POPULAR GARDENING AND FRUIT GROWING

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DEVOTED TO

Horticulture in all its Branches.

CONDUCTED BY

Elias A. Long, Author of "Ornamental Gardening for Americans," "The Home Florist," Etc.,

To study culture, and with careful toil
To 'meliorate and tame the stubborn soil;
To give dissimilar yet fruitful lands
The grain, the herb, the plant that each demands;
To cherish Nature in a humble state,
And share the joys your bounty may create;
To watch the matchless working of the Power
That shuts within its seed the future flower.
These, these are arts pursued without a crime,
That leave no stain upon the wings of Time.
Marnell.—

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POPULAR GARDENING

AND FRUIT GROWING.

VOLUME IV.

October.

Down from the north they are marching,
The scouts of the Winter king;
Where bright spring flowers were blooming,
Withered and dead leaves they fling.
Their bivouac fires they've kindled,
Sumacs and Maples aglow;
Oaks on the hillside are waving
Signals to Birches below.
O'er field and meadow are drifting
The smoke and dust of the fray;
In woodlands dead leaves are falling,
This Indian summer day.

—*Forest and Stream.*

Poor Cauliflower. In some parts of the country it is reported that much rain has damaged the Cauliflower crop; the heads showing discolorations which entirely unfit them for market, a chief selling quality of this vegetable, aside from compactness, being its whiteness.

The Magic Touch of Horticulture. An old evergreen tree, denuded and dead, on a neighbor's lawn, was converted into a most charming ornamental feature simply by planting at its side and training over it a purple Clematis plant, and which all through summer was a perfect mass of the royal color.

It is a Loss to New York. While regretting the loss to our own State of such an efficient horticulturist, it is otherwise a pleasure to note that our correspondent, Mr. M. H. Beckwith, formerly Assistant Horticulturist of the N. Y. State Experiment Station at Geneva, has been advanced to the position of Horticulturist and Entomologist of the Delaware Agricultural Experiment Station.

The Apple Crop and Foreign Markets. A yield of Apples rather above the average in this country and especially in the fruit sections of Western New York, Canada, and Nova Scotia is at this date a certainty, and corresponds with the fruit crop report published in our July issue. But with a large crop the market outlook is perhaps brighter for steady prices, than for some years past. This is due partly to the growing western demand in our own country; but chiefly because of the almost entire failure of Apples in Great Britain, with but a light crop on the Continent. In England, this is doubtless caused by the unprecedently cold, rainy season, together with the previous season's drought, contributing to fearful insect ravages this year. The consequence to our own fruit growers must be that all the first grade of winter Apples can be disposed of at good figures, the quotations of September 10, giving prices at Liverpool, on the first shipments as, per barrel: Kings, $4.85 to $5.75; Blush, $4.35 to $5.08; Baldwins, $2.88 to $3.40; Greenings, $2.40 to $2.76. These prices were for sound fruit of good size, well packed and graded.

First Report of the Division of Pomology. Pomologist H. E. Van Deman, of the newly established Division of Pomology of the Department of Agriculture, has given forth the first bulletin of his division, entitled, "History and Condition of Tropical and Semi-Tropical Fruits Within the United States." In this first report, seventy-seven species of the above classes of fruits are described together with the methods of culture, diseases, preparing for market, etc. There are full page colored plates of Kelsey and Satsuma Japanese Plums and Persimmons. Some sixty varieties of Pineapples are mentioned as being cultivated in Florida and the Keys; only that part of the crop measuring at least four inches in diameter being considered fit for shipping. An elaborate report is given on Orange growing, including descriptions of over 170 varieties. Lemon culture, says Mr. Van Deman, continues to make rapid progress in Southern Florida where Lemons equal to those of any country are produced; 32 varieties are described. Fig raising is also treated quite fully, with notes on preparing some ninety sorts for commercial purposes. Considerable encouragement is given those who desire to grow Olives, as this fruit seems well adapted to the climatic conditions of the Gulf States as well as California, and is so hardy as not to have been injured by the freeze of 1886, which hurt the Orange groves. The Date palm is also hardier than the Orange, and where one is now seen, thousands should be, and are being planted. Their mode of preparation for market is also given. Of the many interesting fruits spoken of, we make but short mention in the above, but expect to have frequent occasion to refer to this valuable report.

Stuff and Nonsense.

THOMAS MEEHAN, GERMANTOWN, PA.

Under and in the name of sanitary science, numerous crimes against horticulture are often committed, that bring a blush to the cheek of common sense. We all know how it is in gardening, there are scores of pretenders to one of real intelligence, and "by the same token" as some of the old countrymen would say, charlatans abound in the medical profession as well as elsewhere.

We laugh at the ignorance that prevailed in the olden time. Many old people among us are still young enough to remember, when the whole medical profession joined in forbidding a drop of cold water to a fever parched lip, and blood-letting was the sovereign remedy for every trouble. One or two men who prepared text books so taught, and few had industry to think for themselves. Is it any better to-day? We laugh at the inability of those of the past, to see the relation between cause and effect, are we any wiser now?

In the time of Queen Elizabeth, there was a bishop in England very fond of horticulture. His name was Grindall. Bishop Grindall was one of the first to raise fine Grapes under glass. Proud of his grand success he sent some to the Virgin Queen. Bess very much enjoyed the Grapes, whether she made a little pig of herself is not told; but a day or two afterward she took sick. It would not do in those days, any more than in these, for a doctor to say he didn't know, so it was concluded that those Grapes must have had the plague about them. It was charged that, knowingly having the great plague in his house, yet Grindall sent Her Majesty Grapes! It was fortunate that the connoisseur sent to examine the affair found the bishop's family in a usual state of health, or the accused might have lost his head.

Not long since there was some typhoid fever in a district near Philadelphia. "The physicians"—they are always put in this ambiguous plural—said it "must be" from drinking Skuylkill water—the great river that supplies the huge city with drink. Then it broke out in a district 400 feet above tide-water, and where the water was from a large and particularly healthful crystal spring. As it would not do to charge it to water here, the trees caught it. "The physicians" declared there were too many of them, and a large number of beautiful specimens, some of them of great value and variety, fell before the ax or were ruined.

Not fifty miles from Philadelphia, perhaps nearer New York than that city, an unusually intelligent florist undertook to get up a trade in aquatic plants. Some bilious trouble appeared in the house, and "the physicians" attributed it to the water tanks of the poor florist, and he has been literally ordered to leave the place.

I know a church entirely covered with beautiful vines. It was the pride of the district. Some one, who had seen the sun dry a pile of clay, started the whim that the shade of the leaves kept the sun from the walls, and that the dampness was unhealthful. "The physicians" joined in the cry; the beautiful vines were cut away. It was no use for those who had had practical experience to say that vines kept the walls dry,—for the intelligent horticulturist to point to the innumerable rootlets sucking from the walls every particle of moisture, for the

antiquarian to tell of the ivy-clothed ruins of the old world—ruins still remaining because the ivy-dried walls defied the pick of the iconoclast to reduce them. "The physicians" had said. The vines had to go.

Just now the great bugaboo is Bacterium, Bacillus, Micrococcus, and an innumerable string of hard words are slung at us by "the physicians," and to read what they write for us makes it a wonder that any human life is left on our planet, but there are bacteria in dew drops, and more of these terrible creatures in the teeth-tartar of every body's mouth than in all the water they drink in a whole life time.

Flowers are banished from our living rooms. "The physicians" say they are unhealthful; especially at night, but the poor consumptive, given up to die, takes his tent and camp utensils, sleeps out on the fresh green grass for months, and comes to the flower-banished home a new man—but only, in time, to become the doctor's patient again.

It is quite sickening to read the miserable twaddle in the daily papers, whenever matters connected with horticulture,—especially sanitary matters affected by horticulture or the kindred sciences, come before them. Here are papers that pride themselves on their accuracy; papers that have a rule to discharge at once any reporter whose statements of every day facts are found in the slightest degree inaccurate; and yet can scarcely ever offer a paragraph bearing on horticulture that does not teem with error, or even absolute nonsense.

Is the fault with horticulturists themselves? Do they make it a point to keep abreast with the world in the march of general intelligence?

I will not answer these questions now. I only know that horticulture affords scope for a greater breadth of human knowledge than any other pursuit,—and if the true horticulturist would take pride in diffusing the varied knowledge they ought to possess, not even the crude *ipse dixit* of "the physicians" could lead to the perpetration of the enormities I have briefly outlined.

Do Varieties Run Out?

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

If, by the question is meant that varieties of any kind under *general* cultivation run out, I say, No. That, under unfavorable conditions, varieties are *apparently* less vigorous than when first originated from seed is certain. But it is a run of unfavorable conditions only that can bring about such results; such as over-propagation from weak cuttings or slips, planting in poor soil, or in temperature unsuited to their nature, (such as growing hardy plants in tropical latitudes), or in doing anything inimical to the nature of the plant. Thus, the Violets, and some of our Carnations, and Roses, are beginning to lose vigor,and become diseased. No wonder that they rebel, when instead of giving them the rest that their nature demands in the winter months, they are "forced" without cessation, year after year, at a winter temperature averaging perhaps 70°, when in their natural condition, the temperature is probably 30° less for two or three months in winter.

I believe that there is no such thing as *permanent* degeneration of any fruit, flower or vegetable that is propagated by cuttings, grafts or roots. Our hardy Concord Grape is found, when grown under proper conditions, to be just as perfect as when introduced nearly half a century ago, and the foreign Grapes, such as the Black Hamburgh and many others, are as perfect, even under artificial culture,—but which gives them the needed winter rest—as they were one hundred years ago. The Wilson and Sharpless Strawberries and the Early Rose Potato can, under the most favorable conditions, be found just as perfect as when first introduced. New plants when first sent out, often suffer from over-propagation, and seem to be weaker than they actually are, for example: When we sent out the "Sunset" Rose some six or eight years ago, the demand for it necessitated every inch of it being used for propagation, which so enfeebled the stock that for two or three years it was generally condemned, until its vigorous nature asserted itself, so that now its size and coloring are fully up to the original specimen from which it sprung.

FLOWER SPIKE OF LACHENALIA PENDULA.

An excellent example of how growing a plant foreign to its nature, induces temporary degeneration is found in the Oat. Oats from England, Scotland, or Norway, weighing 44 lbs. to the bushel, the first year after sowing in our tropical summer,fall to 40 lbs.; that product being sown the second year, again is further reduced to 35 lbs., which again being sown the third year falls to the normal weight of our American Oats which is 28 or 30 lbs. per bushel. Were the culture again reversed, by sowing these same Oats (which had become degenerated by being grown in our climate) in the lower temperature of Britain, they would climb up in three years to their normal weight there of 44 lbs. or 46 lbs. per bushel.

This subject is too comprehensive for an ordinary magazine article, but I think a large majority of cultivators of experience will agree with me in believing that there is no such thing as permanent degeneration of any plant, whether increased by seeds or slips, even should the cultivation reach into thousands of years.

Lachenalias and Their Culture.

E. ORPET, PASSAIC CO., N. J.

Amongst the many beautiful Cape flowering bulbs these take high rank, flowering as they do, in winter or early spring when flowers are by no means plentiful. As they may be grown very successfully in a house, provided frost is excluded, or in any cottage window, Lachenalias are sure to become popular when better known.

In their management, now is the best time to repot them, shaking them out of the old soil and using five-inch pots or nine-inch shallow pans, with a compost of two parts loam and one of leaf mould and dried cow manure, with enough sand to keep the soil porous and to ensure good drainage. The bulbs should be placed one inch apart and covered with one half inch of soil and given one good watering; this will suffice until growth commences, which will be in about three weeks. After planting place the pots or pans in a cool moist place with plenty of air, taking care to avoid cold draughts, or a stunted growth will be the result. All Lachenalias do much better when kept altogether in a cool place away from the drying influence of fire heat. Under these conditions each bulb will produce flower spikes, and these keep in good condition for nearly two months. When the flowering is over, the plants should be placed in the full sun to ensure thorough ripening, after which no water will be needed until repotting time.

Apart from the beautiful colors of the flowers of Lachenalias, many species have foliage, spotted with dull purple, as in L. tricolor, which is perhaps best known, with flowers of bright green, red, and yellow. L. pendula has deep purple, red, and yellow flowers about an inch long and very showy. L. pallida, whitish, more or less tinged with red; but the best of all is L. Nelson's, a handsome hybrid with golden yellow flowers, in long racemes, deserving general cultivation though, rather, scarce as yet. The above are a few of the best out of about thirty known species.

Lachenalias are easily increased, forming as they do, a number of offsets from the old bulb every year, which in two years will make good flowering bulbs.

A Fruit Album.

S. MILLER, MONTGOMERY CO., MO.

The colored plates of fruits and flowers can be had so cheap that a collection can be had with but little expense. Yet there are often new fruits that we like to have a sketch of, and for Apples, Pears, and such like, a very simple method will give us the exact outline and size of them.

Take a sharp, thin-bladed knife and cut the fruit lengthwise, splitting it through the middle, stem and all; rub ink on the face, stem, and blossom parts; press upon the paper; the stem must be pressed down firmly as also the little angles of the blossom end, and you have a very complete picture of it. Herewith is a specimen [reduced to two-thirds size in the engraving] of an Apple ripe here, just now, sent to me under the name of Rebell. Although I detest the name the Apple pleases me very much.

There is an album in my book case that has impressions, taken forty years ago, of fruits from a number of horticultural friends, some of whom have long since passed away. If one had water colors, and knows how to use them, the colors of some might be appropriate and would add to the picture. To each specimen I add the name of the orchard from which it came, date of ripening, and various descriptive points.

Manures other than from Live Stock for Fruit and Vegetable Growing.

T. T. LYON, VAN BUREN CO., MICH.

The fruit growers of the east shore of Lake Michigan, especially about this place, (South Haven), are very largely owners of small parcels of land, in most cases wholly occupied by permanent fruit plantations, affording little opportunity for the manufacture of barn-yard manures. It is also true that very little stable manure is obtainable in the vicinity, so that, although the region is yet new with much virgin soil, the manure question is already pressing.

Very little manufactured manure is yet used in this vicinity; although farther south, in Berrien County, where fruit planting commenced somewhat earlier, these are more extensively used. So general, however, is the distrust of these compositions, and even of the analysis of their alleged constituents, that they are accepted with more or less hesitation, while some of the most efficient and successful fruit farmers practice the manufacturing of their own manure, visiting the Chicago stock yards and purchasing the crude material.

Green manures are quite generally employed to assist in maintaining the fertility of fruit plantations in this region, although it is hardly anticipated that they will suffice to fully and permanently maintain the requisite conditions. Clover requires too long a period to mature a crop suitable for plowing under in fruit plantations; resort is therefore quite generally had to Rye: sowed in August, and plowed down green the next spring before heading; or to Oats or Buckwheat, sowed and plowed down same year.

The conviction seems quite general that the plowing under of green manures should be practiced only as a temporary expedient; and that a necessity must sooner or later arise for the employment of something adequate to fully maintain and even increase soil fertility.

Muck, where it is obtainable in a thoroughly decomposed condition, is very nearly as effective as barn-yard manure, and more especially so after having been used in the stable as an absorbent.

GEO. J. KELLOG, ROCK CO., WISCONSIN.

My experience with commercial fertilizers has not been satisfactory. By request of our State Board of Horticulture, in 1886, I planted four plats, three square rods each, each plat one rod Wilson, one rod Manchester, one rod Crescent, the Wilson coming between the two pistillates. On these plats I applied fertilizer as follows:

LACHENALIA PALLIDA.

Plat No. 1. I applied before plowing, one load, one-half cord, of unrotted stable manure, (horse and cow);

Plat No. 2. No manure or fertilizers;

Plat No. 3. 6¼ pounds bone meal applied about plants after planting;

Plat No. 4. 6¼ pounds sulphate of potash applied about plants after planting.

The ground was in rather lean condition, so that the fertilizers ought to have shown results; the plats were well cared for, spring planted; the Wilson and Manchester was set 18x36 inches, while Crescent were set 36x36 inches and all trained in matted rows. The very unfavorable drouth of 1887 detracted from the value of the experiment—the yield was light and in the following proportions:

Plat No. 1. 56-100 Crescents, same as both the other kinds.

Plat No. 2. 42-100 Crescents, nearly equal both the other kinds.

Plat No. 3. 33-100 Crescents, more than both the other kinds.

Plat No. 4. 32-100 Crescents, *much* more than both the other kinds.

The picking was from June 7th to 28th; nine pickings and correctly kept.

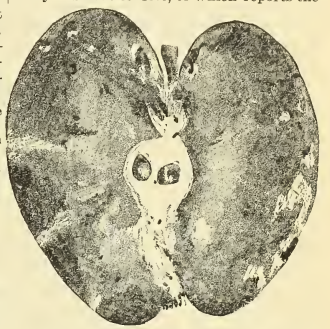
In 1886, I also applied 200 pounds of commercial bone meal on a plantation 30 rods long, 13 rows wide—taking three rods across the patch, then skipping three rods and applying 20 pounds bone meal on every alternate three rods,—again the drouth may have interfered with the result; (still the fertilizer did not show on the 350 bushels of Onions taken this year from the same ground), there was no perceptible difference on the Strawberries where the bone was applied and where it was not. This was on soil five years from the forest and no manure having been previously used, though a good dressing was applied of stable manure for the Onions that followed.

In 1887, I applied bone meal fertilizers (prepared like the 200 pounds used in 1886, especially for Strawberries), on 13 rows, 19 rows long of spring planting all one kind, Jessie. This was on land well manured with barn yard manures. I put 14 quarts on every other row and left every other row without; the application was made June 24th, after the plants had commenced forming matted rows; the best of care was given this pet plantation—it was a little too heavily mulched for winter and some rows showed loss, but the growth of plants last season or the stand and yield of fruit this, could not be distinguished one row from the other, except on the end of two rows where there was applied additional fertilizer Nov. 7th.

So that, from my feeble experiments on light prairie loam bordering rich black Oak and Hazel brush soil, I can see no good in the application of bone fertilizers, potash or leached ashes for Strawberries. I have not tried green manuring but would prefer Clover to any other crop.

Regarding Pear Blight.

A recent article on the subject of Pear or Fire Blight, which found its way into these columns has had the effect of bringing out numerous other articles on the same subject. This might have been expected, for it is well known that no other subject excites discussion among fruit growers readily as this old and fertile one. It is also as well known that little if any direct gain can come from a general discussion of this subject, hence we concluded, instead of publishing the various opinions recently received to lay before our readers, at the risk of repeating ourselves, some of the valuable conclusions arrived at as a result of the extended experiments and microscopical investigations concerning this disease, made by Profs. Arthur, Burrill, and others in recent years. Our quotations are drawn from the writings of these gentlemen as they have appeared in the reports of the Department of Agriculture for 1886, and of New York State Experiment Station Work, for the years 1884 to 1886, to which reports the reader is referred for further statements concerning the disease.



Specimen from a Fruit Album, see opposite page.

The Cause of Pear Blight. The cause of Pear Blight, as established by the last seven years of research, is connected with the activity of germs, and the malady belongs to the category of germ diseases, now definitely proven to occur both among animals and plants. The germs causing blight, are borne from place to place, and from tree to tree, by the atmosphere, which is never so quiet but that its movements are sufficient to keep such impalpable bodies afloat. Upon the germs finding entrance to the juices of the plant, the disease is set up in a more or less virulent form.

Investigation. Bacteria were first noticed in connection with Pear Blight, by Prof. T. J. Burrill in 1877, but no experiments were undertaken till 1880. He then made an extended series of careful inoculation, which resulted in showing that the disease could be easily communicated from one Pear tree to another, by introducing in healthy tissues a little of the exudatiou from a diseased part, and in the same manner could be communicated to the Apple and Quince. Experiments were also tried to determine how the disease is naturally propagated from tree to tree, tying diseased branches into healthy trees, and smearing the uninjured surface of stems and leaves with the exudation used in inoculations, but with purely negative results.

Proof that Specific Bacteria cause Pear Blight. (*a*) Bacteria are found in great abundance in actively blighting tissues, so as to be easily demonstrable to the naked eye, and occur in less abundance in proportion as the disease is less active. (*b*) The disease may be introduced into healthy tissue by inoculation with germs from diseased tissue. (*c*) It is communicated with equal certainty when the germs are separated from all accompanying juices of the diseased tissue by a series of fractional cultures. (*d*) *Per contra*, it is not communicated by the juices of the disease, after the germs are removed by filtration. (*e*) The germs connected with the disease constitute a single species, which is essential to successful inoculation. (*f*) *Per contra*, the numerous other species of earth, air, and water are not found to a noticeable extent in connection with the disease, and cannot be

made to originate it by inoculation, or in any other manner.

BLIGHT IN OTHER FRUITS. Another point made by Professor Burrill was that the blight of Pear, Apple, and Quince is identical, a conclusion that my own work fully sustains, for in all the experiments performed, the result did not in any way appear to be influenced by the source of the virus. That made use of, was from Apple, Pear, and Quince, mostly obtained from young nursery trees about a mile and a half away. The test was carried even a step further by using a virus from Quince, which had received its infection from Pear, and continuing the disease in the Pear, Apple, Quince, etc. Several such permutations were made with no variation that could be traced to the changes of virus.

PREVENTIVES AND REMEDIES. Whatever form Pear Blight assumes, it is started by germs gaining access to the tree in one of the three ways described—through the flowers, the growing shoots, or injuries of the bark. No method is known, or has yet suggested itself, of rendering the tree insusceptible to the disease, and a direct prevention must be sought in some means of excluding the germs. There are three ways by which germicides may be applied to trees—by fumigation, by spraying and by washing. The first method offers a possibility of at least partial success, and appears to be the only means by which one can hope to protect the flowers to any extent.

THE APPLICATION OF WASHES cannot, of course, be made to the flowers or growing shoots, but excellent results may reasonably be expected when made to the trunks and larger branches. Sufficient study has not yet been given to the matter to say what will prove the most effective application; but linseed oil has been advocated as forming an elastic coating, and to it might be added some sulphur, and at least 1 per cent of carbolic acid. This would seem to answer every requirement for an antiseptic, and for the exclusion of atmospheric germs from the cracks in the bark. To decrease the amount of cracking, the body of the tree may be shielded from the sun's fiercest rays by a low trimmed head, or by leaning the whole tree toward the southwest, or by boards, matting, or other protection, on the sunny side of the trunks.

AMONG THE INDIRECT METHODS of fighting the disease, none are more important than those which secure slow growth and early maturity of the shoots. This has been recognized from the first agitation of the subject, but until the present time there has been no unanimity of opinion as to the exact objects to be accomplished. From the preceding account it is apparent, however, that the chief aim should be (*a*) to keep the amount of tender surface of shoots at a minimum, in order to diminish the chances for the penetration of germs, and (*b*) to make the tissues as solid as possible, as the progress of the disease and the chances of its entire cessation are in inverse ratio to the succulency of the parts attacked.

OF GENUINE REMEDIES there are none; but as the disease is local, and spreads through the tissues slowly, it is possible, as has long been known, to effectively check its progress by amputation. The smaller limbs are to be cut off a foot or two below the lowest manifestation of the disease, and the spots on the trunk and larger limbs are to be shaved out, cutting deep enough to remove all discoloration. A careful operator will keep the knife disinfected with carbolic acid or otherwise; if this is not done, the disease will be conveyed, in some instances, to the freshly cut surface. After the diseased portions are cut away, some benefit may come from applying to the fresh wounds, the above mentioned wash.

To Buffalo in 1889. Society of American Florists.

The florists of America may expect a right hearty welcome to this fair and thrifty city when they meet here in annual convention next year. Added to the fact that Buffalo florist establishments rank among the most enterprising in the country, hence that in the direction of their own business, visiting florists will find much of interest here it must also not be forgotten that Buffalo stands in the front rank of American cities in the matter of fine parks, magnificent tree-lined and lawn-skirted streets, fine public buildings, a delightful summer climate, and above all else, she includes almost within her own suburbs, that most wonderful of all natural attractions, Niagara Falls.

Indeed, it may be said that because of the above advantages, and still others, our rising city of fully 250,000 inhabitants is becoming famous as a favorite convention city. We always see that our visitors are well cared for. We think we can point with pride, and as being of special interest to florists and landscape gardeners, to our generously executed park system, embracing more than 600 acres, with 40,000 hardy trees and shrubs growing in it, and miles of excellent drives throughout its area. And we must also add that almost at our door lies, what in the near future doubtless will be united to our own park system by a grand boulevard, namely: The New York State reservation park at the Falls of Niagara, and with this all the excursionists will have an opportunity of becoming familiar, before the convention business is finished.

Buffalo, with her immense new hotels now nearing completion, will by convention time be equipped with public accommodations second to no city of her size, in this country, while for holding the sessions and making a floral display, the building can nowhere be found that can excel our magnificent Music Hall. As for agreeable weather, this we are almost safe in assuring beforehand, for August, in Buffalo, is rarely otherwise than a most delightful month, in which cool breezes from Lake Erie, and the mollifying influence of tens of thousands of trees in our streets, combine to create an invigorating atmosphere during the twenty four hours of every day.

To these and other attractions, apart from the excellent programme sure to be provided, the attention of the florists of America is therefore directed. To the many friends of this journal who will be present, a specially hearty welcome is extended, to visit not only our office in the city, but if possible, to make a trip to the POPULAR GARDENING Experiment Grounds, near Niagara Falls, and see the work here begun, in the interest of American horticulture. A cordial reception will be in waiting for all, who may favor us by their presence.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

FIRM THE SEED IN THE SOIL (page 233), or, rather, firming the soil about or above the seed, doubtless has all the importance Mr. Henderson gives it, and he deserves much credit for bringing the matter so prominently before cultivators. But general rules admit of exceptions. There is at least one exception to Mr. Henderson's rule, and it should be kept equally prominent: Do not firm damp, heavy, clay soils about or above seeds. If such very adhesive, dense soils are compacted by the pressure of the foot or otherwise, though only so damp as is allowable and often necessary when planted (by no means wet), the soil is put in a condition very unfavorable to the growth of the plant. If the seed is covered, the chances are that if the covering is firmed, the plantlet will be unable to penetrate it. In the old days of hand planting of Corn, covering it with hoe or "jumper," the coverer compacted the covering with his hoe or foot, unless the covering was of heavy, clay soil. Nowadays, when the covering is compacted by the wheels of the planter, the wide awake cultivators of heavy soils follow with a light harrow to loosen the earth about and above the seed.

Surely in what is said about access of air to germinating seeds, Mr. Henderson is farther wrong than the person he criticises. Free access of air is not even destructive to the germination of seeds, as access of air is one of the conditions necessary to the germination of seeds. Mr. H. says his purpose in firming the soil is "to exclude the air;" if he succeeded in doing this, the seeds certainly would not germinate. On this point I quote Stoner, Professor of Agricultural Chemistry in Harvard University. "Agriculture," Vol. I, Page 29, under sub-heading: "Large quantities of oxygen are consumed by germinating seeds and roots, buds, flowers, and fruit. Oxygen is essential, from the beginning, for the process of germination. Seeds do not germinate in the absence of oxygen. Even a seed that had sprouted would soon wither and perish if it were wholly deprived of oxygen. In sowing seeds care has to be taken not to bury them too deeply, lest they should be too completely cut off from the oxygen of the air."

FROZEN POTATOES GROWING. Judge Miller's notes about Potatoes, remind me that I was not aware until this spring that frozen Potatoes would grow. One of our berry growers and market gardeners planted Potatoes that had lain in an out-building during winter, and had been frequently frozen. When planted they were soft and much shriveled. Yet they reached the surface in less time than well-kept seed, and were unusually vigorous during the growing season, and made a fine yield. Of course this does not make it advisable to plant frozen tubers, but perhaps some will be as much surprised as I was to learn that they will grow.—*N. Y. L., Illinois.*

CARNATIONS FROM SEED. No flower raised from seed has given me greater satisfaction than the Carnation Pink. I sow the seed in spring, either in hot-bed or open ground, cultivate the plants through the summer, and give them a slight covering of leaves in winter. The next spring they throw up flowering stems and bloom profusely. They have never lived through the second winter with me, though in some of the catalogues they are called perennial.—*E. A. Horr.*

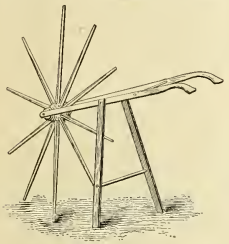
HOW DEEP TO PLANT. I think that the chart showing the proper depth for planting Bulbs as given in last issue is most commendable for simplicity and practical use. The question of "how deep shall I plant" is one that is often perplexing to the amateur. Under some circumstances, it might be mentioned that Hyacinths and Tulips may be planted several inches deeper than shown, without detriment.—*Remle.*

DROUGHT AND CULTIVATION. Perhaps the one point that has had more stress laid upon it, in late issues than any other, has been the necessity of continued and thorough cultivation, and its benefits in times like the past season of drought. One feature specially to be noted, is the concurrence of testimony, as to good effects, from nearly every part of the country. One correspondent writes of good results on Strawberries and other fruit; another on Corn and other vegetables, Potatoes, Cabbage, Celery; some on the comparative immunity of nursery stock, well worked, and so the story has been told. Now the lesson for each and every one, who has not already learned by experience, is to resolve another season, if dryness threatens, to keep the surface soil stirred and mellow about the growing crops; where irrigation is practical it ought to be gotten into readiness for use. Otherwise, see that you have the tools best adapted for the end in view, and then no matter what else may be neglected, do not let the ground suffer. Keep in mind that even though a full crop is not secured, the price is likely to be higher, therefore some extra labor may be profitably given it.—*Elmer E. Summey.*

THE CHINESE OR SHANTUNG CABBAGE, referred to on page 273 of the September number, has been successfully grown in northwestern Iowa, for several years past by an English sea captain, who procured the seed in China. The heads are small, weighing from three to five pounds, and much resemble a well-headed Cos Lettuce. In quality it is far superior to any of the kinds now grown, and is a novelty well worth introducing.—*F. E. S. Nebraska.*

POMACE FOR COWS. There is a great deal of unfounded prejudice against Apples for feeding stock. It is a well-known fact that when a cow, that is unaccustomed to succulent food, breaks

into a Cornfield or Clover patch and gets all she chooses to eat, it is likely to result in drying off her milk if nothing worse, yet fresh Clover and green Corn are not condemned as milk-producing foods; but when a cow that has not had access to fruit breaks in and surfeits herself, with the result of drying off her milk, it is charged to the fruit. I have kept cows in a pasture where they commenced to pick up the fruit that fell as soon as it acquired any size at all, and where the quantity gradually increased until they could



Land-Measuring Implement.

not consume all; the result being an increase of milk of from one to two quarts per cow; and I have also fed Apples largely to both cows and swine with good results. I never could see any difference between sweet and sour Apples for these purposes. With four to six cows having the run of an orchard for twenty years, in Massachusetts, and in feeding my single cow here from a peck to a half bushel of Apples per day for the last ten years, I have never experienced any loss in the production of milk, but invariably a perceptible increase, and when I happened to have pomace I have also fed that freely, to good advantage. In one case, in Massachusetts, a cow, that had the run of a cider mill yard, nearly lived on pomace after cider making commenced, and always gained in milk largely; but in those days straw was used freely in the cider press, and at that season the weather was so cool that there was little or no fermentation, which soon spoils pomace here in New Jersey.

Asparagus. In the July issue Mr. Miller advocates breaking Asparagus in place of cutting it with a knife. I have always broken it off and think it is much nicer, but do not agree as to the white part. There is no other vegetable that will compare with it.—*Mrs. J. L. White, Knox Co., Ill.*

Rose Bugs. I suppose that Mr. Powell meant the Rose *slug* instead of the Rose *bug*, when he wrote about keeping them off by hellebore. It will work very well for the slug, but for the tree Rose bug hardly.—*C. M. Weed, Ohio Agr'l. College.*

Land Measuring; An Easy Method. In a recent back number, mention was made of a land measuring implement, which reminds me to describe one I use: It is simply an old wheel having ten or twelve spokes, the rim being removed and the spokes left in such shape as to have just one foot between the outer ends. A short axle is passed through the hub, and is fastened to pieces which form the handles, and which latter are then supported by light legs for keeping the machine in an upright position. One spoke is painted different from the others or may have a tag tied to it for ease in counting. It will be seen that by each revolution of this wheel, it counts ten or twelve feet, and forms an easy and rapid method of getting the dimension of any desired land area.—*C. J. Gaines, Yates Co., N. Y.*

The Rural Hybrid Roses. Your correspondent E. E. S., has made a mistake in his appreciative note on page 268. The Rose named George Bruant is a hybrid between Rosa rugosa and a Tea, produced, according to published accounts, some six months after my hybrids, between Rosa rugosa (female) and Harrison's Yellow, both recognized as distinct species. The first of these (nine in number) to bloom, bore flowers having from 30 to 35 petals of a color closely resembling that of Gen. Jacq. The odor is extremely delicate resembling that of Teas. It has been in bloom constantly during the entire season. The plant is a rampant grower with thick, leathery leaves like its mother's, but larger and more pointed. Two others have since bloomed, but the flowers are small and nearly single. It is an interesting fact, that of these nine plants, but one resembles Rosa rugosa in foliage. A more interesting fact is that of 60 Roses, the progeny of a cross between Rosa rugosa (female) and a number of Hybrid Remontants and Teas (males), there is *not one* that resembles the mother in foliage. These have not as yet bloomed, as the seeds were planted only last winter. It would be difficult to find 60 Rose bushes more dissimilar.—*E. S. Carman.*

Niagara Experiment Grounds.

CONDUCTED IN THE INTERESTS OF THIS JOURNAL. LOCATION, LA SALLE, NIAGARA CO., N. Y.

The Compost Heap. Towards the end of July a compost heap seven feet wide at the base, 30 feet long and four feet high, was made for the purpose of providing special fertilizing matter for use in future tree planting on the grounds. This heap consists of two kinds of material, namely, turf from the meadow and old fence lines, and stable manure, the proportions being as two of the former to one of the latter. The pile was built up from the ground in even layers, alternating the two kinds of material. As completed the top was left basin-like and into this basin was deposited about 30 barrels of water—enough to thoroughly soak the pile. This had the effect to cause the compost to heat and the ranker matter to commence decomposition. The next step will be to cut down the pile with a sharp spade, working from one end and throwing all of it over. After laying thus for two months longer it will be a safe and superior fertilizer to mix with the soil when planting out trees. All trees will appreciate just such a treat as this will afford them for starting in.

Who Uses Subsoil Plows? In all of the writer's experience as a horticulturist he has placed the subsoil plow in the very front rank amongst important tools. When therefore he came in possession of "Woodbanks" one of the very first tools he invested in was a subsoil plow. But he could find none at the implement depots in Buffalo, so it had to be ordered direct from a factory. The reason the plows are not kept on hand is because of their limited sale, so the dealers said; cultivators not seeming to appreciate them. One of the largest plow dealers in Buffalo said he doesn't sell a subsoiler once in six months. We know very well that there is something in this, that when a plow of the kind is brought into a neighborhood it is made to serve a number of neighbors; but, notwithstanding all this, the above remarks would show the tool is not by any means appreciated as it deserves. The writer agrees quite nearly with that gardener who spoke in these columns recently to the effect, that to go down when tilling the soil to twice the depth of ordinary plowing, is equivalent to adding one-half to the size of the farm.

Cultivation, or no Cultivation.—The value of cultivation for young Apple orchards is forcibly illustrated at "Woodbanks." About one half of our orchard, consisting of 160 Apple trees, has for six years past been in Timothy meadow; the other half, in the same time, has been devoted to cultivated crops of various kinds. The trees in the meadow have not been neglected in the matter of fertility but have had a top-dressing of manure over the roots occasionally. Those of the other part have never been freely manured, while the land has been cropped as stated. Now mark the contrast: those in the cultivated part have reached a diameter of trunk of about six inches at two feet from the ground; have fine spreading heads and handsome dark foliage, and, in the case of Baldwins, will this season bear an average of one barrel of fruit apiece; the trees in the meadow, and of the same age and in the soil as the above, have trunks not more than four inches through, two feet up, with heads lacking in size, vigor and color, and the Baldwins will not average a peck of fruit apiece. As both plats were cropped in addition to the presence of those trees, but the one plat with cultivation, the other without, it is obvious that the increased quantity of fruit is directly due to growth and cultivation.

Fowls and Gardens. Our observation this season goes to show that a good garden, and fowls at large on the same place, are not incompatable elements. This is the plan: Keep the vegetable and small fruit crops 40 rods or more from the poultry house and farm buildings, and then they will not be reached by the chickens. Vineyards, Orchards, the Asparagus, and Rhubarb beds, and such succulents like Beans, Parsnips, Sweet Corn, Cucumbers, etc., the green growth of which fowls will not devour may be kept nearer without detriment.

A New Late Strawberry: The Carmichael.

E. W. REID, BRIDGEPORT, OHIO.

The greatest merit of this variety is its lateness, being from six to ten days later than Gandy or any other berry on the market at present. Its flavor is rather poor compared with Wilson (my best), although many others are far below the Carmichael and as its season is so late, the flavor has very little to do with its selling qualities as the fruit is much larger than other varieties.

With me, this season, was almost a failure, but this was not the fault of the berry; from the time the blossoms were setting until the first of July we had no rain. The Jucunda was a failure, and all other varieties were cut down to less than one-half crop; it has done good work before. Like all other late varieties it needs plenty of rain when setting its fruit.

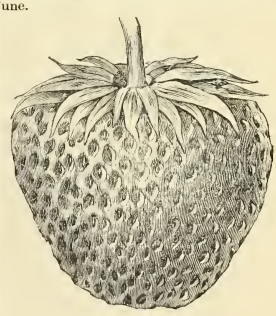
As for productiveness it is but medium compared with Crescent and Wilson on our grounds (they are the best), but will compare favorably with Sharpless or Cumberland, not quite so large but sells for more than either.

Of my correspondents who have this season expressed themselves regarding this variety, Geo. E. Gowen, Rockingham Co., N. H., has seen enough of it to know that it is altogether the latest berry we have. When the rust struck my plants the Carmichael was the only one that proved free. The plants are very vigorous. On July 20, I gathered quite a lot of nice looking berries. Wm. Laverick, Cayuga Co., N. Y., writes: "I consider the Carmichael one of the best berries on my farm, and just what we need. To-day, July 8, I picked my last Crescent, and for my first Carmichael received 10 cents per pint. Many people wonder where I got my late berries." In a different strain Mr. M. Crawford, Cuyahoga Co., Ohio, writes thus: "The Carmichael is not a success on my soil. It is very late, but not very productive nor of extra size.

In noting this difference of opinion it is well understood by fruit growers that a difference in soil makes a great difference with the fruit. I could give other favorable letters, but as the introduction of new varieties is quite risky, I do not wish to draw persons on. As we have had very favorable results here in former years, I see no reason why it will not produce the same again. I know this to be the latest berry and a good market variety.

A Promising Strawberry: the Daisy.

This new berry, of which a cut is annexed, was awarded one first and two special premiums at the Morristown, N. J., Strawberry show, last June.



The Daisy Strawberry.

It is said, by the introducer, Mr. Thos. G. Zane, of N.J., to be a seedling of the Crescent, and Cumberland Triumph, the latter of which it resembles, though it is claimed to be much more productive. Its time of ripening is with the Sharpless. The berries are said to be uniformly large and symmetrical, of good quality, holding out well until the last of the season. This berry withstood the drought, followed by cold weather of 1886, when about twenty other varieties largely succumbed to the unfavorable conditions. Another point claimed for the Daisy, is that it blooms later in the spring than most others, so is not liable to be hurt by late frosts. The Daisy after three years' trial, seems, in the estimation of those who are familiar with it, to be well adapted for field culture on nearly any good soil, yielding, it is said, a large crop of marketable berries, with ordinary treatment.

About Some of the Newer Vegetables and Fruits.

SAMUEL MILLER, MONTGOMERY CO., MO.

As early in the spring as I could I planted seed of Maule's Early Ripe, Landreth's Extra Early, and Alaska Peas. They were planted in the same hour and in same row. Alaska and Landreth's Extra Early ripened about the same time, and are as early as a Pea can ripen; both productive and good. Maule's Early Ripe was fully one week later, but a most excellent one. When a new Pea is sent out the packet should state the height of the vine. I have just now the Perpetual Pea six feet high, with fruit and blossoms.

MELONS. On the same day we planted on top in hot-bed, seeds of Orange, Maule's Early Ripe and Landreth's Extra Early, and Green and Gold. The sods with the plants (three in a sod) were set out when the ground became warm. At the same time I planted seeds of the same in the open ground. On August 2d, I took in one Melon of each of the above, all ripe, with no gain in earliness of either, except that the Maule was a little over ripe, giving it perhaps a few days ahead. But in quality it falls below all the others, in fact, some of the coming ones must be better or it will be discarded. Landreth's is so much like Phinney's Early, that not one in ten would distinguish it from that variety. It has, however, a thicker rind, with the flesh a little paler.

The Orange is too well known to need a description, and to my taste is of the best. But when it comes to beauty and excellence combined, the Green and Gold takes the lead of all I have yet met with. Medium size, slightly oval, dark green outside, with blotches of fawn color when ripe. Flesh yellow as gold, sweet as sugar, and very pleasant. Seed white, with a pink shade around the edges. These different varieties are planted so distant from each other that they cannot well be mixed.

PLUMS. THE MARIANNA. This has fruited freely with me this season, and one tree will do me. It is no earlier than the Wild Goose, not quite as large, and inferior in quality. It is also more liable to be destroyed by the curculio. Fruit of the purple-leaved Plum has been received. It is a beautiful fruit and of excellent quality. Round, dark red, about an inch and one-eighth in diameter.

BUTLER PLUM. August 4th I received a very handsome Plum with the above name; a seedling of the Wild Goose, about the size of Marianna, and resembles that variety closely in appearance, but of much better quality. It will be two weeks later than Wild Goose, which will make it valuable.

THE LOUISA PLUM will now come in when the latter is over. This is fully as large as Wild Goose, darker in color, and much better in quality, in fact it is the best native Plum I know of. Originated on the fruit farm of Mr. Scribner, some twenty years ago; but was never brought out with the trump of fame as most new fruits are, hence its scarcity. I have none to sell.

Marketing Dried Fruits.

In an article on this subject, the California Fruit Grower strongly condemns the practice of sending one's stock of good, dried fruit to the market in old pillow-cases, bedticks, flour sacks, grain bags, and what not, thus depreciating its value very materially.

The same article goes on to say, that all consideration of the commission-man apart, the producer cannot afford to make this mistake of packages. It makes a loss outright. The fruit will not sell as promptly, nor at as good prices in irregular, shabby packages as it would in clean, new, uniform ones, and the difference in price will be more than the cost of new packages. Buyers will infallibly pass by your lot, as long as they can find other goods in more attractive order.

No wholesale merchant wants any such packages piled in his store, and no first-class retailer would care to open them on sale in his bright windows. If the buyer takes your lot at all, it is at a price to pay him for new packages and the cost of transferring, even if he stops at that. His business and aim is to use every art of his own, and every circumstance of the quality and appearance of goods to cheapen the price to him, just as it is in your province to employ all skill and taste to make him pay the uttermost price.

Bright, clean, uniform packages make that favorable, first impression, which is the keynote to nearly every deal in articles of food, and, in proportion to that impression, will be your own confidence in standing for a price, and his willingness to pay it. To have to apologize for goods for any reason, is a bad beginning for a trade. Your buyer knows it as well as you, and will use it for all there is in it to his advantage.

For not over ⅛ of a cent per pound on the fruit, you can get cleau, bright, strong, uniform sacks, which will make your goods worth several times ⅛ of a cent per pound more than the pillow-case, flour sack style. Or you can have them boxed by capable packers at a cost of three-fourths to one cent per pound for boxes and packing, plain work and a proportionate higher price if grading and facing are done. For common fruit only, such as sun-dried, unpeeled Peaches and Apricots, use burlap or grain sacks. For all dark fruits and evaporated or other fine goods use white cotton fruit sacks. Of the latter, two standard sizes are made, viz.: 36 by 20 inches, and 30 by 23 inches, the latter costing ¼ of a cent less than the former. Fruit in white cotton sacks looks brighter, and contains no hairy lint, such as comes from using burlaps.

Important to Tree Planters.

J. N. STEARNS, KALAMAZOO CO., MICH.

As it is very desirable to get all the growth possible the first season, the proper planting of trees is very important. By the usual mode of planting, a hole is dug, just large enough to crowd the roots into it, the soil shoveled in, stamping the roots down in a mass at the bottom of the hole, and after the soil is replaced, it is tramped solid and smooth on the surface, which, if it remains dry for some time, is almost sure death to the tree. If the planter thinks it necessary to water, he turns the water on this firmed surface, which only serves to make it the harder, and is worse than no watering at all.

To illustrate the proper way to plant, (we say proper, for by this mode, if the tree has the requisite vitality, we never loose a tree,) no matter how dry the season, and we plant thousands of trees and plants every season: If the whole ground planted has not been thoroughly fitted by deep plowing, (and on stiff land subsoil plowing is of great benefit), the hole for the tree should be fully as large again, as would be required to simply take the roots in. All bruised roots should be cut off with a sharp knife, and the top headed back fully more in proportion, than roots cut off by digging.

The soil should be sifted in carefully, so as to allow each root to remain in its natural position, just as it grew. When the roots are just covered, and the hole about two-thirds filled, tramp it firmly and turn in a pail of water, allowing it to soak away around the roots before putting in the balance of the soil; I consider this the important part of the planting. It will pay if you are planting one or a thousand trees, even if you have to haul the water five miles, especially with such seasons as the last three.

This furnishes the requisite moisture to give the tree an early start. The past season we had no rain to wet down to the roots of newly transplanted trees for three months after planting. The result was, thousands of trees died, and many that barely lived, succumbed the first winter, while those planted as above, made a healthy growth.

In no case should the soil be firmed that is put in after the water has soaked away, but leave it loose and keep it so by frequent stirring with cultivator or hoe. If watering is considered necessary, dig a hole down to the roots and turn in water, allow it to soak away and then draw the soil back. This plan is equally applicable to planting Strawberries, Cabbages, etc.

Fall Stirring Destructive to Garden Pests.

N. Y. L., ADAMS CO., ILL.

The gardener finds so much that must be done in the spring, that it is best to do in the fall all that may be done at this season. The ground may be broken up in the fall, and by doing this we reduce the amount of spring work, increase the solvent action of the frost, increase nitrification largely, and what is of even more importance, lead to the destruction of garden pests.

Many of these pests spend the winter in the pupæ state, near the surface of the ground, or the eggs are deposited here. By breaking up the ground in the fall, and stirring it once or twice afterwards, we expose the pupæ or eggs, which may or may not lead to their destruction through the action of frost. Thus the cut worm larvæ, unprotected, survives a temperature of 30° below zero; but other larvæ are certainly destroyed by exposing them to the severities of the winter.

Fall stirring accomplishes far more, however, by bringing the larvæ where the birds can get them. In the late fall and early spring the birds are hard driven for food, and will devour almost incredible numbers of these larvæ if where they can be found. It is often well to call in the pigs to aid the birds, as the hog is truly omnivorous, and larvæ are a dainty to him. The white grub of the May beetle often gives the gardener much trouble. Their favorite abodes are pastures and meadows, and where they are once established in the grass, the only practicable thing to do is to put all the hogs in the fields that can be had, in the fall. The swine get very fat, and, if there is enough of them, make clean work of the white grub, so also of the cut worm. The blue bird and the robin, especially, are partial to a diet of cut worms, and they come early in the spring. The ground should be broken up in the fall, and stirred at least once, two weeks later, and be again stirred in the spring as soon as the work can be done.

The wire worm is another serious pest. In many places it is the worst of all. It does not injure Peas, Beans, or Buckwheat, but these are the only considerable crop of the garden or farm that it may not injure seriously. They pupate in an earthen cocoon, and if brought within reach, the birds and swine will make short work of them.

The Squash vine root borer pupates in a rough cocoon of earth about the roots of the plants it has destroyed; so does the Tomato worm and the Radish fly (likely). The striped Cucumber beetle pupates in the earth during the winter, and so do many other enemies of the gardener or fruit grower. Some of these may not be eaten by birds or swine, but nearly all are, and there are yet other friends whose efficient aid may be had by bringing the pests on or near the surface. Thus, the skunk delights in a feast of the pupæ of the Tomato worm. As these pupæ measure three inches in length, a skunk having the range of a stirred plat infested by them, ought not to hanker much after their nearly every day fare of eggs.

If we stir the ground in the fall, we must first clear up the rubbish and ashes left on

it after the crops are harvested, and this clearing up deprives some pests of desirable winter locations, while if the stuff is burned, others are destroyed. For example, the tarnished plant bug is not affected by fall stirring of the ground, but the imago hibernates in rubbish, and by destroying this we deprive the imago of winter shelter, if we do not destroy it itself. This pest has destroyed thousands of dollars worth of Strawberries in Southern Illinois, by sucking the juice and vitality from the unripe fruit. It is an indiscriminate feeder, and so destructive that any measures that will lessen its numbers, should not be neglected.

Poultry in Vineyards.

The vineyards of that part of France, to the south of the Garonne and Gironde Rivers, known as the Medoc, where the wine interests are so large, has been visited by Mr. Stephen Beal who reports concerning them as follows: "These vineyards are subject to enemies, and at one season, June, they are infested with vast hordes of slugs and earth worms, which if not kept down will destroy the vines. The efforts of fowls are very largely depended upon to destroy these pests. At other seasons of the year fowls are found to be most valuable adjuncts to the successful working of the vineyards.

There are to be seen on every side and in every field small poultry houses. Some of these are permanent structures, but the majority are movable, narrow enough to stand between the rows of vines, and with handles at each end to facilitate carrying.

There is only one season of the year when fowls are kept off the vineyards: namely, when the fruit is just ripening, for then they would pick at it. At all other seasons they are permitted to wander at will. At the time of my visit, plowing operations were going on very extensively; and behind every plow were a lot of birds revelling in the fat things laid bare by the plow. At first it might be feared that the poultry might do harm to young and tender shoots, but in practice this is not found to be the case. I suppose there is so much that is better for them on the earth, and the weeds growing therein, that the birds do not feel any inclination to eat off the vine, save at the time already mentioned.

One very remarkable thing I learned is that the best fowls are reared on the estates where best wine is made. Evidently the qualities that go to make the best wines, are just those needed to produce a fine quality of flesh in fowls.

Fungi and Plant Diseases.

PROF. T. L. BRUNK, BEFORE THE TEXAS STATE HORTICULTURAL SOCIETY.

These diseases are known as rusts, smuts, mildews, blights, rots, and scalds. Every branch of horticulture suffers serious losses from these enemies, no climate or section long escaping their attacks. The number that affect the interests of horticulture will certainly count by hundreds, and to estimate their loss of market value, by these low forms of vegetable life, involves probably hundreds of millions of dollars.

Internal Fungi. Fungus diseases were formerly thought to be diseased growths of the tissues themselves, upon which Fungi was supposed to live and thrive. The cause of the abnormal growth was attributed to the meteorological conditions, especially warm, misty weather, but by the higher elaborations of the microscope within the last half century, it has been shown that the tissues of higher plants do not change into the things called Fungi, neither do they originate in any other manner than as descendants of pre-existing parent forms through as rigid specific lines as can be traced among any animals or plants.

The beautiful researches of M. Pasteur, have established the fact, verified by other observers equally authentic, that a spore is as necessary for the production of the minutest speck of mouldiness, as the acorn is for the germination of a giant Oak.

There is in some species, a kind of spore which reproduces only in summer, being destroyed by a low temperature. Another that retains its vitality in the most intense cold, propagating the disease the following season, by giving off still different sexual bodies so very light, as to be easily wafted to a distance by the wind.

After these spores or conidia reach the host plant, they immediately, under the proper conditions of moisture and heat, begin to send out a germinating tube. By becoming excited, by imbibing moisture, its outer wall bursts and simply allows the living fluid within, known as protoplasm, to increase into a delicate tube (or in some cases zo-ospores), and at the same time increase in quantity. This tube, in inside-growers, begins to force its way into the tissues of its host, probably through the small pores known as stomata. The delicate growing tube or, (when they have become a great number,) the mycelium, forces its way upwards through the intercellular spaces and between the cells, not entering the cells bodily.

This plant tapeworm, as it were, grows on and on, simultaneously with the growth of the host plant, till it reaches the uttermost parts of the leaves, branches or fruits, when it next sends to the surface miniature forests of branches on which are matured the spores or conidia like the Parent reproductive body. The millions of external erect stems present to the naked eye the appearance which we call rust or mildew.

To this class belong, of the Grape, the dreaded black rot (*Physalospora Bidwellii*); anthracnose (*Sphaceloma Ampelinum*); downy mildew (*Peronospora viticola*); Grape leaf blight (*Cercospora viticola*); leaf spot (*Phyllosticta labrusca*); of the Peach rust of leaves (*Puccinia prunispinosa*); Peach curl (*Exoascus deformans*); black knot of Plum (*Plowrightia morbosa*); scab and leaf blight of Pear (*Fusicladium pyrinum*); Apple scab and leaf blight (*Fusicladium dentriticum*); Blackberry and Dewberry red rust (*Cœomanitens*); Potato rot (*Phytophthora infestans*); and others.

Bacteria Ailments. The bacteria live and move in the contents of living cells of both animals and plants, often until they break up the compounds, on which the plant lives, into those which seem to disintegrate and decompose cell contents and structures, causing what are commonly called blights or rots, as Pear, Apple, and Quince blight, yellow disease of Hyacinths, and probably Peach yellows and gummosis, Cotton blight and Tomato rot.

This class of infinitesimal enemies slay their victims by the millions, and no adversary yet found, save knife and fire, can overtake them. At one stage they move with untiring activity. Some oscillate and quiver, never making progress in any given direction; others slowly and smoothly glide along in a straight line, while others whirl and dance and roll.

They are single minute cells filled with that living liquid known as protoplasm, and having a distinct plant substance (cellulose) for walls.

They multiply by a method known as fission, that is, each bacterium becomes two by the formation of a transverse partition across the middle of the adult cell.

These minute plants gain admission to the cells of their host by the insect punctures and wounds made on the host, and by the very young ends of buds and root hairs, probably aided by some acid or alkaline condition of air or soil.

External Ailments. The external plant parasites are not so numerous nor so difficult to cope with as the internal growers. The spores of these Fungi float in the currents of air to the proper plant where they germinate, but instead of forcing an entrance to the interior, simply spread out over the surface of the part infested, in many cases like a finely spun cobweb. Their presence is indicated by curling of the leaves, turning yellow, or white powdery blotchics.

As a rapid means of reproduction, these fine crossing and ramifying threads or hyphæ, send up many vertical branches which divide into a chain of loosely attached bodies, the topmost one of which falls off first, followed by the next, and so on. Each of these have the power to germinate, and produce a new mycelium all season. Late in the fall a sexual reproductive body is formed upon the hyphæ which contains from one to several sacs, and these sacs each contain from one to twenty-four spores. These bodies, in the spring, by rupturing, allow the spores to escape, to go through the same cycle of events as the parents.

Under this class of causes we have the Pea blight (*Erysiphe Martinii*) and powdery mildew of the Grape, (*Uncinula spiralis*). As compared with Peronospora of the Grape, the Uncinula likes a much dryer atmosphere, and often occasions most injury during seasons of protracted drought. There remains yet to be given the remedies and preventives applicable to the three classes of Fungi mentioned.

Black rot and Downy mildew of the Grape. During the summer of 1887, an extensive set of experiments with these two diseases was carried out both in France and this country, with very encouraging results. Among those who did valuable service in many parts of this country, in aiding the Department at Washington, was our President, Mr. T. V. Munson, and several other gentlemen of this State. The two experiments giving the most satisfactory results were with the Bordeaux mixture and Blue Water or Eau Celeste, as the French term it. The first is made by dissolving in a wooden vessel, eight pounds of sulphate of copper in fifteen gallons of warm water; in another vessel, slake ten pounds of quick lime in five gallons of water. When both mixtures are cooled pour the latter slowly into the former, stirring constantly. The second is prepared by dissolving one pound of sulphate of copper in three or four gallons of hot water. When the copper salt has completely dissolved, and the solution cooled, add one pint of liquid commercial ammonia. When ready to apply dilute to twenty-two gallons. Both of these solutions are applied with a spraying apparatus.

Anthracnose. This comparatively new disease, which acts on the Grape leaves and branches as though currents of hot air had parched and shriveled them, and spots the berries not entirely unlike the black rot, has not been as thoroughly mastered as mildew. It, however, has been found that when the vines were sprayed thoroughly two or three times early in the season, with sulphate of iron, followed by a dusting of sulphur mixed with air-slaked lime, and continued several years, this disease rarely appears.

Orange rust of Blackberry and Dewberry (*Cœomanitens*) is a disease forming red blotches on the whole under surface of the leaves, completely robbing them of all vitality, and they drop from the stock. This disease is rapidly spreading westward. It has already reached this State, and is beginning to play sad havoc with these berries in the east, and in Illinois, whole plantations have been swept away. Nothing but fire and knife will exterminate it, and every grower should be vigilant in removing every plant on the first indications of the disease. The disease is not caused by any insect, though an insect may happen to work simultaneously with the disease, but on that account alone could not be reasonably considered the cause.

Pear Blight. This strange disease which has baffled all attempts to prevent or destroy it, is caused no doubt by a bacterium known as Micrococcus amylovorous. The blackened leaves and patches of bark are usually the first indications. The disease will then have been at least three weeks in progress. By removing the diseased branches some inches below the point where the bark is discolored, the disease may be checked, and possibly cause the tree to entirely recover. Do not contaminate the knife by cutting the effected parts, as it would convey the virus to every branch cut thereafter until disinfected. As preventives, says Dr. Arthur, the most promising is to check the growth of the tree by mulching, withholding fertilizers and cultivation, or by putting the orchard into grass.

For all Fungi that grow only on the surface of the host, flowers of sulphur has been found to be a very effectual remedy. Apply with a bellows when the surface is damp.

883. **Barberries from Seed.** These are exceedingly easy of propagation. Seed may be sown immediately after ripening in the fall; or in the spring, in clean garden soil, well enriched. The growth is rapid, and the plants will need only to be wintered safely.—E. P. P.

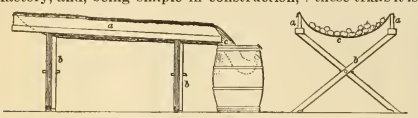
889. **London Purple on Cabbage.** It is criminal to put any arsenical preparation on Cabbages. We have already too much risk to run with our Potatoes. Many physicians of high repute insist that we are suffering new complaints owing to the amount of Paris green used on the Potato. On the Cabbage it would certainly be in part held by the leaves. Cabbage eaters must look to this, as a good deal of arsenic is already used by growers who look only to profit.—E. P. Powell.

A Convenient Fruit Sorter.

REMLE, NEWPORT CO., R. I.

As fruit growers come to realize more fully the increased value in the markets of well graded fruit, more care is bound to be taken in the matter of sorting, and for this business it is easy to secure some assistance in a device suited to simplifying the work.

The fruit sorter herewith sketched, I have, with four years of use, found altogether satisfactory, and, being simple in construction,



A CONVENIENT FRUIT SORTER.

one may easily be made at home, and at almost no expense, by any person. The support consists of four legs *b*, *b*, crossing each other x shape, and held together at the middle by a wooden or iron pin. To the upper ends of these supports are attached two light two by three bed pieces, extending lengthwise, each supporting a side-board *a* of inch stuff, four inches wide, with a similar piece across the back, also.

The bottom, c, of the sorter is made of canvas, this being well tacked at the upper edge on the side and end pieces, with slack enough to form a trough three to five inches deep and hanging free from the sides, interiorily. The cross section view gives the right idea as to its form when ready for use. This canvas, it should be added, extends forward some two or more feet longer than the frame, for reaching down into the packing barrel, as shown by the dotted lines.

In using it, the extreme end of the canvas in the barrel is held up by an iron hook, which is attached over the rim of the barrel, thus forming a pocket into which the first fruit in the barrel falls, without injury; then when this pocket is full the hook is freed, and it is gently lowered to the bottom of the barrel and emptied. The front end of the sorter is of a height to allow of a barrel being set underneath, and the other is three inches higher to admit of the fruit being easily moved along the canvas as it is being graded. If more pitch is desired, this is secured by further tilting up the back end of the sorter. When not in use, this sorter can be compactly folded up, by loosening the end pieces.

Copperas or Sulphate of Iron as Manure.

Under the direction of Professor Muntz, at the farm school of Vincennes, France, experiments have been made with this article and reported upon. A solution of one per cent of sulphate of iron was used one time; the quantity corresponding to fifty-eight pounds per acre. On equal lengths of rows, the increase was ten per cent of Dwarf Beans, and within a fraction of ten per cent increase on Carrots.

A second application would have been still more beneficial, as is confirmed by M. Fischer, President of the Section of Horticulture, at Chaillevois, by whom an increase of thirty-six per cent of crop is noted by use of two hundred and seventy pounds per acre. Other instances are: Thirteen hundred pounds per acre on Peas, which pushed with extraordinary vigor and grew to a gigantic size, bearing an immense crop; copperas at the rate of 800 pounds per acre was used on Lettuce; the plants were thrifty and fine with leaves erect. It was also successfully used on Strawberries.

Its use on vines is most beneficial, as was shown, especially on some that were enfeebled and supposed to be in a dying condition, and on others whose leaves had become a sulphury yellow, indicative of disease; in the former case the vines took on a new growth, and in the latter the foliage turned to a healthy green color.

Its good effect on Pear trees is noticeable, in one case transforming, by its action, fruits which were formerly hard and gritty into good, mellow fruit. Roses, Geraniums, Violets, and other plants are mentioned as receiving benefit from its use on them. From these trials it is to be observed that copperas can be employed to advantage on garden crops at the rate of two hundred and fifty to nine hundred pounds per acre, using it in a solution of one and one half per cent, repeating the application three or four times.

Notes on Growth.

E. P. POWELL, ONEIDA CO., N. Y.

I do not find the Brighton Grape a poor bearer after it has reached some age; young vines proved such shy bearers that I was afraid they must be discarded. But this year the five year old vines are loaded. It is not from superior fertilization; because it happens that my Brightons alone stand out of the vineyard, and at quite a distance from all other sorts. The only Grape that has ever had black rot in my vineyard is Massasoit. I had intended to dig them, but as my man John suggested giving them one year more of trial, I conceded to his wish, and now there is none healthier than the delicious Massasoits.

No Trimming for Raspberries. Some one writes: "Do I understand that you do not trim your red Raspberries at all?" I answer "No sir, not at all." It is all work thrown away. My Cuthberts stand six to eight feet high, are tied to wires—one wire stretched on posts, and are never cut. Of course the old canes are cut out and superfluous suckers are removed. Turners are tied in the same manner, and suckers more closely removed, but no pruning. If you can get better crops than mine you will do well; I am satisfied.

Strawberries. I grow Strawberries under my Grape trellises in the vineyard and get excellent results. The Cumberland and Sharpless are my main croppers. I think the effect on the Grapes is beneficial as the Strawberry plants keep the ground cool and moist. After picking, the old vines are cut off with hoes and left as mulch. A few are left growing which soon cover the ground again; of course double cropping the ground requires double feeding in return.

Of course I grow other Strawberries in carefully prepared beds. So far I have no varieties that are superior to the above for home use or for market. But am now trying Itasca, Haverland, May King, Jessie, Jewett, Ontario, Logan, etc. Among them I am very hopeful that Haverland is to be a standard as well as Bubach. Ontario is essentially Sharpless. Crescent is a beautiful berry and wonderful every way, but for eating, it is too keenly acid. I shall make my next main plantings of Bubach, Haverland, Summit, Itasca, and Ohio; the latter for my late—always holding fast to Cumberland and Sharpless.

Crossing Experiments. I have done a good deal for years, in the way of crossing Beans, and Corn, and our small fruits: among my cross bred Beans, I am establishing a few very choice varieties. I have secured white wax pods three inches around and eight inches long, with a nearly white Bean; so near white that it cooks white. Among my cross bred Corns a queer freak occurs—a huskless sort. The ears are masses of silk, and worthless as Corn, so far as I know. Several of my Corns are, however, very fine, especially crosses of Moores, Concord, and Blount's Prolific.

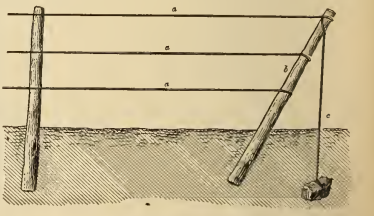
Every farm and garden in the United States should be an experiment station. The children should be trained to try seedlings, and should be taught how to cross-breed, and hybridize. They should especially be taught to recognize a good thing when it is seen, and so a great many wildlings that now go to waste would be preserved. If some one had not at last recognized the value of the Seckel, it would have gone, where probably hundreds of Pears quite as good, have already gone. If you wish for intellectual boys and girls give them something *new* to do and think of.

Currants. Fifty years ago every home had a few Currant bushes; now very few have any. It speaks poorly for our people that they will let as easily killed a creature as the Currant worm beat them out of a superb fruit. We really have no fruit for health to surpass the Currant. The white Grape is, by considerable, the best for table; but it is surpassed in size by the Versailles. The Cherry is inferior to the above in quality and in prolific bearing. The Fay is in no way superior to Versailles; I see no reason for growing any but the two sorts I have mentioned. Dust on hellebore as soon as the worms begin to hatch, and you will have no trouble. For market the Currant is always in demand. The black Currants now in cultivation are trash, and we must look to improvements of the Missouri Ribes—of which the new Crandall is the first.

Vineyard Trellis Bracing.

WM. MILLER, OTTAWA CO., OHIO.

The accompanying sketch shows the method of bracing the end posts of vineyard rows, as practiced in this section by our best Grape growers. It has several advantages over that given in a recent issue. The letters *a*, *a*, *a*, show the wires fastened to the end post *b*, which is inclined outward from the row. Near the top of this post is also fastened a piece of medium weight galvanized wire c of a sufficient length to reach below the surface of the soil beyond the reach of frost; the buried end is fastened to a good sized stone, that will keep the inclined post and also the wires in their proper position. The ground about the stone and wire should be well firmed.



Vineyard Trellis Bracing.

Work for Women in Improving Fruits.

D. S. MARVIN, JEFFERSON CO., N. Y.

Do we realize what we are doing when we hybridize two species, plant the germs and aid in creating a new fruit? Do we appreciate our ability and power to control the forces of nature in creating new and better and more beautiful organic structures?

We have been so long accustomed to look at the normal products of the garden, the field and the forest as nature's best and highest work, that we are yet blind to see what art can do. It takes nature a hundred

thousand years to do what an intelligent horticulturist can accomplish in a life time.

Nature's working forces are the elements, insects, birds and animals. In the work of planting and hybridizing, the elements do their work entirely at hap hazard. Insects, birds and animals exercise choice, but not intelligent choice, the motive is the satisfaction of their natural appetites. They hybridize and scatter seeds accidentally; there may result just as good work as the hybridizer can accomplish, but the chances are too remote to leave it to those agencies. We are often pained to see intelligent ladies going the same old round of stitch, stitch, doing work that barely keeps soul and body together, while at the same time there is horticultural work for which they have full capacity and every convenience in their own gardens in originating, cultivating and selling new fruits, flowers and herbs. Frequently this can be done at odd hours and it will turn a morbid, spiritless, dejected drudge into an alert, capable, satisfied woman.

The Single Pole System of Grape Culture.

A. F. HOFER, CLAYTON CO., IOWA.

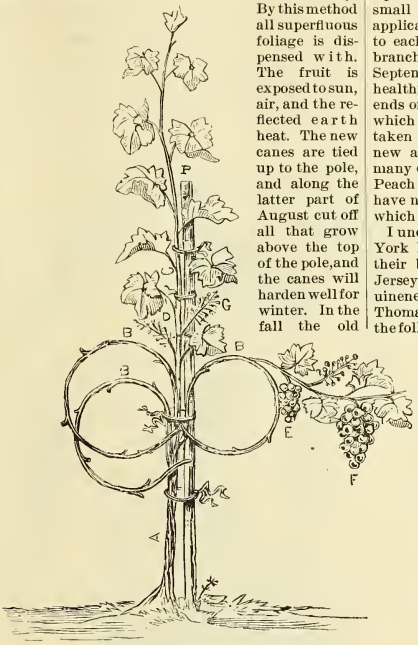
The single pole system is adapted to any variety or soil, and a southeast slope is capable of producing a finer quality of early Grapes. It is especially adapted in the case of clay with gravel, or the black flinty soil found on many steep hillsides so valuable for Grapes, as it is easily kept free from weeds and quickly responds to manuring. A southwest slope is less exposed to frosts, receives and retains heat in an enlarged degree. As the single pole system brings the fruit quite near to the earth, the reflected heat hastens the ripening process.

Quantity and quality are the objective points of Grape culture, and this system is adapted to achieve the highest success in these points. As there are no "off" years in the Grape crop, a fully planted, single pole vineyard of one acre will contain 2,000 vines, bearing with good treatment 10 to 20 pounds per vine. This is not a mistaken statement, for the writer has helped to raise and harvest a crop that yielded 30,000 pounds of Grapes to the acre.

The accompanying illustration is designed to demonstrate our system of Grape culture throughout the entire season. The pole should be six to eight feet above ground, and not less than two inches thick at the top, firmly fixed in the earth, as the pole holds the whole vine against the wind. The bows, or canes B, are the canes grown the previous year, now bent down and tied to the pole for fruiting. There are 24 fruit buds on these bows, on E, F, with fruit in different stages of development. Each of the fruit buds will bring such a cluster with from two to four full bunches of Grapes. The crop is near the earth where it ripens faster, evener and sweeter than when scattered higher up among the leafy shades of a trellis. The canes are tied in damp weather after being taken up in the spring, as we cover our vines in winter.

In the figure, D shows a prospective fruit cane, of which we grow from two to four each year to bear next year's crop. On these growing canes remove all suckers as far up as you want the canes to make a bow the next year. If you let the suckers grow they will destroy the virility of the fruit bud. From eight to 12 of these suckers should be removed, according to the strength of the vine, but no more. If you remove all the suckers on the new canes, the sap will cause the fruit buds to blossom.

To prune the bearing wood, proceed as follows: Leave only one leaf opposite to each bunch of Grapes, and one leaf beyond the last bunch. That is all that is necessary. By this method all superfluous foliage is dispensed with. The fruit is exposed to sun, air, and the reflected earth heat. The new canes are tied up to the pole, and along the latter part of August cut off all that grow above the top of the pole, and the canes will harden well for winter. In the fall the old



THE SINGLE POLE SYSTEM OF PRUNING.

spurs are clipped off and the vine is trimmed and lain down. A few shovelfuls of earth give the best winter protection.

Peach Yellows Curable.

W. F. BASSETT, ATLANTIC CO., N. J.

In a short note, in the August number, I intimated that it was likely soon to be an important question whether the yellows is curable. Some fifteen years ago I had a small Peach orchard of 60 acres attacked by this disease, and after it was nearly destroyed I was induced to try gas lime, which I applied in late winter or early spring, in such quantity that it destroyed the foliage of Currants growing among the Peach trees, and much of the foliage of the trees and as the orchard was so far gone that I finally had it dug out with the exception of one tree, but the foliage of that tree resumed its healthy color and it continued to produce sound fruit for several years. I have since regarded this as a cure of yellows, yet the experiment was so imperfect and likely to carry but little weight that I have hesitated to bring it forward as evidence.

Within a few feet of where I write stands a large Peach tree which, as I am reliably informed, some five or six years ago exhibited all the indications of a decided case of yellows. At the present time the tree is in sound health, with rich dark foliage. It bore a full crop of fruit last year and has some this year. Almost within reach of the branches stands a steam boiler, and the ashes from the furnace have been thrown under this tree until quite a quantity accumulated. The fuel used was mostly coal but some wood, in this way potash enough was supplied to effect a cure.

A more recent case has just been shown me by Mr. T. Greiner, the observing editor of Orchard and Garden. One of his neighbors had two Peach trees which presented a sickly appearance; some of the fruit ripened prematurely, and there were many small wirey shoots. Mr. G. advised the application of two quarts muriate of potash to each tree, which was dug in under the branches in July of this year, and now in September, one of these trees has made a healthy growth of six to eight inches on the ends of all the leading shoots; and the other, which was in worse condition has evidently taken a new lease of life, and has started a new and healthy growth. I might name many other instances of the resuscitation of Peach trees that had the yellows, which have not come under my observation but of which I have satisfactory evidence.

I understand that our Michigan and New York horticulturists incline to poke fun at their brother fruit growers here in New Jersey, and express doubts as to the genuineness of the disease in these cases. In Thomas' American Fruit Culturist, I find the following items about the Peach yellows: "*Infallible* indications." "First a premature ripening of fruit some weeks earlier than usual, with an insipid flavor of purple discolorations of the flesh. Next season numerous small wirey shoots are frequently thrown up from the main branches, the leaves become yellow and the tree eventually dies." The italics are mine. We have had all these; and I might add that free-stone Peaches when thus prematurely ripened become clings, and the roots of the trees when dug up are found to have white lines running along them, somewhat resembling those seen on decaying chips when dug out of a wet mass of such material, but finer and a slight appearance of transparency.

Thomas, in his American Fruit Culturist, also says, "In some parts of the country possessing a strong and fertile soil, as for instance, some portions of Western New York this disease has not spread extensively when introduced from abroad. It has generally destroyed a few trees near the affected ones and then disappeared." Yet I am told that the State of New York has a commission appointed for every county in the state to examine all the Peach orchards and destroy all trees which they consider affected with yellows and the affected ones near them, indicating as I infer that this exemption does not now exist. Such a result would be likely to follow the carrying off the potash in successive crops of fruit, Potatoes, etc.

Dairymen, in the older portions of the country, not unfrequently observe a like result in the case of pastures where cows have been left for a series of years, and the phosphates removed by the sale of the milk products, and especially when the cows are yarded nights; and cows kept in such pastures often become prematurely lame from the lack of phosphates in their food.

My observations have fully convinced me that Peach yellows is a fungoid disease, and I believe that potash *applied in sufficient quantity* is a specific for it, and some of the closest observers who have been investigating the subject agree with me in this view.

There is a fungoid disease common to the Apple, but does not appear to permanently injure them, and appears to disappear, perhaps as the result of difference in the atmospheric conditions of different seasons. Its presence is indicated by spots on the leaves, which under a magnifying glass present a crystalline radiation from the center, the foliage turns yellow, and the same white spots are on the roots as in Peach yellows.

On the Culture of Hollyhocks.

PETER HENDERSON, JERSEY CITY, N. J.

Hollyhocks are becoming more popular as their culture is being better understood. There is no plant that I know of that produces itself as certainly true from seed, as the double Hollyhock. Seeds taken from double white, crimson, rose, yellow, lavender, black, orange, or carmine, even when placed side by side, reproduce themselves according to their respective colors, almost as certainly as if propagated from cuttings. The reason of this is, that the reproductive organs are so enveloped by the petals of the double flowers, that there is little chance of insects carrying the pollen from one flower to another, hence each individual flower has to impregnate itself, thus preventiug the mixing, or cross fertilization of the colors.

The Hollyhock is best treated as a biennial. The seed should be sown from May to July, when to be grown in the open grouud, the plants from which, will produce the flowering plants the next year, during the months of July, August, or October. Florists usually sow as late as the middle of August, aud grow the plants along in small pots until October, in the greenhouse, then transplant in cold frames, to produce plants for next year's blooming, for although the Hollyhock is hardy in most sections, and will produce good crops of flowers for two or three years, it is best to give the young plants the protection of cold frames, when sown as late as August. If sown iu May, June, or July, the plants will be strong enough to stand the winter in the open ground, in most places even the Northern states, without protection.

I notice that your correspondent, E. P. Powell, refers to the use of Hollyhocks on the farm. The late H. W. Beecher, who was a passionate lover of flowers, particularly such sturdy specimens of nature's handiwork as the Hollyhock, had great clumps of them of many separate colors, planted on various parts of his farm at Peekskill, N. Y., in such a way that his visiting friends would be surprised by a blaze of color around the margin of his Corn or Potato fields. They were planted mostly along the fences, so as not to be disturbed by the plough.

The Hollyhock does fairly well in partial shade, (though better in full sunshine) so that it can be used with excellent effect with any shrubbery, or anywhere, as here its gorgeous colors can be framed by a suitable green background.

The Flowering Currants.

Next to the common Lilac, there is perhaps no ornamental shrub more commonly grown than the yellow-flowering Currant, *Ribes aureum*. It is a handsome, gracefully spreading grower, and one of the earliest of spring blooming shrubs, the flowers appearing in April or May. Attractive as is the bloom to the eye, it is even more so to the sense of smell; no flowering shrub excels it for refreshing sweetness and spiciness of the odor. The plant is grown with the greatest ease, and is readily propagated by divisious of the root or by layers or cuttiugs. It is a native species, being at home west of the Missouri River. The species is also known as the Missouri or Buffalo Currant.

Another well-known ornamental Currant, and also a native, is the Crimson-flowered Currant, *R. sanguineum*. This one has deep Rose-colored flowers, which as in the case of the former, appear in graceful racemes, the bloom being less abundant to a given length than in the latter, but the racemes are somewhat more prominent. Of this species there has appeared a pleasing variety which is shown in the annexed engraving. This is called the White Currant, from the pinkish white flowers and the white fruit that are produced. In general character this is not unlike the parent, and is equally desirable. There is also a double-flowering variety, which produces its bloom after the others are done.

Between the two preceding species, a number of hybrids have been produced. The

THE WHITE FLOWERING CURRANT.

best of the latter undoubtedly is Gordou's Flowering Currant (*R. Gordoni*), which has both crimson and yellow flowers. This is a profuse bloomer, the flowers appearing somewhat after these of the foregoing, and is of vigorous growth and very graceful habit at maturity.

One charm of all the flowering Currants, is the richly colored crimson and yellow hues which the foliage assumes early in autumn and just preceding leaf-fall.

Ornamental Gardening at the Soldiers' Home, Near Dayton, Ohio.

ROBERT L. DEAN, GREENE CO., O.

The central branch of the National Soldiers' Home, located at the above named place, is the largest institution of its kind in this country, and furnishes a pleasant abode for about five thousand dependent veterans. Ever since its founding, this place has been a favorite resort for a great many people, even from adjoining states. The chief attractions during the summer, are the various floral and kindred features of ornamental gardening, though it seems to me that ornamental engineering is more descriptive, since the beauty of the place does not lie so much in its ornamental planting, as it does in a bold combination of this feature, with others going to make up an ideal pleasure ground. The growth of flowers is striking, but there is not that profusion which unconsciously tires one. Some respect is given to the law, that nothing is more destructive to the rare value of certain floral forms than their extreme commonness.

The Home has its own water-work system, and during the dry season the watering of plants goes on almost continuously. The labor necessary to keep these ornamental features in proper condition from May till frost is considerable, but it amply pays. The value of nature's adornments has become more apparent every year. Her beauties are always new. Nothing can do more to break the insipidity of the aimless lives of the inmates, than do these varied floral combinations, and the visitors they attract. Formerly an animal park was kept, but it was soon made manifest that the returns it yielded, were not sufficient to warrant its maintainance. It also soon ceased to be attractive to the veterans, so, since then greater attention has been given to the cultivation of flowers and artificial works.

The natural features of the ground were well fitted for improvement. The surface is hilly but not broken. A number of elevated springs mark the position of the flower garden proper; these wind through a number of basins, which are besprinkled here and there by fountains from one or two cascades, and feed a series of lakes. The absence of rocks and bluffs has been largely supplied by rock work artificially arranged; in fact this is one of the noteworthy features of the place. The grounds are essentially artificial, but not noticeably so, as is shown by the grotto and cliff work, which is so screened by planting that the artificial character is largely concealed. I never realized before that there was so much beauty in rocks. Skillful hands have wrought them into such combinations that the effect is really fine. There are rock vases, rock receptacles for flowers, and rock basins—not mere bald stone piles, but structures substautially cemented together. One is struck by the fact that the number of meritorious plants is not great. The novelties are in the greenhouses, principally.

The Agave and Hibiscus are prominent. Bananas were numerous, and had their leaves not been so riddled by the weather, they would be one of the features of the place. The Canna and Caladium are old plants which are hard to displace for giving graceful effects. But few changes have been made in the varieties for bordering and bedding. The rural visitors were interested in the Orange trees with real fruit on them. The shady nooks covered with trained wild Grapevines near the springs are appreciated by the veterans during the hot days. Collections of Cacti and Palms fill a single conservatory, and attract more attention than the others combined. Visitors admire the stately and massive, but it occurs to me that these would become tiresome to the inmates ere long, and they would turn to the humbler species, upon which the casual observer scarcely bestows a second glance. In wandering over public pleasure grounds, it is natural to contemplate the sums of money kept in reserve for beautifying the same; but it is interesting to notice that reasonable economy is practiced, as a rule, in the manipulation of these pleasure grounds. Said an inmate and workman putting the finishing touches on a new fountain. "Its hard to get up anythiug new here; they tell you it costs too much. Now this fountain cost the institution hardly ten dollars."

The Home grounds are an educator, as is every well kept park or ground in the country. Effects that are seen are more eloquent than any description of them. One readily notices that the Home has influenced the planting of dwelliug grounds, both in city and country.

Country Lawns and Trees.

E. P. POWELL, ONEIDA CO., N. Y.

Lawns are best made by following nature's suggestions. If she has made a swale so be it. If she has rolled up a mound let it alone. We have only to remove roughness and inequalities. On the contrary, many people have no idea of a lawn except a graded and leveled city yard, which is only an apology for a lawn.

I am compelled daily to drive by two hillside "lawns." In each case by great expense a plot of ground was leveled and smoothed. This necessitated terracing, so nature's fine rolls were cut and sliced. The flat plot was seeded and rolled, and then a lawn mower was set to work with a fellow behind it—and the people had their "lawns." The result is that the rest of a four acre lot is left neglected, while all the shearing and fussiug is done on the half acre "lawn." Nature's plan is to make the whole four acres neat, tidy, and free from gullies and ridges and roughness. Run a drive about it; at all natural points let the drive come upon a group of shrubbery, a berry garden, an arbor or a shaded seat. Now the lawn would cover the whole lot, and it all "a pleasure would be." City yards are wholly out of place in the country.

Among my hundreds of trees and shrubs, not one variety equals the Norway Maple for fine color, and none surpass it in shade. It is no longer a costly tree, and you can plant nursery trees seven or eight feet high; protect them, and in five years have as large trees as you get of Sugar Maple in ten.

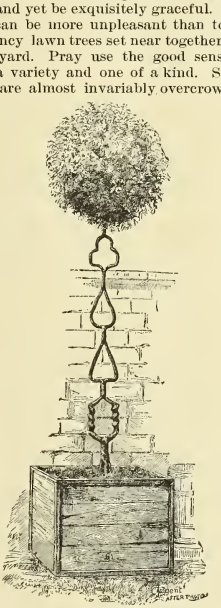
Our Oaks are neglected as street trees. Though they are among the very best, especially the scarlet and red Oak. They grow rapidly, are entirely healthy and hardy, and give excellent shade. The Sugar Maple is not our best street tree, as you will not find one perfectly round, healthy tree in ten. The Elm is far preferable. But why will Americans neglect the magnificent Linden. Probably because it has the popular nickname of Basswood, and is despised as such. It is our royal tree, a noble, beautiful affair in foliage and in growth.

For lawn planting we can afford to be Anglomaniacs in the love of the Beech. The English appreciate this delicious tree, we do not. Buffalo is the only city I know of where it is in such use as it deserves as a park tree. The trouble is, an idiot cannot be trusted near it lest he trim it up. It must be let alone to grow low branched. A grove of Beech is the thing if you have room for it. Another superb lawn tree is the Royal Oak; the Magnolia acuminata is another.

If you have occasion to plant an avenue you will find nothing better than the Buffum Pear. It grows erect like a Lombardy Poplar. In autumn it is the most glorious in coloring of all trees. The fruit is also fine. When lawns are very large, I prefer by all means to plant fruit trees with the rest, especially a few wide-spreading Apples. There is no tree so home-like and welcoming as the Apple. I like a few that grow on a slant, so that the boys and girls can climb up into the limbs and make seats.

The erect Arbor Vitæ is a scarcc tree everywhere, but it is invaluable as an erect growing sort among spreading and round headed trees. This multiplicity of form on the lawn is very desirable. The Erecta Arbor Vitæ is far better than the erect Juniper, because hardier. It can be obtained of nurserymeu at reasonable rates. The charming effect produced by it is seen near New York in the lower basin of the Hudson, where it is a native.

The Cut-leaved Weeping Birch is good for all locations. It is not a mere abnormal sprawler like some of the weepers, but a genuine tree with pendent limbs. If you give it room it will grow to be sixty feet high, and in every way a glorious sight; or if crowded it will adapt itself to a small lawn, and yet be exquisitely graceful. But what can be more unpleasant than to see two fancy lawn trees set near together in a small yard. Pray use the good sense to plant a variety and one of a kind. Small lawns are almost invariably overcrowded.



A CURIOUSLY TRAINED ASH TREE.

One well-grown tree in a grass plot is far better than a half dozen crowded. The same is true of too much shrubbery.

A Curiously Trained Ash Tree.

The illustration of a remarkable Ash tree of the common species, *Fraxinus excelsior* shown annexed, is not presented so much to encourage similar work as it is to give au idea of the tractableness of trees in the hands of skillful gardeners. This tree is at present in the Garden of Acclimation in Paris, France, and represents a degree of skill in bringing about the striking form shown, perhaps never before excelled. Our engraving is a faithful delineation taken directly from a photograph of the tree.

We speak of the subject of our sketch as a tree, when in reality it is the outcome of five trees. By examining the part nearest the ground, it may be observed that it originally consisted of five separate trunks grafted together, which were successfully divided and grown together again, producing the curious loops and forms illustrated.

This and other styles of extreme training have in the past been quite extensively followed in nearly all the countries of Europe. At Haddon Hall, England, there are two quite celebrated Boxwood trees, one representing a ship, and the other a peacock of heroic size. At Chatsworth, near by, there are many curious shapes to be found. At Versailles, at Fontainebleau, at the Imperial Gardens in Austria and in Germany, this same style is to be found.

Such products are in the main to be looked upon as relics of the gardener's art in former ages, as similar work is seldom carried out at the present time. For this we may well rejoice, especially as we contemplate that the present school of gardening courts nature and natural modes of growth rather than artificial ones, and with results the more satisfactory for that.

Preparing Marechal Niel Roses for Pot Culture.

C. E. GAINES, MUNROE, CO., N. Y.

Whatever may be the defects in the constitution of this popular variety, it is one of the most valuable that can be grown for supplying flowers early in the summer. For this purpose the plants must be well and strongly grown, and thoroughly ripened early in autumn. Immature wood will not produce good blooms early in the year, as the eyes from which they should issue very frequently result in nothing but growth.

For propagation, shoots that are half ripened are the best, and these may be had in quantity, near the extremity of shoots that have scarcely yet ceased to grow. The cuttings only need two joints, one to be placed in the soil, and the other to be left just above it. They may be inserted in 7 or 8-inch pots, well drained, moderately thick together, in sand, which I think is better than a mixture of soil and sand. After insertion they should be well watered and covered with a bellglass, then placed in a temperature of 65°. If the pots can be plunged in a warm bed so much the better. In three weeks the young plants will be ready for pottiug singly into 3½-inch or 4-inch pots. This must be done carefully in equal parts, loam and leaf mould with a little sand.

When the Roses are about one foot high it will be necessary to shift them into 6-inch pots, and supply each plant with an upright stake. One-third instead of one-half leaf mold only, should be used this time, and one-seventh of manure may be added. By the time they have filled these pots with roots, they will be about three feet in length. From these they should be transferred into 10-inch, using the same soil as before, except in adding one 6-inch potfull of soot, and the same quantity of bone meal to each barrowful of the soil needed.

When established in these pots, they must be carefully and gradually hardened to cool treatment, for any check will be injurious. Frequently, at this stage, strong shoots will issue from the base, which should be encouraged, for shoots of this nature will soon outrival the others, and often travel a length of 20 to 25 feet before the end of the season. These are the shoots that result in excellent plants for forcing, and will mature sufficiently to flower satisfactorily, if trained close under the roof of a light and airy house. During the time these shoots are in rapid growth, weak stimulants may be given, or better and safer still, a little artificial mauure applied to the surface at intervals of about three weeks.

To insure their starting well and freely, when forced they should be taken outside in October, and tied to a wall or fence to prevent their being broken. If practicable, plunge the pots, for while it is beneficial to subject the shoots to a few good early frosts, there is no advantage gained in allowing the soil in the pots to become frozen. This is an easy and certain method of inducing the plants to rest completely for a time.

Those who have not practised this method of bringing a rest upon the plants, will be surprised at how much easier forcing operations are rendered afterwards.

849. **Manuring Raspberries.** There is essentially no great difference between spring and fall manuring. It depends on how you train and cultivate them. Apply the manure when it is most convenient for you. I prefer the fall.—P.

Nasturtiums.

Oh fire flowers! how I worship you,
Your beauty charms anew,
I love to see your bright-flame leaves,
Your rich, dark garnet hue.

O fire flowers! bloom for me, oh bloom!
I love you well and true;
I'd gather you at night and morn,
And then rejoice anew.

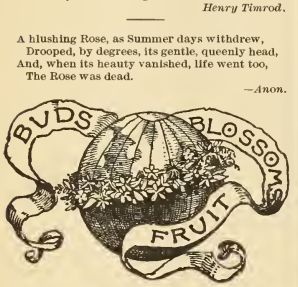
—*Imogene Eaton.*

It is not winter yet, but that sweet time
In autumn when the first cold days are past;
A week ago, the leaves were hoar with rime,
And some have dropped before the north wind's blast;
But the mild hours are hack, and at midnoon,
The day hath all the genial warmth of June.

Henry Timrod.

A blushing Rose, as Summer days withdrew,
Drooped, by degrees, its gentle, queenly head,
And, when its beauty vanished, life went too,
The Rose was dead.

—*Anon.*



Number One, Volume IV.

Chrysanthemum season approaches.

The time to renew your subscription.

No politics for Experiment Station work.

We prefer fall planting always for Beech, Birch, and Larch.

Lettuce now promptly set in the frames should be right for Christmas.

A cold pit is an unequaled place for uplifted plants for a month yet to come.

Fresh October air in liberal volume is everything now to a stock of pot plants.

Next month we will describe our supcrior, new unpatented cistern filter giving illustrations.

Pansy plants should now be on the make for spring bloom; no danger of having soil too rich.

Move the tender plants towards shelter; one severe frost pinch may cause irreparable iujury.

A combination hard to surpass, for table decoration, is furnished by Golden Rod, Barberry, Sumac and Virginia Creeper.

The cool season in western New York has suited Jacqueminot Roses well, leading to much bloom on vigorous plauts all summer.

A question to put to your nurscryman, "Do you have Quack Grass?" If he has the weed, change to a nurseryman who has it not.

A Floral Elephant. At the Buffalo International Exposition, Mr. Wm. Scott, showed a well formed elephant two feet in height made of flowers.

Timely Bulb Questions. Are the bulbs in the earth? We mean Hyacinths, Tulips, and other hardy Dutch ones. Are the bulbs out of the earth? We mean Gladiolus, Tuberose, Tigridia Begonia, Oxalis, etc.

Chestnuts. Of the score or more of Sweet Chestnut trees which contribute towards making the name "Woodbanks" appropriate to the editor's experiment farm at La Salle, N. Y., nearly all are now heavily loaded with fruit.

The cooler weather now exactly suits the Celery crop, October being indeed its best month. The earthing up must therefore not be neglected, such as is well advanced may go to trenches by the end of the month for winter use.

Neighbor John Burdette residing near "Woodbanks," from six young Bartlett Pear trees of four seasons strong growth, recently gathered three and two-thirds barrels of fruit, which sold at upwards of twelve dollars, or an average of $2.10 per tree.

Painting Flower Pots. While for the greenhouse I would strongly advise against this, yet for the window, as the air is so dry in most rooms as to cause a great degree of evaporation, the plants in painted pots will not dry out as quickly, and the pots look better.—*E. E. Rexford.*

Remember this now: those who fail with all other window plants in the winter, may succeed with potted Hyacinths; no other flowers are sweeter or more satisfactory. Any seedsman will be glad to furnish the bulbs at a small price. As for management, directions have recently been given in these columns.

If one would know something of the prevalent lack of information concerning native American trees let him exhibit at any fair, some of the ripened "Cucumbers" with their bright red fruit protruding through the slitted sides, of the pods of the Cucumber Tree, *Magnolia acuminata* and note the question, "What are they" numerously asked by the visitors.

The White Jackman's Clematis. Comment is made in a foreign journal on the peculiar characteristics of this hybrid. The ordinary C. Jackmanii, as is well known, produces its flowers in the summer and later, on the young wood, while the white offspring blooms early in the season on wood of the preceding year, being more or less irregular in character, and again in late summer on young wood.

A Use for Old Hose. Last spring having some young street trees to stake, I pressed into service some old discarded garden hose, to prevent their chafing against the stakes used. This I did by cutting the hose in short lengths, and stringing these upon the wire used for tying them as shown in the pencil sketches enclosed. It worked very well and I offer the idea to such other readers as might care to adopt it.—*C. W. Gaines, Merrimack Co., New Hampshire.*

Pruning Cherry Trees. If Mr. Caywood's (Ulster Co., N. Y.) planting of Cherry trees is rightly reported, he put out 140 trees at six feet apart each way, and as they grew, or when the branches interfered with each other, or with cultivation, they have been and are being cut back according to their needs. While this course does not accord with general practice yet he is reported as saying that an average income of two dollars per tree a season has been given.

Window boxes for early spring, can at this time be prepared for presenting a pleasing appearance, by filling with good soil and planting bulbs of Scilla (blue) and Snowdrops (white) together in each box. These are among the earliest spring flowers, and with a few Tulips or Hyacinths, also, in the boxes, one may have flowers long before it would do to put out ordinary flowering plants. The cost is not so great as to put this arrangement beyond the means of nearly everyone.

At this writing (Sept. 11,) we are not greatly encouraged at the appearance of over 400 potted Strawberry plants set out a month ago in experiment beds. The weather was rather dry at planting time and has been so ever since. While a good watering had the effect of saving all the plants set, still they have not started into the strong growth, which we deem essential to be made at this season for securing a fair show of fruit next season; however two months of growing weather is yet before them.

Our correspondent, Frank Aikin, Macon Co., Ill., sends these notes: I have this season fruited Concord, Moore's Early, Worden and Pocklington Grapes. Moore's Early ripened one week before the Concord, with fully as large a yield, The Worden fruited for the first time, this year, and also ripened before the Concord, and is better in quality than either the latter or Moore's Early. The Pocklington ripened later than Concord, and is some better. Concords are selling here this season at from 2½ to 4 cts per pound.

The Flowering Ash or Manna. Of this ornamental tree Mr. A. D. Webster has the following in the Garden: The Manna Ash resembles the common Ash (*Fraxinus ornus*), but is smaller, more compact; even when young it blooms freely, bearing large plume-like panicles of fragrant almost white flowers during May and June, this being its most beautiful period. A good somewhat damp soil seems to give the best growth. Propagation is usually done by grafting. Manna for medical use is obtained from this tree, chiefly in Italy.

Bubach Strawberry. Mr. Theodore Wilson, Marion Co., Ind., writes of the above strawberry as follows: After growing and marketing more than 2,000 bushels of Strawberries of the leading varieties in the last ten years, I consider the Bubach the best berry to grow for market. It is all a grower could desire, and I predict for it a bright future. At the Ind. State Horticultural meeting, in Richmond, many of the most prominent fruit growers there, placed it at the head of the list of good varieties. One of the largest growers in Ohio, N. Ohmer, says it has no rival.

The Kieffer Pear. Growers continue to be divided as to the value of this Pear. One writer makes out that it is worthy of general cultivation, another that it has a most insipid flavor, one grower claiming non-productiveness and some one else will say that in point of yield it exceeds all others. Not anyone of these views is all right or all wrong. The fact is that in some parts of the country, the central fruit belt for instance, the Kieffer possesses value, finding its chief use for canning, also selling well in markets where appearance rather than quality is sought. The tree is not absolutely blight proof.

Could well be Patterned After. The railroads of England offer prizes to their station agents for the best and most economically kept depot yard, adorned with ornamental and flowering plants. Among these in our own country, the Erie road is noted for the attention given the subject of station yard ornaments in this respect; on some of the divisions the company have erected green-houses for the purpose of planting beds at the depots and yards, and this system is being extended each season. It might prove profitable in many ways, to other roads if they should adopt this plan more generally.

Hyacinths in Glasses. An Englishman reports the following method of managing them by which fine results are obtained: Fill the glasses with sand containing a small portion of vegetable matter but not enough to cause decomposition or a foul odor; then pour on boiled water after it has cooled, until the sand is full, leaving room for the bulb on the top. As boiled water remains pure and there is little evaporation, but small additions of water are required. Some who never succeeded in growing anything but puny specimens with poor foliage, unable to develop fine flowers, might, by this course secure blooms almost equalling pot grown ones.

On Bulb Culture. "Notes on the Cultivation of Dutch and Cape Bulbs, by Ant. Roozen & Sons of Holland," is a recent work which forms quite a complete directory of cultivated bulbs, hardy and tender, together with methods of treatment of insects, diseases and remedies; a portion of this book is devoted to a useful list of both American and English common names of bulbs, in connection also with the botanical terms. The author remarks in the preface, that the only natural advantages which Holland possesses over other countries in rearing bulbs, are the constantly moist atmosphere and light sandy soil. Equally good soil is obtainable everywhere, he further remarks and only a little care with strict adherence to their instructions is needed to produce most gratifying results.

What is to follow Peaches? The Peach growers of Delaware and Maryland are troubled concerning what they shall raise after the yellows has killed the Peach trees which are going fast. We can pass along a hint on this point, which is to say that here in Western New York the fruit men planted Pears after Peaches, and also went more into general small fruit growing. Where Pears were thus planted eight or more years ago,

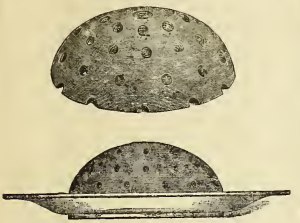
Discarded Garden Hose used in Staking Trees.

the results, especially in the case of Bartletts, have been extremely satisfactory. Take it this season for instance, the Pear crop has been very heavy with a demand for Bartletts at $3.50 to $4 per barrel, far ahead of the supply. One Pear canning concern in Rochester, N. Y., would alone have taken 50,000 bushels of this variety at that rate. In this case all the fruit is prepared for the London, England, market.

Raspberry Cane Rust. As this disease in some sections is doing considerable damage we give a summary of the remedial action proposed by the Department of Agriculture Pathologist in the last report: For prevention, train the plants so that plenty of sunlight and air circulates about the canes. Plant five feet apart in rows six feet apart, and cultivate both ways. No canes that have been killed by the fungus which causes this

anthracnose should be permitted to remain in the field as it is very contagious. Sulphate of iron has been used with success in anthracnose of the Grape so that it is reasonable to suppose that it may prove effective against this similar disease of the Raspberry and Blackberry. The solution is prepared by dissolving two pounds of sulphate of iron in five gallons of water, applying in any way most convenient.

Uncrowded Flowers. One of the knacks desirable to be acquired by florists and others who



Uncrowded Flowers: Forms for Table Decorations.

arrange flowers, is to have a certain number of blooms go as far as possible through not crowding them unduly. Usually the less experience one has in making-up the more will the flowers be wasted by crowding. Often a skillful florist will make two bouquets from the flowers that another would put into one, and the former will each be as large as would be the latter, and vastly handsomer. To lead the reader into the right use of flowers as well as foliage in this respect, a flower form or holder in two positions for table designs is shown herewith, the idea coming from an English source. Such forms made of earthen ware are in some places kept for sale, but similar ones of wood could be made by any wood turner for a small sum of money.

About Some Raspberries. I am again confirmed in my belief that for early berries the two best are Turner and New Rochelle. The latter is a profuse bearing purple of the red sort, but rooting at the tips like the blacks. It is a good berry every way and part gone as Shaffer gets ripe. Shaffer is the same color but larger. It is elegant as a canned or otherwise preserved berry. The Turner is of fine quality and a good bearer grown in thin rows. But let run to suckers and it is worthless. For two late or main crop berries I choose first of all Cuthbert, and second, Shaffer. Golden Queen is good, but I must modify my opinion and believe it no better than Franconia, if the latter be well tied up in trellis form. It is, however, harder and better for carriage. I do not feel so well satisfied that it is a sprout of Cuthbert. It is more likely a seedling sowed by birds.—*E. P. Powell.*

Cotton as a Flowering Plant. The stalks grow to a height of six feet and covered with buds and flowers from June until frost, are a most magnificent sight. The large bell-shaped flowers, when first open are of a creamy white changing by noon to a deep yellow, while by night they have become a bright red. The buds and ball are enclosed in a deeply fringed, three leaved calyx. The ball about the size of a Lemon, is a large green pod, which bursts, and the long silky white staple hangs out about three inches. The leaves are, besides green, not infrequently red and yellow, blotched with white, all together forming in the field a most brilliant scene. The Verbena is native here, being semi-evergreen with flowers of a delicate mauve color. Wood Sorrel, however, seems to take the lead both for size and beauty; its red foliage and yellow flowers contrasts well, though it is not far ahead of a Pink-flowered variety with ordinary foliage. Primroses of white, yellow and red hues form a perfect carpet over open spaces between the trees,—*Mrs. W. M. Barrett, Walker Co., Texas.*

Of Interest to Plant Propagators. It is questionable whether the propagation of plants from leaf cuttings has yet received the attention it deserves from plant growers. Take the singular sword leafed plant Sanseviera Guineensis, this has always been put down in the books as requiring to be propagated by division or from stolons. Yet herewith we give an illustration of some leaf cuttings of the same which were prepared and successfully rooted at the Kew Experimental Gardens, England, with a view of testing this as a means of quickly obtaining a stock of any of the Sansevierns, all of which are now attracting attention as valuable fibre-yielding plants. The leaves were cut into lengths of about two inches, and planted with the basal end in sandy soil. In about a month they developed roots, and soon afterwards they put forth the long fleshy runner-like stems shown in the picture. Apparently this stem is an elongated bud, with scale-like leaves, which ultimately forms a bud at the apex from which the true leaves are developed. It might have been expected that the leaf-bud would have been formed on the cutting itself. It seems singular that a bit of the leaf of a plant with the habit of a Sanseviera would, when treated in this way, form a true stem before it proceeded to develope leaves. The Gardener's Chronicle (in which the original of our engraving appeared) in commenting on this matter remarks that theoretically it knows of no reason why all leaves should not do this, but practically only a comparatively few can be made to strike root. When the minute anatomy of the leaf is sufficiently studied, these points may be clear.

The Value of Leaf Soil. In propagating, leaf mould is as useful as sand, and almost all plants in pots are benefitted by its use. It is also excellent in the kitchen garden and flower beds, and as a winter covering it is unequalled. It is, however, more in propagating and potting that it is used and valued, but it varies in quality, and much that would turn out first rate is rendered next to useless by the treatment to which it is subjected. In many cases it is thought so long as it appears to be leaf soil that is all is necessary, and the leaves are frequently used for hot-beds and other purposes before they come for potting, and this is a common way to convert them into mould. It is certainly one way, but far from being the right one, as the fermenting bed reduces it to mere waste. After receiving a hint as to not fermenting it, we have ceased doing so, and the result is a material which may be put to the choicest plants without producing fungus or other deleterious matter. We have abundance of leaves; chiefly Oak and Beech, the best of all. We do not gather the leaves into a large heap to ferment as formerly, but we collect several cartloads in a hollow and spread them out in a layer about 18 inches or two feet deep, and there they remain without fermenting until they decay naturally. Those treated in this manner last year are now in splendid condition, and by storing a quantity in this way annually there is no difficulty in securing a constant supply of leaf soil. In the woods plenty of this material can usually be found and in fit condition for use, in the little hollows between trees, when the wind has piled the leaves and keeps up the supply as their bulk is reduced by decay. It will be necessary of course to first remove the dry leaves on top. I can recommend this system thoroughly.—*Old Gardener.*

Random Floral Notes Taken About New York.

Everything in floral circles of late has had something to do with the convention; little else has been talked of. The exhibition was looked forward to, as something of interest in the empty month of August, and it certainly gave the opportunity of seeing some well-arranged flowers. But on the whole the floral designs at this show were not very remarkable.

Among the original funeral designs one of the best, which was called immortality, was made by James Weir. It was rather too involved for severe taste, though well made in fine flowers. On a base of Ferns was a caterpillar of white Carnations; above this was a cocoon of red Carnations; above all was a butterfly of Roses. Orchids were tastefully disposed about the base, which bore the inscription "Immortality." The idea was beautiful, but a butterfly only, emerging from the cocoon case, would have told the story with less elaboration.

The first prize, original floral design, by Mr. Klunder was a low, round basket with a high square handle. It was filled with a mass of Adiantum, in which were plunged three sun hats. One was filled with Lilium longiflorum and Lily of the Valley; another blue Hydrangea, Perles and Orchids; the third pink Hydrangea and nine De Watteville Roses. In the centre was a tall, loose bunch of Beauty Roses, while a spray of Orchids was tied to the satin-covered handle with a bow of wide white ribbon.

The prize, funeral design had a base of Ferns and Roses supporting a crown of white Roses, rather stiffly made. In front were a pair of Cycas leaves tied with cream white ribbon. Mr. Le Moult exhibited the Scale of Life very large and well made. Another was a design representing the Gates Ajar at the top of a golden staircase, but the result was anything but artistic.

Mr. P. F. Klunder made the only entry for dinner table decorations and received the prize. It was an arrangement in yellow; in the centre was a low, round basket of Allamanda and dainty Adiantum. The ladies' favors were tiny straw bonnets containing a dozen Perles, tied in with pale yellow ribbon, on which the name of the recipient appeared in raised letters. The gentlemen's favors were single Roses, with the names stamped in gold upon a leaf. A centre plateau, by John Finn, was very much admired; it consisted of Ferns and small Palms, with a mass of American Beauty Roses at each end.

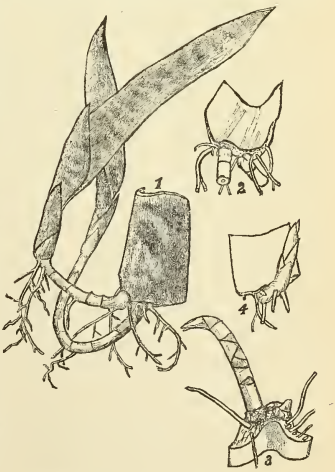
The only bridal bouquet entered was composed of Lily of the Valley, with a loose mass of Odontoglossums and Oncidiums in the centre.

A great deal of fine decoration is done with Gladiolus, whenever large effects are needed—though, truth to tell, very little decoration has been done around the city this summer. As autumn comes on, the brilliant autumn foliage and wayside flowers will be used largely.

Some very handsome new baskets are to be seen. One charming design in bronze-green wicker consisted of an easel supporting a basket formed of curving petals like a gigantic Lotus; another oddity in similar material was a large flat-leaved Cactus, with big cup-like flowers; this was bronzed. Little baskets for favors were formed like pinched-up hats, or queer little directory bonnets. Tripods and easels supporting quaint baskets remain in favor, but they are often more attractive when containing some graceful plant, than when filled with flowers.

No one seems to know of any one flower which is to be the rage, but fashion allows a wider range of color than previous seasons, with a leaning toward shaded effects. Some of the handsome aquatic plants seem growing in favor. The Water Lilies, to be used in decorations, are cut when fully open, and removed to a cool dark place, when they close. When wanted for use, they are simply brought into a well lighted place where they open without any trouble.

In spite of the funeral designs called out by the prizes at the show, there is no doubt but that these arrangements are going out of style.



Sanseveria Propagation from Leaf Cuttings.

Some of the handsomest and most artistic funeral arrangements are when the entire room is decorated with pot-plants and self-colored flowers. Add to this an artistic plaque of blossoms covering the top of the casket, and the result excels in beauty any number of stiff wreaths, crosses, crowns, etc. Very often the sides of the casket are also draped in flowers, and the effect is very beautiful. When designs are made, lettering should be avoided if possible; it never adds to the beauty of the piece, and often detracts from it. EMILY LOUISE TAPLIN.

Rawle's Janet is the Apple most largely planted for market in Southern Illinois, as it leaves and blossoms so late as to avoid injury by late frosts. Does not succeed North. Quality very good.—*J. M. Pearson.*

The Florist Business. As late as 1871 a Philadelphia firm, sent two men here, to New York, to scour the town for Rosebuds for an entertainment there, and received only 59 buds. At present 30,000 buds a day are sold here.—*J. N. May.*

Lily of the Valley Arrangement. Last spring, Mr. Peter Asmus of N. J., built a clay and moss pyramid six feet high, and planted it with Lily of the Valley; when the Lilies were in bloom he consigned pyramid, flowers, and all to an ice house where it hibernated until it was taken to Nilsson Hall for the exhibition. Around the base of the pyramid were small potted bushes of white Lilac in bloom. These have hibernated through the summer, just as the pyramid has.—*Florist Convention Note.*

Prizes for Chrysanthemums. The Pennsylvania Horticultural Society offers the following special prizes to be competed for at the Chrysanthemum Show, to be held Nov. 13th to 16th. All growers are invited: Gold Medal, 25 cut blooms, 25 varieties; Silver Cup, 100 varieties, 3 of a kind; Silver Cup, 24 varieties, 3 of a kind; Silver Cup, 4 yellow varieties; Silver Cup, 4 plants, Chinese class, 4 varieties; Silver Cup, for 6 naturally grown plants. These prizes are offered through the munificence of certain patrons of this flourishing society.

Pruning Blackberries. I have always noticed that small canes are usually loaded with fruit, while the large ones bear but lightly, and I believe that we should prune closer. I began this year by cutting down the young canes to 18 inches, then I cut the laterals off about a foot from the main stem, and if they grow again, I cut them off about six inches long. By doing so, I secure light, young branches on a good strong stem, and am satisfied that they will produce more and better berries. Besides, this will produce a late fall growth, which, I think, will stand the winter better than earlier grown wood.—*E. A. R.*

A Missouri Meeting. At the August meeting of the Jasper County (Mo.) Horticultural Society, the following were shown: Jennie Worthen Peaches, Flemish Beauty Pears, Early Victor, Moore's Early, Perkins, Concord, Niagara, Empire State, Elvira, Etta, August Giaut, and Highland Grapes, by A. Kibler, and specimens of Lansingburg Apples of 1887 and 1888 growth. The Peaches were large and fine, some of the Grape bunches weighed more than a pound. The specimen of Apples grown in 1887, and kept in a common cellar by Mr. Wampler, was perfectly sound and of fine quality, with nothing in its appearance to indicate inability to keep until Christmas.—*Z. T. Russell, Carthage, Mo.*

Egg Plant Culture. The main requisite for growing Egg Plant successfully, is lots of heat. We usually sow the seed in hot-beds about the latter part of February; then we transplant in hot-beds twice before planting out, which is done about the time that Strawberries begin to ripen. Before removing from the hot-beds, we flood them with water; then cut the plants out in squares with a sharp spade, and remove them with earth attached to the roots, to the field, where holes have been already prepared for them. It has been asked as to what per ceut of Cauliflower plants should form good heads. I find that 95 per cent, from a good strain, is about what can be relied upon.—*J. S. Browne, before the Southern Ill. Horticultural Society.*

White Arsenic for Insects. At the discussion of the Missouri Horticultural Society, Dr. Goslin said that he had employed white arsenic for the destruction of noxious insects, at the rate of two and a half ounces to a hundred gallons of water. Mr. Murray had tried it of the same degree of strength, and had not found it to burn the foliage. Its great cheapness gave it an advantage over Paris green, but the absence of the distinct color of the Paris green renders it more dangerous, as the latter may be seen when very small proportions are left on the vessels in which it is used. White arsenic being of the same color as flour, might easily be mistaken for it; if used, the utmost caution should be employed to guard against the danger of poisoning, and the work should never be committed to careless hands.

Orchids for easy Culture. Benjamin Grey, of Mass., at the Florists Convention in August, said: The best varieties of Orchids for professional growers are also the best for the non-professional. Of easy culture are the following: Laelia altumnalis and albida, Cattleya trianæ, Cælogyne Christata, Calanthe Veitchii, vestita rubro and luteo, Dendrobiums nobile and Wardianum. I would add Cypripedium insigne, Harrisanum villosum, and Spiceianum, Cattleya Bowringiana, Odontoglossum Alexandræ. With these we will have a succession of bloom from November to March, that can be grown in one house, excepting the Calanthes and Dendrobiums which require a higher temperature, with plenty of water when growing, but kept cool before growth commences.

A Mission Garden Show. In connection with a London Mission district, there is a Cheerful Home and Window Gardening Society, and this society promotes a flower show among the residents in the more crowded parts of this populous borough. The schedule of prizes, (very unpretentious,) includes prizes for Fuchsias, Geraniums, climbing and miscellaneous plants, window boxes and vegetables. The last class was a surprise, for no one scarcely would dream that vegetables could be grown in the heart of Chelsea; but an examination of the first prize basket showed that it contained Strawberries, Peas, Rhubarb, Radishes, Carrots, Onions, Lettuce, Mustard, Cress, and Mint; and then the outside of the basket had been utilized, for it was covered with flannel, and when moistened, Cress seed was spread over it, which, clinging to the damp flannel, speedily germinated, and gave a crop of edible salad. It is surprising what is grown in the way of vegetables in some of the back gardens.

At the fifteenth annual meeting of the Central Illinois Horticultural Society, at Champaign, Prof. Forbes exhibited a specimen of a new Plum borer that works from the crotches down towards the ground, and of which the eggs are laid on the outside bark, hence alkaline or other washes will possibly prove effective, applied on the eggs and young larvæ before they enter the bark. He also showed a number of specimens of the new cut worm that made its appearance simultaneously all over the State this season in immense numbers, doing considerable damage to gardens and Corn. In gardens, bunches of poisoned Clover leaves placed where they will crawl under and eat them, is an excellent way to destroy the worm. Prof Forbes also described the new Grass root web worm that has done so much damage to lawns and meadows the present season. It is the larvæ of a little white moth, of which three broods are raised in a year. It can be destroyed by Paris green or arsenical poisoning or by using a kerosene emulsion.

Vineyard Plowing. Mr. Ely thought that with plowing away from the vine, his Grapes were the best. Do the work early in spring, but keep the surface level during the summer. Mr. Huff: Moisture could better be retained by turning a furrow from the vines in the fall, returning it in the spring. Mr. McKeel believed in planting deep, then plowing, first towards the vine, afterwards, back again. Mr. Corwin—by turning the ground toward the vine in the spring many weeds are killed. Prest. Butler: Plowing from the vines and leveling with the cultivator were most admirable; where dirt was hilled along under the vine there was more danger from rot. Stir the soil often in dry weather, clay soil requiring more cultivation. Mr. Corwin did not think that old vineyards should be manured close to the vines as the feeding roots were about in the center of the rows, while the contrary was true of young vines. Mr. Lamereaux, said that where cultivation had been neglected, the soil became dry, and lost its substance.—*At a meeting of the Seneca Lake Grape Growers Association.*

Nursery Agent Reform. The tree trade of the country is in the hands of the tree agent, and through him largely under the control of your association. Perhaps the worst evils of the system are: the sale of varieties untested, or unsuited to the particular locality; the employment of unprincipled characters as agents; a nurseryman often allows frauds to be practiced on his agent's billing-out ground; large quantities of stock to go out under false names; this would not be done in shipping to another nurseryman. This does not apply to all nurserymen, nor to all agents, but enough so as to be a stigma upon this mode of doing business, and if a remedy is not found soon, the result will be a marked decrease in sales. I believe it to be a matter of dollars and cents with the trade, as well as a question of moral responsibility. Your association can effect a reform; a few men cannot. Raise the standard of the agents, in justice to the good men now in the business. You cannot reform a radically bad man, but you can drive him out of the business.—*L. A. Bryant, Princeton, Ill., before the American Nurserymens' Association.*

Chief Use of Fertilizers. Prof. Atwater before the Massachusetts Horticultural Society says: The indirect action of fertilizers in improving the mechanical condition of the soil, and rendering its stores of plant food available, is often very important. Hence cheap materials, like bone and plaster, are frequently more profitable than manure or artificial fertilizers. The only ingredients of plant food which we need to consider in commercial fertilizers, are potash, lime, magnesia, phosphoric acid, sulphuric acid, and nitrogen. Of this list, magnesia is generally abundant even in "worn-out" soils. Sulphuric acid and lime are often deficient, and hence one reason of the good effect so often observed from the application of lime and plaster. The remaining substances, the phosphoric acid, nitrogen and potash, are the most important ingredients of our commercial fertilizers, because of both their scarcity in the soil, and their high cost. These materials are expensive, but the right ones in the right places are nevertheless very profitable. Farmers cannot afford to use commercial fertilizers at random. No more can they afford to have their crops fail when a small outlay for the proper fertilizer would bring a bountiful harvest. It is time that they understood these facts, the reasons, and how to make use of them. The only way to discover what our soils want, is to study them by careful observation and experiments. Success in farming, as in other business, requires the use of brains.

A Successful Gardener on the use of Fertilizers.

[*Hon. J. H. Gregory, at a meeting of the Massachusetts Farmers' Club.*]

Crops can be raised with one ton of phosphate alone to the acre. But not if the land lacks potash. You can test soil for potash with Beans, or Peas, which will not thrive without.

Use of Fertilizers. The great advantage of fertilizers in comparison with manure, is that you can adapt them to the needs of the plants. Barn manure must be plowed in at the begining, but fertilizers can be applied at any time. Last year I had an acre and a half of Onions that looked starved, I had an application of fertilizers made, and got a good crop. I could not have done that with manure. Barn manure contains ammonia in a partially unavailable form, so you cannot depend upon the full amount of it. But in using fertilizers about the whole is available the first year, while in barn manure from one-half to two-thirds of the manurial elements are carried over to the second year, though it is not lost, being still in the soil.

Plant Instinct. How is it possible for the plant to find the little bit of dust that is put in the ground, as is a fact. You can apply 500 pounds of fertilizer to a piece of land with certain results; apply 700 pounds to another piece and you will see a difference in the growth of the crop, because the plants find that additional 200 pounds. This shows how little we realize the infinite feeding power of plants, the fine subdivisions of the roots which will even penetrate hard lumps, and get their nutriment from them. But in ground full of lumps the plants cannot develop as they otherwise would. Fine the soil and fine it still again. Men who have plowed their ground twice will never plow less than twice, if they have time. It is well to harrow two or three times. In this way you can make good seed beds. You are more likely to get great crops in this way than by simply trusting to the fertilizer, as it gives the plants extra facilities for obtaining plant food. It is the Jethro Trull idea. It will help the land almost as much as by putting on manure.

Stimulating the Crops. Some people don't believe in putting artificial concentrated stimulant to their crops, thinking it necessary to have manure to get a good crop. But this is not so. I have raised four crops in succession with different fertilizers, and had success each time, for

there is no essential differcuce between fertilizer as plant food, and manure as plant food, except in the matter of application. If you dry some horse manure, fine it up and take a microscope to look at it, you will see nothing but bits of grass in greater or less degree of fineness; all there is in the manure, of phosphoric acid and ammonia and potash must be, in a liquid state, sucked up by these little bits of grass. We know that there is one-half of one per cent of potash and phosphoric acid and nitrogen in barn manure. This is a very small per cent., and this shows that the office of the vegetable waste is to give bulk to the manure, and to hold together the potash and phosphoric acid and nitrogen there is in it. We want to have a concentrated form that the plants can take up readily.

Manure and Fertilizer. I want to make this comparison. You may take a steer and feed him on grass and meal, and that all goes to make his growth, take the manure from that steer, and put it on your land. But if the steer dies, take him to the fertilizer manufacturer and have him made up into fertilizers. All that you get from him was in the grass and meal that he ate; so all there is in the manure comes from the grass and meal; they are the same thing, only that from the animal is concentrated, and easily handled.

Market Gardening.

Continued from page 271.]

If to be composted with alkaline substances, the compost may be used after being exposed one winter, but with barn yard manure, night soil or animal matters, the longer time is better.

Animal manures used in the fresh state should be immediately mixed with the soil, but most vegetation does better if the manure is composted and fermented before using. In animal manures decomposition must be prevented, the valuable portion preserved from dissipation in the air; that it may ferment heat must generate, and its moisture be retained, while an under layer of absorbent substance should be placed to retain its soluble parts, and as fast as throwu from the stable it should be covered with muck to retain the ammonia. Horse manure, especially, begins to heat and lose ammonia almost immediately, and, having the solid and liquid excrements mixed together is particularly rich in nitrogen and the phosphates. Peruvian Guano is a manure of this class. It is the dung of birds that feed upon fish entirely, hence the manure is rich in nitrogen, and in a fresh state should not come in contact with seeds or roots. Bone manure is prepared by the use of sulphuric acid or pulverizing by grinding, forming one of the most valuable manures, in which are united the most desirable organic and inorganic manures.

Refuse Hops of the breweries are also valuable for the garden, not only as a fertilizer, but as a pulverizer of the soil, a top dressing to hold moisture, a protection from frosts in winter, a generator of heat for hot-beds, and when thoroughly decomposed, as a covering for delicate seeds, and I make it a point to incorporate decomposed Hops largely in the soil for early plants in the forcing house. Of saline manures, the most valuable is ashes. Potash is one of the elements drawn largely from the soil, and ashes contains besides potash, many elements conducive to growth, and may be applied directly, or composted with other matter.

Tools. The garden roller may be of two cast iron sections, eighteen or twenty inches in diameter, with an iron handle. Weights may be attached to make it heavier. It may also be constructed of wood. The hand beetle is a substitute for the roller on very small plots of ground. It is a hard wood plank two or three inches thick, fifteen to eighteen inches long, ten inches wide, with a handle inserted in the centre.

Drill markers are made of wood, and the teeth placed at a greater or less distance, as the different varieties of seed require to be sown.

For digging purposes, I prefer the digging fork to the spade; its prongs enter the soil more easily than the broad blade of a spade, and by striking the mass as turned over by the fork, it is pulverized better, but in many operations the spade and shovel are indispensable. The pronged hoe and steel rake are also essential; lately I have used the steel rake to do all my first stirring between the rows of Onions, Beets, Carrots, etc. The triangular hoe is of some merit, being possessed of sharp corners for the roots. The dibble is used in transplanting all kinds of plants that readily succeed when moved. The seed drill is one of the labor saving implements, and no gardener can afford to be without it.

Rotation. The same crops cannot be grown year after year upon the same soil, without reducing its productiveness. Hence as different plants require different substances to perfect their growth to maturity, the rotation of crops is an important matter to the gardener, as in a judicious rotation every element in the soil is taken up by the different crops. However fertile the soil may be, a succession of exhausting crops should not be grown upon the same land, especially as it renders them more liable to the attacks of their particular enemies. Many insects injurious to vegetation, deposit their eggs in the soil beneath the plants which they have infested, that their young may come forth to commit their ravages upon the succeeding crops, but if this is changed to a distant locality, they may perish for want of proper food, and so also of the seeds or spores of diseases in the soil.

Perpendicular or tap-rooted plants, with but few side roots, receive most of their sustenance from considerable depth; horizontal rooted plants find their food near the surface. Various plants by means of their roots act differently; thus, fibrous surface roots break up and lighten the surface soil, whilst the roots of Clover and the like-rooted plants have a similar effect upon a deeper portion. The most exhausting crops are those in general which perfect their seeds, as they draw from the soil more largely of its ammonia, phosphates, etc., than that required in the growth of all other portions of the plant.

To obtain the highest results, there must not only be a general rotation, but sub-successions each year as main crops are removed. It is not always necessary to wait until the first crop occupying the ground is removed before another is put in, a garden well warmed and cultivated with these second crops, will produce a surprising amount of vegetables. The same surface only needs to be hoed, manured, and kept free from weeds, as if it produced but one crop, though somewhat more is required, but nothing like the amount needed to produce the same amount of crops separately.

Culture of the Chinese Primula.

[*Abstract of a paper read before the Birmingham, Eng. Gardeners' Society, by Mr. Horton.*]

Allusion was first made to its first introduction from Canton, in 1800, by Capt. Rowe, who found it as a cultivated plant in China, and to its being figured in the Botanical Register in 1821; at which time several varieties must have been cultivated.

It is not necessary to particularize the efforts which have, by hybridization and selection, enabled us to enliven the dullest and most sunless period of the year, with innumerable varieties of this beautiful plant.

Seed Sowing. Sow the seed in new, or at least clean pots or pans, with plenty of drainage, under a layer of sphagnum, in a soil consisting of three-parts thoroughly decomposed cow manure, which has been well baked to destroy any insect life, and one part of sifted cocoanut fibre, covering seed with paper; plunge the pots to the rim in a bottom heat of from 65° to 70°; as the seed vegetates remove the paper. For pricking off four to five in a pot, the compost should consist of one part turfy loam, one part leaf-mould, one part silver sand, adding a little well-decomposed cow dung, the whole being made fine.

For the final potting, use the following compost; turfy loam, one bushel; leaf-mould, half-bushel; marl, which has been exposed to the frost and air, one-third bushel; coarse gritty sand one-third bushel, a six-inch potfull of commercial fertilizer, and the same quantity of powdered oyster shells; also a five-inch potfull each of soot and lime, and to these ingredients a nine-inch potfull of roughly broken charcoal, well inter-mixing the whole.

To have good plants in bloom in seven or eight-inch pots in November, seed should be sown not later than January 10th.

Treatment. Before re-potting, thoroughly water every plant the day previous, so that the ball of soil when removed into a larger pot, is in a good condition to undergo the operation. About the first week in June, the plants are removed to a cold frame with a northern aspect, and set upon a bed of coal ashes, giving the plants all the light and air possible, but avoiding draughts, syringing lightly about four p. m. on hot days, entirely closing the frame about an hour subsequently. Shading is not adopted during the month of June if the plants are not visibly distressed by the omission; but, with the exception of the first week, keeping more or less air on day and night, being guided by the outside temperature. The final potting being done about the middle of June, when the pot containing the plant is fairly well filled with roots; a check at this time would cause the flowers to appear and any vigorous growth to disappear.

A Fruit Growers' Bureau.

The Fruit Growers' Bureau of Information and Distribution was organized May 12th, 1887, in Dover, Del., for the purpose of improving the methods of marketing the Peach and other fruit crops.

All persons who become members of the Bureau, pledge themselves to faithfully obey its regulations, and confer full authority upon its officer known as the distributer, to control their shipment of Peaches. Members are without power of withdrawal from said bureau, except by written notice sent to the president of the bureau between October and the next May.

The bureau has an executive committee of seven to be elected annually. In May said committee elects a chairman, who is the presiding officer of the bureau.

The executive committee has authority to make new regulations, which, however, may be repealed or altered at any members' meeting. The executive committee appoints a distributer, a secretary, and a treasurer, who give bonds.

The distributer has full authority to regulate the consignment of all cars of Peaches of the members. He is located at the central part of the state, where the headquarters of the railroad system is located, and he keeps a list or map of the towns or cities, (within forty-eight hours communication by railroad) that can daily consume at profitable prices, one or more carloads of Peaches, and he establishes the quota of each of said towns or cities.

When one hundred baskets of fruit are loaded in a car, and the bureau's local agent has, on the day of shipment, or after 6.00 P. M. on the day previous, endorsed "O. K." on a telegram or message, thus certifying to that fact, owner or agent of said car forwards said telegram or message to the distributer, mentioning therein the number of the car, the owner's name, the consignee, and the destination.

The distributer, on receipt of the same, if the quota of the town selected be not already filled, replies to said agent, "Consign your car No. ——to—(the point named)." If the town selected had been previously filled, the distributer so states, and the agent in a similar manner selects some other town where quota is not complete.

The bureau is accountable to the owner, for the prompt return of the sales of any car of fruit, whose destination is changed by the distributer without the owner's or his agent's approval, and the proceeds are sent to the owner, with the regular commission deducted.

The executive committee selects the most available commission houses in each town whither shipments are contemplated, and obtains suitable bonds from said houses, to secure the faithful sales and prompt returns for all fruit shipped to them by the distributer.

All members whose orchards (aged four years or more) consist of 3,000 trees or less, pay an annual assessment to the bureau of five dollars; those whose orchards consist of over 3,000 and not over 5,000 trees pay an annual assessment of eight dollars; and all other owners of orchards pay an annual assessment of ten dollars. Assessments are due in advance, and if not paid by the 18th of August in each year, they may be deducted from any money of said delinquents, that may pass through the bureau.

The bureau's agent at each station has a book on file, where all telegraphic reports of the markets and weather are kept, which reports are accessible solely for inspection by the members.

Nothing in the rules of the bureau shall be construed so as to prevent members from selling their fruit at the home fruit exchanges or otherwise, at any time, or from shipping by water entirely under the owner's control.

The bureau may become united with the Delaware Fruit Exchange, but the accounts and funds are to be kept separate.

Those in favor of this bureau think that producers will receive a great benefit thereby, they say, in avoiding all gluts in the markets, furnishing reliable commission merchants, they insure a

sale of the fruit, placing it all over the United States and Canada. The crop on this Peninsula will be 7,000,000 baskets, and just such a process is needed for an outlet, and to secure good prices. On the other hand there is a fruit exchange on the peninsula, and the members of this organization say that the bureau will be a failure, as they advocate that the buyers shall be here on the spot and pay the cash.

Horticulture at Buffalo's International Exhibition.

For the initial display in what is to be a series of annual fairs to be held in the present Fair buildings of Buffalo, the showing of horticultural products at the recent fair was fairly creditable. Still the number of exhibitors was not large, but those who did enter made good displays. The absence of premiums for exhibits in the plant and floral line was a mistake, but the matter was adjusted in the way of special awards, with the effect of drawing out some remarkably fine exhibits.

Fruits. In the fruit line Ellwanger & Barry, of Rochester, N. Y., had perhaps the best display in the hall. Prominently was a collection of 50 varieties of Plums, which took the first premium of $10, besides 14 plates of Plums entered separately, and which drew 13 first premiums. These fine collections of Plums attracted much attention from visitors. Conspicuous among the newer hardy sorts was the Grand Duke, a large, dark purple, sweet egg Plum. When the representative of the firm was asked to name the best one half dozen Plums for home use from their large collection, the following kinds were included: Bradshaw, Coe's Golden, Lombard, the French Prune, Fallenberg, McLaughlin, and Bovay's Green Gage.

In Pears, the same firm showed the large number of 119 different varieties in various classes and drew a large proportion of the premiums given for this fruit. Two of the Japan and China Plums, Daimyo and Siebold, were included in the exhibit, but were designated as nearly worthless because "they never ripen." Of Apples, 135 varieties were shown, embracing nearly all of the better sorts. Five varieties of Russian Apples were in the exhibit, but of these only two, the Arabskoe and the Titovka, were referred to as possessing enough value to render them desirable for general cultivation, and hardly at all in this section where the better kinds of common Apples nearly all succeed.

The exhibit of Henry Lutts, nurseryman of Youngstown, N. Y., was one of much interest, and showed the presence of many blue cards, indicating that first premiums had been obtained. This collection embraced 20 varieties of Plums, 15 of Pears, 9 of Grapes, and 20 of Apples. A fine display of five varieties of Pears which obtained the first premium, included Duchess, Bartlett, Buerre de Anjou, Buerre Clairgeau, Seckle. The Grapes shown were fair, considering that the fair was held too early to show ripe fruit in most cases. Some fine clusters of Niagara were included in the display. This for a white variety is highly esteemed by Mr. Lutts. He says the vine "takes care of itself most every time."

Mr. Godfrey Zimmerman, of Buffalo, made a good show of Pears and some other fruits, and drew a fair share of the first and second premiums awarded. It is well known, that Mr. Zimmerman practices "grass culture" for Pears, and it was easy to see in comparing his exhibit and that of others that had been grown in tilled land, the peculiar effect grass culture has upon the product. The texture seemed firmer, and the color higher, and while we made no comparative tests as to eating quality, we have no doubt the flavor was richer. Still these gains were apparently secured at the cost of a slight diminuation of size, at least in some varieties. Altogether they were a handsome lot of Pears, and such as most any good judge of fruit would be likely to select for their own use.

From the nursery and orchard of Nelson Bogue, of Batavia, N. Y., came a large display of fruit, but which arrived too late for entering the competing classes. This exhibit embraced 120 plates of Apples, 40 plates of Pears, conspicuous among which for beauty and size were the Bartlett, Duchess, Clapp's Favorite, Buerre Clairgeau (a variety mentioned as succeeding better on poor soil than any other) and Flemish Beauty; seven varieties of Peaches, 15 varieties of Grapes. Black Walnuts and Butternuts. One feature of the exhibit consisted of trees, fruit and ornamental, arranged in boxes of earth. Among other entries of fruits were those of Woodward & Jacques, of Wright's Corners, Niagara County, who made a fine display; M. T. Varney, Colden, Erie County, and one of Japan Persimmons from Norris Grove, Spring Gardens, Florida. The exhibits in the line of vegetables was fine, but mainly made up from the market gardens of Buffalo. These served the excellent purpose of showing the capabilities of vegetable culture, as engaged in with intelligence and enterprise.

Plants and Cut Flowers. In this department the displays, especially on the days reserved for floral designs and choice cut flowers, were grand and attracted much admiration. A common question with visitors as they approached the horticultural section was "where are the Orchids," and the pleasing collection of these exquisite treasures, shown by Daniel B. Long of this city, when pointed out usually brought satisfaction to the querists before they left the hall Among the costly Orchids exhibited by this florist were Stanhopeas, Cattleyas, Odontoglossums, and Cypripediums. The same gentleman showed also some fine cut Roses of the later improved varieties. In more common cut flowers such as Gladiolus, Dahlias, Asters, and Zinnias, James Vick, of Rochester, filled a large space. Of pot plants, William Scott, of this city, made the chief show, doing this by occupying the center space in the hall with an immense mound of tropical plants. The mound was topped with a specimen of Seaforthia Palm, eight feet high.

The combined collection of floral designs displayed much taste on the part of exhibitors. The largest show here was made by Daniel B. Long, of Buffalo, whose exhibit consisted of a floral monument with a plain shaft four and one-half feet high; a graceful glass vase of the same height containing Roses; large panel of dark purple flowers surmounted by a high bouquet of long-stemmed Perle (yellow) Roses; Italian harp; Tom Moore harp; old-fashioned Irish harp; yacht of graceful proportions; large scroll with initial and decorated with horizontal lines of yellow Roses at the top and bottom; Roman vase of dark Pansies with a handle of Golden Rod; an immense shoe made of crimson Carnations on the exterior and lined with Pansies, besides numerous smaller designs. William Scott, of this city, showed a large floral elephant of good form, standing in a jungle of Ferns and other tropical plants; a large harp; a floral pillow with inscription; "gates ajar;" cross and anchor, and a few others. The exhibit of Salter Brothers, of Rochester, included a large "gates ajar;" crescent with lyre inside; a delicate bow and arrow; standing cross with book, and a number of other novel handsome and well-made designs.

Implements of Interest to Land Tillers. In this department the display was large plows and other soil breakers occupying first place in point of numbers. Among these were the following: The exhibits of the Oliver Chilled Plow Works, of South Bend, Ind., including a full line of plows and improvements, such as the self-sharpening slip point and shoe reversible attachments, and the two wheeled plow with self-lifting trip lever. The Gale Manufacturing Co., Albion, Mich., among other plows showed one used largely by New Jersey truckmen for working among Tomatoes, having a disc coulter, and which in turning makes a square corner; and the "Big Injun" sulky plow. Hoagland, Cummings & Co., Albion, N. Y., had on hand their new royal chilled and steel plows. A vineyard, Hopyard, and garden plow was shown by the Syracuse (N. Y.) Plow Co. The Rochester (N. Y.) Plow Co., showed a line of gang plows, specially valuable where shallow plowing is advisable. One excellent point in these plows is that the plow next the row (as in a vineyard) can be set very shallow and the others deeper, the soil being thus merely broken next the rows, while deeper worked between. The South Bend (Ind.) Plow Co., showed a vineyard plow for one horse, which has the advantages that the handles with swivel attachment can be swung to the right or left, as when plowing near trees or vineyard trellises. The Acme pulverizing harrow, clod crusher and leveler was shown by Duane H. Nash, Millington, N. Y. A spring tooth harrow was shown by A. W. Stevens & Son, Auburn, N. J. R. A. Rose, Geneseo, N. Y., showed his patent spring tooth harrow, which is claimed to possess non-clogging qualities. L. C. Lull, Kalamazoo, Mich., exhibited what they term a spring tooth floating harrow and cultivator, and capable of being converted into a wheel cultivator, Grass seeder and Corn worker. J. M. Childs & Co., Utica, N. Y., had on exhibition a line of improved harrows, cultivators, etc., constructed on the spring tooth idea.

In the use of steam for horticultural purposes the Herendeen Manufacturing Company, of Geneva, N. Y., showed their brick set furnaces for greenhouses or dwellings. The Birdsall Company, Auburn, N. Y., had present a steam evaporator, for which they claim the highest degree of perfection obtained in the matter of circulation. One of the most attractive implements on the grounds was the safety steam engine in which kerosene oil is used for fuel, shown by the Rochester Tool Co., of Rochester, N. Y. E. A. Dodgson, Batavia, N. Y., showed a patent duster on wheels for spreading poison on Potatoes with economy of outlay. C. Benj. Titus, Rochester, N. Y., showed a simple and effective hand duster for bug poison on Potatoes. The Boomer & Boschert Press Cos. of Syracuse, N. Y., had a line of their cider machinery on exhibition, and which attracted much admiration.

On the subject of Tile Drainage.

[*Abstract of paper by Judge H. E. Huston, before the Farmers' Institute Meeting, held at Clinton, Ill.*]

My conclusion is that a six inch tile properly laid affords ample outlet for 40 acres, and one of 12 inch diameter for 160 acres. Following the same reasoning a three inch tile ought to be sufficient for 10 acres, but practically it is better to allow at least a four inch one, on account of a greater proportionate friction as the tile decreases in size; in fact any rule of this kind must be but approximate, and to be varied according to the locality.

Much can be learned on this subject, by consulting works on that subject, of which there are a number in print. Much more can be learned in the school of practical experience, which will not be covered by any rules laid down in the books, and which will have to be decided by common sense as the occasion may require.

A most important problem, is not, whether we will or will not tile, but rather as to how we can obtain proper outlets. Our western prairies are so very nearly level, that the instances are rare indeed where a farm can be properly drained, without continuing the ditches over the lands of one or more neighbors. Sometimes vast scopes of territory are involved in the same system, and require for proper outlets expensive ditches stretching for miles over the prairie. Such are the Mason and Tazewell ditches, in the counties of the same name, and the Lake Fork ditches in Champaign and Platt counties.

The drainage deepens the soil, and gives the root of the plant more room in which to expand and collect the nutriment, which is to sustain its life and growth. It promotes the pulverization of the soil, and thereby the facility with which the roots can penetrate it. It prevents the washing away of the surface soil, and enriches the ground by the deposit therein of the ammonia and other ingredients, which are held in solution in the water as it falls from the clouds. A deposit, which in the course of a season, is equal to many tons of the most valuable manure on every acre of ground.

Drainage warms the soil, and thereby lengthens the season in which a crop can be profitably cultivated, thus enabling the farmer to get to work a week or two earlier in the spring than he otherwise could. It does away with the necessary waste of land and bridges where open ditches are used. It puts the ground in better condition to withstand a prolonged drouth so that,

> "The thirsty earth soaks up the rain,
> And drinks and gaps for drink again;
> The plants suck in the earth and are
> With constant drinking, fresh and fair.

Lastly, it removes stagnant water off and out of the soil, and thereby does away with the miasma, which has heretofore produced disease and death on our prairies. It makes our farms more healthful, and more desirable in every way as places of residence, building up happy homes.

Landscape Gardening.

[*Extract from paper read by J. S. Kerr, before the Texas State Horticultural Society at Denison.*]

In landscape gardening certain principles which form a unity of the whole must be observed.

It is to be regreted that so little regard is given the arrangement of shrubs, paths, etc., as

a whole, in the decoration of our homes. It is not expected that every man will be an expert landscape gardener, yet every one should understand the common sense rules of the art.

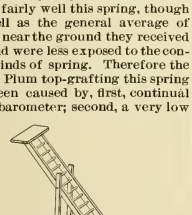
The value of everything beautiful is enhanced by appropriate setting, and the outgrowth of the years will attest forcibly the amount of judgment exercised by the projector. Avoid the mixing of herbaceous flowers with shrubs and trees, as neither can thrive properly, and the effect of each is injured by the other. Seek to have some leading feature in every part of the plan. It does not matter so much what we plant, provided the tree or shrub has some intrinsic beauty—as where we plant it. Generally, let the trees of larger growth be placed farther apart, and flower beds and shrubs nearer.

Avoid straight lines for trees and uniformity of shape in beds and paths. This is more difficult than the old practice of regular lines, but it insures more pleasing results, when done. Usually grass should occupy all ground not used for walks, flower-beds and trees. This grass must be kept short. We prefer Texas Running Mesquite because it is hardy, effective and at the same time is easily controlled, as it does not spread by underground roots, as like the Bermuda grass that is sometimes used.

Paths and roadways made cheaply of gravel, look well and are durable. The concrete walks now made are perhaps the most desirable. It is within the reach of all to study this art of beautifying the landscape, than which no other art is fraught with more beneficial results in health, happiness, and contentment of home-life.

CONDENSED GLEANINGS.

Plum Grafts Not Growing. Scions from the hands of more than twenty experienced men, and others from dozens of correspondents—some cut last fall, others this spring, were used. These were all set very carefully in four different ways, by tongue, splice, side, both near the collar and in the tops, and cleft-grafting. Some of this grafting was done very early and some quite late, and was all intended to be experimental in the line of finding out the best way of grafting the Plum. The grafts were waxed in about all the different modes in use, this also to prove which was the best, with the result of only five to ten per cent of the grafts set, growing, and showing but very little difference in favor of any of the modes of grafting or waxing; or early and late grafting, except slightly in favor of side and cleft grafting, when the grafts were set near the ground, and this is the only key I have that seems to unlock the mystery. Grafts set near the ground grew fairly well this spring, though not nearly so well as the general average of seasons. Because near the ground they received more moisture, and were less exposed to the continuous drying winds of spring. Therefore the general failure of Plum top-grafting this spring seems to have been caused by, first, continual dry air with high barometer; second, a very low vitality in the tops of trees, owing to some peculiarity of the winter or the drouth of the summer before, (if the last, a low vitality in the crowns also), or both.—The Farmers' Review



A Handy Fruit-Picking Ladder.

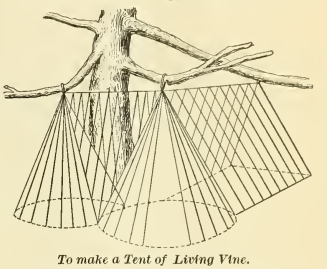
Violets for Winter Flowering. These require very careful management at this time of the year, and, if they do not receive it, no amount of attention, when they are required to flower will induce them to do so. Assuming that young plants were put out in April, they will at this time be making rapid growth, and pushing out runners in abundance. Now, it is of the utmost importance that these runners be removed at once, for if allowed to extend they soon monopolize a large share of the energies of the plant, and the crown does not swell up thick and ready to burst with flower buds as it does if the runners are kept closely cut off. The best implement for removing them is a pair of Grape scissors. The plants should have been gone over several times during July and August, and also the ground should have been frequently surface-stirred with the hoe; and if the weather is dry, a good soaking of water should be given, and after hot days, a good drenching overhead will help to keep red spider in check. Liquid-manure is of great assistance at this stage of growth, and in showery weather a little dry powdered manure shaken on the surface to be carried down to the roots by rain, will help to keep the plants healthy and growing vigorously, as it is when growth is checked that red spider attacks them. Soapsuds, a good homely remedy for spider, should be applied copiously if they appear.—Gardening Illustrated.

Raising Strawberries Cheaply. Reduce the labor of growing Strawberries, as it is the principal expense. The following method is recommended: Manure and plant the ground to some hoed crop the year previous, thus freeing the ground from weeds. Set them in rows, so as to cultivate both ways, until runners start; then, if matted rows are desired, let them fill up the narrow way. Use a cultivator with common straight, drag teeth, running close to the plants. Never allow the weeds to more than show themselves. Let the plants grow up through the mulching; not doing work on old beds until after fruiting, excepting to pull out any coarse weeds. By carefully adhering to these methods one is enabled to grow Strawberries at about the cost of raising Corn or Potatoes. If planted in check rows, like Corn, the plantation can be cultivated both ways until runners start, and yet there will be an abundance of plants for a full matted row. Why should the market grower continue to waste plants and labor in setting them one foot apart in the row, when three will do! Also have an eye on the field to be planted to Strawberries next year. Cultivate and manure it well, and prevent weeds from maturing.—Weekly Press.

A Tent of Living Vines. A very pretty tent can be made, which, instead of being formed of the usual canvas, has its sides composed of running vines, making a cool and refreshing retreat. Select a tree with low spreading branches, and attach stout cords to them at three different places. From these cords smaller strings are brought down to the ground, as shown in the plan, and secured to pegs driven into the earth. Any suitable plants, such as Hops, Peas, Beans, or Morning-glories, are then planted at the foot of the strings, and in due time they will be entirely covered with foliage. The circular parts are laid out by first suspending a stone from the branch above by a string reaching nearly to the ground, to mark the center of the circle. Then drive a peg into the ground at this point, and attach a string to it of a length equal to one half the diameter of the desired circle. By tying a nail or sharp-pointed stick to the other end, and moving the whole around the center peg, a very accurate circle can be readily marked out on the ground, and the strings brought down to it from above. As the weight is considerable care must be taken to have the cords strong and firmly fastened, for withstanding wind.—St. Nicholas.

The Sand Cherry is one of the hardiest plants growing at Brown's Valley, Minn.; has resisted the severest cold and heat, and will thrive in any soil, properly cared for. It is a shrub Cherry, suckers considerably, sending up closely compacted stalks. When pruned to one stalk only, with one leader, it grows from four to six feet, as thus far tested. It is a favorite of the jack rabbit and the rascal will not leave a stem standing, if left free to prey upon it. The root is red, dips down deep, and is also a great spreader. When in June bloom, it is the most beautiful thing you ever saw, looks like so many white plumes swaying in the breeze. Its prolifically borne fruit are oval shaped, dark colored, subacid, fair to eat raw, and nice when rightly cooked. Its root is one of the hardiest that can be found for grafting with other Cherries of the cultivated sort, and has proved a success in this respect. To trap snow for the protection of Strawberries and other small fruit plants, it is recommended to plant matted rows of Sand Cherries at stated distances apart, so that the prevailing winds and snows would strike them at right angles.—The Minnesota Farmer.

Strawberry Planting. This spring 1,500 plants were set out according to instructions given by Mr. M. Crawford, and every single one was growing when ready to cultivate. I take a light spade, (English ditching spade, five inches wide) stick it in the ground about six inches deep and perpendicular, work it back and forth a little, and then pull it out, with the earth, to the right, by a kind of half upward pull. This leaves a hole with the left bank perpendicular. Against this bank the plant is placed with the roots well spread and the growing part of the crown just above the surface. Then moist earth is thrown against the roots and well packed, and the rest of the hole filled with earth, without packing. The plants are taken up out of the old bed, the earth carefully shaken off and the plants immediately put in a pail half filled with water. The plants being taken out of the water only as fast as the holes are dug, in this way there is



To make a Tent of Living Vine.

scarcely any check to their growth if the ground is moist.—T. B. Terry in Country Gentleman.

What Not to Plant. Dakota farmers are warned against planting the Hardy Catalpa (*Catalpa speciosa*), as it winter-kills badly. Russian Mulberry is a failure as a tree. It branches freely from the ground up, and is admirable for ornamental hedging. It is almost impossible, however, to make it form a clean trunk, or even a low-topped tree. The fruit of by far the great majority of the trees is very small—not worth bothering with. The foliage is beautiful, and wherever a large shrub or a hedge is needed, the Russian Mulberry will fill the bill satisfactorily. Soft Maple is not adapted to exposed situations, because of the tendency of its branches to break; it cannot withstand our strong winds. Box Elder and White Elm are almost perfect in this respect. Bulletin No. 3, Dakota Experiment Station.

Washing Vegetables. How often city people speak of the excellent flavor of the vegetables they sometimes eat in country homes, and wonder why they cannot be cooked to taste as well in the city. It is not because the farmer's wife understands the art of cooking vegetables any better than the city dame, but because she leaves on the earth that covers them, until she needs to put them to cook. Housekeepers only can cure this evil. The moment the grocer finds that he loses his head and labor, when he washes his vegetables—just for the looks of the thing—and that the housekeepers are becoming sensible and will buy them in their natural covering, then city folks can have as nice vegetables on their tables as the farmer.—Rural Canadian.

A Cheap Drain. For some sections, a cheap and good underdrain may be laid thus: Dig your ditch as narrow and as deep as you well can, from the nature of the ground, leaving no holes or obstructions in the bottom; now lay in the bottom of the ditch round poles twelve or so feet long, six inches through at the heavy end; put in two side by side first, then two or three on them. Commence at the lowest end, laying in the poles end to end to head of ditch; place over the poles a coat of moss, hay or straw, six inches or more deep; when the dirt is put into the ditch, this covering will prevent its settling down so close on the poles as to prevent free drainage.—Sugar Bowl and Farm Journal.

A Convenient Fruit Ladder. The accompanying cut shows how to make a wheelbarrow ladder, by using two hand cart wheels, or any light stout wheels. The dimensions of the device may vary to suit circumstances; as with tall trees, the ladder may be longer and stand straighter, etc. Care must be taken to secure the foot of the ladder by weights to overbalance the weight at top. The board at the top of the ladder is for setting the basket upon.—Ohio Farmer.

Striking Rose Cuttings Outside. Own-root Roses even Tea-scented are finding favor in many places. The cuttings taken at the beginning of October, and cut into lengths of about nine inches each, and then dibbled into a narrow shady border with no special preparation of the soil; 60 per cent of the cuttings have been grown, many being in flower by the following July. From the success which has attended trials of this method, it is clearly shown that to obtain Roses on their own roots is not so difficult as some might suppose, for such a plan reduces the propagating of Roses

to a minimum of trouble. But do not allow such young plants to retain their flowers, as they are a strain upon the roots, which will prevent their making a satisfactory growth the first year. Making cuttings in August is not advisable, unless they can have a frame or hand-lights to protect them from the sun and drying wind.—Loudon Gardening Illustrated.

Pruning Apple Trees. When planting select two year old, thrifty trees, cut out all cross limbs, and see that the head is evenly balanced, with, however, the heaviest side toward the southwest, as that side needs more shade to protect the trunk and main limbs from the hot afternoon sun. Leave a center stem and avoid forks. Don't forget the nature of the different varieties, and on such as the Ben Davis, Winesap and many others which incline to a low spreading top, start the top about four feet from the ground, while such as Hightop Sweet that make a more upright growth, give not over three feet of trunk. The extreme of either too compact or too open top, should be avoided. Have the trunk sufficiently compact to shade the trunk, yet open enough to admit the air and light freely.—Rural World.

Southern Truck Farming. Three hundred thousand car loads of fruits and vegetables are shipped northward from the South during a sensou; having the average net market value of $100 per car load, with transportation charges of $4,500,000 per annum. Florida and Louisiana lead in earliness; advancing northward the States each secure a share of the trade. Beginning in February with early vegetables and followed by vegetables, fruits and Melons until June. The development of this industry has been so rapid and general, that it has assumed great importance not only to the South but to the country at large, as one of the most significant of a number of important movements toward diversification of industry, and applicatiou of land to its most profitable uses.—Manufacturer's Record.

Huckleberry Improvement. The business of improving the Huckleberry has not been much of a success, its type is apparently fixed. There have been many attempts, but at no time have the wide-awake nurserymen been able to offer improved and cultivated Huckleberries. One advertised garden sort was widely planted, and proved a good fruit, but was in truth a dwarf Service Berry. This subject theu seems refractory, but the work can be done, the fruit in question becoming a denisou of the garden. I have in my eye, a patch of the little early sort, the *arboreum*, with leaves so bright and glossy, the fruit so exceedingly abundant, and when ripening of such a bright red, that the bush is more than worthy of a place in the garden.—Florida Dispatch.

Cactuses. Grown in pots they are often exasperating to the last degree, and sometimes do not bloom until one is ready to let them alone, which is just what they like. Soil in which they are grown should be composed of sand, broken plaster, bits of brick, etc., with enough earth to hold them together. Set the pots where they have full sunshine. Thin-leaved varieties need water only about once in two weeks; thicker sorts not as often. Lobster Cactus is a favorite winter bloomer. Turk's Head is handsome, even without bloom. Sword Cactus has pink and scarlet flowers.—The Farmer.

A Jelly Stand

Strawberries and Water. How many know, that the Strawberry will stand as much water as the Cranberry, or that the bearing of a bed may be retarded from two to three weeks, by flooding it in the early spring, turning the water off at the right time. On the low prairie, dotted with ponds, the wild Strawberry's favorite place is on the margin, just above the water line, the fringe of vines being from three to six feet wide, with the common coarse grass and weeds growing outside, and the rank sedges, with their feet in the water, springing up inside.—N. Y. Tribune.

A Jelly Stand. It is easily made, and the illustration explains itself. The jelly bag is made of flannel and sewed around a strong ring of wire or wood. Rings may be fastened to the ends of the cords, and slipped over the four top rounds, or it may be tied. Jellies will be clearer if allowed to drain thoroughly without squeezing, and it saves much labor and staining of the hands. This arrangement is convenient for making clear soups also. An old chair, without a back, inverted might answer for the support.—Farm Journal.

Treating Peach Borer. The Peach borer, according to Prof. A. J. Cook, has been vanquished in the "Peach belt of Michigan, by the simple process of digging out the borers in late September and early May. This is not a hard task, as the oozing gum tells quickly where the offender is. The victory over these pests in Michigan was obtained by concerted action among the Peach growers—an example for emulation elsewhere, and which is applicable as regards other injurious insects.—American Cultivator.

Seed Laws in Europe. In consequence of the continued frauds in seeds, the French government intends to have a law voted creating inspection of farm seeds offered for sale. The prosecution will be attended with few difficulties, the penalties will be severe, and the compensation allowed to farmers injured by the fraud, will be liberal. A commissioner is to visit Germany and study how the pure seed law there works.—New England Farmer.

An Onion Farm. Messrs. Swayze & Bulgin, in Warren county, New Jersey, own 1600 acres of the reclaimed meadow lands, of which 500 are under cultivation. Their Onion crop will reach 700,000 bushels. The last hill for Onion seed was $1,382. They have also set out 400,000 Celery plants, cut 250 tons of hay, and have an Asparagus bed of 50 acres.—Warwick (N. Y.) Advertiser.

An Oak-Eating Cut Worm. A cut worm about one inch in length, is causing much damage to Oak trees in the vicinity of Ahington, Mass. It cuts the limbs and buries itself in the wood. In working out, the limb is cut off. Its depredations are confined to Oak trees.—Rural Home.

Water Lily Growing. There is no plant, which can be cultivated in the United States with less trouble and more pleasure than this Lily.—Garden and Forest.

Plant Trees. Nature aims to keep every rod of land covered by some form of vegetation. Let us help her by planting trees.—New England Farmer.

American Arbor Vitæ. The American Arbor Vitæ for wind breaks, is the poor man's friend, and the ironclad of the West.—Seed Time and Harvest.

Vegetable Products on the Table.

Celery Vinegar. Soak one ounce of Celery seed in a pint of vinegar, bottle, and use for flavoring soups and gravies.—Germantown Tel.

Huckleberry Pie. This, besides plenty of berries, should have two large spoonfuls of vinegar to each pie, as the berries themselves are comparatively tasteless. Add also one cup of sugar, a little butter and salt and a generous handful of flour over the top.—Indiana Farmer.

Baked Onions. Pare, slice, and boil about an hour, pour off the water, put the Onions into a tin with butter nicely browned, pepper, salt and sprinkle with a little Sage, and bake an hour. While roasting, turn over occasionally, having butter to keep them moist.—English Farm and Home.

Egg Plant Oysters. Boil the plant until tender but not broken. Take out the inside, mash, season highly with salt, pepper and butter. Beat the yolks of three eggs, add to the Egg Plants with half pint of stale bread crumbs. Fry in hot lard by dropping small spoonfuls.—Germantown Telegraph.

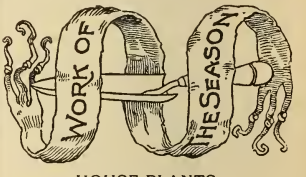
Turnip Soup. Place six small Turnips in a kettle with one quart of cold water. Boil until tender, then press all through a colander. Fry two chopped Onions in three tablespoonfuls of butter until yellow brown, then add to Turnips. Add one quart sweet milk, salt and pepper, one tablespoonful each of Corn starch and butter rubbed together until smooth. Boil five minutes and serve hot.—Prairie Farmer.

How to Can Apples. Peel, quarter, and core. Then pack the cans as full as possible, fill with cold water, and screw on the covers. I have tried this and have cans put up two months ago, perfectly good to-day. Winter Apples when rotting fast, may be saved in this way and kept long into the summer or till new fruits come. Fill the cans with water, put the palm of the hand tightly down on the top of the can, and shake it well, to start the air bubbles that cling to the pieces of Apple, then fill again with water and cover.—S. C. Fairbanks.

Tomato Pie. Peel and slice yellow Tomatoes; place on the bottom crust one level tablespoonful of flour mixed with one heaping tablespoonful of white sugar, arrange the Tomatoes upon this; sprinkle with nutmeg and a little more sugar, and add a few lumps of butter; put on top crust and bake in a quick oven. Eat with cream. Red Tomatoes are almost as good. Green Tomatoes can be used by cutting into fine slices, steam until they can be pierced easily with a fork, making as above with the addition of a half cup of vinegar, using spice instead of nutmeg.

Stuffed Tomatoes a la Milanese. Take six ripe Tomatoes of equal size, cut a circle off the top of each, and scoop out the insides. Press the pulp through a sieve, and mix in with it a little salt, Cayenne Pepper, two ounces of butter broken into little pieces, two tablespoonfuls of bread-crumbs, a large Shallot finely minced, a teaspoonful of Parsley, and two very large teaspoonfuls of grated Parmesan. Fill the Tomatoes with this mixture, put on the tops again, and bake in a moderate oven, or fry them in oil till cooked brown; put Mushroom sauce or sauce Espagnole round them.

Vegetable Soup without Meat. This may be used as the stock or basis of different kinds of soups. Cut up a quart bowlful of any and all kinds of vegetables that you may have; Onions, Carrots, Potatoes, (these should be par-boiled for a few minutes), Celery, Parsley, Leeks, Turnips, Cabbage, Cauliflower, Spinach, etc., but always have either Potatoes or Beans to serve as thickening. Put into a sauce-pan, a large tablespoonful of the fat from the top of the soup if you have it, if not either butter or dripping, but not lard, and when it is very hot, put in the Onions and fry until they take on a red color; stir in a tablespoonful of flour. After stirring this for a minute or two, add a quart and a pint of hot water, pepper and salt and the remaining vegetables. Simmer for two hours, press through a colander and serve.—Western Ploughman.



HOUSE PLANTS.

Begonias for winter, to have liberal watering, with plenty of light (not necessarily sunshine), and not unduly crowded. The Rex or Show-leaf class, from now until after mid-winter, should be but lightly watered and kept in the shady part of the stand. Tuberous ones rested, covering with dry earth or sand where it does not freeze; the pot plants to be dried off storing in a frost-proof place.

Bulbs. Winter Hyacinths are to be potted during the month. Pot firmly, but shallow, in light rich soil; cover the pots with six inches of coal ashes, soil or the like, for six weeks before bringing to light. Hyacinths grown in glasses are very attractive. The glasses may be had of the bulb dealers; the dark ones better than those of clear glass. As to bulbs, select such as are solid and heavy; not of the cheapest grades, single ones being the best as also the earliest bloomers. To start them, fill each glass with clear water to within ¼ inch of the bulb when in its place. Fertilizers or charcoal in the water are unnecessary. Wrap the glasses in paper or cloth and set in a cool, dark closet after. When the roots are growing freely, place in a light window a few weeks. Add water as required, but never having it high enough to touch the bulb.

Caladiums from the beds when frosted to have the leaves removed, and after several days be dug, dried and stored in a cool place.

Cannas. See Caladiums.

Dahlias. Same treatment as for Caladiums.

Geraniums. Those kept from blooming up to this time, are now in shape for fall flowering. Those from the summer beds to have tops reduced one third or more. The ivy-leaf class are especially fine for the house. Geraniums closely cut back and potted, winter well in a good, dry cellar; too much growth left on leads to decay.

Half-hardy plants like Roses, Daphnes, Ancubas, Euonymus, Jasminums, Oleanders, Olives, Pittosporum, Pomegranate, Rosemary, etc., should be brought to winter quarters before hard frosts. A good, dry, partly-lighted cellar is suitable for them, or a glass-covered pit in a sheltered spot outside will answer.

Hanging baskets and interior window boxes to be started early, and kept outdoors or on the veranda for a while, to become well established.

Lifted Plants. Lightly sprinkle these several times a day, until flagging of the leaves ceases. It is best to gradually accustom window plants to shade and closeness by keeping them on the veranda or like place until the weather becomes too cold. Then when taken in, do not expose to much heat.

Primroses are good house plants, because rather liking dryness. They need light, and through blooming time some weak liquid manure once a week, has an excellent effect.

Tuberoses that are late may be lifted and brought in for perfecting the flower crop. Lift balance of tubers, cure and store in a dry place of a temperature of 50° or 60° Fahr.

LAWN AND FLOWER GARDEN.

Crape Myrtle. Directions for Hydrangeas apply.

Gladiolus. See under Tigridias.

Hardy Flower Borders. Clear off any frozen tender things, remove bad foliage, etc., keep the edges trimmed, and they may look well yet for some time.

Hydrangeas. Place in a cool, dry cellar; keeping quite, but not dust dry at the root.

Leaves. Find a place to pile them for rotting and for use on the land later. Many trees are injured by the heat from fall leaf burning. It is not the singeing of leaves that does harm, but injury to the bark.

Lilies to be reset about the end of the month. Plant at least six inches deep, and cover for winter.

Seed Beds. Pansies, Hollyhocks and hardy plants sown recently to be reset from the seed beds. Prick out, when the second leaves show into prepared beds, two inches apart each way for small growers, and proportionate distances for larger ones, carefully watering the young seedlings as needed.

Sodding may now be done. Work up the plat deeply, make even, and roll or beat firmly. Take turf from common pasture ground that is free from weeds and coarse grasses, cut to 1½ inches thick, in squares of one foot or more, or in strips four feet long, rolling them up for handling. Lay evenly, with close joints, by working fine soil underneath thin pieces, and for thick ones shave down the bed, and finish with a thorough beating with the back of spade.

Tigridias. After sharp frosts, lift the bulbs. After drying and cleaning, place in paper bags; winter in a dry place secure from frost.

Trees. Fall planting to be done early, that the roots may get a start while the ground is warm. To bank earth a foot high against them will steady the trees, and keep mice from girdling them.

Vases and Hanging Baskets. Empty these, wash thoroughly, dry, and place under shelter.

PLANT CULTURE UNDER GLASS.

Air and Heat. Open ventilators full height on bright days, allowing change of air among the plants. Avoid fire heat as long as is consistent with safety.

Arranging. The new season under glass begins. As plants come in, study individual needs as to heat, light and so on—placing accordingly.

Azaleas should have perfect drainage, a cool airy place with careful watering.

Bouvardia. For bloom a temperature of 50° will answer, though more heat will bring earlier flowers.

Calceolarias and similar seed-grown plants, will be pushing lively under a fair chance. Shift promptly as needed, water carefully, keep near glass, and clear of insects, airing freely.

Chrysanthemums. Keep the plants uncrowded. Give liquid manure twice a week until bloom shows color, but no longer. Thin the buds of large-flowered sorts. The house in which they are growing to be kept rather dry through the flowering season.

Cinerarias. Treat as directed for Calceolarias.

Cyclamens to be kept in a warm, light place close to the fire, and to be well encouraged for bloom.

Lantanas. By lifting the fine *Elegantissima* and potting, it forms an exquisite spring blooming plant.

Mignonette. For early spring, sow in pots of light, rich soil, which keep in a warm place.

Orchids generally should be resting, in which case, ess water, a cooler and dryer atmosphere, and more ventilation than when growth is on. Where growth is not yet done, do not check, or spot will result. Syringe and water, keeping in view individual needs. Keep everything clean, not overlooking the glass.

Petunias. The treatment for Calceolarias will suit.

Poinsettias. A temperature of 60° or more is required for best results, also liquid manure twice a week.

Roses for cut bloom to be syringed twice daily, and to have a temperature of 55° to 65° at night.

Shrubs for forcing, such as Lilacs, Daphnes, Weigelas, Deutzias, Flowering Plum, Spirea, Kalmias, and so on, to be potted by end of month.

Violet runners and weak shoots to be kept closely pinched off, lifting and potting the forcing plants about the end of the month, and giving them an airy frame for a month more. Give all the air possible during winter, keeping clear of decaying leaves.

FRUIT GARDEN AND ORCHARD.

Apples. For winter keeping, Apples ought to remain on the trees until freezing is threatened, then hand pick, and pack into clean barrels. A cool, dry room is required for storage. Sort the fruit carefully.

Bins for Fruit. New ones to be built, and old ones to be cleaned in season. Make them shallow having a larger number of such. Fruit, except winter Apples and Pears, picked early and binned, will keep longer than that picked late.

Budded Trees to be examined and prevented from being girdled by the budding ties.

Cider Making. For best quality let the Apples lie under the tree in the shade, until the Water has evaporated somewhat.

Cuttings of Currants Gooseberries and Grapes to be put in, having them with three eyes. Plant an inch or two apart in rows, these to be 2½ to 3 feet apart. Set firmly, with the top eye just even with the surface. Later cover well with leaves or straw, to be removed in the spring.

Evaporating of Fruit. Give windfalls and culls, suitable for drying, daily attention. Good evaporated fruit will bring money. This fruit should be thoroughly cured, but not brittlely dry. It may appear damp and yet be dry enough to keep years.

Fertilizers. Potash and bone dust are valuable for all small fruit, and can be applied when convenient.

Grapes. Concords and other thin-skinned sorts, to be marketed nearly as soon as ripe. The thick-skinned ones will keep well for months. With such, let late use and marketing be taken advantage of, picking carefully, and after leaving in a cool room for several days to toughen the skin, wrap the clusters separately in paper or pack in small boxes, and then store in a dry and cool place.

Orchard Care. Before the leaves fall, remove dead or diseased branches from the trees, as they present an undue amount of evaporating surface. Pruning this month is believed by many to promote fruitage.

Pears. Autumn sorts to be picked just before maturing; winter ones may be left on trees until in danger of freezing. The latter can go to no better place for keeping well than in a cool cellar, so moist as to prevent shriveling, yet dry enough to prevent molding and rotting.

Strawberries. Planting should be hurried up rapidly. Keep off runners from plants set this fall.

Tools. When no longer required repair wherever needed, paint and oil, then store in a rain-proof building. A good paint for either iron or wood is formed of boiled Linseed oil, with powdered red lead, adding a little Japan drier.

THE VEGETABLE GARDEN.

Asparagus. Cut down when half withered. Clean up the bed with a hoe, (spading is injurious), and apply a four inch coat of half-rotten manure.

Beets to be taken up before hard frosts; cut the leaves an inch from the crown, store in sand or dry earth, in a cool cellar in pits.

Blanching Celery. A good way to do this is to lift the plants from the ground, leaving a little soil adhering to the roots. Take common flour barrels, put about two inches of sand in the bottom, and on this place your Celery in an upright position, one layer to a barrel. Put in a cool cellar, cover it with a blanket, and in six weeks the Celery will be bleached to the tips. If at any time it seems to be too dry sprinkle lightly.

Broccoli. See directions below for Cauliflower.

Cabbage plants, sowed last month, to be pricked into cold frames, putting about 600 to a 3 x 6 sash, setting the plants rather deeply. Frames for this, made of rough boards, to be eight inches high in front and a foot at the rear, with cross rafters and cleats to support and fit close to the sash.

Carrots. Treat the crop as directed for Beets.

Cauliflowers. As they approach maturity, shade with paper or by turning down the leaves or by bringing the leaves together at the top and tying. For young plants see directions under Cabbage.

Chicory for use as salad, to be dug, and stored in sand in a dry cool cellar.

Endive to be blanched when the growth is well along, by gathering up the leaves and tying at the top. Blanching ends its growth.

Lettuce and Tomato seed sown in a well protected place this month, and covered through winter will give early plants in spring.

Potatoes to be well dried, but not unnecessarily exposed to light, even for one day, before storing in perfectly dark bins, not over three feet deep.

Pumpkins and Squashes, require for winter a cool dry place, secure from frost; a cellar in some respects perhaps being better than a house.

Rhubarb. Treat in general as for Asparagus.

Spinach. Till well, now that the growth is rapid.

Sweet Potatoes. Carefully dig before heavy frost, storing in a warm dry place.

Turnips now grow well; should be kept hoed.

FRUITS AND VEGETABLES UNDER GLASS.

Grapery. After the fruit is ripe, watering is to be withheld in part, for a while. Later the borders should receive a fall dressing of bone dust, and a thin layer of fresh loam. Houses in which Hamburghs and other thin-skinned kinds are hanging must be kept dry and cool. Remove faulty berries before they taint their neighbors. Prune after the crop is removed.

Lettuce. Plants from seed sown in August, should be set out for the early crop under glass. Six or seven inches each way is enough room. The sash should be entirely off the house, except in the roughest weather, for some time yet. Strew Tobacco stems between the plants, to keep down aphis or green-fly, which is the chief enemy to the crop.

Oranges, Lemons, etc. Keep the trees thoroughly clean by soap suds. Thin the fruit if necessary. Water occasionally with manure water

Parsley for winter use can yet be secured by carefully lifting the plants, and placing them in a cold frame. Four inches apart is a good distance.

Rhubarb for winter forcing to be dug, and stored in a convenient place for getting when wanted.

Strawberries. As soon as the young plants in pots show a mat of roots about the ball, shift into six-inch pots, and plunge in saw-dust or coal ashes outside in an airy place, here to remain until November.

THE POULTRY YARD.

Pack Away Dry Dirt. It will be found of invaluable service at a time when the earth is frozen. It not only answers as a dust bath, but keeps the floors clean, being better than sawdust and more easily applied. Lay in a good supply.

Corn Not the Cheapest Food. Corn at 65 cents per bushel, is not cheap as egg-producing food, as it does not furnish the proper proportion of the elements contained in an egg, and if fed alone is insufficient and therefore costly, but when fed as part of the ration, especially in cold weather, it becomes an excellent aid, supplying as it does warmth, and helps toward the yolk of the egg.—Mirror and Farmer.

Chicken Cholera Remedy. We have found the best to be one teaspoonful of zinc (Nox vomica) mixed into one quart of corn meal and fed to the chickens. Stuffing some of it into the mouths of those that are too far gone to eat of their own accord. I have not yet heard of a single failure. That amount ought to do for ten or twenty chickens for one day. Repeat as often as needed.—D. H. Welch, Douglass Co., Kan.

Farmers and Fanciers. Farmers should realize that there is more money in producing eggs at 20 cents, broilers at 40 cents, and good capons at 18 cents per pound, than in entering the well-filled field of fanciers to sell choice eggs at two dollars per sitting, and good birds at five dollars per pair. The prices named for the food products may be obtained in any city, and the demand is beyond the supply year after year and is likely to so continue, while fanciers find prices fluctuating and uncertain.—National Stockman.

Attend Them Yourself. It has been often demonstrated, by repeated failures, that no one in the poultry business can delegate the duty of attending to poultry to others, but must do it himself. To secure a competent man to manage a poultry farm is no easy matter, and nearly all failures result from incompetency. It requires knowledge and intelligence to manage a large poultry farm, and quite a salary is required to secure the right kind of a manager. Any person engaging in the poultry business must be on the grounds at all times. He may have an assistant, and even a foreman and other help, but the careful and watchful eye of the owner must be over the work.—Farm and Garden.

Keeping Eggs. Having filled a clean keg or barrel with fresh eggs, cover the eggs with cold salicylic water. The eggs must be kept down by a few small boards floating on the water, and the whole covered with cloth to keep out dust. If set in a cool airy place, the eggs so packed will keep fresh for months, but must be used as soon as taken out of the brine. To make the salicylic solution, dissolve salicylic acid (which costs about three dollars per pound) in boiling water, one teaspoonful of acid to the gallon. It is not necessary to boil all the water, as the acid will dissolve in less quantity, and the rest may be added to the solution cold. The solution or brine should at no time come in contact with any metal.—Scientific American.

Hay for Poultry. In winter we cannot, of course, get green grass for our fowls, but we can do as we do with our cows when grass is "out of season"—feed them hay. Some of our readers may laugh at the idea of feeding hay to fowls, but it is no new notion with many poultry keepers. Late cut rowen is just as good as any green food you can get for fowls in winter, and any poultry keeper should save a supply "on purpose" for his poultry. Cut pretty fine and steamed, this rowen is the next best thing to green grass, and the fowls eat it readily. Some have fed it dry, and claim as good results as when wet. One poultry keeper who feeds rowen largely, cuts it, pours hot water over it, lets it stand a short time, then mixes with morning feed.—Prairie Farmer.

Chicken House. My hens are housed in a large room, with ground floor 18 x 18; from this they pass to an apartment 18 x 18, which is made of slabs and open to sun. This is their feeding room; the other, which is fitted with nests and roosts, has a large window and is well ventilated. No filth is allowed to accumulate, and the roosts as well as nests are drenched with kerosene once in two weeks. Here they remain and thrive and lay abundantly from the time green Gooseberries tempt them until the Grape crop is gathered. Before and after they run loose. The worst habit our farmers have is the neglect of hens in the moulting season. This occurs when feed is scarce about the farms, and when the hen's vitality is taxed. Feed liberally then and they will lay well into winter, and more or less all winter. My hen house has a chimney running up through it and the rooms above, so that I can heat it in winter. Being a wing of my barn this arrangement enables me to have warm water all winter for my animals as well as fowls.—E. P. Powell.

Inquiries and Replies

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

924. **Blackberries Dying.** Have no trouble to keep over winter in good condition, but as they leaf out in spring they gradually die down, sending up a rank growth from the roots, the same thing seeming to trouble the Dewherries.—J. P., *Jackson Co., Wis.*

925. **Purslane Killing.** Is it possible to kill out Purslane by cropping with Buckwheat, plowing it under when in bloom?—I. M. K., *Ontario, Can.*

926. **Ammonia for Trees.** Will trees, if watered with Ammonia water, receive any benefit? What proportion is used?—A. F. W., *Worcester Co., Mass.*

927. **Le Conte Pears.** I would like to learn something of its merits for market, also how the Keiffer is regarded as to being profitable in the East.—Wm. M. J.

928. **Plums.** (*a*) How is the Blue Dawson on Peach root? (*b*) Can any one make any report on the Artic Plum? (*c*) Has the Kelsey Japan Plum proven of any value?—W. M. J., *Randolph Co., Ill.*

929. **Cherries.** Are the following varieties profitable for market growing in this latitude, Sudas Hardy, Montmorency, and Dyehouse?—W. M. J., *Randolph Co., Illinois.*

930. **Lucretia Dewberry.** What is the value of this Dewberry as a market crop?—W. M. J.

931. **Hen Manure.** Is road dust or plaster the best for mixing with hen manure? Ought it to be applied broadcast or in drills?—P. G.

932. **Stable Manure or Artificial.** Which would you consider the cheapest, stable manure at $1 per two horse load, drawn three miles, or good commercial fertilizer, at $30 to $40 per ton drawn four miles? My soil is light, sandy, and poor.—P.G., *Oswego Co., N. Y.*

933. **Vineyard Posts Rotting.** How can I prepare the posts for my vineyard that they will resist decay? I would also like any suggestion that might be useful in constructing a trellis.—T.W., *Atchison Co., Kan.*

934. **Lilium Auratum.** Will some one please give directions for growing these Lilies successfully?—Mrs. E. L. P., *Crawford Co., Pa.*

935. **Peach Seedling Growing.** I would like to know of a successful way of planting Peach pits?—C. M., *Mosherville, Michigan.*

936. **Mixing Fertilizing Elements.** In what proportion should phosphoric acid dilute, nitrate potash and ammonia or pure undissolved bone, nitrate potash and nitrate sodium, be mixed to form a complete fertilizer? State quantity and method of application.—George F. Smith, *Allegheny Co., Pa.*

937. **Bark Coccus on the Magnolia.** I send twigs, covered with scales. Can you name the twigs, insects and remedy?—John A. Hinckley, *Venango Co., Pa.*

938. **Growing Onions.** Can Onions succeed Cabbage to advantage?—C. W. S., *Van Buren Co., Mich.*

939. **Tent Caterpillar.** How can these be destroyed? Can the arsenites be used for the purpose with safety?—W. O. F., *Greensburg, Ind.*

940. **Trees and Shrubs for Wet Places.** Can any kind of trees or shrubs be grown on wet land with a fair chance of profit?—S. T. M., *Hamilton Co., Ohio.*

941. **Marechal Niel Propagation.** I would like to know of the proper method and time for striking cuttings of this Rose.—Amateur, *Dallas, Tex.*

942. **Sumac for Market.** How can this product be best prepared for market? Also, where is the best point for selling?—J. L. D., *Bradford Co., Pa.*

943. **Wintering Strawberries.** Can I prepare Strawberry plants this fall and keep them for planting in the spring successfully, using a machine?—C. W. Pottenger, *Kankakee Co., Ill.*

944. **Climbing Hydrangeas.** I would like directions for cultivating, etc. Where can they be procured?—R. W. N., *Indiana.*

945. **Lady Slippers or Cypripediums.** Where can the yellow (*parviflorum*) and purple varieties be obtained? The latter is often called "Whip-poor-Will's Shoe" from the form.—Mrs. E. D. K., *Ann Arbor, Mich.*

946. **Glass or Canvas for Hot-beds.** I would like to be informed of the comparative merits of these two articles for hot-bed covering. Does oiled cloth crack so as to leak?—T. J. L., *Rossville, Ga.*

947. **Flues for Hot-beds.** Will you please give me directions for the construction of a furnace-heated hot-bed? How would it compare with manure?—T.J.L.

948. **Stone and Earthen Ware.** I wish some one would explain the difference between these two wares, with reference to pickle making.—Dr. Ben. H. Branax.

949. **Evaporated Fruit Keeping.** How long can evaporated Apples be kept in good condition?—J. P. A., *New Albany, Indiana.*

950. **Selling Flowers.** Where can I find a market for fine garden flowers? Is there any demand?—B. L. M., *Titusville, New York.*

951. **Grafting Scuppernong Grape.** On a rank growing barren vine, 8 or 9 years old. I would like full particulars as to grafting other good sorts.—Mrs. J. L., *Collinsville, Tenn.*

952. **Iris or Fleur de Lis.** I would like directions for growing these plants.—M. H., *New York.*

953. **Everblooming Plants.** Will some one please give a list of ever blooming and fragrant plants and climbers, suitable for a conservatory about ten feet square?—M Harris, *New York City.*

954. **Cider Making.** What is the best method of making cider and preserving it?—M. T. B., *Chenango Co., New York.*

955. **Azaleas.** How ought Azaleas to be treated that have been outside during the summer? They are now in bud. Ought they to have manure water?—Mrs. J. K., *Jackson Co., W. Va.*

956. **Maiden Hair Ferns.** When should these be divided, what is the proper soil and temperature?—M. I. B., *Orleans Co., N. Y.*

957. **No Flowers on Laburnums.** Why has my Laburnums never bloomed? It grows good and seems healthy.—I. T. M., *Gallia Co., O.*

958. **Seed grown Roses.** Can Roses be raised from seed? How shall I proceed?—Rosarian, *Penn'a.*

959. **Suitable Trees.** I would like a list of trees, shrubs, etc., that would do to plant in good soil having a gravel subsoil, the time for the work, and best treatment.—B. T. F., *Worth Co., Iowa.*

960. **Azalea Forcing.** What management is required for this, in a hot water heated frame?—Novice.

961. **Asparagus Forcing.** When is the time to begin and how is it best done for market?—Market Gardener, *New York.*

962. **Raising Tea.** Can this be done in any part of the South? Where can I gain any information on the subject?—A. W. L., *Florida.*

963. **Cracking of Pears.** What causes this trouble? Is there any remedy?—O. P. M., *Wayne Co., Mo.*

964. **House Plants.** Are there any plants that will thrive in rooms in which gas is used for lighting? Many that I have tried die off.—Mrs. A. C. R., *Buffalo, N. Y.*

965. **Heating Greenhouse.** What are the comparative merits of coal and coke for running a greenhouse during the winter?—Amateur, *Ohio.*

966. **Getting out Stumps.** I would like to know of some effective way of getting stumps out of land.—B. A. P., *Lonoke Co., Ark.*

967. **Lawn infested with Worms.** Underneath the turf is a layer of good soil and under that, manure, now the sod is being ruined by worms. Is there any remedy?—G. R. N., *Kenney, Ill.*

968. **Planting Hyacinths.** Would it answer to plant these bulbs a foot or so deep, calculating to leave them and plant summer flowers over them in the spring?—W. O. S., *Katonah, N. Y.*

969. **Black Currants.** How ought I proceed in start ing a plantation, suitable, kinds and treatment?—C. E. V., *McKenny, Ill.*

REPLIES TO INQUIRIES.

883. **Gas Lime in Soil.** For a dose of gas lime, one half inch would have been plenty. Repeated deep plowing when the soil is moist, thoroughly mixing the spent gas lime with the soil as deeply as possible, followed by a good coat of manure, cow manure in preference, would fit the soil finely for most any crop, especially Beets; stone fruits also should be well suited, the chemist of the University of California joins me in this answer. Gas lime in reasonable quanties should be good on sandy soil, not of a calcarious nature.—D. B. W. *San Francisco, Cal.*

877. **Rust on Raspberries.** There seems to be no certain remedy for this fearful scourge. It is a parasitic fungus pervading every part of the plant, from root to fruit. The fungus fruiting or maturing its spores on the underside of the leaves, from scale like brick-red patches. Salt has been recommended as a tonic in the way of prevention. Others have advised to irradicate all diseased plants, root and branch; but this to me seems very silly. A fungus that generates by spores, and whose spores are being continually thrown into the air, by the thousand million by diseased plants all over the neighborhood, (for this fungus seems to be prevalent when climatic conditions are suited to it, being confined to no special soils or environments,) and its infective spores everywhere present. If a plantation was very carefully watched, and all infected plants destroyed before any spores ripened, and there were no infected plants near, it might be of value. Some varieties are much more liable to be destroyed by this fungus, than others. I have large plantations of Kittatinny Blackberry entirely ruined by it, while Wilsons Early and Black Raspberry near by, showed no signs of disease, and also had it disappear from the Kittatinny, and the same lot have good crops of fruit after. It is a hard one to manage.—D. B. W. *San Francisco, Cal.*

788. **Manuring for Strawberries.** Presuming that your land is in fair condition, I would plow it to the depth of sixteen or eighteen inches. Then I would apply blood and bone fertilizer, bone flour or superphosphates at the rate of 1,200 pounds per acre, this should be harrowed in or otherwise well mixed with the soil to the depth of six or eight inches. Early in the spring apply a good dressing of wood ashes, or bone dust and work it in thoroughly among and around the plants.—C. E. Parnell.

885. **Potato Tops as Manure.** Potato tops have more than the average manurial value possessed by the tops of many other succulent plants. They should be gathered and mixed in a compost heap with manure, muck, and other fertilizing material, and when well rotted should be very useful on dryish clay soil, or they may be scattered and plowed under without composting. All such waste vegetable material should be gathered up and put into the compost heap, with all dead animals, and animal refuse on a place. Bones, old leather, leaves, soapsuds, night soil; everything of the kind enriches the compost heap, which should be looked upon as the farmer's saving bank.—D. B. Wier, *San Francisco, Cal.*

827 **Evergreens in Texas.** I have usually succeeded best during moist or cloudy weather in March and April. The White Pine does poorly outside the timberbelt of E. Texas and not nearly so well there as the natives, which are equally handsome. In Central and Western Texas, the Austrian succeeds fairly well, the White Pine poorly, and the Norway Spruce not at all. T. V. Munson, *Texas.*

781. **Ants in the Greenhouse.** Lay fresh bones in the infested places, and as soon as the ants accumulate on them they may be easily destroyed.—C. E. P.

782. **Aphis on Cherry and Plum.** These can be destroyed by the use of Fir Tree Oil or Tobacco soap. The former can be procured in quart, tin cans, the latter in pound boxes. Apply according to the directions which accompany the articles.—C. E. Parnell.

888. **Location for Fruit Growing.** An answer to this question will depend chiefly on the kinds of fruit to be grown. Grapes and the tree fruits will stand "fair facilities" for shipping much better than berries, and the packages go with the fruit, with berries they are generally returnable, and the more perishable character of the fruit would make a home market more desirable, and be much more economical in the capital required to be invested in baskets and crates. With a distant market fully ten times as many crates and baskets will be needed than in a home market, because of the delays in returning the empty packages and some will never find their way back, and to get out of packages in the midst of the picking season, is a contingency that must be provided for. In a home market you can look after these things yourself and the prices are apt to be better, even though the home market has some more details to be looked after, and with respect to small fruits, the home market will compensate for a good deal of difference in adaptability of soil and location. A consideration of the above difference should influence the decision.—Williams.

874. **Blackberries Affected before Ripe.** Is dying or drying meant? Drying of the fruit would naturally result from the dying of the canes, and the latter is probably due to some local cause, perhaps the Willows may have something to do with it, but the query is too indefinite to allow me to venture a reply.—E. Williams, *New Jersey.*

847. **Plants after Blooming.** Petunias that have bloomed all summer are not worth taking up and potting, as they can be so easily produced from seed, still if you have some choice varieties that you desire to perpetuate, you should cut the old plants back, early in September, and as soon as the young growth is four or five inches in length, secure cuttings, these will produce fine plants for winter. Abutilons, can be taken up and potted on the approach of cold weather. If necessary they can be well cut back, but then water should be carefully given until growth commences. Tuberose bulbs that have flowered are worthless, those that have not, should be taken up as soon as their foliage has been destroyed by the frost, carefully dried and stored in any dry, warm place where they will be safe from water or damp. Plants placed in a cool greenhouse require careful attention after they have done blooming, as far as watering is concerned.—C. E. Parnell.

790. **Hen Dung for Gardens.** Pulverize it as finely as possible, and mix it well with the soil. To exterminate worms give one or two good dressings of lime.—C. E. P.

796. **Copperas.** This is of no value as a plant stimulant.—C. E. P.

846. **Plants Bare at Bottom.** If you will divide your plants and give them a deep well enriched soil, a good mulch of rather coarse stable manure with copious waterings during seasons of drouth, the trouble will be avoided. To be of benefit to the plants, the mulch should be applied early in May.—C. E. Parnell.

817. **Black Ants.** Dust their hills freely and frequently with lime or wood ashes. They dislike such treatment and will leave.—C. E. P.

814. **Forcing Roses in Succession.** I don't think it would be advisable to force the Roses as you propose to do.—C. E. P.

799. **Worms on Grape Vines.** Carefully pick them off and destroy by burning.—C. E. P.

862. **Ailing Camellia.** It is evident that something is the matter with the roots of the plant, so turn it out the pot, reduce the ball of earth as much as possible and place in a smaller sized pot, giving fresh compost. Your plant evidently suffered from imperfect drainage. To grow Camellias well, they should be given a porous or soft-baked pot, one proportionate to the size of the plant, a compost composed of two thirds turfy loam, one third well decayed cow manure, and the pot should be well drained, if it is one third filled with drainage, it is none too much.—C. E. PARNELL.

858. **Weeds.** To keep Purslane from becoming so rank, keep the ground well cultivated so that they will be destroyed while small.—C. E. P.

855. **Ants in Lawns.** Scatter wood ashes or lime freely and frequently around and over the hills.—C. E. PARNELL.

852. **Worms on Alternantheras.** I would gather the worms carefully by hand and destroy.—C.E.P.

845. **Fly on Chrysanthemums.** Dust the plants freely with Tobacco dust, or spray the infected parts with Coles insect destroyer; white hellebore or Persian insect powder applied with a sulphur bellows or insect gun will also destroy them.—C. E. P.

867. **Asparagus.** To put up bunches in good shape, you should procure a regular bunching machine. The size of the bunches should be from three to four inches in diameter and from six to eight inches in length. Keep the tops exactly even, and cut the bottom off square, tie in near the top and near the bottom, using bass bark, or broad soft twine. When shipped, it is packed in crates with tight bottom with slat sides and tops. The crates should hold four dozen bunches, and deep enough to hold one layer when standing upright. When packing, place the bunches in firmly to protect the top from becoming injured, and see that the Asparagus is perfectly dry before packing.—C. E. P.

865. **Grapes.** (*a*) Grape cuttings when placed in sand or soil, and protected from cold will grow in the spring. (*b*) In setting out Grapes, I would not shorten the roots, but merely cut off those that have become broken, still they will not have to any extent if left uncut. (*c*) Ordinary grafting wax is not injurious to Grape vines.—C. E. P.

863. **Strawberry Insect.** I am not acquainted with the insect you describe, and the only remedy I can suggest will be for you to gather and destroy them. I would occupy the ground with some other crops, and plant the Strawberries in another place.—C. E. P.

871. **Pepper for Cabbage Worms.** I know of no reason why Cayenne Pepper dust would not answer as well as that from the red.—C. E. P.

869. **London Purple for Cabbage Worms.** Yes, it can be applied while the plants are small, but just as soon as their heads show indications of forming, it should no longer be used.—C. E P.

868. **Verbenas Rotting.** (*a*) There may be some insect pests at their roots; take a plant up and examine it carefully; or the ground may be too rich, if so you have no remedy but to change the soil another season. The Verbenas prefer a deep sweet turfy loam. (*b*) I know of no remedy for the worms, except to pick them off carefully and destroy them.—C. E. P.

866. **Dealbata Acacias.** If you will raise the bottom of the frame about an inch or so from the surface of the ground, so as to permit the air to circulate around the plants, I think that you will have no further trouble.—C. E. P.

819. **Tan Bark Ashes.** Yes, it will prove to be a good fertilizer. Apply liberally, harrowing it in thoroughly before sowing the seed.—C.E.P.

818. **Insects on Grapes.** I don't think that the bees injure the flowers. The wasp and the small insect will not trouble them, if properly bagged as so often recommended in this paper.—C. E. P.

914. **Mulberries Fruiting.** Yes, if several trees were near each other. The Russian Mulberry is dioecious and Downing is variable. The best success in fruiting the Mulberry is reached when planted in groups with varieties or species intermingled.—J. L. BUDD, *Ames, Iowa.*

937. **Bark Cocus on Magnolia.** The tree evidently is some species of Magnolia. The insect is one of the many bark lice that effects trees and plants. It is not an easy insect to deal with, because of the difficulty of applying insecticides directly to them. One of the best remedies is made by bringing two gallons of water, to which has been added one quart of softsoap, to the boiling point, and then stirring into it one pint of crude carbolic acid. This should be applied with a scrubbing brush to the affected parts, June being the best season, and then at intervals later as needed. A more recent remedy and highly praised, consists of one fourth pint of Fir tree oil, to two and a half gallons of water, applying the same to affected parts with a syringe. Fish brine from the barrels of salt fish, applied to the trees with a syringe is said to kill the insect; we think this latter liquid ought to be diluted somewhat with water, when applied to trees in leaf.

815. **Works on Botany and Greenhouse Plants.** Woods Class Book of Botany or American Botanist and Florist are good works on Botany. Henderson's Hand Book of Plants is the best work for your purpose.—C. E. P.

841. **Rhododendron Protection.** A very good protection for Rhododendrons is to stick in the ground about them limbs of Evergreens, and pile leaves all about, over, and under plants. Great care must be used with barrels not to make use of those that have held brine or salt. I lost a Golden Yew by placing over it a very old salt barrel; but there was enough of the saline left to do the work. If you cannot get Evergreen boughs, you can get leaves, and then hold them in place with light sticks. Of course the plants would be broken with the weight on top, if not supported by leaves placed underneath.

835. **Gooseberries for Market.** This fruit, so highly valued in England, has been neglected here quite too much. Of varieties, that depends on location and culture. I grow, on clay soil with warm southeast exposure, all sorts, and no mildew. Of the American varieties, I find one about as good as another. The ground should be strong and rich, but not highly manured with fresh manure. Cultivate and keep clear of weeds; with me the sprawling bush form is as successful as well-trained, erect stems; but the fruit is smaller and gets soiled. No plant enjoys mulching more than the Gooseberry; use sawdust. The profit on Gooseberries is not equal to that on Currants because the demand is not so great; but the supply is also small and therefore the market is good. They bring about eight cents a quart. Of the newer sorts the Industry is promising, but I dare not speak surely of its prolific bearing; with me as yet, it does not bear heavily.

858. **Weeds.** Nothing will keep Purslane from coming up if the seeds are there. Don't let any seeds get ripe. Keep it hoed and buried or burned. It makes a good fertilizer if it is buried where it will rot; weeds are useful in the right place.—E. P. POWELL.

825. **Currants Dropping.** I think that the worms are the cause of the trouble; they may have injured the clusters so as to have caused dropping, before hellebore was applied.—C. E. P.

848. **Black Raspberry Blight.** I find that cutting out the main stalk under the ground, leaving only the roots, which grow up the next season all right is a method of overcoming the disease, otherwise roots and all are killed.—C. MILLS, *Onondaga Co., N. Y.*

835. **Gooseberries.** Late grown from medium to large size will sell in New York from $2.00 to $2.50 per bushel. Extra large ones from fifty cents to one dollar higher; there is no demand for small ones. For the past two seasons there have been received from Canada which sold readily. If shipped in barrels or boxes, they should be well ventilated, as they become heated quickly.—C. W. IDELL, *New York.*

834. **The Gueii Plum.** This is one of the finest in cultivation, above medium in size, color purple, perfectly hardy, and an abundant and early bearer, ripens early, and with me does not rot. I consider it one of the very best.—A. A. H.

918. **Hollyhock Propagation.** Hollyhocks always come true to color, either from seed or when plants are kept over from one year to another.—A. A. H.

741. **Black Knot on Plum Trees.** Never allow a single bunch of black knot to remain on the tree an hour after you discover it. I always have a sharp knife in my pocket, and when I discover a black knot on a tree, it is removed at once; and this is not all, put a drop of turpentine on the scar and it will prevent other knots from growing around the edge of the wound.—A. A. HALLADAY, *Vermont.*

872. **Wood Ashes.** It will not injure the trees unless applied in great quantities; but why place them so close to the trunks? Rather scatter around and work under with a fork.—C. E. P.

874. **Blackberries Drying before Ripe.** They may be troubled with an ailment of fungoid origin, he would cut back and destroy all shoots as soon as they show indications of drying.—C. E. PARNELL.

876. **Tomato Blight.** I think that you are giving your plants too much water and so advise you to gradually reduce the supply.—C. E. P.

877. **Rust on Raspberries.** Cut off at once and burn every sprig that shows indications of rust. This only will prevent the destruction of all your plants by the rust.—C. E. P.

903. **Aquarium Management.** The water in an aquarium should never be changed, but merely added to, as evaporation takes place. The oxygen for the fish is supplied by the plants which it is absolutely necessary to grow. "Novice" can obtain these in almost any pond. The aquarium should be covered by a piece of glass, projecting about ½ inch over the sides all round, which prevents dust settling upon the surface. Snails do not purify the water, but simply cleanse the glass and the plants from the confervoid growth which appears in stagnant water.

908. **Blanching Celery.** My way of earthing up Celery, or rather preparing for that operation, is to tie up the plants some time before any soil is put to them. This support to the leaves causes a more upright growth and keeps them together, when the earthing up can be done easily and quickly without any of the soil getting into the hearts of the plants. Instead of cutting away the ties and removing them, we leave them on; they rot off quite soon enough, and if they do not it matters little, as Celery cannot well be held too closely together to blanch and exclude the wet. The soiling up piecemeal, as is practiced by many, is a mistake, as the plants require much water all the time they are growing, and it is impossible to give them this after they are earthed, without washing some of the soil in amongst the leaves, and that either causes them to rot or cripples the hearts.—C. J. GAINES.

910. **Lilium Auratum Treatment.** If kept in the house they should be at rest after the stalk has died down. The plants being only sparingly watered until potting time this month. With good management they will flower better the second season than they did the first, and stronger the third than they did the second. If they have blossomed out-of-doors, the roots may be lifted for the winter and stored away dry and cool, and in either case started in slight heat the next year. They do better out-of-doors, almost, than under glass. After flowering some people place the pots containing the plants out-of-doors; this is an error, as they suffer from wet.—REMLE.

883. **Gas Lime in Soil.** While the Lime used in purifying gas is a good material for improving cold, heavy land, has the effect of killing wireworm and other insects, four tons to the acre is the quantity usually applied and immediately plug in. With the quantity mentioned, nothing can be done other than to keep the garden under constant cultivation for some time, then growing some rank feeding root crop.—REMLE.

786. **Nitrate of Soda.** It is of great benefit to Chrysanthemums, Dahlias, Carnations, &c., during their growing period, acting as a powerful stimulant, and very soon imparts a luxuriant appearance to the foliage. But, like soot and other stimulating manures, ought not to be given to the plants at rest. A solution should contain about one pound of nitrate in twelve gallons of water. If scattered evenly on vacant ground, it is of great service in destroying slugs and other garden pests. It is also beneficial when applied sparingly to lawn.—J. W. V.

897. **Yuccas Hard ?.** I should think they would be, but if any doubt exists, the lightest kind of winter covering will be sufficient to make them perfectly safe.—REMLE.

843. **Tree Pæony not Blooming.** The probable cause is lack of plant food in the soil. Give a heavy coat of manure over winter and the trouble will likely be remedied.—REMLE.

804. **Setting out Strawberries.** To ensure a satisfactory result it will be necessary to use potted plants.—C. E. P.

833. **Barberry from Seeds.** Sow as early in spring as possible, in drills two feet apart in a nicely prepared bed or border; sow thinly, cover carefully, and keep the young plants well weeded at all times.—C. E. P.

854. **Cyclamen Treatment.** After the plants cease blooming, they should be turned out of their pots and planted out in a nicely preparred border. Here they should be permited to remain until September, when they should be taken up and potted. For potting use porous or soft baked pots, and let them be well drained and proportionate to the size of the bulb; at first water sparingly, gradually increasing the supply as growth advances. When the plants are about to bloom, liquid manure should be given at times, after the blooming period is over, gradually reduce the supply of moisture. Inside, they should be given a light sunny situation and a temperature of from 50° to 60°. In planting them outside keep the bulb or corm about an inch and a half below the surface.—C. E. P.

803. **Transplanting Tree Pæonies.** I would transplant as early in the spring as possible after the ground is in a proper condition.—C. E. P.

800. **Coal Slack for Heavy Soil,** I would use the coal slack by all means.—C. E. P.

813. **Stove Plants.** Stove plants are those that require for their proper development an average night temperature of not less than 65°.—C. E. P.

753. **Removing Soot from Trees.** Dissolve whale oil soap in water at the rate of two ounces to a gallon, and syringe the trees thoroughly with this some damp evening. Early the next morning syringe copiously with clear water. The mixture applied before rain will materially assist in removing the soot.—C. E. P.

913. **Onions for Wintering.** No one objects to Onions being large for autumn use, but the largest are not the best keepers. I find none to keep better or longer than bulbs that weigh from three to four ounces each, and such, where sound and well harvested, might be kept for nine months, in suitable quarters.

942. **Sumac for Market.** On uncultivated plants the new growth only is cut, stem and leaves, while green, and dried in the sun, protecting carefully from dew and rain. When perfectly dry, run though a straw cutter and pack in bales or bags ready for market. The full year's growth is cut from cultivated plants when in full leaf, before frost, near the ground; new shoots growing for late, or next year's cutting. The leaves are stripped, dried, and baled for marketing. The kinds most in use for tanning and dycing, are *Rhus glabra*, or smooth Sumac, a spreading leafy bush, four to ten feet high; or stag-horn, *R. typhina*, grows twenty feet high; a dwarf, *R. capallina*, one to seven feet high and others. Any large user can give information as to markets.

941 **Marechal Niel Propagation.** The simplest and surest way of striking either this or any other Rose from cuttings is in September, to select vigorous shoots which feel quite firm, cut into lengths, having four or five buds. Cut the base of the shoot close to the last bud. Half fill a five-inch pot with Cocoanut fibre, packing quite firmly, give some drainage also. Stand the cuttings on this about two inches apart, round the inside of the pot, then fill up with fibre and ram down hard. Place in a shady position for a few days, then a sunny one, sprinkling the foliage two or three times a day. In November let them have the shelter of a cold frame, and when the cuttings are sufficiently rooted transfer them to single pots.—*Amateur Gardening.*

940. **Trees and Shrubs for Wet Places.** Alders, Ash and Elm, can profitably be raised on places too wet for most things to do well.

954. **Cider Making.** Select and wash sound fruit. Strain the juice into clean barrels, and keep filled up to the open bung hole for a few days, until active fermentation ceases; then "rack off" into clean barrels, keeping in a cool cellar, with the bung tightly closed. If wanted fairly sweet for a long time, add a pound of Mustard seed to each barrel before closing.

906. **White Clematis.** None of the White Clematises, in cultivation at the present time, are sufficiently vigorous and hardy to be of much use; they come from lanuginosa, which is a tender kind. There has, however, been exhibited in England a white Jackmanii which ought to be of value. Have you tried Viticella rubra grandiflora? This has bright claret red flowers, not so large as Jackmani, but very numerously produced, and is a most effective variety.—Remle.

886. **Celery Blight.** When the blight comes on in the earlier stages of growth, the plant can outgrow it, but occuring at a later stage, it sometimes almost completely destroys the crop. It is not likely to make its appearance in a very wet season, unless on springy land where the drainage is poor. On high land it frequently appears, immediately following two or three weeks of drought, and in such a case the only remedy is to apply water. This can best be done by plowing away a furrow from each side of the row, into which the water may be led, afterwards plowing back again to cover the moistened earth and to restore the level surface. By repeating this as often as once a week the tendency to blight may be overcome. Some growers believe it is an insect which causes the blight, but I cannot agree with that view. The insect which appears on the leaves when they begin to decay, is invited by the decay, but is not the occasion of it. Often when the insects have made their appearance and the leaves are already yellow, a sufficient application of water, either through a heavy rain or by irrigation, will cause the insects to disappear, the yellow leaves to drop away, and finally the plants will grow healthy again, with a good crop as a result. The blight is undoubtedly a disease caused by a check in growth, due to the roots of the plant suffering from lack of proper nutriment, and most generally occurs in dry weather.—W. W. Rawson, *Mass.*

896. **Profits in Market Gardening.** It is not possible to give any close estimate of the capital per acre required to market garden, there being so many ways of working. As a rough estimate for the cost of growing common garden crops, I would say $75 to $125 per acre might be reckoned on. Manure is a very heavy item, as from forty to fifty tons are generally applied every year, some being made on the farm, but the greater portion has to be purchased. It would be better to pay a higher rent close to a large town for a small space of ground, than to take a large piece at lower rate, a number of miles away from market. Kidney and Lima Beans, Asparagus, early Rhubarb, green Peas, Tomatoes and such crops sell well, but all these need to go in fresh, and carting detracts considerably from their value. Then again the man whose produce is ready before his competitors even by only a day or two, can obtain twice or three times as much as is possible when the market is in full swing. Another consideration in favor of being near to a town is the supply of labor readily obtained, for unless there are ample means of securing the crops at the proper time much loss might ensue.—Remle.

885. **Potato Tops as Manure.** Much of the exhaustion of soil by the Potato crop is due to its top, which is rich in potash, and as it readily rots it leaves whatever manurial value it possesses on the soil were it lay. Some work the tops into the manure pile. Most of the substance of the tops, if left in the field, will be washed into the soil before spring, and what remains will soon disappear when plowed under.

911. **Plantain and Weeds on Lawn.**—I have effectually cured a lawn of coarse weeds, Dandelions, and Docks. Get a little sulphuric acid, and, with a sharp pointed stick a drop put in the centre of each plant, will kill it. Afterwards dress the lawn with bone dust or guano. D.McL.

912 **Single Dahlias.** Deal with these as with the double kinds. Lift them when frosted, cut off the stalks about four inches above the tubers, turning them upside down, so as to allow any moisture to run out. Clean the tubers and dry, storeing in a place free from heat, damp, and frost.—Remle, *Newport Co., R. I.*

858. **Weeds.** Nothing. The only thing that will in any degree abate this pest, is very thoroughly destroying all that appear on the surface by cutting and burning. With this treatment it may at length disappear.—Remle.

907. **Thrips on Dahlias** This pest has been very troublesome on the Dahlias, and the only way to keep them off is to syringe the plants daily during hot weather. The insects will not do much harm if this is continued.

905. **Pruning Clematis.** It is quite right to cut back Clematises of the Jackmani and Viticella sections every year, as they then break stronger, and consequently flower finer and more continuously than they do if the shoots are left entire. There is also this advantage of pruning back hard, the lower portion of a trellis or wall can be better furnished by means of the laterals which spring from the main shoots.

904. **Tan Mulching for Strawberries.** Seeing it recommended as preventing slugs from getting to the fruit, I obtained a quantity and placed it about six inches in width from the roots of the plants and also between them, but when the fruit began to ripen I found that it had been eaten; and at last found the slugs crawling over the tan with seeming ease. My experience was certainly unfavorable to the tan, as it also became the propagating bed of a number of minute maggots, not at all pleasant to associate with the Strawberry.—F.

Concerning Steam Heating for Greenhouses.

In some of the most extensive greenhouse establishments in the country, among others that of Mr. Peter Henderson, in Jersey City, New Jersey, heating by steam has been thoroughly tested for a number of years. Mr. Henderson, in summing up his experience with steam, as compared with hot water heating, does so in these words: "My experience in the use of steam over hot water for greenhouse heating, on repeated trials made on two similar houses, each 20 x350 feet, equally exposed, one heated entirely by steam and the other heated entirely by hot water, it was found that 25 per cent. was saved in fuel in the house heated by steam over the hot water house."

As presenting the general advantages of steam heating, the following extract from a recent essay on the subject, will prove of interest to those having greenhouses.

In warming greenhouses with steam, when the sun shines strong and the temperature rises, simply closing the valve, instantly stops the heat from the steam pipes, and, in the best and most modern of self regulating steam generators, likewise checks the production of steam and consumption of coal. Steam pipes are invariably the same degree of warmth no matter how remote from the boiler. Hot water pipes, on the contrary, are liable, if carelessly set, to become much hotter nearer the boiler, and rapidly grow colder the more distant they are, so that all parts of the greenhouse are not given an equal temperature.

As to care in running, boilers are now constructed with a magazine feeder, so that no attention is required from evening until morning, automatic dampers and drafts perfectly regulating the steam and fire. In piping houses for steam, the overhead system is generally used, as it gives a more natural radiation downward upon the plants, prevents the cold air next the glass falling upon the plants, melts the snow sooner, thus allowing more sun heat, and the pipes are more easily put up. In propagating houses of course all the heat is put under the benches.

The number of lineal feet of different sized pipes sufficient to make ten square feet of radiation are as follows: 1-inch pipe 28 lineal feet, 1¼-inch pipe 24 lineal feet, 1½-inch pipe 20 lineal feet, 2-inch pipe 16 lineal feet, 2½-inch pipe 13 lineal feet, 3-inch pipe 11 lineal feet.

Careful and repeated tests, by well known florists and steam engineers, in different parts of the country, have established the following proportions, for amount of radiating surface as compared with glass surface. For Canada, Northern New York, New Hampshire, Vermont and Maine, use ten square feet of radiating pipe surface for thirty-five to forty square feet of glass. For the Middle States and balance of New England use ten square feet of radiating pipe surface for forty to fifty feet of glass. For latitude of Philadelphia use ten square feet of radiating pipe surface for fifty to sixty feet of glass. For Baltimore, Washington and the South use ten square feet of radiating pipe surface for 60 to 80 feet of glass. This will be found to give a temperature in the coldest winter weather of fifty degrees. A higher temperature can be secured by the addition of sufficient radiating surface.

As illustrating the above points, the writer saw, at the establishment of Mr. James Morgan, Cayuga Co., N. Y., two steam boilers in use, the pipes arranged by the overhead system, which were said to be very satisfactory, much more so than the previous use of hot water; a dwelling house was also heated with the same fuel.

THE COMPLETE GARDEN.*

XX.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 278.

EDIBLE NUTS.

A complete garden should contain some, if not all the nut-bearing trees hardy to its locality. The trees are mostly ornamental and require but little attention; still they will repay a fertile soil and cultivation.

Almonds. Near relations of, and in many ways resembling the Peach. These choice nuts, if we except the soft-shell sort, will thrive wherever the Peach does and with the same treatment. They are usually, for the North, budded on Plum stock. The soft-shell is only adapted to the Southern States, except it be trained against walls in warm situations. For general culture, the best varieties are the Common Sweet, Long, Hard Shell, and Bitter Almonds.

Chestnuts. The universally liked Common Sweet Chestnut will succeed in most parts of our country if given a light, sandy soil. The Dwarf or Chinquapin Chestnut is useful in small gardens, growing from six to ten feet high. The Spanish Chestnut is much larger than the Common, but somewhat more delicate; it succeeds, however, as far north as New York State.

Filberts. These are improved varieties of the European Hazel-nut, being three or four times the size of our native Hazel. Some of the English varieties are quite satisfactory in our gardens. After planting allow no suckers to grow, and keep to a low bush-like form, somewhat like Gooseberries cutting back the young wood about one half each spring. The best kinds are Cosford, Coburg, Dwarf Prolific, Red Skinned, and the White.

Walnut. The Black Walnut (*Juglans nigra*) and the Butternut, (*J. Cinera*) succeed

in fertile soil everywhere. The English Walnut or Madeira nut (*Juglans regia*) is a desirable nut for the Southern States, and if the young trees are protected for several years, in the North, becomes quite hardy even here. Of these, other than the Common, the Thin Shelled is the best, while for garden purposes, the Dwarf Prolific is useful; it can be easily protected where required, and commences to bear at a height of three feet and at three or four years of age.

Hickory Nuts. These nuts in several species are well worthy of cultivation, both for their delicious kernel, and for the handsome character of the trees.

THE PEACH.

The Peach is noted for the beauty, deliciousness, and large size of its fruit, and the prolificacy and early bearing of the trees. It succeeds almost as far north as the Apple, but is rather more particular as to its requirements.

Soil, Cultivation, etc. For Peaches, the best soil is a deep sandy or gravelly loam, with a well drained subsoil; the poorest a cold clay. The trees succeed in a very light soil but generally strong loams will produce larger and better flavored fruit. A northern exposure is to be preferred, as it retards spring growth, thus clearing danger from late spring frosts to the early fruit buds. Clean culture for the trees is the rule of the most successful growers, although on some light thin soils, the trees do well if no cultivation is given till after the first crop is borne, and even then only shallow culture, applying liberal top dressings of fertilizers. The best manure undoubtedly is wood ashes, either leached or fresh, in good quantity yearly.

Pruning. Pruning is of much importance with this fruit, because the sap in this tree tends more to the extremities of the branches than in any other fruit. Without pruning, a straggling form with long bare limbs having only a bunch of foliage at the tip is the result. By the *shortening-in* method of pruning, now most in vogue, and which I shall describe, the pruning aims to supply every part of the tree continually with young wood, full growth, and imparting compactness to the form. *First year's Pruning.* Yearling trees are the best to plant, setting them out only in the spring. Cut these back to a single switch between two and three and a-half feet according to the length of the trunk later desired. During the first year allow but three shoots to grow and these for forming the frame of the future tree. *Second year.* Early in the spring the tree branches of the previous year are cut back to fully one half their length. The aim, this year, should be to raise but two shoots to each of the present branches, one on each, for continuing the branch. As nearly as possible these should be evenly distributed, and with a view to letting sun into the trees. *Third year and later.* Cut back all the shoots one half, early in the spring. Evenness of growth throughout the tree should be secured by summer pruning of the soft shoots. In later years when the head has been formed as above, the pruning should be limited to cutting back annually, all young bearing shoots to one half their length for inducing the formation of other bearing shoots at their base, and to cut away those that have borne a crop. To neglect a branch for even one year will place it beyond its best condition, as it reaches, a comparatively dormant state, while if it were cut back two new shoots will start at the base of each shoot giving a growth for use the following year.

Varieties. From the list of old standard, budded kinds that have become firmly established on their merit, I present a list of kinds worthy of general culture:

EARLY	MEDIUM.
Alexander.	Foster.
Beatrice.	Conkling.
Coolidge's Favorite.	Old Mixon Free.
Early York.	Snow.
Hine's Surprise.	LATE.
Rivers.	Crawford.
Mountain Rose.	Salway.
George the Fourth.	Stump the World.
Crawford.	Ward.

The Nectarine. This fruit is really a variety of Peach, differing from the common type in having a smooth skin, and is hardly its equal in quality; the flavor being less rich but somewhat spicy and decidedly agreeable. It is well worth growing wherever Peaches do well. The treatment is identical with that of the Peach. There are a number of varieties, among which the best are: Hunt's Tawny, Hardwick, Early Violet, Boston, Elruge, New White, and Red Roman.

A SHAPELY DWARF PEAR TREE.

THE PEAR.

The Pear is the most luscious of all hardy fruits of an equally long season, and a universal favorite, both for dessert and for culinary uses. In good soil and under fair cultivation, the tree is vigorous in growth and profuse in bearing. Indeed in the last named respect I consider it is one year with another even more reliable than the Apple. The season of the Pear is from August to March in the north.

Pear culture has to do ordinarily with two classes of trees, namely, standard Pears and dwarf Pears. The former class is produced by propagating the Pear cion or bud on a Pear stock; the latter by budding the Pear on a Quince stock, a union which takes place readily with most varieties, and which leads to the producing of a tree much dwarfed, but prolific and early to come into bearing. Some varieties, notably the Angouleme (Duchess de) succeed better as dwarfs, than otherwise, while Bartlett, Seckel, and some others, do very indifferently as dwarfs. From a long experience, I am convinced that the better course in Pear culture is to aim for what may be called half-standard trees. These are obtained by planting dwarfs deep enough to bring the point of union between the Pear and Quince a little under the ground, by which Pear roots will form to induce increased size and longevity to the tree.

Soil and Culture. Almost any good soil that can be rendered fertile will answer for the Pear tree, but still the tree has some preference. The standard class thrive best in a loam not too heavy, and which has had the subsoil broken to a depth of 18 or more inches to accommodate the long forked roots of the Pear. The soil, for either standards or dwarfs, should be well underdrained. Dwarf Pears seem to prefer a loamy soil having a clay subsoil. In this class the roots are more fibrous than and not so deep rooting as in standards. Half-standard trees have both kinds of roots referred to. The fertility of the soil for all classes is of great moment, and after an orchard has been established in well enriched ground, it may be kept up by top dressings of manure each autumn, and a manure mulch applied in June of each year. Wood ashes are an excellent fertilizer. Dwarfs need rather more liberal culture than standards. A common resource for securing both a deeper soil and better drainage is to have the tree rows on slight ridges, with furrows midway between. Such ridges may be made by running the plow twice in the same furrow, turning the land first from and then twice to the line, for the row of trees using the subsoil plow in the bottom furrows, or in gardens trenching with the spade instead. While about 20 feet apart is right for standard Pear trees, and 10 to 12 feet apart for dwarfs, it is not uncommon to plant both kinds in one orchard, setting the former in rows 18 feet apart and 24 feet in the row, and alternate with dwarfs in the row.

Pruning. The first aim should be to secure a well-balanced head. A Pear tree will always have a leading branch, and this should proceed from a bud in the direction of the prevailing winds, a matter easily governed by cutting the top shoot back to near such a bud when the young tree is being planted. Six or seven branches should, in the young tree, be allowed to constitute the frame work of the head. The head should be well up from the ground, and in order to cause it to spread somewhat, for admitting air and light the cutting back should always be done to an outside bud. After the foundation of the head has been provided little pruning is needed beyond cutting out branches that appear in bad positions, until the trees have reached a dozen feet or more in height in standards, and somewhat less in dwarfs, by which time they will be somewhat bushy, and then pruning should be more earnestly begun. This on the simple basis of trimming out some of the excessive interior branches annually, and heading back the outer branches rather severely, to induce the formation of fruiting spurs along the sides. From the fall until in early spring is the most suitable time for pruning the Pear.

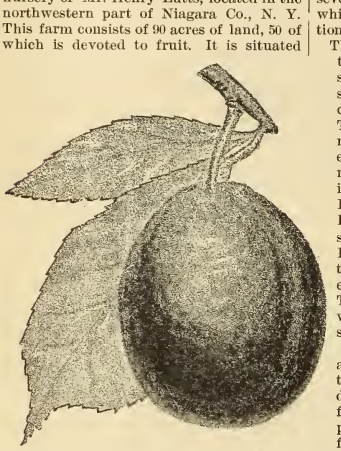
A Selection of Varieties. In the following list the kinds that are particularly well suited to dwarfing by budding on the Quince stock are preceded by a *.

SUMMER PEARS.	Summer Doyenne.
*Andre Desportes.	Tyson.
Bartlett.	AUTUMN PEARS.
*Clapp's favorite.	*Angouleme.
Giffard (Beurre Giffard).	*Belle Lucrative.
*Margaret.	Beurre Bosc.
Flemish Beauty.	WINTER PEARS
*Howell.	*Anjou (Buerr de).
*Louise Bonne of Jersey.	Clarigeau (Beurre).
Seckel.	*Lawrence.
Sheldon.	Winter Nelis.
*Superfine (Beurre).	*Easter Beurre.
Souvenir du Congress.	*Josephine of Malines.

(To be Continued.)

Niagara County Notes. The Fruit Farm of Henry Lutts, Youngstown.

On the 18th of August last, the writer with a friend took an eight mile drive from his home at LaSalle, to the fruit farm and nursery of Mr. Henry Lutts, located in the northwestern part of Niagara Co., N. Y. This farm consists of 90 acres of land, 50 of which is devoted to fruit. It is situated



Niagara Plum. Natural size of Average Specimen.

about two miles from Lake Ontario, and about one half of that distance from Niagara river at a point several miles from its mouth. The soil of the farm is a clay loam. There is enough of undulation to the surface to admit of easy drainage, and thus far, surface drains have been the main reliance for carrying off excessive moisture.

Mr. Lutts divides his attention mainly between the culture of Pears, Peaches, Plums, and Grapes, but having also an Apple, and Quince orchard, besides considerable land devoted to the culture of nursery stock. His main Pear orchard consists of 1,000 trees of the (de Angouleme) Duchess variety, set out seven years ago, but he also has numerous other sorts under orchard cultivation. The Angouleme trees being dwarfs, stand at 18 by 10 feet apart.

At the time of this visit, the Pear crop of the place was most promising, the Bartlett variety especially, having begun to show up finely as their time of maturity was nearing. In marketing this variety, Mr. Lutts said, he makes three pickings of the fruit in the season, taking the ripest at each picking. The proprietor depends on marketing his fruit mainly in Buffalo, Toronto, and at Niagara Falls, sending to the first and last named places directly by wagon.

In Pear culture Mr. Lutts pursues a course equivalent to clean culture. This he does by plowing the land about the latter part of August, turning the furrows toward the tree row, and sowing Rye to the ground, which is then allowed to occupy the space until early spring when it is turned under, plowing away from the tree now. Then in May or June, a mulch of manure is applied about the tree, to remain until the August plowing, when this is turned in. By such a course the land receives a crop of green manure and of stable manure annually, it is kept well furrowed between the tree rows from fall until spring, and the cultivation is simply managed. Moreover the crop of young Rye growing on the ground serves to prevent injury to falling fruit in a considerable degree. This system of culture is also applied to Peaches and Plums, after the young trees have passed their first year of growth. No blight has troubled this Pear orchard for years.

In pruning Pears, Mr. Lutts allows much freedom of growth in the young trees, observing, however, to have the main branches well located, and then when bearing begins, he cuts back the ends of all branches rather severely to induce plenty of side spurs, of which he later trims away a good proportion, if they seem to be too numerous.

The Plum orchard of some acres is one of the finest looking and most profitable sections of this fruit farm. The trees stand fifteen feet apart each way. The culture is similar to that for Pears. The Niagara is one of the favorite and most profitable varieties, being large, early, and productive. A medium specimem of the fruit is figured herewith. It is a blue Plum, and is believed by Mr. Lutts to be the result of a cross between Duane and Lombard. The tree presents the hardiness of the Duane. Mr. Lutts' other favorite Plums are Washington, Jefferson, Magnum Bonum, Quackenbos, Reine Claude, and Italian Prune. The Reine Claude is an excellent late variety, coming in late in September, is sugary and a heavy bearer.

Questioned about his management against Plum ailments, Mr. Lutts said, that for rot, he relies on removing the diseased specimens as soon as they appear; for black knot he prunes off the effected parts immediately they are discovered; for curculio, jarring is considered an all-sufficient remedy. Concerning the last process, the insects are jarred upon sheets and burned; when they are numerous he goes over the trees six or eight times, if less plentiful, usually half as many times suffice.

The Peach is not as perfectly at home on the heavy soil of Mr. Lutts' home farm, as are some other fruits. Still his orchard of these trees is thrifty and the trees heavily loaded with fruit. In common with his neighbors, the proprietor cares little for Yellows, by using the simple safeguard of setting the trees on land free from wetness, and by promoting healthfulness by free culture and fair manuring. No other crops are grown in his orchard excepting green ones for plowing under. On this soil he is particular to ridge the earth into lands in August, with a furrow for surface drainage midway between the rows.

Mr. Lutts grows the standard varieties of Peaches, with the Crawfords as favorites for main crop. Among his best early market Peaches he includes Alexander, Arkansas Traveler, Hine's Surprise, and River's early. Hine's Surprise is the earliest for store and a great favorite for marketing. Its flavor is first-class, and it is a profuse bearer, the trees giving, in some instances, as much as three baskets apiece by the third year.

The Quince section of this orchard is in splendid condition, as is also the vineyard of two acres. In Quinces the favorite variety is the Angers. This is true indeed to an extent that will lead the owner to graft many trees of other varieties with this. One strong point in favor of the Angers is that it is but slightly disposed to suffer sun burn. In pruning these trees, Mr. Lutts cuts out the point rather severely, and by thus getting rid of many fruit spurs, the thinning of the crop is also effected.

In the vineyard, Concords and Niagaras are the preferred varieties for market purposes. As for pruning the vine, Mr. Lutts depends on cutting the wood closely in winter, and in summer trimming in the main by removing "suckers" at blossoming time.

In Mr. Lutts' nursery department, the raising of young hedge plants is a leading specialty. To show what this enterprising nurseryman is doing in the way of stocking our country with live fencing material, it may be remarked that he has sown five tons of Honey Locust seed, for hedge plants, in one season. This species engages his attention most largely; the plants can be furnished cheaply, and in four years after planting; they make not only a complete but a very handsome fence.

PLANTING STRAWBERRIES IN THE FALL. Successful fall setting depends on the character of the soil, location, etc. If it be dry, they can be set any time up to November, and come on well in the spring, but otherwise if wet are liable to heave. The gain in fall setting on favorable soils, is that they make a larger growth next season for the first full crop for the year following, than those set uext spring, and the drought is not so apt to affect them. For family garden beds, we would recommend setting this fall, and protecting with straw or Evergreen brush. We would not purchase plants from a distance, before last of September or in October, for they are not in first-class condition for good work until then.

Received at this Office.

CATALOGUES, ETC.—FIGURES INDICATE PAGES.

Lewis Roesch, Fredonia, N. Y., Grapes, etc., 10.
Dan'l B. Long, Buffalo, N. Y., Holland Bulbs, 4.
Frank Ford & Sons, Ravenna, O., Small Fruit, etc., 8.
Wm. C. Wilson, Long Island City, N. Y., Florist, 16.
E. G. Mendenhall, Kinmundy, Ill., Nursery, 8.
J. Jenkins, Winona, O., Nursery, 4.
Ant. Roozen & Co., Haarlem, Holland, Bulbs, 122.
Howard & Lardner, Shenandoah, Iowa, Plums, 4.
Fred. W. Kelsey, New York City, Nursery, 2.
W. A. Mason, Crystal Springs, Miss., Strawberry, 2.
West Jersey Nursery Co., Bridgeton, N. J., Strawherry, 6.
Albert Benz, Douglaston, N. Y., Pansies, 4.
J. M. McCullough's Sons, Cincinnati, O., Bulbs, 40.
Haage and Schmidt, Erfurt, Dutch Bulbs, 44.
R. J. Halliday, Baltimore, Md., Florist, 4.
Culinary Grape Co., Dayton, O., Grapes, 2.
Thos. S. Ware, Tottenham, Eng., Bulbs, etc., 280.
Pierce, Butler & Pierce, Syracuse, N. Y., Boilers, 10.
H. S. Miller & Co., Newark, N. J., Fertilizers, 56.
O. R. Kreinberg, Philadelphia, Pa., Pansies, 8.
Thomas G. Zane, Chew's Landing, N. J., Small Fruit, 4.

MISCELLANEOUS.

Bulletin No. 2, N. Y. Ex. Station of Cornell College, J. P. Roberts, Director, 12.

Journal No. 7, of the Muskingum Co., (O.) Horticultural Society, containing reports of July meeting, 8.

"The Conditions of Tropical and Semi-Tropical Fruits in the U. S.," Bulletin No. 1, Div. of Pomology, U. S. Dep't of Agriculture, H. E. Van Deman, Chief, 149.

Bulletin No. 2, Ill. Agricultural Exp. Station, Selim H. Peabody, Champaign, President, 24.

"Insect Life," Bulletin Nos. 1 and 2, of a series to be published at regular periods, Div. of Entomology, U. S. Dept. of Agriculture, C. V. Riley, Chief, 32.

Report No. 1846 U. S. Senate Committee on Classification of mail matter and rates of postage, 20.

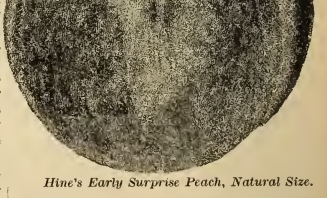
N. J. Experimental Station, Bulletin No. 8, Geo. H. Cook, Director, New Brunswick, N. J. 16.

Thirteenth Annual Report of the Meeting of the American Association of Nurserymen at Detroit, Mich. June, 1888, numerous illustrations of Pomologists, C. A. Green, Rochester, N. Y., Secretary, 120.

N. Y. State Experiment Station, Bulletin No. 10, new series, Peter Collier, Director, Geneva, N. Y., 8.

Transactions of the Mass. Horticultural Society for 1887. Part 2, Robert Manning, Sec'y, Boston, Mass. 240.

Annual Report of the Division of Forestry, U. S. Dept. of Agriculture for 1887, B. E. Fernow, Chief of Division, 156.



Hine's Early Surprise Peach, Natural Size.

Bulletin No. 30, Mass. Exper. Station, C. A. Goessmann, Director, Amherst, Mass., 16.

Copy of the Bill passed by the Legislature of Mass., May 3, 1888, requiring all who manufacture or import, either abroad or from other States, Commercial Fertilizers or material for similar purposes, to secure from the Director of the Mass. Exp. Station, an analysis of each brand offered for sale, under heavy penalties.

California Experimental Station, Bulletin No 80, E. W. Hilgard, Director, Berkeley, Cal., containing account of progress of work, 4.

Notice of Ohio State Horticultural Society, Centennial Meetings during the Exposition at Columbus, O., beginning Sept. 2, Geo. W. Campbell, Secretary.

Michigan Crop Report No. 82, with report of Michigan weather service, Gilbert R. Osmuns, Sec'y of State, 31.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. NOVEMBER, 1888. No. 2.

It seems only yesterday Summer was here!
The landscape was green and the sunlight undimmed!
The flowers were garbed in their gaudiest gear,
And happiest harmonies all the birds hymned.
But now hath the Maple a gold that it spurns,
And cast in the dust as the season draws nigh,
That ushers in Death to the year, and returns
To earth all the beauty begotten to die.

—*J. D. Vanderpoel.*

"PROTECTION" is the main issue in the garden now.

WHY SHOULD THIS BE? Mr. Idell, the New York Commission Merchant, tells us that Black Currants were a scarce fruit in their market during the past season.

CAUSE ENOUGH. On the kill or cure principle, a Nova Scotia reader tried boring a small hole in the trunk of a Plum tree, and filling it with parafine oil, as a cure for black knot. Now he reports that the tree is dying.

THE GRAND OLD Elms of New England seem to fill a recent writer with alarm, because occasionally one has been known in a storm to topple over without a moments warning. We have lived all our days near a city that can boast of thousands of large shade trees, and have yet to hear of the loss of life from a falling tree.

NEXT YEAR'S WORLD'S FAIR. A World's Fair of great magnitude will be held from May 5th, to Oct. 31st, 1889, in Paris, France, and Congress has appropriated $250,000 to meet the expenses of our exhibitors. Horticulture is to have a department of its own, and this we trust will be well represented, in view of the importance of the fruit exporting industry to Americans. Particulars may be obtained of Commission General W. B. Franklin, 35 Wall St., New York.

PLINEY W. REASONER. The terrible Yellow Fever which swept over Florida during the past summer, carried off this brilliant young horticulturist on September 27th, at his home in Manitee. Mr. Reasoner was but 25 years old, and had by his business enterprise, as the head of the Royal Palm Nurseries, and as an industrious correspondent of the horticultural press, secured a position as a horticulturist quite rare for one of his years. He had served the horticulture of his section well as an officer of several of the great expositions in the South in recent years. Mr. Reasoner was a native of Illinois, but had been a resident of Florida since 1881. His untimely death will be widely deplored.

LATE QUOTATIONS FOR APPLES IN ENGLISH MARKETS. Under date of Oct. 25, we are advised by DeLong, Mayer & Co., Apple exporters, that the demand for first-class winter fruit is good, and that prices since the first of the month have had a tendency to rise, which they believe will continue for a time. The receipts at the various ports were on the 15th, inst, 59,000, on the 22nd, inst, 75,000, while on the 25th they were only 5,225 barrels. The prices at Liverpool for the latter date, per barrel, was for Baldwins, $2.73 to $3.33, Greenings, $2.67 to $2.91, Newtown Pippins, $3.33 to $5.21, Hubbardsons, $2.36 to $2.66, Wagners, $2.90 to $3.19, Tallman Sweets, $2.55 to $2.67, Northern Spies, $2.67 to $2.91.

PASS THEM BY. The men who have recently turned up in Buffalo and other large cities and towns, and are soliciting trade for supplying or moving large shade trees with a patent tree-mover which they exhibit, had better be left alone. The writer of this recently put on the air of a probable customer and interviewed one of these chaps. He was ready to handle any tree under 16 inches diameter of trunk, and warrant it to grow without marring its beauty by pruning so much as a single branch. Not only that, but he claimed he could move them as well in mid-summer as any time, and without the wilting of a leaf. His terms for transplanting large trees and warranting them to grow was from $25 to $35 apiece, payable two thirds down and the balance within a year if the tree grew. Of course any one who will make the pretension that this fellow freely did, is unreliable and not fit to be employed. Moreover he never expects to call for the contingent one third of the price, its the two thirds down that he is after. The owner will keep the one third, and it should at least pay for removing the dead trees which the two thirds procured.

INTERESTING POTATO CULTURE. Last spring, Mr. E. S. Carman, of the Rural New Yorker, undertook to show what he knew about growing large yields of Potatoes, by his trench method of culture. The land chosen for the test had, for 12 years, been devoted to Potatoes, and which in that entire time had not received over 50 tons of horse manure per acre. On April 20th, the seed, already sprouted, was put into trenches, which to begin with were eight inches deep, but which had received a scattering of Commercial Potato Fertilizer, at the rate of 800 pounds per acre, in the bottom, and in this, two inches of soil for a seed bed. The trenches were three feet apart from center to center, the seed pieces, having at least three strong eyes each, were placed at one foot apart in the row. Over the seed was scattered another lot of fertilizer equalling in amount that first applied, and also some sulphur to repel wire worm. Then the trenches were filled even full of soil. Shallow level culture prevailed throughout the season. On September 28th, the Potatoes of which there were three varieties, were dug in the presence of a committee of five reliable men, who reported on the result as follows: Variety No. 4 yielded at the rate of 644 bushels, No. 2, 1076 bushels, and No. 3, (which was a comparative failure, owing to the ravages of the flea beetle in the growing season,) 276 bushels per acre. The test is to be repeated on a large scale next year.

New Dwarf French Cannas.

PETER HENDERSON, JERSEY CITY HEIGHTS, N. J.

These, introduced first into this country from the establishment of M. Crozy, of Lyons, France, three years ago, are proving to be some of the grandest plants ever introduced into our gardens.

This new class differs from the old Cannas (which are mainly used in summer, for the tropical effects produced by their grand foliage), in growing only from two to four feet in height, blooming continually from midsummer until October. The flower spikes are from six to 12 inches in length, running through all the shades of crimson, scarlet, carmine, orange, and yellow, many of them so spotted and mottled as to resemble some species of Orchids.

The flowers, gorgeous in themselves, are greatly enhanced by the rich tropical foliage by which they are enveloped; but these new Cannas are still expensive, and will continue to be for a year or two yet, until stocks for propagation can be secured.

The plants produce seed freely, but unfortunately the bulk of it is imperfectly fertilized. The seed, to all outward appearance, is plump and sound until cut open, when it is found that only about one in twenty shows the seed germ to be perfect. Out of 10,000 seeds that we imported last year, only about 500 plants were produced, but among these we have obtained some splendid sorts, surpassing even the named plants that were imported at the same time at a very high price.

Canna seed should not be started in this latitude, even in the greenhouse or hot-bed, until the middle of May. At that season (if the germ is perfect) they will vegetate, and grow to make strong flowering plants in 60 days from time of sowing.

Some Errors in the Garden.

WM. F. BASSETT, ATLANTIC CO., N. J.

"SQUASH BORERS." Walking with Mr. T. Greiner recently in his garden, in Monmouth Co., N. J., in which are conducted numerous careful experiments, we came to some Melon vines which had wilted down and were dying, as so many of this family do. Then the old theory of Squash borers came up for discussion, and a comparison of experience showed, that neither of us had ever been able to find any indications of borers in such cases, although we had repeatedly made careful examination, and on various occasions it was determined to make a thorough search once more, and the vines were carefully cut away in slices, with but the same result. Various insects were found around and under the vine, but they were evidently brought there by dampness and the already diseased condition of the plant.

The difficulty appeared to be more in the bark just at the surface of the ground, and we pronounced it fungus, but to make sure, a section of a vine was mailed to Prof. Scribner; he reported the disease fungoid, but says it is not yet much understood, although the department sent an agent to South Carolina last year to investigate. It seems hardly credible that the whole horticultural world should accept such an error for 30 years, but it goes to show that, in the absence of any better explanation, plausible theories are often taken up, echoed and re-echoed without proper investigation.

WIRE WORMS AND POTATOES. The wire worm theory, as causing scabby Potatoes, is another preposterous idea which was taken up by some editors who are generally sound.

Several correspondents of an agricultural paper advocated this view a few years ago, and the editors endorsed them. I wrote an article at the time showing conclusively that it could not be wire worm, because they are never found in our soil to any extent, and that they invariably do their eating by boring a small hole. No notice whatever was taken of this communication.

Soon after, in digging early Potatoes, in land that was wholly dried out, so that wire worms could not exist, if they had ever been there, some were found with incipient scab, and I sent a specimen by mail with a communication on the subject, which also went into the waste basket, and some time after the editor stated that there were two kinds of scabby Potatoes—one produced by wire worms and one by fungus.

A certain amount of guess work and crude theory, almost necessarily attends the investigation of many questions in horticulture before their nature is understood, and the publication of these serves a useful purpose in directing attention and farther inquiry to the subject; but those whose pride of opinion is too great ever to acknowledge an error, should be very careful how they commit themselves on such a matter.

MIXING OF MELONS. Mr. Greiner has noted some interesting results on this point. As his grounds are limited in extent, there is no chance to keep different varieties far separated, and sometimes it has seemed desirable to plant seed from those which have grown along with other varieties.

For instance the Emerald Gem Muskmelon he has found to be much superior in quality to any other he has ever grown; and such varieties as Chicago Market, Millers' Cream, etc., he estimates as better to sell than to eat. But seed saved from the Emerald Gem which was grown with these, came nearly true, and even after planting a second year with other varieties, the seed still gave but few mixtures, and these, although differing in outward appearance, still retained the flavor of Emerald Gem; a similar result followed with a small early Watermelon after growing with Citrons.

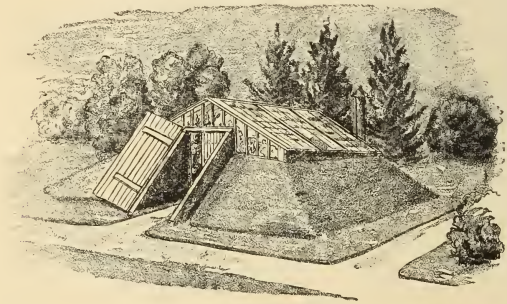


FIG. 1. IMPROVED PLANT PIT WITH AIR FLUE.

An Improved Plant Pit with Flue.

The following description, with a sketch, was sent us by a correspondent from the State of Texas whose address has been mislaid. The simple idea is, a cold frame warmed some degrees above the outside temperature by air without fire heat. Its distinctive feature is an air flue leading from a point down the incline on which the pit is situated, through the earth mainly below the frost line, in order to temper the fresh air that is admitted, somewhat. A chimney for creating an air draft is also included as shown in the engravings.

In Figure 1 is given a view of the pit in perspective, showing also the manner of banking up with earth and the two doors at the entrance. The lower cut gives a lengthwise sectional view and shows the peculiar interior arrangement. In its construction there is first a pit, *b*, some four feet deep and about seven feet wide, as long as desired, of the shape shown. Above this the framework, *a*, is erected, resting on a foundation of stone. The sides of the house are banked up nearly to the top; above the bank, *c*, glass is used on ends and roof.

Some fifty feet from the pit, a trench two feet deep is dug and extended to the side of the pit, and opening into it from beneath the foundation. Five inch drain tile, *c*, are laid in the bottom, beginning at the pit and running to the surface at *d*, the ditch being filled in again. At the rear end of the pit, a ventilator pipe runs up from the pit, thus causing in all mild weather, when the pipe cut offs are open, a constant current of air to pass under the stage on which the plants stand. The cold air in its underground passage from *d*, through *c*, is said to become sufficiently warm to keep the plants from being harmed by the cold. Of course, only plants like Roses, in a dormant state, or half hardy and hardy sorts, are to be stored in a frame of this description.

The Onion Crop.

WM. H. YEOMANS, TOLLAND CO., CONN.

The Onion has been grown in this vicinity for years; there are Onion beds (so called,) that have been cropped without interruption for 30, 40, or more years; up to a few years ago there was one that had probably been cropped continuously for nearly 75 years, and what is peculiar about this course, is that it does not seem to deteriorate the crop in the least, but rather seems to be the best treatment that could be adopted.

Results go to show that there are certain climatic conditions that exert either a disastrous or a beneficial influence, as the case may be. The preparation of soil, manuring, cultivation, and general attention is about the same year after year, but, setting aside any effect of insect depredators, the growth and quantity of the crop is quite variable in different seasons.

Last season the crop set out with much promise; the young plants looked healthy and vigorous, and continued so until the season was well advanced, when the tops were attacked by a blight which seemed to be wide spread, that immediately checked the development of the bulbs, and the result was a large crop of small Onions; but this season the conditions, whatever they may have been, favored a continuously healthy growth, and a development of the roots in an unusual manner; inasmuch as both of these conditions existed without any apparent cause, we are led to the conclusion, that the crop may be affected, favorably or unfavorably, by imperceptible conditions.

Pears, Persimmons and other Fruits.

S. MILLER, MONTGOMERY CO., MO.

The LeConte Pear I fear will not stand the test, as some that were gathered at the proper time and ripened according to rule, got soft in the middle first, an unpardonable fault in a Pear.

The Persimmon Seedless was sent to me as such, yet there are a few seeds in some. The St. Thomas will not be ripe for some little time yet, while some of the Seedless and Josephines have ripened and fallen. The one got for Early Golden is not so early as some others. The Ruby, although not large, is an excellent one and dried on the trees well.

The Persimmon is worth more attention than it has thus far received. We have them ripe here now, and will most likely have some until well into February.

DeSoto Plums have ripened splendidly the season just now passed. It is nearly as large as Wild Goose, and much better in quality. Golden Beauty has also ripened a full crop, free from curculio or gouger marks, and is sweet and good. For market however, it should be gathered before ripe, as it will drop as soon as it becomes the least soft.

The Smock Peach is fruiting for the first time, and one before me measures just 11 inches in circumference and is a beauty. October Beauty is also loaded with fruit, but I fear we will get a frost ere it ripens, as the weather threateus a visit of old Jack.

In my fifty years of fruit growing, never was I favored with such a splendid crop of all kinds of fruit that grows in this latitude.

The largest Pecan Nuts in the North, heretofore, have been received from Texas and Louisiana. But a year ago I learned of a large one not far from here, and received some of the nuts which were as large as any from the South. These will no doubt prove hardy, while those from Texas are not; a friend of mine invested $30 in nut trees from Texas which freeze every winter, and are now no larger than they were when he got them five years ago. I recently spoke with the gentleman who owns the tree of those large ones here, and engaged the crop, which I will keep in dry sand to distribute to those who wish to try them.

They should be planted at once where they are to remain, in which case they will usually bear in six or eight years I am told. Those who wish to procure any had better let me know in time, and the number they want, under a half pint, as no one can get more than that. Otherwise some would monopolize it and prevent its dissemination.

The Hybrid Pecan grafts of Nussbaumers have made a handsome growth, and may bear fruit next year. As mentioned in a former number, all my Hickory grafting of last spring failed, hence I have no grafts for distribution.

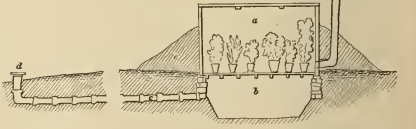
A Protest Against Exaggerated Illustrations and Descriptions in Catalogues.

A. T. GRANT, WORCESTER CO., MASS.

This subject is one about which I have never as yet seen anything written. It bears on the matter of the pictorial exaggerations in the catalogues of many dealers. Does the gardener or fruit grower think, when looking over a catalogue to select seeds or plants, that he is going to get car loads of Watermelons of 119 lbs. each, Onions of 5 or 6 lbs., Potatoes to cover the ground after being dug, so completely that they could be gathered best with the horse rake? If he thinks such things are to be common to him, after buying seeds of Mr. So and So, why, he will be mistaken.

If these things cannot be, why do dealers illustrate in this way. I have at hand now a catalogue from a responsible firm, showing a Geranium with 34 clusters of bloom in sight and a small plant at that. I find most everything in this way; how can the buyer get any knowledge of a variety by these cuts.

We certainly want new sorts, we want varieties that are free bloomers, but when the dealer gives us to understand that 50 clusters of bloom on a small Geranium are possible, we get disgusted, and I for one cannot trust other statements, some perhaps that are true. I have to buy seeds, and must have the earliest and best kinds for market. I want a way to find out which are,



LENGTHWISE SECTIONAL VIEW OF PLANT PIT AND FLUES.

at least, the best to try, and when any dealer decides to give us this information in his catalogue, I want to hear from him.

I hope that this evil referred too may be done away with before long.

A True National Flower. The Perennial and Other Phloxes.

We would ask those members of the Society of American Florists, and all others who are interested in the question "What shall be styled our National Flower," why

not decide on the family of Phloxworts, of which the numerous beautiful Phloxes proper comprise the greater number. It is a noble family of plants, perennials and annuals, and one which is as popular, perhaps more so, across the ocean than it is at home. Witness for example, a leading German seed catalogue which offers 133 varieties of Annual Phloxes, and of leading foreign plant catalogues which enumerate hundreds of named varieties of the Perennial group. And yet the genus is distinctively American, no species in cultivation being attributed to any other land. Is there another equally valuable and popular class of plants, of which as much can be said? The Phlox is indeed the National Flower.

But the object of the present article is to call attention more especially to the various perennial species and varieties of the Phlox genus. Than this class we have no hardy garden flowers that are more desirable, none that are more easily grown. And it is a pleasure to add a thing not often said about natives that there is not a weedy plant among them.

Concerning classification, some disorder prevails in the catalogues.—Let us look at this for a moment. For convenience they may readily be arranged into three groups, namely: The Low-growing or Tufted Phloxes, being spring bloomers; the Sub shrubby (or Suffruticosa) Phloxes, being summer bloomers; the Decussata (also termed Maculata) comprising the later flowering, erect growing Phloxes. With a proper selection from these, and some reliance on the Annual section, we may have Phloxes in bloom almost from April until frost.

Of the Low-growing or Tufted sorts (shown in the foreground of the annexed illustration), the Moss Pink (*P. subulata*) with narrow moss-like foliage, covers the ground with a mass of rosy flowers in April and May; and a white variety when in bloom is very showy; a rather rare sort, and one of the finest of this group is the Starry Phlox (*P. stellaria,*) with smooth stems, six to eight inches high, narrow leaves, and flowers white with a bluish tinge, each lobe being cleft. The Creeping Phlox (*P. reptens*) is a neat grower, with purple flowers; the Procumbent Phlox (*P. procumbens*), a hybrid of the Moss Pink and the Lovely Phlox (*P. amœna*) having lilac colored flowers in May, and one called The Bride (*P. setacea*), a dwarf compact grower, which is covered with conspicuous white blooms, having a red center, constitutes the early section.

All of the foregoing are especially suitable for dry exposed places, and for rockwork. Although perfectly hardy, these tufted sorts are liable to receive harm during warm open spells in winter, hence some covering is beneficial at this season. They are easily propagated by cuttings taken off during July, or by division of roots.

Following on the early blooming section referred to, come the fragrant Summer Phloxes (*P. suffruticosa*), beginning to bloom just after the Roses. Throughout July this division, with its delicate chaste and sweet-scented flowers are at their best, and worthy forerunners of the late varieties. In general their management is identical with the section next to be referred to, except that during the winter a slight covering will be of benefit, just as in the preceding section.

The Late Flowering Phloxes, include many species, but which are not always clearly distinguishable, because of the effects of much hybridizing. These flower most freely during July and August, but by pinching the shoots of some of the plants about the first of June and again in July, the blooming season may be prolonged into late autumn. When the plants are two years old they produce their finest trusses of bloom, and the third year they should be fall lifted, divided and transplanted, though better results are obtained by keeping up a succession of young plants from cuttings each year. There is almost an endless variety of colors, tints and markings in the flowers. The plants vary in height from one to four feet, the foliage from narrow and shining to dull and broad.

A GROUP OF HARDY PHLOXES.

The flowers of this section are produced in pyramidal panicles, as is well shown in the engraving, often six inches across. Of self or one-colored sorts, there are white, salmon rose, lilac purple, violet, and crimson of various shades.

The Phloxes succeed in any good deep soil, and enjoy greatly a heavy manure mulch during the summer, together with an occasional dose of manure water during their season of growth. A winter covering is also of benefit.

Pot culture of the early sorts is satisfactory with using strong clumps; lift late in fall and store in a cold place until brought to mild heat, replanting after blooming.

A good collection of varieties and species, aside from those incidentally specified above, might embrace the following distinct ones. Of the dwarf section are, Compacta, Fairy, Model, Vivid, Georgia, Darwin, Dr. La Croix, Lilliput, Rosinante. Among the fragrant pure white varieties are Countess of Galloway, Lady Napier, and Pearl. Both early and late are in the following of the Decussata section; Andre Leroy, Trancois, Coppee, Gambetta, Leclair, Lothair, Phoceon, Queen, Reve d'Or. Other fine species are P. bifida, P. Carolina and P. Douglasii var. diffusa.

Some Points and Pointers on Fruit Growing.

A. P. REED, CUMBERLAND CO., ME.

Spot Disease. By way of experiment, which should never cease until at least some points are gained, I would suggest a trial of whale-oil soap for thoroughly washing the trees; a comparatively inexpensive thing, which I think would show good results in the case of spot disease.

Mice injuring Trees. For mice gnawing trees, I have found that trees around which two or three shovelfuls of manure are thrown close up to the trunk, late in fall, are seldom troubled, and while this is a simple and effectual preventive, it is also very healthful for the tree; strengthening the little rootlets that come out near the trunk, and which are essential feeders.

Mulching. Manure put about a tree in this way, may be drawn away from the trunk during the summer, and after haying; a few Brakes are put around the tree for two or three feet out.

Plum Raising. While there are a good many Plums grown throughout the country, yet there are not nearly enough to supply the people. Wherever raised, no matter what the variety, any surplus finds a ready market at fair prices. They are as saleable as any garden product that grows as easily as the Plum does, and much more salable and profitable than many other things that are more generally grown. To like Plums is natural for nearly every one, to grow them is far from being common, as yet.

There are many kinds of Plums easily grown, and no fruit tree is more active in reproducing itself than this; and, even though the trees be almost entirely neglected, yet under such conditions I have known Plum orchards that were profitable; but the Plum will largely repay the best of cultivation, and it is a bad type of horticulturist that will let anything, so willing to do something, ever be so neglected. Ripe Plums may be eaten of very largely, with no injury, and no fruit is more healthful for immediate use or putting up for winter. To make a business of Plum growing, is to strike one of the most paying branches of horticulture in many parts of our country.

New Jersey's Cranberry Crop.

According to the Newark Daily Advertiser early in the season the prospective Cranberry crop bade fair to be a large one. Notwithstanding, vines not covered with water during the last winter were badly winter-killed, those which had been properly protected looked remarkably well, when the water was drawn off in the spring.

On many of the Cranberry bogs, fruit buds were developed in great abundance and gave promise of a large crop. But the unusual cool weather of the season placed

a check upon the perfecting of the fruit, and a large portion of the buds did not expand well. The crop is said to be between two and three weeks later than usual, and with the thermometer at 47½ degrees Fahrenheit,—being so cold as to render a fire necessary for comfort—they are not likely to catch up soon.

At the time this article was written, it was conjectured the crop would require favorable weather for the remainder of the season to perfect even a medium crop in New Jersey. But such would be no disadvantage to the growers, as a light or medium crop is much more remunerative than a very large one. A frost in May injured a number of bogs in the vicinity of New Egypt and Corkstown. The vine worm has been very destructive the past season, in fact quite as bad as it was a year ago.

The Kelsey Plum. By its Introducer in the East.

P. J. BERCKMANS, PRESIDENT AMERICAN POMOLOGICAL SOCIETY.

Early last spring, I spent several months in Florida, and had an opportunity of noticing the behavior of the Kelsey and other Japan Plum trees. The result of my observations were that the Kelsey found its most suitable section in the northern and western sections of Florida, and in the southern and middle sections of Georgia, Alabama, Mississippi, Louisiana, and Texas.

On April 1st, last, Kelsey Plum trees were still dormant at Tarpon Springs, on the west coast of Florida, but retained the leaves of the previous year's growth. On the 2d of April, at Orlando, the trees were just bursting into bloom; on the 6th, in Baker Co., I found the trees laden with fruit varying from one half to an inch in diameter. On March 24th, last, our trees near Augusta, Ga., had set a full crop of fruit, which was then from one quarter to a half inch in diameter, but three successive frosts destroyed the crop. From this it will be observed that in Southern Florida, the period of active vegetation extending late into winter causes the Kelsey to remain dormant for fully four weeks later than here, (400 miles further North,) where active vegetation ceases at a normal period.

In September, 1887, I carried some fine specimens to Boston; they were then matured after having been culled from the trees a week previously. This year our earliest specimens ripened by the middle of July.

While the tree of the Kelsey is hardy in the latitude of New York, I believe that the fruit will seldom be perfected there; I would advise that it be planted only as far North as Middle Georgia or South Carolina, its success being doubtful in higher latitudes.

We find the Peach stock the most desirable to work the Kelsey upon, although those upon Plum (Mirobolan) are vigorous. The fruit sets mostly near the body of the tree, and this I consider a desirable feature with so large a fruit. I look upon the Kelsey as the coming fall fruit for our section. The illustration opposite, of a perfect fruit, cross section and a pit of same, shows well the characteristics of this Plum.

Bradstreet's Report on the Evaporated Fruit Industry of Western New York.

No finer fruit is produced on this continent than is grown in the territory embraced under the name of western New York. The orchards of the farming community are the chief sources of their wealth, and the industry is prosecuted with vigor. Whether due to the favorable climate and soil, or the superior or skillful cultivation of the orchardists, one thing is certain, that the Apples of western New York are sought with avidity, and bring relatively higher prices than those grown in any other portion of the country.

The success and magnitude of the evaporation industry is due largely to the fine quality of the fruit, easily and cheaply procurable in abundant quantities, and also to the enterprise of the producers in adopting new and improved evaporators and machinery, in place of the crude processes in vogue years ago, producing thereby a quality of fruit quite as good and palatable to the sight and taste as though it were in the fresh and uninjured state. Thousands of tons of Apples are produced every season, from a quality of fruit heretofore wasted and allowed to rot on the ground, and which now forms a nice income to the grower.

It is in the utilization of these waste products that the desiccation of fruit becomes a valuable and indispensible adjunct to every fruit-grower, and the business may be considered as yet in its infancy. Within a radius of 40 miles of Rochester there are more than 1,500 evaporators, from the small farm house dryer of a capacity of 25 bushels per day to the large steam evaporators, drying 800 to 1,000 bushels of Apples each 24 hours. These evaporators give employment during the autumn and early winter months to at least 30,000 hands, who average from $5 to $12 a week, according to experience and usefulness.

Constant care and scrupulous cleanliness are the first elements of success in evaporating good fruit. The production during the season of 1887, may be well considered the largest since the inception of the business some 15 years ago. A careful estimate places the total quantity at about 30,000,000 pounds, worth at first cost some $2,000,000. To produce this quantity of Apples is required 5,000,000 bushels of Apples, 15,000 tons of anthracite coal, and the constant attendance, night and day, of an army of men, women, and children, numbering 25,000 to 30,000. The water eliminated in the process of evaporation amounted to 225,000 tons, reducing the bulk of the green fruit to about one eighth of its original weight, each 100 pounds yielding, when properly evaporated, 12 pounds on an average.

The fruit is usually packed in cases of two cubic feet measurement, holding 50 pounds net, the product of say 8¼ bushels of green Apples, and in this concentrated compressed form is shipped all over the world. The advantages in freight alone will be apparent from the following comparison, showing the cost of shipping one case to Liverpool, Eng., which at existing freight rates will cost a little less than 30 cents, while in the green or fresh state in barrels the same quantity would cost $2.25, and in the canned state, almost $2.10, without considering the deterioration of the green fruit, and the dangers of fermentation to the canned article, the Apple in the evaporated state being transported without deterioration.

The refuse of the Apples, such as the parings and cores, are dried and form the base of all the cheap jellies manufactured at present. The quantity thus produced last season will aggregate some 12,000,000 pounds, thus no particle of the fruit is wasted.

The principal consuming countries abroad are Germany, England, Belguim, Holland, and France, in which the new product has displaced the old fashioned sun-dried fruit. There were shipped alone to France during 1887, some 18,000 barrels of a quality known as chopped or sliced Apples, which is dried without either being pared or cored, and is used chiefly for the production of cider, cheap wines and distillation when the vineyards of France suffer from the phyloxera. Some 4,000,000 pounds were exported during the season, of which more than one half were shipped from the region of western New York.

New York State evaporated fruits have secured a very favorable reputation and strong foothold abroad, and can be had in almost any town or city of importance on the European continent. The goods are also taken in considerable and increasing quantities by the West African and Australasian trade every season, and with the popularity and growing demand at home, the success of the business is more than assured.

Tobacco as an Open Air Insecticide.

G. A. SCHMITT, NORFOLK CO., MASS.

ASPARAGUS BEETLE.—Last year I had very great numbers of them on my field. Being frightened by their numbers seen as late as October, this spring I opened furrows on each side of the rows, and placed a little more than half a ton of tobacco stems in those rows, closing them again with a plow. The two acres and one third were disposed in four beds, with a road 10 feet wide between every two beds. There was no tobacco placed in the roads. This spring I planted a row of Asparagus in each road; there was also an Asparagus seed bed from which I planted another 3½ acres with Asparagus this spring. No tobacco was placed on the seed bed. The place where the seed bed had been is now a part of the new Asparagus plantation. The only places attacked by beetles this summer are those four roads, the place where the seed bed has been, and the plants heeled in. Had I used tobacco on the seed bed I think my plantation would have been entirely free from the beetle.

CUT WORMS.—I have used tobacco in former years against the cut worms which ate off the young shoots of my Grape vines, by surrounding each plant with stems, dug in, with entire success.—October 1888, Bulletin Department of Agriculture.

Selling Fruit by Auction.

During the past season, the attention of fruit growers has been attracted to the auction sales of California fruit, especially at Chicago. As in this country this plan is comparatively new, we give an idea of it as employed in London for twenty-five years, or more, as outlined by a correspondent of the Pacific Rural Press, and gained by interviewing several firms who claim that the result both to grower and commission man are far better than under the old system, while the public is better served and at no higher price. This is because, as one London dealer said, they have so few cases to report of rotting on their hands; within half an hour of its delivery it is sold. Another item to be taken into consideration is that by private sales there used to be many claims on account of short weight, inferior quality or damaged condition, and if from important customers they could not be disregarded; hence the commission men were at the mercy, to some extent, of the buyers.

Then again, an auction sale is a public affair; the grower may, if he chooses, have his sales reported by other men, and reports of underprice by the seller would soon ruin the reputation of the concern. As for "knocking down" choice lots at low prices to special friends, this can not be done at auction, for choice lots are well known, and bring all they are worth.

As for this system in America, foreigners predict that there will be many obstacles to be overcome, for it involves a radical change of methods. Those, for instance, who handled the fruit on commission to advantage to themselves, and who might be thrown out of business, are likely to intimidate and prejudice the grower against the plan before it has had a fair chance. Then again, the growers, unless united, will consign part of their crop elsewhere, when it may be used to counteract the plan. The

buyers, too, will be likely to fight shy of any radical change at the start.

The change in London was a gradual transition, and came about like this; a price was fixed on fruits, but if it was too high, no buyers were found; if it was too low there were too many. Give them to whomever one would, there was trouble; if buyers were asked to bid and accepted the highest offer that would be auctioneering, and for doing that without a license dealers, were liable to a fine; some fellow at last took out an auctioneering license, and that was the beginning of the auction plan.

The following conditions are observed:

1. The highest bidder (in due time) to be the purchaser, who is to pay down whatever sum may be required.

2. The goods to be delivered to the purchaser with all faults and defects.

3. If any neglect to pay the remainder of the purchase-money, on or before the delivery of the goods, the money paid will be forfeited to the proprietors. Such lots as remain uncleared after the time limit will be resold.

4. If any dispute arises in bidding, or the lot be claimed by more than one bidder, it shall be put up again. The auctioneer reserves the right of accepting or refusing the bid of any persons who may have been defaulters, or in any way objectionable.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

STRAWBERRIES WITH GRAPES. I am doing just what Mr. Powell is doing—growing Strawberries with Grapes—and having tried it for several years can commend the plan. Strawberries with Grapes are better than Strawberries with Blackberries, which I tried for some years and which, I would confess, were not so many ready to jump up and criticise, I think is a good plan when you haven't a critical market. The writer in the New York Tribune is right: The Strawberry does best when it has much moisture. It does best in the shade, or in at least partial shade. Hence you may have fine Strawberries with Grapes or Blackberries, and the latter are the better for the mulch.—*J. M. S.*

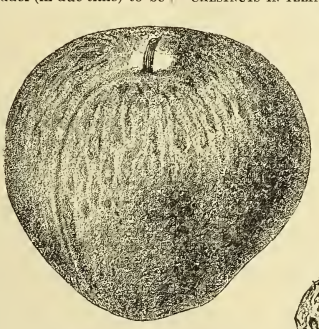
RIGHT AND WRONG SUBSOILING. I don't know how it is in your parts, Mr. Editor, but the reason subsoiling is in disrepute out this way, (and its a reckless thing for a man to recommend subsoiling hereabouts), is that we tried trench plowing and thought it was subsoiling, and where we trench-plowed our fields we spoiled them for good crops for half a dozen years. Some years ago we had a little boom in subsoiling. I don't know how it started or why it spread—it was a craze; and it was a bad thing for us. Don't say that trench plowing is a good thing as long as you don't go below the soil. Our soil is six feet deep; but by trench plowing we put on top soil that had to be aerated and stirred and sunned and mellowed by rain before enough of the richness in it was put in condition available for plants, making a good growth of grain, vegetables, or fruits. And because this was called subsoiling I must go around here and explain that your sort of subsoiling—stirring the subsoil, but not putting it on top—is not our sort, and is a good thing.

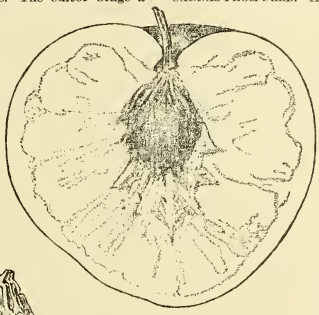
TREE PLANTING. Allow me to add to Mr. Stearn's directions for tree planting, that when enough dirt (which should be always fined before it is put in) has been sifted in to fill the hole somewhat more than half full, covering most of the roots, to grasp the stem firmly about the lower part and move the tree up and down vigorously, but not through a space greater than an inch. This will settle the dirt about and close against the roots—a very important point, for the roots can get food only when the earth is in intimate contact with them. When the tree is transplanted it has lost so much of its root formation and always of the best feeding part, that it stands in urgent need of all the food it can get; and many a tree that dies, starves to death because the soil is so far from the roots that it cannot feed. How much closer shaking the tree up and down will bring the dirt to the roots is shown by the lowering of the dirt in the hole. After you have done this, put in a little more earth and then firm it down as Mr. Stearns directs.

CHESTNUTS IN ILLINOIS. The editor brags a little about his Chestnuts and I don't blame him. The Chestnut is a handsome tree—an ornament anywhere. Its wood is of the highest value for fencing, and its fruit is worthy of the tree. I have been criticised for recommending the planting of the Chestnut here in Illinois. But being "raised" along side "Chestnut Ridge," I think I know something about the Chestnut, and any person who thinks it won't grow thriftily and beautifully in Illinois can see that he has been laboring under a misapprehension, by making me a visit. Because Chestnut growing was not made a success by the Illinois University folks, people suppose I don't know what I am talking about; but the I. U. folks say, in their report on their tree growing, that the Chestnuts did not have a fair show; they were eaten up, had poor soil and little cultivation. According to the same report that is so often poked at me, the few Chestnuts that had a fair show are thrifty and vigorous—as promising as any other tree in the plantation.—*N. Y. L.*

"PROTECTION FOR FRUIT GROWERS," was brought to the attention of the public here a few days ago by the shooting, by a German fruit grower, of three boys stealing his fruit. The wounds were not serious, bird shot being used. Young hoodlums had been stealing from the German so long and so persistently that he had become exasperated. Of course the public justly condemned the shooting. If I mistake not, we have in Illinois no statute specifically covering this case; but the offense would clearly come under the statute directed against petit larceny, and if the court so directs, the person convicted may be compelled to work out his fine breaking rocks. The trouble is that it is almost impossible to secure the conviction of the offenders. They are too alert and fleet to be caught at the time, and it is exceedingly difficult to identify them afterwards. Actual protection for fruit growers has yet to be devised. I believe that the right sort of a dog is a mighty good thing to have around in such a case.—*John M. Stahl.*

NEGLECTED ROADSIDES. It is altogether proper Mr. Editor, for you to say that "a neglected roadside is inexcusable." But to have nice grassy roadsides is well nigh impossible in some neighborhoods. One or two or four cannot have them. The neighbors must all work together to this end; and in many cases, to enlist your neighbors is the biggest task you have undertaken since you tried to lift yourself over the fence by your boot straps. However, I have found that the best way to get your neighbors started is to make the roadside along your premises nice and attractive. They cannot but compare this with weedy, unkept roadsides, and the comparison is very apt to bring "a lively conviction." But you must rise superior to many discouragements. Our highways here are well graded, but few of them are gravelled. Last winter and spring the graded roadbed became very muddy and much cut up, and people outside the neighborhood, and a few in it, rode or drove over my nice roadsides, which were smoother and solider, until they were cut up, too. This could not be prevented. The grass was largely destroyed, and weeds have sprung up in its place. I must do my work over again—discouraging both to me, and to those about to do as I had done.—*J. M. S.*





THE KELSEY JAPAN PLUM, FRUIT AND KERNEL.—(*See opposite page.*)

CANNAS FROM SEED. A group of these stately plants if properly located, makes a fine ornament to any dooryard, and by growing them from seed anyone can have a fine group in a couple of years. Last year among other seeds sent me from the Department of Agriculture, was a paper of Canna seed containing 14 seeds. In February of this year, I put them to soak in a pint of boiling water, and set them on a shelf. A multiplicity of affairs caused them to be temporarily forgotten, and that night the water froze solid. I thawed them out, and planted them in a pot of earth with very little hope that any would germinate. About a month after, four of them came up, and now are three inches high, and growing finely. Several years since a lady friend planted a paper of Canna seed and only one germinated, but this proved to be a vigorous plant, with a beautiful purplish foliage. The third spring it had grown to the size of a pie platter with seven crowns. She planted this root entire in a very rich bed in the front yard, and it made a mass of foliage nearly three feet in diameter, and over six feet high. Had she divided the crowns and planted them a foot apart, the bed would have been larger and she would have had seven well developed plants instead of one.—*L. B. Pierce.*

OLD FRUITS. To the Concord Grape, and the Wilson and the Sharpless Strawberries, Mr. Henderson might have added the Bartlett and Seckel Pears. The Bartlett is now 118 years old, and is as good as it ever was.—*N. Y. L.*

TRELLISING GRAPES TO SINGLE POLE. I belive that there is no better way for farmers to raise Grapes, than to set posts eight feet apart each way and train a vine on each one, letting three or four canes grow, cutting out the oldest each year. One can cultivate both ways and keep them clean with very little labor. This is the way we grow them at our experiment grounds.—*Prof. W. A. Henry, Madison, Wis.*

NEW TREES IN OLD ORCHARDS. I find no trouble in growing Apple trees on the ground occupied by old orchards. But I think that orchards need manure as well as any other crop. It should be applied a little each year, well spread over the ground.—*C. J. Gaines, Vt.*

THE PITCHER PLANTS. A friend competeut to speak, has just been telling me that the Pitcher Plants may be classed with the ornamental foliage plants, and besides they are curious. Not so long ago there was a mystery about growing the Nepenthes; but they are easier to grow than Verbenas. They may easily be grown from seed; or, like Verbenas, etc., be propagated from cuttings. They are pot plants and demand heat. The Sarracenia is an American Pitcher Plant, of which there are several varieties. Sarracenia purpurca is found in the Northern States, S. Drummondi in the Southern States. The former is but a few inches high, the latter all of two feet. Every student of Darwin is interested in these plants; Darwin said the Pitchers ate the insects which they caught; this may be true; it is also true that sometimes the Pitchers catch an overmess and die—of indigestion.—*N. Y. L.*

Who Can Tell about the Polo Apple?

J. L. BUDD, IOWA AGRICULTURAL COLLEGE.

When at Pomona, California, last winter, I called upon Rev. J. Loop, well known on the slope as an experienced Apple grower.

I found, in his great collection, fine varieties of Russian Apples, that seemed more perfectly at home in that climate than any of his American sorts. One of these he specially prized as a winter market Apple on account of the large and handsome fruit, its even habit of bearing, and the perfect exemption of sun scald on fruit and foliage.

This he received from Western New York, under the name of Polo. I thought, at the time, that it was the Aport, No. 252, of the Department Collection. I sent cions home for root grafting, and to-day I have compared its leaves with those of the Aport. They appear to be identical, but this is not absolute proof. I believe it to be a valuable variety for large areas of our country, and would like to know where it was first propagated under the name of Polo: Will some reader of POPULAR GARDENING answer?

Pruning According to Nature.

E. P. POWELL, ONEIDA CO., N. Y.

Is it possible for any one who loves trees and plants to prune them advisedly without advice? That is an Irish way of putting the matter, but it is to the point. Cannot any one, by simply studying nature, learn how to manage his lawns, vineyard, etc.? I studied rules myself, and finally was driven to observe growth as my only director. If there be any rule of general application it is, do not disturb the natural tendencies of growth in any tree or bush. If you do you will sacrifice what you prune.

I once let a professional trimmer into my Pear orchard. Not thinking that he might be an ignoramus, a mere walking saw, I left him to work alone for half a day. When I returned I found my whole orchard of twenty varieties, cut, so far as he had gone, after the model Pear tree of a nurseryman's book—that is an exact pyramidal oval. You should have seen the symmetry. But my poor Buffums were totally ruined; their upright tops were sawed off and they cannot grow in any other form. The round headed Seckles were sharpened up at the peak, and the stiff Clairgeaes put into stiffer corsets. I sent the fool out with a flaming sword after him, and a vow never to trust another professional trimmer; but I did once more: Living at the time in Michigan, I engaged a man to trim my evergreen hedges; in this place I had not less than a quarter of a mile of Arbor Vitæ and Hemlock hedges. I found the whole had been straightened up on the sides and flattened on top. That cured me. No professional has ever since got into my grounds to cut. Fortunately my hedges were young and I could reshape them.

What was the trouble? Simply this, you cannot successfully fight nature, and these men tried to do it. Arbor Vitæ and Hemlock will stand, in a natural condition, about four feet in diameter at the base to a seven feet height; while the top is rounded without being quite pointed. To trim a hedge, therefore, should be to leave their proportions, and I assure you that if you will not, you will sooner or later have a ruined hedge. If you crowd in the trunk the bottom limbs will die. If you flatten the top you will have winter killed spots and often long strips. I have as superb hedges as the country can show, and they are never touched by weather. Evergreens love pruning. They take to it; but you must study and adapt yourself to nature.

In the case of the Pear orchard, the trouble was in supposing that all sorts of Pears can be compelled to adapt an ideal shape. In fact each sort has its own strong will and must be consulted as to growth. The Buffum grows like a Lombardy Poplar; the D'Anjou has a fine robust spread that approximates roundness; the Louise Bonne will conform nearest to a pyramid. The Seckel is round; the Nelis is spreading; the Sheldon is upright and open. There, is in fact, to each sort a characteristic, and this must not be interferred with. To prune a Pear tree is either to open the top or to remove weak shoots, or to head in the year's growth, or all these together.

While an orchard is young, summer pruning should be very constant, to rub out weak shoots and suckers; and at a second pruning in late October, or November, cut back the year's growth about one third. In all such heading-in leave, the trimmed bud pointing in the direction you desire the limb to continue its growth. In general terms, the last bud left on the limb should be one that points outward. This general law for Pears will also apply to all trees.

Fancy trimming is always an abomination. I do not care how many oddities you can get to grow, or odd shapes you can secure, you had better leave them all out. Above all do not carve your Evergreens into rings and into squatty or square shapes. I have just picked up a horticultural journal that ought to be in better business; but it tells its readers how to make the Scotch Pine take many odd forms.

"These peculiar offsets are very striking in a flower garden, and other things besides Evergreens will furnish them," to be sure. For instance, if we try we can shape our babies into oddities—flat headed, or thimble footed, or pot bellied, etc. How delightful! I wish Americans could get rid of the love of the monstrous, and find pleasure only in the exquisite variations and symmetries of nature. Our work on the lawn is to remove and prevent abnormal and excrescent forms, to encourage vast variety, but not unnatural or monstrous growths.

I have hardly said enough of the need of regular pruning, so anxious am I to aid in abolishing the fancies of uncultivated taste. Yet there is nothing so evident as we drive about the country as the lack of proper supervision of the growth of trees. The orchards are hideous with suckers and limb shoots, that take the life from the established limbs, and soon ruin the orchard. Twice every year each tree should be carefully cleared of suckers. The older the tree, the more need of being cared for. An orchard of Apple trees may easily live 150 years if always wisely cultivated and pruned.

On the Subject of Transplanting Large Trees, and Fall Planting.

S. MILLER, MONTGOMERY CO., MO.

TRANSPLANTING LARGE TREES. That for large orchards, and commercial purposes, two and three year old trees, and one and two year old vines are most suitable, no one will deny; but that it will not pay to move large ones, in certain instances, is a mistake.

About six years ago, in the remnant of a nursery, there were some large Apple trees that I wished to have in my orchard, where some had failed. They were so large that one was quite as much as one strong man cared to carry. They were brought here and set in the orchard; not one of the seven failed, but grew well and have been bearing for four years. Some of them have at least three to five bushels of Apples on them now. The past spring some three year Grape vines were set into my vineyard, that have made canes ten feet long.

In this planting, like every thing else, it must be done right. Those Apple trees mentioned were not chopped out, as some would have done, with spade and axe, but dug around with trenching forks, for at least three feet from the trunk, the roots carefully taken up, and the holes were large enough for them without doubling any roots. The heads pruned and cut back to balance the loss of root; the wounds cemented. This takes labor, care, and patience, and the reward comes quickly.

Two years last spring, I transplanted Pear trees two inches in diameter, that were allowed to ripen a few specimens, and made two feet of young shoots, that bore the year after, half a peck of Pears each. Not twenty feet from my house stands a Norway Spruce, planted twenty years ago, that is now thirty feet high, and a perfect beauty. A contemplated R. R. through here may take the tree. If it must go, I will move it to another place, and it won't die either.

FALL PLANTING. For many years I have advocated setting out Strawberry plants in the fall, particularly if a crop is desired the following season. Many denounced, but are gradually coming to it. Matthew Crawford, (than whom there is no better authority) truly says, that plants set out early in the fall will make twice the number of plants the following season, as those set out in the spring; and I say, they will bear twice as much fruit also.

But there is a vast difference between doing the thing right, with the right kind of plants, or otherwise. The latter should be good, strong plants, grown not too thick in the bed, and not the spindly plants, where five hundred were grown to the square yard, and sold for less per thousand than a man should be paid for digging, dressing, and packing them. The former, instead of gouging a hole and cramming in, or with a dibble, and the roots packed down and crowded together, should have a little mound in the hole, on which to spread the roots, the earth drawn in around, and pressed firmly.

When the planting is finished, the crown should be just a little above the level of the earth, give a good watering and shade for a few days. Loose, fine hay is an excellent thing for this purpose. Good plants thus set out, followed with suitable weather, in one month, will stand a freeze as well as any old plant, while if set in a careless manner, as first described, they will be hoisted clean out, by the first, few, hard frosts. Just as soon as the ground begins to freeze at night, cover lightly with some litter, and when the ground freezes hard, cover up well, but much heavier around the plants than on the crowns.

Raspberry plants, even the tipping kinds, will do as well set out in the fall as in the spring, provided they are covered as soon as the ground freezes. I do all the planting I possibly can in the fall or even in the winter, as then the work is done. Since here in Missouri, I have planted in every month, from October until April.

In a climate like ours here in Missouri, fall planting is particularly desirable, as we often have no spring to speak of; it is cold and the ground too wet to work well, until at once it becomes very warm and vegetation comes on with a rush; everything to be done at once. I have seen springs here, when there was not three days in which young Peach trees could be transplanted decently. Those planted in fall will callus the roots where cut off, even start out new ones, the ground becomes well settled, and, when spring comes, will be ready to grow, as soon as vegetation commences to move.

The Care of Fruit Trees.

VIRGIL BOGUE, ORLEANS CO., N. Y.

One of the most important of all points in fruit raising, is to give the tree such care as will produce a regular and steady growth, from early spring till the close of the growing season. I have just sold an extra fine quality of Bartlett Pears, at three cents per

pound, an average of four hundred dollars per acre, from a six year old orchard that has born four consecutive crops, for each of which the trees were loaded to their utmost. I have a four year old Plum orchard that has its second crop. The Quince, Prunes, and Greening Apples are bearing heavily, just as they did a year ago. I would advise the use of any kind of manure that contains enriching properties, as rich land can be controlled more easily than poor, or any that will aid in keeping the land moist; but depend more on early plowing, and continuous or frequent cultivating.

On Conducting Horticultural Fairs.

BY T. L. BRUNK, BRAZOS CO., TEXAS.

A criticism, that is made with sincerity and unbias, is always productive of good results. I will come immediately to some points observed to be detrimental and unjust to exhibitors at many of the horticultural fairs. All entries sent from foreign districts of the State to a local fair should receive prompt attention and some mention. This sectional competition is what we need.

The wording and clearness in stating a premium is very important, to obviate misunderstandings. Brevity in statement should not outweigh accuracy, clearness, and explicitness. A few cases to illustrate, are: "Best display cut wild flowers, with botanical names;" "Finest display of Grasses;" "Finest collection of fruits." As I understand the above premiums, they should not be offered at all. A display of an herbarium of either general or special flora is all right, but no benefit can be derived from gathering a few wild flowers in bloom, for a premium. There is nothing educative in a stack of hay, but it is otherwise with a classified and named list of the different kinds of Grasses, which enter into the composition of that stack.

What is meant by "Finest general collection of fruits?" What lesson does such a collection teach, without names and limitation of quantity? We can never expect the best results from any exhibition, where the tendency is to amaze people by showing them prodigies, picked quantities and exaggerated forms, and especially, will the good results be less, if anything is allowed to enter such a schoolroom without its proper name, in many cases with only its common synonyms. The premium is generally so large that it would do much more good if divided into smaller premiums of definite character.

Such premiums as "Best collection of Grapes, or Peaches, etc., with names," are to be specially encouraged. This brings together a large variety of all kinds of fruit, forming interesting and profitable lessons to those interested in their growth; but premiums like "Best plate of Peaches," "Best plate of Apples," "Finest display of Irish Potatoes," "Finest Geraniums in pots," etc., should not be offered. A committee will always give the premium to the largest variety of Peach or Apple; but that is not giving due consideration to varieties whose natural size is smaller.

The offering of such premiums as "Finest display of Irish Potatoes," "Best display of Begonias," and the like, are so very indefinite in their language, that the person who displays a bushel of the same variety of Potatoes, in the same condition, size, etc., will take the premium from a person that displays only a peck. The same would be true with flowers, seeds, berries, and in fact everything. We must learn that it is quality and specified names, and not quantity, that we must have to properly educate a people in the way of horticulture.

All the entries in each class should be known by numbers, and all be placed each together; not scattered over a large rack or table, to be hunted down by the judges. Premiums should be limited strictly to horticultural products. There is a great abundance of material to work on, that properly comes within the bounds of horticulture, and it is this that should be the sole aim and object of horticultural societies to bring out at their fairs. Let us see new plants; fruits of introduced varieties that have been tried successfully; new productions, as seedlings and hybrids, sports, and examples of variation on different soils, localities and altitudes.

The arrangement of the entries has much to do with the educative results of a fair, and the ease and facility for an awarding committee to work. The department superintendents should see that the division superintendents have their entries arranged according to their premium numbers, and where several plates are entered as a collection, there should be the same premium number placed on every plate.—Texas Journal of Horticulture.

Increasing the Profits.

N. Y. G.

This is what we all want to do. If we think together, for ten minutes, we will be able to reach some means of increasing profits; and surer, safer means than new varieties, new fertilizers, etc., about which we are continually troubling ourselves, although we should always be wide-awake and not wed ourselves to old things among varieties, or in manuring, or planting. I don't claim that I have discovered anything; I hope only to impress some things upon you, to stir you up a little.

If you could get just twice the land you now have, without any additional cost, equally fertile and well drained, could you not increase your net income? Well, you may do practically the same thing by growing on the land two crops in a season instead of one. It is as easy to do this as to fall off a log. Some crops will require the land so long that another crop cannot be grown on the land the same season; but to offset this, of certain crops three, and sometimes four, may be grown on the same ground in one season. The second crop can be planted between the rows as soon as cultivation of the first season, and will be growing and will have enough room while the first crop is maturing. We all know that this can be done; it doesn't need arguing. If you will sit down and think hard for half an hour, you can plan to average two crops of what you are growing on the land in one season. Perhaps you are already doing this. Well, drive fifty miles among the premises of other market gardeners and you will see that you are an exception. The vacant ground will show plainly enough that many, unlike you, have not considered that they might double their present production without paying more rent or buying more land, and then gone to work and done it.

Now, if without any more expense for land we could double our production again; making it four times what it is, we would be on the fair road to riches, wouldn't we? Some of us, perhaps, couldn't stand prosperity; if we got rich we would be proud; but we can't know about this until we get there, so I propose that we risk the effect of riches on our modesty and humility. You have read of not a few in your business—market gardening, small fruit growing, or whatever it is—who are getting twice the yields we are. We can't dodge around this by saying that these yields are exceptional, due to an unusually favorably season, etc.; for we know of quite a number who are getting these big yields year after year. Their average yield is twice our average yield; and the natural features of their situations are not more favorable than they are of ours. We can't dispute about the why and the wherefore of these big yields; the matter is settled. The secret—an open one—is better cultivation and higher manuring. And the point is that it cannot be longer disputed that a bushel, or a pound, grown by this method costs as much as when grown by our methods. The way to get cheap pounds or bushels is to get big crops; and the way to get big crops is to manure more and cultivate more; and that's another way to double production without and additional expense for land.

Did you ever notice that these fellows that get the big yields always sell at fat prices? Of course you have. Until the figures were proved correct beyond question, I often have heard them disputed. The whole thing was figured too high—price, as well as product. There is some trick about it; that was more than you got for your berries or vegetables. I believe it. Why? Because what the other fellow had to sell was of better quality and ready for market earlier. Extra manuring and cultivating makes bigger yields, because it makes larger berries or vegetables; and if you don't believe big berries sell better just, stand for an hour in the market. But the other fellow's product was of better quality in other directions. For example, the extra manure and cultivation made quick growth; quick growth make firm, juicy Radishes; it makes plump, juicy Peas; and soon. And it brings products to market earlier, when long prices prevail, as they do when the products are first on the market.

Perhaps we are now willing to concede, since we've thought about the matter, that the other fellow got the price claimed. There will be no doubt left in our minds if we see how he fixes for market the things he has to sell. They look fresh and neat; they are tempting; nothing stale and unpalatable about them. All this has required some thought, trouble, and care; but it is one of the things that increases profit. Every one of us ought to spend at least one day in a large city market, studying intently; and another day about a commission house. It would cost something, but it would pay. Likely you would'nt learn much that you didn't know before, as in the reading of this; but unless you are a hopeless case you would have impressed upon you some things that increase profits.

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887. **Apple Trees Dying.** The insect referred to is probably the Pear blight beetle, *Xyleborus pyrus* (Peck), an insect that is sufficiently numerous to do much damage. The only remedy known is to cut off and burn the blighted limbs below the injured part, before the beetle has escaped.—E. S. G.

888. **Rose Bugs.** Try spraying the bushes with thin whitewash. This has been used upon Grape vines with marked success.—E. S. G.

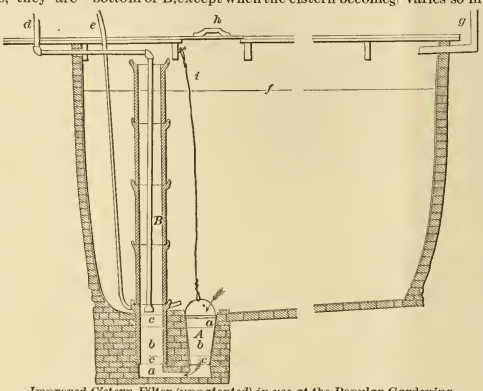
604. **The Blue or Sour Gum Tree.** The Sour Gum Tree, (*Eucalyptus globulus,*) is considered one of the most valuable timber trees of the southern hemisphere. It is a very rapidly growing tree, sometimes attaining in its native clime a height of three hundred feet, but is not hardy except in warm countries. It is used to some extent in sub-tropical gardening, for which purpose the seeds are sown in August; the young plants grown through the winter under glass to be bedded out the following spring.—E. S. G.

889. **Passion Vine and Wistaria over Winter.** If the Wistaria is not hardy with you, it can be easily protected by placing it on the ground, and covering with five or six inches of earth. This to be done just as the ground commences to freeze hard. Uncover gradually in the spring. The Passion Vine can be cut back as soon as the frost has destroyed its foliage, taken up and potted, and wintered in a frost proof cellar. The Moon Flower should be taken up, cut back, and potted before cold weather sets in. For the winter it should be given a light, sunny situation and an average temperature of from 50 to 55 degrees. The Passion Vine and Moon Flower can also be employed to good advantage during the winter season in the window garden by training them up and around its sides and arches. In this case, however, care should be taken to keep them in a growing condition and free from all insect pests.—CHAS. E. PARNELL.

The New Cistern Filter at the Popular Gardening Experiment Farm.

It is not the object of this article to discuss the advantages of thorough filteration for all cistern water to be used for domestic purposes, for the importance of this is everywhere admitted. What it is desired to do is to describe the filter recently put into the new cistern at "Woodbanks" and point out its advantages. So far as we know, the peculiar features of this filter are our own invention as applied to cisterns; they are unpatented, and all who may desire to do so are welcome to adopt them.

The main principle of this filter is the one common to about all good filters, namely: causing the water to pass through a mass or several masses of pounded charcoal, because of the well known power of charcoal for drawing to itself the impurities found in anywater that passes through it. Layers of gravel or sand are also used for attracting impurities. Where the defect of the ordinary filters built in cisterns lies, is in the difficulty or impossibility of changing the filtering material except as the cistern becomes emptied of water. It is obvious that a filter or at least the parts through which the water first passes, should often be cleaned of the impurities suspended in the charcoal, etc. This may readily be done with the filter here referred to.



Improved Cistern Filter (unpatented) in use at the Popular Gardening Experiment Farm.

As is shown in our illustration, the filtering arrangement of this cistern is brought below the lowest part of the cistern floor. It consists of two receptacles A and B (lower end) containing filtering substances, and these are connected by a passage at the bottom. The substances used and the place of each, is as follows: *a a* fine gravel, *b b* powdered charcoal, *c c c* lake sand.

The part B consists of 10-inch glazed sewer pipes, cemented together at their joints to keep out the unfiltered water. This feature may be looked upon as a well of filtered water in the midst of the cistern, no water can enter except from below through the filters. The course of the water is indicated by the arrows. The water in this well, B, invariably stands at the same height as in the cistern proper, except as it is temporarily lowered by pumping out,and then it soon fills again. From this well an iron pipe, *d*, leads to a pump on a sink in the kitchen on the floor above, (it should be stated that the cistern is beneath the basement or cellar floor of the house,) and this furnishes water for cooking and drinking. Another pipe, *e* —a lead one—reaches from the cistern proper to a second pump in the sink in the kitchen, for supplying unfiltered water for washing, cleaning, etc.

Now for the distinctive feature of this filter. The receptacle A is a galvanized iron pail with a fine screen bottom and having a strong iron bail. The size of this pail is 10 inches in diameter at the top and 7 inches at the bottom. Surrounding this pail and the lower pipe of the well B, is a solid filling of cement and brick. This was made to closely fit the galvanized pail, by filling it when fresh, against the pail, and turning this a few times while the cement was setting. The pail thus is movable. With then having an opening in the cistern cover at *h*, directly over it, and a heavy galvanized wire attached to the bail and leading to the top of the cistern, it becomes easy at any time to elevate the pail, change its contents by substituting fresh charcoal for the older, and, cleaning the sand and gravel, returning it again. Inasmuch as the bottom of the pail is three inches narrower than the upper end of the opening which receives it, there is no difficulty in returning the pail to its place even though the cistern is full of water. To have the pail fit perfectly close to the sides of its opening, in the cement, some cotton wicking is wound around it just under the stiffening wire at its top to act as packing.

It is true that by this means it is not possible to change the filtering material in the bottom of B,except when the cistern becomes empty, and then by taking down the pipes, but this is not necessary very often, for all the water first passes through the 20 inches of charcoal, sand and gravel in A before it reaches the other part, and by changing the contents of the first every two months, for a medium sized family, a long time can elapse before the material in the second compartment requires changing.

Applying Stimulants to Chrysanthemums.

E. MOLYNEUX.

Soot water in a weak state is the best thing to apply first to the roots as a stimulant. One bushel of soot placed in a bag to 100 gallons of water will be ample. The water soaking through the soot in the bag becomes charged with the manurial properties. Water used in this manner may be given to the plant every time they require watering for a week, and then it is better to withhold soot water for three weeks, giving them another course after this. The stimulant may be used in conjunction with other liquid manures during the time soot water is in use, but it is not necessary to stop using other stimulants while soot water is being given to the plants.

I have seen plants injured through using soot water too freely. It is far better to use it weaker and oftener. Chrysanthemums require a change of food, using one sort for, say, a week, then have another. To the strongest growing varieties, stimulants should be given every time water is required if the plants are well rooted. All stimulants should be used in a weak state to begin with, increasing the strength as the plants grow. If a spell of wet weather sets in for, say, a week together, it is wise to withhold all stimulants for a short time, as extra care is needed in applying water to the roots of any sort. In the case of weak-growing kinds, liquid manure should be given occasionally, as over-feeding brings on premature budformation or malformation of the petals, caused by forcing the larger outer petals too quickly, and not allowing the center of the flower-bud to fill up by degrees, as it should do under proper circumstances. When the soil in the pots is approaching dryness is the time to apply stimulants.

It is difficult to define the quantity of manure to use for making liquids, as so much depends upon the requirements of the cultivator. A safer guide is to use the liquid made from animal manures about the color of brown brandy. Sulphate of ammonia in careful hands is an excellent manure, perhaps unequalled, but the percentage of ammonia contained in the different samples varies so much that it is decidedly risky to use it. It is wise to act safely, that is, give it in a weak state, but often. The cultivator should be quite certain that the pots are full of roots before commencing the use of sulphate of ammonia. The best way to apply it is as follows: Dissolve one tablespoonful in four gallons of liquid manure, and apply it to the plants once a week; the alteration in the color of the leaves after its application can be quickly discerned if they were pale before. The color of the flowers is also much improved. The pink-lilac flowers and darker shades are rendered much richer by the use of this manure. Some growers sprinkle the ammonia on the surface of the soil and water it in, but this is dangerous to the surface roots of the plants,as they often are burnt with the ammonia. The loss of the surface roots by this mismanagement gives a check to the plants.

When the flower buds are forming in the points of the shoots which are considered the best for each particular variety, no matter whether it be crown or terminal buds, the application of stimulants should cease for a time, until the flower buds are formed and swelling, as during the time the buds are in the embryo state a check to the growth takes place.

When to finally stop the use of stimulants of any sort, and depend solely on clear water for the finishing of the blooms, is a matter about which some growers disagree. Some advise that feeding be discontinued as soon as the bloom buds show color, but in my opinion that is just the stage when assistance is required to develop the flowers. Continue to feed the plants until the blooms are three parts expanded, then cease the use of stimulants, as it will be found that plants in that stage do not require water nearly so often as those plants which are in a more backward condition.—The Garden.

Delaware Fruit Matters.

M. H. BECKWITH, DELAWARE AGRICULTURAL EXPERIMENT STATION.

While visiting fruit farms in the locality of Smyrna, Del., I was surprised to learn that it was customary to obtain profitable crops of Strawberries from plantations that had been in bearing four and sometimes even five years. One bed of three acres, two thirds of which was planted with Sharpless and the remainder with Cumberland, has produced four crops of fruit; the yield the past season being in the neighborhood of 100 bushels of berries. The vines were very healthy, although not as vigorous as I was accustomed to see those varieties growing in New York State; yet the rows appeared as if they might have been newly planted last spring.

The soil is what might be termed a very sandy loam. Several plantations were shown me that had been in bearing for different lengths of time, from two to five years, and it would be a difficult matter to

tell from their appearance, which had been, in bearing the longest. In this locality the Sharpless and Cumberland are very extensively grown, and are considered the most profitable. The bulk of the crop is shipped to Boston, where it finds a ready market.

I saw several acres planted with Houghton Seedling Gooseberries, that at the time of my visit did not present a very attractive appearance. The entire space between the rows of bushes being occupied with thrifty plants of "Beggar's Lice." The soil is kept thoroughly cultivated and free from weeds until the fruit is gathered, when cultivation ceases and these weeds quickly spring up and take possession. Cultivation is begun again early in the spring, and this late growth of weeds does not appear to be detrimental to the crop of fruit.

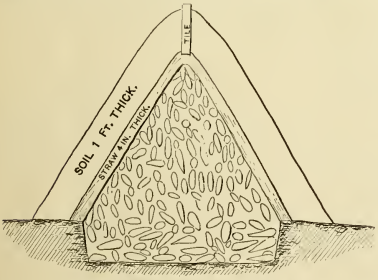
The same party has also a Peach orchard of about 1,500 trees, 1,100 of which are nine years old and have been in full bearing several years, the balance having been only recently planted. Several rows of trees on one side of the orchard show unmistakable signs of the yellows, and occasionally a sick tree can be found elsewhere in the orchard, but none show the last stages of disease.

Potash in various forms will be applied to a part of this orchard and part will receive no application, with a view of testing the efficacy of this remedy for the yellows.

Winter Keeping of Roots

It may be well at this season, when the roots and Potatoes are to be stored, to notice the methods of wintering these crops in frost-bound Scotland, where much attention is paid to their use as food for live stock. A Scotch method followed very generally, may be thus described: On a high, well-drained spot, where water never stands in the winter, an excavation, five or more feet wide, of whatever length is desired, and ten inches or a foot in depth, is made.

From the bottom the roots are piled up in a compact, triangular mass, the peak being about as high as the base is broad, and the sides almost straight. Next to the roots a layer of straw is then placed, the thickness of which depends upon the coldness to be guarded against. Four or five inches will be sufficient where the temperature seldom gets lower than 8° or 10° below zero; then again upon the straw comes a covering of earth from 12 to 15 inches thick, serving



AN EFFICIENT ROOT PIT FOR WINTER.

mainly as a shield to the straw, not allowing rain to get in, etc., as it affords no special protection from cold, the straw being the non-conductor, and this, then, is what should be increased or diminished, according as the cold is less or greater.

For ventilation, drain tiles, or boxes made of strips three inches wide, are set into the pit, as the ground is thrown on, to extend from the roots, to above the ground, and about six feet apart, along the peak of the pit. These ventilators should, in extreme cold weather, be closed, opening them again during any mild spells.

Such pits are, for this purpose, preferable to cellars, or almost any other form of storage, from the economy of labor required for getting the crops in winter shape, and also their freedom from rot; the space used is of no special value for the time occupied. Whenever desired in winter, they may be gotten at, and the frozen ground-cover forms a protecting shell about the open end, which can be filled with straw for a distance, as the roots are taken out; thus keeping everything snug and warm.

The Lucretia Dewberry. In reply to No. 930.

A. J. CAYWOOD, ULSTER CO., N. Y.

Concerning the market value of the Lucretia Dewberry, that I think it is one of the most beneficent berry gifts that the country has ever received, from several considerations; and I probably would not have given my opinion, was this noble fruit not being traduced by parties who ought to know more of its good qualities. We planted nearly half an acre, three years ago, when the price of plants was high. The next summer after planting, it paid interest on land, paid for the plants, all culture and work (including stakes and tying up), and a balance remained of $28.00, and this year I had a full crop, the first half of which brought me 24 cents a quart—they were sold in one half pint cups at six cents each.

They begin to ripen from a week and a half to two weeks before any other Blackberry, excepting the Early Harvest, and here it is fully a week ahead of that. It just completes our time for steady picking from 1st of June beginning with Strawberries, then Red Raspberries, Lucretia Dewberries, and ending with Minnewaska Blackberries, the end of September. Its coming so early fills the gap between Red Raspberries and standing Blackberries.

The characteristics of this fruit are as follows;—A great bearer, berries 1 inch to 1¼ inches in length; and berries have been measured in our patch, by visitors, 1½ inches in length by ¾ inch in width, which is larger than the heaviest Kittatinnys, and equalling in size the Minnewaska or Wilson as grown here. The berries are all perfect, with little, if any, deformity in shape, and sweeter than any other Blackberry, excepting the wild Dewberries. Their solidity warrants their shipment to markets at a greater distance, than any other berry I know of. The picking and marketing is of short duration—about two weeks—nicely lapping on to standing varieties; and it is one of the most beautiful sights that one could imagine, the bushes black with large glossy berries, from the top of a five foot stake to the ground.

I plant them as I do Red Raspberries, 4 feet apart each way, cultivate both ways until the fore part of June, when the renewals get too long to do so. We then direct the renewals of each row along the bottoms of the hills, and cultivate the other way, as long as required, and one man has done the directing of our patch in a day. The old canes are taken from the stakes any time after the fruit is off, before tying up in the spring. The renewals are left on the ground all winter, which is sufficient protection here, but, if it is necessary to protect them in colder regions, their prostrate position facilitates the work.

In the spring, one draws the entire hill from under the other hills in the row, and holds them to the stake, while a boy ties them tightly, this can be done as rapidly as tying Red Raspberries. I think my patch was the first managed on this plan; we have tried the Winrow System but like staking the plants better.

August Started Chrysanthemums.

JOHN LANE, AMATEUR FLORIST, COOK CO., ILL.

In my collection of 250 Chrysanthemums, I have none more interesting than the following, now about 60 days old, full of buds to flower. The first is Gen. Jack, one of the M. A. Hunt, Terre Haute, Ind., importation from Japan in 1887; a strong grower and free branching sort; Aug. 6th, I layered a branch of a spring-started plant planted in open ground; Sept. 3d, cut it loose from the parent, and Sept. 25th, lifted and potted in a five-inch pot; now, Oct. 4th, it is 24 inches high, has 15 branches varying in length, all full of buds, a beautiful pyramidal plant.

Two other interesting plants are Marabout and Alx. Dufour, of the class hybrid-Japan, and of dwarf habit, free branching sorts; Aug. 1st, cuttings made of tips from the top of an old plant, were started in a propagating bed and later potted in two-inch pots; Sept. 6th, were moved into four-inch pots; now, Oct. 4th, they are bushy plants six inches high; one with five branches the other with seven, all with buds set. They being of the small-flowering class, I will not disbud, but am giving liquid manure to make them flower their best.

I have others, both layered and cutting, made at the same time with the above, they are all very interesting plants, and will be in flower within 100 days from time of starting them. The layered plants are mostly very strong growing, and are potted singly in five-inch pots, making pyramidal plants. The cutting started ones are not so strong growing and are mostly planted three in a five-inch pot, making good, small plants.

Such late started plants should not be cut back if early flowering is desired, and only free branching sorts are adapted to this method of growing. Elain is a good one for layering; Mrs. Frank Thompson, for either layering or cutting. No great skill is required in layering them; simply cut into the branch where roots are wanted, then bend it upright at the cut and plant it, keeping it moist, it is also better to mulch them when set; in 20 days cut away from the parent, and in 40 to 60 days lift and pot in rich soil.

801. **Fir Tree Oil.** This is an English insecticide, which if applied properly as directed and rationally, in the evening before sunset, has not failed to prove efficacious in killing insect life on plants, beast, or man. It is, in a diluted state, an unsurpassed wash for plants and pet animals; it has proved a bleacher and disinfectant on fabrics in connection with ordinary household soap; and it will dissolve parafine oil in water if mixed in proportion of a quarter pint of parafine oil to a pint of Fir tree oil. It is as effective in the United States as abroad, as gardeners of the highest authority and standing in our country will not hesitate to declare, as they buy it continually for greenhouse use.—A. ROLKER.

915. **Lilies Not Doing Well.** (*a*) I think that your Lilies are growing in an unsuitable soil. Lilies delight in light, rich, soil such as is afforded by a mixture of loam and well-rotted manure. (*b*) Unless for the purpose of propagation, it is best not to disturb them for a number of years, as frequent removals are injurious. (*c*) From one to two feet.—CHAS. E. PARNELL.

918. **Hollyhock Propagation.** As a general rule, Hollyhocks reproduce themselves pretty true from seed if carefully selected. I see that assortments containing six, eight, and twelve varieties are offered by seedsmen, and these will be found quite reliable.—C. E. P.

882. **Tomatoes.** Perfection, Favorite, and Beauty are early and reliable varieties, and the seed can be procured of any seedsman.—C. E. P.

892. **Rose Bugs.** There seems to be no other remedy than gathering them carefully by hand, and destroying them.—C. E. P.

887. **Apple Trees Dying.** If the worms are working in the pith of the young twigs, I would cut them off and burn; this may prevent the increase of the pest, and save you some trouble later on. I am not acquainted with this pest and so cannot suggest any other remedy.—C. E. P.

Evergreens as a Home Background.

L. B. PIERCE, SUMMIT CO., O.

The evergreen protection of my home is in the form of a windbreak, the remains of some evergreen nursery rows set about 11 years ago. There were four rows each of Norway Spruce and American Arbor Vitæ, the latter being to the east of the former. The sketch shows the group as it now exists, separating the north side of the dooryard from an orchard in the rear; its present form comes from digging and selling trees at random, as customers wanted them, until too big to transplant; then the Spruces were sawed for christmas trees, and the Arbor Vitæ cut for evergreen trimming in summer. The result is quite a pleasing variety of ground outline on the eastern or doorway side, and the sky outline, not shown in the plan, is sufficiently varied not to be monotonous, the path going to the back yard along a nursery of Apple trees, *e*, to be removed.

The space between the path and the evergreens, I propose to grade with a slight rise to the west, and make the trees a background for displaying flowering trees and shrubs, and perennials. As shown by the lines, it is nearly all in sight from the two windows on the north side of the house, and also from the street, 12 rods to the east.

The planting is not all decided upon; it includes a cut-leaved Weeping Birch at *a*; a variety of Syringas at *c*; Chionanthus, double Deutzia, and two white-flowered Deutzias, at *d*; just north of the latter, I will plant a white-flowering Dogwood between the Arbor Vitæs, allowing it to push its branches out here and there betweeu them. The six Arbor Vitæs at *b* will be trained to a single top, thus forming an arbor or summer house. Between the shrubbery at *d*, and the path, will be a bed of double Hollyhocks; skirting the shrubberry on the southeast a narrow bed of double Zinnias.

The rest of the space from *d* down past *c*, will be kept in lawn *i*, while a bed of Chinese Pæonies will come just north of *b*, and other shrubs and herbaceous plants will be planted in the nook southwest of *c*. No attempt will be made to have everything show from the house, but some planting will be done with a view of affording pleasant surprises, and giving added interest to a ramble along the walk.

At *m*, a group of Lilacs has been planted with a plant each of Exochorda grandiflora and Clethra alnifolia; *f*, is a group, consisting of Scotch Pine, Hemlock and an American Arbor Vitæ, planted ten years ago to break the north wind, and, while the combination is not to be recommended, it is now too valuable to be cut down; *g* is a little ornamental group put out six years ago, and is composed of various evergreens of unequal habit of growth, and has always been pretty, the Fir being now about nine feet high; by annual cutting back, I hope to maintain a suitable relative height, as between the Fir and Hemlock, and the others, for several years more, after which the group will be remodeled or removed.

It will be observed, that such a combination of windbreak and ornamental planting might form the side of a half-acre lot instead of the back, where accident has in this instance located it, and where, including the path, it occupies but 27 rods of ground; the most of this, however, is lawn, as the trees only use about 20 feet, for nearly one third of the distance.

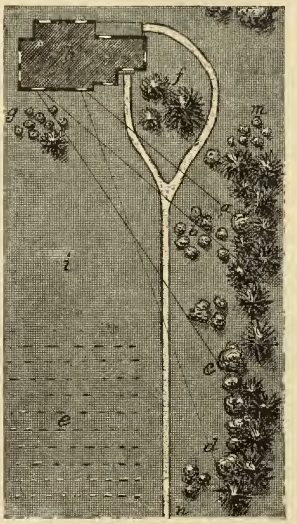
If the house were at the intersection of the walks, and the street at *u*, then the windbreak would form part of the ornamental planting of the grounds. Of course the present accidental arrangement could be varied for the better, and other evergreens substituted for the Arbor Vitæ; Hemlock corresponds better in color with the Norway, but does not present quite as good a setting for the beauties of the small shrubs and herbaceous perennial plants.

Some Good Window Plants.

E. P. POWELL, ONEIDA CO., N. Y.

ABUTILONS. The Abutilons have once more come into style for window plants, and there is no reasou why they should not stay in style. Among the best varieties are Lustrous, a bright red; Boule de Neige and Purity, white; Rosæflorum, pale Rose, and the splendid Thompsonii. But the value of any plant depends on the opportunity it offers to originate new sorts. Seedlings of Abutilon grow easily and are interesting.

BEGONIAS. I wish every one would try a case of Begonias—a window case or a Wardian case. Among the choicest new sorts are Louis Chretieu and Roi Leopold. The tuberous rooted are also fine in variety—



Evergreens as a Background in Lawn Planting.

many of them double. Metallica is a noble sort; but many of the older varieties are exceedingly fine. Rex Begonia is a clean plant, seldom infested with insects and not hard to grow. They can all be kept in the shadier part of the window or conservatory. Propagate by pressing a leaf into the surface of the soil, and cut the spines partly through.

FUCHSIAS. The Fuchsia has never been surpassed for grace and loveliness, both of growth and color. This also may be propagated from seed readily. Perhaps, however, the ease of propagating the best older sorts will detract from raising novelties. The least bit of cutting of Fuchsia plant on wet dirt or sawdust under a hand glass, or in a Wardian case, will root. The Fuchsia is easily managed, and prefers a back seat in window or conservatory. Let them overhang the Lycopods or be among the Ferns.

PHILODENDRON. One of the finest vines for the window is the Philodendron, a rope-like vine that will extend itself for fifty feet above your window or ceiling, bearing Palm-like leaves with slits in, of half their length. It bears a fine fruit, but will not be likely to bloom in ordinary heat. I have seen it in fruit in Shaw's garden at St. Louis—under cover of course. It is curious, rich in foliage and easily grown.

WAX PLANT. The Hoya is not nearly common enough. If well grown, and then left without repotting for twenty years, it will repeat its grand florescence each spring and summer. I have had one twining about the ceiling of my conservatory with 150 clusters of flowers at a time. Set the pot high up and let it remain there. Water profusely while in growth. The Hoya carnosa is the best for common culture.

AGERATUM. The Ageratum is delightful under all conditions—as a vase plant, a bedder, or a window plant. The Blue Sage (*Salvia patens*) is a finer blue, but not a profuse bloomer.

GERANIUMS. Let us go back and get once more in love with the dear old Pennyroyal, Rose, Apple, and other sorts of scented Geraniums. They have the advantage of belonging to health-giving plants—ozone breeders. I am sure they are sanitary agents. The Apple scented is most delicious.

HYDRANGEA. With these, why not bring into vogue again the old Hydrangea hortensis. I have a distinct remembrance of two boxes of this grand flower with over forty clusters on each. It has the advantage of being beautiful for two months. First it is pink, then passes into a mottled green, not at all lacking in beauty. Set it away in a cellar during winter, watering lightly.

BRIDAL ROSE. The Bridal Rose, or double, blooming Blackberry, a member of the Rosacæa family, is incomparably beautiful. I do not always succeed in bringing it to perfection, but when it is at its poorest it is fine; at its best it is a grand boquet of double white Roses. Its name is appropriate. I have had them to be one mass of elegant, pure white bloom.

LILACS, ETC. But if you wish for real joy in winter, fill your windows with Lilacs. These should be small compact bushes, dug in October or November, after the leaves fall, and placed in the cellar. I cannot do without a dozen of them. When one is wanted, I box or pot it in clean garden soil and water it well. It will do no harm to prune back the roots and crowd them in potting. Still you will need 12 to 15-inch pots. Water with warm water daily and freely, and in about three weeks you will get the delicious odor through all the house. It will pay also to have a few bushes of Clethra, Deutzias, and Syringas.

Window plants are a source of health if they are themselves healthy; but if diseased, you may be sure it is wiser to pitch them out-of-doors. The dirt must also be free from poisonous qualities, for not seldom there is malaria in a flower pot. The pots also should be thoroughly cleaned from mildew, inside and out.

A Few Good Bulbs for Under Glass.

MARY R. SPAMFIELD, CUYAHOGA CO., OHIO.

To the many people who have but the most ordinary means of caring for anything in the line of flowers, during the winter, I will explain how I managed to have the small bit of glass I had, bright with bulbous blooms, from early February until those from outside came along.

My conservatory is simply a narrow lean to on one side of the house, with two windows, and a door opening into it from a warm room. My object does not include forcing anything, but to have them come along naturally, so I find it quite easy to keep frost and dampness out of the house, sufficiently, to have my plants in very fair condition.

The best early bulbs for my house are Roman Hyacinth, Roman and Paper-white Narcissus; some are potted as soon as they can be obtained, and by this means flowers can be had without using much artificial heat. The Hyacinth being planted six, and the Narcissus four in a pot. First to bloom are the Hyacinths, then the Roman Narcissus, following which are the Paper-white. As it has been impossible for me to do any-

thing with these bulbs after flowering they are then thrown away.

Immediately succeeding the foregoing, comes the Cyclamen. I have about fifty, mainly of the giganteums, though I know that many say the flowers are sparingly produced and are coarser, with not so compact a plant, nor as fine foliage. It perhaps is true, but they are grand, and if desirable, one can have both sorts.

Most of my Cyclamen have been raised from seed, which was sown as soon as ripe; the young plants remained in the seed pans until spring, when they were potted off into 2¼-inch pots, in a compost of equal parts loam and leaf mold, with plenty of coarse sand and charcoal. They are grown on until the foliage fades, when they are laid upon their sides until August, and then repotted in fresh compost, placed in a cold frame, and as cold weather comes on, removed to the green house; they make good flowering bulbs the second year.

After the colored Hyacinths have finished blooming, they are gradually dried off, and the soil shaken from them; at the proper time they are planted in the garden, where they keep on flowering from year to year, giving much satisfaction; my borders now are full of bulbs thus treated.

After these, the Freesias show bloom; of these I have about ten pots, and I find their culture very simple. There may be some little difficulty with bulbs just imported, but I am sure there is none with them afterwards. The great secret of success I believe, is, as I learned from an English grower, to thoroughly roast the bulbs after flowering, when yet in the soil and pots, by placing on a shelf fully exposed to the sun, there remaining until the foliage is completely withered and the soil dust dry.

They are then taken down, and laid on their sides under the stage, being left there until potting time. I use the same compost as for the Cyclamens, planting six or eight in a six-inch pot. They are kept in a cold frame until winter sets in, and then brought inside. By this treatment I have had them 18 inches in height, with three or four scapes of bloom from a bulb, and they increase very rapidly.

Another bulb is the Ixia, and I hardly know of a more quaint and peculiar flower than the variety viridiflora; but I have not been so successful with them, having to procure new bulbs every year, and the tips of the foliage are apt to get discolored. With the allied genera of Babiana and Sparaxis, I however have no trouble, but they are not nearly as handsome as the Ixias, of which I have this year treated some of my last year's bulbs as I did the Freesias, thoroughly sun-drying the bulbs and potting them. At present they look well, but whether they will so continue is the question.

Tritonias I have no difficulty with; they bloom on year after year, and increase in size and vigor. There are few more satisfactory bulbs than the Lachenalias, and I heartily endorse all that was said in the last number. They are easily grown, and produce their flowers freely (an object I always keep in view in selecting my stock,) and so being valuable. A pretty way to grow them is in hanging baskets as well as in pots.

The Alliums are very satisfactory for flowering in the house; their large umbels of pure white flowers coming in early spring make them attractive. Neapoliatnum is the variety most generally used; but I received last year, a variety called Hermetti grandiflorum, which is much superior to it, stronger in foliage, and larger flowers. Neither of these have the unpleasant odor which belongs to most of the tribe. The compost that I use, and the treatment, is much the same as for Freesias; in fact, I find that for the most of these spring-flowering bulbs, this treatment is the best.

One of the Newer Perennial Plants. Heuchera Sanguinea.

There is a genera of low-growing perennials found growing all the way from Mexico to near the Arctic circle, and known by the name of Heuchera, which has usually been looked upon as containing only inconspicuous weeds, for although their foliage and habit is pleasing, the generally purple flowers are small.

The new Perennial, Heuchera sanguinea, (Flowers deep red.)

One plant of this genus has attracted some special interest also, from the peculiar property of the root, which posesses the astringent qualities of alum in a surprising degree, and this one is kuown, commonly, as the Alum Root (*H. Americana.*)

Not many years ago, however, the late Dr. Engelmann, described a species, H. sanguinea, from Arizona, which seems to have been not widely noticed; and this now promises to be one of the handsomest of recent herbaceous acquisitions; from its hardiness, ease of management, and beauty of flowers and foliage, it might yet have a place in every garden. This plant is also spoken of as being especially excellent for planting in the rockery, doing well also in the cool greenhouse.

The flowers of this species are of a rich, red color, with foliage dark, faintly marbled with light green. The plants will grow in any ordinary garden soil that is deep and does not contain much clay. They propagate in the spring by divisions of the crowns. The general character of the Heuchera is well shown in our illustration, a reprint from the English Gardeners' Chronicle.

To say that the Heuchera is a near relative of the Saxifragas should be to give a good idea of its general value. Take the common Saxifraga samentosa, known as the Strawberry Geranium by most plant growers, and it is one of our most ornamental house and basket plants; the variegation of the foliage being especially attractive. In the line of hardy plants, there are a number of Saxifragas with red and rose colored flowers that appear very early in the season, which rank among the best of plants. From our favorable acquaintance with them, we also look upon the subject of this present sketch very hopefully, believing, as we do, that it may form a desirable addition to our list of hardy plants. We find it offered in but a single American catalogue, that of the B. A. Elliott Co., Pittsburgh, Pa.

On the Wintering of Pansies.

BY DANIEL K. HERR, LANCASTER CO., PA.

To have fine, early blooming Pansies, get the plants a month or more before the usual freezing up of the ground. Choose a place where no water will stand, dig ten inches deep, and work into the soil one-fourth bushel well-rotted stable manure, or one pound fine bone meal per square yard; rake the bed up mellow; then set the plants three inches apart each way, putting the roots well down into the soil which is to be moist.

Before freezing weather sets in, surround the plants by a frame of boards, one foot high on the north side, and six inches on the south; cover this with lattice of lath nailed three fourths of an inch apart on strips strong enough to withstand the weight of the snow, or sashes may be used, fastened on with a space of one inch left open at the ends of the frame and between the sashes, to allow the circulation of air, this will save all attention to airing during winter; if the soil gets dry, water on mild days.

As spring comes take the lattice off, but replace during cold spells. If sash were used, air freely for a week, then remove them to keep the plants from growing soft, replacing only if the weather gets very cold. Plants so wintered are very hardy, and may be planted where they are to bloom as early as the bed can be prepared. As Pansies must have rich soil, it is well to manure such bed heavily in the fall, and dig in roughly; work it over in the spring, setting the plants as above directed.

Keep the bed moist, and when hot days come mulch, two inches deep with anything at hand, to keep the soil cool. It probably will be necessary to water once a week, and oftener, as the heat increases—do not plant Pansies close to trees, but the afternoon shade from a building or fence is beneficial.

834. **The Guii Plum.** The Guii Plum originated with Mr. Hagaman, Lansingburg, N. Y., about 50 years ago, and was first cultivated largely by John Goeway (pronounced Guii, Gweii or Gueii), and was called and mostly known under that name. Tree hardy and a vigorous upright grower, said to be an early and abundant bearer, fruit large, roundish oval, suture slight, skin dark purple with a thick blue bloom; cavity large, with a long slender stalk; flesh pale yellow, sweet and juicy, with a sprightly sub-acid flavor, not rich, but good for culinary purposes and market. Almost a free stone and ripens about September 1st.—W. H. ARENDT, *Missouri.*

914. **Mulberries Fruiting.** Downing's Mulberry produces immense quantities of fruit with me every season, and my tree stands as a single specimen on the lawn with none near it.—C. E. P.

Garden Chrysanthemums.

My bright-faced darlings by the garden path
Standing almost alone, nor asking why,
Meagre the sunshine that thy small life hath,
Born under Autumn's chill and changeful sky.

Ye never knew the Roses white and red
That overflow the Summer bowers with bloom;
No loving Violets with the Mosses red
Pours at thy feet its purple, faint perfume.

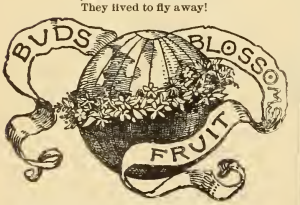
For thee are only withered, falling leaves
And stricken grasses, turned from green to gray;
The kindly spider in the sunlight weaves
Her silver bars across thy desolate way.

—*Inter-Ocean.*

The leaves are crisp and russet,
The Sumac's blazing red,
The Butternut descending
Is cracked upon your head.
The butterfly's departed,
Likewise the belted bee,
The small boy in the orchard
Is up the apple tree.
The trees wear lovely colors
In beautiful excess;
All nature seems to rustle
Just like a new silk dress.

—*Harper's Bazaar.*

Sing a song of snow-flakes,
Icicles and frost;
Four and twenty snow birds
In the woods were lost.
When the storm was ended,
Happy birds were they,
By some crumbs befriended,
They lived to fly away!



Which premium will you have?

Dusty plants can not be real healthy.

Sheltered spring bulbs flower the earliest.

To Our Subscribers: Club us as we deserve.

Beans were not known in England until 1509.

Any bulbs yet to go in? The season's days are closing.

Many pot Geraniums are killed by over watering.

Whoever induces a friend to become a reader of this journal does that friend a favor.

Would you have strong Maurandias for next spring? Then sow before the holidays.

In looking over the fascinating premium offers, remember that they are for dollar subscriptions.

The use of bulbs in bold groups is capable of creating a much better effect than a similar number planted in precise lines.

That Strawberry bed, made from potted plants, on our experiment farm lately, and referred to last month, has shown better for some weeks now past.

Why Not? Some one has been at work developing the purplish crimson type of Pigweed, and is about launching forth, as an ornamental plant, the results of his work.

How Grand it Must Be. An effective corsage bouquet arrangement is said by an authority to be in the form of a letter V, full at the neck, tapering to one flower at the waist.

A New Seed House. Mr. W. A. Morehouse, formerly general manager of the Hiram Sibley & Co. seed house, Rochester, N. Y., will embark in the business for himself shortly.

Weed Killing in Winter. An excellent way to kill perennial weeds in the Raspberry rows, is to smother them with a heavy coat of manure, which may be used to advantage in this way even if somewhat coarse.—*D. N. L.*

A LeConte Pear Orchard. I have an orchard of 125 trees five years old from cuttings, being therefore on their own roots. Some of them have made a growth of six feet of well matured wood. —*Wm. M. Jeffrey, Randolph Co., Ill.*

For wintering Celery for home use, a frost-proof cellar, rather dark, but with fair ventilation, serves admirably. Dig the plants with as much dirt as possible, store close together on the cellar floor, and it will continue to grow and blanch until used.

Now is the time for soil to be gotten under cover in shed or cellar. It should be of good quality for use in hot-beds and starting-seed boxes next spring while the ground is yet frozen. By filling the outside frames with leaves, and covered over, the soil will not freeze so hard.

The premium pages were brought into the most conspicuous and safest part of the present paper, in part to accommodate the binder of the paper. If when the annual volume is completed, or at any time it might be preferred to take them out, the removal of the stitches will release these, leaving the regular matter intact.

As window plants in winter, but few are so easily grown as the Nasturtiums and especially the dwarf form which comes in every shade from creamy white to orange and dark crimson. Branches of these readily grow, if placed in a dish of water, and make finely blooming specimens, the vessel becoming filled with roots. It should be kept in the sun.—*E. E. S.*

The Winter Coverings of Straw. As far as possible every thing about a garden should partake of a neat and orderly appearance. The French gardeners appreciate this point very well. From a sketch made in a garden in France we have prepared our illustration of a tripod of sticks, supporting on its upper side a sheltering cap of straw, over the plant below.

It is Not a Rare Freak. This in answer to E. W. L., Schenectady, N. Y., who has mailed us a Carnation flower which has a new bud standing out immediately from the center of the bloom. We have seen hundreds of them in Carnation forcing houses, nearly to the dismay of the growers who desired the crop for market, and for such a purpose it was almost a failure because of this peculiarity.

An Insectary. What is It? It is a greenhouse-like structure erected at the Agricultural Experiment Department of Cornell University, Ithaca, N. Y., for the novel purpose of breeding insects, thus allowing of a more complete observation of their habits. Prof. J. H. Comstock, the entomologist, writes that he hopes soon to furnish our readers with an illustrated sketch of the building, and their methods of work.

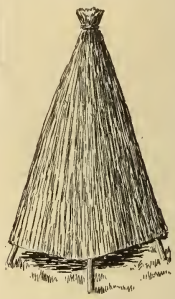
Spiræa. The large number of beautiful flowering shrubs under this head, vary greatly both in bloom and foliage, flowering from May until late in August, when the one known as Hard hack or Steeple Bush (*S. tomentosa*) shows its rosy-pink flowers. From being so common this species is seldom planted, but handsome low-growing shrubs like it are not plentiful enough to warrant this being so greatly overlooked. Its lateness also is in its favor, and it grows well on almost any soil.—*T. R. Murray.*

This ailment is growing alarmingly common. So says Supt. Doogue, speaking of the deadened appearance of young Maple trees in the Public Gardens of Boston, Mass., and that the only cause he could ascribe for the ailment, is a premature development of the foliage occurring early in the season, which was then suddenly withered by a few days of extreme heat, giving the trees a blighted look although the trunks seem perfectly healthy. The Maple trees about Buffalo have for several years been affected similarly to this. We believe it is a disease.

Every reader could secure from one to fifty new subscribers to this journal before the holidays if they would go about it with a will. If you think well of the paper call the attention of your friends to it, that they too may receive its visits. With 20,000 more readers we can make a vastly better paper than now, and yet keep the price at one dollar a year. That number of new subscribers should come to us within six weeks. They will come if you, and you, and you, kind readers, will only get at the import of our liberal premium offers, and act accordingly.

How do You Treat Your Fernery? To have a Fernery do well requires only simple treatment, but the attention needed must be regularly and fully given. Drainage is of prime importance; the easiest way to secure it being to have a double bottom, the upper one coarsely perforated, the lower being like a water tight pan that can be emptied. The soil should be light and fibrous. Do not crowd the plants, and sunshine may be allowed on the case, being sure that moisture is never lacking. Air should be applied daily by raising one side and then the other of the cover, an inch or so for an hour.

The Wild Rhododendron. It grows in shady places, and prefers damp or sandy footing, often running up to a height of 20 feet. Its branches are bent and twisted in the strangest most fantastic ways imaginable, and bear up lanced-shaped evergreen leaves woolly underneath and resembling the Kalmia. Amongst the wrangling branches and sober setting of leaves gleam great bunches of pale pink blossoms. The buds are bright rose color, in compact heads, and last a long time; opening slowly when put in water in the house, to as fine flowers as if they had been left on the shrubs.—*Remle, Newport Co., R. I.*



A Winter Shelter for Small Trees, Shrubs and Plants.

Catalpa leaves, as a protection for summer set Strawberries, was a new idea to me, but that is the use I saw them put to on the fruit farm of W.W. Farnsworth, of Lucas Co., Ohio. Over each plant newly set, a Catalpa leaf was placed with enough soil on to prevent its being easily blown off; in a few days the leaves are dried up and many are blown away, leaving the plants bright and cheerful in their new home and ready for business. The leaf is better than grass, because it has a tendency to keep the space covered in a sweated condition, which is very favorable for young plants recently moved.—*E. H. Cushman, Cuyahoga Co., Ohio.*

Coronillas. These are very distinct looking plants, easily grown, and amongst the freest of bloomers even when quite small. They succeed well with ordinary greenhouse warmth, coming in during the summer season, according to the temperature they have during the early spring months. Cuttings, consisting of the present season's shoots several inches long, inserted in pans or pots, filled with sand and covered with glass, strike freely any time from spring to autumn. If put in now the little plants will through next summer be much in advance of such as are not rooted before spring. Pot them singly,and through the winter have a night temperature of about 50 degrees.—*Marjory.*

Fine Tomato Growing. I have tried to get early, smooth and large crops of Tomatoes out of good garden soil for 20 years, while not a failure has been made entirely. No such crop has ever been reached as I had the past season on a stiff yellow clay soil sloping gently toward the north. It was planted in Potatoes last year and well manured then, no manure this season having been used. I have Mikados weighing 26 ounces. This kind is smooth, early and enormously productive, though other varieties are nearly as good. Very rich soil is not very good for the Tomato, as where they are native they grow on the hillsides, not in the rich valley bottoms.—*A. C. Bates, Kankakee Co., Ind.*

A Haul-up Watering Pot.

Watering Plants. The slopping work of plant watering does not impress most growers as the most agreeable part of plant culture, either in the window or the plant house. As we cannot get rid of it, the plan herewith figured is, for

small places, to be commended as an effective, simple aid in making a neat job of the watering: Take a pail or bucket about the size of a Tobacco pail, with a hole in the side as close to the bottom as possible. This hole is to be large enough to admit the small end of a hose coupling, the screw end projecting out, to which a piece of small hose of whatever length required is attached by a corresponding screw socket. A light rope is fastened to the handle of the pail, and then put through a pulley wheel placed in the rafter. It is a very easy matter to elevate a pail of water and keep it up by tying the cord, then proceeding to water or syringe the plants within range.

Peroxide of Silicate. This substance having been extensively advertised as a superior insecticide and fertilizer, we would advise our readers to go slow in buying it, on the authority of analyses, made at the Connecticut and Vermont Experiment Stations, of its composition, showing that it contains no silica nor any "great amount of oxygen" (peroxide), being mainly plaster of Paris (gypsum), upon which it depends chiefly for its fertilizing power, containing four per cent of Paris green. The latter of course renders it fatal to insects; the fraud consisting in giving a high sounding, misrepresenting name to the article, persuading people that it is something remarkable, and selling at an exorbitant price a common mixture that every user can prepare for themselves at a cost of about 65 cents per hundred pounds, instead of paying five dollars, the price asked for the above compound.

A fortune lies before the person who will give us a Blackberry as large as Kittatinny and hardy as Snyder. It should ripen early and be prolific; also for the person who gives us a Currant as large as a Houghton Gooseberry, as good as the White Grape, and an abundant bearer; as well as for a man who will improve the Quince till it is a fine dessert fruit, and yet retains its peculiar flavor. The man who has the tact and persistence to give us a race of thornless Blackcap Raspberries which produces fruit as fine as Gregg and hardy as Doolittle, will be amply repaid. It is not worth while to expend work on new Strawberries or Potatoes. You are not likely to get any thing finer than we now have, and there is sure to be enough done in that direction; but with a wide-awake horticulturist there will occur openings for work of the sort noted above, that will be sure to bring most liberal compensation. The Fay's Prolific Currant has netted Mr. Fay over $20,000.—*E. P. P.*

Confusion Among Violets. It is remarkable, says a writer in the Garden, that so few realize the difference between the Parma (dark) and Neapolitan (light) Violets. This occurs from the fact that the Neapolitan is the older and most grown in England, while the Violette de Parme is so general in the south of France that the inquiring stranger is assured that there is no other, Neapolitan being only a synonym for De Parme. In some districts, however, the Neapolitan is grown and produces the very finest pale blue-gray flowers in spring. The Parma Violet dates from the days when Napoleon I's wife was called Duchess of Parma. All who grow the Neapolitan well know how troublesome the runners are in summer, and how useless it is to expect much bloom in winter unless these runners are kept off. The merit of the Parma Violet is in its tufted growth and free-blooming qualities, without the special care that the Neapolitan requires; it has few runners, and its flowers, freely borne, open well in winter, so that all who care for winter Violets should try the Parma; many will prefer it to Neapolitan, on account of the simple management required for success.

How to Grade for Drains. I use two targets, which I will name No. 1 and No. 2 to describe them, and a pole. No. 1. A, is a piece 2½ inches square by two feet long pointed so as to drive in the ground, two clasps on as shown in cut, for B to slide in. B, one by two and one half inches by two feet long. G, one by two inches, eight inches long, fastened on A with thumb screw D. No. 2, is a piece one by two inches, six feet long. B, block two inches square made to slide up or down as is necessary—fastened with thumb screw C. Dig ditch deep as desirable at outlet. Set No. 1 so that arm G extends over ditch. Then take a pole and set up in ditch and slide B down or up on No. 1 till it comes even with top of pole. Next take No. 2 and stick it into the ground several rods *back* in the opposite direction that the ditch is to run from No. 1, in line with ditch. Now take pole and go ahead about six rods on the line of the ditch and sight from three feet on pole back over No. 1 to No. 2 beyond, and slide B on No. 2 up or down as is required till you have it in range. Commence to dig at No. 1 and set pole in the ditch every foot or two to see whether the top of pole comes in range with target on No. 1 and No. 2; when you have dug back to where the pole was sighted from, proceed as before. No. 1 can be leveled with pocket level if ground is laid off by a civil engineer. Set targets with grade stakes. There are a great many tile laid

One of the Pretty Hoop Petticoat Narcissuses.

uneven in grade, which soon fills with mud, the users get discouraged and blame the tile, saying it don't pay.—Drainage and Farm Journal.

The Hoop Petticoat Narcissuses. These form a most fascinating group of the dwarfer class of Daffodils, bearing as they do a profusion of white or yellow flowers springing from peculiarly clustered, long, grass-like foliage. While their culture is of the simplest character, yet, from their being natives of Spain, they require a warm, sunny situation and light, sandy soil. Another point is that they should be taken up and divided every second fall. All of the varieties are worthy of culture, either in pots or the open ground, being of especial value for cut flowers. When pot-grown, by potting early in season, they will easily bloom by the holidays, and are likely to become popular. The varieties are all hardy if planted five inches deep and given a winter covering, except the Algerian form Corbularia monophyllus, (*cbusii or albus*). This sort, in pots, has many snow white blossoms, as shown in our illustration, in early winter, on stems three inches or so high, and is a beautiful acquisition to our bulbous plants. Aside from pots, an effective way of growing this or any variety, is in shallow pans or boxes, using a gritty soil, (in pots also,) composed of loam, broken charcoal and spent mortar, and coarse sand. A variety with bright, yellow flowers C. conspicua, is excellent for bedding, pot culture or rockery, blooming very early. In pots place a number in each pot with sandy soil, treating like Tulips. A larger form of the above C. citrinus grandiflorus is of a pale lemon color and earlier, excellent for forcing. It is very hardy and unique when grown as a ground work on a carpet of Glory of the Snow (*Chionodoxa luciliæ*). A very rare form C. graelsi is similar but shorter, and of a pale sulphur color. A very neat golden yellow (C. tenuifolium) is rare and distinct.

New York Fancies in Flowers.

It is still early for much decorative work, but a few autumn wedding and small receptions are giving work to the florists. Flowers have been comparatively scarce during the early autumn, Roses excepted; they were plentiful enough, but coarser outside stuff, such as the florist depends on for large decorations, was lacking in consequence of rough weather. Wild flowers do not seem quite so plentiful as usual either.

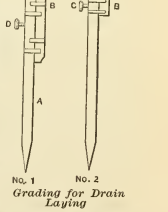
There is but little real novelty in the wedding decorations. A back ground of handsome plants forming a semi-circle, is usually made; either arch or canopy in the center of this. When the arch is used, a wedding bell is usually suspended from the centre, but this is rather hackneyed, and is often dispensed with. The canopy is fringed with handsome flowers, and is usually square.

In decorating rooms, much use is made of large vases filled with a mass of handsome flowers, one sort only. A great vase filled with about fifty Beauty Roses, forming a loose bunch, is strikingly handsome. Mantel pieces, where consisting simply of the one broad shelf, are simply formed into a bank, often bordered by some of the finer Lycopodiums. Many of the modern mantels, being formed like cabinets, do not permit of this arrangement; they have to be draped with Asparagus or other light greens, while the recesses contain vases of flowers or decorative plants, irregularly arranged. Foliage plants are more used than ever; their reign is certainly on the increase, as screens of large Palms are placed near doors, or shading quiet nooks, while the stiff masses of flowers, which were both inartistic and expensive, decrease rapidly in favor. Not that flowers are used less—quite the reverse, but they are used in different ways. But the eagerness of the great city florists this autumn to buy up all the good decorative plants possible, shows decidedly the tendency for the coming winter. It is to be a winter of plant decorations, undoubtedly. Big Ferns, Dicksonias and Alsophilas will be used; Palms in greater profusion, Arecas, Kentias, Seaforthias, and so on. For smaller plants, Pandanas and Dracænas are sure to be in favor, as well as the smaller Palms. Small Kentias are very much used with Adiantum cuneatum in table plateaus. Good decorating Ferns, Adiantums, Pteris, Davallia, and so forth, are in strong demand.

Is it to be an Orchid winter? Certainly enough Orchid plants have been sold cheap at the auctions to supply the trade with plenty of cheap flowers. I, for one, don't believe that Orchid flowers will ever bring fancy prices again, but there is sure to be a certain demand for them. Whether the prices realized will pay? Well, that is uncertain; there are so many large collections in the vicinity of New York. According to number of plants, DeForrest's place alone might be able to stock the entire market with Cattleya blooms. Then there is Siebrecht and Wadley, with their big stock, to say nothing of the United States Nurseries at Short Hills, with the largest collection of Cypripediums in this country—some 280 varieties and a tremendous number of plants. At any rate, people need not think that other flowers will be put entirely in the back ground by the Orchids; they will not supplant Roses.

The handsomest bouquets show a mixture of Roses and Orchids; but are hardly so large as they were. It is said that they will be much smaller during the winter, as women are becoming tired of carrying such immense erections. A little later we may expect to see the usual avalanche of Chrysanthemums in bouquets and everything else. They require a certain amount of art in arranging, to give the requisite appearance of careless grace. A good many florists of otherwise good taste, make the mistake of mixing light Ferns with these flowers. It gives them a decidedly coarse look, which should be avoided, heavier foliage is absolutely necessary, if any at all is used. Ribbon is another thing which somehow does not have an æsthetic affinity for Chrysanthemums.

Table decorations are still comparatively simple. With a great many the fashion still prevails of making the centre piece of choice flowers, which may be removed and presented as favors. Pink flowers are still admired for this purpose, as they have the advantage of showing up well by artificial light.



Grading for Drain Laying

Funeral designs are certainly going, but they will die hard. They do not seem to lose favor at all out of large cities, except in rare cases. But city florists say their popularity is certainly diminishing, and there is certainly a decrease in the barbarous practice of lettering in stiff immortelles. More faint-colored flowers are used in designs, as a relief to the intense white, and exquisite arrangements are made in Pansies and Heliotrope, shading from pale lavender to deepest purple. Elaborate symbolic designs are rather discouraged by high class florists, though there is a certain demand for them.

EMILY LOUISE TAPLIN.

The Indiana Florist's Society will hold their second annual show in Indianapolis Nov. 13th to 16th.

Forestry Congress. The American and Southern Forestry Congress will meet together Nov. 20th, at Atlanta, Georgia.

Results of Labor. From the wild sour Apple and the bitter Almond, came the tender spicy Apple and the luscious Peach.—*M. P. Wilder.*

The Tomato Family. At the recent Michigan State Fair, the State Agricultural College, among other exhibits, had a collection of Tomatoes numbering nearly 150 varieties.

A New Sweet Corn. The Massachusetts Society awarded a first-class certificate of merit to Charles N. Brackett, for his display of "Ruby" Sweet Corn, a kind with dark red husks, which was ornamental to say the least, but of its merit for table use no report was given.

The State Horticultural Society, of Indiana, held its semi-annual meeting at Indianapolis, Sept. 19th, with its exhibition in connection with the State Fair. New fruits of many varieties were shown. Dec. 5th, 1888, is the date for the next meeting in the same city.

Horticulture for the South. J. M. Howell said recently before the Texas Society: Southern people must abandon large farms, because labor cannot be obtained, and population is increasing. With approved methods of culture, one acre can be made to produce as much as ten did before.

Burr or Mossy-Cup Oak (*Quercus macrocarpa*). This Oak is one of the most picturesque of the species, and is highly prized by foreign growers. In fact, most of the European Oaks are inferior to our natives, which are not appreciated by us as fully as they deserve.—*H. W. S. Cleveland, before the Minnesota Horticultural Society.*

A Mammoth. A Stump, the World Peach shown on the tables of the Cherokee County exhibit, at the East Texas Horticultural Fair, grown by Mr. Foreman, of Rusk County, weighed one and a quarter pounds; the fact is also well attested that the same tree produced the most remarkable crop of fifteen bushels of Peaches at the same time.

Peaches for Texas. At a recent Texas State meeting, Mr. Hogan said that with the exception of the Peen-to varieties, all kinds of Peaches succeed in Texas. At this meeting also the following list of fourteen was compiled, as the most desirable varieties for the State: Crawford's Late, Old Mixon Cling, Alexander, Columbia, Heath's Cling, Crawford's Early, Chincse Cling, St. John, Old Mixon Free, Elberta, Rivers, Amelia, Picquett's Late, Lemon Cling.

New Names; Old Plants. The renaming of plants must not be overlooked. We must hold inviolate and sacred the right of any man or woman, to name the plant through whose skill, patience and care it has been produced; and not only that, but we must by the moral force of this society, render secure his or her right and title in the same forever. No one has the right, either through caprice or malice, to change or attach any other name save that given by its disseminator.—*President Hill's Address.*

Lawn Making and Watering. During a discussion on Ornamental Gardening before the Michigan State Society's meeting, Mr. W. W. Tracy said: The rule is to smooth down the dirt from the cellar excavation, lay some turf, and then giving just water enough to keep the grass green. This method is always disappointing in the end. Prepare the soil deeply and seed it. When watering give a thorough soaking to induce the roots to go down below the surface; this renders the lawn able to resist drouth.

Golden Beauty Plum. Appearance handsome, skin rich, golden yellow, very thin, and of a transparent appearance, in which innumerable small dots of a lighter shade of yellow present a peculiar resemblance to small air bubbles. The veins in the flesh near the stem are also visible through the skin. Fruit smooth, roundish oblong, one and one eighth inches in short diameter; flesh golden yellow, firm, rich, sweet, and of excellent flavor; free stone; pit very small. Valuable where it will produce well.—*G. L. Taber.*

Potato Blight. About June 20th, there were several heavy showers following an extended drouth; immediately after the rain I noticed small spots of rust on the leaves, and they continued to grow larger until the leaf was destroyed; then the vine became affected and died prematurely. All the Potatoes in this locality were affected after reaching a certain stage of growth. My land had been pastured for several years, and plowed the previous fall. The plants were very promising when the disease struck them.—*Wm. Lyon, Minneapolis, before the Minnesota State Society.*

Something New Among Roses. At the July meeting of the Belgian Botanical Society, there was given an account of a supposed new species of Tea Rose, discovered by General Collett on the mountains of Birmah. The pure white flower is five inches in diameter, and differs from the common Rosa chinensis *Jacq. (R. indica, Auct.)* by its single flowered inflorescence, entire outer sepals, unarmed floriferous axis, and large size, being called by Collett, according to M. Crepin, who described it to the Society, Rosa gigantea. It may prove to be only a rare variety of R. chinensis, but cultivators would do well to look after it.—*Gardener's Chronicle.*

Warding off Grape Rot. Reference has been made to the system of training the Grape vine, which I adopted to counteract Grape rot. I cut the vine down to the ground after fruiting, and the new canes of the subsequent growth produce the next fruit. It is a system that tides the Grape over until the rot crisis has passed. The vine must be in a healthy condition; the number of canes of course depending upon the strength of the root. Leave but two clusters on a lateral; pushing the fruit by every means to a robust and early maturity. Whether these results are attainable with other varieties than the Concord, or on various soils is not known.—*Prof. Hawn, to the Leavenworth Co. (Kan.) Society.*

Summer Florists' Houses. One half of the growers' houses stand empty from the first of June to the end of September. If these were planted with young vigorous stock, thousands of extra dollars would find the pockets of producers. The Rose is not the only flower that should receive attention. We want variety, and the market is entirely barren of good flowers at this season of the year. Why not grow a few of our choice varieties of Carnations, as Buttercup, Grace Wilder, Grace Farden, and others. Long-stemmed blossoms of these kinds sell readily at fair prices. The list might be extended to include many kinds not considered heretotore, from the mistaken idea that they would not pay.—*F. F. Benthey, before the Chicago Florist Club.*

Georgia Horticultural Society. The Georgia State Horticultural Society convened at Thomasville, on August 1st.; many instructive essays were read, including those of Prof. Willet of Macon, on the "Hybernating of Insects;" Dr. Samuel Hope, on "Apples in the South;" Prof. J. J. Newman, on "Horticultural Education," and Mr. J. D. Husted, of Vineyard, on "Best Methods of Obtaining New Fruits, etc." This is a strong organization, and the President, Hon. P. J. Berckmans, of Augusta, is one of the most scientific and progressive horticulturists in the United States, being also president of the American Pomological Society. The exhibition of fruit was a credit to the Society as well as the State. President Berckmans and Secretary T. L. Kinsey were re-elected. An interesting incident was the presentation of a costly gift to Col. Kinsey, which was a just tribute to a faithful and efficient officer. The Society will hold its next meeting at Griffin, Ga.

Massachusetts Horticultural Society. Recently at a regular Saturday Exhibition, a feature was several large collections of Sweet Peas. The finest flowers in twelve unnamed varieties were shown by Mr. Charles Francis Adams, of Quincy. M. B. Faxon, Boston, staged twenty-five named varieties, of which the finest were Black Purple, with nearly black flowers; Butterfly, light, clear lilac; Painted Lady, pink and white, and Invincible, dark, clear scarlet, and the handsomest flower in the collection. Many of the newer varieties give evidence that too much attention has been given to the development of large flowers at the expense of clear self colors. Sweet Peas are now great favorites with the public. At a later meeting Horace Eaton contributed eighteen varieties of Plums grown in New England, the largest display made for twenty years. There is a growing interest in the cultivation of Plums in New England; though this year the black knot has done great injury.

The Association for the Promotion of Window Gardening, of Boston, Mass., held an exhibition the middle of September, of much interest. The superior condition of the plants over the show of last year, showed the progress and good effects of this needed work. The increased attendance, as also the many cultivators, give promise of much greater future results. The display consisted of almost two hundred potted plants, and cut flower collections numbering over a hundred. An admirably arranged collection of wild flowers of two score varieties, by Mr. Coburn, attracted attention. There some seventy gratuitics to various exhibitors were presented by the committee, while nine members displayed plants which were worthy of special mention. Exhibits in different localities of the city were held during the season, an especially successful one being at Roxbury. The committee furnishes plants to those desiring them, at cost and free delivery to some central point for distribution.

Culture of Gooseberries.

[*Read before the Ontario Fruit Growers' Association by B. Gott, of Arkona.*]

The soils best suited to successful Gooseberry growing, have been found to be thoroughly drained, rich, and deeply worked, clay loam. These qualities of soil are imperative, as the plant is very impatient either of excessive dryness or heat. This is one of the chief causes why success with it is so uncertain in our climatic conditions.

Culture. But with a moderate amount of protection from dryness and heat, the success of Gooseberry growing, from improved American seedlings, is assured. To secure these conditions, location must be skillfully used. The young plants at two years old, will be fine, strong, and well-rooted, whose after-growth will be rapid; carefully planted in ground, previously well prepared, and marked off four feet apart each way. This planting gives 2,725 plants to the acre, and will give satisfaction to the workers and pickers, and if every plant grows it will make a fine plantation after the first year's growth. The ground must be kept stirred, by means of a one-horse cultivator, between the rows both ways, and not a weed allowed to be seen. The young bushes make extraordinary growth of young, thrifty wood, and the set of fruit buds will be astonishing, repaying all the care lavished upon them. In Gooseberry growing, as in every other kind of fruit culture, if one would wish to reap the highest result, unceasing vigilance and constant application must be certainly and freely given.

Pruning. The annual pruning consists in shortening the summer's growth to a moderate extent, and thinning out the crowding shoots. This operation is generally and best done in the early summer, as the growth of wood and fruit buds, on that which is left, will be so much better and more encouraging to the grower. After the wood has borne fruit some three or four years, and becomes old and feeble, cut it entirely out and the young growth encouraged in its place. This renewing is very important in all pruning for fruitfulness. We have known a Gooseberry plautation to be profitable after having been fruited for 20 or 25 years, but we do not advise this kind of thing; we believe that the best results come from young and vigorous plants, as in other fruits, and would advise changing the plantation after ten years' service, as young plants are produced so cheaply, that there is no economy in running a plantation after its prime has passed.

Enemies. The ordinary enemies of the Gooseberry are insects, mildews, and blights. The most common insects are the Gooseberry sawfly, (*Nematus ventricosus*), and also the Gooseberry worm, (*Pempelia grossularia*). The first of these insects is hatched early in May, and so numerous do they become that they will completely defoliate an entire plantation, unless given an application of white hellebore or Paris green, which will stop their ravages and save the crop. This insect is not nearly so abundant or destructive as formerly. The worm insect mentioned, was also a threatening scourge, but its numbers are less, and it may disappear from our Gooseberry bushes altogether. After hatching, the worm eats its way to the inside of the berry, and devours the contents. Then immediately

joins himself to another berry, enters and devours it also, and so continues. No remedy is known for this insect aside from hand-picking.

But the worst of all enemies to improved Gooseberry growing, in this country, and which have baffled skillful cultivators, are mildew and blight. When we attempt to grow improved Goosberries in this country, a thick growth of vegetable mould or mildew will spread itself entirely over, thus destroying the fruit and rendering the bushes unprofitable and worthless. Another mildew or blight attacks the leaves, and covers them on the under side with a whitish growth which destroys them.

We think that the cause of these is atmospheric, and the remedies, to forbear planting such varieties as are liable to such parasitic growths. Happily it is found that new forms, grown from seed of our native American wild Gooseberries, are not liable to this mildew.

Varieties. Our varieties are as yet limited to two or three, as a variety must be at once hardy in bush to stand our climate, free from mildew, a good grower, and an abundant bearer, with fruit good, but not too large; these points we have developed in Houghton's Seedling, Smith's Improved, and Downing; others are promising but, as yet, not certainly established.

More about the Meeting of the Society of American Florists.

Mention has been made in previous issues of the last convention of this flourishing body, held in August, at New York. The exhibition, aside from the show of florists supplies, was not what it should have been, considering that over four hundred florists live within twenty-five miles of New York.

The President's Address. Retiring-President, E. G. Hill delivered an able address. Among other things he said that all wisdom comes largely by experience, and we can help each other and ourselves by meeting together and comparing notes. We should supplement practical knowledge by a study of scientific reasons.

We should critically study the present possessions of the florists, and improve them in form and color of flowers, by the raising of new varieties by hybridization. American florists were doing too little in this direction, and most of the best novelties were thus far, either sports or accidental seedlings.

The credit system needs bracing up, by making the officers of the society a bureau of information, to whom could be forwarded reports of dishonorable business transactions, by parties injured, and in that way dishonest parties could be made to pay up or be blacklisted.

The evil of substitution of plants in filling orders, should be heavily sat down upon by the society. If the membership could not be purged of dishonest individuals, the society, or at least the large majority could put themselves on record to posterity as being honorable men.

Exhibitions were urged as being a means of enlightening buyers, and giving growers standards of comparison. In the discussion of the president's address, Mr. Cole, of Des Moines, Ia., believed that the necessity of a scientific education was not so urgent as was implied. He preferred the practical experience of florists to the most elaborate chemical analysis. Mr. Peter Henderson thought life too short to acquire a scientific education. He considered the majority of the heads of agricultural colleges to be inexperienced and incompetent, and that a boy of practical experience could beat them in securing paying results. President Hill was sure that practical knowledge could be advantageously supplemented by a scientific study. Mr. Ferguson, a practical florist from Pennsylvania, said the main trouble with florists was a failure to acquire a knowledge of the practical details of the business.

Study of Botany. "What can this society do to encourage the study of systematic botany?" was a question referred to Superintendent Smith, of the Botanic Garden, Washington. Mr. Smith believed that while a knowledge of elementary botany was desirable, he saw no great advantage to the florist from its study. Mr. Peter Henderson believed that a study of botany was a great help to the florist, and emphasized this belief by offering a prize of $100 for the best herbarium or native plants, not less than 500 species, arranged in their natural orders, the plants to be gathered between now and the next annual meeting, and the competition to be confined to members of the society and their children. He offered the prize knowing that the best knowledge of systematic botany was obtained through the work of collecting and arranging such an herbarium. Mr. Grant, of Chicago, said that the value of education must be applied to each case separately. If a young man has the mind to build on he can, by applying himself rightly, acquire an education without college help.

Elevation of Business. In a paper, "The Elevation of the Business," by H. H. Battles, of Philadelphia, stress was laid on the idea that mental and manual labor should go hand in hand. An excess of the one made of a man a visionary and theorist, while he who labored solely with the body was one who rarely reached the goal. Intellectual stagnation in later life, might often result from the lack of early education, but this need not be an absolute bar to progress. That success could be commanded, even though study should not begin until in after years, the lives of many in various professions proved. Close observation was the handmaid of intelligent thought, and may be aided by a knowledge of botany. In the study of this science, Gray's How Plants Grow, and Manual are most excellent helps. The florist should also study color and its laws, so that taste could be used in arranging flowers, and also in using colors; combine red, green, and white; blue and Orange; yellow and purple. Table decorations should harmonize with the surrounding colors. Corsage bouquets, instead of being blindly arranged to fill orders, with no regard to complexion or dress; one might better send loose flowers, allowing the wearer to select the proper flowers. Improve funeral designs of flowers in the way of having them less cumbrous and heavy; flowers of pronounced odor, like Tuberoses, are to be avoided. The wide-awake florist also is always a regular reader of the best papers bearing on his business.

Palms from Seed. C. D. Ball of Pa., read a paper on "Ferns, Palms, and other Decorative Plants," in which he said: Palms were easily propagated from seed, if the seed was good and sown as soon as ripe, for the best results. He sowed in six or eight-inch pots, covered it about one half inch, was careful of the watering, and generally the young plants appeared some seven or eight weeks after sowing. Robert Craig said he trapped snails, that injure such seedlings, by scattering little bunches of Lettuce around, and gathering them up in the evening while the snails are feeding. Another florist used bran; covering the benches with air-slaked lime; salt was also mentioned.

Plant Nomenclature. The subject was ably handled by R. J. Halliday, of Baltimore, who presented a strong paper on "Plant Nomenclature." He indicated the ways in which plants were known by Latin names, and classifications. This system was not complex or meaningless and no correcting was to be done except by men of scientific research. There were names like Fuchsia, Rose of Castile; Geranium, Happy Thought, etc., and these names were necessary to designate particular plants. He denounced renaming old plants or sending out the same plants under two names, as was done with a Fuchsia. Drop all such nomenclature, as Wax plant, Beef Steak, Fish Geranium, etc.

Glass Area. It was reported, by the special committee appointed at the last meeting, that so far as they could ascertain, the total area of glass in use in the United States by florists was 14,444,460 feet (263¾ acres); increase during 1887, 1,492,279. Showing that the annual increase probably was about from 10 to 12 per cent.

Express Rates and the Tariff. Mr. Peter Henderson reported that express rates could not be bettered, the companies having the best of the argument. J. N. May said that every florist ought really to boycott the Adams Express Company for exorbitant charges and incivility. Mr. Hendricks, of Albany, thought persistence might avail and wished the committee to be continued for farther agitation of the matter; not only were first-class charges made, but the companies doubled the rates, and even then were slow in settling the losses caused by their own employees The committee on reduction of duty on bulbs, &c., reported no progress. Mr. Hendrick, admitted that he was a protectionist, but favored the admission of foreign bulbs, plants, and the raw material for florist supplies, free of duty.

Chrysanthemums and other Flowers. D. B. Long, of Buffalo, advanced the opinion that an abundance of Chrysanthemums or other cheap flowers, did not affect the sale of Roses. Mr. Jordan, of Boston, also concurred, but believed that it mattered little whether any injury was done or not, as Chrysanthemums would be grown as long as a demand existed. A good market Chrysanthemum, according to John Henderson of Long Island, should be vigorous in growth, and of erect habit, to sustain the heavy blossoms. No more than three blooms on a spray is advisable for getting best results.

Ixoras for Profit. John C. Gardener, of New Jersey, said, that Ixoras and other like stove plants could be grown so that the flowers can be sold at a profit, by adjusting the time of blooming to the market. He had at times changed the season by six months, using plants grown in pots, as the temperature of the roots can be better controlled to change the period of bloom. The plants should be gradually ripened off by withholding water. When ripened hold in a absolute rest, by keeping at a comparatively low state of temperature.

Wholesale Flower Markets. J. C. Vaughan thought, that wholesale markets for selling cut flowers in large cities were impracticable. London and Paris had over two million inhabitants, and the successful flower markets were closely connected with other large markets. The experiment the past year at Berlin had been a failure, although the buildings were built by the city. In this country it must be undertaken by the florists' clubs of the larger cities, and as a concentrated population is necessary to success, he doubted if America afforded a city large enough to warrant the experiment.

Elements Essential to Plant Growth.

[L. A. Simmons, before the State Horticultural Society, Meeting at Holton, Kansas.]

Growth in the vegetable as well as animal kingdom is the result of the consumption of food. All plants from the tiniest to the giant Redwood, take a portion of their food, organic, as well as the inorganic or mineral elements, by the aid of water, from the soil and from the air, by the pores in their leaves and branches.

Air and Water. The air, composed mainly of oxygen and nitrogen, is the compound in which all plants live, and from which they derive a large portion of their food.

Water, composed of one equivalent of oxygen and one of hydrogen, has some properties which deserve careful attention. Its power as a *solvent*, incorporating into its own mass, both gases and solids, is truly remarkable. It absorbs from the air a portion of oxygen, nitrogen, carbonic acid, or almost any other gaseous substance or vapor it may contain. Its affinity for certain solids, as lime, ashes, clay, etc., is truly wonderful, and the value of manures depends largely on their capability of absorbing moisture. Water is the chief medium by which growth elements are conveyed to the roots, and conveyed in the sap to all parts of the plant structure. It also enters the leaf pores of every growing thing.

Carbonic Acid. The compound formed by two equivalents of oxygen and one of carbon, is called carbonic acid. Water absorbs a little more than its own bulk of this compound, but like other gases it may be greatly compressed; so that water may be made to hold several times its own bulk of it, as long as the pressure is maintained.

Carbonic acid is about one half heavier than common air, hence ascends much more slowly than the elementary gases, and exists in largest quantities near the surface of the earth, and spread by the winds over great areas, constantly entering into the composition of the air. Though on an average it constitutes only the one twenty-five hundredth part of the atmosphere, yet it may in some localities, as when forests are burned, form a greater portion.

In a pure state, carbonic acid is fatal to all plant life, yet, existing as it does in the air, it constitutes the greater portion of all plant food, being constantly imbibed by the leaves and roots. The experiments of De Saussure, as to the effect of carbonic acid, in excess of what is usually contained in the air, on plant life, are instructive. The growth of plants was stimulated, in the sunshine, when the quantity of this compound was increased so as to constitute about one twelfth of the air; when it formed two thirds they ceased to grow, and speedily died when it was made one half. In the shade any increase of this gas in the air proved injurious.

Carbonic acid combines with the alkaline elements, lime, potash, soda, etc., to form the carbonates which are in somewhat common use

as fertilizers. Hence, this compound of the organic elements is indispensable to plant growth as one of the active forces in the preparation of plant food. Whence comes the supply of this? Science says it is produced by the fermentation of vegetable substances, generated in the decay of animal and vegetable matter; perhaps the larger portion results from the daily burning of cords of wood, and tons of coal by the million.

Ammonia. Another compound consisting of one of nitrogen and three of hydrogen, is known as ammonia, which exerts a powerful effect on plant growth. Water can be made to contain 670 times its own bulk of this gas, and this proportion is known also as hartshorn. The pure gas has an acrid alkaline taste, and not only kills growing plants, but disorganizes them.

All vegetable substances absorb ammonia rapidly, as do even the clays of our subsoils when in contact with it. Charcoal will absorb about 95 times its own bulk of this compound, and light friable soils, having a considerable portion of organic matter retain a still greater portion.

The most common forms in a commercial way are carbonate, nitrate and muriate of ammonia, which have a direct and favorable influence on vegetable life, not only promoting rapidity and luxuriance of growth, but in the interior portions causing the substances taken up as plant food to separate from some and recombine with other elements, and so build up the structure. Uniting successfully with the organic elements and their principle compounds as the nature of each plant requires, it seems to be a sort of essential distributive force.

Nitric Acid. The combination of one of nitrogen with five of oxygen forms nitric acid. It derives its name from nitre or saltpetre, being generally obtained by the distillation of this permanent salt. It imparts a yellow color to most animal and vegetable substances. It is not found in a pure state, but in the tropical regions it is found in combination with lime, soda and potash, and known as nitrate or soda, lime and potash. These salts are soluble in water, yet are solid when dry. The nitrates of lime, soda and magnesia, so strongly attract moisture from the air that in damp weather they are inclined to assume a liquid form, and hence, in soils, increase its powers of absorbing and retaining moisture. In small quantities these have a salutary effect upon plant growth, especially the grasses; yet when a soil has naturally enough of these elements to induce the vigorous growth of any plant, the addition of more would probably not prove beneficial.

The most important use which nitric acid has in its relation to soils and plant growth, consists in its remarkable solvent powers, for by its action the alkaline mineral elements become capable of assuming a liquid form, the condition precedent to their being used so as to influence and aid plant growth. As it is exhaled by the leaves, its use is similar to that of carbonic acid in perfecting the organization.

Phosphoric Acid. Another auxilliary to plant growth is phosphoric acid, which by combination with potash, lime, and soda, constitutes the valuable commercial fertilizers, known as the phosphates, which are extensively used.

All of the compounds treated in this paper are the immediate promoters of plant growth, being essential to perfect organization, germination of seeds and sustaining plant life during all the stages of growth. As a more thorough knowledge is gained of the elements employed and the natural forces which universally operate in forest, field, and garden, better understood will be the nature and needs of every plant cultivated, and hence such food and care can be given as it naturally requires.

Cold Storage and Refrigerator Cars.

[Discussion at the meeting of the American Horticultural Society in California.]

President Earle, Illinois—Fruits are not injured by cold storage, and they do not necessarily decay more rapidly when exposed afterward to the warm outside atmosphere, unless they were over-ripe when shipped. My own experience convinces me of the value of thoroughly cooling all fruits before shipment. A refrigerator car simply holds the fruit so that organic action is checked for a time. When the fruit is packed in a firm condition it does not essentially change when taken out. The success of shipping fruits from this coast to the East, would depend largely upon the kind of cars used, and the manner of packing. A refrigerator car is the worst place in the world for fruits after the ice is melted, as it is then without ventilation, and soon warms up, thus spoiling the fruit very quickly.

Mr Wilcox, California—Fresh Grapes must be kept dry while in the process of refrigeration. The cold storage establishment at Riverside is quite successful.

The President—Fruit that has been in cold storage, or shipped in refrigerator cars should never be reshipped in ordinary cars. Refrigeration is to be used with judgment and care.

Mr. Feely—Cold storage has not proved entirely satisfactory to California fruit growers.

Mr. Klee, California—I think the experience of shippers at Riverside is against cold storage. Lemons and Oranges decay rapidly after being taken out. California fruits at New Orleans, which were not in cold storage, kept much better than fruits from Eastern states, which, as a rule, were so treated. This, however, may have been due, in part, to the extraordinary solidity and good-looking qualities of fruit sent there from this State.

Mr. Van Deman, Washington, D. C.—The cold storage facilities on the exposition grounds at New Orleans were very inadequate. Arkansas was the only state which availed itself of the opportunities, but, owing to some delay in the preparations, the fruit was greatly decayed before the storage application could be used.

The President—Fruits that went into cold storage at New Orleans in good condition came out all right. The process was successful.

Apple Orchards and their Care.

[Mr. C. Schultz, before the summer meeting of the Missouri State Horticultural Society.]

The Apple is our standard fruit and there is no other industry that pays so well at the present time. We can produce as fine Apples in Missouri as anywhere and at little cost, with a good demand from the northwestern market.

The great trouble has been in getting stock, from not knowing the best varieties; this has caused a great deal of trouble, and there has been so many tree peddlers whose goods were worthless, that it has discouraged the people from further efforts. I think a tree swindler is worse than a horse thief.

Buy trees from your home nurserymen, that will be true to name and are adapted to this country, then give them good care; always buy first class trees to start with, as crooked, forked, scrubby trees, will not be satisfactory.

The best time to buy is in the fall, when the nurseryman's stock is not broken, and then you can set them out in the spring when you are ready. Prepare the ground in the fall, by plowing deep and harrowing well. Plant the trees 30 x 40 feet apart, growing crops in the orchard while the trees are small. Potatoes or Corn are the best crops to raise; any hoed crop is good that does not vine and run upon the trees. If Corn is planted mark the rows each way; leave a space of six feet wide north and south of the trees, to give them air.

Keep the weeds and grass away from around the trees; working around often with a hoe and taking the Corn off when ripe. Burn nothing in the orchard, for trees are easily damaged by fire, and cultivate the orchard until the trees begin to bear freely. Do all the cultivating early in the season, so the trees may have time to mature their young wood before winter.

Bearing orchards on the prairies may be seeded to Clover and pastured by young hogs, and the trees headed low down, while bearing orchards within timber shelter should be headed up and well cultivated each year without cropping. The first year after planting, the young trees make a large growth, and this is the time to prune and shape the trees. If attended to while the trees are small, it is but a slight job.

Do not forget that you must keep an eye on your orchard, not trusting a hired hand, for a careless man will do more damage to an orchard than good. Keep out of the orchard all tramps that are around after jobs of pruning, allowing none to be done without skillful direction.

Wrap young trees early in the fall to keep the rabbits from barking the trees. The best material to use is wire screen, as it will keep the borers and mice away from the trees as well as the rabbits. It will cost about 22 cents per yard which will make five guards.

As the Apple grows well when planted in new, rich soil, fertilizing is not needed then; but when the trees are bearing five barrels apiece, then the trees absorb all the substance they can reach, and begin to fail if not fed; the cause of so many trees dying, is simply that they are starving for sustenance; give plenty of manure, but don't pile it up all around the trees; spread it broadcast over the ground, so the feeding roots of the tree will get the benefit. Pruning should be done mostly in non-bearing years.

Experience in Fruit Culture.

[A Paper read by A. L. Hatch before the Wisconsin State Horticultural Society.]

Growing fruit successfully, and making money out of it, are subjects always in order. My experience is varied, and yet I have made a success of some things in fruit culture, not brilliant, but quite tolerable.

In planting an Apple orchard I would set such trees as Tetofsky and Duchess deeper than others, because they sprout so much from the root if set shallow. If for money making, I would set but few kinds, McMahon's White being one, and would not replant an old orchard site. When fruit was abundant I would not buy a cider mill nor an evaporator, for, if I could not sell the fruit at a paying price, I, here in the north, would not attempt to compete with southern dried fruit. I look to cold storage for helping me to save fruits for favorable markets, though as a rule, I would push fruit to market when in the best condition, sorting, and handling carefully, trusting to the seasons for average returns. I would not top graft or prune trees after a very cold winter, nor depend upon top grafting for an orchard, even though I had many large trees to graft, preferring to plant young root-grafted nursery trees.

If trees made a good growth each season, but refused to bear, I would change their treatment; if cultivated, I would seed to clover; if bushy, I would thin, as with such trees, whatever will cause maturity of buds will tend to fruit for the next season. Golden Russett trees, three to six inches through, winter killed, while those of two inches or less diameter did not. Have the older trees exhausted the soil and do not mature their wood like the younger ones? In the province of Ontario were the finest Fameuse and the best crop I ever saw, on a bank where a road had been were stones whose surfaces were crusted over with lime from the leeching water of the earth above. In our section of Wisconsin we have lime with 30 to 45 per cent. magnesia, and will not that account for some of the differences in Apple culture? Would such facts suggest improving the soil for Apple trees by applying lime of the proper purity?

It is often mistakenly said of the Wilson Strawberry, the Currant, and native Plums, that they are gross feeders, but they are light feeders, having so low feeding powers, that they often suffer from lack of growing material, where others would make a good growth, thus they require well fertilized rich soil. I get the most and best DeSoto Plums and Currants from trees and bushes fed nearly up to fruitlessness with strong fertilizers and good culture, otherwise they soon become exhausted; at the same time I have had varieties like the Windsor Chief Strawberry that our common soil just feeds up to fruitage. Right here is a fine point in horticulture that must be mastered by any one who would be completely successful. Some varieties must be fed up to fruitfulness, while we can feed others past fruitfulness. The true measure of success in fruit culture being, not necessarily the largest yield per acre, but is the best returns from labor invested, even though at greater expense of field room. To gain such, the variety that will feed itself to full fruitfulness on any certain soil, is the one to plant.

Among Strawberry plants, the Manchester is from rust almost wholly ruined, for fruit next season. Although without hope, I shall give a portion of it a heavy dressiug of wood ashes uext spring and try for a crop. I do not know that ashes is a remedy for rust, but I know it will add to the vigor of Strawberry plants and help in time of drouth.

Of Raspberries we have some rows five feet apart, but which would be better if seven. My Blackcaps are mostly in rows by themselves. I think it would be better if every other row was

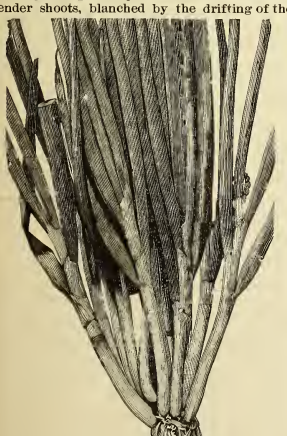
Red as it would be easier to cultivate and manage, and now I wish also that I had planted so as to have filled in around the roots after they had started, the crowns being then just below the surface, for they would be stronger in hard winds, and when being covered for winter. A mistake I made was in not giving winter protection to my Raspberries and Blackberries. Not because they winter kill, but because a larger crop is more certain. Last fall I buried all I had, and one acre required but six days work including shortening-in the bushes and removing the cut brush. This shortening-in put the plant in better shape to cultivate, makes the bushes more self-supporting and giving a crop of berries of larger size and more uniformity, besides ripening in a shorter time. I do not pinch off the new growth of either Blackberries or Raspberries, but allowed the new sprouts to grow at will, as I think they are more easily buried than if much branched.

Some of the Blackberry bushes I put under were ¾ of an inch through, but by using a common four-tined fork to lift the roots while bending the bush, I got them down in very fair shape. Another very handy tool I used was a round pointed shovel. The style of hoe I use in cultivating all small plants and especially Strawberries is made by taking a common hoe and cutting off the upper corners, from the shank to the corners of the cutting edge. File smooth where cut and keep the edge on a straight line. This tool properly sharpened is far superior to any other for hand use where close work is desirable.

In Grape culture I wish to note the desirability of getting good pliable trunks on vines, which should be three to five feet long from the roots to the fruit branches. Such a trunk will handle easily in giving winter protection, permits the vine being put high enough for to keep the fruit clean and also makes it less liable to mildew. For a trellis I use only White Oak stakes seven and one half feet long, as I determined not to put up costly wire or fixtures until my bank account derived from the vineyard was greater than I had use for. On the same plan I have throughout pursued a conservative course, determined that after a reasonable start my fruit should support me, rather than be a constant sink for hard work and money, and everything has paid, me that has been attended to.

CONDENSED GLEANINGS.

A History of Sea-Kale. This favorite vegetable derives its name from having been originally found growing wild upon the sea-coast where its tender shoots, blanched by the drifting of the



Appearance of the Perennial Onion.

sand, were occasionally eaten by the families of the fishermen. It was not seen in a London market until about a century since. Sir William Jones, who lived at Chelsea some time in the middle of the last century, highly appreciated the excellencies of this delicious and delicately flavored esculent, and endeavored to reintroduce it to the markets, with a moderate amount of success. It was always in favor amongst the Scottish people, and may now be found in most Continental markets, especially in France. When blanched and well served, it equals, if it does not surpass, Asparagus in delicacy of flavor. The young shoots and unopened leaves are the best parts of Sea-kale, but the larger leaves may be scraped and served like Asparagus, and is also useful for soups. Forced Kale is most delicate in mid-winter, but it should not be exposed to the light, as that renders it strong and bitter; therefore, after cutting, keep the heads in the dark, or carefully covered; if allowed to become stale and discolored it is worthless. Sea-kale is generally eaten plainly boiled and served on buttered toast with melted butter poured over.—British Journal of Catering.

Black Walnut Tree Growing. Mr. George Van Houten, who is regarded as good authority in such matters, says if the husks are removed it is safe to count that about 1,000 nuts will make a bushel. With the husks on, from 500 to 600 per bushel would be a reasonable estimate. Some years many of the nuts are abortive, while other years nearly all will grow. A fair estimate of their germinating qualities can be made by cracking a few, as nearly all plump, natural-appearing kernels will grow, under favorable circumstances. It is best to plant rather more nuts than trees are wanted, for, like most nut-bearing trees, the Walnut does not transplant easily. After being gathered the seed should not be allowed to dry; if shipped a distance, the nuts will keep from drying out with damp moss about them. In the fall they can be planted at once, and covered three or four inches deep in well-prepared ground. If planted in the spring, over winter, spread the nuts two or three layers deep, mixed with earth or leaves, and covered lightly; if the ground is moist, at least part of the rains should be kept off, planting as soon as the frost is out of the ground. Good cultivation should be given for the first few years, after which but little further care.—Iowa Homestead.

Perennial Onions. These are something new in Onions, as they never form a large bulb, and their value lies wholly in the special adaptability for producing green Onions for fall or spring use, particularly the latter; soon attaining a marketable size, are immensely productive and perfectly hardy. Being perennial, they will, if left in the ground, continue growing for an indefinite time, continuing to increase both from the bottom and from sets produced on top of the stalk. The old set within the ground, closely resembles the wasted bulb of other Onions after having seeded. In their culture the sets should be planted as soon as they have reached maturity, not waiting until dry, as they thus derive the benefit of prolonged growth, and attain a larger size. Plant in drills with a depth of three to four inches, to bleach the ensuing growth to some length. The set produces from one to three large fine shoots the first season after planting, but if left undisturbed new sets are again produced from the the top the same season, and by the following fall and spring the original Onion will have formed a clump of sprouts numbering from ten to twenty, as shown in the cut.—Wm. C. Beckert's Catalogue.

Destroying Wireworms. These are the larvæ of the click beetles, of which there are several species, the most common being *Agriotes lineatus*. There is really no cure for these pests save high cultivation and the encouragement of starlings and other birds; amongst flowers, trap with hollow Carrots or other roots, examining on alternate days, and destroying the larvæ found adhering to them. The only thing which can be advantageously used among garden crops, is ground linseed cake sown broadcast over the ground from time to time. This is eaten greedily by the wireworms, who burst as the dust becomes moist, and thus perish. Where soil is used for potting in which wireworms are thought to exist, it should be baked for some hours, a process which will destroy all living organisms.—American Cultivator.

A Rare Fruit. White Huckleberries are growing on the summit of East Knob, near Blooming Grove, Pa. The berries are about the size of wild Cherries, creamy white and very sweet, the yield this year being twelve bushels, though twenty bushels have been produced in a season. The owner of the land, a Mr. Hobday, keeps away outsiders, picks the crop and sells it to a Philadelphia fruit dealer, who has taken it for years at five dollars per bushel. In Sussex County, N. J., on lands owned by a Mr. Everitt, is another white Huckleberry area, the yield of which rarely exceeds one bushel. These two localities are said to be the only ones where white Huckleberries grow in notable quantities, but there is probably a sprinkling wherever the ordinary fruit is found.—N. Y. Sun.

Seed Raising in California. There is no soil and climate in the world which produces so abundantly, flower seeds of superior grade as that of California. Great quantities of Verbena, Smilax, Pansy, Begonia, Fuchsia, Petunia, Taconia, etc., and innumerable rare seeds, worth almost their weight in gold, annually go to waste, because people have not learned their value, and there is no one to buy them if they had. Consequently this great industry lies almost dormant, waiting for the magic touch of enterprise to awaken us to a sense of squandered wealth. California's value does not all lie in Oranges, Apricots and wine, these industries only bring wealth to the favored few, but in Flora's Dominion, every door yard however humble, can have a measurably prosperous part.—C. Florist.

Grafting Pecans on Hickory.

Cape Cod Cranberries. The Cranberry pickers have gathered by the hundreds on the Cape, the work of harvesting has begun in the Wareham, Wauhinquah, and Tremont bogs. The season will last about two months. The crop this year is unusually large, and in excellent condition. It is a little late in ripening, because of lack of intense heat during the summer, and frequent rains. The frost has wrought no damage as yet, and such injury is expected to be avoided by the general adoption of the signal service system. Worms have damaged many berries in certain sections, but not extensively. Last year the crop in Plymouth and Barnstable counties was 83,500 bushels. The reports given from Wareham, Barnstable, Falmouth and other Cape Cod towns indicate a much larger crop than ever before raised. —Mass. Ploughman.

Grafting Pecans on Hickory. Graft in February at the collar, and bank up with soil to retain moisture, using no wax. On small stocks, one-half inch and less, I usually make a side graft, as in Fig. 1, and tie tightly with a string. For stocks one half inch to one and one half inches in diameter, use the old-fashioned cleft-graft. If stocks are very large, one and one half inches and upward, I saw the stump off squarely, and saw downward perpendicularly, about one and one half inches, trimming out the saw kerf smoothly and somewhat flaring; then cut a good strong cion to fit, and drive it in with a hammer till tight enough, as in Fig. 2. On good Hickory stocks the growth is very rapid, and makes quite large trees in three or four years.—Florida Farmer and Fruit Grower.

The High Cranberry for Ornament. Of the Viburnums, none are more showy that the High-bush Cranberry, as its brilliant scarlet fruit lights up its heavy foliage. The neat Arrowwood (*V. dentatum*) is also at its best now, with its large clusters of blue fruit and its shining leaves, The Dwarf (*V. cassinoides*) with pink and blue berries among its deep green leaves, makes a good companion for the others, and when planted on rich soil is hardly surpassed by any other shrub of its size. These Viburnums, beautiful during spring and summer, in flower, foliage and habit, are doubly useful for the new charm they develope as their fruits ripen in autumn.—Garden and Forest.

Iris Root for Commerce. In three of our hardy Irises—a pure pearl white, (*I. florentina*) pale buff, (*I. pallida*) and deep violet and mauve, (*I. germantia,*) we have the true Iris root of commerce, extensively used in the perfumer's art, and which imparts the subtile Violet odor so prized. The Iris grows and multiplies with wonderful rapidity in all parts of California, and the roots could be easily produced in any quantity desired. The Iris root used in this country nearly all comes from Italy, where it takes nearly two years to cure the roots pure white. In our dry climate it probably would not take more than one season to cure perfectly.—California Florist.

Blight of the Raspberry. Unless some means can be devised to stamp out the fungus Sphæra Hendersonia, small fruit growers may better

give up entirely the culture of the Raspberry. There is not one variety at the Rural Grounds exempt from it. The fruit-bearing canes are just about dead before the berries ripen. It would seem that the fungus attacks only the fruit-bearing canes. Those of the current year's growth are perfectly healthy. Not until the fruit-bearing canes begin to bloom does the work of the fungus manifest itself. Then black patches upon the canes appear, the leaves turn yellow and the canes die.—Rural New Yorker.

The Night-blooming Stock. (*Mathiola bicornis*). The flowers are lilac, with a white blotch at the top of the claw—colors by no means brilliant or attractive. During the day they close up, the petals rolling from the apex, inwards to the center, so that the back only is seen. One would almost certainly fail to observe that the plants were in flower, should he see them during the day. At eveniug, in the cooler atmosphere, the flowers quickly unroll, and are powerfully fragrant; and although the flowers are for this, in themselves, comparatively insignificant, no garden should be without a bed, line, or patch of it.—Gardening World.

Le Conte Pear. J. J. Thomas says. that the Le Conte Pear is remarkable for its rampant growth and productiveness at the South, and for the worthless quality of its fruit at the North, and is found by Samuel Miller of Missouri to be quite liable to the blight. Shoots that are fruiting this season, he states, are blighting badly. However popular, therefore, it may be in the Southern States, it will be hardly worth while for cultivators at the North to take much trouble to procure it. It ripens at Midsummer there and in October here.—Albany Cultivator.

Novel Apple Tree Treatment. A Maine Apple grower has adopted the plan of giving his Apple trees an abundant wateriug at this (early fall), season of the year, applying one or two barrels slowly to each tree, and allowing it to soak into the ground on all sides, especially just outside the shade of the top, where, as in any other trees, the feeding roots are most abundant, then mulching to prevent evaporation; and he has been rewarded with yearly, instead of biennial, crops of Apples.—Prairie Farmer.

Japan Plums. These are different from any of the other Plums—a cross between something and something else—the something having a dash of what we call European Plum, in its composition, while the something else, which relates more especially to the flavor, has a dash of, perhaps, rats, bird's nest soup, Pea meal, etc. At least, it is said to be emphatically Oriental in character, and if that does not include rats, etc., why, then it *is* something else.—Am. Farmer.

Movable Grape Trellis. The Grape trellis shown in our illustration, is especially convenient in a climate where it is desired to lay the vines down

A Movable Grape Trellis.

and cover them for winter protection. It consists of a gate-like frame set between two posts and swings down flat onto the ground, carrying the vine with it. It is made of boards and wire, poles and wire, boards and poles, or all three. The hinges are simple bolts or pins through the posts and uprights of gate.—Prairie Farmer.

Strawberry setting. If the weather is favorable, it will be well to plant as soon after the first of September as convenient, and a big crop of berries can be expected next season. Many are now coming around to fall planting, that formerly were opposed to it. Matthew Crawford says, that plants set out in the fall will produce more fruit the next season, and will make twice the number of plants.—Rural World.

Fall Onion Planting. Top, or tree Onions, among some of the German market gardeners, are set about this time. They are perfectly hardy, and soon after planting they commence to grow, staying in the ground all the winter; on a sandy, warm knoll they quickly get into growth in the spring, and form young, green Onions in good shape for market.—Prairie Farmer.

Celery on Swamp Muck. A swamp can be drained and plowed this fall, cutting grass and any bushes there may be, completely turning under the sod and letting it rot and freeze this winter; next spring thoroughly working until fine and mellow, it can be planted to Onions or Celery, and it will raise a good crop the first year.—Am. Rural Home.

Onion Curing. Messrs. Swayze & Bulgiu, of New Jersey, place the Onions in bushel crates "slatted" and pile them high up in this manner; it not only economizes space, but admits of a free current of air through the Onions, thereby keeping them from rot.—Delaware Farm and Home.

Whitewash the Trees. Whitewashing the trunks and larger limbs of fruit trees may prove unsightly, from an aesthetic point of view, but the result is death to all manner of insects and their eggs, hidden away under the rough, scaly bark.—Tribune.

Olive Growing. Olive culture has been experimented with in Tom Green County with a satisfactory result. It is believed that culture of the Olive will eventually prove profitable.—Denison (Tex.) Gazetteer.

Know the Weeds. The Ontario Agricuitural Farm has started a weed plot, upon which is to be cultivated a wide range of uoxious farm weeds.—O. J. Farmer.

Fruit vs. Pork. It would be far better if people would eat less in the way of grease at breakfast, and make use of more fruit.—Farmer's Advocate.

Open Secrets. Large yields always and everywhere, only are results of rich soil, good seed, and thorough tillage.—Am. Agriculturist.

A Weedy City. There are a thousand acres of Thistles, Burdocks, and Burrs about Chicago.—Western Rural.

A Black Hollyhock. A black Hollyhock is growing in Santa Rosa, Cal.—Cal. Fruit Grower.

Vegetable Products on the Table.

Cold Cauliflower. Boil half an hour in salted water, then drain dry. When cold, break in pieces and cover with mayonaise sauce.

Baked Green Peppers. Remove the seeds, and fill the Pepper with cooked Tomato pulp and minced Mushrooms, seasoning with salt and butter. Bake in a hot oven.

Quince Jelly. Cut Quinces in slices; place in a shallow kettle, and pour water over them; boil until soft; strain through a jelly bag. To each pint of juice add a pound of sugar, and boil until it jellies.

Apple Preserve. To five pouuds of Apples, put two and one half pounds of granulated sugar and a Lemon; make a syrup of sugar and water, adding the whole Lemon cut into small pieces, and boil twenty minutes; add the Apples, quartered, and cook till tender; seal air tight.

Canned Quinces. Peel and boil the parings; then strain; use this as a syrup for fruit; use one teacupful of sugar to two teacupfuls of this liquid. Steam the Quinces until a straw will easily pierce them, then drop into the syrup, and stew fifteen minutes. Can the same as Apples. —Good Housekeeping.

Cabbage Salad. Cut the Cabbage very fine, and put into a dish in layers, salt and Pepper between; then take two teaspoonfuls of butter, two of sugar, two of Mustard, two of flour, one cup of vinegar, and one egg. Stir all together and let it all come to a boil on the stove; pour it hot over the Cabbage and mix well.

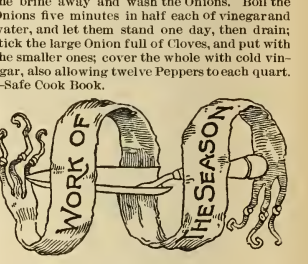
Celery Soup. One quart of veal stock or chicken broth, a pint and a half of milk, three fourths of a teacupful of Rice, and two heads of Celery; wash the Rice, put it into the milk, and set where it will simmer, adding grated roots and white part of the Celery. Cook until the Rice is tender. When done strain and add to the strained stock; salt and pepper according to taste.

French Cooking Cabbage. A Cabbage, washed and trimmed, is covered with cold water; as it approaches a boil, add four or six Apples pecled, cored, and quartered, a small piece of butter, some salt and pepper; let all stew together till tender; strain, and add to the liquid half a teaspoonful thickening of butter and flour, a little water, a teaspoonful of vinegar, and one of any kind of tart jelly.

Barberry Preserve. Stem the berries; then drop them into molasses, that has been boiling ten minutes a quart of the fruit to a pint of molasses, then boil 10 to 15 minutes, and skim out; boil slowly 15 minutes longer; then drop berries in; add hard, sweet Apples, pared and quartered, after the berries are skimmed out, and boil until the Apples are cooked; then put back the berries.—JAS. J. H. GREGORY.

Apple Dumplings. Pare and quarter the Apples. For dough, take a pint of sour milk, a level teaspoonful of soda and lard, butter enough to make the pastry hardly as rich as for pies; roll it out as quickly as possible, then cut into pieces large enough to cover one quarter of an Apple; roll the Apples up and bake them in a bread pan. Before baking, cut a cross in each to prevent bursting. For the sauce, nothing is better than cream.—The National Stockman.

Onion Pickles. Select small, white Onions, and one large one. Remove the outside skin and wash them. Put in a jar and pour on hot brine, sufficient to cover them, and strong enough to bear an egg; let them stand three days; throw the brine away and wash the Onions. Boil the Onions five minutes in half each of vinegar and water, and let them stand one day, then drain; stick the large Onion full of Cloves, and put with the smaller ones; cover the whole with cold vinegar, also allowing twelve Peppers to each quart. —Safe Cook Book.



HOUSE PLANTS.

Ardesia, with its red fruit, is one of the best of house plants, but it will not stand freezing, though in a cool temperature, 45° to 55°, its berries remain from one fruiting season to another, with fewer insects.

Box edging, divided and replanted before freezing weather, should be set deeply and firmly.

Cactuses should rest through the fall and until February or March, keeping the soil all but dust dry. They may be kept on window shelves or tables in the house. For appearance have a glass case over delicate ones.

Callas should now be approaching bloom, and require liberal treatment in the way of light, space, and water, to induce stocky growth and flue flowers. The soil ought not to lack in richness, and a frequent dose of soot or other manure water will help them.

Carnations succeed in the window, if kept near the glass, in a place cool and airy. Dryness rather suits them, but the roots must be kept moist, not over-wet.

Cleanliness. The entire stock to be frequently cleansed of dust and impurities on the leaves and stems. Where plants are sponged off and sprinkled lightly every day, they are the better for it.

Ferneries. Light soil and good drainage are required. Ferns and Selaginellas (Lycopodiums) are mostly used, yet all moisture-loving small sized plants succeed well, while bulbs flower admirably in them. A few plants well developed that have good space are finer than many if crowded. A little sunshine on the Fern case at times is no detriment. Air should be admitted occasionally by tilting the glass at one side.

Freesias. Start at intervals for succession. With advanced growth increase on the root moisture.

Forget-me-not flowers may be had during winter, if good clumps are lifted and given 6-inch pots; store in a cold pit until the holidays, then bring into heat.

Habrothamnus elegans. If this plant is kept within control by free pinching, it forms a fine window plant with profuse bloom.

Heat. Avoid extremes; from 45° to 60° at night is the safest, general temperature. At the former there will be a handsomer plant growth; by the latter more flowers, but not so fine as if cooler.

Hydrangeas. To be wintered in the cellar, keeping the earth rather dry about the roots.

Mirabilis roots, taken up and stored in dry sand, away from frost, can be used another season.

Oleanders. Treatment the same as for Hydrangeas.

Oxalis. As the bulbs show signs of sprouting repot and give water regularly.

Pot young cuttings as soon as they show root; to wait until the roots are large is to spoil many, and perhaps injure the plants.

Trimming. A free use of the knife on all soft-wooded plants that were lifted, is required both for health and beauty; all yellow leaves and old flower stems to come away.

Watering is often overdone; the surface of the soil should get quite dry, but the plant ought not to be wilty, before applying water, and then enough should be given to thoroughly soak the ball of earth; discriminate as to which require more than others.

LAWN AND FLOWER GARDEN.

Bulb planting may go on until the ground freezes. Beds of these to be covered with litter before winter.

Evergreen Shrubs, especially the larger-leaved, like Mahonia, are liable to sun scald and injury from the wind. A good protection is some Evergreen branches, with their butt ends set in the earth on the windward and south sides, and held up by tying a cord around the plants and boughs.

Guard trees in streets and lawns from animals; this may be done with stakes and barbed or other wire. The number of trees that are needlessly injured and oftentimes killed by the gnawing of animals is almost beyond belief.

Improvements. There is no better time than now for grading, laying drains, making walks, drives, etc., allowing the ground to settle during the winter.

Lawns. Continual mowing weakens the grass plants, and on poor soil these are liable to be crowded out by Moss, Veronicas, and other minute weeds. We apply fertilizers at this season, preferring bone manures and guano to stable manures, on account of the unsightliness of the latter.

Leaves are Nature's fertilizer; the richness of wood's earth being due chiefly to these decaying on the ground. The gardener, gathering these annually onto a spot where they would be constantly moist, for rotting them, need never want for manure. Several year's time are needed for becoming available. Those from Oak trees are considered the best, but none need be rejected. After lying for one year, compost with slacked lime, at the rate of 30 bushels to one, as it hastens decay.

Rhododendrons will be the better for a mulch of coarse litter or partly rotted leaves. See Evergreens.

Rockeries. Delicate Alpine plants on these suffer more from wet than from frost; such had best be potted and put in frames until spring.

Shrubbery Beds. Good treatment at this season is to mulch with a thick layer of leaves, both to protect the roots and to supply needed fertility to the soil; the leaves should not be removed in the spring, but are to be lightly turned under to decay.

Stakes and other plant supports to be gathered and stored for next season's use.

PLANT CULTURE UNDER GLASS.

Achimenes, being at rest, should have a dry place, with temperature of 50°.

Amaryllis, of the evergreen sorts, need only enough water to prevent the leaves drying; the deciduous ones are to be kept quite dry.

Astilbe Japonica for early bloom to be started any time from now on.

Azalias, if young, early blooming plants, need good heat. Those at rest keep moderately dry and cool.

Cinerarias sown in June to have final shift, for blooming in January. Guard against fly; above 45° of heat weakens the growth. For early, shift into larger pots. A light place is best for them, air when possible.

Grassula Lactea to be rather dry for fall flowering.

Cyclamen seedlings to be potted in same soil as were grown in. Growing plants generally to be kept near the glass in temperature of 50°. Those in bloom can be given manure water.

Deutzias are easily forced into early spring bloom, and the plants should now be potted. Two months are required for flowers after bringing into heat.

Euphorbias should now make good growth, being in brisk heat with heads near the glass.

Geraniums in all cases to be kept rather dry, and the plants near the glass. The disease known as "spot," is caused by excessive moisture.

Green-flies or aphis increase rapidly if not checked. The standard remedy is burning one half pound of refuse Tobacco stems to each 500 feet of glass weekly. Keeping moist Tobacco stems under plants bedded out or between pots, is also approved of.

Heliotrope in bloom requires liquid manure.

Heaths must have careful attention as to watering, with air, and not too high a temperature.

Hyacinths that were started early, having filled their pots with roots, may be brought to heat, and are not to be allowed to suffer from dryness.

Light naturally fails now; so don't have the glass clouded with filth or whitewash, the former inside.

Lily of the Valley wauted early, to come into heat along the end of the month.

Orchids. Most kinds including Cypripediums and Dendroblums will be ready for rest, so the Orchid house may be cooled down and kept rather dry to suit the larger number. Those like Oncidium and Zygopetalum which flower this month, or have not completed their growth, will be better by themselves, in a shady, somewhat dry situation with not too much heat. For Orchids at rest a temperature of 50° by night and 10° higher by day will be sufficient.

Pelargoniums (Lady Washington) that were cut down to he repotted when new growth is an inch long. Reduce the ball to go into pots that were used before or in smaller ones. Shift such early ones as are ready.

Poinsettia. Treat as directed for Euphorbias.

Remove dead leaves and mildewed twigs at sight; these look bad and impede light and air.

Sowing of Candytuft, Mignonette, Sweet Pea, and so on, outside for early spring bloom should be done.

Tubers of the Dahlia and Tuberose class that are now cured to be stored in dry places under the benches.

Verbenas from fall cuttings to be kept cool and near the glass, with plenty of air in all suitable weather; fumigate with Tobacco once a week.

Water sparingly now as a rule; with all plants having ample drainage. Should the water stand in the pots for some time after watering, the drainage needs to be looked after. Better shift into new soil and pots.

FRUIT GARDEN AND ORCHARD.

Drainage. The orchard must be free from standing water; where needed, now is the time to drain, putting in enough tile to keep the soil dry and mellow.

Fences and gates to he kept in order, as at this season of scant outside feed, animals that get out are likely to injure trees.

Fruit. Keep the ventilators of the storage place open day and night; as much as weather allows, have the temperature of the place uniform at 34.°

Grape Vines. For pruning, see article "Complete Garden," in September issue. From the vines cut off in pruning, select the best for cuttings; cut into lengths of eight or nine inches, tie in bundles and bury in the open ground, or pack in moist sand, over winter.

Grafting. Scions should be cut soon now if required. Packing them in soil or sawdust and storing in a cool cellar until wanted; sort when hurying them. Carefully label each bunch; never trust to memory.

Labels, on newly set or other trees, should he looked after before winter sets in. Those that come from the nursery are not to be trusted, as the wire, for one thing, is usually too light to be durable. A zinc or white-painted Pine label, secured with a large loop, using No. 18 wire, is what is wanted.

Manuring Orchards. The amount of manure needed varies; some land may already be rich enough, but this is not often the case. Let the growth be the guage; if much less than one foot of new growth appears throughout the tree per season, the soil is not rich enough; if above this, it is richer than it should be, winter killing being liable. Heavy mauuring must never take the place of good tillage.

Mulching. For this purpose strawy manure or swamp grass is probably the best. Evergreen boughs, with some leaves are also good.

Raspberries of tender kinds should be covered before the month is out, by hending the canes along the line of the row and covering with soil.

Records. See to correcting the orchard records now that each tree has shown what its kind is.

Seeds, pits, and nuts saved for spring plauting to be mixed with sand and subjected to freezing.

Stocks for root grafting to be lifted this month, and stored in the cellar ready for use later.

Strawberry beds to be lightly covered, between the plants, rather than over them, with leaves or straw before winter sets in.

Trees for spring planting should be gotten at this time and heeled-in, to be ready for the earliest suitable planting time.

Vineyard. Plowing later in the fall is suitable for the South; North, however, winter-killing if often the result, as in plowed ground, the frost goes deeper. A plan followed by some Grapemeu, is to sow Oats at the time of the last cultivating, doing nothing more until the following spring.

Washes for the bark of trees are applied for killing eggs and insects. Some believe that they preveut a "hidebound" condition, in protecting the trunks from exposure to the hot sun and drying winds. Whitewash is unobjectionable excepting the color. Prof. Cook recommends one quart of soft-soap in a gallon of water, when boiling, a pint of kerosene, thoroughly stirred in. Weak lye is also useful and safe.

Young trees to be bauked up to steady them. To prevent girdling by mice after the snow falls, use an old tin can, take off the bottom, open the side seam and put it around the tree above the soil, fastening with wire; if one is not enough, fasten two or more together sideways.

THE VEGETABLE GARDEN.

Cabbage. No better way for storing can be devised than to lay down two scantlings or rails, two or three feet apart, and between these place the heads closely together, roots up, afterwards covering them over with soil about four inches deep, but not more. The covering is better deferred until cold weather is at hand.

Carrots. Store like Potatoes.

Celery should be stored this month; a small amount for early use in the cellar, the main crop in trenches outside. These should be made about one foot wide, and of a depth to accommodate the length of the stalks, which are to be kept even with the regular surface. Set the plants, the tops of which should be dry, closely together in these, with nothing between them, cover with straw, and on this a few boards. Later, as the cold increases, the cover over the trenches should also be increased.

Clear the land as fast as crops mature, both for appearance and economy. Such others as are vacant may be manured and worked over roughly, preparatory to next spring's use.

Leeks. Take up and store in sand in a cold cellar.

Onions. Store in a loft, even where it freezes, rather than in the cellar. In the latter they will sprout, to their injury; kept frozen, this is prevented.

Parsnips for winter may be lifted, and stored in sand in the cellar

Rhubarb should have a heavy coat of good manure.

Potatoes. Store in bins one foot or 18 inches deep, raised somewhat from the floor. Do not bruise or they will be likely to rot.

Roots in the nature of Salsify, Scorzonera, Horse-radish and Parsnips, freezing does not hurt, so the main lot may stay out where grown; but some to be dug and put in earth in the cellar for wluter use.

Spinach. Cover lightly with litter before winter.

Sweet Potatoes. Pack in boxes of dry earth, not having the roots touch each other; then store the boxes where no frost can come to them.

Sea Kale. Late in the mouth cover with a good layer of coarse manure.

Squash. Keep dry and cool, but protect from frost.

Turnips to have earth or sand worked between for keeping them crisp and solid.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus and similar vegetables may be forced under the greenhouse stages, or in pits, or hot-beds, in the spring, with the greatest ease. For this purpose, lift old roots and store in any place, so as to be easily reached by February, or later, for starting up.

Lettuce. Air the plants freely, even leaving off the sash in all but the roughest weather, and when it is freezing. Scatter Tobacco stems around the plants to protect from green-fly.

Mushrooms. Beds made now under the stages or in warm sheds will soon begin to produce. Let the stuff be beaten firmly in making up the bed; a large bed is better than a small one; mix turfy loam with the dung, to secure moderate heat and longer bearing; do not spawn the bed until the heat has declined to a moderate point. The beds ought not to be too wet or too dry for good returns.

Parsley. For winter use take some of the earliest, outside sown, and plant in a cool house or frame.

Pine-apples. Young plants require a moderately dry atmosphere, good ventilation, with 55° to 60° of heat. Those in fruit need plenty of moisture, both at the tops and roots.

Rhubarb. See directions above for Asparagus.

Strawberries brought along in pots should now go into cold frames, plunging the pots to their rims in earth or coal ashes, in order that the roots shall not freeze; water sparingly. About one month later they may come in to be forced.

THE POULTRY YARD.

Weak Legs. Sometimes the rapidly growing Brahmas "give way" on their legs when they are four or five months old. Bone meal and Barley would be suitable for such.—National Monitor.

Fresh water is what fowls need. Anything not fresh is bad. But the worst of all, in its evil effects, is the stagnant pools that are filtered through manure heaps.—Colman's Rural World.

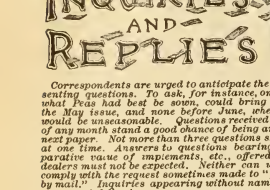
Eggs or Butter. When a dozen eggs bring as much in the market as a pound of butter, the farmer who keeps hens and manages them well, is a little ahead of the dairyman whose cows hardly return enough for the keeping.

Feeding Turkeys. Turkeys are readily fattened on thick boiled corn meal and oatmeal, mixed with chopped suet, and then should be kept in closed coops, away from other birds. A shed which is only partly lighted is a suitable place, and the food being given every three hours. No water being required with this food. The birds will be fit for market in twenty days.

A Rat Proof House. It is an easy matter to keep them out of the poultry house, by the use of half-inch wire mesh laid under the floor of the house. On a ground floor, dig out to a depth of six inches, lay down the wire, and replace the dirt. The edges of the wire may be turned up and tacked to the sills. Rats cannot cut through wire, and so they will soon leave the place.—Mirror and Farmer.

Turnips as Food. As winter food for poultry, the Turnip gives good results fed in the cooked state. If a mess of Turnips and grain be fed, the hens will keep in better condition, and lay a greater number of eggs than when grain alone is fed. The poultryman will some day know, that when he feeds a mixed diet of Turnips, chopped Clover, and other bulky food, with only enough grain to balance the rations, as is done for the cow, he will get better results and at a lower cost.—Mirror and Farmer.

Look Out for Cholera. The latter part of August and fore part of September is the time when cholera "breaks out" in places where it can obtain a foothold; but it won't break out if it can't get in, and it can't get in if you keep it out; you can keep it out by taking proper sanitary precautions. I know poultry raisers, who have kept fowls for years without even having a single case of cholera on their premises, while their neighbors' fowls died off to the number of 60 or 70. And the lucky ones did not "keep their fowls well" by dosing with "cholera pills" and "powders;" they saved them by simply taking care of them. Strict cleanliness about the houses, yards, and coops will do more towards keeping the cholera away, than all the cholera medicine ever invented. Nine tenths of the "sure cures" advertised to cure and prevent cholera are worthless, or nearly so; and yet some of them do good, because in the accompanying "directions" there is good advice about cleaning and disinfecting, and the people who buy the remedies follow the directions, because they have paid for them.—Prairie Farmer.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

970. **Black Lice on Chrysanthemums.** Do these injure the plants? How can they be destroyed?—E. D. H., *Baltimore, Md.*

971. **Thin Cloth Bags for Grapes.** Would such allow water to escape, or must an outlet be provided?—MRS. J. B. B., *Raleigh, N. C.*

972. **Soot on Chrysanthemums.** How can this best be applied?—G. B. H., *Paducah, Ky.*

973. **Liquid Manure.** In what way is the best article, for general use to be made?—G. B. H.

974. **Carnation Buds Turning Yellow.** Can winter buds of Carnations be prevented from turning yellow and dropping?—C. E. H.

975. **Japan Iris.** Will some one direct as to the culture of Japan Iris, soil varieties, etc.—Z. W. SHIMER, *Orange Co., N. Y.*

976. **Fruit for the South.** My place is thin, red and yellow clay, Pine land, with good subsoil, 100 miles north of New Orleans. Am anxious to learn what fruit and vegetables are best for planting here?—C. D. W., *Bogue Chitto, Miss.*

977. **Transplanting Celery.** Which is best, transplanting Celery directly from the hot-bed to the growing bed, or to transplant twice before setting in the field.—T. H. J., *Mass.*

978. **Pear Blight or Rust.** On Onondaga Pear trees, the fruit was so affected that many were only half grown, both this season and two years ago, by being covered with a sort of rust, mixed with black spots. Two years ago the leaves also had black spots, but not this year. Other varieties standing near are not affected?—C. H. JOSSELYN, *Middlesex Co., Mass.*

979. **Lily of the Valley not Blooming.** After growing and running well the year before, why should clumps of our common Valley Lily fail to bloom. Would the imported pips be more satisfactory.—J. O. H., *S. Bufield, Mass.*

980. **White Grubs Eating Strawberries.** I have lost several thousand plants from these grubs, and would like a remedy, if any is known.—A. J. GUNNELL, *Randolph Co., Mo.*

981. **Plum Tree Ailing.** On my Plums trees I find holes bored in several feet from the ground. What is the trouble and how can they be gotten rid of?—J. K., *Nova Scotia.*

982 **Rust on Raspberries.** On my Red Raspberries I find the leaves curled and rusty; and the fruit ripening prematurely. It is confined to no one variety, how shall I treat it. J. K., *Annapolis Valley, N. S.*

983. **Lettuce Rotting.** I would like some points as to watering Lettuce; temperature of water, hest time, etc.—P. F., *Sound Beach, Conn.*

984. **Caring for Banana and Pineapple Plants.** Can any one tell me how to care for Musa Cavendishii and the scarlet Pinang? Do they require a season of rest?—MRS. S. M., *St. Paul, Minn.*

985. **Evaporated Fruit.** I wish information concerning prices, exports, and yield of 1888, compared with past year?—W. C. B., *Shanesville, Mo.*

986. **Blight on Le Conte.** Is there any case known where this Pear blighted when grown on its own root.—WM. M. J., *Rockwood, Ill.*

987. **Non-Blooming Wistaria.** My Wistaria is six years old and has never bloomed. Can anything be done?—MRS. R. E. SAMSON, *Butler Co., O.*

988. **Book on Flower Growing.** What hook or hooks can I huy that will inform me as to the growing of various flowers, both outside and under glass, how to make and attend to flower beds?—H. R. H., *Paducah, Ky.*

989. **Propagating Plants.** How can I propagate Carnations, scented Geraniums and Heliotrope? I have no trouhle with Scarlet Geraniums, Roses, Coleus, etc.—L. B., *New York.*

990. **Vineyard Trellis.** How much No. 12 wire will he required for a four acre vineyard, two strands, vines 8 to 10 feet, and the price? Which will he the hest for the ends of Oak posts, charring, coal tar, or kerosene oil.—S. F. B., *Forsyth, Ga.*

991. **Oxalis, without Bulbs.** Seed that I hought for Oxalis made fine plants and flowers, hut this fall I could find a single hulb. Is there such a sort?—X. X., *Charlton, Mass.*

992. **Planting Lilies.** Which is the hest time to plant Lilies?—S. H. S., *Wellington, Kans.*

993. **Hemerocalis Varieties.** Are golden or yellow Lily (*H. flava*), Orange or Corn Lily (*H. fulva*), and Lemon Lily (*H. graminea*) three varieties? I received the same thing for H. flava and graminea.—C. B. E., *Barry Co., Mo.*

994. **Lapageria Growing.** What are the hest varieties? Soil and other directions would he liked.—L. R. F., *Hampton, Iowa.*

995. **Canned Fruit Spoiling.** Sometimes it spoiled within a few days after putting up, othertimes not until after a number of weeks, even where every care was exercised. Can the trouhle he in the fruit? The spoiling has occured in many separate cases.—WM. F. BASSETT, *Atlantic Co., N. J.*

996. **Plan for Building small Greenhouse.** Can you not give directions, estimate of cost and other particulars in regard of putting up a small glass house for private use.—E. A. B., *Kittaning, Pa.*

997. **Lilium Longiflorum Hardy.** Is this Lily hardy in this section?—W. A. P., *Waterville, N. Y.*

998. **Best Blackberry.** Which is the hest for market, hardiness not considered?—D. M. DIMMICK, *Santa Barbara Co., Cal.*

999. **Preserving Fruit.** Can any reader furnish a receipe for putting up Gooseberries, Currants etc., for showing as samples.—J. M. G., *Rochester, N. Y.*

1,000 **Le Conte Pear.** In this latitude what shall I do with a two year old orchard of this Pear? I am afraid of frost, would Bartlett or Kieffer he hest for working on them?—C. J. C., *New Castle, Ala.*

1,001. **Sawdust Mulch.** Is this safe for fruit trees?—M. A. P., *Londonville, O.*

1,002. **Pineapple Salvia.** Can you tell me anything ahout such a plant?—C. V. W., *Ilion, N. Y.*

1,003. **Rabbits Injuring Trees.** How can I protect my fruit trees from rahhits in the winter?—JOHN MCK. *Waterloo, Iowa.*

REPLIES TO INQUIRIES.

962. **Raising Tea.** There is a Tea farm at Summerville, S. C., that was started by Commissioner of Agriculture LeDuc. There is also good Tea produced at Georgetown, S. C.—MRS. J. S. R. T., *Spartansburg, S. C.*

945. **Lady Slippers or Cypripediums.** These can be procured of Edward Gillett, Southwick, Mass., or Woolson & Co., Passaic, New Jersey.—CHAS. E. PARNELL.

946. **Glass or Canvas for Hot-Beds.** For hotbed work early in the season I prefer glass. For use later on, the Waterproof Fibre Cloth can be used to great advantage, as less attention is required for ventilating. It not only protects by night but the temperature is not raised too high during the day. I have had no experience with canvas, oiled cloth is unsatisfactory and for various reasons I do not advise its use.—C. E. P.

955. **Azaleas.** Keep them in a cool, airy situation and water sparingly until you desire them to bloom, when they should be given a higher temperature and a liberal supply of water, both overhead and at the roots. Don't give any manure water until growth commences. When the plants are in bloom keep them in a cool dry atmosphere and the flowers will last much longer. —CHAS. E. PARNELL.

950. **Selling Flowers.** A note addressed to W. S. Allen, 36 East 23d, st., New York City, would give you all the information you desire on this subject.—CHAS. E. PARNELL.

958. **No Flowers on Laburnums.** Your Laburnums are growing too rapidly. After they become a few years older and the rapid growth ceases they will bloom freely enough.—C. E. P.

880. **Fall Sown Cabbage Seed.** In this vicinity the varieties generally sown in the fall for early spring use are the Early Wakefield and Early Summer, the former being sown from the 15th to the 25th of September, the latter ten days later.—C. E. P.

893. **Sowing Cherry Pits.** I would sow them as soon as possible after gathering.—C. E. P.

894. **The Blue or Sour Gum Tree.** I presume Eucalyptus globulus is referred to, if so, would say that it is not hardy north of the Carolinas, and consequently can only be used for sub-tropical planting or as single specimens on the lawn during the summer season, where it forms a very ornamental plant and will attract considerable attention on account of the reputation it has of absorbing malaria. It is of rapid growth and is readily increased by seeds. In this vicinity of New York City it can be grown by planting it out as soon as the weather becomes warm and settled, and taking up and potting as soon as cold weather sets in. Winter in a cool, dry cellar.—CHAS. E. PARNELL.

898. **Mulberries for Market.** No, it will not pay to grow Mulberries for market.

885. **Potato Tops as Manure.** They possess no manurial value, but can be used as the foundation of a manure or compost heap, or to fill up low wet places in the cowyard or hogpen.—C. E. PARNELL.

900. **Moving Grape Vines.** It will not pay to move a Grape vine over four years old.—C. E. P.

911. **Plantain and Weeds in Lawn.** Nothing but a careful weeding will remove Plantain, Dandelion and other strong growing weeds. Smaller weeds may be easily kept in subjection by encouraging the growth of the grass in every way possible.—C. E. P.

912. **Single Dahlias.** Take them up carefully on a dry day, place in a box or barrel, cover with sand and store in a dry, warm cellar for the winter.—C. E. P.

909. **Bindweed.** This can be banished by cutting off the young shoots with a sharp hoe as often as they make their appearance.—C. E. P.

902. **Stocks from Cuttings.** You cannot well raise stocks from cuttiugs. If you wish to procure good flowers, obtain the best seed possible, regardless of cost.—C. E. P.

906. **White Clematis.** C. flammula is a robust growing variety producing small, white, and very fragrant flowers. C. lanuginosa candida has large grayish white flowers. C. Henryi has large, finely formed creamy white flowers, while C. Fortunei has double, rosette formed flowers of a creamy white. These are hardy and free flowering if given a good mulch of coarse littery manure as soon as the ground commences to freeze in the fall, and then placing the vines on the ground, covering with Evergreen branches.—CHAS. E. PARNELL.

913. **Onions for Wintering.** There is no difference in the winter keeping qualities of large or small Onions.

919. **Callas.** The best soil for Callas is one composed of two thirds turfy loam, one third well decayed cow manure, and a fair sprinkling of bone dust. Mix well and use the compost rough.—C. E. P.

921. **Delawares Not Fruiting.** With me the Delaware has proved to be one of the most reliable for setting its fruit, and I think that the flowers of your vines were injured by cold, rainy weather at their period of blooming.—C. E. P.

923. **Blackcaps Not Growing.** They succeed not only on good soil, but many sorts produce large crops on the lightest kind of sandy land. They should always be planted in the spring, as they are difficult to make live if planted in the autumn. They propagate themselves by taking root at the ends of the long branches, which, if allowed to grow, will by fall reach over and touch the earth. They will be rooted by spring, when they can be taken up and planted.—C. E. P.

796. **Copperas.** See article, page 8, last issue.

803. **Transplanting Tree Pæonies.** See page 261, Vol. III.

873. **Peach Tree Pruning.** See article headed "Complete Garden," page 23, last issue.

873. **Peach Tree Pruning.** The Peach tree requires more severe pruning than most other standard trees, for two reasons. 1st. The fruit is borne only on last year's wood, hence, to secure good crops we need to stimulate the growth of new wood. 2d. The Peach is a very vigorous grower, and unless headed in, the branches soon grow out so long that they are unable to sustain the weight of a good crop of fruit. I make it a rule to cut off, each spring, about one half of the new growth on all the branches, and in addition, to thin out the new shoots, wherever they grow too thick. This keeps the trees in a fine, compact form and furnishes abundant young wood to bear fruit.—E. S. G.

903. **Aquarium Management.** A few plants in the aquarium are indispensable, to supply the water with oxygen which the fish inhale. In the nearest brook or clean pond you will find a variety of plants. Get the roots of them as long as possible, wash them to clear off any objectionable matter, separate the best, tie them firmly in bunches, and fix them in the bottom among the stones. They should be left in the water a few days before the fish are put in. The common Duck-weed is useful during sunny weather, for the shade it affords. The water snail is not much good, but will add to the interest of the aquarium.—REMLE.

853. **Smilax.** Your plant is in a state of rest and should be sparingly watered until September, when it should be repotted and started into growth. When grown as a pot plant for the window garden it should be given a compost of one third well decayed manure, two thirds well rotted sods, and the pot should be well drained. When growing freely it should be given liquid manure once or twice a week and sprayed or syringed occasionally to keep it free from red spider. It also requires a winter temperature of from 55° to 60°. When repotting in September, place in as small a pot as possible, and when it commences to grow shift into a pot two or three sizes larger. The plant will pass into a state of rest early in May, when it can be plunged in a partially shaded border, and treated as above. —C. E. P.

935. **Peach Seedling Growing.** Save the Peach stones and bury them in the ground a few inches deep in the fall—have a stone or a stake for a mark—let them remain until spring. When the soil is in a suitable condition for planting, dig them up, you will find some already cracked and sprouted. Those that are not cracked, crack by striking on the edge of the Peach stones. Be careful and get the meats out whole; you can plant in rows three or four feet apart and six inches apart in the rows if you want a nursery. If you want an orchard without the trouble of transplanting you can measure off your ground and drive stakes at suitable distances, and plant three or four meats around each stake. When they come up, let them grow one year and then take up all but one to each stake, leaving the best.—WM. HALE, *West N., Mass.*

691. **Mulberries for Profit.** In your section there would be no money in growing Mulberries. Downing is as good as any.—E. E. S.

694. **Evergreens for Texas.** See answer to 827 in last issue.

696. **Propagating Weeping Trees.** European Ash (*F. excelsior*), English Goat Willow (*S. Caprea*), and seedling stocks of the the Wych or Scotch Elm (*U. Montana*). Fuller's Propagation of Plants for sale at this office.

698. **Started Cucumbers Fairly.** The most likely cause is a fungus, the history and treatment of which is but little known.

702. **Market for Hoarhound Herb.** Inquire of some wholesale druggist in Chicago or other large city.

703. **Leading Snap Bush Bean.** Early Red Valentine, Refugee or Golden Wax, are all largely grown for market.

708. **Non-blooming Oxalis.** There may be something wrong about the soil for continuous bloom, or they do not receive sunlight enough.

709. **Time for Shrub Pruning.** The safest guide is found in the manner of flowering of the various kinds. Those shrubs which bloom on last years growth should be pruned immediately after flowering in the summer. This class includes such as Lilac, Honeysuckle, Deutzia, Japan Quince, Rhododendron, Azalea, Viburnum, etc. Such as flower from the new or spring growth are pruned in the fall or early spring, and embrace the Althea, Fall-flowering Spirea, Hydrangea, Rose, etc.—E. E. SUMMEY.

710. **Improved Morning Glories.** Probably the most certain way is to carefully pick the worms off by hand.

712. **Clematis Under Glass.** With their proper seasons of rest being observed, there is likely to be no especial difficulty in growing them in the Grapery.—REMLE.

821. **Raspberry Picking.** A light picking stand large enough to hold six or nine pint boxes, is a favorite with many growers.

722. **Tomato Shipping Package.** Nothing, unless it might be a light crate or box holding a half bushel.

726. **Book on Nursery Management South.** There are many valuable works, no one of which perhaps contains all the points. For two, Barry's Fruit Garden and White's Gardening South, would be valuable. For sale at this office.

744, **Growing Winter Onion.** The time of fall sowing varies according to locality, and they do not always do well. I should think that a light covering of straw would be of benefit.—REMLE.

862. **Lapageria From Seed.** As they grow quite readily, no especial treatment is required other than that the soil have in it coarse sand, and be rather fibrous. Giving free drainage is the most important point.—REMLE.

904. **Tan Mulch for Strawberries.** I have used this material with good results. It is thought best not to apply the tan fresh from the yard, but to haul it some weeks before using. Fresh tan is thought by some to induce worms.—E.S.G.

881. **Nitrate of Soda in Lawns.** The effect of this is to stimulate the growth of grass and to impart to it a rich, deep green color.

882. **Tomatoes.** The Mikado is not one of the earlier varieties. It is, however, productive and of good quality, though the fruit is often rough.

920. **Introducing New Fruits.** Now that every State has its Experiment Station, the very best way of introducing new fruits to the public would seem to be to have the varieties tested on the station grounds. Their reports and bulletins have extensive circulation and their testimony is entirely impartial. One of our leading originators of new fruits said recently in a private letter, that he should do all he could to discourage the introduction of new fruits until they had first been critically tested at the Experiment Station.—E. S. GOFF.

924. **Black Cap Cultivation.** The failure to secure plants noted by the inquirer, would indicate that his soil is decidedly unfavorable to this fruit. The plants are propagated from the ends of the canes. Late in summer these grow down to the surface of the ground, and under favorable circumstances will strike root of themselves. But the rooting may be much encouraged by burying the tips slightly with soil.—E. S. G.

894. **The Blue or Sour Gum Tree.** No, they are not; growing tall and slim, similar to a Poplar, they cast a long shade, in consistency with their shape. The "Pepper" and Texas "Umbrella" Trees are best, but only for climates like our own.—F. WEIDENMILLER, *California*.

933. **Vineyard Posts Rotting.** I know of no preparation that will assist the posts in resisting decay, but as Cedar or Locust wood is the most durable would advise the use of such for posts if they can be procured. For a trellis there is nothing so good as wire stretched on posts. It may cost more than others, but from its durability will prove cheapest in the end.—C. E. P.

943. **Wintering Strawberries.** Strawberry plants are readily kept over winter by heeling-in, either in the open ground or in a cold frame. Cover with a little straw or other litter to keep the ground about them from heaving by alternate freezing and thawing.—E. S. G.

943. **Wintering Strawberries.** If I understand this query right, would say that you cannot prepare Strawberry plants for planting this fall and keep them over, so as to have them in a proper condition in the spring, without going to considerable labor and expense; I would not advise the attempt.—C. E. P.

895. **Plum Grafts Failing.** Plums should be grafted earlier than Pears or Apples; the scions should be cut some time before the grafting is done—March would be none too early. If you want to graft them in April you should cut the scions in March, as the stocks should be in advance of the scions.—WM. HALE.

901. **Blistered Peach Leaves.** The trees are affected with the disease known as "curl-leaf," due to a fungus *Exoascus deformans*. No certain cure has been discovered, but a vigorous cutting back of the new growths each spring tends to lessen it.—E. S. G.

875. **Hollyhocks Changing Color.** No. As a rule these always come true to color, either from seed or where plants are kept over from one year to another.—A. A. H., *Bellows Falls, Vt.*

908. **Blanching Celery.** No material, on the whole, has been found so satisfactory as earth. Drain tiles and paper answer well early in the season. It is unnecessary to tie the stems together in using earth, provided they are held firmly together with the left hand, while the earth is placed about them with the right.

911 **Plantain and Weeds in Lawn.** It is doubtful if there is any better device for destroying weeds in the lawn than the lawn mower persistently used. The soil should be kept fertile, and in places where there is a dearth of grass, a mixture of June Grass and Red Top seed should be sown as soon as the frost is out of the ground in spring. I have never seen the plantain or dandelion eradicated from the lawn by digging out. The attempts that I have seen made resulted in a multiplication of the weed.—E. S. G.

925. **Purslane Killing.** It will be impossible to kill out Purslane as you suggest. I know of no other way of killing it than to keep the ground well cultivated so that they will be destroyed while small.—C. E. P.

926. **Ammonia for Trees.** The trees will not be benefited by using ammonia water as you suggest. C. E. P.

927. **Le Conte Pears.** I am selling the Le Conte and Duchess in bushel boxes. The Le Conte are fair and large and sell more readily than the Duchess, which are equally as large, but dark; yet I would not advise the growth of them in the north; they are grown in immense quantities in Georgia and ripen early. They sell well in New York only to the Italian fruit dealers, at street stands.—C. W. IDELL.

930. **Lucretia Dewberry.** I do not think that this would prove profitable if grown as a market crop.—C. E. P.

931. **Hen Manure.** Plaster is the best for mixing with hen manure. It should be applied in the drill and well mixed with the soil.—C. E. P.

932. **Stable Manure or Artificial.** Stable manure is the best and cheapest for you to procure, and for soil of your description you cannot apply too much.—C. E. P.

937. **Bark Coccus on the Magnolia.** This Coccus can be destroyed by an application of Tobacco soap which may be procured at any seed store in pound boxes. Apply according to directions which accompany it. Or dissolve two pounds of potash in two gallons of water, and apply with a paint brush to all the infected parts. —One or two applications will be sufficient.—CHAS. E. PARNELL.

938. **Growing Onions.** Onions can succeed Cabbage if the soil is in a proper condition, and no weeds have been permitted to mature their seeds.—C. E. P.

939. **Tent Caterpillar.** If the nests are on small limbs it is best to cut them off, and destroy by burning. Or they may be brought down and destroyed by means of a round brush fixed to the end of a long pole, and worked around in the nest. All this, however, should be done as early in the morning as possible, before the caterpillars leave their nests which they usually do about eight or nine o'clock.—C. E. P.

939. **Tent Caterpillar.** Rub off the nest with a swab saturated with kerosene or turpintine. Spraying the foliage of the trees with water containing Paris green or London purple—an ounce to 10 gallons will destroy them—E. S. G.

940. **Trees and Shrubs for Wet Places.** The basket Willow would probably thrive if the ground is not too wet, and in many localities would prove fairly profitable. Cranberry culture would doubtless pay if the soil and other circumstances were adapted to this fruit.—E.S.G.

966. **Getting Out Stumps.** If no stump machine is within reach, try boring a large auger hole into the soundest part of the stump, and filling with sulphuric acid.—E. S. G.

927. **Le Conte Pears.** This is not a success in Western New York.—E. S. G.

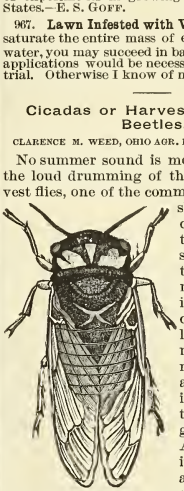
962. **Raising Tea.** The reports of the Department of Agriculture issued during Commissioner LeDuc's administration, give much information upon the subject of Tea growing, with the results of experiments in growing it in the Southern States.—E. S. GOFF.

967. **Lawn Infested with Worms.** If you can saturate the entire mass of earth with the lime water, you may succeed in banishing them. Two applications would be necessary to ensure a fair trial. Otherwise I know of no remedy.—C. E. P.

Cicadas or Harvest Flies and Beetles.

CLARENCE M. WEED, OHIO AGR. EXPERIMENT STATION.

No summer sound is more familiar than the loud drumming of the cicadas or harvest flies, one of the commonest of which is shown in the accompanying illustration. There are several species of these insects, the most notorious being the periodical cicadas or 17-year locust, as it is commonly called. This noisome pest has appeared this year in many parts of the country in great numbers. As is well known it only appears in a given locality once in 17 years, though Dr. Riley has found that there is also a variety which appears every 13 years.



One of the Harvest Flies.

But we have our common species with us every year. The one illustrated is the dog-day harvest fly, and is about an inch and a half long, with a wing expansion of about three inches. Its body is black above, except a portion of the head and thorax, which are marked with olive-green lines. A large portion ot the under side is white; the legs are olive-green as are the eyes. The head is almost square, and the thorax (the part, next behind the head, to which the wings are fastened), is very robust, as would be expected from the strong and rapid flight of the insect. The wings are olive-green near the body, and brown a short distance away.

The dogday harvest fly deposits its eggs in the twigs of various fruit and shade trees. Soon after hatching, the young are supposed to drop to the ground, like the young of the 17-year cicada, where they burrow down and eat the roots of trees and shrubs. When ready to become adults, they come out of the ground, attach themselves to some support, when the skin splits along the back and the adult insect emerges.

Dr. Harris describes the curious drumming process as follows: "The musical drums of the males consist of a pair of kettle-drums, one on each side of the body, which, in some species are plainly to be seen just behind the wings. These drums are formed of convex pieces of parchment gathered into numerous fine plaits, lodged in the cavities of the body behind the thorax. They are not played upon by sticks, but by muscles or cords fastened to the insides of the drums. When these muscles contract and relax, as they can do with great rapidity, the drum heads are alternately tightened and loosened, recovering their natural convexity by their own elasticity. The effect of this rapid alternate tension and relaxation is the production of a rattling sound, like that caused by a succession of quick pressures upon a slightly convex and

elastic tin plate. Certain cavities within the body of the insect, which may be seen on raising two large valves heneath the body, and which are separated from each other by their partitions, having the transparency and brilliancy of mica, or of thin and highly polished glass, increase the vibrations of the sounds and add to their intensity."

BLISTER BEETLES. A number of beetles sent by a Missouri subscriber, who found them injuring garden crops, are common species of blister beetles (*Epicauta*,) sometimes called the old fashioned Potato-beetle, and they often do serious damage to various crops in the Southern and Western States. These insects are rather difficult to get rid of; they may he driven out of a patch in flocks, as they are easily frightened, but will return usually before much time has elapsed. They may also be killed by arsenical poisons, where it is safe to apply these to the plants attacked.

Abutilons and their Culture.

CHARLES N. KRULL, YORK CO., PA.

With those persons who grow an assortment of tender plants, few shrubby kinds are more deservedly popular than the Abutilons, known also as the Chinese Bell flowers and Flowering Maples. Of late years so much improvement has heen obtained over the older ones, by seed lings variously crossed and hyhrid ized, that the original species are nearly superceded.

This class shows a number of peculiarities of flowers, foliage and hahit. There are some which assume the form of standards, others are climhers or droopers; all are satisfactory, and many of them strong growers. In foliage there are varying colors and forms all of which are interesting, the flowers include white, rose, yellow, maroon and orange colors in endless shades, many of which are thickly veined or striped with red and carmine.

Propagation is easily done in the spring from cuttings of the young wood, inserted in sand in a temperature of 60° and covered with glass. When roots are formed move into larger pots of loam and leaf mould with some coarse saud. As soon as they hegin to grow, pinch out the points to induce stocky growth. When shifted into hlooming pots, which ought to be done hefore the roots become matted, use only good loam in quite a rough state, for free bloom. The points may he stopped again, and syringing thoroughly every day is helpful. As autumn comes they will require rest, and not to he given much water, and to have a winter temperature of 45° or so at night.

When wanted as trained specimens, as shown by our engraving of the variety Boule de Neige, some more atteution to proper pruning, etc., is all that is required, Where a wall is to he covered, or they are wauted to grow on pillars, planting in a well prepared border, having good drainage where space is not limited, otherwise pot culture will he the hest; a portion of the shoots are to be cut back to different lengths each spriug for furnishing young blooming wood over the whole plant. Never allow auy more shoots in any place than will just cover it, not having them at all crowded, as this interferes materially with the health and flowering of the plants. Do not give too much water until the roots have got well hold of the soil, then they will need when in full growth a most liberal supply, together with some manure water. Keep the ground merely moist in winter, aud before spring growth begins cut the strongest shoots back for regular breaking from top to bottom. The third spring shorten both top and roots of those in pots, giving fresh soil. By repeating this treatmeñt and the use of quite strong manure the plants can be kept growing for years in a satisfactory condition.

A ueat combinatiou may be had by grafting a trailing sort like A. Mesopotamicum variegata on the top of a standard, A. striatum or other strong grower, some four or five feet from the ground, and as the hranch grows, cut away the original top, and you may soon have a weeping Abutilon that will he quite ornamental.

Some of the best varieties are the following, to be had of most florists. Golden Bells, Gauntlet, Wm. Fowler, Robt. George, Snowstorm, Boule de Neige, Mesopotamicum, Darwinii, Tancreda, Thompsonia Double, Royal Scarlet aud Fraseri.

A WELL-GROWN POT ABUTILON.

Winter Protection of Trees and Plants.

DANIEL K. HERR, LANCASTER CO., PA.

We are already reminded of the wintry ordeal to which our fruit trees and berry plots, our vines, and shrubs, will soon he subject while the axe has left so few protecting forests. Fortunate are those, who, long ago, have planted belts of Norway Spruce, Hemlock, or Arhor Vitæ, for backed with such, the trees and plants need little extra care.

But while patiently waiting for what seem like slow growing evergreens, some artificial shelters can be made, 10 feet or more in height. Posts, about 5 inches in diameter, aud 12 feet long, are set 8 feet apart; or, instead of long posts, hutts of some timher, 3 feet long, dug in, and 3x5 scantling firmly spliced onto them will answer. To these are nailed hoards 6 inches wide, and left 3 inches apart, and on the side where of least hindrance, 8 feet from the shelter, butts are dug in opposite each post, with the top about 6 inches above the ground, to which to nail hraces about two thirds way up the posts, aud if wires or lath are secured on them, they make the hest of Grape trellises.

Such shelters allow the wind to go through, but it is cut up and its force hroken, and iuside such an enclosure it is more calm, than if the shelter were made close, as no eddies and rebounding of the storm are created. A better and neater shelter can also he made of good quality of heavy plaster lath, nailed three quarter inches apart, on horizontal rails secured to the posts. If snow hanks or drifts are objectionable inside the enclosure, the lower part, 3 or 4 feet high must be made tight.

Such shelters as these, or helts of evergreen, do not, however, produce much change in the actual temperature, rather, their value is the prevention of rapid evaporation during cold, drying storms. Such storms are common, over country not near large bodies of water, and where woodlands exist only in small patches. Large timher tracts retain the snows, and give off much moisture, while other land is bare and frozen.

These conditions are all the reverse of nature. Nature congregates her trees and vines; the storms are checked, and leaves mulch and feed the roots, and here we learn the lesson. It seems most reasonable that orchards and fruit gardens, hare of snow, hare of leaves, and the ground frozen down below the roots, have a poor show to withstand a dry, icy storm. We know how woodwork dries out, and joints open during such a storm, how streets dry off, and clouds of dust caused hy evaporation, fly everywhere. Let any one cut a sappy twig of a tree or a cane from a vine, and put where they are exposed to winter storms, and see how soon they dry out. Mulch our fruit trees, our herry patches, our Grape gardens heavily, with no matter how rough a material, and nature will treat us more kindly.

Such a mulch will give the roots a chance to throw up sap, when so sorely needed during those dry, cold waves, that often last for days, and as nature both checks the storm and mulches the ground, so they whose grounds are sheltered should not stop here, hut also give the soil a covering.

Much is said and written as to the laying down and covering vines and plants with earth or otherwise, even thatching tree tops, tender Roses, and other shruhbery with straw. This is all proper for a few, but in extensive gardens it is next to impracticable, hecause it is difficult to get these plants laid close to the ground. If soil is used we mutilate and lay hare the roots between the rows, and other material often wears away too much to be effectual. Simple mulching presents no difficulties, save the material in sufficient quantities, and requires no removal unless for appearance sake. If left in place it will retard somewhat the early blossoms that are sometimes caught hy late spring frosts; it will keep the weeds hack, saving cultivation at a time when there is plenty else to do; it will retain the rain fall, and still more, when hot, dry days continue, the soil is kept cool and moist. These henefits alone are worth the cost.

As for material, there can he much saved up through the summer on every farm and garden, that may he utilized, to which may be added straw, or hetter, strawy litter from the stahles, and where procurahle, shavings from planing mills, waste from hroom factories, midribs of Tobacco from cigar manufactories, leaves from forests, etc. On farms weeds cut down before the seeds ripen, or Corn stalks cut up from four to six inches long make capital mulching. For general winter mulching, a mixture of any suitahle material that does not contain seed of foul weeds, is hetter for continual use as a fertilizer, than to use but one kind of material, unless a change is made, using a certain kind a year or two, then something else.

A. W. Livingston's Ways of Producing New Tomatoes.

It no doubt would be of interest to our readers to know by what means the gentleman, whose name is given in the heading, goes about producing new Tomatoes, a work in which he has met with such marked results. This he has recently told in the Horticultural Advertiser, and we are glad to reproduce the article here:

My plan is, selection and cultivation—not such as is commonly known, by selecting the finest specimens from stocks that produce both rough and smooth fruit. Fifteen years of that kind of selection and trial proved it to be an utter failure. I then turned my attention to the process by which all my varieties have been produced—that is by selecting small, perfect Tomatoes without a rough one on the vine, and cultivating them up from a small to a large one, which usually takes five years. Not every small Tomato will cultivate up—only such as have the right kind of seed. As yet I have not given that part of my experience away, but such is the fact, however.

My commencement was in 1861, with a small red Tomato, all being perfectly smooth, but small, with not a rough fruit on the vine. In 1866 I sent out my product, and named it Paragon; this was the first perfectly smooth Tomato ever introduced. It was immediately named over by others, and advertised extensively under false names. I then sent out the Acme, which I advertised extensively; no Tomato ever had such a run. But it would not bear shipping on account of its delicate skin, and as shipping became a business, I got up Livingston's Perfection, and gave it to seven leading seedsmen to introduce. Its qualities were the best for shipping purposes, as it has a tough skin.

My next was the Favorite, which is the best for canning purposes, and is now used more than any other variety for that purpose. My next was Golden Queen, a fine yellow variety, used for slicing; then came the odd Potato-leaf Foliage, and the last, Livingston's Beauty, a purple variety, much larger and more productive than the Acme. The above named seven varieties are my sending out, and every other variety now on the market bears a striking similarity to mine. I have been frequently told that they are the same, by the very men that use them under an assumed name, and many catalogues say they are crosses between two of my varieties. Some hybridize them.

In conclusion, I would be pleased to see some other parties come out under their own signature and let us know just how they manufacture their new varieties.

Early Tomatoes from Cuttings; Forcing.

ELMER E. SUMMEY, NIAGARA CO., N. Y.

As late in the season as may be possible, get succulent young growth fit for cuttings, from Tomato vines, where somewhat protected; as on the stem close to the ground, taking the tips several inches long. Cut the end square just below a leaf joint, and put them in a cutting bed composed of sand, and having bottom heat.

Such cuttings will root easily, after which put them into small pots or boxes, setting them in a temperature of 45° to 50°, where they will grow but slowly during the winter. Do not attempt to hurry them until about the first of March, when the soil may be shaken from the roots and the plants, with new rich soil, put back into the same pots, and given some more heat, about 55° to 60°. From this time on, until they can be planted out, have them grow without check, yet not so rapidly as to prevent the formation of good strong plants; which, when so treated, will repay all extra trouble, in the earliness of the fruiting so induced, over the earliest seed grown plants, even if the seed is sown the last of February as many do.

While those who make a business of forcing Tomatoes, may have, by this time, young plants either from seed or cuttings, ready for the winter's work, yet where these are lacking or only a few are wanted for private use, the uninjured roots of old Tomato plants will furnish very satisfactory stock for a winter supply, if lifted and planted inside, in as light a place as possible, in pots, or preferably, in beds of six inches of very rich soil. Cut away all the old growth except two or three of the best young shoots, nearest the roots. When these are a foot or so high, select the strongest and cut the others off to throw all the strength into the one, from which, also, as it grows, cut out all laterals except one on each side, about every eight inches, thus forming a flat vine that can very easily be fastened to a trellis.

This matter of properly pruning, so as to keep the growth down to a point which will just furnish the vine with sufficient foliage and fruiting wood for good results, and yet, not be in such excess as to prevent the formation of fruit buds, is of the first importance. After the fruit is set, thin out wherever crowded, not allowing more than three or four to each cluster; while the fruit is developing, frequent doses of manure water will be required.

The trellis on which the vine should be fastened, unless wire is used, need be only a strong, three or four foot or longer, upright stake, with horizontal strips nailed on at distances to correspond with the laterals on the plant. The main stalk and laterals are secured to this trellis, and as fruit appears, the clusters are also tied, otherwise their weight would be likely to tear the plant.

The air where Tomatoes are being forced must be kept moist with frequent syringing, to keep down red spider, and fumigating with Tobacco will be required because of the green fly. A temperature of from 65° to 75° is about what is required for the most successful results, also, the use of warm water, on the plants, is beneficial; during the winter months over-watering must be guarded against, as it would be fatal to any sort of a Tomato crop.

Fruit Growing at the Far North.

E. W. MERRITT, AROOSTOOK CO., ME.

Mulching Strawberries as far north as the 46th, parellel with anything except Spruce or Fir boughs, which abound here, is positively injurious; if lain on properly they do not press down the plants, while with straw mulch, the three or four feet of snow, which we always have here, crushes the plants so that they are injured; but where the snow fills in among the Spruce leaves they come out clear and bright in the spring. The boughs are put on quite thickly to exclude the heat and light in early spring, not removing them until after the middle of May, when plants begin to grow where the boughs admit any light. This prevents thawing and freezing when we have an early spring, which however is not usually the case.

An important advantage of this treatment consists in the fact of its retarding the bloom until after the late frosts, thus producing late fruit, which is an advantage here. We commenced to pick, last season, about July 5th, and continued nearly three weeks. As probably wild Strawberries never grow larger or more abundant than in this county, especially as the farms are new; these berries come into the market so plentifully that we strive to keep back the cultivated fruit until the wild is gone. A profitable business for us is raising late Strawberries for the Boston market. We grow mostly Sharpless and Manchester, which do not have an insect enemy, as is also the case with the Raspberry and Blackberry. Mulching is not specially essential, as the snow generally comes on in November and remains until the middle or last of April, the ground freezing but little, often not any.

THE CURRANT WORM AND ITS ENEMY. We are well stocked with Currant worms, but are in hopes to soon be rid of them, as there has appeared a bug in the nursery, somewhat larger than and resembling a Raspberry bug. This bug approaches the Currant worm, darts its proboscis into its head and soon sucks it dry, leaving only the skin. This to me, new bug, has in some adjoining localities kept the worm in check the past season, no insecticides being used.

On Some Insects and Insecticides.

[*Extracts from Bulletin No. 1, Division of Entomology, U. S. Dept., of Agriculture.*]

EAU CELESTE FOR ROSE BEETLE. It is reported by Col. A. W. Pearson, of New Jersey, that Eau Celeste, a simple solution of sulphate copper with ammonia, has proven not only a remedy for Grape mildew, but also ridded the vines of Rose beetles which were so numerous as to threaten the entire destruction of both fruit and foliage.

KEROSENE EMULSION FOR CABBAGE WORMS. As soon as the butterfly (*Pieris rapæ*) appeared, I prepared for him. Not having milk, in making the solution, I substituted common soap-suds, and at dusk showered the enemies, (using one gallon of the mixture to 12 gallons of water) upon the plants through a coarse-spouted watering pot. The victory was complete, partly owing perhaps to the prompt and early use of the remedy.—Frank E. Anderson.

PRIVET WEB WORM. The best remedy, and one that suggests itself, is trimming the hedge infested, when the young caterpillars are noticeable, sometime in June. The shoots cut off should be removed at once and burned, else the worms will find the plants again. Applications of the various insecticides will also prove effective, applied in a powerful spray, because of their protecting web.

LIME AND TOBACCO FOR CURRANT WORM. Last summer I found the Currant worm (*Nematus ventricosus*) had attacked one side of the Currant and Gooseberry bushes, I sprinkled the foliage, then applied a compound of two parts unslacked lime and one part tobacco dust. This killed every worm by one application.—N. M. Firor.

A NEW PEAR ENEMY IN OREGON. A snout beetle (*Aragnomus griscus*) is said by R. S. Wallace, of Oregon, to have been destructive on young Pear trees, after having spoiled the fruit of older trees. This beetle has never before been known to be injurious, and nothing is known of its breeding habits. We would advise spraying the trees with a solution of Paris green or London purple, one pound of either of these poisons to 100 gallons of water.

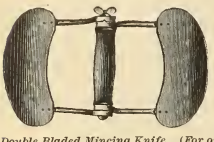
BUCKWHEAT VS. CUT WORMS. Everywhere cut worms are plentiful, but on half an acre where there was turned under a crop of Buckwheat, the land is free from them while adjoining plats are being overrun.—Zimmer Bros., Alabama.

CANKER WORMS. Both birds, especially the black-polled chickadee or titmouse, and the chickens destroy great quantities, but not overcoming them so, I used London purple, though it may also kill fowls and birds.—W. S. Newton, Kansas.

THE GARDEN WEB-WORM REAPPEARS. In Kansas the garden web-worm (*Eurycreon rantalis*) has again appeared, and is eating Pigweed, Sweet Potatoes and Cabbage. Spraying with London purple or Paris green solution will likely prove effective.

Some Additional Articles for the Home and the Garden.

Steam Egg Poacher. (227)—We believe every one likes to have their eggs poached. Here is a utensil that housekeepers will prize, for it renders the difficult process of egg poaching a most easy one. The Poacher with parts separated is shown in the engraving. Five eggs are taken at a time. The cooking is done mainly by steam arising from the water in the pan. The eggs may be transferred to toast or a plate without breaking, and they are of uniform shape and inviting appearance. A single trial will convince all that this article has a place in every kitchen. One complete Poacher made of the best retinned ware given for a single new name and 20 cents additional. Price 90 cents. Receiver paying express charges whether sent as a premium or purchased.



Double Bladed Mincing Knife. (For one name. See Premium 228.)

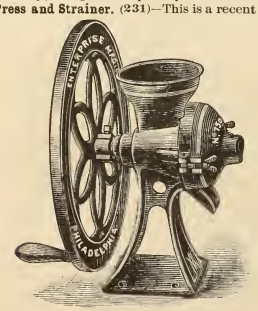
Railroad Dinner Pail. (See Premium 229.)

Improved Adjustable Mincing Knife. (228)—This two bladed Chopping Knife has the merit of being double adjustable, that is, it can be opened for cleaning and sharpening as shown in the engraving, while for use the blades are brought closely together side by side, thus cutting rapidly. There is nothing about it to get out of order. Made of the best cast steel with black enameled wood bandle. Given for one new name; postage paid. Price 40 cents eacb, post-paid.

A Complete Dinner Pail. (229)—This is known as the Railroad Dinner Pail. It has two main compartments, besides an ample receptacle for coffee or other liquids for drink and a cup. The cover is hinged. Its length is 8½ inches, its height 5½ inches. Sucb a pail would often come in use. Given for one new name and 25 cents. Price $1.00, receiver paying express charges, whether send as a premium or purchased.

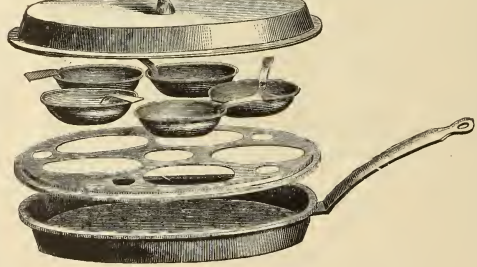
Enterprise Coffee and Spice Mill. (230)—It is well-known that ground Coffee and Spices are largely adulterated, while if the housekeeper does her own grinding in an ordinary mill, often poor enough, there is a large wastage through inferious work. Tbese considerations have induced us to offer a Family Mill of the most perfect description as a premium. It is all iron except the grinding part which is a hard chilled metal, warranted equal to steel. It grinds fast and even, and is regulated by a thumb screw. Can be clamped instantly to a table or bench, or may be attached permanently to a shelf. Given for one new name and 30 cts. Value $1.25. By express only, charges to be paid by receivcr.

Press and Strainer. (231)—This is a recent and very simple invention, offered for pressing out fruit, vegetables, etc., and for mashing potatoes. A metal cup with a screen bottom, and sides has one handle attached, and a plunger to fit the cup has another, tbe two being hinged togetber at one end. Works very easily and rapidly. Given for one new name. Price 65 cts., post-paid.



Bone, Shell, and Corn Mill. (See Premium 241.)

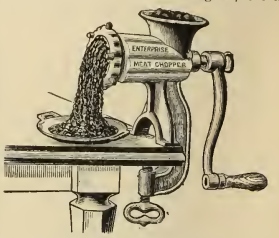
Patent Reclining Rocker. (232)—In recent years there has sprung up for parlor use, a great demand for what are known as "Patent Rockers" in which the old-fashioned rockers are done away. These new rockers are both easier and handsomer than the old style. The present one embodies all features of tbe best patent rockers made, and in addition by a simple contrivance the back may be made to recline at any desired angle, after the manner shown in the engraving. By this means togetber with a moveable foot rest extension, the chair is instantly convertable into one of the most comfortable reclining chairs to be imagined, suitable for taking one's ease, or as a reading chair, or as the perfect invalid's chair. It can also be converted into a comfortable couch for sleeping. All the changes involved are made by turning a knob while one is occupying the chair. The back can again be brought forward to an upright position or to any angle at will. The foot rest has legs whicb are turned out of sight in the engraving, and this when detached with legs down is a handsome Ottoman for general use, 19 inches square. The writer bas had one of these chairs in use for several months, and is so favorably impressed witb its comfort and beauty as a parlor piecé (or pieces he should say), that he is glad to be able to offer it to all readers on the favorable terms here named. One complete chair as illustrated, the woodwork of 1½ inch stuff, fully upholstered, with Japanese and curled hair, spring in back, seat and footrest, covered witb extra quality of Mohair or Silk Plush, (any color) or with Leather, Nickel Plate attachments, given for fifteen new names and $16.00 additional, or for thirty-eight new names. Price $30.00. Freight to be paid by the receiver. (333)—A similar chair in all respects to the above, except tbat their are no springs used in upholstering, and one grade cheaper of plush is used in covering, (or a fine quality of cretonne or tapestry may be substituted if desired) will be given for ten new uames and $12 additional, or for thirty new names. Price $20.00 Freight to be paid by the receiver.



Steam Egg Poacher. (For one new name and 20 cents additional. See Premium 227.)

Lawn Tennis. (234)—This is a recent game that has attained to immense popularity since it was first introduced. On city lawns it has nearly superceded all other lawn games. In almost every place of considerable size also there are now Tennis clubs which have Tennis grounds. The equipments are necessarialy much more expensive than of Croquet, but our terms for a good set are so favorable no one need be without one. The set consisting of four Regulation Balls, four Regulation Rackets; Net 27 feet long by four feet high; Poles, lines, and runners, mallet, book of instructions, complete in box, given for eight new names and $5.00, or seventeen new names. Price $12.00. Packing 20 cents. By express only; cbarges to be paid by receiver.

German Magic Lantern. (235)—The instrument we offer has been imported from Germany, and represents a combination of good qualities, that, a few years ago, would have been thought unattainable in an instrument costing even several times the price we can offer this at. It has a condensing lense, which other toy lanterns generally have not, making a larger and clearer picture. Each lantern has 12 slides with four to six pictures, also a comic one and one Kaleidoscope. The slides are covered or double glass, so that the pictures cannot be damaged by cleaning. Given complete for three new names and 20 cents. Price $2.50. Postage and packing 30 cents when sent as a premium or purchased. Extra slides from 50 cents to $6.00 per dozen, several pictures on each slide. A magic lantern affords the means of giving first-class evening entertainments either in the home or a public room.



Family Meat Chopper. (For one new name and 50 cents. See Premium 36, page VIII.)

A Real Steamboat. (236)—This little boat is made of brass, and is but nine inches long. It has horizontal boiler and oscillating cylinder. Its rudder can be set to guide it straight ahead or within the compass of a tub of water. It will go for about 20 minutes with one filling of water. It is a perfectly safe toy in every respect. Given for two new names. Price $1.50. Postage and packing 20 cents when sent as a premium or bought.

Self-Inking Printing-press and Outfit. (237)—This is a perfect printing outfit weighing 20 pounds, and suitable for printing small jobs, such as cards, envelopes, etc. It will print a card 2½x4 inches. As the type is ordinary metal type, it will be seen that unlike the rubber stamp described, the type is suitable for regular job work, to be set up and distributed at will. Many boys earn a good deal of extra money with such presses. It carries two inking rollers and revolving ink disks, and works to a charm. The handle is beautifully nickel plated. Besides the two fonts of type, the outfit includes ink, furniture, and 50 cards. Given for six new names and $4.50 additional, or for fourteen new names. Price $10.00. Freigbt charges to be paid by the receiver.

The People's Syringe. (238)—No family can safely be without a good rubber Syringe. It is the only effective yet mild relief for a number of distressing pains, and may save life. In procuring an article of this kind one should accept only the best. Ours is made by the celebrated Goodyear Rubber Co., of the best white rubber, and has two adjustable pipes which fit to the end of the

The People's Syringe. (Given complete in box for one new name. See Premium 238.)

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. DECEMBER, 1888. No. 3.

Now comes on the wintry blight;
And the stilly earth is white
With the blowing of the Lilies of the snow;
Once it was red
With the Roses summer shed,
But the Roses fled with summer long ago.
We sung a merry tune,
In the jolly month of June,
And we danced adown the garden in the light;
Now December's come,
And our hearts are dark and dumb,
As we huddle o'er the embers here tonight.
—*R. R. Stoddard.*

THE CHARMING Pissards Purple Plum yields fruit an inch in diameter and quite edible.

WATERMELONS to the number of over seven and a half million is said to have been the Georgia crop this last season, with a value of a million and a half of dollars.

TAKE NOTICE FLORISTS. It is now well known that under some conditions, wood, if confined in a heat that is but little more intense than that of boiling water may ignite. Look to the wood near your hot water pipes.

FOR YOU ALSO, HORTICULTURISTS. Congress having accepted the invitation of the French Republic to take part in an International Exposition to be held in Paris next year, has directed Commissioner of Agriculture, N. J. Coleman, to collect and prepare suitable specimens of the agricultural productions of the several States and Territories for exhibition at said Exposition. A special division has been organized in the Department for this purpose and agents have been appointed to collect specimens. Agriculture furnishes four-fifths of our exports, and it is to our interest to be creditably represented at the great Exposition at Paris, which will attract countless visitors from all countries of the world. In view of these facts all cultivators are cordially invited to co-operate by every means in their power with the agents appointed. The Department of Agriculture would be pleased to hear from any one and to get their views as to the most appropriate products of any section.

FAST BUDDERS IN TEXAS. Our brethren in the South have become considerably worked up concerning what constitutes fast budding, and as to who is the fastest budder in Texas. It seems that one Ramsey, through the Texas Journal of Horticulture, claimed to be the champion Texan budder, but the exact claim he made is not at our command. This was met in the last issue of that paper by one nurseryman who brings forward a young man, T. A. Hillard, as able to outdistance Ramsay. His daily task, between sometime after sunrise and before sundown, is said to be the setting of 2,300 to 2,450 buds. He cuts his own bud sticks from the orchard and prepares the buds but does not tie them. He is paid $3.00 per thousand for all buds that take and there is but little failure. Another fast budder challenges Mr. Ramsey to a trial of speed in budding, being willing to put up any sum from $50 to $300 against the other man. It will be seen that Mr. Ramsey has his hands full in establishing his claims,and the country at large not yet heard from. Who knows but we shall yet have regular budding matches and budding teams starting up in all sections of the country. Look out, Texas!

On Pruning the Early Harvest Blackberry.

JAMES H. MYER, BRIDGEVILLE, DEL.

First we find them very peculiar regarding fruit buds. Some seasons they have them along the limbs to the main stalk; other seasons only near the tips of limbs. In the latter case, early trimming leads to cutting off the fruiting buds so there is little or nothing left to fruit.

To overcome this difficulty, we have adopted the method of pruning after the blossom buds begin to make their appearance, just as soon as we can discern which are blossoms. Under this method we have not failed to have a crop, but previously had two decided failures; at one time having cut the fruiting buds all off, and the other time left too many of them.

To have this variety at its best care should be taken not to leave too many fruit buds on, as the value of the crop is reduced by so doing, for they will not ripen early. When too much fruit was left on one season the bulk of our crop did not get ripe until the last of August, and 1st of September. We have noticed that the first year's fruiting of this variety is nearest the tips, while the second year it is down the stalk.

For a good, early crop, we leave three or four laterals on each limb. This, we find, gives us a profitable crop. Perhaps some would think they had cut all the crop off by so doing, but we get plenty of berries, and pick them all within a week after commencing, and are about done when Wilson's Early begins, or at least we stop then. This past season we made all our money from the Early Harvest, and did it before Wilson's came in, for Wilson's did not pay much, and Early Harvest did not sell for less than ten cents per quart in Philadelphia.

The Law of Light in Combining Colors.

W. T. ALAN, MERCER CO., PA.

There are three colors that constitute the primary colors of light. They are yellow, red and blue, all other colors are but shades or combinations of these three; if this is once understood and retained in the mind it will solve all questions of combination of color in floral arrangements. When you have any certain color and wish to know its "subjective" color think of what the other two colors would be if mixed and you have the color necessary for the combination to form "light."

Suppose for instance you have a border of yellow Coleus and you wish to know what will be suitable next it; we mix the other two colors together and it gives us purple, so purple Asters or Lobelia will be the subjective color. Suppose, however, we have Orange (a combination of yellow and red) then the subjective color is of course blue.

This law of color is stamped on the human mind, is in fact a part of our very being, and should the memory fail in regard to this combination of colors, it may be tested thus; supposing you have red as a color for which you are seeking a suitable combination. You cut out a round piece of cardboard and paint it red, then with a pin stick it on a white wall in a room well lighted by the sun, then seat yourself a few feet from this disc and closing one eye gaze with the other steadily for about one minute on the red cardboard, then cover the head with a dark cloth and the exact form of the disc will be impressed on the retina of the eye with the color for which you are seeking; in the above instance the impression will be green, if the disc is painted green the subjective color will appear as red.

It is only successful as an experiment with those who are not "color blind;" in fact this is a test of the presence or absence of the organ of "color," a physical organ of the mind, which cannot be distinguished outwardly. This law of "light" is written upon every conceivable thing in the universe, both natural and spiritual.

Horticulture at the Ohio Centennial Exposition.

The praises have been loud for the grand horticultural exhibit made at the Exposition lately held at Columbus, Ohio, to commemorate the centennial of the state. No other such exhibit of fruits, vegetables and flowers had ever before been brought together within the boundaries of that commonwealth. Almost every fruit that could be grown in the country, north or south, was represented, and large numbers of plants that were grown in greenhouses.

The counties vied with each other in the extent and beauty of the exhibits made. Of these there were seventeen, viz.: from Montgomery, Muskingum, Stark, Belmont, Wayne, Wood, Lorain, Morgan, Lake, Clark, Marion, Van Wert, Lucas, Ottawa, Ross, Miami, and Franklin; each containing two hundred plates or more of the choicest fruits.

As may be understood, the awarding of the four premiums was no easy matter, and among the crowds of visitors there were not a few who—with no present responsibility resting upon them—felt sure they could have made a better award.

The first examination for premiums (there were two others, at intervals, later) resulted as follows: Best, Clark county; second best, Lake; third best, Muskingum; fourth best, Ross.

Owing to the unaccountable vacation of the curculio the present season, the exhibit of Plums was remarkable. Grapes were also in abundant supply, and there were more Pears than might be expected, considering the short crop. Peaches were also plentiful and Apples in endless display. Van Wert county exhibited the most very large Apples and had a fine show otherwise.

The departments allotted to the Ohio Agricultural College and Experiment Station were extensive and well filled and gave ample evidence of skilful and well-directed labor. Besides improved implements of different kinds they had a very attractive collection of vegetables, grains, grasses, mounted insects, insecticides, etc., and Potatoes in almost endless variety, including many entirely new. Among the latter were two, named respectively Mrs. Foraker and Governor Foraker, which certainly have never been surpassed in beautiful appearance, and the quality is understood to be of unusual excellence.

Livingston Bros., the well-known seedsmen and originators of new Tomatoes, had a fine exhibit of Onions, Melons, and other vegetables; seeds of all kinds, Tomatoes, etc.

The plant department contained a most interesting collection of Palms, Bananas, Ferns, Caladiums, Geraniums, besides numerous other fine exotics.

The Southern California exhibit, which had a building all to itself, contained

A NEW JAPAN STUARTIA (*Stuartia pseudo-Camellia.*)

Pears, Melons, Grapes, Onions, Figs, etc., of enormous size, and Corn twenty feet high.

The Stuartias. Why so Neglected?

The Stuartias must be classed among the flowering shrubs native to America, which, like our native Azaleas, Rhododendrons and some others, are more popular abroad than at home. It is an illustration in the horticultural world of the scriptural proverb that a "prophet" is not without honor except in his own land. In the hope that we may draw fresh attention to the genus, we this month present an illustration re-engraved from the English Journal of Horticulture, of a far-fetched Stuartia, namely, the Camellia-like Stuartia (*Stuartia pseudo-Camellia*) which is a native of Japan. Our much prized shrubs like Weigelia, Deutzia and Syringia, are natives of Japan and other Asiatic countries; perhaps a Stuartia from the same distant regions will also be more popular than our natives.

The Stuartias native of America are handsome shrubs that abound in the woods and along streams in the highlands of Virginia and Kentucky, and from there southward to Florida. It will be observed therefore that they are shrubs for Southern gardens rather than for the North. Still in the various catalogues at hand from nurseries in the Southern States we do not find the Stuartias included. There are two species, S. Virginica and S. pentagyna, both of which have large white or creamy white saucer-shaped flowers in July, with rich green ovate leaves, and constitute really attractive shrubs that when in flower are hard to excel.

The beautiful Asiatic addition to the class which we illustrate, proves to be as hardy as our own species—it is hoped that further trial will show it to be even more so. This, when shown at the Royal Horticultural Society's meeting in London last summer, received recognition from the plant committee in the shape of a first class certificate. Several years ago there was exhibited by Messrs. Parsons & Sons, of Flushing, N. Y., another Japan species, S. Japonica, which attracted much attention. This species is described as having small but exquisitely formed flowers. It may be remarked that the Messrs. Parsons are the only American nurserymen we know of who catalogue our native Stuartias. All are deciduous shrubs which in a suitable latitude succeed in ordinary good garden soil, not appearing very particular as to situation, though a moderately sunny position suits them best.

Horizontal Training of Vines.

A correspondent of the New York Tribune says that each added year's experience convinces him further of the superiority of the horizontal training for vines; and he states that he is gradually substituting flat trellis for erect ones, and prefer them of good height — seven feet or over.

The thrip, he remarks, has become a pest with him, and as the flies shelter on the under side of the leaves they can readily be drenched to death by using a syringe or force pump. Water alone is serviceable, but the addition of some kerosene emulsion makes it very effective.

The Grapes hanging free under the screen of foliage attain full perfection, and are more readily bagged, if their best quality and preservation are especially desired, or if left unbagged they are less liable to injury by birds than on erect trellis. The canes should be well separated and tied down close to the rods, which should be far enough apart to allow of head and shoulders rising through for convenience of pruning, etc., if the bower be wide.

For a single long row of vineyard vines a trellis need not be over three feet wide. One of the most useful positions for such a bower is an awning or screen for lower windows and back doors, to shade the lower story of a house on the sunny side. There is always abundant fertility and moisture for the vines to gather up, and they ripen more perfectly under the reflection of heat from the walls; and, as their leaves are continually inhaling moisture copiously, one always feels an agreeable coolness under a wide luxuriant Grape arbor, even on the hottest days. Such an arbor can readily be made a handsome extention of the lower portion of a house, while horizontal training may come in play in various other ways.

Grapes and Pears Together. Ans. to Inquiry No. 1,014.

E. WILLIAMS, ESSEX CO., N. J.

While Grapes are generally considered to do best on dry, well drained soil, as they do not like wet feet, your Concords tell a very different story so far as they are concerned; and as it is designed to replant the ground with this variety, your present vineyard tells you plainly that it is good enough as it is. Additional drainage might help it for other varieties, but the expense might be greater than the return, and unless especially good prices are realized, one would hardly be justified in incurring it.

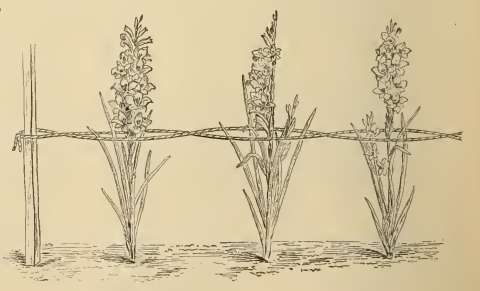
As to my former article on this subject in this paper, my advice was questioned and characterized as injudicious by two other correspondents, so our readers must consider the pros and cons and decide for themselves. My commendation of the plan, or advical if it can be so called, was based on practice. A few years ago when I began to entertain the idea of planting my vineyard for profit, the only ground I had was already planted to Standard and Dwarf Pears and Peaches, not very unlike yours as to slope. The rows of trees were 25 feet apart and the trees 15 feet apart in the rows, running north and south. Between these rows I planted two rows of vines and one vine alternately in the tree rows between them. The Peach trees and some of the Dwarf Pears failed and have been removed and a vine put in their places. All of the Standards and some of the Dwarfs still remain and are four to six inches in diameter of trunk. Thus the vines are seven and one-half feet from the trees in the tree rows and a little over eight feet in the vine rows.

I have yet to see any serious effects on the vines from the presence of the trees. I have as poor vines in the vine rows as in the tree rows and vice versa. It would hardly be possible for all vines in a vineyard to be equally strong and vigorous, even if there were no trees in it. I have this season taken 20 to 25 lbs. of Grapes from a vine within eight feet of a Pear tree 15 to 20 feet in height, which satisfies me, (though when I planted the vines, theory made me doubt the wisdom of the practice) that practice is ahead.

In J. W. H.'s case I would not advise more than one row of vines between the tree rows. I think this will be found better and more profitable in the long run than to plant two rows as proposed.

Supporting Gladiolus and Similar Plants When in Bloom.

Our correspondent. "Sister Gracious" says she would like to know the best way of securing a Gladiolus, so that its brittle stalks will not bend or break either by the wind or brushing against them. She has



Supporting Gladiolus and Like Tall Plants, when in Bloom.

tried tying them singly, but made awkward work of it, and trying to fasten them to one stake makes too much string in sight, and not enough plant to look well.

Then our correspondent goes on to give a description and a pen sketch of an excellent method for securing these plants that is in use near her own home. It is in one of the large gardens of D. M. Ferry & Co., of Detroit, Mich. The Gladiolus were

planted in rows, perhaps eight feet long, a strong stake was placed at each end, and a small rope wound in and out as in the illustration.

If any reader knows of a better way than this for managing such plants we would like to have them report it in these columns.

On the Cultivation of Celery.

MANSFIELD MILTON, MAHONING CO., O.

The culture of Celery within the last decade has been greatly simplified. Instead of being planted with the manure placed in the bottom of the trench, it is now planted on the surface after the manure is thoroughly incorporated with the soil, the same as we do in general vegetable and fruit growing.

STARTING THE PLANTS. The seeds of Celery being very small require the seed-bed to be well pulverized before sowing. A position sheltered from cutting winds and not too much exposed to the hot sun is the best for the seed-bed. Thoroughly incorporate in the soil a heavy application of well rotted barnyard dung, making the earth's surface as smooth as possible, and if of a very retentive nature a good mixture of sand and muck or leaf mould should be used. The surface of the soil once in good condition, sow carefully in shallow drills, beating along the row with the back of a spade, making the soil firm and compact around the seeds in order to insure vegetation. I find where it is practical that a shading from evergreen boughs placed on the bed insures a more rapid vegetation than when left entirely exposed.

As soon as the seedlings can be seen, stir the surface of the soil to prevent all weeds starting and to encourage a rapid growth of the young Celery plants. Should the weather be dry, water sufficiently to wet the soil to the very ends of the roots.

In late and northerly locations, where ground cannot be worked much before the first of May for early Celery, it is necessary to start the seeds in a nearly spent hotbed, and transplant as soon as the plants get large enough to handle; where only a few dozens of plants are wanted, they could be raised by sowing the seeds in a box and transplanting, when large enough, in some sheltered corner where the soil has been previously well prepared.

PREPARING THE SOIL. There is no use trying to grow a paying crop without heavily manuring with well rotted manure thoroughly mixed with the soil. The plan I adopt with my Celery ground is to first plow in a good heavy coating of manure, then I apply another coating of thoroughly rotted manure on the surface, harrow and cultivate to perfection before planting the crop. No half-way measure with this crop is allowed.

SETTING OUT THE PLANTS. In preparing the plants for setting out, about a week before planting I go over the seed bed and cut the tops of the leaves off, then, if possible, select a cloudy day, dig up the plants and set them out within as short a time as possible for the roots to be out of the ground.

When planting, care should be taken to pack the soil firmly around the roots. Unless this is done new roots cannot be readily formed. The distance apart for the rows depends a good deal upon the variety planted. The self-bleaching kinds can be planted as close as 3½ to 4 feet, while in order to get sufficient soil to bleach the green kinds a distance of 5 feet is necessary. The self-bleaching kinds require, however, soil placed around the plants the same as the green kinds to give them a good flavor. They do not require as much, it being only necessary to keep the leaves upright and close together.

Five Good Celeries: Golden Dwarf, White Solid, Henderson's Half-Dwarf, Large Ribbed, Boston Market.

To insure a rapid growth the ground between the rows should be well worked and not a single weed allowed to appear. Thorough, but not deep cultivation, after the plants have made a good growth, will carry them through a dry period better than watering unless sufficient can be given them to soak the soil around the roots.

Drawing soil up around the plants for the purpose of blanching them should not be done until they have made a good strong growth. If started too early it retards the growth and during hot weather rust is apt to appear upon early banked-up Celery. What is wanted for early use should be banked nearly to the end of the leaves, but what is wanted late should only have sufficient soil put up against the plants to keep them in an upright position. Celery should only be handled when dry, for when wet it is liable to rust.

STORAGE. Celery should be stored for winter before it has received frost severe enough to injure the leaves. While it will endure a good sharp frost without getting killed outright it only takes a few degrees to injure the leaves sufficiently to prevent their keeping well. Where large quantities are stored, cellars for the purpose should be used; these should be so constructed that on all good days plenty of air can be given to prevent damping and rotting of the leaves, and still moist enough to keep the plants in a good, healthy, condition. A temperature not to exceed 40° should be uniformly maintained.

Celery can also be kept in trenches successfully. These should be dug in some place where the water can drain off freely; they should be about eighteen inches wide and deep enough to allow the top of the plants to be below the surface of the soil when packed. When packing the plants place them as close together as possible without bruising them. Place over the trenches boards, on the top of which can be placed straw or leaves sufficient to keep out frost. I keep a good many thousands in this way every year, sometimes to the middle of April. Rats and mice are frequently destructive in these trenches by cutting and eating the Celery. In small quantities it can be packed in boxes close together, with sand or soil placed over and under the roots, the boxes stored in a cool part of the cellar, and care taken that the plants do not get too dry, but at the same time use care in not wetting the foliage as it causes decay. A great convenience in watering the roots of Celery stored in boxes is to have a few holes near the bottom on the sides, into which the water can be poured without wetting the foliage, a watering-can being a handy article for this purpose.

MARKETING. In different sections of the country different methods are adopted in putting Celery up for market. With us and through most of the West it is put up in bunches of one dozen or half dozen heads; sometimes when it is poor we often see from fifteen to eighteen heads tied together and sold for what they will bring. Good Celery, well trimmed and well cleaned, put up in bunches of twelve heads, always command a good price in all cities of any size, especially in manufacturing cities; but poorly blanched or rusty Celery is always at a discount.

In cleaning Celery we strip off all outside leaves, then cut the root off, leaving the base in a pointed form; this is more attractive than when cut straight across. We use a brush with long bristles when washing, being always careful to have it thoroughly cleaned. In tying we use two strings, one near the base and one near enough to the top to keep the leaf stalks straight.

VARIETIES. There are a great many varieties of Celery in cultivation; the dwarf and half-dwarf kinds being the most suitable for general culture. They are generally conceded to be of better flavor and of easier cultivation than the tall kinds.

Henderson's Half-Dwarf is a standard Celery and probably one of the best flavored in cultivation. It has a strong, compact habit and is a good winter keeper.

Golden Dwarf is one of the best keepers during winter. I have kept this variety as late as May in good condition. Its flavor is good, nutty and crisp.

White Solid can be grown to a large size and is one of the most solid growing kinds.

Large Ribbed is a strong grower, of good flavor, when not grown too fast, but when fed too strongly with liquid manure, is liable to be soft and the stalks hollow.

Boston Market is still largely grown by market gardeners in the east. It is a remarkably fine flavored, nutty variety. It is one of the very best white Celeries.

White Plume. The introduction of this remarkable variety was a new era in Celery culture, and Mr. Henderson, had he only

been the means of introducing this alone, outside of his many other acquisitions, deserves a lasting fame among market gardeners and all others interested in Celery culture. The second year of its introduction I grew 15,000 plants of it and since then have grown but few of any other. It costs me less to have it ready for market and it commands a better price than any other. It, however, requires to bring it to perfection, the best of cultivation and an abundance of thoroughly decomposed manure. No variety rusts worse in half decayed or fresh manure, but where suitable culture is given larger profits can be obtained from it than any other. While it gets white in the stalks without earthing it is not nearly so well flavored as when blanched by being "handled" and soil drawn up against it. It takes only a short time to get sufficiently blanched to be fit for use; therefore, where a succession is required it should be attended to accordingly. It can be kept to the middle of April, if it be stored before any soil has been drawn up against it. I tie it up about a week before storing, which gives it an erect shape and makes it more easy to store. It requires to be kept in a low temperature to keep long.

Horticultural Notes by Samuel Miller.

To grow fruit successfully in any country where dry summers are the rule, some plan of irrigation seems absolutely necessary. I never was more convinced of this than at the present season. May and early part of June was unusually dry, and all manner of fruits seemed to be at a standstill, so that it looked gloomy for a crop.

Then came spells of warm, rainy weather in succession. In those ten days the fruit grew more than in four weeks previously, and soon gave a promise of the finest crop had for many years.

Give me water enough, easily applied, and I don't care much for insect, pests, or anything else, to grow fruit successfully. During that rainy spell the curculios, which I had been fighting all along, held a recess. In fact, when it rains every day I don't think their eggs amount to anything. But I have digressed. The question is: How are we to accomplish this water affair? That there is rain fall enough in this latitude in the year to supply all wants there is no doubt; but four fifths of it passes off on the surface and goes to the sewers. Terracing and dams are the only plans. Build little dams in the ravines, and whenever possible make terraces, even if narrow; they will retain the rain water and let it go into the ground, leaving its fertilizing matter in the soil, instead of running off and taking the best soil with it.

I have land here of the very best for growing fruit, that must and shall be protected in some way. The hills are being washed off, so that it will require deeper plowing and more manure to keep it up. I have, before now, run to the garden with a spade just before a heavy thunder gust, and dug holes, here and there in places, over a pretty good patch. When the rain was over all these holes were full of water, and none of the earth washed away; while, where it was not done, quite an amount was washed out. To terrace, a man need not get a surveyor, but can do the leveling with the aid of a carpenter's or mason's level.

PEACHES FROM STONES.

Any one who has Hale's Early Peaches and will plant the stones, stands a fair chance of getting one half of them as early and as good as the Amiden. Such has been my experience with more than 100 trees, all of which have been washed out by the Missouri river. Some were superior in quality to Amiden, and fully as large. One tree, yet standing, within one foot of the river bank, ten feet perpendicular, bears the largest early Peaches we ever raised; one half of the fruit would fall into the river if not gathered. This Peach I shall bud, as it is a perfect beauty along with its great size and good quality. Whether a man who has plenty of fruit for his family, friends, and strangers, could make much money or not out of such Peaches I do not know, but he certainly can have a great deal of pleasure in growing them. There is not a poor family in this whole neighbor, hood who need be in want of fruit if they apply to me. Those who can pay for it must do so. To give children, or those who cannot grow or pay for them, a lot of good Peaches, many of whom have not seen a Peach before, does me as much good as to eat them myself.

If plenty of fruit and flowers don't help to make people happy I don't know what will. I work sixteen hours a day, yet would not exchange with a Vanderbilt or Gould if I had to take their cares, with their wealth, and be deprived of tilling the soil.

RASPBERRIES.

This fruit grows to perfection here so far as the varieties can be relied upon. Black Caps come first; Centennial, and Souhegan, earliest and about the same time; both productive and good size. The Centennial is still my favorite, as the canes are not so vilely thorny, and the fruit is sweeter, as also finer in flavor. Close on these comes the noble Hopkins, a match for either, and in my opinion as valuable as any other Black Cap that we have. Mammoth Cluster is coming on also, with Gregg to wind up. I still have a few of the Senecas, but they have been set aside by the newer ones, yet it is well worth having.

Of Reds, my collection is not large. Turner comes first and best to my taste. Cuthbert is only half hardy, and never has given us half a crop, while Marlborough is a failure. Crimson Beauty, Scarlet Juue, and Staymans No. 2 are everbearing, but not suitable for extensive planting for market.

But the berry for general purposes is the Schaffer; while not of the best flavor to most tastes, it is good, and cannot be beat for size and productiveness. Plant vigorous, and should be planted further apart than others; a week later. Just now the bees are taking the Schaffers as fast as they get ripe, but they are welcome. My sons got 30 gallons of honey a few days ago..

THE GARBER PEAR.

It now turns out that the Pear that I have been fruiting under the name of Cocklin's Hybrid, is in reality the Garber. The latter, a much larger and better Pear than the Cocklin. Those who have received grafts of it from me are not cheated, but only wrong in name. The original grafts were sent me by Mr. Garber, the originator of it, but as his eyesight failed, in his latter years, he made the mistake, having both varieties growing on his grounds.

That this Pear deserves extensive trial I am sure. It seems to be free from blight, as La Conte, budded on to it, have succumbed to the blight, and have been sawed off close to the stem of the tree while the main tree has not a sign of the disease.

The tree is a rampant grower, with dark shining foliage, that I can see glitter in the sunshine from two miles off on a hill. The fruit is of the largest size; golden yellow; quality good, and has a quince flavor that no other Pear that I know of has.

MELONS AGAIN.

After trying some six varieties of the new and old ones, it seems that in point of quality, none of boasted ones are better than some that we had for many years. First and foremost comes the Orange for home use, but it is no commercial Melon, as it will not stand rough handling. Next in quality comes Hungarian Honey, which last season did not please me. This season it is excellent; is not large but easily grown to fifteen pounds; round as a cannon ball; red flesh; very sweet, and with the smallest and finest seed of any Melon I know.

Green and Gold, while not quite a good as represented, is undoubtedly the handsomest thing of the kind that ever graced a table. Landreth's Extra Early (an early strain of Phinney's) is a solid rinded excellent one, and would ship well. Reid's of Georgia is a fine large Melon of good quality. Maule's Early Ripe—this gave us a big crop, and is a pale green, large and fine looking, but the poorest in quality of any Melon I ever grew.

Some pretty intelligent people don't seem to know how to eat a Melon. They bring them to the table at the beginning of the repast, cut in slices crossways, and by the time one is ready to eat of them they have lost that freshness so pleasant in this fruit. In my home the Melon is not seen until all are ready for it, when it is brought from its cool retreat, cut in slices lengthwise and divided among the party at once. Our usual plan is to tackle them an hour or two after dinner.

If I did state that a Melon should be fresh cut when to be eaten, there is a way in which a part of a Melon can be kept for a day or two without suffering; when it is too large too be eaten at one time. Cut straight through crossways, then set it on a plate with the cut side down it must be flat however, then pour half an inch of fresh water into the dish to exclude the air. It will be found all right 24 hours after.

The Paragon Chestnut.

The engraving of a group of Chestnuts, that appears annexed, represents the exact size of some specimens of this fruit which recently reached our table. As compared with the ordinary sweet Chestnuts that grow on the POPULAR GARDENING Farm, these specimens were three times the size of the former. Three of the large fellows occupied a single burr; it is said that in some cases the burrs contain four full sized nuts.

The Chestnut to which reference is had is known as the Paragon, and the stock is in the hands of H. M. Engle & Son, of Marietta, Pa., for dissemination. These gentlemen received their first tree some twelve years ago from an amateur in Pennsylvania uuder the supposition that it was an American seedling. The best authorities agree however, that it is not American, or at least not a pure American variety, hence the name "Great American" which at first was given to it has very properly been dropped, and the present name given instead.

That it is a foreign kind would seem to be indicated by its large size, for it is a mark of the foreign sorts from Japan and Spain that they are very large as compared with the American Chestnut. These foreigners are moreover coarse in texture and lack the full sweetness of our own, in which respect the variety now under consideration is not altogether an exception, although it is said to be much superior to the average Japan or Spanish Chestnut.

Whether this sort will prove hardy as far north as the native species has not yet been determined. A tree of it will be planted at "Woodbanks" early next spring. It is said never to have suffered in the least from cold in south-eastern Pennsylvania where it has been the longest in cultivation. In general it is safe to say of this variety that so far as it has been tested it has proven to be as good as can reasonably be desired in

regard to hardiness, vigor, quality, and early and regular bearing. Its disseminators report that none of their bearing trees have had off years thus far, while if it has a fault it is that of a tendency to overbear.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

How to Make Kerosene Emulsion. I see kerosene emulsion recommended frequently in Popular Gardening as an insecticide. It is a splendid thing when properly made and applied,but a great many horticulturists do not know how to make it or to what it may be applied with benefit. My way of making it is as follows: Take eight pints kerosene, four pints water and one half pound of hard soap—whale oil soap preferred—boil the soap in two pints of water until it is all dissolved, then take it away from the fire and add the remainder of the water and the oil; agitatedit in such a manner that it will become thoroughly emulsified —I use a Nixon force pump for this purpose, also in applying it; pump it back into the vessel from which it is drawn for a few minutes until it takes on the granular appearance of butter about "to come." When made this way you will have no trouble from the oil and water separating. Dilute this mixture from seven to ten times before using and you will have no trouble from its burning the foliage. Kerosene emulsion may be used with good results on all smooth bodied worms, and on moths and butterflies, etc., but is of little account in destroying beetles. I can especially recommend its use on Peaches, Pears, Cabbage, and all kinds of berry bushes when the fruit is advanced to a point where it would be unsafe to use London purple or Paris green. Where it is safe to use London purple I consider it superior to Paris green or kerosene emulsion as a cheap and reliable insecticide.—*J. O. Atwood, of U. S. Division of Entomology.*

The Gandy Prize Strawberry. Concerning the remarks in the October number regarding the Strawberry Carmichael being six to ten days later than the Gandy, I wish to say that as it originated with me some five or six years ago, the first plants being sold in the spring of '87 no one could have fruited it successfully except,during the one season of '88 (a very dry one in Ohio). The statement referred to as coming from Rockingham Co., N. H., that the grower gathered quite a lot of nice looking berries of Carmichael on July 20th, indicates that marketable quantites of that variety were about exhausted for the season. That was far north where berries should be several weeks later than in southern New Jersey, where I picked fine Gandy's Prize as late as July 19th, and quarts of them on July 10th, and sent them to market on July 1st. I will place Gandy with any variety grown for market, Jessie and Carmichael included, side by side, treated the same, and get more net cash from it than from any of the newer sorts.—*O. S. Gandy, Cumberland Co., N. J.*

Commercial Fertilizers or Stable Manure. Repeated trials on my soil, a stony loam, has shown scarcely any noticeable effect from commercial manures, probably owing to the liberal use of stable manure, but on sandy loam in this neighborhood good results have been obtained from guano and other fertilizers, on Onions and Grapes especially.—*D. N. Long, Erie Co., N. Y.*

The National Flower. Suggestions as to what shall be America's national plant or flower are made on all sides. California would like the jolly Sun flower, and this idea is not to be sneezed at. Does not this sun loving flower flourish from Maine to California. Is it not both useful and ornamental, a medicine and a fuel? But we don't like the idea generally. Now I propose the Onion, it, too, flourishes everywhere; the small silver kind could make up quite prettily with pink or blue ribbons for the young girls to wear, and they grow in all sizes. They have regular two pounders in California; think what an energetic symbol for a political campaign. A convention of howling delegates each with a big Onion in his buttonhole would be an exceedingly strong affair; its influence would stretch far and wide. Some one suggests the Tobacco plant, as America is its native country. Half the population already use it, sticking out of their mouths, or stuffing their noses. The women could wear its rather pretty flowers for corsage bouquets; Americans are noted for their excessive use of it, in the way of cigars, etc. They might offer as an excuse that it was our national emblem; perhaps so considered it would cease to be a nuisance.—*Sister Gracious.*

White Huckleberries. White Huckleberries are without doubt what might be termed a rare fruit, but not to the extent indicated in the paragraph in the November issue from the New York Sun, although the patch at East Knob, Pa. is more extensive than any of which we have any knowledge. The White Huckleberry also grows to quite a little extent in the town of Mansfield in this state, also in one of the towns of Massachusetts the name of which has escaped our memory, and we have also seen numbers of them in other places but of which we made no note at the time. The Huckleberry has become one of the desirable small fruits, the only detraction from it being the tendency to greatly discolor the mouth in its being eaten, either in its raw or cooked state. The white berries that we have seen are of good size, possess the same rich flavor that is characteristic of the black fruit, but are of a pearly white, being tinged upon the sides exposed to the sun, with a pinkish hue. It is believed that there are difficulties in the way of the general propagation or cultivation of the Huckleberry; if this is erroneous or could be removed and the white variety could be more largely increased, it would be quite desirable. It seems as though some attempt should be made to bring the fruit into more general cultivation if it is among the possibilities. The Huckleberry seems to have a sort of native habitat and cannot be easily disturbed.—*Wm. H. Yoeman, Tolland Co., Ct.*

PARAGON CHESTNUTS, SHOWN NATURAL SIZE.

Pruning the Grape. Notwithstanding all that is said and written on the subject of pruning the Grape, the majority of experienced growers think that no one particular time is any better than another, and this is proven by a few of the knowing ones, of whom some prune in the fall, others in the winter or spring, but all with the same result. There are some who profess to believe in pruning early for wood and late for fruit, yet who only in part carry it out, as their desire for fruit is so strong that they prune late always; yet have plenty of wood.—*J. H. Tryon.*

Fruit Preserving with Salicylic Acid. This being recommended for preserving cider. I wish to give the following on the use of salicylic acid for other fruits, according to experiments by Dr. F. Von Heyden, of Dresden, who advises the use of not more than two teaspoonfuls (one drachm of the acid crystals) to three pounds of fruit, berries so treated having kept over a year, no sugar being used, the jars being covered with paper saturated with a solution of the same; such paper may be used to wrap about raw fruit, which will preserve it for some length of time. For every hundred pounds of fruit, in marmalade, and other manufactured preserves, two ounces are needed. In Germany and some other countries, its use is on the increase, but in France its use has been forbidden.—*Remle.*

Wood Lilies. Noting the favor with which you regard hardy native perennial plants, I wish to call attention to the White Wood Lily,(*Trillium grandiflorum* , which is one of the most singular and beautiful of all hardy plants. It grows from six inches to one foot high, and, when in good health, each stem bears a lovely white, three-petaled flower, fairer than the White Lily, and almost as large when the plant is strong. It thrives under almost any kind of treatment, and becomes a free-growing herb of goodly size in a shady, peaty border in the open air. If placed in a sunny, exposed position, the large, soft green leaves are not sufficiently developed, and consequently the plant fails to become strong. Depressed shady nooks in the rock garden or hardy fernery will suit it admirably. It is now sold cheaply. There are several other species in cultivation—T. atropurpureum, erythrocarpum, sessile, and Pendulum, none of them equal to T. grandiflorum, but some are pretty, and all are interesting.—*C. Granger.*

Fall Plowing to Kill Cut Worms. That is good advice N.Y. L. gives in the October issue, on getting rid of garden pests by fall working the soil, and especially in the way of destroying the cut worms, for hard frost is one of the sure remedies, but even then to be effective the worm must be turned up to the surface so the frost can get a fair chance; if this is done but few will escape, and certainly not if the land, carly as possible in the spring, is cross-plowed, giving the frost a second chance. No fear need then be felt about putting in any kind of crops.—*E. E. S.*

On the Sale of Pears, I find on looking over the condensed statement of the sale of Pears last year, given on page 247, that in a few instances the printer has reversed my meaning, and possibly it may be well briefly to correct the errors:—I am made to say that Flemish Beauty and Vergileau were so excellent in quality that they were resumed for home use. It so happened that they were not up to the average, although good. It was the Bosc that was so excellent that it was not put on the market. In another place I am made to say that the Seckel sold well for "its surpassing beauty of appearance," which remark will hardly apply to so unattractive a Pear as the Seckel. These errors are hardly worth correcting, yet might possibly lead some person into mistake. —*J. J. Thomas, Cayuga Co., N. Y.*

Fruit Sorting. Apropos of the recent illustration of a canvas bottomed fruit sorter, an orchardist of a quarter of a century's experience, Mr. Seth Fenner, of Erie Co., N. Y. uses one quite similar, having the sides converging somewhat more, down to a canvas bottom, and not having the attachment for running into the barrel. On the subject of packing Apples, Mr. Fenner expresses the opinion that filling the middle of the barrel with low grade fruit is the "meanest business in the world."—*E. E. S.*

Pruning Raspberries. I lost fifty bushels of Raspberries this season by trimming off the ends of the laterals when they were about 15 inches long the season before, thinking thereby to thicken up the bushes and get more berries, but it checked the growth so that nearly half of the canes died by spring. Rows adjoining that were not so trimmed bore a full crop. Moral—"Let well enough alone."—*A. W. N.*

House Plants and Consumption. I have lately read in the paper, of a physician's recommending the cultivation of house plants to those of his consumptive patients who lacked strength or means for travel. He did this believing that the exhalation from growing plants so purifies and oxygenizes the air as to arrest the tendency to lung diseases, if taken in time. I do not know how true this is, but it coincides so entirely with my own theory that the presence of plant life in a house promotes the health of the occupants, that I am quite ready to believe it. An instance, when a florist's wife regained health by leaving the kitchen to hired help and spending her time in the greenhouse, has come under my own observation. It is now generally admitted by all intelligent observers, that an atmosphere where plants cannot flourish contains some elements for human life.—*J. B. Gardiner, Lake Co., O.*

Notes from my Vineyard.

E. P. POWELL, ONEIDA CO., N. Y.

The season last year was about a week or ten days earlier than this year; crops of all sorts, Grapes included, have been ten days to two weeks late in ripening. This gives a basis of judgment as to the average time of ripening of different varieties. Last year I picked Lady Grapes on the 20th of August, this year they were ripe about September 5th. Last year Worden was ripe September 15th on arbors, where this year it is not fully ripe October 5th. But when well trimmed and open it was ripe this year September 10th. Lady in reality should be put down as ripening in this latitude about the first of September.

I propose to give a few notes of some of the best sorts out of sixty varieties which I am fruiting. The increase of really fine sorts has been remarkable for the last few years; and out of my sixty sorts I should not like to part with at least twenty five or thirty.

Agawam is a fine, large Grape rather late for the *Red Rogers* varieties, and quite inclined to scattering bunches under ordinary treatment. *Salem* is a finer Grape every way, ripening about September 10th in this latitude. *Findley* is still better, but not always sure of setting fine bunches as the blossom is not perfect, ripens September 5th. *Massasoit* is a trifle later, and not quite so pure a quality, but is extra good.

Of the Black Rogers I should by all odds select *Herbert* as the noblest, it ripens September 15th, and will keep till December or January. *Wilder*, *Barry*, and *Merrimac* are not unlike, and about equally good. I should find it hard to choose, but think I should prefer on all accounts the *Merrimac*. My favorite of all Rogers Grapes is *No.* 30. It ripens about September 15th, is a light red, very handsome, prolific, and keeps nicely. It is a meaty, tender Grape, and while not highly flavored is very pure. *Moore's Early* is ripe before September, and sometimes gives a fair crop, but is not generally a good cropper. *Worden* comes soon after and is one of the best Grapes at all points ever grown. It is an enormous bearer of fine bunches, very sweet as soon as colored, in that unlike *Concord*, as well as ten days earlier than *Concord*. I omitted among the *Rogers* to name *Gaertner*, one of the best and earliest. It should not be omitted in a list of a dozen, a handsome large berry and bunch.

Of the white Grapes, not one is finer all in all for show, quality and prolific bearing than *Duchess*, it is a marvel of beauty. *Lady* is earlier and the very acme of quality, but I cannot get good crops from it; ripens about September 1st. *Moore's Diamond* I think is the equal of *Lady* in quality, and nearly as good otherwise as *Duchess*. *Lady Washington* gives me superb bunches, but is too late, ripening this year October 5th. No Grape in this latitude that fails to ripen before October can get its real character and sweetness. *Prentiss* is a failure every way, it is tender, not a good bearer, bunches only medium, and flavor very moderate. *Jessica* is a miserable fraud; those who have praised it have left out the important facts that it is not only small but half seeds, and the flavor is in no way comparable to *Lady*, *Duchess*, and *Diamond*. *Niagara* is a magnificent grower, bearer and bunch. It is not quite first-class in quality, and is late; but not later than September 20th.

Jefferson is a superb Grape in bunch and quality, light red in color; and comes almost to the ideal, only it is too late for some years, about October 5th this year; generally September 25th.

Of all delicious Grapes of course we rank *Iona* about first, one of the best three or four. But *Iona* is too late for vineyards and is too tender, but instead of *Iona* we have its progeny *Brighton*, a Grape of Grapes. With me it bears superbly, giving large bunches of large berries and every berry a sack of wine, ripens all along from September 1st to September 30th. *Early Victor* will do tor a few vines, its compact little black bunches are ripe with *Moore's Early* just after *Lady*, and are sweet. I would not plant many either for profit or table. *Poughkeepsie Red* is good enough, but no reason for planting it beside the *Delaware*. *Ulster Prolific* is of fair quality, small bunches, red, and not very desirable. *Vergennes* is better than the last two, and a good keeper, but I do not see any reason for planting many of the vines. *Greins' Golden* is the handsomest yellow Grape I have seen. It is however very sour; which is too bad, it bears well, fine bunches, and large berries, and so handsome. *Pocklington* is another golden sort, and I like it better every year. It is a large compact bunch, ripe about September 20th to 25th, bears heavily, and pleases everybody. Quality some years better than others. *Greins' No.* 7, a little nuisance, no quality, no size all seeds. *Golden Gem* really a nice little Grape, small, but so good you can afford it room. *Hayes*, I have not had enough fruit from to make sure of it; but I think it is not over praised. It is good in quality, grows fairly and is a good sized bunch.

Martha is a very sweet Grape, and when fully ripe, of fine quality, it bears enormously of fine bunches, ripens about September 25th. *August Giant* is an astounding grower and the quality is better than I expected. I recommend this Grape as a hardy rampant grower to cover arbors, rocks, out buildings, etc. *Diana*, all old Grape growers understand. It is a solid fine bunch of good, but peculiar flavored berries, and a very excellent keeper, it does not ripen till last of September and often not then. *Empire State* is an admirable grower, prolific, fine bunch, medium sized Grape; and no matter what is said, it is only medium quality, but it is one of the best late white Grapes. *Gœthe* is a a fine Grape if you can thoroughly ripen it, light red. This and *Rogers No.* 30 are most like hot-house fruits of any of the Rogers Grapes, but I would not plant it except below the line of New York City.

Among the best of the list, place, for white, *Moore's Diamond* and *Duchess*; for medium, *Martha* and *Hayes*; for late, *Niagara*, *Empire State*, and *Pocklington*. In black Grapes take for early, *Worden*; for medium, *Wilder*, *Barry*, or *Merrimac*, or all of them; for late, *Herbert*. For red Grapes take for early, *Brighton* and *Lindley*; for medium, *Salem* and *Gaertner*; for late, *Rogers* 30 and possibly *Agawam*.

There is no excuse for planting any more *Concords*, *Hartfords*, *Champions*, *Ives*, *Cottage*, or *Isabellas*, unless as a winter Grape, or *Rebecca* a poor grower. Of *Eaton* I cannot speak as I have not grown it; of *Witt* I have high expectations. *Woodruff Red* is, I think, a humbug if my vines are true to name.

Plant Grapes I say. It is the healthiest fruit in the world. For yield it is the Banana of the North. Cover your barns with them, your outbuildings, fences, rocks, stone walls, stone fences, and then have a small vineyard. Grow to wires, two wires fastened to poles about six feet high. If you grow but one vine take the *Worden*, it will take care of itself as well as the Concord.

Vines That Lack Vigor.

D. S. MARVIN, JEFFERSON CO., N. Y.

Looking over some Croton and Duchess vines this morning, has reminded me to record for others my experience with these and some other varieties. I have retained for my own use a few of these two sorts, because of their fine, delicious fruit, and good keeping qualities for winter.

The early spring was propitious, and the vines started vigorously, but there was some drouth at blossoming time, and neither variety had strength enough in the filament of the stamens to push off the petals, therefore, there was failure to fertilize the ovules, and the vines have no fruit upon them. I shall dig them up, for this is more or less their condition the majority of seasons, there is too great a preponderence of *V. vinifera* in their make up.

Some of our own native varieties are also too feeble for general cultivation, but not always for the same reason. Lady is one of these, always a feeble grower here, never bearing enough fruit to repay its cultivation. In and in breeding appears to be the reason for its failure. Pocklington has the same fault but not so marked; in rich soil and while young if not allowed to overbear, it usually does well.

While Cottage is vigorous enough, yet there is some defect in its reproductive organs, apparently deficiency of pollen, which makes it likewise an unprofitable sort. And while Hayes seems better in quality than other seedlings of Concord, it too lacks vigor of vine here. Miner's Victoria is more showy in fruit, but the vine is feeble, while Worden and Brighton are both vigorous and reliable here.

The Apple Tree of the Future in the North.

J. L. BUDD, IOWA AGRICULTURAL COLLEGE.

The suggestion of Mr. Wier, in regard to the proper method of top-working the Apple, is valuable. But his experience as to relative hardiness of root grafts and top-worked trees of green varieties at Lacon, Ill., nearly 100 miles south of the 42d parallel, will hardly warrant the idea that top-working will be the one thing needed to make old varieties profitable on, or north of, the 42d parallel west of Lake Michigan.

With an experience of over thirty years near the 42d parallel, in central Iowa, and an intimate acquaintance with the fruits and fruit growers of northern Iowa, I have reached conclusions that differ from his.

Top-working does not materially benefit varieties liable to disease of the foliage in our dry, interior climate, nor varieties liable to kill from the top downward. Our close observers need not be told that leaf troubles have usually preceded our loss of many varieties of the Apple of the grade of hardiness of Ben Davis and early Richmond Cherry, and that top-working such sorts will not save them.

Again, varieties liable to kill down from the top, even where they have retained perfect foliage, such as the Peach, the Chicasa Plums, the Chinese Pears, and the Jonathan and Dominie Apples, are not materially benefited by top-working.

Varieties liable to stem injury, but with good foliage, and wood not liable to be injured at the top, are benefited by working on hardy stocks. Fameuse, Grime's Golden, Roman Stem, and Willow, are examples of this kind. But stocks cannot be selected at random. All our experience and observation favors the idea that winter sorts worked on varieties as early as Duchess and Whitney's No. 20, *ripen their fruit prematurely*. We have seen Grime's Golden and Ben Davis on Duchess stocks that dropped their fruit in a mellow condition by the middle of September.

South of the 42d parallel, Gros Pomier has proven a good stock. North of this line, the best available stocks we have are those of the Hibernal, Recumbent, and Silken Leaf, but I know of no winter variety of the old list hardy enough to work on profitably, except the Roman Stem, and that will not stand up to the 43d parallel.

How the Chicago Gardeners Gather and Keep Onions.

Relating to this subject the Prairie Farmer gives the following account:

"The Onion crops, one of the great market and shipping crops of gardens in the vicinity of Chicago, bid fair so far to produce a full yield. Onions are pulled as soon as the tops begin to turn, and thrown into windrows, where they are left to dry down. If there is much rain the winrows must be stirred out occasionally. When dry enough so the tops will rub of easily, and when perfectly free from dew, they are freed from the tops and placed under cover, thinly on racks, where they become fully seasoned. Some growers place them first in piles, to sweat slightly. This assists in drying out. They are also sometimes seasoned by laying in long ventilated piles in the fields, being covered with hay and mats to protect fully from rain. If to be sold in the local market this seasoning and hardening is not needed.

To keep through the winter they may be kept on slatted racks, one above the other in layers not more than six inches thick. The place where they are kept must be dry,

well ventilated, and as near the freezing point as possible, since the bulbs will sprout at about 45°. They are successfully kept near Chicago, by heaping them in long piles just before freezing weather, covering them with almost six inches of earth and letting the frost enter. When frozen, litter is heaped over the earth to keep the frost in. If allowed to remain thus until the frost is drawn out naturally in the spring, the Onions will come out intact and perfect, but will not keep long after removal.

Some Vital Points in Vegetable Culture.

BY L. F. ABBOTT, ANDRESCOGGIN CO., MAINE.

In the growing of vegetables I am satisfied that one of the greatest errors is over crowding. The mistaken notion is entertained by many persons, that the quantity of a crop is increased by closely growing or planting. On the contrary, both in weight and quality, the crop of all vegetables to be as large as the nature of the ground planted permits, will be found to increase in proportion, as sufficient space is afforded for the proper tillage of the ground during the growth, and for the admission of the requisite influence and circulation of light and air.

Another great impediment to success in the production of fine vegetables is the lack of due attention to the proper tillage of the ground. While I do not fully concur with the teaching of old Jethro Tull that tillage is manure, yet I do admit that oftentimes better crops and more satisfactory returns in first-class vegetables might be realized, with less expenditure of fertilizers and a more lavish expenditure of elbow grease. Nothing can supercede the advantages accruing from deep culture, and while this is true of all, or nearly all crops that farmers cultivate, it is most emphatically true of garden crops.

Good drainage is another requisite to grow satisfactory crops of vegetables. Plants nor trees can thrive at their best with cold feet. A heavy clotted, soggy soil is unfitted for growing anything except Cranberries and Chickweed.

A proper rotation of crops upon the garden soil is a matter for consideration. Manure should be given to those plants above ground, as the Cabbage tribe, Peas, Beans, Potatoes—the latter is not properly a root—and similar vegetables, and these followed by root crops, as Carrots, Parsnips, etc. Experience seems to favor the practice of continuing the Onion crop year after year on the same spot.

Those who are experienced cultivators have no need of these suggestions, but few who are not so will not be easily convinced of the importance, until by direct experience they are satisfied of their value and truth.

Matthew Crawford's Hints on Small Fruit Growing--Work for Women.

This well-known horticulturist of long experience in small fruit raising, is well qualified to instruct those who are about to start in the culture of fruit, and he is especially sanguine of the place women will eventually hold in this work.

The first thing required, according to a recent statement from his pen in the Chautauqua Farm and Vineyard, is to post up on the work. Study your facilities, your land, capital, nearness to market, and ability to obtain needed help. Secure the control of some good land. It costs as much to prepare and cultivate poor land as rich, and the profits are little or nothing.

Plant but few varieties, and only such as generally succeed. You can well afford to do without those new kinds that are "destined to supercede all others." Be more practical than theoretical. Be more ready to believe what you see than what you hear. Take some good horticultural papers, and read them attentively. Join a horticultural society if there is one within your reach.

Do your work well, for both profit and satisfaction come from a little well done, rather than a large plantation grown in a slipshod manner. Sell no poor berries, as they will injure your credit more than they are worth. Use them, or give them to those who have none, and cannot afford to buy.

Keep your plants growing during the growing season, but injure no roots in cultivating, for while plants make their own repairs, they should be better employed. The force expended in healing a broken root might be more profitably used in building up the plant or storing away nourishment for the next crop of fruit.

All the berry plants do best on land that is rich, moist,—not wet,—and cool. Without richness there is nothing to make fruit of. Without moisture to dissolve the food in the soil it is unavailable, for all plant food is taken up in solution. Without a comparatively cool soil the plants cannot remain healthy. Each plant should have plenty of room, and no other roots should be allowed to rob it of food and moisture. The surface of the soil must be kept loose by stirring or mulching, so as to admit air to the roots, for they cannot live without it. As a plant can make its wants known only by signs, whoever is most faithful in supplying the wants will succeed best.

Each plant set out is an independent establishment, and if not hindered will go steadily on doing the work appointed to it by nature,—gathering its food, and changing the raw material, by means of the rain, the sunshine and the atmosphere, into delicious fruit. It is the fruit grower's province to see that all the conditions are favorable, so that their returns will be in exact proportion to his judgment and thoroughness in this respect.

Here knowledge is power, and this fact is a strong reason for women taking up the business of small fruit growing for market, as there are few pursuits which offer more advantages with fewer drawbacks. It is not laborious neither does it require much capital, and fruit growers meet with less opposition than almost any other class, and next to none from coarse or ignorant people. Their products generally meet with a ready sale, and here for once, woman has an equal chance with man. When she sends fruit to market no one demands it for half price because it was grown by a woman. There is not a single qualification needed for the business of growing small fruits that woman does not possess.

Fine fruit sells on its own merits, and a good article is always in demand at a paying price. No advertising is needed to sell it, and no money is spent in building up a trade. It can be grown in any part of the country, and there is a market for it where every people live. The demand for fruit is not based simply upon its being delicious and attractive, it is a real need. The human system has a natural appetite for the combination of acids and sugar that is found in berries, and the market for direct fruit is never overstocked.

Small fruit growers have another advantage in the fact that their products come into market in the summer, when people have money and are liberal in spending it. One reason for women being so generally successful is that they attend to details. They are in sympathy with their pets, and learn their habits much sooner than men do. As a rule they are not so ready to neglect their work, and this is important in this business where it is not hard work, nor the ability to do hard work that makes fruit growing successful; it is the heart work, the real interest, the carefulness, the faithfulness, and the good judgment that are put into the enterprise.

A Report on Raspberries in Canada.

Red: Cuthbert has proved to be by far the best with us. Though somewhat tender, it has stood our severe climatic conditions well, and proved itself to be prolific, large, good color, firm, and of delicious flavor. The severe winter of 1886-87 injured many of the canes. It is somewhat late but extends the time of berries, and is a variety which should be found in every Raspberry plot. Growing side by side with the Philadelphia, an excellent opportunity is found for comparison; and, as, from time to time I have gone to the ground in the berry season with visitors, I have always found they soon judged in favor of this variety, popular both for home and market use. Philadelphia with us ranks second. It is very prolific, hardy but not a firm berry, and thus not so marketable. It makes a fine show on the bush, but does not pick as readily as the Cuthbert. It has rather a poor color and ripens comparatively early. Turner comes next, of good flavor but not very firm berry, and consequently not a good shipper; hardy, and seems as if it would grow under adverse conditions better than most varieties, but not an early berry. Herstine has not done much with us. Its bearing season seems short; berry soft and canes fairly hardy. Niagara has given a fine yield, but late. Clarke is a large, bright, luscious berry, but soft and not very prolific here; canes tender. Highland Hardy is a small bush, and a poor grower, tender with us, killing down and bearing soft berries. Brandywine has produced some fair crops, but on the whole has done poorly. Thwack has not fruited well.

Black: None have done remarkably well. All have suffered considerably from our cold seasons, many hills have died out completely. Davison's Thornless, though killed badly, has proved to be a strong grower and has furnished some good fruit. Gregg is a little late in the season and has also suffered, but has yielded a fine, large, firm berry. Mammoth Cluster has killed out very much; it is medium early. Saunders' Hybrids have proved themselves to be prolific; the berries are inclined to be soft, a good flavor, but a very poor color; being a cross between the red and black, they have the color of neither the one nor of the other, but a sort of moldy-like appearance. This no doubt would affect their sale, but for home use these berries are worthy of a good place. They seem to possess the flavor of black more than red berries.

White: Caroline has been fairly prolific and comparatively hardy.

CONCLUSIONS: 1. We have been very successful in obtaining a satisfactory yield from red Raspberries, especially the first-mentioned on the list.

2. We are inclined to believe, that leaving the old canes till spring aids in keeping the snow about the hill, and thus serves as a protection during the winter months.

3. Our climate is rather severe on black varieties.

4. Ground for Raspberries should be well drained and thoroughly cultivated.

5. The best red varieties are: Cuthbert, Philadelphia, and Turner; of black, Gregg, Mammoth Cluster, and Saunders' Hybrid (57); of white, the Caroline. These make up a collection likely to do well in most places in Ontario.

6. Farmers, with a little care and a small amount of labor, might easily grow Raspberries for home use, and thus save many a toilsome tramp and weary hour to members of their household, who strive to gather wild

Raspberries from patches where fruit is obtained under most adverse conditions.—[Bulletin from the Guelph (Ont.) Agricultural College.

Our English Cousins Air their Knowledge on Fruit Marketing.

At a recent conference of more than fifty of the leading English fruit growers, held in Sydenham, near London, the following points were brought out as reported by the Gardener's Chronicle. We also present several illustrations of fruit packages

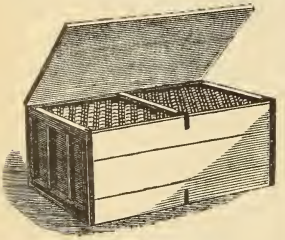


Fig. 1. Crate Complete with Trays.

recommended at this meeting. Fig. 1 showing a case of trays for holding the fruit, Fig. 2, one of the movable trays previous to placing in the case.

Ignorance as regards packing and the condition in which fruit should be marketed are the principal causes of loss to the fruit grower. We frequently send it too ripe, and make use of any package that may come to hand, with little regard as to whether it is too deep or too shallow, or is otherwise suitable. Packing is an important factor in securing good prices; what is the use of growing the best fruit in the world if it be spoiled in transit? Never send fruit too ripe. Peaches and early Pears especially should be packed hard, as they travel better in that condition, and are rarely used by the retailer for several days after purchasing. If possible, never send fruit for Saturday's market, except small fruits. Monday and Tuesday for the first part of the week, Wednesday aud Thursday for the latter part. All fruit should be sorted into bests and seconds, and in some cases into thirds. There are always buyers of first and other grades, but seldom of mixed qualities.

Anyone could grow fruit if they had the trees, land, and climate; but not everyone could get the best price for it. "To put the best side towards London," is very unfair to the salesman and the customer in town. This is the reason why many complaints were made of certain growers receiving poor prices.

But did the English fruit growers ever trouble whether the fruit was bruised or not? No; in nine cases out of ten all he cared about was getting it off the trees and into market, many times without considering which sort ought to go first. Oue grower's packing would make double the price of another's if his mark had become known as an honest packer. The French often realized more for one ton of their fruit than English growers for two tons, because they did not begrudge employing labor. Labor would and must pay.

None but the finest fruit should be put in the trays,(shown in Fig. 2). With respect to marketing, fruit must be disposed of in the most economical way, and also having facilities for preserving fruit and vegetables in superabundant seasons, besides, the surplus left from each day's sales must be utilized, for it is to this surplus that the growers in extended fruit cultivatiou must look for the profit.

As regards Apple packing, it was said that if English growers wished to compete successfully with American fruit, more attention must be paid to this matter.

Notes from the Germantown, Pa., Nurseries.

W. FALCONER, QUEENS CO., N. Y.

If Professor Thomas Meehan were not so great and good and esteemed a citizen the City of Brotherly Love, no doubt would let him stay home and mind his own business, and not insist upon his presence in their big town to mind theirs. But they have heaped well deserved honors upon his head and every gardener in broad America feels a personal pride in the honors bestowed upon Prof. Meehan, always our friend and teacher. While I was rambling through his nurseries the other day, he was sitting in the Council, in Philadelphia, but his son Thomas, and his brother Joseph were my capital companions. In an old established nursery like this, and especially the home of a botanist, we are sure to find many trees and shrubs, and lesser plants not generally grown in other nurseries. The following notes are about some things I noticed.

Of Halesia Diptera. A bushy plant, 16 or 17 ft. high, on a sloping bank and closely sheltered by a clump of other trees, is now bearing a cup of seed pods, and this for the first time. Many evidences of tenderness exist in the form of stubs of old killed-back branches. But if we cannot rely upon this species, we find in the commoner and more northern Snowdrop Tree, (*H. tetraptera,*) a hardy and lovely flowering shrub tree.

The Supple-Jack, (*Berchemia volubilis*) of the south also shows evidences of hard battles with former winters, but as we have many handsomer vines that are perfectly hardy with us, we can well spare this denizen of our southern swamps.

Of Ilex monticola, I observed several nice thritty plants. This species is indigenous to the mountains of North Carolina aud behaves as if it were hardy enough about Philadelphia and New York, at least our plants on Long Island have survived the winter unscratched. It is a deciduous species and highly recommended by those who have seen it in its mountain home.

The Gordonias. Handsome shrubs from the Southern States. The Loblolly Bay (*G. Lasianthus*) bloomed this year for the first time in this nursery. The Franklinia (*G. pubescens*) has several flowers open now (Oct. 31,) and that too on plants not over two feet high. But at this time of the year it is not the white blossom but the crimson foliage of these Gordonias that is so attractive, and nothing now is brighter. But Gordonias are rather tender in their youth and require some nursing in the way of care and shelter for the first few years.

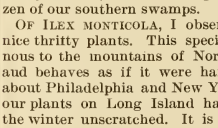


Fig. 2. Character of the Trays.

The Russian Ivy, (*Hedera Taurica*) is a pretty little Evergreen Ivy and said to be perfectly hardy. It is running over a rockery at the office door and climbing up a tree near at hand.

Mr. Meehan has received a good many complaints to the effect that the Weeping Flowering Dogwood (*Cornus florida*) is hard to transplant successfully. Why should there be more difficulty with it than with the typical form I cannot see, for isn't it grafted on the common species? But I can guess. In transplanting deciduous trees and shrubs we should cut the tops well back in order to insure success; in the case of this Weeping Dogwood we may hesitate to cut the tops back least we remove all the wood that shows a weeping tendency our hesitation often being rewarded by the death of the object of our consideration.

The Pin Oak, (*Q. palustris*). Mr. Joseph Meehan considers this one of the easiest of the genus to transplant, and I believe it is one of the prettiest. There is an individual contour to this species by which you can tell it almost a quarter of a mile away. We have an avenue of these Pin Oaks which from the 5th to the end of October was a sight worth seeing on account of their crimson-tinted leaves. The great objection to them is that they always have a deal of dead, twiggy wood among their branches.

Other Oaks. There is a good demand for American Oaks. Some of the higher-class landscape architects have a strong preference for American trees, and Oaks in particular. The general public who visit the nurseries and select their trees, lean with most favor to the Scarlet Oak, with Red Oak as next choice.

Berberries Thunbergii. A very pretty mat of color, crimson and gold, is a bed of little seedlings of this Japanese species, which, I think is the finest of all deciduous Barberries. Mature plants are 3 to 4 feet high, more than that across, of dense habit, with arching very leafy branches, and oval scarlet fruit that will hang upon the bushes till the new leaves appear the next spring.

Benthamia Japonica is in thrifty condition and more than ever resembles our Flowering Dogwood, the leaves of both plants are much alike in general appearance and color. I saw larger specimens of this plaut in bloom at Flushing last summer, and the flowers had a striking resemblance to those of the Flowering Dogwood, although borne two months later in the season.

Idesia polycarpa, from Japan, holds up its head as if it meant to make its home here. Should it prove hardy it would be a desideratum. It is a very striking large-leaved tree, but about Boston and New York it has despised our hospitality, being too tender.

Both here, and elsewhere, around Philadelphia, I noticed some large plants 8 to 10 ft. or more high, of the Japanese Red Bud (*Circis Chinenses*). It assumes more of a shrub than a tree shape, and is not so handsome a plant as is the American species (*C. Canadensis,*) but its larger and brighter flowers in spring and the great profusion of them cause it to be much esteemed.

We seldom come across so large and full a plant of Cornelian Cherry (*Cornus Mas.*) as one that is growing near Mr. Meehan's house. From its appearance now, so full of little buds, it must be a handsome sight next March and April, when its leafless branches shall be sprinkled all over with yellow blossoms. Indeed I think we might use more of these early blooming shrubs than we do with advantage. We also have Spice Bush, Fragrant Sumach, Corylopsis, Mezeron and Fragraut Bush Honeysuckle to be quickly succeeded by Forsythias, Japan Quince aud other more showy shrubs.

Mr. Meehan got some plants of "*Viburnum variegatum*" from California, but although the shrubs have grown well enough none of them have shown any sign of variegation. Well, this is all right. No doubt the plants are *V. rotundifolium variegatum*, a Japanese Snowball of great excelence in the way, of but a little earlier than *V. plicatum*. In fair-sized plants a few of the leaves, but never all of them, show variegation. The Variegated Ginkgo is another case in which similar sparse and uncertain variegation is shown. Naturally enough a customer buying a Variegated-leaved Snowball shrub would expect to find some variegation in the foliage, and would consider he

had just cause of complaint if no variegation at first occurred, but in this case the variegation is a whim of the plant and cannot be or has not yet been controlled by the nurserymen, so this Viburnum should be marked as one likely to produce some variegated leaves. Perhaps it behaves differently in California, but on Long Island, where we have large old plants, the above is just how it acts in this matter.

INDIAN CHERRY (*Rhamnus Caroliniana*). "Now that's one of my favorite shrubs," remarked Mr. J. Meehan, "it is so pretty when in fruit." True, it is a shrub or small tree indigenous to Long Island, south and west to Eastern Texas, but not much cultivated in gardens. But it well deserves to be grown among our choice shrubs on account of the immense profusion of its small but ornamental red and black fruit. Why, in summer the bushes are covered all over with small greenish flowers, and unripe and ripe fruit at the same time. At the Arnold Arboretum, at Boston last summer I saw it in this condition and thought it was one of the prettiest shrubs in that almost unequalled collection.

WITCH-HAZEL (*Hamamelis Virginica*). Our woods hereabout are full of it and we grow it in the garden, but at Mr. Meehan's and Mr. Child's I saw it in a finer condition as a garden shrub than I remember having seen it elsewhere. The specimens were large, broad-spreading at the top, dense, and not at all lank and straggling as we so often find it in its wild state. This is because they had been pruned back a little in their earlier years. It is an odd shrub at this time of year, (October and November), to be covered with its modest yellow flowers which come before the leaves fall and continue for sometime after the plants are leafless.

HARDY JASMINES. The Naked-flowered Jasmine (*Jasminum nudiflorum*) is grown in limited quantity. If the people could only see it when in full bloom and know what a good thing it is, demand would soon increase the supply. It is a deciduous species of shrubby vine, and a native of China. Its flowers are yellow and appear in great profusion along the leafless flexible branches in earliest spring when the Snowdrops and Crocuses are in bloom. The plant is fairly hardy if in a sheltered place, and may be trained to a pillar, trellis, or other support, or allowed to spread over rockwork, or rootwork, or form a dense isolated bush-specimen as we often do with Fortune's Forsythia. Of the common White Jasmine (*J. officinale*) Mr. Meehan had several small plants, and which are quite thrifty. In the warmer parts of Britain, also along all Southern Europe, this is one of the commonest of garden plants, and is used as a vine, also clipped low for a garden edging as we sometimes have *Euonymus radicans*, and running loose on rockwork. Its flowers are white and appear from midsummer and later. The species is indigenous to Persia and Northern India. As I do not know of any large flowering plants of it growing out of doors in the Northern States, I cannot say how hardy it is. The Southern Jasmine (*Gelsemium sempervirens*) is grown in considerable quantity and it looks first rate, but I am told it blooms very little. Now, in a warm, sheltered spot, slightly shaded from bright sunshine, on well drained land, and with a winter mulching of dry Oak leaves and some evergreen Spruce branches, I am sure we can grow this Jasmine good enough to bloom it well in the neighborhood of New York. It is to the South what the Mayflower is to the North.

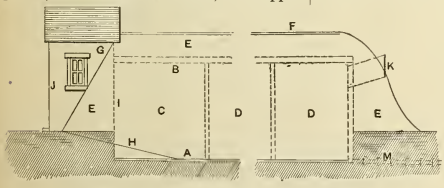


Fig. 2. Open Air Root Cellar. Lengthwise Section.

Out Door Cellar for Roots, etc.

CHARLES WILLIAMS, ORANGE CO., N. Y.

Not having enough cellar room for my root crops, two years ago I built an outside

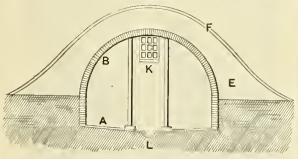


Fig. 1. Cross Section of Root Cellar.

cellar, which possesses some advantages. It holds all the Potatoes and other roots I have to store. It is convenient to the house, while all stench from decaying vegetables is prevented from entering the dwelling, a menace to health. It is easily filled, it is perfectly durable and with being banked over and the soil coated with turf, it presents not a bad appearance.

To give others an idea of the formation of this cellar, I present some rude drawings herewith. Figure 1 shows a cross sectional view of the structure, Figure 2, a similar one taken lengthwise. The letters in the two illustrations refer to corresponding parts.

The main feature of this cellar is an excavation three feet into the ground on a dry site, the same being ten feet wide and forty feet in length. The sides and roof are of brick (stone would answer also) arched as shown by Figure 1. Over the arch is a cover of 20 inches of earth, the surface of which is sodded. There is a storm house entrance at one end through which access is had to the interior.

In the Figures, A represents the floor, being lower at the center where is a drain L. The floor and drain are cemented, and the latter is protected by a board walk. B is the arched wall of brick. C is the first room of the cellar, and which is furnished with benches and shelves for storing milk, fruit jars and the like. D D represent the bin sections; the bins being to the outside of a central walk which extends through the length of the cellar. E shows the cover of earth, F the sod on top of it. G is the storm house which protects the entrance. H is an incline from the interior through the inner door, I to the outside entrance J; this incline is made of plank and admits of readily entering the cellar with a wheelbarrow. K is a boxed opening, having a window and an outside door, and is used as a ventilator, for admitting light, and to serve for filling the cellar with such roots as may be safely handled over a chute. L is the drain before referred to, and M the outlet to the same.

In the summer, a wire screen is placed on the opening K, as well as a screen door being provided at the regular entrance at the other end. By having both doors and the opening at K, the air in the cellar changes place constantly, with good effect. It is a fine milk room; nothing has ever frozen in it. A cellar similar to this could be made for much less first cost money than this, by using studding and boards instead of brick or stone for the sides and top. In the long run the brick structure would be the cheapest and by far the most satisfactory.

Keeping Garden Vegetables Fresh the Year Round.

An exchange says: "Apples, Potatoes, Cabbage, and sometimes Beets, Turnips, and Parsnips, may be kept till spring," upon which the Country Gentleman comments as follows:

This length of time will doubtless apply to ordinary modes of storage in cellars, but with suitable packing we find no difficulty in keeping garden roots quite fresh the year round. There is little difficulty in retaining Potatoes in nearly as good a condition as those freshly dug, provided the temperature is kept so low that they will not sprout or grow, the skin being nearly impervious to moisture so that they will not wilt.

Beets, Turnips, and especially Parsnips, become withered and dry in a comparatively short time, and it is essential to imbed hem in a suitable packing substance to prevent the escape of moisture. Sawdust, slightly damp (but not wet), answers an excellent purpose, provided it is placed in boxes sufficiently small in size to prevent heating. All the interstices between the roots must be compactly filled. They should then be kept in a cool cellar. Sawdust being an excellent non-conductor of heat, a few degrees of frost in the cellar for a few hours, during an excessively cold snap, will not be likely to reach them. We have kept garden Beets in this way through the twelve months, and taken them out in November apparently as fresh as the day they were dug, although with some loss of flavor.

Parsnips, which wither rapidly when exposed to the air, may be kept fresh in this way during winter, but those needed for spring use should be left in the ground where they grew, and taken out in the spring for ready use; or else packed away by the mode already described, for longer keeping. They may be allowed to remain in the ground a few weeks longer, if the roots are not allowed to become exhausted by the growing leaves, which is prevented by cutting off the starting foliage rapidly with a light hoe ground sharp on the grindstone.

Cabbage, intended for early use in winter or for a few months, may be kept by a mode somewhat similar, using slightly damp moss instead of sawdust, or the latter will answer nearly as well. Procure good sized or long boxes, cover the bottom with two or three inches of the moss, place a stratum of the Cabbage heads regularly and compactly on this layer, then having added another layer of moss, proceed as before, till the box is filled. A quite low temperature for the boxes is desirable, and some frost occasionally will do no harm.

When moss is used for packing roots, it answers a good purpose if rubbed or ground rather fine or pulverized. It may be necessary during winter to examine the degree of moisture, and if quite dry or likely to become so, to apply more with a watering pot, but not to drench them. It is essential to maintain a low temperature, to prevent any danger from rotting.

963. **Cracking of Pears.** I have experimented for some time with many remedies, and have found it to be a disease attacking the young wood, going from one tree to another until I expet it will go over my whole orchard. The best I have ever done was to cut off all last year's growth, fruit buds too, and unless there is left some that are cracking in the near vicinity, when they come out fresh, the fruit will prove healthy. This disease treated in department report 1836, is confounded with Pear blight entirely distinct.—P. H. FOOTE, *Suffolk Co., N. Y.*

The Canadian Lily. It Deserves Better of our Flower Lovers.

A love for novelty, or for whatever is far-fetched, has often led American growers away from that which, among our native plants is meritorious, to things far less so from the nations of Europe or of the East.

A case in point is that of the remarkably handsome native Lily known as the Canadian Lily (*Lilium Canadensis*) of which an engraving of the flowers is shown on this page. This is a bulbous plant found native to nearly all parts of our country and of Canada, and which in the graceful habit of its growth, and the beauty of its flowers, stands among Lilies simply matchless for beauty. The plants grow from two to four feet high, bearing on slender stems terminal clusters of drooping, brown-spotted and orange-colored flowers; varieties also bear red (*L. C. rubrum*) and yellow (*L. C. flavum*) flowers.

The Lilies known as L. parvum, L. nitidum, and L. columbianum are somewhat similar to the Canadian Lily and require the same treatment.

The Canadian Lily is by no means difficult to cultivate, the principal thing being to plant its peculiar rhizomous bulbs in a compost abounding in vegetable fibre, in a situation that is always fairly moist, without being soggy, and the roots after being planted should not be disturbed, as then they will gain in vigor every year. While generally the soil should be quite largely of peat, or some similar substance like decayed turf, no strict rule can be laid down as it is found doing well in an open loam in the wild state, and has been also known to naturalize well. A slightly shaded position seems best for this Lily, but it must have light enough to keep it in a thriving state.

The Canadian Lily flowers in late summer, and when in bold masses such as may be seen more often in the gardens of Europe, than (be it said to our discredit) in those of our own country, is very attractive. Both it and the allied forms will make elegant groups among choice shrubs in rich beds. With such treatment we are often able to get a second crop of bloom, as well as a variety of forms from beds that otherwise would have only a single lot of flowers and rather unsightly plants. In this method the shrubs should be kept from forming a stiff solid mass, having them so grown as rather to provide a shelter to the Lilies, without doing them harm by excluding the necessary light or preventing the development of the flowers.

A Trio of Deserving Plants That are Little Known.

W. E. ENDICOTT, NORFOLK CO., MASS.

Three genera, Gloriosa, Littonia, and Sandersonia, are so much alike in many ways that no person, however ignorant of botany, could fail to perceive the relationship. Gloriosa and Littonia, indeed, are almost indistinguishable, except in flower and root. They both make long rambling stems, set with glossy, bright green leaves, the tips of which are prolonged into tendrils, by which the plant will climb up a string under the roof of a greenhouse to the height of eight or ten feet. Sandersonia has the same glossy leaf, and might be taken for one of the former, which had not advanced far enough to begin to climb, which the Sandersonia never does.

They are all showy plants and deserve extensive cultivation. The tubers should be potted, two or three in a five-inch pot, the end of March. If the house be warm they start in a few days; otherwise they remain dormant for some time. When plants (Gloriosa and Littonia) have reached a height of two feet they begin to flower, and continue for a long time. Sandersonia will blossom when ten inches high; its full stature never exceeding two feet.

They are self-fertilizing, and every flower will form a long, three-lobed pod of a most brilliant and glossy green, which at the end of the season will split open and display rows of bright, red-skinned, round seeds

A Fine Native Lily. Lilium Canadense.

about as large as a very small Pea. I have raised very many Gloriosas and Littonias from seed, and have always found the seed of the former to germinate in about six weeks, while Littonia seeds never sprout in less than eighteen months, and sometimes they take two years. When the foliage and stems turn yellow, the pots may be turned down on their sides under the benches until time for repotting, or the tubers may be at once taken from the earth and put away in a box, no packing being needed or repotted, and be kept dry and warm over winter.

Gloriosa was named by Linnæus, but the name is objectionable for two reasons, first, the word is an adjective, not a noun; second, it conveys a very exaggerated idea of the appearance of the flower. The best known species is *Gloriosa superba*, a name which is fitting for only the most brilliant and beautiful of flowers, which the one in question, though showy and attractive, most certainly is not. Methonica and Clinostylis have been suggested as fitting names, but Gloriosa has the precedence, and by botanical custom it must stand.

G. superba has reflexed flowers of scarlet or orange, and yellow, the former color occupying the outer half of the floral divisions. It is found throughout India and the large islands adjacent, and throughout the southern half of Africa. *G. virescens*, occupying the same parts of Africa but not extending into Asia, is not unlike the former species, but its variety *grandiflora*, which is found in equatorial Africa, is quite distinct, bearing larger flowers of a beautiful clear yellow.

Seedlings of Gloriosa make in their first year, a triangular tuber from one corner of which the stem springs; the other two containing the "eyes" from which growth starts the next year. As the tuber increases in age, (if we may so speak of an annual tuber) the shape change and the two branches (sometimes three) attain a length of several inches, and are frequently much contorted by their crowded condition in the pots. The natives of India believe that one of these branches is a virulent poison and that the other is its antidote.

Littonia has but one species, *modesta*. Its flowers are less showy than those of Gloriosa, but are pretty and graceful. They are of a clear egg-yolk yellow and are not reflexed, but hang like little bells among the leaves. They are not more than an inch long. A new variety, *Keitii*, has lately been found, which is fully twice as large in all its parts. The plant is a native of Natal and Kafferia. The tubers of Littonia are of the shape described above, but much thicker.

Sandersonia, with two species, is also a South African plant. *L. aurantiaca* has orange-colored, urn-shaped flowers, resembling those of the Blackberry in shape, though considerably larger.

Sister Gracious' Comments on Several Matters.

A new motto for plant lovers. Be bold! Be bold!

Many look at my plant shelf and say, "I wish I could raise plants, but it's no use for me to try, plants won't grow for some folks." Take right hold of something, if it dies, try again. Make a rule never to buy a plant in bloom. Get a slip, raise it yourself, you will have learned lots about its habits and needs, and when you have coaxed a bud, the pleasure will be double than if you had bought the plant at some florist's, only to see the flowers fade in a few days.

AMATEUR'S DISAPPOINTMENTS. These crop out all along the line, and are sometimes overwhelming. My pretty Chrysanthemums were covered with pure white blossoms that lightened the parlor windows, and drew a smile from the passers by, but the darlings were covered with disgusting black bugs. I made a strong Tobacco tea, filled the watering pot, removed the plants to the kitchen sink, and deluged them well. Poor little things, they held down their heads, dropping tobacco juice tears, and the next morning the white blossoms were spotted and looked as if they were afflicted with small pox. Will some benevolent plant raiser, give to the suffering sisterhood, a sure, quick, clean remedy for these black pests on Chrysanthemums, that flourish and increase like the flies in Egypt?

CHRYSANTHEMUMS. October and November are the months for this queen of Autumn. In Detroit they flourish royally. One sees them in the windows of grand houses and cottage homes. The flower market is one grand display. The florists' wagons are laden with them delivering to rich customers, and the street cars are bright with great pots of them, carried, perhaps, with live fowls in one hand, or a big basket of vegetables, and perhaps one baby in arms and another clinging to the skirts. In the ardor of our admiration let us make a resolve to grow them ourselves. The pleasure then will be distributed along through nine months in the year. If one is beginning, go to the florists' in May, and get slips. He will pull them off two or three inches high from the old plant, and sell them for a few cents. Plant them in the garden for a while, water every day, and now and then with cow manure tea. How they grow! Jack's bean stalk is hardly a circumstance. Keep pinching them off or they will be looking over the fence into your neighbor's yard. Pot in July or August, and in September the buds will begin. Keep out-of-doors until October.

ENCOURAGING BOYS. My little nephew brings home lots of "trash" in the shape of weeds, stones, etc., to beautify Aunty's plant shelf. He pulled out some water plants, and I put them in glass cans, and even didn't object to several disgusting looking worms that he insisted belonged in the water, and there they drag out a miserable existence half buried in the pebbles at the bottom of the cans. In return for my forbearance, the little fellow is always willing to help Auntie, he climbs the step ladder to fasten vines, and hails a new bud as enthusiastically as heart could wish. The trash he brings home sometimes turns out well; he picked up from the sidewalk a withered looking bulb that had been stepped on, it looked as dead as a door nail, but to please him I tucked it into a pot. It soon sent out leaves, much to my astonishment, and in a year it gave me beautiful flowers. It was a superb Calla.

A Good Garden Plant: The Platycodon.

A hardy perennial that has been growing in the writer's grounds for the past fifteen years, and all the while giving much satisfaction, has been the plant known botanically as *Platycodon grandiflora*. It is not that the flowers are as showy as are those of the Pæonies, or of the Phloxes, or that they are quite as freely produced over the plant as the artist who made our engraving would have it appear, which make this one of our favorites, for these qualities do not exist so markedly. But the plant is one, which in our heavy, loamy soil, lives, and thrives, and blooms regularly, year after year, without petting or coaxing, and the flowers which appear in profusion about July 1st, are always appreciated.

Measured by the standard that requires a flashily colored flower, or none, then this Bellflower would disappoint. But for those

A GOOD GARDEN PLANT: PLATYCODON GRANDIFLORA.

who appreciate flowers of delicate coloring and clean form, we have something pleasing in this. The color varies from white, slightly suffused with lavender or blue, to a pronounced blue with lavender center. It is mostly just enough off from a dead white to strengthen the effect of white flowers in a vase or bouquet, by bringing in some of them. On this account the flowers are in some demand with florists, for purposes that call for white and other delicate flowers. The form of the flowers is that of a five pointed star. They are from two to three inches across. The texture of the petals is firm enough to make the flowers quite lasting for cutting purposes.

Had we started out to say that this plant is very near the Companulas or ordinary Bellflower, we would at once have given a fair insight as into characteristics. Formerly it was classed with the last named, and is yet in some catalogues, but incorrectly, for while it resembles these in general habit and in freedom of growth and bloom, it is yet sufficiently distinct in botanical features to entitle it to be considered a separate genus. It is a native of China and Japan.

The culture of the Platycodon is identical with that of the Companulas, and this is equivalent to saying that few plants are more easily cultivated. It thrives in any ordinary garden soil well enriched with manure, and here it will grow into an elegant, cleanly looking plant. It dislikes damp, undrained situations, for here its thick, fleshy roots are liable to decay. It may be propagated by dividing the roots, or by young cuttings in the spring, or from seed. The plant does not divide readily. Cuttings three inches long placed in gentle bottom heat root with fair readiness. Raising the plants from seed is one of the easiest ways of getting up stock. Young plants may be bought from most nurserymen who sell hardy perennials.

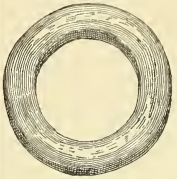
An Amateur's Successful Chrysanthemum Show.

Mr. John Lane, of Chicago, who contributes occasionally to these columns, is a very successful cultivator of plants and flowers. One of his favorite plants is the Chrysanthemum, and in its culture he has achieved some remarkable results. Recently, he gave an exhibition of the handsome Chrysanthemums he has raised during the past season, and this was so pronounced a success as to call forth notices from the leading Chicago papers. From the Tribune, of that city, Oct. 26, we make the following extract touching upon Mr. Lane's recent show:

The grounds of John Lane, No. 4801 Lake avenue, Kenwood, presented an unusual and handsome sight yesterday. Mr. Lane is a wealthy inventor, who of late has turned his attention for health and amusement to amateur floriculture. His pets are Chrysanthemums, and yesterday he exhibited his flowers and invited his neighbors to see the result of his labor. The attendance was large. The grounds were profusely decorated with rare effects in every choice variety of this favorite fall flower.

Mr. Lane had invited a number of the local florists to display collections, and John Goode & Co., George W. Miller, and the Oakwoods' Hothouse were represented. Eastern florists sent plants, including the Philadelphia prize set from Robert Craig of that city, a set of fancy seedlings from Hallock & Sons, Queens, N. Y., some small plants from M. A. Hunt, Terre Haute, Ind., and some choice varieties from M. K. Harris, Philadelphia.

It was Mr. Lane who distanced the commercial florists in last season's Chrysanthemum exhibit, and his collection of 130 varieties has been carefully nourished. The visitors were enthusiastic in their praises of the showing, not only in varieties, but the remarkable advancement shown in securing early blooming.



Rubber Ring for Packing Hot Water Pipes.

In the display were some extremely large plants, one six feet high and four feet across, loaded with flowers. Dwarf plants six inches high in full bloom, and a miniature plant one inch in height, fully leaved and budding, were among the curious effects. The choice plant of the collection was "The Gorgeous," a delicate orange flower of rare beauty. An advance of ten days has been made in blooming the Chrysanthemum under Mr. Lane's care since last year.

Rubber Rings for Packing Hot-Water Pipes.

One of the latest devices for packing greenhouse hot-water pipes is a molded rough socket ring of India rubber, which takes the place of ordinary packing. The makers claim that they are superior to anything of the kind in use, and being stout and made of one piece there is no joint to allow the water to enter, and that being slightly rough they get a good grip on the pipes. It is also stated that by using these rings any man can himself take his pipes to pieces and put them together again, saving both time and labor. This would, of course, necessitate the staying of the pipes in some manner to keep them firm. Whether these rings could be had in this country at the present time we do not know. They are being offered in London, England, by Stanley, Morrison & Co., 9 Graceburch street. If these rings are as efficaceous as is claimed, some of our dealers in horticultural supplies would do well to keep them in stock.

968. **Planting Hyacinths.** It will not answer to plant these bulbs over four inches in depth.

994. **Celery Worm.** The worms have changed to chrysalids on the way from Missouri, and if they are allowed to live will again change next spring into beautiful black swallow-tailed butterflies (*Papilio Asterias*), the worms being the caterpillars of them. They are common on Parsnips, Celery, etc. all over the country.—C. M.W.

975. **Japan Iris.** They are hardy herbaceous perennials, close, tufted, vigorous, upright growers, and love deep, rich, moist soil. Every two or three years divide them in spring and replant in order to maintain their health and vigor. Seeds sown in spring will give blooming plants two years afterwards. All are good, but the "double" white, intense purple, and marbled varieties are most liked. It is useless to give names of varieties, because the names are not very authoritative, and often considerably mixed; better get the catalogue of some responsible florist, and select from it such varieties as you think you like; all are lovely.—WM. FALCONER.

984. **Caring for Banana and Pineapple.** Success depends upon your accommodations. Neither requires a season of rest. Bananas may be planted or placed out-of-doors in summer, lifted or potted in fall, and wintered in cool greenhouse. If you wish to fruit it, plant it out or give it a large pot or tub in a warm greenhouse, and let it have lots of room. The Pineapple requires warm quarters at all times, say not under 50°, but preferably 60° in winter.—W. F.

956. **Maiden Hair Ferns.** I would divide them as early in May as possible. For soil use a compost composed of two thirds well decayed sods, one third well decomposed manure, and a fair sprinkling of sharp sand. Mix thoroughly and use the compost rough. During the summer they should be given a moist, shady situation, and an average temperature of from 65° to 70°. In the winter a temperature of from 55° to 60° will answer very well.—CHAS E. PARNELL.

Pansies in Winter.

Were they sleeping sweet in their wintry bed,
That shelters the living as well as the dead?
Would they wither if I should with tender touch
Raise the delicate robes lest they sleep too much?

Then softly I lifted the snowy screen,
And bright as the stars at evening seen,
The Pansies rose from their setting of green.
—*M. A. M.*

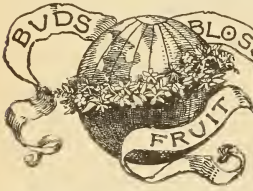
The Murmuring Pine.

Thou wilt not tell me, O murmuring Pine tree!
What thou art whispering, day by day;
I cannot guess thy song's vague burden,
And cares are calling me, far away.

And so I must go from thy half-guessed secret;
Thy mystic spell must not hold me long;
Mine is the strife of the far-off city,
Thine, to murmer thy woodland song.
—*J. S. Cutler, in Youth's Companion.*

"Farewell, Sweet Summer!" Thus in minor key
The poets, with bent brows, are sadly sighing;
But nothing of the kind she'll get from me;
I was extremely glad to see her flying.

For though she gave to us the "fragrant rose,"
To it a host of horrid bugs were clinging;
And her "dear birds" my berries boldly stole,
Thus making me pay dear for their "glad singing."
—*Margaret Eytinge.*



Begin to plan next years garden.

Where do all the flower pots go to?

Spinach is not found in a wild state.

Small gardens call for the most skill.

Suggest this journal to your friends.

Let there be light for the window garden.

The knife to old exhausted wood on Roses.

Cions ought to be cut before hard freezing.

Prize varieties are usually petted varieties.

Asparagus roots are known to grow 20 feet long.

For Pansies light protection is better than that which is heavier.

Horticulturists! Serve the cause by getting others to subscribe.

What plant can equal the Poinsettia in its intense scarlet floral dress.

When you call on a neighbor try to win him to the POPULAR GARDENING family.

With Primroses err, if at all, on the side of giving too little rather than too much water.—*J.C.C.*

What Makes Good Gardeners. A bad climate and a tolerably sterile soil, says the old Scotch gardener.

At the Chrysanthemum shows how few estimate the important part that liquid manure has played in producing the finest results.

Double Glazing. High hopes were once entertained that this plan would come iuto general use. It has been tried and found wanting.

"Christmas Roses" may have been all right as a term for Hellebore flowers years ago, but today the real Christmas Roses are the sweet Teascented Rose buds.

A machine may show its value in a single year, but it is only by long continued experience that we can decide as to what varieties of fruit are the best.—*E. W. Woods.*

Indian Corn or Maize is actually grown as a window plant in London. It is not a bad one by any means, wherever, as in England, Corn does not succeed in field culture.

Shall our subscription list be doubled before January 1st? We understood our last month's premium list to say "yes." Still it is the present subscribers who largely have it to say.

Tuberose growers may be interested to know that when the flower stalk is full grown and the buds begin to open, if a paper bag is hung over it, rust is prevented and the flowers will be perfect.—*T. Herrick, Ashtabula Co., O.*

Vegetables in the North. Last spring was an unusually late one; vegetables were not sown until about May 15th, but by the middle of July we were starting second-crop Radishes, Lettuce, Spinach, Peas, etc. Potatoes do especially well here, having new ones the last of July, and if the season is at all favorable get from 350 to 450 bushels per acre.—*C. Redpath, Pembina Co., Dak.*

Apples or Pears for Profit. Our neighbor, H. C. Howard, informs us that from his Apple orchard of 25 acres, his crop netted him after expenses, $1,300, the fruit having gone to a preserving factory. From the produce of a two acre Pear orchard, to which was added about 25 barrels of Pears from a younger orchard, the same gentleman realized nearly as much as from the entire Apple orchard and with far less labor.

It is a common thing to make a Holiday present of a year's subscription to this journal. What could be more acceptable to a friend of horticultural taste, than the monthly visits of such a journal and serving to remind the recipient of your friendship. But one request we have to make in all such cases, and that is that our subscription department be notified when a subscription is sent as a present, as we are desirous of keeping all such separately.

Stakes for Plants. I had gotten tired of split wooden stakes for my pot plants. I was in an old umbrella and parasol maker's shop the other day and seeing a quantity of old ribs of umbrellas tied up together, I asked the man what he wanted for the lot; he offered them for nothing, I gave him ten cents, and since then I have not been short of good stakes. Wire would not do so well because it bends and these old ribs do not.—*Mrs. M. Clare, Worcester Co., Mass.*

The Victoria Regia's near relative, the Euryale ferox, from Chiua, is reported to have been flowered during the past season by Mr. L. W. Goodell, of Massachusetts. Like the former, it is an annual, and much resembles it, except in the flowers, which are only the size of our common white Water Lily, but of a violet color. There is a chance of its becoming naturalized in Southern waters, otherwise it has no special value to justify the trouble and expense of growing it under shelter in the north.

The slowness of the gardencrs of England to take up advanced ideas which do not originate in their own brains, is well shown by their uow waking up to the improvement of propagating Carnations from cuttings, instead of by the old way of layering. They are now beginning to talk of the former course as a uew thing, while in America it has been the practice for a score of years. Imagine a large Hudson River florist propagating the 10,000 Carnation plants he annually needs by the laborious layering system.

Black Insects on Chrysanthemums. A Remedy. My Chrysanthemums look nicely, and are free from the disgusting black insects that have troubled me greatly in past years, I have tried Tobacco and hellebore, but I couldn't keep the pest away for more than a day or two. An old Scotch gardener told me to take up a handful of dry fine soil and gently rub on the stems. It seemed so simple, and the remedy was so close at hand, that I tried it rather scornfully, but was delighted with the result.—*A. Lyman, Wayne Co., Michigan.*

Heat for House Plants. One successful amateur over in New Hampshire says she don't allow frost bites to her plants so long as she has a two gallon jug in the house and can get up hot water. She first coats the jug with layer after layer of paper to keep in the heat and also to modify it. Then in severe nights she places this jug on her center table and all around it the tender plants, and over all a sheet or water-proof cloak supported by some sticks thrust into the pots. This method carries the plants safely through any kind of a cold night.

Keeping the Savory Herbs. While in common with, all housewives, I take pride in the rows of glass fruit jars that weigh down certain shelves in the cellar, I take equal pride in the jars and tin boxes filled with savory herbs of my own raising that occupy a shelf in the pantry. Such collections are seen less often than those consisting of jars of fruit. I send a little sketch of my shelf. The wide-mouthed bottles cost six cents each at the drug store, the tin boxes eight cents each at the tinners. They will last endlessly.—*Mrs. H. Southwick, Oscoda Co., Mich.*

Prize Sorts not always the Best. Beginners in Chrysanthemum or Rose culture often make the sad mistake of copying the names of the fine flowers that take prizes at the shows, and order plants of these for their first efforts. Far better let the order be sent to a reliable florist and ask for vigorous growers suited to a beginner. The florist will be likely to send kinds that are of vigorous habit and good bloomers. After experience is obtained and a stock gathered, then the finer sorts will come into use, with the prospect of raising specimens that should be prize earners.

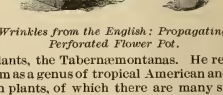
The Chufa or Earth Almond. This is an edible tuber which is almost as palatable as a Hazel nut, and easily grown in any dry soil. It is a native of the south of Europe and the north of Africa. Its culture is most simple, all that is required is to drop a tuber at a foot apart in shallow burrows three feet apart. Its habit of growth and its productiveness is indicated by the engraving on the opposite page. It is indeed so productive that its culture for hog feed has often been advocated. The tubers should be gathered when frost stops the growth, and they must be stored in a place secure from frost.

A delightful fernery may easily be gotten up at home according to Judith Smythe's directions in the Home Maker. First use an inch of coarse charcoal, covered with fine potsherds on which is placed three inches of wood's earth; this to be covered with Mosses in which is some Partridge Berry (*Mitchella repens*) growing, the scarlet fruit of which remains all winter. Dwarf Evergreen Ferns, a root of the Pitcher Plant (*Sarracenia*), together with some trailing Arbutus, and some Ground Pine. Use a Begonia for the center, with Ribbon Grass (*Phalaris arundinacea picta*), English Ivy, Wandering Jew (*Tradescantia variegata*) and Violet roots. Deep in the soil place some Hyacinth and Crocus bulbs.

Several Wrinkles from English Gardeners. The first is simply an earthern pan that can be had to order at any pottery, the dimensions being dependent upon the size of the glass which is to cover it, sliding in grooves. The back is about a foot high, the front several inches lower to give the glass pitch. In this miniature frame can be sown fine seeds like those of Primula, Calceolaria, Cineraria, etc., and cuttings can well be rooted in it. There is little risk of dampingoff in such a case. Of special value in the window garden because of its cleanliness and wide adaptability. The second figure shows a perforated metal flower pot. It is claimed that the growth of plants will be strong and rapid, while the pots, of any size or shape, have a neater and lighter appearance and are much more durable than those of common earthern ware.

Oregon Fruit Notes. Up to four years ago I never saw a codling moth in Oregon. This year we have an abundant supply. I sprayed my Pear and Apple trees last spring with London purple solution, and as a result out of 7½ tons of Bartletts there were not half a dozen wormy ones. My later fruits fared worse. Perhaps one sixth of my winter Apples were affected and had dropped from the trees. Fruits of all kinds were very abundant this season, and Oregon orchardists have dried a great many Prunes, Plums and Pears. My orchard contains 17 acres mostly young, but nearly every tree was over-loaded. Four hundred Yellow Egg Plum trees planted four years ago yielded over 2½ tons of fine fruit. Our principal crop is of Italian (Fallemberg) and French (Prune de Agen) Prunes. They yield most excellent returns, as we have no curculio yet.—*Dr. O. P. Plummer, Multnomah Co., Oregon.*

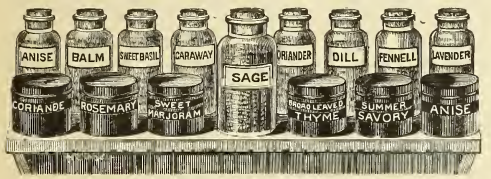
Desirable Heat-Loving Shrubs. One of the last articles from the pen of the late P. W. Reasoner, of Florida, was on the subject of those fine



Some Wrinkles from the English: Propagating Case, Perforated Flower Pot.

pot plants, the Tabernæmontanas. He referred to them as a genus of tropical American and West Indian plants, of which there are many species, most of them white or yellow-flowered; they vary in size from small shrubs to good sized forest trees, but the commonest ones in cultivation are shrubs very much resembling the Gardenia or Cape Jessamine. The commonest species as well as one of the most beautiful, is the double flowered form of T. coronaria, which has white flowers with somewhat wavy petals, and is covered with flowers almost all summer. A beautiful sort, T. alba, is cultivated by the acre, by the florists of Havana for their cut flower trade; the flowers of both species are very fragrant, and are favorites in floral work—some growers in the north devotiug considerable space to their production.

Bulb Flowers and Bulb Culture in Holland. One enthusiastic visitor to the great bulb growing district of Holland last year, remarked that on each side of the road the country looked like two immense crazy quilts, whose patches were represented by large fields of Hyacinths in a hundred different varieties, as well as Tulips and Narcissuses. The soil is very sandy, and it is believed that this part of Holland was formerly the bed of the sea. In September the bulbs are put into the soil; in December they are covered with



Herbs in an Excellent Shape for Winter Use. See opposite page.

hay, remaining until February when the covering is removed. They are allowed to be in blossom until July, when the flowers are cut off as grass is mown, and after lying on the field to rot are used for manure. Immediately after the blossoms are cut the bulbs are pulled and taken to the dry-house. The crop depends very largely upon the weather,and the quantity of rain this year has harmed the Hyacinths considerably; the production being twenty-five per cent less than last year. The exportation to America is on the increase.

The Window Pot Culture of the Fig, according to a correspondent, is a simple matter if the following points are observed: About the middle of October, or as soon as all the leaves have fallen,the wood having been ripened out-of-doors during the summer, it is thoroughly washed and placed in a light warm window. Along the middle of March it will begin to show signs of life. Water it during the spring months with tepid water, and do not allow it at any time to become dry. As soon as six good leaves are made each shoot is stopped, and when the weather becomes warm, the tree is occasionally taken outside and well syringed, which keeps it clean and healthy, a most essential point if a good crop of fruit is desired; the tree should also be placed out-of-doors during every shower. Keep the bottom side of the leaves clean, for if this is neglected red spider will quickly make its appearance. When the fruit is swelling, an occasional watering with liquid manure assists both the fruit and wood, although it must not be too strong. In an eight inch or larger pot the plant will not need repotting every year if an annual top-dressing of loam, ground bones and wood ashes is given.

On this You may Depend "I hope you will do as you say and not sell anything from your Experiment Farm, for then we can have confidence in your opinion on new varieties." So writes an esteemed reader from Missouri. We do not wonder that people write in this strain when with perhaps a single exception aside from the present journal, all of the so-called horticultural periodicals in the country are conducted as advertising adjuncts to some nursery or seed house. But here, good reader, is one which is a marked exception to that rule, and so it shall remain indefinitely. Within one year after having become owner of this farm we shall have planted more than $500 worth of fruit and ornamental trees, shrubs and plants, with the sole view of reporting on the comparative merits of kinds, and methods of culture, for the benefit of our readers. We are prepared to defy any person directly or indirectly,or by cunning, if you please, to buy so much as a single plant, tree, slip or cion at any price from this place. This journal was started in the belief that the American people would be ready to support a strictly first-class independent horticultural journal, whose opinions were not measured by the nursery stock its owners may have for sale, and the older we grow as publishers, the better are we pleased to stand by that principle. The fact that we have consented to allow the sale of the excellent articles included in our premium department, has no bearing on this matter, for they have no special relation to horticulture.

The True Geranium or Crane's Bill. What are known as the common Geraniums, are in a botanical sense Pelargoniums. Among the distinct class of true Geraniums, or Crane's Bills, and which are in the main hardy everywhere, are some plants quite well worth growing, either in rock work or as border plants. They will succeed in almost any well-drained soil. With a selection of kinds, bloom may be had from May until late in September. Those better adapted to border culture, none being over a foot high, are the Iberian Geranium (*G. Iberica*) with large blue flowers, and its variety polypetalum, having violet flowers with reddish veins; the Dusky Geranium (*G. phæum*) almost black with white spot on base of petals; the Meadow Geranium (*G. pratense*) a lilac purple, blooming in July and August. A double form of this is excellent and showy. Endress Geranium (*G. Endressii*) is a light rose, useful for cutting and one of the best; Richardson's Geranium (*G. Richardsonii*) large reddish purple. The Spotted Geranium (*G. maculatum*), pale lilac, is good for wet places. Such as are more suitable for rock work are the Silvery Geranium (*G. argenteum*), pink flowers, darker veined; the Gray Geranium (*G. cinereum*), red, dark striped, very green foliage. Large-rooted Geranium (*G. macrorhizon*), bright purple, and the Blood Red Geranium (*G. sanguineum*), a handsome neat spreading species, with crimson flowers all through the season. All the kinds are easily propagated from seeds or root cuttings, and they also hybridize freely. The most of these varieties may be had of the leading growers of hardy plants.—*Remle, Newport Co., R. I.*

An Introduction to Entomology. There has come to our table a work under the above title, and to which we take the utmost pleasure in calling the attention of our readers. It is the work of an able entomologist and teacher, John Henry Comstock, formerly United States Entomologist,now Professor of Entomology at Cornell University, assisted by Anna Botsford Comstock who drew and engraved a large share of the 200 very fine illustratious, in Part 1, now before us. What makes the publication especially valuable is that it has been prepared as a text book for anyone who desires to find out something about common insects. When the aggregate loss of products by insects, to our American cultivators, runs up into the hundreds of millions of dollars annually, it is beyond a doubt time that thousands who have never given the study of the destroyers serious attention should do so. Here is a work that will provide exactly the help this class needs and by which they may instruct themselves. One feature of the work that impresses us as being especially valuable, is that which relates to descriptions of the species that are of interest to horticulturists and other land tillers, and to indicate methods of controlling the injurious ones. By means of that part of the work which leads to a thorough knowledge of the elementary principles of Entomology and then the analytical keys similar to those used in Botany, the student can readily determine to what family any insect of which he has specimens belongs. Only the first part of this work has been issued up to this date. It can be procured of the author at Ithaca, N. Y. A sufficient recommend for the general elegance of the work will be given when it is stated that it is from the DeVine Press, New York, the same firm that prints the Century Magazine.

Random Flower Notes by our New York Correspondent.

Many are the autumn weddings, but very few are the novel wedding decorations. Of course autumn flowers and foliage have been well used, but they have lost their novelty. At one pretty wedding reception the rooms were banked in ferns and palms, with large Makart bunches of bright-colored leaves put on the walls above them. The regular mantel bank is giving way to a more irregular and picturesque grouping.

Ferns have always been in favor, but their use seems to be decidedly on the increase like that of all foliage plants. The favorite colors may be considered pink and yellow, though purples and violets are often employed.

Of course there is the usual Chrysanthemum cyclone, sending other flowers out of the way for large decorations, loose Posies, and Corsage knots. But every year proves that designs of Chrysanthemums are regular monstrosities, and, entre nous, most Chrysanthemum bouquets are the same. One cannot help thinking that any man who will make up a bouquet of these flowers in conjunction with Adiantum is lost to all artistic feeling, and yet this is often done by people who know enough to do better. Let us have loose Posies, or big jars or baskets filled with these flowers, but set designs or arrangements with fine foliage—never!

Asparagus plumosus—which is not so much grown as A. tenuissimus, is likely to be used for the finer work, while the latter, which is much more readily propagated, is used like Smilax in large decorations. Neither are so well-used for bouquet work as Adiantum, which can never be improved upon. While the delicate bridal bouquets fringed with light Orchids are used for special orders, the average bride is content to carry a bunch of Roses and Lily of the Valley. The Lily is now produced twelve months in the year; the price averages about $8 per 100, all the year round. There is not really such a great demand for it during the summer, but some people want it at all seasons.

Some very pretty bridesmaids' bouquets seen recently, were round loose bunches of Grace Wilder Carnations, fringed with Adiantum and tied with pink ribbou. Others were of pink Bouvardia, a flower for which many women have a great fondness.

Some very pretty table decoratious have been made in foliage, for which our English cousins have quite a fancy. Irregular ornamentations of trailing vines have been introduced with good effect; the Japanese Ampelopsis, when in its rich autumn colors, is particularly handsome. Quite a novel and artistic lunch decoration was made with Hop vines.

Many of the new baskets are eccentric variations of the old ones, carried out in odd wicker, with much gildiug or metallic color. The rush baskets, though pretty, are not quite so much used. Flat wicker creels with high round handles, miniature wine baskets, hampers and Japanese fish baskets, are all pressed into service. The highly ornate ones have really less chance of popularity than those of simpler form, in which the flowers take precedence of the basket.

Ribbon may be considered indispensable for some uses in connection with flowers, but we do not now see an epidemic of bows breaking out all over a basket or design. Following the milliuers' lead, the florist must now put aside satin and moire ribbon, and use heavy grosgrain, with a plain narrow satin edge.

Some of the plaques used to cover a casket, in lieu of the old-style funeral designs, are beautifully made of Violets, with a trailing bunch of Perle Roses or pale Orchids. Orchids are especially decorative for such use. An arrangement

Chufa, or Earth Almond. See opposite page.

of decorative plants about the casket is also used; this makes a beautiful setting for the plaque covering.

People who demand set designs still call for the orthodox pillow, often with lettering, making it as nearly hideous as a floral arrangement may be. A pillow arranged in two diagonal sections with loose bunches of fine flowers is often very haudsome, but this is because something of the set appearance is removed. Broken wreaths still remain a favorite form, but the fact remains that in the city-trade funeral designs are greatly out of date. For every other occasion they are more used than ever; but, unfortunately for the trade, the prices realized are not as large as tney might be. So far this season has not beeu an encouraging one, and it is likely to be a short one in the bargain. EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Black Spot on Rose. A sudden check to the plant, I believe, would produce this disease.—*Antoine Wintzer.*

The Association of American Cemetery Superintendents has nearly doubled its membership since organization.—*President Nichols.*

Ornamental Shrubs for Nebraska. At a recent State horticultural meetiug, it was stated that any of those grown in the East were hardy and suitable for planting in that section.

The Oriental Plane Tree or Sycamore is recommended by Mr. Robords, president of the Bates Co. (Mo.) Horticultural Society, as being a valuable tree for towns and cities where there is much coal dust, smoke, and gas.

The cause of Apple scab might have been the drouth of last summer which went below the roots, but not until after a supply of sap had been stored, sufficient to allow the trees to put forth their leaves while the roots were decaying and dead.—*Secretary Henry Speer.*

As to Club Root in Cabbage. At a meeting of Massachusetts Board of Agriculture, several speakers mentioned the planting of Cabbages upon old pasture land, or upon a sod that has not been cultivated for a few years, where there was no trouble in having a crop free from disease.

Commission Men and the Growers. A committee of fruit growers and gardeners has been appointed by the Dutchess and Ulster County Farmers' Club, to present a bill to the Legislature, aiming to compel the commission houses of New York State to give ou bills of sale, the names of purchasers of consignments.

California Society of Florists. It is reliably reported, that a State Society of California Florists is to be organized, in consideration of the encouragement given by Secretary De Louge of the Board of Horticulture, who agreed to publish the transactions in his annual report. The Society will in no sense be a trade organization. but will follow the usual methods of similar bodies.

The Ohio State Horticultural Society. The twenty-second Annual Meeting of the Ohio State Horticultural Society will be held at Troy, Miama County, Ohio, on December 12th, 13th and 14th, 1888. To this meeting, members of other kindred societies, and all persons interested in horticulture are cordially invited. Troy is the county seat of Miami County, situated in a region abounding in large nurseries, and enterprising and enthusiastic horticulturists. A large, interesting and profitable meeting is anticipated.—*Geo. W. Campbell, Secretary, Delaware, Ohio.*

Florists, Help the Committee. In accordance with Mr. Halliday's recent paper on Nomenclature, the following committee was appointed by the Society of American Florists. This coming season would be one in which they should make a good start: Robert J. Halliday, Baltimore, Md.; Chas. D. Ball, Holmesburg, Phila.; G. H. Leahy, West Grove, Pa.; Edwin Lonsdale, Chestnut Hill, Phila.; J. N. May, Summit, N. J.; C. B. Whitnall Milwaukee, Wis.; Wm. R. Smith, Washington, D. C.; Robt. George, Painesville, O.; Robt. Craig, Phila.; A. E. Whittle, Albany, N. Y.; M. A. Hunt, Terra Haute, Ind.; Benj. Grey, Malden, Mass.

The St. Louis Exposition's Horticultural Department was made a grand success, through the energy of the members of the Missouri Horticultural Society, Each county exhibit was kept separate, some twenty-five being represented. In Apples some have shown over two hundred varieties, from the unmatured late winter sorts to the early Red June, as well as having Pears and Grapes. Between twelve aud fifteen thousand plates were needed to maintain this extensive display. The express companies gave the exhibitors half rates on their goods, an example to be remembered by the companies in other States and for other Societies.

Are Orchids the Coming Flowers. It is my firm belief that Orchids, some day or another, will be "the flower." I do not say that Roses are going to be driven out—not at all. There is no getting away from that fact, for there are too many well founded reasons why Orchids can never take the place of Roses, one being that you cannot have them in quantities, and they cannot be produced for the million. On the other hand, Roses and other flowers are proliferous. And their growing is now conducted with such precision, that dealers can safely make contracts at the beginning of the year for large quantities of Roses for future delivery. With Orchids this is impossible. Nevertheless, I believe that, at some time, Orchids will find a place for themselves and may take the lead.—*Henry A. Siebrecht.*

Seven Growers on Mulching Strawberries. At the summer meeting of the Michigan Horticultural Society, the following was given on the subject: Parker Earle, mulches with Wheat straw late in autumn, covering the rows lightly, the ground between heavily, and never removes it. Prof. W. J. Beal, at the Agricultural College, used leaves with Corn stalks on top, but by spring the leaves had all blown away. Dr. Marshall used planing mill shavings with success. W. K. Gibson thought that sawdust would not be satisfactory. Pres. Lyon: Sorghum begasse has been used by some, and highly recommended. Being crushed it soon decays, forming a valuable fertilizer. Marsh hay cut before being ripe is good, said E. H. Scott, while A. G. Gulley spoke of spent tanbark being used successfully.

The Cost of Fertility in Land. It is beyond question that the essential elements to be supplied in plant food consist of only three, viz: nitrogen, potash, and phosphoric acid; all the other elements seem to be abundant aud available in most soils; but some of these three are often lacking, or are locked up in combination beyond the reach of most plants, and must in some way be unlocked or supplied artificially, or we can have no healthy plant growth. These elements have an almost fixed value the world over. Soluable nitrogen is worth over 16 cents per pound potash 5 cents, phosphoric acid 8 cents. Comparing the various land products it is demonstrated that selling $500 worth of hay would remove fertilizers with a value of $366; $500 worth of Corn, $180; same of Wheat, $125; of Wool, $50; like amount of dairy products, $38; $500 worth of fruit would cause a loss of much less than either of the last, thus in the matter of fruit growing it is shown to impoverish land only in a small proportion that ordinary farm crops do.—*S. S. Bailey, before the West Michigan Farmers' Club.*

Horticultural Relationship. My idea of this subject is, that the local societies should meet once a month and discuss matters, compare notes as to varieties for their section, arrange about marketing, and unite in getting up displays of fruit and other produce at the fairs. The combined societies should get up district exhibitions, pass on the merits of new fruits, give premiums, and interest growers. They can start canning factories in co-operation; and arrange with express and railway companies about shipping. The exhibitions should be under the management of the State Horticultural Society, whose duty would be to see that all fruit was correctly named, that no old varieties were worked off as new fruits by unprincipled dealers; to examine all new varieties and decide as to worthiness for general or local culture, and advisability as to putting them on the market. The State Society to be a court of appeal, whose decision should be worthy of the confidence of all fruit growers; no man having an axe to grind being elected to any office of the Society. The judges should be selected from the best men; work for the general good, *setting down hard* on all frauds; be willing to tell all we know that will help the cause of horticulture, and working to keep up prices of produce to a living figure.—*Wm. Watson, Bentham, Tex., Pres. of the State Horticultural Society.*

The Massachusett State Society's 60th Annual Exhibition was held during September, but on accouut of the wet weather during the month the display of outside flowers was less extensive than usual, though of good quality. Greenhouse plants and blooms were fine, and were well shown by an unusually attractive arraugement. In fruits the exhibit was on the whole not inferior to past shows, and while Apples ar. Pears were hardly as abundant, they were exceptionally free from any disease or insect injury. Vegetables were uniformly good; a display of Tomatoes numbering 56 plates being noticeable for the mass of color and perfect forms. Pitcher & Manda, of New Jersey, contributed a fine collection of Orchids and decorative plants; an admired display of Nymphæas and other aquatics was made by L. W. Goodell, of Dwight. Wm. Martin took first prize on six specimen greenhouse plants. A collection of 38 varieties of native Asters, by Mr. J. F. C. Hyde, including some hybrids, which he has under cultivation. Amoug the large exhibit of Harvard Botanic Gardens were Olive, Coffee, Pepper, Cinnamon, and numerous other specimens of economic interest; in this display the labelling was a noteworthy feature. E. Fewkes & Son showed some fine tuberous Begonias and new Cannas, while a number of exhibitors had good Dahlias. In the Roses was shown the new Md. Watteville.

Illinois Growers Talk About Fruits.

[*Reported to the Alton Southern Horticultural Society by Secretary E. A. Riehl.*]

The year 1888 will be remembered as one of great fruitfulness. The winter left the buds uninjured (except of Peaches); there were no late spring frosts, and abundant rains through the summer carried the fruit to a size and perfection seldom seen. The scarcity of fruit in previous years so reduced the fruit insects that all were more or less free from insect injury.

Among Pears, I have found Howell, as in years past, the most profitable. It is larger and handsomer than Bartlett, and later, which is an objection. The tree is a fine grower, very productive, and with me the least subject to blight of any; Mount Vernon also gave me au immense crop of fine fruit. Pears properly grown are profitable; the early varieties more so than the later ones. We should try something of good quality and size that is earlier than Bartlett.

Of Peaches I have had a crop about double the average. The fruit was large, well-colored and quite free from insect injury, but in flavor not as good as usual, owing to rains and cool weather when ripening.

The smallness of the crop is owing largely to the planting of tender varieties like the Crawford, which usually set a light crop of fruit, but attain to a large size, aud so sell well. I think it is better to plant hardy varieties and thin the fruit as most varieties, and even seedlings can be made large by proper thinning. It is less labor to thin the fruit while young than to pick it when grown. In the former case it is only necessary to break the young fruit off and drop it to the ground. In the latter, aside from careful handling, the small ones must also be taken out, so that really to thin fruit makes less labor than not to do so; and it is a satisfaction to market fruit that you know is good all through the package.

There are two Peaches that have proved earlier and in some respects better than Early York, and are called Amelia and St. John. They have no fault—and should be largely planted wherever it pays to grow Peaches. The Chinese Cling and its seedlings, Gen. Lee, Family Favorite, and Thurber have been satisfactory, being hardy, productive, of fine color, and large, but not of the best quality. George the 4th has been in the past one of the best, and no orchard should be without it, as well as Oldmixon and Stump. Shipley's late Red proves desirable, ripeuing at a time when there are few good Peaches. Great Western, a white cling like Heath, but ripening earlier, is hardy, productive, and should be largely grown; trees two years planted are loaded with fine fruit. Wilkins, a seedling of Heath Cling, is like it in every way except being double the size, and will likely supercede it.

The Apple crop is good in some neighborhoods and orchards aud not in others, but on the whole the crop promises much better than it did at the last meeting.

J. M. Pearson remarked, that some years ago he planted a few trees of Clapp's Favorite Pears. They are earlier and larger than the Bartlett, but not so salable. There is no Pear that will pay better than Bartlett. S. F. Connor was of the opinion that generally the Howells in the market don't compare in size with the Bartlett, nor do they sell as well. Clapp's Favorite is positively of no value whatever for market. When ripe it is too soft to handle or even for eating.

Wm. Jackson said he did not pick his Plums at all this year, but let them fall on blue grass sod, so they were not hurt. Monawa is a new Plum which he fears will be a light bearer. The Weaver is one of the best of red Plums, but the skin is too thick. He thinks it is best to graft Plums on Peach stock, as then suckers will never bother. Mr. Pearson couldn't understand how any one can plant Wild Goose or Weaver, when Damson is so easily growu. They will grow from slips and bear three years after setting, and are certainly far superior to anything else, a full grown tree bearing several bushels. The only objection

is their being hard to pick. If Plums are desired for cooking, the plan of letting them drop from the trees will not work, as they are then too soft.

J. S. Brown was of the opinion that if a late Plum is desired, Golden Beauty is several weeks later than Damson, and of the finest quality. Damsons are often picked before they are ripe.

Concerning vineyards, Mr. H. G. M'Pike said, our main object in growing Grapes now is to find a good rot-resisting variety combining the good qualities of the Concord and Norton's Virginia. Last year he had grafted most of his vines over, and many have fruited this year. But they have not had a fair test, as the grafts grew so fast that the wood did not mature well.

Floral Nomenclature and other Matters.

[*Summary of paper by Robt. J. Halliday, before the New York meeting of the Society of American Florists.*]

The nomenclature of plants admits of the following divisions: Scientific nomenclature; all botanical names given to plants, subject to the universal rule of priority. For example, Ampelopsis, Camellia, etc.

Floral nomenclature: the naming of varieties by their originator, and here the rule of priority should also be observed, but is not always. An example is Camellia, Jenny Lind, Fuchsia, Rose of Castile, etc.

Popular nomenclature: much confusion arises from not giving in catalogues and periodicals the scientific as well as the popular name. What, to illustrate, is Boston Ivy? Is it Ampelopsis Veitchii, Senecio scandens, or a variety of Ivy?

Market house nomenclature: I have designated this but a more fitting appellation would be humbug nomenclature, since a name is substituted which not only puzzles the botanist and the amateur, but may "deceive the very elect." How many vines are sold as the "Cinnamon vine," the "Wax Plant," "Painter's Brush," "Beefsteak Plant?"

There is nothing so important as the honest presentation, through catalogues and other advertisements of what we have to dispose of. To correct scientific nomenclature is not the object of this paper, but the correcting of floral nomenclature and popular names.

My views are that with a committee much could be accomplished towards amending our present nomenclature, and it is to be hoped that such a one will be ordered here. We need reform in the matter badly, one and all. Our catalogues require pruning. A committee would have great influence, and a rule would be established as general and final, and settling the question as to whether scientific, floral, or popular names should be used, or whether the three are not better than any one employed alone. I am in favor of popular names as well as scientific, but the former must not be misleading; or, are you going to allow them to continue to be known in different parts of the country by as many aliases? This has been the great source of confusion.

Renaming. This growing practice should be condemned. Allow it to extend, and in a short time many of us will be classed with those which humbug the public. Plants are advertised with high sounding names, other than those given by the originators; some even going so far as to give pretended warning, "We are the only firm which has the true Eureka," etc., etc.

Coleus Dr. Gross of the west was taken east and called "Nellie Grant," Heliotrope Madam Blomage from Europe was renamed "Snow Wreath," sent back to England under this new name, returned to us again under the name of "White Lady." Against fraud, fictitious namings, deluding the trade and the public, a tribunal is needed whose authority should be recognized as effective and final.

The florist in moderate circumstances, the beginner, who has only gone into a modest business for himself, want authority for what is now advertised the country over.

Every florist should have the right to name his own seedling, (and this right ought to be sacredly preserved to him, and no one allowed to change or rename it) and to place it upon the market as he thinks best. His reputation may be such that it will go at once and upon his own word, but one man's word generally goes but a short way in our line now-a-days; the people want something more reliable. Establish here to-day the suggested committee, and you will at once accomplish much towards laying a foundation for the correction of nomenclature, of substituting, of renaming, and of humbuggery.

As a practical grower lacking knowledge, I would ask the proper names and synonyms of the following plants, so they may be catalogued correctly. How does Fuchsia Storm King of New York differ from Frau Emma Topfer of Germany? What is the proper name for Ipomæa Mexicanum? What is the proper name for Rose, Ball of Snow? Is it Boule de Neige of French origin? Is Geranium, White Swan, American, or Cygne which was sent out two years ago? Would not your committee recommend giving the French as well as the English names for not all lovers of flowers, any more than myself, are French scholars. Is Ipomæa Childsii new, and in what respect does grandiflora differ from bonanox? What is the correct name of the great Siberian Lily, so broadly heralded over the country a year or two ago? How does the new Tea Rose, The Gem, differ from Marie van Houtte?

Substituting. By this is meant sending one kind or variety of plant for another ordered of the same color, or nearly so. As for example, sending Rose Cornelia Cook for The Bride. Give to plants known to be good and distinct the seal of the association's approval, and substitution will be seldom practiced. There are some who class substituting with what is more aptly to be designated as fraud, as where a hundred kinds are taken from one batch and labelled to suit the order. This kind of substituting will always be practiced by street venders or peddlers, but, of course, is not thought of for an instant by any florist of reputation.

Approved Varieties. By some it is claimed that the more names and the longer lists the more demand. Henceforth I hope our practice will be fewer names and more distinct kinds. Take for instance the Roses, Agrippina and Queen's Scarlet, so near alike that one of them will answer every purpose. Then we have Roi de Cramoisie and Eugene Beauharnais, I do not say that these are identical with Agrippina, but they are very similar. Go through the Teas, the Bourbons and the Hybrid Perpetuals in the same way, and the florist with moderate glass will be able to compete for popular favor; the beginner will not be bewildered, and the amateur will not be humbugged, and our business will be conducted by a higher standard. Then those living far from floricultural centers would have something else to depend upon than the flaming catalogues description.

It would be no part of the duty of the committee to condemn any plant, save upon sufficient evidence that there is fraud connected with its introduction or naming. The indorsement or authorization—say the initials S. A. F., or any other mark to be adopted, would be a guarantee that it had received the favorable verdict of 12 competent judges, confirmed by a majority vote of the members of the association.

Some plants like the following might be designated and decorated with the sign of the association's approval if deemed worthy: Aspidistra lurida variegata, Pandanus Veitchii, Palm, Latania borbonica, Palm, Seaforthia elegans, Cyclamen Persicum, Acacia pubescens, Farfugium grande, etc.

Many may ask what would be done with Roses, etc. of recent introduction, for example, Princess Beatrice, Meteor, Viscountess Folkestone, Ye Primrose Dame, Puritan, Luciole, etc. These are all advertised and catalogued as first-class in every respect, but, would a committee of twelve men give such an endorsement? It is doubtful as they have not been long enough disseminated for their true character to be known. Members should be invited to submit lists of plants grown and offered for sale by them, for the committee to pass upon; and as this was done, in the course of time we would clear off the rubbish.

New plants and those of recent introduction should be fully tested before receiving the sanction of the association, if not worthy of approval they will fade from lack of notice.

What of the Future for Marketing Fruits.

[*B. F. Adams, before the State Horticultural Meeting, at Platteville, Wis.*]

As population and wealth increase, wants multiply rapidly. Over 40 years ago a cargo of Apples was brought to Milwaukee, but sold slowly, and the owner soon became convinced that had his barrels been filled with groceries, coarse merchandise, etc., he would have realized more profit; the citizens of the young metropolis were then all so busy speculating that they could not buy more than one Apple at a time.

The farmers planted Apple seeds, and set trees obtained from other states and awaited results which were unsatisfactory; and the first trials at Apple, Pear, and Peach growing in the northwest demonstrated the fact that the generation making them must buy fruit if it obtained a supply. A large per cent of our population now regard them as necessaries, and the quantity shipped into the northwest is enormous and increasing. We have improved on our first efforts, but considerable time will yet be required to fill this northwestern land with home grown fruit. In summer time and autumn small fruits are plenty in our markets and sometimes appear in great abundance. Twenty-five years ago only a limited quantity of small fruit was grown, and so ignorant theu were our people generally, that only here and there were they grown.

I have seen small fruits raised near the Mississippi, sent to Chicago, and then reshipped over another railroad three fourths of the distance towards this river and sold, thus making between 300 and 400 miles transit when 100 miles direct shipment would have placed it at the selling point, in better condition and sold for more money and given the consumer better satisfaction. Those best qualified to realize profits from growing fruit in the future will be the ones who not only relish the business but understand thoroughly all its details, its requirements and its contingencies. So much rosy literature on fruit growing has been scattered that many have been stimulated to embark in it that have not even a conception of its requirements, so failures are quite common.

The market for fruits will continue to expand with increasing population; choice fruit in larger quantities and at even lower prices are in future prospect. To the few engaged in growing small fruit 15 or 20 years ago in this region the profits were large, but now they must grow and handle four or five times the quantity once required to supply the market, and receive from one half to one third less money. Were it not for careless cultivation, management, and severe winters lessening production, the price would be still less than it now is. Still even now we do not produce enough fruit to supply our population, but we cannot depend on high prices, for the facilities of transportation are so vast and varied, and fruit districts so numerous where it can be grown cheaply, that all who can buy will not likely want for a supply.

Many millions will yet people these cold northwestern States and beyond, fruit will find a ready market; and its cheapness will depend largely on the quantity of home grown fruit. Discourage the growing of it under the plea that the climate is unfavorable and other products can be raised at so much greater profit that we shall have a purchasing power and we certainly will not buy fruit cheaply. It is the aim and policy of this society to redouble its efforts to stimulate the cultivation of fruit in Wisconsin, for if it be true that the average income of American farms is only about $500 per annum, the purchasing power of the average farmer is not very great, and unless he grows some fruit he will probably live without it.

In Strawberries we can do better than shipping them to Chicago. Take this one fruit, which we have been growing more than any other fruit, and the consumption has increased from 100 quarts to 1,000 quarts with a population of 12,000 to 14,000 inhabitants, and I shall expect to make money out of it hereafter, only we shall have to handle it more skillfully and watch the market.

Ohio Gardeners on Deep Drainage.

[*Discussion at Ohio State Hort. Society Meeting.*]

C. W. Harris: The best way to water land is to drain it four feet deep. Subsoil, if possible, before planting. One foot of loose ground will hold a good deal more water than a foot of hard ground. In the course of time it will become loose four feet down, regardless of how hard the soil may be. As far as the water goes, the air will penetrate the capillaries of the earth work and fetch up moisture. Just so far as you can loosen and warm the ground, so far it will bring up moisture. Subsoil your ground and it will be like a sponge, if not, it will be like a baked pancake—thin.

M. T. Thompson. Subsoiling four feet deep, has been my idea for years. I would rather have

one drain, four feet down, than two drains, two feet down. I knew a man who tiled four, and four and a half feet deep, and was laughed at. In two or three years he had the best crops in that neighborhood, although the same farm had almost broken down another man who undertook to work it without drainage.

N. Ohmer: I think these views are generally correct about under-draining; but, in regard to muck land, which is all vegetable, for Onion growing, four feet under-draining almost ruins it. Two feet is as far as we ought to go, to have Onions do the best. I advocate three and a half or four feet for ordinary land, but underdraining is especially bad for Onions. As for Pears, we don't expect to grow such fruit here as they do in Boston. They tell me the nearer they get to the water, the better fruit they grow. Away from the influence of the water it is not so good. We have insects, and they have insects, but we know how to destroy them; we know how to get around such as the codling-moth, which does more harm than all the others, especially to Apples. We ought to do better than we are doing.

Leo Weltz: I believe Mr. Ohmer is correct as regards draining for Onions. If you drain your land four feet deep, of course the roots can't get to the water, and you can't grow bulbs, such as Hyacinths, Onions and Tulips. They raise fine bulbs in Holland, because the roots touch the water. If you drain the ground, they have to go so much deeper. As to Pears, if we had the climate they have in the East, we could raise them as well, but besides that we have here more worms and borers.

W. C. Harris: I used to see them making tile in England—the first that was made. They were foolish enough to think the water could not find its way into the tile, and so they punctured holes into it. They then drained very shallow, but kept getting deeper and deeper. Go through a drained orchard in a drouth, and you can tell where drains are by the moisture and growth. Roots go down easily four or five feet to the tile.

Seed per Length of Drill.

The latest bulletin of the Michigan Agricultural College furnishes the following relating to quantity of seed for a given length of drill: It is stated that careful records of the quantity of seed used in these vegetables ordinarily sown in drills shows that the quantity required is usually much less than that recommended by seedsmen. The following figures indicate the extent to which this is true, the quantities recommended being taken from "Gardening for Profit."

Peas. One quart to 100 feet of drill recommended; 850 feet of drill used four quarts of McLean's Advancer, or one quart to every 212½ feet; 850 feet of American Wonder required 3½ quarts, or one quart to about 245 feet of drill; 850 feet of McLean's Little Gem used three quarts, or one quart for every 283⅓ feet; 850 feet of Rural New Yorker used 3¼ quarts, or one quart for over 261 feet of drill; 850 feet of Cleveland's Alaska required three quarts, or one quart for 283⅓ feet. These figures indicate that the recommendations of Henderson are from over twice to three times too high. The following figures will show that our sowings were thick enough; One pint of McLean's Advancer contains 1,600 seed. A pint sowed a trifle over 106 feet of drill, giving over 15 Peas for every foot of drill, or a plant every four-fifths of an inch.

Radishes. One ounce for 100 feet of drill recommended; 1,000 feet of drill, sown thickly to Early Long Scarlet Short-top, required 9½ ounces of seed. In this case the figure is not extravagant.

Beets. One ounce to 50 feet of drill recommended: Loug Dark Blood, Eclipse, and Bassano each required four ounces of seed for 334 feet of drill, or an ounce for 83½ feet, and the sowing was much too thick. An ounce of Long Dark Blood Beet contains about 1,200 fruits or seeds, or over 15½ fruits to each foot of drill, as we sowed them.

Parsnip. One ouuce to 200 feet of drill is recommended; 1,000 feet of drill of Holland Crown took four ounces of seed, or an ounce to 250 feet of drill. The sowing was made in very hard ground where a thick growth of seedling is necessary in order to break the crust. Yet the sowing proved over twice too thick.

Carrot. One ounce for 150 feet ot drill recommended; 566 feet in hard ground used 1½ ounces of seed, or an ounce for over 377 feet of drill, and even then they were much thicker than desirable.

Landscape Gardening for the Prairies.

[*E. R. Brown, Elmwood, before the Illinois Horticultural Society.*]

In a prairie country variety and picturesqueness are not so easily produced as where the face of nature is more diversified. Now the chief point I wish to make, is that a level tract and one that is hilly require different treatment. I make an exception in the case of the American Elm, the king of trees, which, if it can have space, justifies itself everywhere. In maturity it combines in itself grandeur, grace, strength and beauty beyond any tree that grows. It will stand with its feet in the water all the year around. To be sure, he who plants an Elm will hardly live to see its maturity. But why not, in this line as well as in others, do something for posterity?

Everything above the turf—the buildings, shrubs, vines, trees—should be so placed as to exaggerate, so to speak, the natural features of the landscape. It is especially desirable in our regions of monotonous scenery, that we make the most of such variety of surface as we have. Nature gives us a hint. On the summit of mountains, the spire-like Redwoods and Sugar Pines shoot upwards two and three hundred feet, suggesting indefinite and infinite height. The Black Spruce (*Abies nigra*), with its pointed top, crowns old Greylock in famous Berkshire, while in the valley below grow clumps of Alders, tufts of Willows, round-headed Sugar Maples (*Acer saccharinum*), and the Sycamore, spreading by the river bank.

Low grounds, first allowing ample space for turf, should be planted in vines, shrubs and trees of low-growing habit. The common Alder (*Alnus glutinosa laciniata*) should be there, with its large corymbs of white flowers, for wild Grape vines and Clematis to run upon. Suppose that there is at the rear a gentle roll or rise of five or ten feet, which we wish to enhance and make the most of. Leaving the first part of the declivity as open lawn, set a line of low shrubs; next behind these place low-headed trees—The American Judas Tree or Red Bud (*Cercis Canadensis*), or the beautiful Hawthorn (*Cratægus oxyacantha*); then Sugar Maple and Box Alder (*Negundo aceroides*), or trees of similar form; and bring up the rear with tall or pointed trees; or, beginning with Gooseberry bushes, follow back of them in order of height with Plum, Apple, Butternut and so on to the tallest to be had. The trees will apparently be growing on a ledge twice or three times its actual elevation. On level tracts, trees of medium height, Honey Locust (*Gleditschia triacanthus*), Ash (*Fraxinus*), Sugar Maple and Elm, (*Ulmus*) are appropriate.

The lawn should be arranged on the same principle as a properly executed landscape painting, the lines in the foreground free and bold, diminishing and softening toward the background, giving the effect of distance and depth There should be no shrubs at the front; simply a few goodly trees on a smooth turf, with wide hospitable spaces between, to "let the light in and the sight out." Toward the rear the shade may be more dense, nearly hiding the ground, giving, if possible, suggestive glimpses of the silver surface of pond or stream; but, at least, leaving, here and there, narrow peeps through to some vague and indefinite beyond. So we may help out the fancy, and an acre or two may seem to stretch away to a wide estate.

Do not try to have every fine thing that grows. The lawn is often made a sad and meaningless jumble of things, pretty in themselves, but made a nuisance by their aimless setting.

Now a word as to flowers and color. In some retired and partially shaded nook, let the early spring bloomers have a chance. Especially let us have the Spring Beauty (*Claytonia Virginica*) and the Dutchman's Breeches (*Dicentra cucullaria*), followed a little later by the Lady Slipper (*Cypripedium parviflorum*) and Buttercups (*Ranunculus bulbosus*). In midsummer and later, give our native Asters and glorious Golden Rod (*Solidago*) a fence corner in which to bourgeon at their own sweet will. The trees should be selected with a view to the grand autumn object lesson in tints and shading, which they furnish, the lemon tint of the Elm, the bloody hue of the Virginia Creeper, (*Ampelopsis*) the Claret of the small Oaks, and the ruby of the Sumach, while the Sugar Maples glow with the whole chromatic scale of reds and yellows. Even the blue of Raspberry stems, and the Coffee color of Blackberries add to the infinite range of tint and shade that signalize and delightfully prolong the glow and glory of autumn for several months.

Report on the New York and Philadelphia Chrysanthemum Shows.

The first-named exhibition opened on November 8th, in a marquee or tent, at the corner of 5th Avenue and 14th street, with a superb display of Chrysanthmum plants and flowers. The central part of the tent was arranged in three large groups of plants; the stages around the sides were devoted to cut flowers, mainly Chrysanthemums.

In the cut flower department, W. Tricker, gardener to Judge Benedict, of Long Island, took the 1st prize on the following lots of Chrysanthemums: 12 Anemone-flowered, 12 new varieties, 6 Japanese varieties, and on 6, 12 and 24 varieties each of the Chinese class.

Wm. Hamilton, Alleghany City, Pa., 1st silver cup prize for seedling, showing a bloom of unequaled large size, deep maroon color on inside of petals, outside of light flesh color.

E. Fewkes & Son, Newton Highlands, Mass., showed nine blooms of imported Japanese varieties, which were very fine and of types new to us. The most noticeable that had names attached were "Emma Rick," white, petals reflexed; "Empress of Japan," white, petals reflexed; "Lilian B. Bird," white, pink center, very fine slender quilled petals, seven inches in diameter; "Kioto," yellow, globular, petals incurved and curled in a whorl, good color; "Mrs. Fowler," nice shade of light pink, large size.

Mr. T. H. Spaulding also made large displays in new and choice varieties, and P. Henderson & Co. made a display of not less than 200 vases of Chrysanthemum flowers. John Thorpe took 1st prize on six, 25 and 12 Japanese sorts. In cut Roses, J. H. Taylor, Long Island, took 1st prize on Cusins, Mad. de Watteville, Perles and Bride. J. N. May, of New Jersey, 1st on American Beauty and Niphetos.

In Chrysanthemum plants, John Dallas took 1st prize on six Chinese and on one specimen Japanese, "Fair Maid of Gumsly," a fine white variety grown in tree form. John Thorpe 1st prize on six and 24 Japanese, six yellow varieties, 30 plants and six plants in six inch pots. T. H. Spaulding 1st prize on 30 plants and 15 plants in six inch pots, and on six well grown Standards.

The Philadelphia show opened Nov. 13, and altogether it may be said to have been the finest show of Chrysanthemums ever held in this country, due chiefly to the wide-spread interest shown by the local florists aud gentlemen having private floral establishments, together with the liberal spirit displayed in the regular prizes offered by the society, and the special ones presented by individuals.

The decorations of the hall were rendered singularly effective by the use of Palms, Chrysanthemum plants and flowers, garlands, etc., with large clumps of greeneries and flowers in the gallery, placed at intervals against the wall. Upper main hall was filled with Chrysanthemum plants, and all of very fine quality.

Following we name the prominent prize takers: J. W. Colflesh 1st prize of $100 for 12 plants in 12 varieties. The list including Mrs. M. Wanamaker, flesh color; Mrs. C. W. Wheeler, flesh color outside, petals red inside; Mrs. Joyce, pink, semi-double; Puritan, white, semi-double; Cullingfordii, double red; Gloriosum, semi-double, lemon color; Eugene Wizard, crimson and pink, semi-double; Retta C., white, semi-double; Surprise, double, somewhat globular shaped, pink with yellowish center; Mrs. Frank Thompson, large semi-double, deep pink inside of petals, flesh tint outside. J.W.Colflesh, 1st prize on Pompons, six plants in six varieties, and also on incurved, six plants, six varieties, and general collection; while W. K. Harris received 1st prize on Japanese, six plants, six varieties, incurved, and for a single specimen of the white Puritan.

Mrs. Alpheus Hardy, already famous, and shown by Pitcher & Manda, New Jersey, was awarded a silver medal. This has a large, white, somewhat globular form, recurved in a sort of whorl. The fleecy fringe on incurve of petals is very noticeable and gives it a distinctive appearance, while its character of growth seems favorable; a plant in a three inch pot showing three well developed flowers of fair size and full foliage to the base of stalk.

The show of cut flowers in the committee hall, Chrysanthemums especially, was fine, and

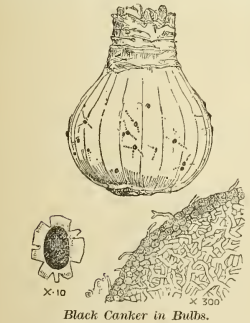
impressed me beyond past displays of this kind. Blooms fully eight inches across were not uncommon, and the range of form and coloring was more bewildering, while the number of specimen flowers shown seemingly ran up into thousands. A few vases of cut Roses called for favorable comment, as did also several Thanksgiving designs in flowers and fruit contributed by local florists.

The florists club and invited friends sat down to the annual supper at 10 o'clock. A delightfully social time was enjoyed by all, the toasts and responses being numerous and felicitous.

CONDENSED GLEANINGS.

A Bulb Disease: Black Canker. The bulb growers of Europe recognize a certain disease of bulbs under the name of "black canker" or "black rot." In typical cases the buds are studded with minute black projecting spots, as shown in the upper part of our illustration; this is the resting or hibernating state of the fungus which causes the disease. Narcissus bulbs are imported in apparently sound condition, but really with the fine threads of a fungus mycelium just beneath the outer membrane, and it is impossible to tell without a microscopic examination whether the bulbs are free from taint or not. In the course of a few weeks (or months) the spawn beneath the membrane congregates in little knots (like grains of gunpowder), which speedily become black outside. These grains are sclerotia. If the membrane of the bulb is carefully laid open with a needle, and one of the black grains enlarged ten diameters, it will appear as shown on the left of the illustration. A fragment of the sclerotium under the microscope, enlarged 300 diameters, shown, as in the right-hand bottom corner, one compact mass of fine fungus threads. The warmth and moisture favorable to the bulbs is exactly suited to the grains, which after about nine months' rest produce a small fungus named Peziza—possibly P. ciboroides, Fr., which sometimes grow on Oak leaves and Clover. This fungus produces spores which germinate and produce a new crop of sclerotia, by which the life of the "black canker" is carried in a passive state from year to year. As infected bulbs propagate the disease, no bulbs showing the granules of "black canker" should be sold or planted.—Gardeners' Chronicle.

No Rubbish Heap. Most gardeners are in favor of a rubbish heap, as being of considerable value from a manural point of view, while in the case of heavy soils the free use of such refuse is of the greatest possible help in bringing the soil into proper working order, but some time since I observed au instance of the "no rubbish heap"



Black Canker in Bulbs.

principle. The accumulation of rubbish in large and small gardens goes on at an alarming rate, and soon becomes offensive; it was with a view to avoid this, that the rubbish heap was abolished. The garden where this is carried into affect is of considerable size, and forms part of the grounds of an Orphanage, and consequent upon the number of inmates, precautionary measures are freely employed against disease; with this object the superintendent has studiously avoided a rubbish heap, and to get rid of the refuse a deep trench is formed across the garden, and the refuse as fast as made, is deposited in it and covered with soil. When the trench is full, it is filled in, leaving another by its side; this is served likewise, and so the operation continues till the whole has been traversed. By this process the soil receives a good dressing, and is thoroughly trenched, while at no time is there any great extent of land unoccupied. The plan answers admirably, and excellent crops are the result; nothing is simpler or more effectual, for most gardens.—Forcign Exchange.

The 1888 Plum Crop. This year was unusually favorable for Plums. The crop is many times larger than it has been for a long time, and trees which never perfected any fruit before have had a greater load than they could well carry. Imperial Gage, Prince Engelbert, Sharp's Emperor (Victoria), Bavay's Green Gage, Shropshire Damson, and a number of others, to say nothing of the old Damson, have all borne remarkable crops. Just what occurs in a number of years to cripple the curculio so that, although present in greater or less numbers, they can only do a small portion of their bad work, it is difficult to say. Possibly there was some part of the winter which was unfavorable to them, or something in the preceding summer, or both. But such events, occurring from whatever cause, give hope that sooner or later some of the unseen forces of nature may make a clean sweep of the "little Turk," such as happened in the case of the tent caterpillar several years ago. But while the curculio did little or no harm, as much cannot be said for the rot which attacked a number of the large varieties. Several of these, however, notably Sharp's Emperor and Prince Engelbert, have been almost wholly exempt from this malady. Trees growing in door yards, or where pigs and chickens have free access, have done best in all respects, as usual.—National Stockman.

Results from Spraying Bartlett Pears. Spraying young fruit with liquid poison, to destroy noxious insects has proved particularly advantageous to Bartlett's, which from their earliness appears to be particularly liable to the attacks of the codling moth and curculio. The spraying is done when the young Pears are between the size of Peas and Cherries. It is sometimes necessary to repeat the operation to replace loss by heavy rains. Paris green thoroughly mixed with 700 times its bulk of water, and lightly showered over the tree destroys all the codling worms just hatching in the calyx, and before the Pears are half grown the rains have washed off all the poison; and though Paris green is a very imperfect remedy for the curculio on Plums, it is more effective when they are on Pears. An orchard of Bartletts was sprayed three times, the rains interrupting somewhat. The result was that the heavily loaded trees had scarcely a defective specimen, while on a tree 40 rods away nearly every Pear was more or less disfigured by the codling worms and the curculio. Fig. 1 represents a specimen of the fruit much reduced from the sprayed trees, which is smooth and uninjured, and Fig. 2 a specimen from the unsprayed tree, disfigured chiefly at the sides by the curculio. London purple, if pure, answers as well as Paris green.—Country Gentleman.

The Culture of Rhubarb. While the best time to plant Rhubarb is in the fall it may be done early in spring; the old roots should be divided so as to have but one or two eyes to each piece, and set about three feet apart in furrows four feet apart. Cover two inches deep. Rhubarb is in no way particular about the land it grows upon, provided it is not a dry gravel, but demands very heavy manuring; 10 or 15 cords per acre every year of strong manure, rich in nitrogen. Rake off the dead leaves and rubbish about Nov. 1st, plow a light furrow from the plants at each side, fill this with manure, and cover with plow, ridging the land well over the crowns. In early spring cultivate across the ridges, and stir often with plow and cultivator, and hoe until it has grown too high. The best variety for general marketing in Boston is the Victoria, on account of its large size and very heavy yield. The Linnæus variety is earlier and milder acid, but it does not yield much more than half. The bed should be replanted after about five years' bearing, the new plantation not being cropped the first year, and will not produce a full crop the second, but after that for five years it is in its prime.—American Cultivator.

Trees for Streets. All things considered, the silver-leaved Linden is one of the most suitable for avenue-planting, though whether it will endure the gas and smoke of the densely crowded city remains to be seen. Its chief merit consists in absolute hardiness, entire exemption from destructive insects and diseases, a vigorous growth, and a beautiful, compact head. The bark is smooth, and the trunk straight and symmetrical. Many so-called street trees droop their branches to the annoyance of travellers, but in the silver-leaved Linden the tendency of every limb is upright, and is clothed with charming foliage. While little difficulty is experienced in providing suitable trees for small towns and

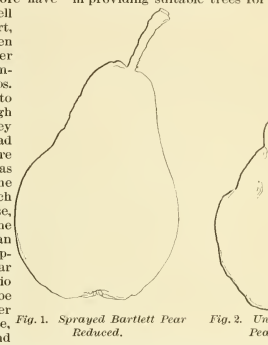


Fig. 1. Sprayed Bartlett Pear Reduced.

Fig. 2. Unsprayed Bartlett Pear Reduced.

country places, the list that will accommodate itself to the closely-built city, and especially to the manufacturing districts, is small indeed, so that the Carolina Poplar has been introduced in such positions. It has demonstrated its ability to withstand the hardships of its surroundings, and shows to advantage in a comparison with well-known trees. Whether it will continue to thrive remains to be seen, but for the last decade it has seemed to defy both confinement at the roots and vitiated air.—Tribune.

An Apple Inspector. Mr. N. Hudgin advocates the appointment of an inspector of Apples for export, for the purpose of fostering the trade, which is largely on the increase, and requires a more careful selection and proper brauding. The shipper employs a number of packers who endeavor to pack as large a number as possible, regardless of the employers' interest, and it is hard to trace this; or the farmers compel them to pack Apples that are hardly fit for evaporating, thus injuring the foreign market, and subjecting the shipper to a heavy freight bill on goods not worth the transportation. The farmer should pack his own Apples and save 15 cents per barrel, and the trouble of a lot of men, if desirous to do so, and likewise take the consequences. Then the packer would have to look after his own interest, as every tenth barrel could be gone through, or more or less as necessary, and this would have a tendency to check abuse.—Canadian Horticulturist.

The Peach Borer Cure. The eggs are laid on the tree, close to the ground, where the tenderness of the bark makes it easy for the young grub to get through to the soft new wood, on which it feeds. Gum mixed with the sawdust-like castings of the worms, indicates the presence of the pest. Cutting into the tree with a knife, will soon find a soft, dull-whitish worm with a brown head, and the knife puts him beyond doing any more harm. Sometimes the track extends down under the bark, but one need not fear to follow, as the cutting heals over with no harm to the tree. When left to itself the grub comes out and makes a cocoon of the gum and castings. The perfect insect, which lays the eggs, is a slender, dark blue, four winged moth, not unlike a wasp. Nothing can be done to prevent the depositing of the eggs; but cutting out the grub is a perfect protection if done in time. Twice a year, fall and spring, the trees should be looked over.—National Stockman.

Home Horticulture for Children. Farmers, grounds should be neat and attractive. The wise man will begin early, with his children, to gather these attractions. If he takes an interest in grass and flowers, he may convey this mental inheritance to his children by pointing out their beauties and wonders. A neatly kept home and surroundings, facilities for the study of the natural sciences, home collections of minerals and insects, teaching the art of budding, pruning and grafting, making dried collections of weeds, and of grains and grasses, will in the course of years make the country permanently attractive.

to growing up families, and incite a taste for rural and scientific study.—Albany Cultivator.

Protecting Peach Trees. Energetic cultivators in the Northwestern States grow superior Peaches every year by giving winter protection. Two methods are noted. In one, the trees are plauted in a sloping position and trained to a flat, or fan-shaped form. Late in autumn the branches are bent down and covered with Corn-stalks, which, by retaining the warmth from the soil, prevent hard freezing. The other method is to plant the trees at the base of a steep slope, or high bank, when, by training in the same manner, the branches may be laid over against the back, and covered as above noted. The expense of covering is slight as compared with the value of a fine crop of Peaches.—Country Gentleman.

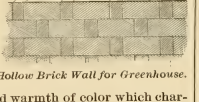
Treating Scale Insects and Parasites at the South. Clean away the top earth in the fall for two or three inches deep, and for three or four feet around the tree, and sprinkle wood ashes over the place, leaving it until spring, then replace the dirt, and when the trees are done blooming, smoke them on a still night with Tobacco and brimstone. I use charcoal in a vessel or pan, and after it gets to burning, put on the Tobacco and then the sulphur. This has saved my Plum and Peach trees, both of which have done 50 per cent better since I began this treatment. I find that Pear trees are benefited by having a dressing of iron filings.—Farm and Home.

Hollow Brick Wall. At the greenhouses of the Dingee & Conard Co., their Superintendent, Mr. Autoine Wintzer, states that walls of this construction have stood on their place for nearly 20 years in good condition. The sketch shows plainly how the wall is constructed The great advantage of a hollow wall is admitted and it would seem that such a simple manner of construction should commend itself. It would be well to give such a wall a strong stone foundation, and sink it well into the ground to prevent heaving by frost, in any latitude north of Philadelphia.—American Florist.

Cyclamens for the Window Garden. These succeed admirably, especially wherever gas is not used to a great extent. Repot if necessary, when the new growth is commencing, using a mixture of loam, leaf-soil, and sand, with good drainage. Keep the soil constantly and evenly moist after roots have freely formed, and the plants in all the light possible, and safe from frost. In May remove to a lightly shaded position out-of-doors, and still keep the soil just moist.—Gardening Illustrated.

No use for the Potato Blossom. The seed of the Potato, which results from the blossom, are not only unnecessary to the formation of the tuber below, but are a prejudicial strain on the plant, for it stands to reason that the plant which is propagated from its root-stem ought not to spend its energies in the production of flowers and seeds which are of no economic value whatever. —Mark Lane Express

English Cut-Flower Trade. Of the London flower trade, we can safely say that the designs and decorations are much behind those of the leadings florists of the United States. The designs are more formal, lacking the ease, grace, and warmth of color which characterize the American florists' productions. Only in plant decorations do the English florists and decorators excel.—American Florist.



Hollow Brick Wall for Greenhouse.

Foreign Fruit Evaporating. In England land is too high to devote to Apples, with a view to competing with the United States in evaporated fruit. Attempts made in Germany to establish the fruit evaporating business have failed. An adequate supply of good fruit could not be had to keep the evaporators running.—Chautauqua Farm and Vineyard.

The Dwarf Champion Tomato. We have observed the growth of this Tomato with much interest. It has not the sprawling habit of other varieties, its stem being self-supporting. The foliage also differing. For the home garden the plant will commend itself by its neatness, and the fruit which is produced quite abundantly, is of fair size, extra smoothness, and good quality.—Farm Life.

Testing Seeds at Experiment Stations. We would suggest that the seed tests be made as soon as possible after the seeds are harvested, and the results made known before the time of sowing, then growers would have the opportunity of selecting the best.—Germantown Telegraph.

A New Winter Delicacy. A Pearl river plantsman is bleaching the tops of Russia Turnips, which are in favor abroad, and are prepared for the table much the same as Sea-kale. These and Cauliflower, will be in market about Christmas.—Garden and Forest.

What Ashes are Worth. A bushel of average hard wood ashes is worth eighteen cents for the potash and phosphoric acid alone, according to the commercial price of these ingredients.—Bulletin Mass. Ex. Station.

The Fruit-eating population of the United States is increasing far more rapidly than the fruit-raising population.—Chautauqua Farm and Vineyard.

Sharp Californians. The fruit driers of California have organized an association that seems very much like a "Trust" from this distance.—R. N. Y.

The late Emperor Frederick was a munificient patron of the gardening art, having a great love for flowers.—Gartenflora.

Apples are shipped from California to Australia.—Garden and Forest.

Vegetable Products on the Table.

The Sharpness of Vinegar is entirely owing to the pointed figure of its salts, which float therein. —Scientific American.

Celeriac. Scrape the roots carefully, boil in water till tender; when half done season with salt, and when cooked serve with a cream sauce.

Stewed Celery. Cut the Celery into pieces two inches long, boil half an hour, drain, pour fresh water on, and boil for another half hour. Drain and serve on toast with melted butter.

Fried Squash. Sieve two and one-half cups of cooked Squash; add a pint of milk, two eggs, a teaspoonful of sugar, a pint of flour, two teaspoonfuls of baking powder and a little salt. Beat together until smooth and fry in butter.

Onions Fried. In a hot pan, put butter (or meat fryings after frying meat), and the Onions sliced with a little hot water, sprinkle with pepper and salt and cook twenty minutes; add a teaspoonful of flour in a little milk and serve when it boils.

Sweet Potato Pone. To one and ahalf pounds of Sweet Potato, boiled and mashed, add a heaping tablespoonful of butter, a little salt, two tablespoonfuls of sugar, one of ginger, and half a pint of milk, beat well, pour in a buttered pan, and bake an hour.—Farm Journal.

Sugared Popcorn. Boil in an iron kettle a spoonful of butter, three spoonfuls of water and a cup of granulated sugar; when ready to candy, pour in three quarts of well popped Corn; stir until the Corn is covered with syrup, remove from the fire and continue the stirring until cool.

Preparing Salsify. Scrape the salsify and put into cold water with one tablespoonful Lemon juice. Boil in salted water until tender. Sauce, —melt two tablespoonfuls of butter, add one tablespoonful flour and pour on slowly one and a half cups white stock; season with salt and pepper.—Mass. Ploughman.

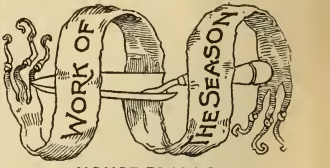
Parsnip Cakes. Peel the Parsnips; cook them soft in slightly salted water; mash, and to a pint add two tablespoonfuls each of butter and cream, or milk. Heat and stir in two well-beaten eggs; when cool make into small cakes. Dip these in beaten egg, then in bread crumbs, and fry in boiling fat.—Prairie Farmer.

Baked Cauliflower. Boil tender, cut into neat clusters and place in a buttered pudding dish, stalks downward. Make a soft paste of bread crumbs, melted butter and cream; add salt and pepper and one egg well-beaten. Place this over the Cauliflower or Broccoli, cover closely and bake eleven minutes, browning the last five. Serve very hot.

Relish of Cabbage. One good head of Cabbage, shaved as fine as possible; one tablespoonful of grated Horse-radish to each quart of Cabbage; one pint cider vinegar; let it come to a boil. Three eggs, a little salt. Beat the eggs well, stir into the vinegar until cooked, then pour it over the Cabbage and set away to be eaten cold.—California Patron.

Using Sea-Kale. An excellent sauce for Sea-kale is made by rubbing several ounces of butter in flour; then stir in the yolks of eggs, according to quantity of sauce wanted; flavor with a squeeze of Lemon juice, serve with the plain boiled Sea-kale, but not pouring over. Cold Sea-kale may be cut into pieces, dipped in batter, and fried, forming a palatable side dish. —British Journal of Catering.

Baking Sweet Apples. Most kinds of sweet Apples do not easily bake soft as the best cooking sour varieties do. They have, besides, too little acid to fit them for pies, though where no other fruit can be had, the demand for pie may be met by mixing them with cider vinegar. But they need no addition for baking by themselves. The sweet Apple thus prepared is excellent and healthful and are easily digested by the most delicate stomach.—American Cultivator.



HOUSE PLANTS.

Airing. Observe this closely to secure a uniform temperature without drafts.

Aspidistras need plenty of water at the roots and the foliage wiped off with a wet sponge.

Azaleas may be treated like Aspidistras.

Begonias not in bloom can be somewhat shaded, while flowering ones like a sunny position in 55° to 60° of temperature.

Century plants and all others of its class to be kept rather dry, but free from dust on leaves.

Chrysanthemums. After labelling properly, cut the tops off and keep in a cool place, watering but little until cuttings are wanted.

Cobœa scandens, being a rapid grower, requires attention as to tying. Green fly and red spider often spoil its beauty. Use Tobacco water for the fly, and sponge the leaves for the latter.

Farfugium grande while growing slowly to have less water. It does best in light soil.

Frosted plants should be promptly moved to warmth of only about 38° to thaw out gradually, as nothing can be worse than high heat. Carefully wet the frosted ones with cold water, and do not handle the leaves.

Hyacinths in glasses, as the roots are well developed are to be brought in for flowering.

Ivies for beauty as well as for health must be kept free from dust and insects.

Jerusalem Cherry and other Solanums require the fruit and foliage to be kept clear of dust; cover when sweeping, building fires, etc., wash sometimes.

Lantanas are especially liable to suffer from red spider; syringe often.

Light. All that can be had at this dark season is needed; curtains should be rolled to the top through the day. Nothing should come before the glass of the upper window sash.

Lily of the Valley. Clumps taken from where the plants are strong in the garden will bloom in a warm, light window.

Mignonette does best in a light place; loosen the soil.

Othonna often damps off at this season if carelessly watered. A light, rich soil with a temperature of 50° to 55° suits them.

Plants in the cellar not to be allowed to dry or shrivel up but avoid to much dampness.

Primroses need warmth and freedom from dampness and drafts.

Sempervivums. Keep somewhat dry, from 45° to 50°.

LAWN AND FLOWER GARDEN.

Altheas. For one or two years after planting these should have the soil mounded up over the roots and the tops tied in straw.

Clematis. Protect each plant after being cut back or laid on the ground, with several forkfuls of manure.

Compost Heap. The chief substances for it to be turf rich in vegetable fibre (from a pasture or roadside) and manure, say two parts of the former and one of latter. In addition there may go to it muck, wood's earth, road scrapings, leaves, soil siftings, old plaster, ashes, hen manure and all like materials to be gathered about a place. These should be built up in regular layers to form a shapely pile. In the spring with working from one end of the pile to throw it over once or twice, all the matter will soon be in capital shape.

Drains. New ones may be laid in fair weather; old ones to be watched, seeing that they are in working shape. Sometimes drains become stopped by rats or other causes. This can only be corrected by following up the drain tile by tile from the opening to the place of trouble.

Evergreens. Whenever snow lodges on these shake it off, as they are likely to be injured.

Herbaceous plants of the hardy class to have a covering of strawy manure.

Lilies like Auratum and other delicate sorts to be protected by earth or ashes over them.

Protection. Plants like Pampas Grass, Chrysanthemums, Tender Roses, etc., may in many places, be wintered outdoors by hilling earth around so as to leave the plant in a hollow which is filled with leaves, so roundedup as to remain above the ground after settling.

Rockeries. Have coarse manure strewn over the more exposed places, keeping it in place by brush. New ones may be commenced.

Roses. Of the Bourbon, Bengal, Polyantha, and similar classes to be bent over and covered with soil or sods laid grass side up. Hybrid Perpetuals especially such as are delicate, to be protected with straight straw tied on with heavy twine. The surface of all Rose beds to be heavily mulched with manure that is half rotten or less, for when well rotted it is not so good.

Staking Trees. With Evergreen trees, three stakes should be driven close to the tree, and from each a coarse cord be brought to the stem and back again, protecting the bark where the cords come with a band of leather. A mound of earth placed around the base of the tree will aid further in steadying it.

Trellises and support that are moveable, to be sheltered, repaired, and painted where needed.

PLANT CULTURE UNDER GLASS.

Ageratum seed, for fine early plants, may be sown during this month.

Air-loving plants like Azaleas, Camellias, Heaths, etc., should be freely provided with this element daily when the weather is favorable.

Azaleas. Give the forced plants when in bloom a dry, cool place, while those coming next to be kept warm. Push young plants as rapidly as possible, by giving warmth and water. Guard against thrip and red spider.

Bulbs. Hyacinths, Tulips, Narcissuses, Crocuses, and Scillas, to be brought into heat for succeeding the Roman and other earliest kinds; air freely and give plenty of water.

Calceolarias should now have a cool situation near the glass, but protected from cold winds and frosts. Ventilate only enough to keep down mildew. Avoid both over watering and not watering enough.

Callas. See that they be kept clear of aphis, as no plant suffers more when once it becomes infested. Give plenty of space and water freely, using liquid manure sometimes.

Camellias show white scale now, if at all; examine often, and cleanse with water and a brush. Water carefully and syringe lightly twice a week, giving an even temperature.

Cannas. Keep the roots of potted plants dry, and in a cool place.

Carnations. Avoid over wetness at the roots, but syringe sometimes, and air as freely as possible.

Centaureas. For strong plants the seed should be sown promptly. Candida especially is a slow grower.

Centradenias. When showing buds, give light and manure in liquid form.

Cinerarias. See under Calceolarias.

Cold Pits containing half hardy plants should be aired freely in mild weather and covered on cold nights, as the plants cannot well stand sudden and extreme changes of temperature.

Cyclamens for early young plants may be sown now in pans near the glass.

Deutzia gracilis for early blooming should be given a warm, light situation.

Fern spores may be sown in rough peat, either in pans or pots under bell-glasses.

Francisceas. Young plants to be shifted, then as growth begins keep warm and well watered, syringing several times each week.

Heliotrope will be benefited by a warm, moist atmosphere and some manure water.

Hellebores (Christmas Roses) force well in a cool house, having flowers scarcely inferior to Eucharis.

Insects. Fumigate twice a week for aphis or green fly, and syringe daily or oftener to destroy red spider. Mealy bug or scale can be gotten rid of by washing. Slugs can best be captured at night, when they are feeding, by the aid of a light.

Mildew is often present on Roses, Verbenas, and such plants at this season. Dust powdered sulphur over the plants early on a sunny day, first wetting the foliage, and then keeping the house close.

Orchids require close attention; any drip from the roof is injurious. While many kinds are still at rest, others are inclined to move, and should be encouraged by giving a warm moist situation; such varieties like Aerides odoratum need a good deal of heat, with partial shade, not allowing the roots to become dry. Repotting or renewing the Sphagnum or baskets is not advisable at this season.

Palms. Never allow the soil to become dust dry, and thoroughly water when needed.

Primulas. Do not water overhead as it has a tendency to cause the stems to rot; carefully give water only at the roots. As the weather admits, air freely, a cool temperature, say from 45° to 50° will favor stocky growth.

Roses. Syringe blooming plants twice daily. Prune the "monthly" class, as the buds are taken, back to within two eyes of the base of the shoot. Once in a while go over the plants removing all "blind shoots," or such as have ended their growth. A night heat of from 55° to 60° is the best suited to the free development of the bloom.

Stocks. Scatter Tobacco stems about the plants and fumigate freely, as they are liable to suffer from green fly. Water carefully, remove dead matter, and look out for damping off in the Winter Flowering and Ten Week sections.

Thunbergias. For blooming plants have about 55°, syringing freely for red spider.

Verbenas. Keep the plants cool and well aired. If there is moss on the soil, remove it with a little earth, replacing with fresh soil. Guard against over-watering. See under mildew.

Violets. Air freely when weather allows, stir the soil and remove decaying matter.

FRUIT GARDEN AND ORCHARD.

Bark. By applying a wash of lime, soot, and clay with a brush, moss and vermin may be gotten rid of. Care needs to be taken that no fruit spurs are injured.

Clearing up. Stakes, ladders, barrels, etc., to be sheltered; exposure injures more than ordinary wear.

Cuttings of Grapes, Currants, Gooseberries, etc., to be well covered with evergreen boughs or similar protective material.

Dwarf Pear and other bush trees should not suffer from accumulated snow; shake it off.

Fruit. In the storage room remove any fruit at the first sign of decay, as it will spread. As the earlier varieties approach ripening bring to a warmer place to finish the process. Market before softening begins. Well-kept Pears will find a good market this month.

Grapevines. Prune on mild days; those set out last spring to be cut back to three eyes; older ones to have the past season's canes cut back to six or eight buds, according to strength. As even the hardy sorts are better for winter protection, lay the canes on the ground covering with straw, branches, or soil, seeing that the roots are well protected.

Manuring. Now is an excellent time for applying well-rotted manure to fruit trees of all kinds.

Propagation by root-grafting can be done at any time during the winter. Scions should be cut in mild weather, choosing good ripened shoots; pay close attention to labelling and store in a cool cellar.

Rabbits may be kept from injuring trees by using tarred felt, or smearing fresh liver or blood over them frequently; for mice and such pests, remove all weeds and tramp the snow firmly about the tree.

Raspberries. Lay the tender varieties down and cover with earth, top-dress the hardy ones about the roots with good manure.

Staking. Young trees in windy places should be steadied by driving stakes close to the tree, wind up a wisp of straw to place between the stake and tree; cut a piece of old heavy duck, or else use leather of a length to pass from the stake around the tree, and back, drawing the tree tightly against the straw, and nailing the duck fast to the stake.

Strawberries. It is not yet too late to cover these if not already attended to.

Water. Ditches should be opened to carry off any standing water.

Winter leisure may profitably be employed in studying improved methods, reading horticulture matter, visiting different growers, and attending the meetings of the societies held at this season.

THE VEGETABLE GARDEN.

Cabbage should receive final covering for winter-ling over.

Celery. As the cold increases, Celery in trenches should receive additional protection, in the shape of leaves, litter, or the like.

Cellars for vegetables to be kept as near 35°, the temperature being regulated by a thermometer which ought to be in every cellar. In warm cellars all roots should be covered with soil which is kept moist.

Cold frames containing Cabbage and other plants to be daily aired in mild weather, but keeping close and protected with shutters and mats at night and during cold spells. Cauliflower plants are less hardy than Cabbage or Lettuce. If mice trouble, trap or poison. Clear snow from the sash promptly, unless the ground within is frozen, when if it lays a week no harm will be done.

General Matters. Provide stakes, etc. for the coming season. Repair frames, sashes, and tools for spring use; repaint and provide new ones where required. Remove old bushes, do underdraining or trenching and make any other alterations that are desirable.

Kale. In the North treat as directed for Spinach.

Manure is the foundation of all profitable vegetable gardening; it should be collected from all available sources, slaughter houses, breweries and like places.

Onions. Keep dry at not over 40°. September sown seeds to be treated as for Spinach.

Ridging the garden may be done any time before the ground freezes hard. If with the plow the ridges to be about four feet wide and as high as possible; by spade-work there would be less of a ridge, but the ground should be left lying uneven. If part of the garden is thus worked over and a part not, much difference will be seen in earliness and quality of crops on the respective parts next year.

Roots in pits to be banked over with additional earth as winter fairly sets in.

Spinach is helped by a coat of an inch or two of hay or leaves, as hard weather comes on.

Trimmings of trees and vegetables should not lay about to harbor mice, insects and other vermin.

Tools as they pass out of use to be overhauled and put in order, awaiting use in the spring; a coat of white wash is easily applied and is a good preservative.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus roots can be brought into heat for an early supply. The roots for succession to be stored where easily procurable.

Dandelions may be treated as directed below for Parsley.

Grapery. In the cold house, vines after being pruned to be laid down and covered completely with soil. In early houses vines breaking should have a gradual rise of heat, beginning at an average of 65° at night, with 10° degrees of sun heat. Too sudden a rise will make long joints, weak growth, and inferior crops.

Lettuce. This is a time of slow growth, and there may be many days when air cannot be admitted. Water sparingly, as too much wetness in dark, close weather will be likely to spoil the crop. Green fly will be on the increase now, so keep the house clean by smoking semi-weekly. Remove all decayed leaves. See Answer to Inquiry No. 983.

Parsley plants may yet be gotten in from the garden for winter or early spring use. Plant the roots in rich soil, not crowding them.

Rhubarb. Treat as directed for Asparagus.

Strawberries prepared as directed in previous months may come to heat during December. Begin with about 45°, and as growth advances increase to 60° or 65°. Water amply, but avoid flooding.

THE POULTRY YARD.

Boiled Peas and Beans fed warm are excellent winter egg-foods.

Don't crowd the poultry in their winter quarters if you expect them to thrive.

The breast bone of a young goose is soft and easily bent, if hard and firm, it is impossible to tell how old it may be.

"Pumpkin Seeds," says Prof. Groff, "contain a medicinal principle, which, in large quantities, proves poisonous to chickens and turkeys eating them; some become paralyzed in the legs, while others walk as though intoxicated."

Using Wood Ashes. Wood ashes, when scattered over the poultry yard, causes sore feet, due to the alkaline properties of the ashes. The best mode of using is to first leach it, allowing to dry, and placing them in a box for the fowls to pick over.

Cabbage in Winter. Cabbage can be either chopped fine and fed to the hens, or tied to small stakes so that they can pick the heads at will. There is no great amount of nitrogen in Cabbage, but it serves as a change from grain to green bulky food.—Ind. Farmer.

Dressing Poultry. Dip the fowls in cold water, let them drip and apply a half teacupful of pulverized rosin to the feathers with a dredging box, then scald in the usual way. The rosin sticks the feathers together, so that the pinfeathers come out with the others, saving much trouble. Use the common cheap article.—Am. Poultry Yard.

When to Market. If poultry raisers will ship during the holidays, they will find "the other fellow" about to do the same thing. Never sell between Nov. 15th, and Jan. 15th as prices will always be down. Because during that period the markets are overstocked, as poultry is perishable, but high prices at other times, however, can be had.—Poultry Keeper.

A Poultry Car. The car is built for the conveyance of live poultry. It stands about 2 feet higher than an ordinary box car; contains 116 compartments, each four feet square, in a series of eight decks, with aisles running through it crossways and another one lengthwise. The capacity of the car is from 3,500 to 4,500 fowls. By a system of drop decks, the fowls are loaded and unloaded at the bottom of the car, the sides of which are of strong wire netting, in which are the doors to the several compartments. On the top of the car, in the center, is a water tank large enough to supply a full load on a journey of two thousand miles. The food being carried in a receptacle beneath the car.—N. Y. Commercial Bulletin.

Old Hens. My flock is mainly composed of old ones, many being from eight to ten years old, and they are still good layers. I have seen a physiological or anatomical analysis of exactly how many eggs a hen can lay, and invariably we are told to kill all that are over two or three years. I think the most important matter is to secure a breed of non-setters. Mine are mainly Plymouth Rock crossed with Hamburg Rock. There are also a few Hamburgs and Leghorns. This cross of Plymouth Rock sports to black, and a non-setter. For mothers I keep a few Brown Games—the best of mothers. But in selecting a setter, I am careful to choose one who is not too wild, as the Games are inclined to be flighty. Certainly, old hens if well fed, and especially through the moulting season, will continue to be good layers.—E. P. Powell.

INQUIRIES AND REPLIES

PLACE LETTER BOX

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what trees had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 15th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,004. **Peach Stones Splitting.** Is there any remedy for this?—R. T., *Harrington, Del.*

1,005. **Apple Trees for Miss.** Which is the best sort for this latitude, time for planting and distance?—A. C., *Magnolia, Miss.*

1,006. **Camphor Tree.** How is this tree grown and propagated, etc.?—R. H. Y., *Dayton, Tenn.*

1,007. **Fern Roots.** When is the proper time to divide these?—W. O. M., *Kercheval, Ind.*

1,008. **Moving Rhododendrons.** How large can these be for safe moving? Would 6 feet high be too large?—J. D. R., *Leyser. W. Va.*

1,009. **Corn Flowers.** What are these and how are they grown?—B. U. F., *Laurenburg, Vt.*

1,010. **Removing Stones.** Is there any advantage gained by clearing off stony land, or do they serve any useful purpose? How do they act upon the soil?—J. F. W., *Johnsonville, Conn.*

1,011. **Heating Small Greenhouses.** How can one 16x30 ft., be well heated with the most economy?—JNO., *Stark Co., O.*

1,012. **Begonia Rex Failing.** What is the cause of my plants getting rusty, and leaves falling off?—L. A. G., *Hancock, Minn.*

1,013. **Maiden-Hair Ferns.** Soon after cutting the fronds of this Fern, they shrivel up. Ought they do so? Why is it?—G. T. P., *Guthrie, Ky.*

1,014. **Grapes in Orchard.** My orchard (Pears, Plums, and Morello Cherries at 20 feet apart with Raspberries between) slopes to the west. On a low part of clay loam, (underdrained) the berries fruit poorly because of surface drainage from the higher parts. On similar land Concord Grapes do well. Now could not Grapes take the place of the berries between the trees here, the shade not being heavy, with due fertilizing?—J. W. H., *Cleveland, O.*

1,015. **Growing Cabbage in Cold Frames.** I would like a practical method for this.—C.J.B., *Port Perry, Pa.*

1,016. **Chip Manure Insects.** How can I destroy the insects in chip and cow manure, as I think them injurious? Is acid good?—E. J. G., *Dalton, Ga.*

1,017. **Lake Bed for Grape Cuttings.** The bed is dry, of light vegetable loam, shells, etc. Would Grape cuttings succeed here?—F., *Michigan.*

1,018. **Grafts from Nursery Trees.** Would it hurt foot-high Salome, Gideon, or Russian trees to take off some grafts, or had I better buy such?—F., *Michigan.*

1,019. **Lime for Land.** How much air-slaked lime should go per acre on rather wet Oak land with lime stone at 10 feet below?—D. T., *Oakalla, Ind.*

1,020. **Lime for Truck Patch.** On clay soil what kind and how much, and the best to apply?—W. S., *Holmesburgh, Pa.*

1,021. **Name for Monthly Honeysuckle.** The petals are curved circle-like, flowers very fragraut, yellow and white streaked with red.—MRS. G. M. W., *New Rochelle, N. Y.*

1,022. **Blood Peach.** I would like information regarding this, also known as Indian Peach?—G. A. W.

1,023. **Coal Ashes as a Fertilizer.** Have these any value?—G. A. W., *Roxburg, Mass.*

1,024. **Storing Cabbage.** What is the best method to enable getting at them at any time?—A. W. N.

1,025. **Geraniums Acting Queerly.** My young plants cease growth after flower buds are formed and until they, then, they start to grow, and keep this indefinitely. What's the trouble?—W. R. H., *Detroit, Mich.*

1,026. **Scale on House Plants.** How can I rid Calias, Ferns, and the like of these?—MRS. DR. H. *Clayton, O.*

1,027. **Begonia Rubia Ailing.** The plant is healthy, but the buds drop. What's the remedy?—MRS. DR. H.

1,028. **Hydrangea Propagation.** How can H. paniculata grandiflora be propagated? From a hot-bed of spring cuttings? I got but one plant.—A. T. H., *Lewiston, Pa.*

1,029. **Sowing Water Lily Seed.** When is the best time and the best way in a greenhouse?—G. B. H., *Paducah, Ky.*

1,030. **Pruning Grapes.** What is the best method; also the best book on pruning?—H. S., *Watertown, Wis.*

1,031. **Blackberries Dying.** Stone's Hardy and Snyder, looked and bloomed well last spring, but the canes soon dried up. They were not protected last winter; are worse on black soil.—H. S.

1,032. **Renovating an Apple Orchard.** Can a 19 year old orchard, pastured for nine years and unpruned except the dead limbs, be successfully treated, and if so, how?—M. W. J., *Lebanon, Mo.*

1,033. **Grafting Mulberries.** Will the Downing and New American grow on the Russian?—R. M. K., *Huntley, Ill.*

1,034. **Liquidized Cow or Horse Manure, Which is the Best?** Is there any difference between them?—C. F. J., *Harvard, Ill.*

1,035. **Raising New Gladioluses.** How are the named ones increased and the flowers fertilized, do they come true from seed?—C.W.B., *Binghampton, N.Y.*

1,036. **Growing Cinerarias.** I have nice plants, but they die during the summer from heat. Can I do anything to help them?—A. L. H., *Iola, Kans.*

1,037. **Wild Everhearing Raspberry.** It has thick, dark green foliage, stock growth, green canes covered with brown spines, fruit is large, firm and fine. On old and young wood it fruits from June until late fall. Should this not he a valuable sort?—G. M. A., *Boulder, Colorado.*

1,038. **Apple Tree Borers.** My three year old trees are injured badly. What can I do to destroy them? Would cutting the trees down and re-grafting do it?

1,039. **Pruning and Grafting.** (*a*) How ought young Apple trees of different varieties he trimmed? (*b*) I desire directions for grafting the various fruits including Cherry, Plum, etc.—BEGINNER, *Worth Co., Mo.*

1,040. **India Rubber Plant Cuttings.** How can these be rooted?—W. N., *Johnstown, Pa.*

1,041. **Top Crops in one Season.** I would like some information on this matter in connection with the heading on page thirty-one.—C. L. H., *Worcester Co., Mass.*

1,042. **Cutting Cions for Grafting.** When is the proper time to do this for Apple, Pear, Plum, and Cherry?—J. W. RANGE, *Spokane Co., W. T.*

1,043. **Starting a Market Garden.** We have a good market, I am a beginner and wish to know which books I should read which would be the best line of business to follow?—J. A. E., *West Bay City, Mich.*

1,044. **Marketing Celery and Cauliflower.** How should these vegetables be prepared for market?—J.A.C.

REPLIES TO INQUIRIES.

890. **Vineyard Trellis.** I take from a wire manufacturer's circular the following table: One pound of wire catalogued as No. 12 reaches 34 feet; one pound of No. 11 wire reaches 26 feet; one pound of No. 10 wire reaches 20 feet; one pound of No. 9 wire reaches 17 feet. According to this table it would require 1300 pounds of No. 12 wire to trellis four acres of vineyard with two straight rows planted eight feet apart, or twice that much of No. 9 wire. If rows are planted 10 feet apart it would of course take ¼ less wire. About the only wire used nowadays in vineyards in this section is No. 9 steel wire, which we buy of local dealers at $50 per ton. Our general practice here is to put posts 24 or 30 feet. Used the best for end posts; medium sized ones every second or third post, and lighter ones between. However, if lighter wire is used, the supports should be correspondingly closer together. I have not had experience enough to say which treatment would be best to preserve posts from rot, but from general principles I judge that if the posts are thoroughly seasoned and are dry, either method mentioned would be good. But if not thoroughly seasoned and dry I should say that charring would still be good. Petroleum is useless and coal tar worse than useless. The charring should be carefully done so as not to unnecessarily weaken the posts.—L. ROESCH, *Chautauqua Co., N. Y.*

908. **Best Blackberry.** The Kittatinny will produce the most satisfactory results.—C. E. P.

1001. **Sawdust Mulch.** My experience with sawdust as a mulch has been so unsatisfactory that I would not advise its use. Not only does it harbor, but it appears to be the cause of many fungoid ailments which eventually destroy the plants.—C. E. P.

970. **Black Lice on Chrysanthemums.** Yes, they will injure the plants if allowed to increase. You can readily destroy them by an application of Pyrethrum. Henshall's Insect Death Powder, applied with a powder bellows or gun will also banish them.—C. E. P.

882. **The Mikado and Beefsteak Tomatoes.** These are not the earliest. The former is good and reliable for medium to late. The Dwarf Champion has good points for early. "Improved Acme," though not entirely smooth, I make most money from as first early.—A. W. N.

949. **Evaporated Fruit Keeping.** I saved some evaporated Apples two years ago for our own use, that are apparently as good now as when dried. They are kept in a dry place in a tight barrel with the head in, so that no flies can get to them.—A. W. N.

977. **Transplanting Celery.** I prefer plants that have been transplanted once.

973. **Liquid Manure.** See answer to 972. Or dissolve two ounces of Peruvian Guano in one gallon of water and apply twice a week. This is the best article for general use as the guano can be easily procured in large or small quantities at any seed store.—C. E. P.

988. **Book on Flower Growing.** Henderson's Hand Book of Plants will give you a great deal of valuable information concerning the treatment of plants both inside and in the open air. Solly's Book of Plants, contains many excellent plans for beds and fancy flower gardens. Volumes 1, 2 and 3 of POPULAR GARDENING also contain an immense quantity of useful information on the subjects that you refer to.—C. E. P.

979. **Lily of the Valley Not Blooming.** Your plants have no doubt become exhausted and require another season's growth to enable them to become properly developed for blooming. By all means give them a good dressing of well decayed stable manure this fall. Imported pips will prove more satisfactory if a crop of flowers is desired the coming season.—C. E. P.

980. **White Grubs Eating Strawberries.** I know of no remedy except to plant them in another place.—C. E. P.

982. **Rust on Raspberries.** I would cut out and burn all stalks that show indications of rust as soon as noticed.

987. **Pear Blight or Rust.** I can suggest no remedy. The Onondaga Pear is perfectly worthless in this vicinity on account of this blight or rust, so affecting the fruit as to render it worthless.—C. E. P.

987. **Non-Blooming Wistaria.** It is growing too rapidly. After it becomes a few years older and the rapid growth ceases it will bloom freely enough.—C. E. P.

993. **Hemerocalis Varieties.** You should have received three distinct varieties.—C. E. P.

997. **Lilium Longiflorum Hardy.** Yes, if given a good mulching of leaves, or well covered with Evergreen branches.—C. E. P.

971. **Thin Cloth Bags for Grapes.** I have never used them, and know of no one who has experimented with them, so would advise their use on a small scale only. I think they will allow water to escape without an outlet being provided.

972. **Soot on Chrysanthemums.** I don't understand this query but presume that it refers to its use in the liquid form. For this purpose dissolve two or three pounds of soot in a gallon of water, and apply twice a week.—C. E. P.

991. **Oxalis Without Bulbs.** Yes there are Oxalis that do not have bulbs. The genus embraces a great number of species differing very widely in their manner and habit of growth.

1002. **Pineapple Salvia.** Salvia rutilians is the plant referred to. It is a plant of free, compact growth, attaining a height of from two to three feet. The foliage possesses a peculiar yet delightful fragrance that renders it agreeable to most persons. The magenta colored flowers are produced in neat spikes during the late autumn months. Unfortunately they are produced so late in the season that frost soon destroys them. When well grown it forms a pretty plant for the mixed border, or for large collections, but for most persons it has but little to recommend it unless grown for the peculiar fragrance of its foliage. It is commonly called the Apple-scented Salvia.—C. E. P.

992. **Planting Lilies.** The best time for planting Lilies is during their period of rest, but late autumn plantings should be avoided. Lilium Candidum should be removed in autumn, L. Excelsum, Martagon and its varieties in September. All the other species and varieties can be planted in September.—C. E. P.

989. **Propagating Plants.** All the plants referred to can be readily increased by cuttings of the half ripened wood. The wood is in a proper condition for rooting when the cutting breaks or snaps off clean instead of bending.—C. E. P.

975. **Japan Iris.** Iris Kœmpferii and its numerous varieties require a deep, well enriched soil and a sunny situation. They can be readily increased by a careful division of the older plants, or by seeds, which if sown early, will produce plants that will flower the second year. They are really grand hardy plants and worthy of a place in every garden, as they do not flower until midsummer. The flowers are both single and double, and present the greatest variety of color from pure white to dark purple, with all the intermediate shades and markings. A protection of Evergreen branches is of decided benefit to them during the winter months.—C. E. P.

983. **Lettuce Rotting.** During the winter season Lettuce should be very carefully watered. The best time for watering is early in the morning of a bright sunny day, and if at all possible give a little air. Water slightly warmed is preferable.—C. E. P.

986. **Blight on Le Conte.** I have never heard of a case of this Pear being affected with blight when grown on its own roots.—C. E. P.

978. **Pear Blight or Rust.** The mixture of sulphate of copper and lime, commonly known as "the bordeau mixture," would undoubtedly prevent this blight or rust if thoroughly sprayed on your trees at the first appearance of rust.

980. **White Grubs Eating Strawberries.** The best way to get rid of these is to pull up your infested plants and burn them up. Then plow the ground and expose the remaining grubs to insectiverous birds, etc. Plant some other crop on the land that will require cultivating for a year or two. Bi-sulphide of carbon will undoubtedly kill the grubs, but it is a costly and sometimes dangerous drug to handle.—J. O. A.

985. **Evaporated Fruit.** It is too early to get at the coming evaporated crop. The Peaches are not boxed yet, and Apples are many of them at this writing yet on the trees.—C. W. IDELL.

969. **Black Currants.** These will thrive and bear well on any good soil. Lee's Black Prolific is one of the best varieties. They require no special treatment other than clean culture and occasional thinning out. Plant in spring or fall in rows seven feet apart and in the row four feet apart.—E. S. GOFF.

944. **Climbing Hydrangeas.** To cultivate these successfully, plant close to the trunks of large trees, and if at all possible, in a deep well enriched soil. While small, water thoroughly during hot dry weather, also mulch well and keep the base of the plant free from grass. They can be procured of most nurserymen.

991. **Oxalis without Bulbs.** Yes, lots of them; several ornamental species are only annual and and have no need of bulbs. Again the purple-leaved sorrel now so much used for bedding purposes multiplies itself from seeds and runners and not from an increase of bulbs.—W. F.

993. **Hemerocalis Varieties.** They are three distinct species. Be careful about *A. flava* and *A. graminea* as they look very much alike to a casual observer. Both have long narrow leaves and yellow flowers, but flava is about done blooming before graminea begins to blossom.—Wm. FALCONER.

983. **Lettuce Rotting.** An excess of water or excess of any other condition causes Lettuce to become subject to rot. The only remedy seems to be to control all conditions of moisture, temperature, ventilation, etc., so as to preserve perfect healthfulness. Lettuce likes moist soil, but sogginess should be rigidly avoided, and is worse than rather dry, especially in winter. A good rule is to water only when the surface of soil shows dryness, which may not be for weeks or months during Nov. Dec., and Jan. Although care should be exercised that the lower part of soil does not become dust dry from bottom heat, before the surface shows dryness. Excess of warmth without sufficient moisture, and excess of cold especially if allowed to freeze, so as to check growth and vigor, are probably the most prolific causes of this difficulty of the Lettuce grower.—D. N. LONG.

978. **Pear Blight or Rust.** The fruit was probably affected with a fungus allied to or identical with "Apple scab," which was very injurious to Pears in Ohio this year. For an excellent account of it see the Report U. S. Department of Agriculture, 1887, page 341.—C. M. W., *Ohio Experiment Station.*

970. **Black Lice Injurious to Chrysanthemums.** They can be destroyed by spraying with a decoction of Tobacco and soap. Do not use Kerosene Emulsion. There are several different brands of potash soap on the market that are good for this purpose, and directions for use are given with them.—J. O. A.

946. **Glass or Canvas for Hot-beds.** I raise a good many thousand Cabbage, Tomato, Sweet Potato and flowering plants, and have only two glass sash, all the others are covered with muslin. I commence sowing seed in February and continue sowing at intervals until warm enough to sow in the open ground in the spring. To have nice stocky plants under muslin the soil should be within three inches of the cloth. Sow in drills three inches apart and transplant into other frames when the fourth leaf forms, setting the plants in rows three inches apart and two inches apart in the rows; when become crowded transplant again into a cold frame, setting the plants three inches apart each way, and harden as soon as the weather will admit. The muslin on the first frames is oiled with linseed oil, and the later ones as it gets warmer are covered with cloth unoiled. Last year I grew several thousand heads of Lettuce under muslin covered sash, and I never saw finer Lettuce grown under glass.—A. L. H., *Iola, Kas.*

1037. **Everbearing Raspberry.** While I could not undertake to name the variety from the given data, yet I may say that the description reminds me of Belle d'Fontenay, Henrietta, etc. It is probably a seedling of some of our native species which are widely disseminated. Possibly it may be a valuable addition to our class of autumn or so-called Everbearing varieties—if fruits of this class out of season may be called valuable; I should set more value on the summer crop. The foliage seems good, and it may be especially valuable in Colorado. It is not uncommon for many of our varieties, both black and red, to show fruit on canes of the present season's growth, but the profit of a fall crop of this fruit is questionable.—E. WILLIAMS.

805. **Removal of Large Limbs.** (*a*) No special rule can be laid down as to safety in this matter, except that one should never cut off a larger branch than is absolutely necessary. (*b*) Just before growth begins in spring. (*c*) White lead thickly applied to the cut surface is excellent, as also is melted grafting wax and shellac varnish. —REMLE, *Newport Co., R. I.*

1003. **Rabbits Injuring Trees.** Metal protectors, wire screen and tarred roofing paper or felt have all proven effectual. It is also reliably recommended to smear the tree with bloody meat once a week or so during the winter. A whitewash, in which, to a peck of lime, one-half pound of copperas is dissolved, thickly applied, is cheap and said to be effective.

791. **Perennial Phloxes Dying.** The question is hardly explicit enough to admit of advice being given, as a number of causes might occasion death; having standing water about the roots during winter, or not being taken up and divided every three or four years, thus becoming weakened, or some underground insect may be at work. The remedy for these is obvious, together with deeply digging and manuring the plants in spring.—REMLE.

992. **Culture of Day-Lilies.** This is extremely simple if their requirements of shade and moisture are supplied, and in no way can they better be grown than by planting under trees along some water course. Propagating is simply done by dividing the roots.

795. **Asparagus Turning Green.** Perhaps the only thing to do would be to keep it in complete darkness.

802. **Cultivating Native Cherries.** I would not suppose that in the cultivation of this Cherry there would be any great profit unless grown for the timber, which affords a fair substitute for Mahogany. The fruit is also in some demand for flavoring brandy. There would seem to be little hope of increasing the quality of fruit, and a danger to be feared from them is black knot, in which they are very prolific, to the damage of Plum and other Cherry trees.—REMLE.

816. **Water in Pipes in Summer.** I have never perceived any ill effects from allowing water to stand in the heating pipes during the summer.—E. E. S., *Niagara Co., N. Y.*

810. **Greenhouse Buildings.** In an early issue directions will be given for the erection of greenhouses suitable for various purposes.

856. **Raising Cauliflower Seed.** All of the most reliable Cauliflower seed is imported, no part of our climate as yet being found suited to growing it. Whether seed would mature successfully in Colorado could only be learned by experiment.—E. S.

879. **Fertilizers for Shade Trees.** Bone dust, guano or other good commercial manure applied broadcast over as large a surface as the tree top covers would certainly be beneficial. The same manures could be applied in liquid form, or stable manure water can be prepared by using a bushel of horse or cow manure to a barrel of water, and which can be refilled several times before the manure is exhausted. For the same quantity of water four pounds of commercial fertilizers would be sufficient.—REMLE.

899. **Hop Worm Troubling.** The question is so indefinite as to not admit of a satisfactory answer. There are a number of worms or caterpillars which injure the Hop either on the vine or at the root, though the worst of the latter (*Hepialus humuli*) is but little known in this country as yet. The one meant may be the caterpillar of the semicolon butterfly (*Vanessa interrogationisis*), which sometimes abound to such extent as to destroy the Hop crop. So far as known the only remedy is, when the insects have become chrysalids and hang downwards from the leaves, to cut off the vines, save the ripe Hops and carefully burn the rest. There is also a maggot parasite (*Pteromalus Vanessæ*) which destroys great numbers of these worms. These caterpillars usually do not appear on the Hop vine until August, and are of a brownish color, variegated with yellow, or vice versa, having a yellow line on each side; the head is rust-red, with two spines. The chrysalis is ashen brown.—REMLE.

884. **Green Roses.** You can do nothing with them, and if you do not care for them it is best to destroy all. It is the variety known as viridiflora or viridiscens, which produces green flowers and no beauty whatever, and is only grown as a curiosity.—CHAS. E. PARNELL.

1002. **Pineapple Salvia, or Salvia Rutilans.** This is a Sage in the way of the well known S. cocinea, the flowers being crimson and produced in long slender spikes. It is a continuous bloomer as long as warm weather are maintained by others, which greatly prolongs the beauty of the plant. The foliage has a scent somewhat like that of the Pineapple, and it is a desirable winter flowering greenhouse plant.

1013. **Maiden-hair Fronds Fading.** Too much heat and moisture were given while growing so they are too tender to last well when cut. It is probable, too, that they have had too much shade and not enough air. From May onwards they should have no artificial heat, but plenty of air and shade from hot sun. The mature fronds then, while not so large, will keep good for days, if, after cutting, they are laid in water for a few hours. From October on the plants ought to have a steady temperature of about 50°, for then they will remain green all winter.—REMLE.

991. **Oxalis Without Bulbs.** You probably have one of the annual varietics. The genus Oxalis includes annuals, perennials, and greenhouse shrubs. Some have tuberous roots, others are bulbs; many are tender and others perfectly hardy.—M. B. FAXON, *Suffolk Co., Mass.*

992. **Planting Lilies.** Spring is the best time to plant Lilies, as by so doing there is hardly any danger from their being winter killed. If the bulbs will not keep till spring they must of course be planted in the fall. All the Lancifoliums, the Longiflorum, and the Auratum will keep till spring in good condition.—M. B. FAXON, *Suffolk Co., Mass.*

997. **Lilium Longiflorum Hardy.** This Lily is perfectly hardy with us —M. B. FAXON.

984. **Caring for Banana and Pineapple Plants.** Given heat and moisture the dwarf species of Banana (*Musa Cavendishii*) may be easily grown. They may either be planted in a pit, supplied with bottom heat, or in pots, and plunged either with or without bottom heat. A house for Bananas should not be less than 14 to 16 feet high with a night temperature of from 65° to 70°. The soil should be turfy loam, three parts, and old hot-bed manure, one part, with some sand and crushed charcoal to make it porous. If grown in pots they may be ranged along the sides of an ordinary warm greenhouse devoted to foliage or flowering stove plants. As a plant reaches its full size the flowers are thrust out from the center and the first open flowers set, and the fruit begins to swell rapidly. When a sufficient number to form a good cluster of fruit has set the remainder may be cut off. During the time the fruit is swelling frequent waterings with liquid manure should be given. When the fruits are approaching maturity the plants should be kept somewhat drier at the root than hitherto, and water should not be allowed to touch them. The plant throws out offsets or suckers from the bottom, which may be potted singly, saving all roots possible, kept in a warm house, with plenty of moisture, they will fruit in from twelve to eighteen months.—REMLE.

994. **Lapageria Growing.** The White (*L. alba*) and the Red (*L.rosea*) are the best varieties being usually grown against the wall of a greenhouse. The best soil is turfy loam and leafmould with very free drainage. Lapageria alba being rather more difficult to manage, may be given some extra care.

1006. **Camphor Trees Growing.** There are two trees from which the Gum Camphor of commerce is obtained. Of the Sumatran Camphor tree (*Dryblalanops aromatica*) a native of Borneo and Summatra, I can give no information, and have not heard of their ever being grown in this country. The common Camphor tree (*Cinnamomum Camphora*) which belongs to the family of the Laurels and is a native of China and Japan, will grow in the Lower Gulf States and can be raised from seed or cuttings, under a bell glass. plants can be had of Reasoner Bros , Manallan, Florida.—REMLE.

989. **Propagating Plants.** No special difficulty should occur where the last named are rooted without trouble. Carnation cuttings might be given more air together with less top heat. Scented Geraniums usually root as easily as the common ones. The earlier that Heliotrope cuttings are put in after January the better for rooting easily.—E. E. SUMMEY, *Niagara Co., N.Y*

New York Market Quotations, Showing Tendencies.

	Week ending Nov. 17.	Week ending Nov. 5.
Apples—King, per bbl,.....	$1 75@2 75	$2 00@2 25
Spitzenburg, per bbl,.....	2 00@2 25	
Greening, choice bbl,.....	1 75@2 00	1 50@1 87
Baldwin, choice bbl,.....	1 37@1 87	1 50@1 87
Twenty Ounce, per bbl,.....		2 00@2 25
Gravenstein, per bbl,.....	2 00@3 00	
Cranberries—Cape Cod, per bbl,.	6 75@7 25	7 50@8 00
Grapes—Delaware per bbl,.....	5@ 7	4@ 9
Concord, per lb,.....	2@ 3	2@ 4
Niagara, per lb,.....	3@ 7	4@ 6
Quinces—per bbl,.....	50@1 50	1 25@1 50
Apples—evaporated, 1888 prime.	6@ 6½	
Evaporated 1886, common,....	5½@ 5¾	
Evaporated 1887, per lb,.....	5@ 6½	
Chopped, per lb,.....	2@ 2½	
Cores and skins,.....	1½@—	
Peaches—Del., evap'd, peeled,	18@ 20	
Del., evap'd, unpeeled,.....	7@ 9	
Southern, peeled,.....	8@ 10	
Southern, unpeeled, 1888,....	3½@—	
Raspberries—evap'd 1888, lb,...	—@ 22	
Sun-dried 1888, lb,.....	—@ 20	
Blackberries, evaporated 1888,.	5@ 6	5¾
Potatoes—State Burbank, 180 lb.	75@1 25	1 25@1 62
State Rose, per 180 lb,.....	1 25@1 50	
Sweet Jersey,.....	2 00@2 50	1 50@2 00
Sweet Virginia,.....	1 25@1 75	1 37@1 50
Cabbage, Long Island, per 100,..	2 00@3 00	2 00@3 00
Onions—State yellow, per bbl,..	1 75@2 25	1 50@—
Eastern, white per bbl,.....	2 75@3 25	
Celery, per doz. bunches,.....	75	50@ 75
Squash, Hubbard, per bbl,.....	1 00@1 25	
Turnips, Russia, per bbl,.....	50@ 75	62½@ 75

RECEIPTS AT NEW YORK.

	Week ending Nov. 17.	Cor. days 87.
Dried fruits, pkgs,.....	21 831	11 309
Apples, pkgs,.....	74 335	84 094
Potatoes, bbls,.....	75 668	143 162
Onions, pkgs,..	5 376	8 523

School Yard Horticulture.

WARREN MANNING, READING, MASS.

With a view to permanently satisfactory results, a plan should, among the first things, be devised for the school lot Varying as school lots do in soil, surroundings, etc., care must be used in selecting the trees and shrubs, with reference to their size at maturity, the soil, and situation. Were a competent person to be employed to attend to these points, the expense would be more than offset by the more satisfactory results and the economy that would come from having system in the work.

Often the teacher alone will be able to devise and carry out the improvements. Even if there is town aid, much will depend on the teachers for successfully doing the work proposed, especially if the scholars are to have a personal interest in it, as they certainly should have. By all means, lead the children to be governed by the pride and respect they may have for the results of their own work, properly directed.

Arbor Day is established in many of our States as a public holiday, and in this day, above all others, the children should take part, that they may more fully appreciate tree planting.

Among the things to be aimed at should be ample shade, fresh, green grass, and flowers in abundance, and good-sized play spaces. We should employ those kinds of flowering plants that will be of greatest value in the education of the children, and among such we know of few that are more desirable than the native species of our woods and clearings.

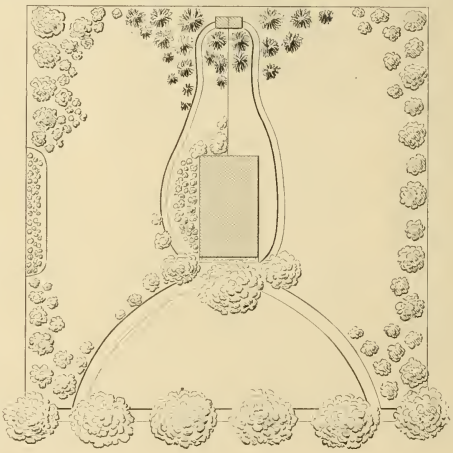
The grounds must not be so very nice that a good deal of careless play would do them conspicuous injury. Plants and trees should not be employed that will require the care of a skilled gardener, while weedy plants must also be avoided.

In the matter of trees, it will usually take but a few of our larger growing kinds like the Elm, Maple, Pine, and Spruce to supply the need in this direction. The deciduous trees may be used along the roadsides, but to plant in the small school yard, few, if any, would be desirable. There are many small growing trees and shrubs that are just the thing for placing throughout the grounds in masses. With a good selection of such shrubs, a few vigorous, hardy herbaceous plants among them, and a flower bed if desired for the finer hardy perennials and annuals, a sufficient variety should be secured. If as complete a representation of the native flora would be secured as practicable, it would be of great help in the study of botany. Each plant and tree in the school culture should be carefully labelled not only with the common name but with the botanical one as well, and the natural order should be given.

Whenever a plan is made, regard should be had for the present features of the ground, and for surrounding scenery, and the planting should be made to harmonize with it as far as practicable; a rough tree may form the center of group; the trunk of a noble shade tree may be brought out in relief against a backing of smaller trees and shrubs. Climbers will make a rude stone wall or ledge a mass of foliage, or a plain board fence can be covered with their graceful wreaths; and even the bare walls of the school house can be made ornamental with a dress of vines.

The most available side of the yard should be reserved for a play ground. A few trees could be placed on the outskirts in groups or irregular lines, connecting with a broken belt of trees and shrubs at the corner and along the back; screening (with evergreens) the outhouses from view.

The other side of the grounds should be devoted more to the ornamental. The groups, arranged with the larger growing kinds in the center, should be so disposed as to hide unpleasant views, with openings where the outlook is agreeable. Arrange the shrubs along the wall among and in front of the trees, with the herbaceous plants among them. The greatest care should be taken, however, not to plant too close; a well-grown tree is much better than many, crowded. The smaller growing trees will not require much room, and low growing shrubs can be filled in about them; the outline should be irregular, and future planting should be rather at the projections of the grounds than in the recesses formed by previous planting.



EMBELLISHING THE SCHOOL YARD BY TREE AND FLOWER PLANTING.

Allow grass to grow where it will, but do not try to have an absolutely level lawn as a few irregularities would make it more in keeping with the nature of the place; it should, however, be kept well cut and all parts scrupulously neat. Walks with cut edges would be impracticable where there are so many thoughtless, hurrying feet, but there should be good gravel paths on the lines of greatest travel.

These suggestions are made more especially with reference to the small school yards, scattered all over the country, but they will also apply with equal force to more extensive grounds.

The accompanying plan may be suggestive, for no plan would fit every lot.

The trees at the street should rarely be planted less than 30 feet apart, and such trees as the White Elm, in favorable soil, 50 feet. But for an immediate effect, rapid growing kinds can be placed between, to be removed when they begin to crowd the permanent trees.

At the back are shown some evergreen trees for a center, and lower growing kinds in the foreground to make a pleasing group and complete screen; stronger growing kinds on the boys' side, the more choice ones on the more ornamental side.

The groups to the outside of the ornamental ground could embrace a larger variety, with trees, shrubs, and occasional clumps of strong growing herbaceous plants. The flower bed should be away from the roots of the larger trees, and may be filled with the finer herbaceous perennials, tender plants, and annuals.

The large tree, as well as a few smaller ones to protect the front of the building, without excluding light and air, is not out of place, and a collection of low growing shrubs, directly under the windows on the ornamental side, would be very pleasing.

General Hints on Window Plant Culture.

DANIEL K. HERR, LANCASTER CO., PA.

The first requisite to success is to cherish a love for plants, so their needs are met with pleasure. Appearance as to fine shelves, pots, and other fixtures should be secondary, beauty of fine healthy plants first.

As plants in living rooms do not have the moist air and dew of summer nights, let the pots stand on a layer of Spagnum or cotton or even a good thickness of papers, to retain the water from the necessary spraying that by its evaporation, moisture is given to the air among the plants. The spraying should be done every morning or two. Use the rubber bulb sprayer, or have a tin can made to hold a quart or two, and with very small holes in the rose. Plants of vigorous growth are not soon overwatered, but slow growers, or those newly planted must be kept merely moist, or the soil will sour.

The soil for potting should be put in preparation twelve months before it is needed. Take good friable garden mold, or sod, and to each bushel add one half bushel of best stable manure, and one quarter bushel river sand. Work this over two or three times during the year, then pulverize it fine for use. If the ingredients are not convenient at hand, as is often the case with window gardeners in town, then buy potting soil from your nearest florist.

The pots should be heavy, or else covered outside with paint, or better with some cloth or paper, to keep the roots in moistures that distribute themselves around the inner surface of the pots. For this reason, wooden pots or boxes are best of all. Stir the soil frequently over the surface, or mulch with Spagnum, or other moss, pulverized, and if plants show any loss of vigor, mix with the mulch a tablespoonful or two of fine bone meal according to size of plant. This will save repotting for a while, but the latter must not be deferred when the pots become filled with roots.

The hardiest plants should be set nearest the glass, as the air is somewhat cooler; all must have plenty of room and light; rather than crowd, some may be wintered in a cool room, watered sparingly to keep almost dormant. Low growing plants that will do in partial shade may go under the taller to fill up and help to hide the mulch on the shelf or stand.

Ventilation should be admitted to window plants from above in a thin stream, or by some way that no cold blast will strike the plants, as they will "catch cold" quicker than we do, and every ill befall them.

If aphis, or plant lice, appear, fight them with persistence until thoroughly cleared. Use a stiff feather dipped in insect powder, and brush them off daily, or in a suitable place wash them off with soapy water.

When all is provided and fixed, to give the plants congenial conditions to thrive, and greet us with bloom and fragrance, and beauty of leaf, our care must not cease, they must be given a weekly cleaning, and scrupulous care to meet all needs.

THE COMPLETE GARDEN.*

XXI.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 23.

THE PLUM.

In its better varieties, the Plum is not excelled for deliciousness by any other fruit. The tree is hardier than that of the Peach or Cherry, and will grow freely on a greater variety of soil than any other fruit tree. Comparatively it is a dwarf grower, which suits it for cultivation in small grounds, while its handsome appearance at all times, but especially when in flower, commends it for ornament as well as for utility. With the slightest attention to protection from insects it is a sure cropper, and lives and produces fruit to a good old age.

Well-shaped Quince Tree.

Soil, Cultivation, etc. While this tree no doubt prefers a rich clay loam, having an admixture of sand in its composition, it will succeed in almost any soil except that which is low and wet. Good cultivation is essential to the best results with Plums; by attending to this point young trees will usually bear freely in the fourth year from planting. The bearing stage arrived at, a liberal supply of manure should be worked into the soil, and many good growers invariably apply a couple quarts of salt over the surface about each tree, at this time. The salt serves the double purpose of promoting health and vigor to the trees and of rebutting some kinds of insects. The above fertilizer should be applied and the land be worked over at about leafing time in the spring, after which, for six weeks, the soil should be kept thoroughly tilled, not permitting a weed to exist. A second turning over of the soil should take place in early midsummer, working the soil slightly towards the trees, and, after pulverizing the surface thoroughly, a mulch of coarse manure or half-rotted straw should be spread under each tree as wide as the branches extend. No further treatment should then be given until the following spring, when the above course should be repeated, and this every year. Without heavy manuring Plum culture will not succeed. Bone manures and ashes, besides the ones named above, suit this tree very well. No pruning is needed for the Plum beyond cutting out any superfluous branches and heading back rampant growing ones, to induce shapliness of form.

A Selection of Varieties. Yellow and Green: Bauvey's Green Gage (Reine Claude of some), Coe's Golden Drop, McLaughlin, Washington. Yellow Egg. Purple or Red: Bradshaw, Fellemberg (Italian or French Prune), Lombard, Pond's Seedling or Font Dill, Shropshire Damson, Quackenboss.

THE QUINCE.

This fruit deserves better treatment at the hands of growers than it usually receives. Aside from being much esteemed for jelly and preserve making and for flavoring other cooked fruits, the tree is hardly excelled among ornamental growers for beauty both in its blooming and in its fruiting stages. There are but few varieties of the Quince; those known as the Apple or Orange and the Angers being the most commonly grown. Rea or Rea's Mammoth is a superior new variety.

Soil and Cultivation. The Quince succeeds best in a deep, rich, loamy soil. It is a mistake to suppose, as many people would appear to do, that it requires no manuring, for no tree responds more quickly than this to liberal treatment both in this respect and that of good cultivation. Not only should the trees receive a top dressing of manure every autumn, but the surface of the earth about them should be kept tilled during the early part of each season.

Pruning. Naturally the Quince tree is rather a crooked, irregular grower, but with a little pains bestowed on training, it may be had to be a regular and handsome little tree. The best form, ordinarily, to train it is to have a trunk two feet, or a little more, high, and proceding from this a rounded top. After planting the young tree, attention must be given to securing a vigorous, erect stem which may be done by keeping it tied to a stake. To form the head side branches should be allowed to develop above the height desired for the trunk, having them so distributed as to provide a well balanced, open, symmetrical head. The Quince tree bears its fruit on small twiggy shoots produced on wood two or more years old. The fruit appears singly at the end of spurs several inches long. Such fruit spurs should, after bearing, be cut back somewhat, to cause new spurs at the same point.

THE RASPBERRY.

This delicious small fruit directly succeeds the Strawberry, and like it commands the attention of those who have scarcely room for fruit trees. The sub-acid fruit is hardly surpassed for the dessert and is held in the highest esteem for making preserves, jellies, tarts and the like, while for evaporating the black cap varieties stand unexcelled. Raspberries possess one advantage over Strawberries for growing in small places, namely: that they seem to be benefited by slight shade, while the latter are not.

The Raspberries generally in cultivation embrace three distinct species with their hybrids and varieties. The species are represented by the large fruited kinds of foreign blood, with red and yellow berries (*Rubus Idæs*); the native Red Raspberry, (*R. strigosus*) with its improved varieties, and the native Black Cap Raspberry (*R. occidentalis*) also known as Thimble-berry, with improvements. The two former kinds may be classed as the Upright Growers, the latter as the Caps.

Soil and Cultivation. The Raspberry will thrive in any soil that is rich and deep, but it naturally prefers light to clay land. Previous to planting, the soil should be deeply spaded or plowed, trenching the subsoil in the former case, subplowing it in the latter, and be at the same time well manured. The best time for planting is early in the spring. A good distance apart to set the plants is in rows four or five feet apart, the plants three or four feet in the rows. This admits of cultivating with the horse both ways in areas of fair size, while in the smaller plats it aids in securing clean culture, which is important, and in confining the red kinds (sending up, as they do, suckers from the roots) to a small compass. The soil between plants should be kept deeply stirred during the first summer and somewhat less so later, but at all times the aim should be to allow no weeds to grow. Still the cultivation should cease by August of each year, in order that late plant growth shall not be promoted. If weeds appear after the cultivation period they should be cut with a sharp hoe near the surface or else pulled up by hand. A heavy mulch of swamp hay or old straw applied after the spring cultivation may take the place of summer cultivation and serves the excellent purpose of keeping the ground moist.

Raspberry Plant, Before and After Covering.

Pruning. Young Raspberry plants should be set with the germinal bud about two inches below the surface, then after covering them over, cut off the old wood at two inches above the surface. No further pruning will be needed the first year. In the second year and later the upright growing class should have the young bearing canes cut back in the spring to one-half their length on an average. After the canes have had a crop of fruit they are of no further use and should, for neat culture in the garden and where staking is done, be pruned away after the crop is gathered. In field culture it is now customary to allow the old canes to remain until the following spring in order that they may support the young canes somewhat. The plants should, in the garden especially, be restricted to hills and all suckers beyond four or five, be kept down. The cap class does not sucker from the roots as the young growth proceeds directly from the old plant. In pruning these, the canes of which bend toward the earth, cut the canes about midway of the bend.

Protection. Nearly all kinds of Raspberry plants succeed better for being protected during the winter. The preferable way of doing this is shown in our engraving. First a spadeful of earth (A) is thrown close against one side of the plant over which to bend the canes, and then these are covered entirely over with earth (B) to several inches deep.

A Selection of Varieties. Upright Growers: Clarke, Fontenay (good fall bearer if the canes are cut to ground in the spring) Herstine, Hudson River Antwerp, Orange, (Brinckle's), Cuthbert, Hansell, Marlboro, Reliance, Turner (very hardy). The Cap Class: Gregg, Mammoth Cluster, Ohio, Shaffer's Colossal, Souhegan or Tyler.

THE STRAWBERRY.

In rank of popularity the Strawberry stands at the head of all the fruits known as small fruits. Were it not that the Apple has the advantage of a season extending almost the year through, the Strawberry would undoubtedly crowd it hard for first place over all fruits in the esteem of consumers. The advantages that the Strawberry possesses as a popular fruit are: first, that it can be grown perfectly in quarters so small that the planting of tree fruits could not be entertained. Second, it comes into full bearing the second year from planting; third, its earliness in the season; fourth, its ease of cultivation and productiveness; lastly its beauty and lusciousness. The absence of anything short of the universal cultivating of the Strawberry by land holders can only be accounted for on the score of neglect to set out the plants.

Soil and Cultivation. Any soil that is suited to growing ordinary garden or field crops will answer for the Strawberry. Still we should bear in mind that this fruit is composed of a very large part of water and the plants are rank feeders; hence, to secure the best results, the soil should, previous to planting, not only be deeply stirred by trenching or subsoiling to promote the retention of moisture to it, but it should be well enriched. Then, with thoroughly clean surface culture, it is one of the easiest feats of horticulture to raise an abundance of most superior fruit.

Two methods of cultivating the Strawberry prevail, namely, the hill method and the matted row plan. For general culture whether in the garden or in the field, we

prefer the latter system as being productive of the best results with the least labor. In the garden, beds of three rows side by side at 15 inches apart, and the plants the same distance apart in the rows may be formed across the plot to be occupied. Then one row should be skipped, bringing a new bed of three rows thirty inches from the first, and so on. The spaces between the beds will serve as walks, by means of which the soil can be kept clear and the fruit be gathered without treading on the mat of plants. In field culture the method does not vary materially from that described, excepting that the rows are planted a uniform distance apart, usually three feet, to admit of horse culture between them and the plants set at one foot apart in the row.

The simple idea of the matted system is to allow the plants to run and propagate freely, occupying the bed or row with a solid mass of fruiting plants. The only attention needed in the way of cutting the runners, which always appear freely, is to cut the first set that comes out on plants put out the spring previous, so that the young plants may become the better established for sustaining runners, and then cutting these as they extend too far into the walks or between the rows. By this system beds had best be newly set on a fresh spot every second season, for if allowed to stand long the plants become injuriously crowded and weeds are liable to get a strong foothold.

Hill culture is suited to the case of those persons who do not object to be at the pains of cutting away, all through the season, every runner that appears on the plants. When this is done the plants, in good soil, form large, handsome stools that present a very fine appearance, and the fruit is large and highly flavored. But the gross product to a certain area is usually less than by the matted system and the work considerably more. The planting for the hill system should be done in beds, as recommended for the matted method, except that the walk between the beds might be six inches narrower. Whatever system of culture is observed it is important that the surface of the soil between the plants be kept tilled to entirely prevent the presence of weeds.

Protection and Mulching. In all localities where the winters are severe, Strawberry plants should be slightly covered with coarse manure, marsh hay, leaves or straw, at the approach of each winter. This covering should not be applied until after the ground is frozen, usually about December first, or a little earlier. The covering must also not be thick. Many errors are made by covering Strawberries both too early and too heavy. The cover must be drawn from the crowns of the plants early in the spring, but here it may remain for keeping the fruit from soiling until after the current season's crop is gathered. Some, who like to be at nice pains about a fruiting mulch, remove the winter covering entirely, replacing it just before fruiting time with a coat of cut hay or straw, or grass mowings from the lawn. Besides keeping the fruit clean the mulch serves to keep the ground cool and prevents it from baking.

Selection of Varieties. Of the multitude of varieties that are offered in the catalogues the following list embraces an excellent selection of tested sorts: Crescent (P), Cumberland, Jersey Queen (P), Triomphe de Gand, Bubach (No 5) (P), Sharpless, Wilson and Charles Downing.

Of the above kinds, those followed by the letter (P) have not perfect flowers, being destitute of Stamens, and are termed pistillate. All the others have perfect flowers. To supply the defect of such or any pistillate sorts, it is only necessary that to every four rows of these there be planted one row of any kind that has perfect flowers. Usually the pistillate sorts are splendid bearers, well worthy of this special attention.

Peach Culture in Western New York.

We have had three successive good crops of Peaches in Western New York, and as a result much fresh interest is awakened on the subject of Peach tree planting. Land tillers are always ready to try experiments that promise better returns, and in the revival of Peach culture many of them are now looking hopefully forward to good paying results.

Commenting upon the essentials to successful Peach culture, a writer to the Rural Home presents an excellent article from which we make the following extracts:

Those who embark in Peach culture and will choose favorable localities and soil, prepare the soil well; select good trees of profitable varieties, plant them as they should be planted, and keep a sharp lookout for the grubs in the roots; pick, pack, and market the fruit in accordance with true business maxims, you will be likely to succeed, while those who pursue the opposite course will meet with doubtful success.

Don't try to grow all the Peaches that consumers may demand. You will be more likely to succeed if you start with four or five acres than if you exceed that number. You have got to be educated in the business partly by experience.

Do not plant Peach trees in a locality where the mercury falls, nearly every year, below 16° below zero. The probability is that so low a degree will kill the fruit-buds, although under some favorable conditions buds have survived 20°. In the same neighborhood the mercury will frequently fall from five to ten degrees lower in a valley than on a hill-top; hence, select elevated ground for Peaches. Northwest protection by a wood lot or a range of hills may save the crop in some seasons. In the absence of this an Evergreen belt is a great help.

Peaches need a dry soil, and generally succeed better on a sandy or gravelly loam than on a clay loam. Still we have seen splendid crops on underdrained clay loam. Quite frequently, in years past, Peach orchards on the light, sandy soil of Irondequoit, between Rochester and Lake Ontario have borne crops when those on heavier soils in other directions have borne no fruit.

For planting, choose good, vigorous trees, one year's growth of bud, and give preference to those having a healthy ancestry. Although the "yellows," the great scourge of the Peach growers of western New York and Michigan, is probably a contagious disease, propagated by living germs, those germs are more liable to take hold of trees with impaired constitutions than of sound ones. The stocks should, if possible, be propagated from pits of seedlings grown where the yellows have never prevailed, and the buds should be taken from bearing trees growing where the scourge had never been known. At any rate, we should insist upon sound ancestors.

As to varieties, you want but few, and those the best. You want two or three of the very early sorts, such as Waterloo, Alexander, Early Rivers; to be succeeded by a few Mountain Rose, or some other equally good sort. By this time Early Crawford will be ripe, and you want no other ripening at the same time. Then between that and Late Crawford you may work in a few Fosters and Stumps, perhaps, and Old Mixon Free. This latter will come in conflict with Late Crawford, but as it is a surer producer we would plant it. If your soil is certain to grow the Late Crawford well, we would advise you to plant pretty largely of that splendid variety, but if you have never tested it upon your soil you would run considerable risk in doing so; but we would advise taking some risk at any rate. Then to follow the last named there are Ward's Late, a white-fleshed, and Hill's Chili and Smock, yellow-fleshed.

To make sure of obtaining varieties true to name, we know of no better way than to contract, in writing, with some reputable nurseryman for the varieties you want. Should they fail to be what you paid for you could collect damages if the nurseryman was reliable. We have seen but a few large Peach orchards where there was not more or less of spurious, worthless, or nearly worthless, varieties growing.

Plant your trees in perfectly straight rows about a rod apart each way, requiring 160 trees to the acre. Carefully examine the roots of every tree, before planting, for the grub, and if found cut them out. Many would say, head back the top to three or four buds, so that it will branch near the ground, but we think we should prefer to have them branch as much as four feet from the ground, so that a horse might be able to pass under the branches in cultivating the trees, for don't you forget that the trees must be cultivated thoroughly.

If the trees are well-fed, hoed crops may be taken from between the trees for the first three years, but allow ample space around every tree for its roots to forage in, and suffer no worthless weeds to rob the trees of food. Bone-dust and potash are good special fertilizers and should be used freely.

To prevent grubs simply raise a mound of earth twelve to fifteen inches high around the stem of the tree. It would be likely to prevent the moth from laying her eggs in the roots. This course has long been recommended by writers on Peach growing.

Received at this Office.

CATALOGUES, ETC.—FIGURES INDICATE PAGES.

Cozad & Litson, La Cygne, Kans. Nursery, 10.
D. S. Myers & Son, Bridgeville, Del., Nursery, 34.
J. D. Kruschke, Piqua, O., Miami Strawberry, 4.
Wm. C. Beckert, Allegheny, Pa., Florist, 90.
Peter Henderson & Co., New York City, Florists, 46.
Parsons & Sons Co., Flushing, N. Y., Nursery, 100.
A. B. Cleveland Co., New York City, Bulbs, 4.
J. B. Wild & Bro., Sarcoxie, Mo., Nursery, 24.
T. S. Hubbard Co., Fredonia, N. Y., Grapes, 14.
Cleveland Nursery, Lakewood, O., Small Fruit, 12.
J. V. Cotta, Nursery, Illinois, Nursery, 8.
John Saul, Washington, D. C., No. 7, Bulbs, 38.
Wm. H. Smith, Philadelphia, Pa., Seeds, 16.
T. S. Ware, Tottenham, London, Eng., Bulbs, 100.
Reasoner Bros., Manatee, Fla., Nursery, 100.
Chas. A. Reeser, Springfield, O., Bulbs, 32.
H. M. Engle & Son, Marietta, Pa., Chestnuts, 4.
E. H. Krelage & Son. Harlem, Holland Bulbs, 48
McMath Bros., Only, Va., Vegetable Plants, 4.
P. J. Berckmans, Augusta, Ga., Nursery, 64.
Wm. B. Hartland, Cork, Ireland, Bulbs, 16.
W. H. Eastman, East Summer, Me., Seedsman, 32.
S. H. Rumph, Marshallville, Ga., Nursery, 32.
Bush & Son & Meissner, Bushberg, Mo., Grapes, 8.
H. P. Kelsey, Highlands, N. C., Nursery, 8.
A. J. Caywood & Son, Marlboro, N. Y., Small Fruit, 8.
Schlegel & Fottler, Boston, Mass., Bulbs, 16.
H. Cannell & Sons, Swanley, Kent, Eng., Florist, 88.
F. W. Wilson, Chatham, Ont., Nursery, 58.
J. M. McCullough's Sons, Cincinnati, O., Peach Pits 2.
Wm. Paul & Son, Waltham Cross, Eng., Nursery, 200
E. W. Reid, Bridgeport O., Small Fruit 4.

MISCELLANEOUS.

Report of the State Entomologist of New York for 1886. J. A. Lintner, Albany, N. Y. 76.

The Origin, Plan and Results of the Experiments of Sir J. B. Lawes, at Rothamsted, Herts, England, 97.

Report of the 33rd Meeting of the Western New York Horticultural Society, at Rochester, Jan. 1889. P. C. Reynolds, Secretary, 137.

Reports of Experiments on the Fermentation of Wine, etc., by E. W. Hilgard, of the California Experiment Station, San Jose. Illustrated, 48.

Report No. 56, on Condition of Crops for October, Department of Agriculture, 50.

First Annual Report of the Vermont Agricultural Experiment Station, Burlington. W. W. Cooke, Director, 152.

U. S. Consul Reports on "The Licorice Plant," Compiled by W. Hunter, 2d Assistant Secretary, 20.

"Fruit Culture in Various Countries," being U. S. Consular Report No. 415. Compiled by John Davis, Assistant Secretary, 40.

Bulletin No. 12, Vermont Experiment Station, concerning Insecticides, Seed Tests and Analysises. W. W. Cooke, Director, Burlington, 30.

Bulletin of the Botanical Department of the State Agricultural College, Ames, Iowa, by Byron D. Halsted, Illustrated 1888, 108.

Volume XVI of the Proceedings of the Minn. Horticultural Society at Minneapolis, March, 1888. S. D. Hillman, Secretary, 464.

Annual Report XVII of the Michigan Horticultural Society Meeting at Hillsdale, February, 1887, also a History of the Geology of Mich. Chas. W. Garfield, Secretary, Grand Rapids, 387.

Root Crops for Stock Feeding, and How to Grow them, being Prize Essays and Practical Experience. Edited by W. Atlee Burpee, Philadelphia, Pa., Ills. 72.

POPULAR GARDENING

AND FRUIT GROWING.

"*ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE.*"—MILTON.

Vol. IV. JANUARY, 1889. No. 4.

"And Nature, the old Nurse, took
The child upon her knee,
Saying, 'Here is a story-book
Thy Father has written for thee.'

'Come, wander with me,' she said;
'Into regions yet untrod,
And read what is still unread
In the manuscripts of God.'"

GOOD PLANNING in January will facilitate good planting in April.

THE DANDELION is worthy of more attention as a cultivated garden crop. Raised in the garden its salad is much finer than that from meadow plants.

VEGETABLES BY WEIGHT. The Retail Grocers' Union, of New York, last week urged Mayor Hewitt to sign a resolution compelling the sale of vegetables by producers by weight. As the said resolution did not stipulate that the dealers should in turn retail such products by weight the mayor promised them no encouragement until this point was adjusted. The representative of the growers left the meeting in high feather.

CHRYSANTHEMUMS ARE STAPLE. Those persons who fancied that the Chrsanthemum "craze" was about spent a year ago, should by this time be able to note the failure of their predictions. The shows of this flower during the recent season have, both in large towns and in small, been as popular as ever. Three qualities common to this plant have much to do with its hold on public appreciation, namely: As to the flowers, the artists ideal of simple beauty; as to season, coming at a time of extreme general scarcity of blooms; as to hardiness and culture, accomodating itself well to the average grower's circumstances.

THE NATIONAL MEETING KEPT IN VIEW. The florists of Buffalo in their club organization, are carefully considering and carrying out plans for rendering the meeting of the Society of American Florists in this city in August next as successful as possible. The regular meetings of the Club are held semi-monthly, and they are usually well attended and the meetings lively. Vice-President, W. J. Palmer, of the American Society is President of the local association, with D. B. Long, Secretary. The executive committe of the National Society will meet in Buffalo, early in January, to outline a plan of the Society's work for 1889.

ON TO FLORIDA NEXT MONTH. P. J. Berkmans, President of the American Pomological Society, informs us that it is now definitely settled that the next Biennial Meeting of this Society will be held at Ocala, (not Sanford as previously talked of) Florida, beginning February 20th, next. He assures the members and friends of the association through the country, that the horticulturists of the South intend to give them a most cordial welcome. A programme will be arranged such as will tend to give them much pleasure and profit. The aim will be to provide a few short essays, such as will serve to draw out a free discussion. The Florida Horticultural Society will tender an excursion to the visiting members to the places of greatest interest to fruit growers. It may be well to state here, that Mr. E. B. Engle, Waynesboro, Pa., Secretary of the Pennsylvania Horticultural Society, has recently informed us that steps are being taken by this Society to organize for securing reduced excursion rates for the Florida trip, and an invitation is extended to members generally to co-operate with them. The present Secretary of the American Pomological Society is A. A. Crozier, Washington, D. C., elected in place of C. W. Garfield, who resigned on account of ill health.

Water and Other Close Covers on Strawberry Beds.

M. CRAWFORD, SUMMIT CO., O.

At the November meeting of our County Horticultural Society Prof. Claypole stated that he had seen a Strawberry bed in England that was overflowed by the Thames and remained under water thirteen weeks without injury. Gooseberry and Currant bushes in the same garden were killed.

I once had a bed that overflowed twice in the one winter and each time the water remained a week or more and froze. No harm was done. At other times I have seen beds partly overflowed and remain under water and ice for several weeks without injury except around the edges where the soil was full of water and had frozen and thawed several times. I have seen patches in a wheat field that were under water and ice, and, with the exception of the edges of the pond, came out in better condition than other parts of the field. I have seen Strawberry beds covered all winter with six inches of soil and they were in perfect condition when spring came. In an experience of over thirty years I have never seen plants injured by too deep a covering when uncovered early enough in the spring.

A Heat Governor of Simple Construction.

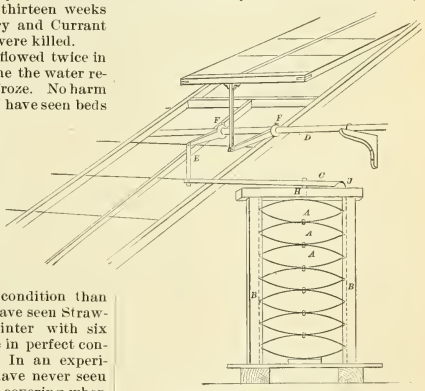
L. L. ESENHOWER, BERKS CO., PA.

How often has a forgotten ventilator or an unexpected change of temperature been the cause of "Jack Frost's" squeezing his presence into the greenhouse or conservatory with sad consequences. The only way to obviate the possibility of such an evil is with the aid of a thermostat, yet as usually contrived it is an expensive affair to obtain. The present article is intended to afford the information for surmounting this difficulty, and with the aid of the annexed illustration to enable the florist to make for himself an automatic heat governor or thermostat of real value.

First there is a frame of wood, strongly built, the boards B, B, being nailed against the upright piece of scantling so as to project about two inches inwardly, the dotted lines indicating the edges of the scantling. In the hollow thus formed are placed the ends of elliptic-shaped springs made of heavy zinc, (as it does not so readily oxidize and its expansion and contraction is greater than steel. Zinc of the ordinary thickness is too light). These springs are bent and their ends after lapping at the center of the under part, are riveted together.

Now we will suppose the temperature of the house to be rising; each spring expands not in a lateral direction, on account of the strong wooden frame, therefore it loses its elliptical shape and becomes more rounded, and as each spring does thus the height of the column is considerably increased, pushing up the pin H, which in its turn pushes up the lever C, which working the same on E, turns the shaft D, and consequently by a like mechanical motion on the upright arm raises the ventilating sash.

The shafting of this device is made of ordinary ½ inch gas pipe resting on brackets, fastened to the back wall, with staples to hold it in place. (They should, however, be made of iron in order to make a nice job, in fact if the house is a double pitch they would necessarily have to be made of iron).



An Easily Constructed Heat Governor for Greenhouses, Graperies, etc.

Thus it will raise not only one ventilator but a whole row of them. When the weight of these from being numerous is heavy, some resort should be had in the way of balancing each sash so that it will raise by a slight pressure.

Now, with regard to the fittings; anyone with some mechanical genius and handy with tools would be able to make the patterns and the castings will cost but a trifle comparatively. Any machinist will bore the holes and tap them for the set screws, F. The other end of these levers are cast in the shape of a fork, and a hole drilled through for a joint; the other levers are made of wrought iron.

To set the thermostat to the requisite temperature we have only to loosen any of the set screws, F, F, and when that is attained tighten them up with a wrench. It is always in order, never needs any attention. Should it be thought to be unsightly it can be enclosed in wood, leaving, however, an opening below and above for the free admission of the air to the springs. If at any time its range of action is not great enough, removing the fulcrum, I, nearer to J will increase this.

More About the Stuartias.

WM. FALCONER, QUEENS CO., N. Y.

I am glad you are calling attention to these handsome flowering shrubs. We have some fine large specimens of *S. pentagyna* and they blossom gloriously every July and August, large, open, frilled white flowers. They bloom at a time when we have very few other trees or shrubs in flower and as their blossoms are so unlike the general make up of those of common shrubs they at once rivet attention. And they bloom for so long a time, five or six weeks.

This tree is perfectly hardy with us. I remember a fine large plant of it in the old Hovey nurseries at Boston. It is a native of the mountains of Carolina and Georgia. But *S. Virginica*, the other American species, is not hardy with us. It is indigenous to the coast regions from Virginia to Florida. It is rather humiliating to us that the handsome Japanese Stuartia (*S. pscudo Camellia*) should be brought to the notice of the American people by the storm it raised in Europe this year.

This plant blossomed in Veitch's nurseries London, last summer, for the first time in Europe, and was exhibited July 24th last at the meeting of the Royal Horticultural Society of London. And what a fuss they made of it, and how the papers lauded it and illustrated it. And right here in New York this plant has been grown and flowered for a dozen years. Well, it is just another case of lighting a candle and putting it under a bushel.

This shrub is the same thing that we used to call *Stuartia Japonica*. When we get new plants from Japan, plants we know nothing at all about, and about which we cannot find out anything, we usually tack on "Japonica" as a provisional specific name till botanists decide about it and tell us what its right name is. True, this often leads to much confusion afterwards.

This Japanese Stuartia, hardier than either of the American species, is a capital grower and a comely shrub. It blossoms late in June and in July. Its flowers are white, smaller than those of *S. pentagyna* and the individuals only last a day in good condition, but the plants keep in bloom for about three weeks or longer. As a flowering shrub it is not as showy as *S. pentagyna*, but as a fine leaved shrub it is by far the best. It is well clothed, retains its foliage into November, and its leaves assume a deep, bright crimson tint in fall.

Gardening in Small Front Yards. Some Select Shrubs and Plants.

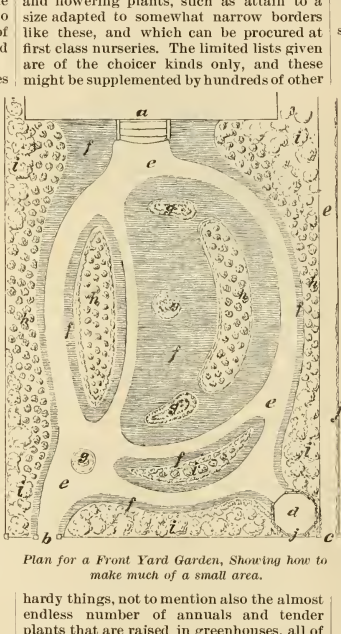
Perhaps a majority of the front yards in American towns and villages have a street frontage of less than 40 feet wide, with a depth from the house to the street line falling even below this measure. Is it worth while in such small plats to attempt auy ornamental gardening beyond having a grass plat and a few small flower beds?

The annexed engraving patterned after an actual example, should at once help to answer this question. Here is a small front area laid out on a graceful plan, which provides not only quite a fair proportion of green sward, but also borders for holding 300 shrubs large and small and hardy plants, besides many summer bedding plants. There is also a vine covered arbor in the front right hand corner. The features of this admirable garden are indicated by letters in the engraving as follows: *a*, entrance to home; *b*, street entrance by the front yard walk; *c*, street entrance to walk to rear of house; *d*, vine covered arbor; *e*, walks; *f*, grass; *g*, small flower beds; *h*, small shrubs and hardy flowers in borders; *i*, larger shrubs in borders; *j*, vine covered fence.

What is especially commendable in this plan is that the center with being open and occupied mainly with green sward tends to impart an air of breadth and repose to the scene, scarcely inferior to what it would be if the hundreds of shrubs and plants of the marginal borders were absent, while the mere fact that these latter objects are present, attracting the eye seems also to direct attention from the actual size of the interior part. In other words here is a plan for making the utmost of a small area, and so occupying the space with a diversity of objects as to lessen the idea of it small size.

To a genuine lover of plant life such a method of utilizing a small space, and on a plan in every way tasteful, should prove most interesting.

To assist those who may desire to adopt this or a similar plan for their own yards, we give below a list of superior hardy shrubs and flowering plants, such as attain to a size adapted to somewhat narrow borders like these, and which can be procured at first class nurseries. The limited lists given are of the choicer kinds only, and these might be supplemented by hundreds of other



Plan for a Front Yard Garden, Showing how to make much of a small area.

hardy things, not to mention also the almost endless number of annuals and tender plants that are raised in greenhouses, all of which might be of service in such a garden. The season of greatest attractiveness of the kinds named is also given.

HARDY SHRUBS OF SMALL DIMENSIONS.

Dwarf Mock Orange (*Philadelphus*); June.
Golden-leaved Mock Orange; June.
Mountain Honeysuckle (*Lonicera*); June.
Dwarf Weigelas (*Diervilla*); June.
Golden Bell (*Forsythia viridissima*); spring.
Sweet Scented Shrub (*Calycanthus*); June.
American Ceanothus; June to August.
Lilac Dwarf; May.
Barberry in sorts (*Berberis*); June.
Berberry, Purple-leaved; June.
Panicled Hydrangea; July and later.
Flowering Currants (*Ribes*); spring.
St. John's Wort (*Hypericum Kalmianum*); July.
Spiræa, Reeve's; June.
Spiræa, Fortune's (*S. callosa*), rose and white; all seasons.
Spiræa, Plum-leaved (*S. prunifolia*); spring.
Spiræa, Thunberg's (*S. Thunbergii*); spring.
Roses in large assortment; June, July.
Azaleas, Hardy; Spring.
Deutzias in variety; June.
Waxberry (*Symphoricarpus vulgaris*); spring and fall.
Corchorus, Silver-leaved; all seasons.
Mezeron Pink (*Daphne Mezerum*); early spring.
Garland Flower (*Daphne Cneorum*); spring.

EVERGREENS OF SMALL SIZE.

Dwarf Spruces; all seasons.
Dwarf Firs; all seasons.
Dwarf Arbor Vitæs in large variety; all seasons.
Dwarf Junipers; all seasons.
Narrow-leaved Laurel; all seasons.
Dwarf Yews; all seasons.
Box (*Buxus*) in variety; all seasons.
Mahonia (*Berberis aquifolium*); all seasons.

CHOICE HARDY PERENNIAL PLANTS.

Monkshood (*Aconitum*) in variety; summer.
Milfoil (*Achillea*), Rose colored and yellow; July to September.
Anemone, Japan, in variety; August to Oct.
Wood Snowdrop (*Anemone sylvestris*); April and May.
St. Bruno's Lily (*Anthericum liliastrum*); May and June.
Columbine (*Aquilegia*), double in variety; June.
Columbine, cærulean (*Aquilegia cærulea*); June.
Columbine, Golden-spurred (*Aquilegia chrysantha*); July.
Daisy (*Bellcis perennis*); spring.
Spring Colchicum (*Bulbocodium vernum*); spring.
Campanulas in variety; summer.
Centaura Montana; May to July.
Valerian (*Centranthus*), red and white.
Crocus, Spring; early spring.
Crocus, Autumn (*Colchicum Autumnalis*).
Lily of the Valley (*Convallaria*); spring.
Crown Imperial (*Fritillary*); spring;
Larkspur (*Delphinium*) in variety; summer.
Sweet William (*Dianthus*); summer.
Pink Garden (*Dianthus*); spring.
Pink Maiden (*Dianthus deltoides*), red and white;
Bleeding Heart (*Dicentra Spectablis*); spring.
Gas Plant (*Dictamnus fraxinella*); summer,
Doronicum Caucasicum; spring.
Dog's Tooth Violet (*Erythronium*); early spring.
Epilobium angustifolium; summer.
Winter Aconite (*Eranthis hyemalis*); spring.
White Snake Root (*Eupatorium ageratoides*); summer.
Plantain Lily (*Funkia*) in variety; summer.
Gaillardia aristata (and others); July and later.
Snowdrop (*Galanthus*); early spring.
Gentian in sorts; spring to autumn.
Geranium maculatum, hardy; summer.
Echinacea intermedia; August.
Sun Flower (*Helianthus*), double, etc.; perennial.
Christmas Rose (*Hellebore*) in sorts.
Day Lily (*Hemerocallis*) in sorts.
Liver Leaf (*Hepatica triloba*); spring.
Hollyhocks; summer.
Hyacinths in assortment; spring.
Candytuft Perennial (*Iberis*); spring.
Grape Hyacinth (*Muscari botryoides*); spring.
Forget-me-Not (*Myosotis*).
Narcissus in assortment.
Star of Bethlehem (*Ornithogalum*); spring.
Pæonys in large assortment; June.
Oriental Poppies (*Papaver orientalis*); June.
Phloxes, creeping kinds; spring.
Phloxes, upright kinds; summer.
Platycodon grandiflorum and others; spring.
Polyanthus Primroses in variety.
Pansies in variety; spring and fall;
Buttercups (*Ranunculus*), double; spring.
Bloodroot (*Sanguinaria Canadensis*); spring.
Saxifragas in variety; spring.
Sedums in sorts; summer.
Lychnis in sorts; early summer.
Goat's Beard (*Spiræa aruncus*); June.
Purity (*Spiræa ulmaria*); June.
Prince's Plume (*Spiræa lobata*); June.
Tulips in sorts; spring.
Spider Wort (*Tradescantia*); spring, summer.
Wake Robin (*Trillium grandiflorum*); spring.
Speedwell (*Veronica*); spring.
Periwinkle (*Vinca*) in sorts; spring.
Violets (*Viola*) in sorts; spring.

What we have above alluded to and chosen plants for, might well be called concentrated gardening. It possesses advantages even to those who, having large grounds, might desire to set apart a portion of it to such a purpose, namely, that the labor and expense of preparation may be concentrated to a smaller area, with the effect of making it so much better. The writer has always contended that if the work and fertilizers put upon the average garden were to be given to an area of one half the size, the results would be more satisfactory.

Some Winter Notes.

E. P. POWELL, ONEIDA CO., N. Y.

For some reason mulching is still the last thing fruit growers will attend to. If they could realize how great the advantage is and how easily it can be applied they would not neglect the work as they do.

Mulching of any sort that shades the soil serves to retain elements of fertility. A bared soil from which nothing is taken is always growing poorer. The moisture secured by mulching disintegrates the soil

and prepares it to take in food elements from the air. Nitrates are formed most rapidly out from under the sun's glare in shaded and sheltered spots. So by mulching you not only equalize the temperature and prevent drying up, but you actually enrich and feed your tree.

In winter, as in summer, there are special advantages from mulching. We are always rohhing our lands by feeding too close in the fall. I am satisfied that the loss is many times over the gain. There is also only mischief from raking up leaves in the autumn. They should he allowed to lie on the lawns until spring and then he removed only where they are too thick.

Those who were crowded for time in November may still in midwinter find it desirable to go on with plant protection. The larger part of the damage done hy winter is not by direct freezing, but hy thawing after freezing and then a sudden freezing again. So it happens to he best to plant the less hardy shruhs on the north side of hedges or houses, where they cannot be touched by midwinter suns. Most of the injury occurs as late as March or April. In addition to other protection it is well to go about in late winter and pack snow about Grapes and Quinces and whatever may he affected by getting started too early. If you can keep the ground frozen ahout them and so prevent the flow of sap for ten or even five days you may have saved your flowers and fruit.

Snow is a splendid mulch and a snow mulch is as good as a straw covering. I have a friend who tramps half the winter ahout his yard of trees and gets a solid ice mat over the ground. His trees are always well loaded. It is equally useful in the way of delaying the appearance of some insect pests, and when these are delayed they are as good as killed.

I used to he content with hilling up rows hut it is so little trouble to hend down the long canes and cover them and one gets such magnificent pay for it, that now I in-

Specimen of the Nordmann's Silver Fir.

variahly do it. Use sod, hut if the stalks are strong lay a sod or more under to prevent hreaking hy hending.

The safety of winter hulbs and tuhers depends on several things. Dahlias must be well dried, hut not kept drying all winter. If they are they will he spoiled before spring, hut if kept damp they will surely mildew. therefore after they are thoroughly dried cover them up with very dry sand. The same of Cannas, Gladiolus also must first he thoroughly dried and then stored away from frost, but not so dry as to shrivel away.

It is quite necessary to protect young shruhs of all sorts. They grow hardy as they get age. It is but little trouble to hill them up and then invert kegs or barrels over them with leaves worked under.

Lilies are better if well mulched for the winter, and I should prefer leaves, as most of the Lilies rot promptly if manure is applied to the roots, and there is also danger in placing it on the surface unless thoroughly rotted before it is applied.

Two Valuable Evergreen Trees.

One is quite naturally drawn to consider the Evergreens in winter, hecause their attractions are now so marked. We take pleasure therefore in inviting attention to two of the most hardy and satisfactory trees of this class, for general planting, we know of, namely, the Dwarf Mugho Pine and Nordmann's Silver Fir.

The chief merits of these trees apart from their marked heauty is their adaptahility to culture in most parts of the country, and especially in the northern helt, and on a large variety of soils. Unlike the majority of Evergreens offered in the catalogues of nurserymen, these kinds require no special petting in order to develop into handsome specimens; in this respect bearing well to be classed with such old reliables as the Norway Spruce, Austrian Pine, Red Cedar and the like. Both of these trees may he had of the leading nurserymen of the country.

The Dwarf Mugho Pine is a handsome compact growing tree or shruh with stiff, dark green foliage, a native of the Alps and Pyrenees of Central Europe. Ordinarily it would he classed with shrubs, hut it is known, under the most favorahle conditions, to reach a height of 25 feet or more. Of a numher of trees under culture as lawn trees, with which the writer is familar, not one has reached a height of eight feet, although the oldest have heen growing for fourteen years or more in their present places. There are, however, several forms of the Mugho Pine recognized, such as the Compact variety and the Roundheaded variety, and it is not unlikely that the tree varies also in the direction of stronger growing forms.

This Pine is used with excellent effect as a single specimen or for forming a clump on the lawn, while the fact of its small size indicates its use in grounds too small for other Pines. It also serves well for massing irregularly in front of the Black or Austrian, the White and other large growing Pine trees.

Of the Nordmann's Silver Fir, it may, we think, he safely said, that it has never been known to disappoint the planter who has given it anything like commonly decent treatment. In the Buffalo Park, which contains a collection of scores of hardy Evergreens, this one stands out conspiciously for its beautiful, dark green vendure the year around, and for its regular and graceful form. It ranks with the hardiest

A Dwarf Mugho Pine on the Lawn.

of trees here grown, and is of remarkably free growth.

This tree was first discovered hy Prof. Nordmann, on the Adshar mountains, at an elevation of 6000 feet, and growing 80 or more feet high, with a straight stem. It is quite common on the Crimean mountains, and those east of the Black Sea.

For the use of the engravings on this page we are indehted to the firm of Ellwanger & Barry, Rochester, N. Y.

The Manure Question Solved by the Fattening of Live Stock.

D. N. LONG, FORMER ASSOCIATE EDITOR OF RURAL LIFE.

In my early experience in market gardening and fruit growing I was ohliged to haul a considerahle portion of the manure used for a distance of ten miles or more, and this with the bad roads often prevailing was found to he so large an item of expense as to eat up a large share of the profits, hence ways and means of securing a good supply at low cost were studied up. As my business was what might be termed farm gardening, and in which the keeping of live stock figured somewhat, I was naturally led to look to enlarging our stock of cattle as a source of manure. A thorough trial of the plan resulted most satisfactorily, keeping the live stock on hand during the fall and winter mainly, then selling it to the butchers. The number of head of cattle with sheep sometimes has increased from year to year, till during the past winter over 70 head of cattle were fattened, hesides keeping some milch cows and horses.

I am now satisfied that manure can often be made on a place at a much less cost than it can be bought for, and especially where farm or wholesale gardening is carried on. In my experience I have usually made a clear profit on the advance in price on cattle, above all the expense of feed, lahor, interest, etc., let alone the great object of securing large quantities of the hest of manure absolutely for nothing right on the place where it could he hauled to the fields at any time of leisure.

The hauling to the fields was usually done during the leisure of winter when the snow was not too deep or the ground not covered with a thick coat of ice so as to cause the manure being carried off hy rains, spreading from the vehicle, by which means it was only handled twice, once in loading and again in spreading.

A peculiar advantage in farm gardening in thus making manure is that with growing large quantities of Cahhage, Cauliflower, and roots for late marketing the tops and

other trimmings afford large quantities of excellent food, a thing also true with growing Sweet Corn. This food I found could, with the help of the silo, be kept any desirable length of time, and was often worth nearly the cost of producing the entire crop, especially in the case of Cabbage. By this system Cabbage can probably be grown at less expense to a certain area than Corn, reckoning the extra manure needed very low, as it costs really nothing.

By ensilaging the Cabbage trimmings and leaf tops so often wasted and feeding them with straw (usually to be had cheaply) and hay, when not too high priced, with a liberal allowance of oil-meal, cotton seed meal, bran, malt sprouts and similar foods, we can produce an increase in weight beef at an extremely low cost, at the same time that we are turning out a large pile of manure of superior fertilizing value.

In this country the feeding of cattle has never been studied as it has been in Europe. Result: a great portion of our oil meal and cotton seed meal is exported to enrich the soils of European farmers. The prices of these excellent feeds are actually governed by the price the foreign farmers feel they can afford to pay for them. Beef and mutton can be shipped to Europe much cheaper than the feed from which it is produced. Let us see to this matter and have the manure, now largely overlooked, for our own use. Let us learn from the European farmers, who sees his cheapest way of getting manure in buying and feeding these concentrated foods, even if he loses money (as we here need never do) in the fattening speculation.

The Successful Gardener.

JAMES CURRIE, FORMER EDITOR "CURRIE'S MONTHLY."

In gardening, as in all other professions, there are men who enjoy almost unbroken success in all they undertake, and, in time, amass a respectable fortune. Others seem only to meet with misfortune although apparently as well situated and having all needed requirements to properly conduct their business, including perhaps, also, a fully equipped range of greenhouses, and withal a thorough business education, coupled with an extensive botanical knowledge of plants and plant life.

The inexperienced may have difficulty to account for this diversity, but not the successful plantsman. Fully appreciating, as he must, the importance of a good education including, if possible, botany, he is yet alive to the fact that his success is due to the strict attention he has always given to detail in his business, and particularly to the watchful care he has bestowed on his plants. Such a man when he sees others always in trouble over hard luck with their seeds and plants, rightly attributes this nine times in ten to carelessness.

It appears strange that any man depending upon plants or their products for a living would knowingly allow them to suffer, even die, for want of proper attention, yet this is constantly occurring. We have all known men, well equipped in all essential respects, to meet with shameful failure simply because they were careless in the many little points recognized as vital by the successful cultivator.

Among the matters of first importance in gardening are proper care in seed sowing, the potting of plants, the temperature of the houses, the prompt destruction of insects, and most important of all, the judicious watering of plants. What does the ability to name and classify plants, to know their seeds, to explain the grand plan by which vegetables propagate themselves, and to understand their heat and moisture requisites amount to, if we then fail to apply this knowledge to all proper details, and with necessary uniformity.

What if a man becomes so expert at potting plants, that he can pot thousands while his neighbor pots only hundreds, if after the potting he allows them to suffer tortures from neglect as well as from the ravages of every known insect enemy:

I recall to mind at this moment an incident of such a kind which came under my direct observation recently. One of our men had in charge the sowing and care of some Primula seeds. When the young plants should have appeared it was found that all the seeds were dead; that inattention was the cause of failure was denied by the man. More seed was obtained from the same lot as the first and which I knew had germinated freely with other growers. I gave the seed to the man warning him that Primula seed is almost certain to perish if allowed to suffer from drought about at the germination stage. Naturally I was on the outlook and one day, at the most critical time, found the Primula soil quite dry. I had it promptly watered, but it was too late and only a few seeds started. Here was an instance of carelessness, for the man has had an extensive gardening education.

Understand me, I am an earnest advocate of a thorough education for the gardener, including at least the rudiments of botany, and earnestly urge all young men to include it amongst their studies. But what I wish young gardeners to especially heed are those apparently little things so easy to learn if attention is paid to them, and yet for some far harder than whole vocabularies of botanical names. Let him turn to some of his successful neighbor gardeners to be found everywhere yet who do not profess to be gardeners. They have learned a few of the first principles of plant culture perhaps, and they practice them faithfully. They watch their plants as they do their children, discovering immediately as far as their knowledge goes, their every want. Experience brings with it knowledge. In all operations they exercise care and success is the reward.

Young gardeners, learn to do all things well and do them with your whole might. If then you are in love with your profession you will soon learn much about it; if you are not in love with it give it up as soon as you can secure anything else to do, for the chances are that you will never make a successful gardener.

Several Subjects Treated on by the Former Editor of "Rural Life."

CHRISTIAN WECKESSER, WAYNE CO., OHIO.

STRAWBERRY MATTERS. I planted a trial plot of about 30 varieties of Strawberries which caused considerable surprise at their almost uniform productiveness and large size. It lead me to see that the secret of the extraordinary vigor and size claimed for so many new sorts lay in the material that is wheeled into the patch, for in this experiment the poorer varieties did comparatively well. This particular plantation was treated with a good supply of stable and hen manure, and a year later some decomposed animals, bones, etc., were very liberally mixed in with the soil. While the extensively circulated statements that Strawberries will do well on any soil that will produce a crop of Corn, may be true, still I am convinced that it is poor policy to plant them on any but thoroughly enriched soil, and there is little danger of getting it too rich. The method of cropping from potted plants does not come anyways near paying with us, our profits depend largely on getting the largest possible crop with the least outlay of labor. A satisfactory and profitable method has been to plant the field to early Potatoes, the first year setting a plant then a hill in the rows, and turning the runners into the rows after the Potatoes are dug.

The Crescent variety is largely planted here for a home market; the Cumberland Triumph seems to be unequalled; Miners' Prolific is probably giving the best satisfaction for amateur culture; Jessie, Bubach and Summit promise well; the Wilson has been discarded as well as the Downing; the Ohio is latest in season, but poor in quality; the Parry and Jewel do not do well.

ABOUT SEEDS AND SEED GROWING. The excellency of the seeds sown having so much to do with the results from market crops, it is no wonder that gardeners' become scrupulous concerning the character of the stock they are about to purchase. It is this idea which leads all reliable dealers to exercise great care in growing and testing the seeds they offer for sale. Tests to prove vitality are important without question, but to my mind the field tests are far more so.

There is much to be learned by trying different strains of the same varieties on various soils, etc., and comparing them. The possibilities thus opened and in time realized, will, no doubt, pay for the outlay.

In this as in every other business, natural adaptations to it is what is needed to best succeed. One cannot make the most of his possibilities unless he has a watchful eye. New developments constantly unfold, and must be closely observed and noted to appreciate which no one can teach like experience.

Getting varieties mixed, especially of the vine family in many cases may not be very apparent the first year, but in time anything but the supposed varieties would result; and experience not having demonstrated the necessity of the utmost care in selecting stock-seed, they also are likely to have deteriorated in desirable qualities as well.

Lettuce Forcing on Long Island.

A correspondent of the Country Gentleman, referring to the extensive Lettuce forcing establishments on Long Island, says, regarding culture, that the soil used is the common earth of the fields, enriched with rotted manure. It is not changed every year, as we do in the case of growing Roses or Carnations, but once in a few years. So long as the Lettuces grow well in it, so long is the soil retained. In preparing for the first or September planting, the soil is forked over, and a liberal dressing of rotted manure is added. For the successional crops, instead of adding fresh manure each time, after the plants get fairly started a dressing of some artificial fertilizer is applied.

In planting, the Lettuce are set out seven inches apart each way—the measure is precise, for it is indicated by a marker. This marker is a very simple affair; it consists of a board the width of the bed, and with two rows of short, nipple-like pegs in it, set exactly seven inches apart each way. I observed that Mr. Frederick's Lettuce were a little farther apart than were the other growers; he says he plants at eight inches apart each way because he believes he gets finer Lettuce. The plants are set with dibbles, and there is no effort made to firm the earth very solidly about the roots. The workmen claim that as the plants are watered liberally as they are set out, this firms the soil enough. May be so, but I have faith in firm planting.

Mr Hopkins tells me that for Lettuce they run a temperature of 40° to 45° at night, allowing it to get up as high as 60° or 70°, with sun-heat if need be. Of course the temperature depends a good deal upon the condition of the crop; a high temperature and dry atmosphere are prejudicial to the good development of Lettuce. Young Lettuce, like blossoming plants, love bright, sunny weather, and in the sunniest parts of the houses are always the finest.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

LACHENALIAS IN HANGING BASKETS. Mary R. Spamfield has a good article on bulbs. Apropos of her remarks about Lachenalias I may say that in the beautiful gardens of Mr. George W. Childs, of Philadelphia, I noticed a lot of hanging baskets in the greenhouses, which were filled with Lachenalias. The plants were sprouting all around the baskets and looked quite pretty. The gardener declared himself highly pleased with Lachenalias grown in this way, and said they are very easy to manage.

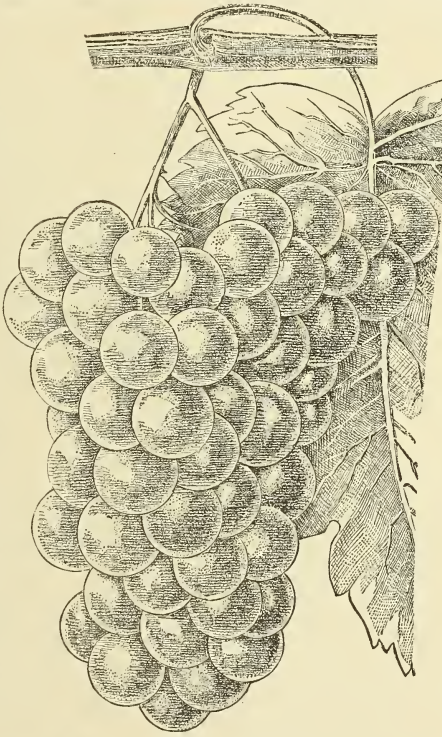
CATALOGUE ILLUSTRATIONS NOT ENTIRELY BAD. Mr. Grant, don't get angry; take every thing with a grain of salt. Buy unknown species or varieties on probation. No fear of this thing being "done away with before long," it is only in its infancy. It may be "evil" still there is good in it. It causes people to buy, sow, grow and reap, and become interested in horticulture, who could not otherwise be reached. And so long as you get a good gardening paper for a dollar a year, and which will gladly give you any information you may wish for about novelties or other horticultural subjects free and just for the asking, the proper way, as it appears to me, of heading off these exaggerations is by spreading the circulation of POPULAR GARDENING. Put it where these glaring catalogues are sent, and then if the readers are gulled, affix this proper verdict—"served them just right."

THAT NATIONAL FLOWER. The Phloxes are magnificent and indispensable, both the annual and perennial. But many of the European varieties are not good enough for America. I remember about a dozen years ago Ellwanger & Barry, after trying most every kind in cultivation, simmered down their collection to about eighteen really desirable ones (of the late blooming perennials) for here. Now, while it is all very well to grow the cream of our already choice sorts, we may have great pleasure and reap a rich reward in raising new varieties for ourselves from seed. Seeds are freely produced, and we often find tops of little seedlings around the old stools. The finest bright crimson colored Phlox that I know of anywhere, was raised from seed by John Thorpe. It is still unnamed. And as these handsome flowers are hardy any person in the country may have as good success in raising new and extra fine varieties as John Thorpe has had. Try it.

NEPENTHE "EASIER TO GROW THAN VERBENAS." Not much. In May or June Verbenas are advertised in New Jersey—Stock plants, $3,00 per 100; rooted cuttings $1.00 per 100, $8.00 per 1,000. There isn't a florist on earth who will or can supply Nepenthe plants or rooted cuttings of them at this price, nor, do I believe at ten times this price.

PHILODENDRONS AND CLETHRAS AS WINDOW PLANTS. What Philodendron is referred to? The finer fruited one with "palm-like leaves with slits in," I should think would be Monstera deliciosa, a plant I have never known to be grown as a window plant. But we have many true Philodendrons of more vine-like nature, but lesser leaf proportions, and of which small plants can be cultivated in warm rooms in glass cases as ferneries where sunshine cannot reach them. Clethras are mentioned among shrubs recommended for window work. As their ordinary season of blooming is July and August it would be interesting to know how they are treated and how they behave as window plants and when they bloom.

TREE PLANTING—RIGHT AND WRONG. When planting "grasp the stem firmly about the lower part and move the tree up and down vigorously" (page 29). No, no, don't do anything of the sort. Leave that with your grandfather's ancestors. Get up your tree with all its roots fresh, plump and moist; have your hole ready, deep, wide and filled in with a hillock rather than a basin in the middle, and so that the incoming tree may set on it firmly, and at about the same depth as it was before; then with your coat off and your shirt sleeves rolled up, bend your back and spread out the roots so that they shall have an outward and downward tendency. Then with your left hand regulate the roots, while with your right you introduce fine earth among them and pack it with your right hand into every hole and cranny. But positively avoid moving or shaking the tree while it is being planted. After



THE MOYER GRAPE, RED.

the hole has been well filled and the soil firmly packed as filling proceeded, if you are at all doubtful that all the holes about the roots have not been filled with soil form an earth basin about the bole of the tree and give a thorough soaking of water. We transplant a large number of trees every fall and spring, and many of these are big trees, too—in some cases requiring two teams of horses to haul each of them—but there isn't a man on this place who would dare shake a tree when planting it. With what success? Come here and see, we will gladly show you.—*Wm. Falconer.*

A SCARCITY OF BLACK CURRANTS. People as a rule don't like the smell of the bushes, let alone the smell or taste of the fruit.

THE BUBACH STRAWBERRY. I consider the Bubach No. 5 Strawberry with a good kind to fertilize it the "boss" of the Strawberry field.—*A. W. Nichols.*

FAST BUDDING. NEW JERSEY HEARD FROM. For fast budders I think New Jersey can hold her own. I can pick ten men right here who can set 50,000 Peach trees in ten hours. Where everything is in good working order they will have the buds cut from the trees for them and the leaves cut off, but they will do all beyond that up to tying, which is done by men or boys. A few years ago four of our men rode five miles and set 40,800 buds up to tying, in three days of about ten hours each, and part of the time it was rainy. We have had our men set 19,000 in one day; these were not all the fastest of budders, nor were they paid by the 1,000, but were our regular monthly men. We have men here who can bud 6,000 in ten hours, and one man who has set 800 in one hour. I am not of a betting character, but if any one doubts my assertions, and feels like putting up money, he can be accommodated on any sum from $500 to $1,000 that what I here say can be done. And furthermore I will guarantee that as many buds will live as of any man who sets but 2,500. There are scores of budders here, and few if any but can bud 3,000 and over. We have grown millions of Peach trees, and have brought every part of it down to a science. Men bud here for $1 per 1,000, and then make good wages.—*Charles Black, Highstown, N.J.*

GOLDEN QUEEN RASPBERRIES. In your October number E. P. Powell is made to say of this berry, "I am not so well satisfied that it is a sport from the Cuthbert. Probably this is a typographical error and should read sport. The Golden Queen was found simultaneously on the fruit farm of Ezra Stokes in Camden Co., N. J., and at the Monmouth Nursery in Monmouth Co., but was undoubtedly carried to the latter with Cuthbert bought of Stokes. The Stokes farm is only 16 miles from here, and I repeatedly visited it before the Golden Queen was introduced, and saw it growing in several places in a field of Cuthberts, and examined the growth and compared the berries, and never could detect any difference in either except in color, the canes having the same growth of foliage, but, like the the fruit, being of a light color. My oldest son was employed at the Monmouth nurseries for several years, and informs me that he saw plants at these grounds not only bearing both red and yellow fruit, but specimens which were partly red and partly yellow, which I think may be considered decisive evidence that it is a sport. This a matter of some importance, partly as a historical fact and especially as going to prove that in quality the Golden Queen stands exactly with the Cuthbert. Any apparent difference may readily be accounted for by differeuce in soil and circumstances, and from testing it at different stages of ripening, all of which often cause a marked differeuce in quality.—*Wm. F. Bassett.*

PRUNUS PISSARDII. This has fruited several times here, but as yet only produced a few specimens. In color, both outside and the flesh, the fruit is much like the foliage; in quality, while there is nothing harsh or unpleasant, it is neither sweet nor rich, and the most I can say for it is there is nothing bad about it. In texture it is much like the European Plums, moderately acid, and may prove good for cooking. We have not had enough to test them in this way yet.—*Wm. F. Bassett, Atlantic Co., N. J.*

The New Red Grape Moyer.

Specimens of this fruit were received at our office from the vineyard of Louis Roesch, Fredonia, N. Y., on September 17th, last, which may be considered very early, as none but the earliest Grapes in this section were yet ripe. The fruit somewhat resembles that of the Delaware in color and flavor, but is rather darker, and not quite so sweet and delicately flavored; as it ripens some weeks in advance of that variety, it will seldom come in direct comparison with it, but with the earlier varieties. The pulp is juicy, rather tender, and without the foxiness common to many early Grapes. It is said to be sweet and good as soon as fairly colored. The skin is thin but tough, which is in its favor for shipping.

The Moyer originated some eight years ago, in Lincoln County, Ontario. The vine is said to be very hardy and vigorous, though rather a short-jointed, compact grower. Its disseminators do not claim that it will yield as many tons to the acre as either the Niagara or Concord, or that it is necessary for it to do so in order to be profitable, for owing to its earliness and fine quality it will always command a good price; and on account of its hardiness and freedom from disease it is believed that it will almost certainly always yield a fair crop of fruit.

A List of Pears.

E. P. POWELL, ONEIDA CO., N. Y.

A good list of Pears for market as well as for home use should include:

1. Tyson. There is no early Pear to equal this. I shall never forget my first acquaintance with it. It is a great bearer and if headed low, as all Pears should be, comes early into fruit. The tree is upright, open, stout and healthy. Season, August.

2. Bartlett, to the exclusion of Clapp's Favorite, which is decreasing in favor with growers and shippers. Season, September.

3. Howell. This is a grand and handsome Pear; growth strong and does well either as a dwarf or standard.

4. Flemish Beauty. This variety cracked badly for a few years but is doing grandly now. It needs an open, sunny location and must not be at all crowded. Let the land also be well drained.

5. Sheldon, the finest table Pear in the world, and good for canning also, but not as good as Flemish Beauty, Bartlett and Louise. Picked early in September and stored in a cool cellar, it will be in good order for two months. It is large and handsome and the tree is very productive. Even the smallest Pears on the tree are always delicious; so there is no waste fruit.

6. Louise Bonne. This Pear was for a time under a cloud, but it is an admirable fruit. The tree is always loaded and if kept well opened to the sun the fruit is finely flavored. It should not be picked too soon; indeed, it is one of those sorts that should be left on the trees till frost, then placed in cool rooms to ripen slowly.

7. Onondaga. This Pear is too large, too prolific and generally too well flavored to be left out of the list. But I have had astringent Onondagas. The tree is a noble, large-headed grower and bears young.

8. The Seckle everybody knows and while it is no longer profitable for market, it is so delicious that it must remain for home use.

9. Clairgeau. This Pear is the most beautiful of all as well as the largest and heaviest. When ripening it colors up in crimson and gold. It must be picked about October first and stored, and is fit for use about the last of November. It has one drawback, it must be marketed at once, as the coloring on it turns black.

10. D'Anjou—the noblest Roman of them all. This tree is perfect in form and grows with great rapidity. The quality of the fruit is simply superb. The Pear is smooth, large, light green, ripening to a lemon yellow, melting, juicy and refreshing. It should be picked in October and will keep until Christmas. It is the Pear for profit.

11. Lawrence, for early winter, is a capital sort, smooth, bright, prolific and sweet.

12. The Jones Pear promises to be the best for midwinter and Josephine de Malines for late winter.

Besides the above I grow a group of Buffums on my tree lawn, for their upright form much resembling the Lombardy Poplar. It also gives the most gorgeous coloring of all Pears as to autumn foliage.

Mulch your Pears when set and always keep them mulched. Let no manure be put in about the roots, but top dress with manure if the land is poor. Seckels and some others need considerable stimulating and feeding by top dressing. Don't plow your Pear orchard, but fork about the trees thoroughly and then renew the mulch.

Scrape the bark and dig out all bark borers; the wood borers seldom attack Pears; kill off professional tree trimmers; let no suckers or weak shoots grow; keep the trees headed low; head back half the growth the first five years; it is also essential to keep the top open and let the trees stand far enough apart to be freely open to sun and air.

Good materials for mulching are coal ashes (anthracite), hardwood sawdust, loose manure and other substances.

The best dwarfs are Louise Bonne, Howell and Duchess, with all odds in favor of Louise. Among the very good sorts I have not included in the above are Dr. Reeder, Bosc; in some localities and double worked, Gray Doyenne, Beure Superfin, Belle Lucrative, a sweet and great bearer, but too dull in color, and White Doyenne or Virgalieu, which is no longer cracking as it did for a time.

The Fifty Million Dollar Soldering Iron.

Recent telegraphic dispatches have stated that Lewis McMurray, and others, had obtained a verdict in the United States Circuit Court against George R. Emerson proprietor of a fruit canning establishment at Somerville, Mass., for using a patent soldering iron without the permission of the owner of the patent. It was further stated that "Counsel for the defendant said if the plaintiffs should proceed against all who have infringed the patent they could probably collect $50,000,000. Suits are to be instituted against all manufacturers who have violated the rights of the plaintiffs.

Mr. C. M. Fenton, secretary of the Erie Preserving Company, of Buffalo, has been asked if this decision affected his company. He replied that he supposed that they had at one time used this iron, which was probably that known as the Tillery pateut, but that they had discarded it some time ago for a German-silver steel solderer, with which 5,000 cans could be made in a day, against 3,000 with the Tillery, and were now getting ready to use a machine made in Chicago, which was almost human in its operations, the unsoldered can going into it on a train, and coming out finished.

He did not imagine, though, he said, that the big companies would accede to such a decision without appealing it, unless they could compromise with the patentee at reasonable rates. Emerson was a small manufacturer, as the small verdict, $93 showed, and there would be further resistance. He did not see why some larger firm was not sued. The Erie Preserving Company, with which he is connected, is turning out 3,500,000 cans of preserves this year, and the award of $1.87 per thousand would amount at this rate to $6,545 per year so long as this iron was used.

In this connection it may be stated that a new company has lately been formed out of the Erie Preserving Company by way of division. The old company still exists, but the jelly-making interest, itself a large one, has been made separate to see which is the more profitable. The new company is to be called the Buffalo Conserve Company with a capital stock of $125,000.

The canning business is said not to be so profitable this year as last. "We have to contend with a curious sort of competition," said Secretary Fenton. "After a good year a large number of small concerns will spring up. They will not put money enough into the business to meet obligations when those who have furnished fruit cans, etc., begin to press. They have nothing but goods to meet the demands with and they throw their only assets on the market for what they can get. This breaks down prices, of course, but to counterbalance this feature of our business, there is much encouragement found in the rapid growth of the foreign trade. Europe does not seem to know how to can fruit. We have just sent 1,000 cases of Apples in gallon cans to England and Scotland. The California fruits are in great demand, and the San Jose Packing Company has this year sent four carloads to the Czar of Russia."

Selection of Seeds.

N. Y. L., ADAMS CO., ILL.

Says Peter Henderson, who in this matter may well speak as one having knowledge: "No matter how carefully the selection of seeds is made, deterioration will take place when the crop is grown under conditions uncongenial to it." And again: "When seeds are sown in a latitude unsuited to their development they will invariably perpetuate weak progeny."

Now, instead of these conditions rightfully opposing the careful selection of seed, they are properly in favor of it. If the conditions are unfavorable to the plant, then we may as well go elsewhere for seed, but should be none the less careful in selecting it. Or, if we conclude to use home grown seed, the fact stated by Mr. Henderson makes it all the more important to make a careful selection. While it is true that the most careful selection of seed will not prevent the deterioration of a crop grown under unsuitable conditions, it is equally true that the continued use of poor seed will cause the deterioration of crops surrounded by favorable circumstances; also, that where the conditions are unfavorable we may retard, and in some cases prevent, the deterioration of the crop by using only the very best seeds.

One frequently sees statements made by persons of unquestioned reliability, about the results from seed selection, that are puzzling. Perhaps when we know the reason the matter will then appear very simple indeed. As an example of these puzzling things, at one of the Wisconsin Farmers' Institutes held this year, Mr. J. M. Smith said: "Last spring I saved a bushel of the seed ends (of Potatoes) and planted them by themselves right in the middle of the piece of two or three acres that I was planting, and I found that when we came to dig them the yield was just about the same, and the Potatoes about the same size. But those coming from the seed ends were nearly a week earlier than the others."

Now, we might say that one swallow does not make a summer; that likely if Mr. Smith did the same thing this year he would get a different result. But at the same meeting Mr. Lockwood corroborated Mr. Smith. Mr. L. said: "Having tried the experiment for seven years I find that the seed end invariably produces an earlier Potato." Experiments covering seven years ought to be well nigh conclusive, especially when the results were the same every year.

Now, why not plant the seed ends for our very early crops? Quite often getting the crop on the market a week earlier makes all the difference between a handsome profit and a disagreeable loss.

Of course the gain of a few days in the time of marketing other garden crops would be equally profitable. Peas are a fine case in point. Now at the New York Agricultural Experiment Station it was determined one season to see how much could be gained by selecting the earliest pods for seed. There were gathered for the purpose the earliest and the latest ripening pods from a row of Tom Thumb. One hundred seeds of each were planted from these selections April 21, and again May 12.

Of the first planting the early pods gave Peas fit for use in 68 days; the late pods in 74 days. Of the second planting the early pods gave Peas fit for table use in 56 days; the late pods in 60 days. Nor was all the gain in the earliness of the crop. The earlier ripening Peas vegetated better in both cases, the average difference in their favor being 14½ per cent. Also, there was a difference in favor of the early Peas of 2.25 pods per plant and of .615 Peas per pod.

This station has also experimented with Oats, planting small and large plump superior grains, making the conditions otherwise

the same. In every case (ten) the plump grains gave the better results. The report says: "The large seeds made the earliest growth, started the best and presented a better appearance from first to last than did the plants from the small seeds. This superiority was manifest in every particular all through the season." On an average the weight of the crop from the plump seed was 110 per cent of the weight of the crop from the small seed. A gain of ten per cent is not small—if made at an expense of five per cent would almost double the net profit from the Oat crop. The same laws of selection and reproduction were obtained in gardening and agriculture.

Probably many readers will remember that the New York Station experimented for two years with seeds from few-celled and from many-celled Tomatoes. The results of the two years' experiments practically agreed. The second year, fifty fruits gathered at random from the plants grown from three-celled fruits contained 158 cells, while an equal number from plants grown from six-celled fruits contained 259 cells. The Station says that "as few-celled fruits seem more likely to be smooth than many-celled ones, it is possible that an advantage is to be gained by selecting few-celled fruits for seed." The experiment gave results full as valuable in that it showed that some fruits transmitted through their seeds special characteristics, the reproduction of which would hardly be expected, thus making the promise of seed selection greater than might be supposed.

Fruits for a Month when Fruits are Scarce.

B. GOTT, ARKONA, ONT.

The only seeming attempt heretofore thought of for a fruit supply in August has been to import—to ship from southern points. This we are disposed to call a great mistake on our part, for a supply, by a little effort, may be had from our own fertile lands, by our own skill. Not, perhaps, to offer our customers blushing Peaches, or bloated Watermelons in July and August, but we do know from our observations and experience that it is possible to offer them Grapes, Watermelons and Muskmelons, Red Raspberries and Blackberries, Tomatoes, Currants, Pears, etc.

For the Grapes we would erect glass structures especially for this industry, growing some of the best European varieties that are known to do well under moderate treatment, and produce them in large quantities. Experimentation might develop the suitableness of some of the best of the American Grapes for this purpose. These Grapes during this month in moderate quantities, and at prices within the reach of the public would be readily taken and used. The question of cost can be practically worked down so fine as to come within reach of ordinary consumers.

For Watermelons, etc., though not so early or so large as those from Georgia, Tennesee or Kentucky, yet we could have them for this month fine enough to suit our people, and of much better quality than the imported article. Take the earliest varieties, nurse them under glass and put them out. Then find sheltered vales where these plants could be fostered into fruitage in the shortest possible time and do the same with some of our most desirable Muskmelons. These products, we believe, would readily displace the southern articles.

The suggestions for Melons will also closely apply to Tomatoes and immense quantities could, in August, be disposed of in almost every market in Ontario. The Tomato is so very easily managed that it is a constant wonder to us that far more of them are not offered early on our markets.

Our plan with Red Raspberries is the following: Take varieties known to be liable to fruit on the young wood after the old canes are cut off close to the ground in the spring, such as the everbearing varieties, or even Cuthbert. Our plan with this last (the best Red Raspberry so far produced) is to cut down close to the ground in early spring and, after thoroughly stirring up the ground, to mulch heavily with old straw or other litter, just baring the crowns. Most of the canes will produce an excellent crop of the finest fruit during August. This would be one of the best things to fill the requirements of the season.

The Blackberry stands pre-eminently at the front of this question of fruit supply for August; it can be produced so readily and in such variety, quantity and excellence that there is absolutely no excuse for short supply. What is required is a cane perfectly hardy and a good, rampant grower, the fruit large, bright colored and excellent quality, and that can be made to produce its crop late by mulching. These desirable qualities I think can be had in some of the varieties. I believe the Snyder could be made to do much for us, also Stone's Hardy, and likely there are others equally good.

Red Currants: Some of these have the quality of hanging long without loss of quality, but rather improvement. Ruby Castle would do well for this purpose. These fruits could be produced in great abundance cheaply and fresh from our own soil.

Another fruit not to be overlooked is the early summer Pear. What is the reason we do not grow them? No people can have a finer list of good ones to select from, or better soil, better locations and better sunshine in which to have them to perfection. They come into your hands during the whole of August. The varieties to use are Osburn's Summer and the Summer Doyenne, with others that may be readily tested.

Why this famishing poverty of all home grown fruits during the heated season? I am confident that it is within the range of possibility to annually place thousands of dollars worth of these fruits on the market.

Field Turnips.

WM. H. YEOMANS, TOLLAND CO., CONN.

We are particularly pleased with the quality of our Turnip crop. The patch where they were to be planted was selected in a field that had not been under the plow for nearly or quite a quarter of a century, but possessed a fairly firm sod. Being away at the time orders were left regarding the planting of the Turnips, which was to be according to the old rule, "on the 25th of July sow your Turnips, wet or dry."

The sod was very carefully turned over and a good dressing of fine manure spread upon the surface and mixed with the soil by dragging over it a bush, leaving the surface level and smooth. The surface received a moderate top dressing of super-phosphate and the seed was immediately sown. Whether the seed was not first quality or for some other cause, it did not come up well and the appearance was decidedly discouraging.

There were a few plants scattered here and there and little or no show was made during the months of August and September, but with the frequent rains, by October the plants began to develop themselves both in leaf growth and in roots, and when pulled on the 22d of November we had as fine a lot of Turnips, being of good size, very smooth, and of the sweetest quality of any we ever ate; so, what at one time appeared like a total failure, turned out to be a gratifying success, which we attribute partly to being planted on an old sod.

California as a Fruit Growing State.

D. B. WEIR.

Col. S. N. D., Iola, Kansas, asks me many questions about California, the answers to which I felt were facts of value to many others, so I repeat them here.

This is a truly great state for good climate, soil, health, fruit growing, etc., if one settle rightly. In its northern half most crops, except Strawberries, grow well without irrigation. Grain crops are not certain in the interior northern valleys, owing to dry seasons, but are in the west valleys. In the north one has, therefore, but little else to look too than the quality of the soil. Here fruit growing, etc., has been mainly done on valley lands. Many of the foot hills and high plateaus have also rich, lasting soils, and with greater altitude have more rain and a healthier, milder climate, but are farther from transportation at present. The higher lands are comparatively cheap; timber and water are in plentiful supply together with a fine climate.

In the south half, or nearly two thirds of the state, crops generally can be grown only by irrigation, a few valleys near the coast with water near the surface being excepted. Elsewhere nothing can be grown without water being brought to the laud. Then if the soil is good and the water is good (uncontaminated with injurious caustic ingredients) and plenty, magnificent crops are assured yearly. To bring permanent water to the land is often very costly, for in a hot climate, with the wind blowing softly but continuously, it takes an enormous amount of water to supply crops.

If the irrigation water holds in solution even quite a small amount of carbonate salts or sulphates of soda, in time soil irrigated with it in a climate where the evaporation is greater than the rain fall, as it is in all southern California, so accumulates by capillary attraction at the surface as to "kill the soil." Owing to its caustic nature carbonate of soda burns or eats into the tender plant and kills it. Millions of acres of the best and richest soil are to-day, from such causes, "alkali deserts."

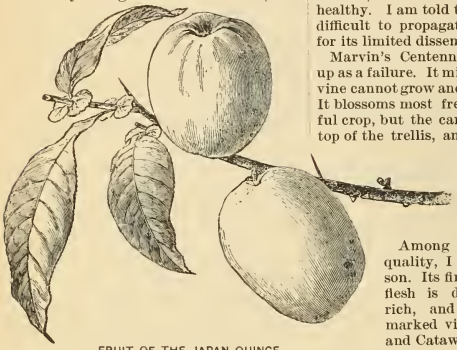
The fact is that much of the waters being used in this State to-day for irrigation carry enough alkali to, in an easily calculated period, kill the soil they are being used on, although for a limited time bearing grand crops. In many instances even the soil naturally carries too much alkali.

These facts have been shown by Prof. Hilgard and indicate that settlers in the south have something to look to other than climate, soil and water for irrigation.

To get rid of the bad effects of alkali in irrigation water can only be done by deep and thorough underdrainage and then flooding the land with sufficient water in the winter time to carry off the alkali. Those who have, at vast expense, gone away up into the mountains after pure snow water, have got that which will give food and fruits to all future generations, but those depending on alkali streams are building very unwisely. What little rain water falls here is only during the three months in winter time. With successful irrigation ten acres will give the grower a larger and more certain income than 160 acres of prairie farm land in the East.

Take Riverside, a fruit growing colony southeast of Los Angelos, for instance. Twenty-five years ago this valley in midsummer was a desert, surrounded on all sides by desolate brown mountains. A party of men one day wandered into this valley and saw that the soil was very rich and the climate very choice. The plateau was sheltered and nothing seemed lacking but water. Good water could be brought there in plenty at great expense and it was done. The world has heard of Riverside

and her Oranges and other fruits. One can ride there for eighteen miles through nearly a continuous line of Orange groves, the finest for their age, perhaps, in the world. This land that went begging for a purchaser but a few years ago at 25 cents an acre, now



FRUIT OF THE JAPAN QUINCE.

occasionally changes hands at from $600 to $2,500 an acre. The sales taken from the books of the fruit growers show that these lands are a good investment.

Fruit of the Japan Quince. Does it Possess any Value?

With the interest that is taken by horticulturists of the present day, in Plums, Pears, Persimmons, etc., from Japan, not to say from other foreign lands, the question naturally arises whether the fruit of that long-since introduced shrub, the Japan Quince, possesses any value, save for the seeds for propagation. In the Buffalo parks where many of these shrubs are growing, as well as in private gardens, we see them fruiting year after year but have never seen the product put to any use.

This fruit which is well represented in our engraving, but somewhat reduced in size, is of a dull green color, and presents a waxy appearance. It is quite hard and so acrid that it would appear to have no value for culinary purposes. Still we have seen it stated that a handsome jelly and not unpalatable to any but a "sweet tooth" has been made from it. Has any reader had experience in its use for the table? If so, we would be glad to have them report with a view to publishing the information.

Notes on some of the Newer Grapes.

E. S. GOFF, ONTARIO CO., N. Y.

Among the very promising varieties soon to be introduced to the public is the Green Mountain, a very early greenish white Grape first brought to notice by Mr. Jas. M. Paul, of North Adams, Mass., who found it growing wild in the mountains whose name it bears. I have fruited this Grape for the past two seasons; it ripens about with Champion, while its quality ranks among the best. The vine is vigorous and quite productive, bearing medium sized, not very compact bunches, of which the berries are a little larger than those of the Delaware. The flesh is quite free from hard pulp, and entirely without harshness or foxiness, and its flavor is very sweet, with a slight inclination toward the vinous. I must pronounce it the only Grape thus far tested that ranks first both in earliness and quality.

The Rochester deserves to be better known than it is. While not equal to the above in quality it is nearly as early, and greatly surpasses it in the very large size and surpassing beauty of its bunch. Indeed, in the latter respects, the Rochester is not excelled by any native Grape with which I am acquainted. Unfortunately the berries are somewhat liable to the brown rot which sometimes disfigures the otherwise perfect bunches. The vine is hardy and very productive, and the foliage appears perfectly healthy. I am told that this Grape is quite difficult to propagate, which may account for its limited dissemination.

Marvin's Centennial I shall have to give up as a failure. It mildews so badly that the vine cannot grow and the fruit cannot ripen. It blossoms most freely, and sets a bountiful crop, but the canes do not grow to the top of the trellis, and the bunches remain green until frost, having insufficient foliage to develop them. The fruit however is of excellent quality when it does mature.

Among the finest Grapes for quality, I must place the Jefferson. Its firm, almost crisp, meaty flesh is deliciously sweet and rich, and though lacking the marked vinous flavor of the Iona and Catawba, it is difficult to surpass. Unfortunately this Grape is a little too late for the latitude of this county. I have it growing upon the south side of a brick wall, and in this favored place, it scarcely ripens before frost. The vine appears healthy and hardy, and is quite productive.

Values in Pomace. How to secure them.

Mr. T. S. Russell, a correspondent of the Rural New Yorker, recently commented upon the waste that usually goes on through loss of seeds and otherwise in fruit pomace, in a very intelligent manner, having accompanied his remarks with drawings of cleaning apparatuses which we have had re-engraved from that journal.

This writer says in substance that it is not generally known that there is as good a market for Apple seed as there is for Clover seed, and the prices for each are similar, ranging from $4 to $8 per bushel, in any quantity. He has received frequent orders, ranging as high as 500 bushels, from one firm. If all cider mills would save seed there would be an oversupply, but this will not be done; so if anybody wants to enter the market, and he has good water privileges, here is one way to save Apple seed.

A stream of water is essential. Construct a V-shaped hopper, as shown in Figs 1-2, varying the length according to the amount of pomace you desire to handle and your water supply, etc. Make the water-tight hopper of wood or galvanized iron say four feet square at the top and six inches by four feet at the bottom, and four feet deep. Make one side of the hopper double, and allow it to extend above at least six inches, space between the double walls one inch. Let this double wall extend half way across the bottom, and leave a one-inch opening in the inside bottom in the middle.

Now make a sieve of copper wire-cloth one-twelfth of an inch mesh, that will fit snugly two inches above the bottom of the hopper. Fasten it down on cleats with a button so that it can be removed easily. Now cause a stream of water to pass down the double wall of the hopper and through the bottom through the sieve. When it begins to overflow have your pomace loosened up and throw in a few scoopfuls; stir it a little. The seed will all settle to the bottom and the pomace will float off with the overflow.

After operating this way for a short time, turn off the supply of water, and by means of a two-inch plug in the bottom of the hopper drain it dry and lift out the sieve of seed and proceed again as before. This small device will clean from three to five bushels per day. Now spread the seed in the shade to dry, and if it is not entirely clean it can be run through a fanning-mill and cleaned ready for market. Drying quickly in the sun or otherwise will discolor the seeds and frequently crack them. Letting the pomace lie in large piles to heat will spoil the seed; if the grater is very fine, it cuts and spoils them. Seedling Apples furnish the most and best seeds.

The seeds can be sold to any of our large seedsmen or direct to the nurserymen. A device similar to the one described, was claimed to be patented some years ago, but Mr. Russell thinks the claim is doubtful.

Another more simple plan is after the plan of gold washing, as shown by Fig. 3. Make a trough 18 inches wide and six inches deep; place partitions across the bottom, about every 15 inches. They should be three inches high, and the length of trough—16 feet. Now, place the trough so that a stream of water will flow rapidly through or over it; throw the pomace in at the highest point, and as the water washes through it, the seeds will lodge behind the cross-partitions, from which they can be removed by stopping the flow of water and turning the trough over on the platform or floor.

Either of these devices will allow the operator to further save the pomace by causing it to drop from the seed-washer on a wooden screen, thus permitting the water to escape. The pomace should now be carted to a suitable place where it may be piled in heaps and mixed with an equal bulk of stable manure, leaf mould, ashes, decayed vegetation, lime, anything and everything that will rot. Have this heap of refuse forked over half a dozen times from fall to spring, and apply it to grain crops or fruit

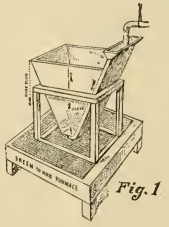


Fig. 1

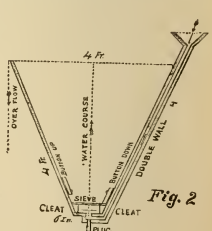


Fig. 2

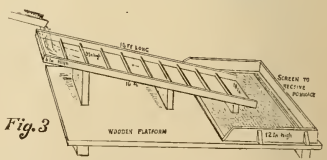


Fig. 3

DEVICES FOR SEPARATING SEEDS FROM POMACE.

trees, on gravel or sandy land, and if the result will be as good as it has been with me, the pomace will never again be considered a nuisance.

Then here is another plan to get cash out of the pomace. Prepare a piece of good, rich, loose soil that is free from stones or roots. Plow and pulverize it to a depth of 10 or 12 inches. Now make flat furrows about two inches deep and six inches broad, and three feet apart; take fresh pomace and scatter it thickly in these furrows and cover

with one inch of soil. Do this before winter. Next spring the seed will come up, and now comes thinning out to about two inches apart, and careful weeding and plowing until fall. These seedling Apple trees, will be from one to three feet high, with nice, straight roots 12 inches long, and there will be from 200,000 to 500,000 on every acre thus planted, that will sell readily for from $4 to $6 per 1,000. Talk to any leading nurserymen about it, and see how quickly you can contract for all you desire to raise.

Pointers for Peach Growers.

W. F. BASSETT, ATLANTIC CO., N. J.

MAKING PEACHES PAY AND THE REVERSE. In reply to my question, what varieties to plant, a successful Peach nurseryman said: It depends as much upon the grower, as upon varieties, whether large high colored fruit of good quality, and abundant crops are secured or the reverse.

Trees of the same varieties have been planted by two men in the same neighborhood and one would have choice fruit and large profits and the other inferior fruit and a loss. The former fertilized and cultivated well and kept the borers out, while the latter cultivated rarely and perhaps tilled deep enough to injure the roots in some places and too shallow in others, took out the borers once in two or three years and allowed grass and weeds to overrun the orchard. Some men with the best kinds will never produce fruit larger than a Walnut.

I recall the case of one man who planted 1,000 trees of common standard varieties, Oldmixon, Stump, Crawfords Late, Rareripe, etc. He plowed and harrowed from April till September, to keep his orchard clear, manured heavily with stable manure every fall and allowed no borers in them. The 4th year he sold his crop for $1,000 on the trees, the 5th year the same, and the 6th for $950, upon same conditions, the 7th year proved unfavorable in various respects, but still the crop netted him nearly $600, and he considered the orchard good for 7 years longer; he had just cut down an orchard which remained in good condition 17 years. A neighbor of his set 1,800 trees of similar varieties from same block, plowed his land once a year, removed borers once in two or three years and on naturally poor soil, fertilized very little, in consequence of which the trees are all yellow and small withered fruit cling more or less to the pits. The former considers his 1,000 trees the best he ever purchased, while the latter claims that he was cheated in the stock.

VERY LATE VARIETIES. It is an undoubted fact that fine Peaches bring extra large prices late in the season, but in repeated trials with such varieties I have never made even a partial success, and the very fact that extravagantly high rates are maintained points to a want of general success. The opinion of an intelligent and successful grower of Peach trees on these points and his reply was that very late varieties had not proved generally successful, but that in certain localities they seldom failed to ripen up well. Moral: the grower should invest very lightly in such varieties if at all, unless known to succeed in that particular locality. I am told that an Island in Cumberland Co., in this State which was formerly occupied as a truck farm, changed hands, and the new proprietor set a few Peach trees which produced abundantly of very large fruit of extra quality and appearance, and acting upon this hint he had planted the whole Island with Peaches and is realizing very large profits.

ONE CAUSE OF YELLOWS. In a large Peach orchard were a few old worthless Apple trees, and in reply to the question, why these were not removed, the owner said that if these trees were taken out the decaying roots would produce Yellows among the Peach trees near them, but that while the trees remained no such effect would follow. This may be a mere whim with no foundation in fact, but I am told that the Peach growers in a certain district near the Hudson River generally consider it an established fact.

THE SECRET OF SUCCESS. One Peach grower in Mercer Co., whose Peach orchards were observed to produce fine crops and retain their health and vigor for a long time, declined to explain the treatment which ensured success, but it was noted that he used large quantities of ground bone and kainit.

MODERATE PRODUCTIVENESS VERSUS THINNING. Several rather extensive planters here, have included in their selection, some varieties which are reputed to be only moderately productive, because they fully understand that a half crop will bring more money than a full one, a basket of extra fine fruit being worth very much more than two baskets of ordinary quality, and the cost of transportation, etc., being only half as much. Thorough thinning at the proper time would, of course, answer the same purpose, but this is very apt to be neglected.

Vegetable Rotation and Culture.

WM. FALCONER, QUEENS CO., N. Y.

Apropos of Mr. Abbott's remarks, page 55 I would say that while I believe in the rotation of crops, I do not find it always practicable or convenient. I make it a point in the summer season never to have an empty patch of land; indeed, most of my ground is carrying two crops at one time, that is, the second crop is planted or sown before the first crop is off, and if this cannot be done, if the first crop is off to-day the second is in to-morrow. This often renders much rotation impracticable.

I have one patch of good rich ground that for some reason or other won't grow Melons, Celery or Cauliflower, but Lima Beans thrive on it, so I crop it year after year with Limas in summer and Lettuce or Spinach in spring, and these crops seem to improve rather than deteriorate. I have grown Parsnips for several years without intermission on the same ground and with no apparent evil effect upon the crop, but Salsify and Scorzonera show their disapproval of such a course of treatment.

I have cropped one piece of ground with Peas in spring and Celery in summer for several years and these crops were finer this year than ever before.

With plenty of cultivation (before planting) and plenty manure, Corn and Snap Beans seem to thrive most anywhere. I cannot raise as good Potatoes in the fatted ground for garden vegetables as in the less fertile farm fields.

Cauliflower is peculiar. Fifty miles east of here—about Jamesport and Riverhead—Cauliflower grows without any trouble. So it used to here, but now-a-days it needs some humoring on account of the club root. In fresh, rich farm land it does well yet, but in garden ground we have to be careful.

Onions, till they become attacked by some disease or trouble, can be grown successfully, year after year for many years in the same ground, but should they be attacked by the Onion maggot, which appears in May, or the leaf thrips which come in June and July, it is time to stop cropping that particular ground with Onions.

We should be guided by rust in Celery, maggots in Spinach and worms in Turnips in the same way, only, as the maggots infest the Spinach in fall and the worms the Turnips in the spring, clean Spinach may be grown in spring and clean Turnips in fall.

Native Nuts Commercially Considered.

C. W. IDELL, NEW YORK CITY.

In years past the Walnut, Hickory and Chestnut were but little known outside of the family circle where they occupied the attention of all during winter evenings, but now they have emerged from this obscurity and become prominent articles of commerce.

The Black Walnut is not a popular one in our market and the few that arrive are generally sold at from 50 cents per bushel to one dollar per barrel. The Hickory Nut is a popular one and large quantities are sold annually. They vary much in size and shape but those known as Shell Barks are preferred to all others, owing to their shape and the color of the meat. This Nut is bought and sold at 50 lbs. to the bushel. In purchasing for our market one should select those that are large and possess a light shell as well as meat, for appearances have much to do in disposing of them readily. The large ones known as Bull Nuts, are not sought for although at times they are sold in quantities to confectioners to work up in candies.

The Chestnut is the most popular of all nuts and has many peculiarities connected with it. The larger portion of these Nuts are bought by Italians for roasting and during their season, which lasts until Thanksgiving, they can be seen at almost any street corner with their little roaster devoting their time in preparing them for their customers. If one were to stop to look at them for a short time he would notice that an x is cut on each Nut before being placed in the pan to roast. One might be induced to think they cut this cross through a devotional consideration, for they are all Romanists, but it is not so; it is done to expedite and improve their roasting qualities, and just here I would call attention to a mistake many speculators in these Nuts make in holding them for a late market.

When a Nut is thoroughly dried it will not roast, consequently these Italians will not buy them, there not being enough moisture in them to generate the steam required to pop the shell. When purchasing for our market it is the better plan to ship often rather than to retain them until a large quantity is collected for then one can get all the advantage of an early market and best prices. Select the largest, brightest Nuts, and I would advise them to clean by sifting before shipping and if there are any wormy ones among them, such should be pains takingly thrown out.

Chestnuts are apt to heat when kept in bulk, and by sifting the refuse dirt and furze is removed, permitting more air to circulate among them. A good sifter can be made by taking a width of wire netting with half inch mesh; one can make the length and height of sides any size they choose, then place it on an empty barrel, fill it only moderately full and by taking hold of it at the side one can get either a rotary or back and fore movement which will soon remove the dirt and also brighten the shells.

The Nuts received from the Southern States are larger than those grown North and are eagerly sought for when the Northern crop is generally small as they have been this year, but they are more infected with worms. In some instances when they meet with a slow passage to market, there is so much life developed in them, there being no demand for fresh meat of this kind, that they will not sell for the cost of transportation. An instance this season was when a lot of twenty barrels sold for $20, the cost of freight being $34.

The common grass Coffee bag is a good one to ship Chestnuts in as they are open and admit air freely. When sent in barrels they should be well ventilated.

A New Plant of Promise but with a Hard Name.

Last month attention was called to the Platycodon as a desirable plant of the Campanula or Bellwort family. Now we have the pleasure of introducing an entirely new member of the order namely, Ostrowskya magnifica, and this, if the signs fail not, is likely to be the most valuable of all the numerous excellent subjects of this family. From the information which follows, for which we are mainly indebted to the Gardener's Chronicle, of England, it will be seen that the advent of its flowering in England occasioned prominent notice.

The plant is spoken of by that world-renowned authority Dr. Regel of St. Petersburg, Russia, as a wonderful Campanulaceous plant. It was collected by Dr. Regel's adventurous son, on the high mountains of Chanat Darwas, in Eastern Bokhara, Asia, and was first described by Dr. Regel himself.

The plant was exhibited by Messrs. James Veitch & Sons, from their nursery in London, in July last, and constituted the most striking feature of the remarkable exhibition of the Royal Horticultural Society on that day. It obtained a first-class certificate from the floral committee, but in the case of an entirely new plant of this excellence a botanical certificate would surely have been the more appropriate award. This, however, is a matter of relatively little consequence. The plant amply deserved any award.

It is a hardy perennial with tuberous roots. As shown the stem is about three feet in height, green, sprinkled with small red spots, with four-leaved whorls at intervals. The leaves are glabrous, rather fleshy, shortly stalked, oblong acute, coarsely toothed. The inflorescence is cymose, the flowers on long stalks, at first pendulous, afterwards nearly erect; when fully expanded they measure the magnificent size of five and three quarter inches in diameter. The seplas are linear-lanceolate, without appendages at the base, shorter than the bell-shaped, pale lilac, eight-lobed corolla, the veins being of a darker bluish-lilac color. The eight filaments are dilated at the base, the style beset with collecting hairs, and the inferior ovary deeply furrowed.

The plant, despite a paleness of color in the flower, is certainly one of the finest herbaceous plants ever introduced, and as there can be no doubt as to its hardihood in England and likely in America, and little if any as to its adapting itself readily to cultivation it promises well to become a favorite.

FLOWER OF THE OSTROWSKYA, REDUCED IN SIZE.

Disbudding and Other Points in Chrysanthemum Culture

JOHN LANE, AMATEUR FLORIST, CHICAGO, ILL.

I had two plants which were quite alike at the end of September, both having been grown the same up to that time. Since then one has had the ordinary watering and care, and by November 10th was loaded with flowers three to five inches across, with many smaller inferior blooms. The plant is worth and would readily sell for two dollars. The other plant was disbudded and fed with liquid manure; each stem was disbudded to three buds each, and liquid manure applied every two or three days from the time the buds were well set until the bloom was nearly out, watering at other times as needed. This plant also at the same time was loaded with flowers, three in a cluster, of a uniform size and very large and fine. The plant is worth five dollars as easily as the other was worth two dollars. The plants are of the variety of Mrs. Frank Thompson.

Again, another plant had fifteen flowering stems; fourteen of them were disbudded to single crown flowering, and the other stem had the crown bud cut out and the side buds left on. It was fed with liquid manure and well cared for, and by the first in November was in full bloom. The single stem blooms were very large, heavy and fine; the one stem had three small flowers, two smaller and two imperfect, seven in all, and was quite pretty, yet the seven would not have sold for one-half that the one single stem bloom would bring. The plant is Mrs. E. W. Clark, the prize taker, and was sent to me by Robert Craig, of Philadelphia, about the middle of October.

Few Chrysanthemums can mature all the buds that set, and disbudding should be done on all large-flowering sorts. They had better be picked off when very small; as they get larger use a knife and cut the stems which bear these off. Take away one third to three fourths of the buds; it is no great amount of work.

Liquid manure may be readily prepared by filling a barrel half full with cow manure and filling up with water. Have the barrel elevated upon an inclined plank with a tub under it to catch the liquid and drip, and with a spigot near the bottom to run out the liquid as wanted. Keep the barrel full of water as the liquid is drawn away. In using reduce with five time as much water at first, and after a time with three times, applying two or three times a week. If the liquid used too strong, or is applied too often, the leaves will be quite certain to droop, and its use must stop for a time and pure water be applied by syringing the leaves two or three times daily until recovered, then return to manure watering as before.

The Ornamental or Chilian Beet.

JOHN F. RUPP, CUMBERLAND CO., PA.

Though it has been several years since the introduction of the Chilian Beet, its great beauty and ornamental uses are but comparatively little known. Planted either singly, or as a border to larger growing plants, they produce an effect which can not be excelled by any winter class of plants.

The past summer, I have given them a thorough test, and am highly pleased with them in all the different ways that they were grown. As a border to a large bed of tall growing Cannas they gave an appearance that was grand beyond description, gaining the admiration of all who saw them. The bed was in the center of a circular drive way in the lawn, the plants grew to height of about thirty inches, having leaf stems twelve inches long by one and one half inches thick, beautifully colored. Some of the stems were of brilliant scarlet, others deep crimson, dark blood red, and a few striped with scarlet, yellow, and crimson. The leaf blades were of a dark, glossy green, measuring nine by eighteen inches. Plants grown as single specimens attained a very large size, of strong, sturdy growth, the leaves measuring three feet, with stems eighteen inches long by three inches thick, highly colored, and blades twelve inches wide. They also do admirably as pot plants, making a unique and pleasing effect wherever placed, as their large, lustrous leaves and colored stems at once attract attention, and can thereby be shown to advantage.

They are really quite hardy plants; those out in several heavy frosts were not in the least injured, and showed as well late in the fall as in the summer; this will prove a great advantage in having large foliage plants late in the season. The Chilian Beet will grow luxuriantly in any good, rich soil, with very little attention, and will succeed where many other ornamental plants would prove a failure. Next summer I shall test the Brazilian varieties.

Do You Grow the Calandrinas?

C. E. PARNELL, QUEENS CO., N. Y.

The several species or varieties of Calandrina form, when taken together, a group of very beautiful free flowering bedding plants belonging to the Natural Order Portulacacæ. Somewhat like their near relative, the Portulaca, the plants are of prostrate habit, having succulent stems, fleshy, smooth alternate leaves, and large purple or rosy pink flowers, which are produced in the greatest profusion during the summer and early autumn months.

On account of their succulent habit they are invaluable for growing on rock work, dry, hot banks, or sunny situations, and then they will endure heat and drought equally as well as the Portulaca. Although they will thrive in almost any soil and situation provided it is not too wet, yet to ensure satisfactory results it is best to give them a deep, moderately enriched soil.

The seeds should be sown about the middle of March, in a well drained pot or pan

filled with turfy loam; sow thinly, cover slightly, and place in a warm moist situation as close to the glass as possible. As soon as the young plants are well up and strong enough to handle they should be transferred to other pans or shallow boxes similarly prepared and placed in rows an inch and a half apart each way, and grown on in a cool airy situation until the tenth of May, when they can be removed to the places where they are to bloom. Or the seed can be sown in a cold frame, as above advised, about the first of April, or on a nicely prepared border about the first of May, and the plants removed to their blooming places as soon as they are large enough to handle. Under this treatment, however, the plants will not flower so early.

The following are the varieties briefly described: *C. speciosa* (or *Menziesii*) flowers of a rosy purple color and the plant which grows about six inches in height is a most profuse bloomer, a native of California.

C. speciosa alba is a very beautiful and distinct white flowering variety of the preceding. *C. grandiflora* (or *discolor*) grows about one foot in height, produces flowers of a rosy pink color and is a native of Chili; *C. umbellata* is an exceedingly beautiful variety from Peru, growing about six inches in height, and producing its rich rosy-violet-colored flowers in the greatest profusion.

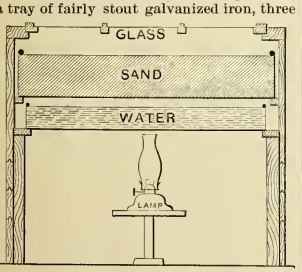
A Portable Propagating Case.

MARY A. NEWCOME, BUREAU CO., ILL.

I herewith enclose a sketch of a propagating case now in use in my conservatory, and which pleases me better than anything I have ever before seen. Water (having an oil lamp below) is the heating medium for the sand, and this is preferable to a body of heated air as sometimes used, a fact that any good propagator will, I think, substantiate.

In the construction of this case (size three feet by four) a strong board outer case with no bottom is made. A tight-fitting glazed sash should be hinged on, and the woodwork is in the main finished. Two feet of the lower part is made double with projecting pieces as shown, upon which the water tray rests, and other projections on each side about an inch wide should be fixed inside the frame, and about four inches from the bottom, which will hold the sand tray.

Assuming the frame to be four feet long, three feet wide and two feet deep inside, a tray of fairly stout galvanized iron, three



A Portable Propagating Case.

feet nine inches long, two feet nine inches wide, and four inches deep should be had to form the water tank, and the one for the sand to be half an inch less than the frame in length and breadth, and about six inches deep. Besides these a kerosene lamp of ordinary form will be necessary to stand under the case to keep the water warm, but not touching the tray standing on a support to raise it to the proper height. The bottom tray is placed in position and nearly filled with hot water. Then the second tray half filled with sand is put into place, and the case covered down. The lamp should be lighted, and after the sand has become warmed the cuttings or seed pans can be placed in, and by regulating the distance between the lamp and the water tray, a proper uniform heat can be maintained.

Double Gladiolus, and A New Form.

D. S. MARVIN, JEFFERSON CO., N. Y.

Again this year I have observed flowers with a double stigma five and six stamens, and ten petals and one with but two; but the most singular form was caused by the two and a half inches of rainfall early in August. A normal spike has flowers upon two sides, and it requires two or three spikes tied deftly together to present a show all around, with no vacant spaces, but these spikes have four rows, and a single spike is a full bouquet in itself; some of them that have doubled began half way up, commencing just where the rain commenced to stimulate the growth.

Dracocephalus is a most singular form, yellow specked with red, upper petals curved downwards so as to force insects to rub the stigmas with their backs and thus fertilize the ovules, but even this device usually fails, for in order to get seed I have had to fertilize them by hand.

Purpurea seems a hybrid similar to Madam Lemoine with longer flower stalks and slimer growth, but inferior to them. Among my Lemoinei and Lemoine seedlings, I find similar but handsomer flowers.

The climate at Watertown seems propitious, for originating the most vigorous and gayest seedlings. It has been a great source of enjoyment to me this fall to watch these opening seedlings, with expectation on tiptoe, and the show has been most gorgeous. Nothing was lacking but fragrance, and I see it stated in a Washington Territory horticultural paper that they have fragrant Gladiolus there. Who knows about this? Where can the bulbs be had?

The Care of Plants in Winter.

MISS C. L. F., CRAWFORD CO., PA.

Much heat is not so necessary for the welfare of the window garden in winter as many seem to believe. As plants get but little sunlight at this season, they are apt to grow spindling if kept at too high a temperature, and red spider will prove most troublesome, unless moisture is provided by keeping a vessel of water on the stove and the plants be frequently sprinkled.

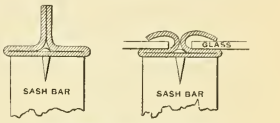
A temperature of 75° through the day, and 40° at night, seems most suitable, though even the quite tender ones will endure 35° for a short time if the wind is not blowing directly upon them; therefore, all cracks or crevices about the windows should be stopped up early in the season. If inconvenient to keep fires at night, the plants may be moved to the center of the room, —when the mercury outside indicates the advisability of such a course—carefully wrapped in papers, and the windows likewise covered.

A lighted lamp in the room will do much to prevent a freeze; an ordinary sized one will raise the temperature 5°; for the reason that some houses are warmer than others it is inexpedient to make rules; we must keep an eye on the thermometer.

There is a large class of plants that require or are benefitted by, an annual rest of one or two months, that may be kept in an ordinary cellar, through the coldest season. As the catalogues give names, a lengthy list is unnecessary. Even Tricolor and Silver-edged Geraniums and Pelargoniums are not such hot-house plants as might be supposed had not our lengthy experience with them proven otherwise.

Lead Glazing.

Judging from the attention the subject of lead glazing is receiving in England it must be possessed of some merit. As is well known, sheet lead is one of the most pliable of metals, and it seems to be in certain ways well adapted for holding glass securely in place on sash bars and ensuring tight joints.



Lead Glazing for Greenhouses.

One of the most simple methods of using lead for this purpose is shown in our illustrations. The sheet is cut into narrow strips which are bent lengthwise to the shape of the letter T in the manner shown by the left hand cut annexed. Then the T is inverted on the sash bar, and small nails with good heads are driven at intervals through it to attach it securely to the bars. The nails easily penetrate the lead, no punching being required. To complete the glazing the panes of glass are placed on the lower doubled part of the metal strip lapping the glass in the usual manner, and the upper edges of lead are folded down over them, being pushed closely down at the corners formed by the laps to prevent the glass from slipping. No tacks for the lights and no putty are required. To replace a pane of glass in case of breakage is far more easily done than when putty and tacks are used as in the ordinary way of glazing.

1010. **Stones in Soil.** Many times mischief is done rather than good by the practice of closely removing stones as they serve more than one useful purpose. When laying on the surface they act as a mulch, checking evaporation. Their slow decay and disintegration by the frost and the action of the elements contribute to the replacement of the food extracted from the soil by the roots of plants. Their action is specially beneficial on stiff clay, breaking up and modifying its texture. Professor Wrightson says: "Many soils now worked as light lands would be unworkable clay were they not lightened up and divided by countless stones." Yet light, stony soils soon dry up, as the subsoil is usually of the same character and the water is soon drained off; but while the amount of moisture absorbed by the soil ordinarily decreases with the quantity of stones it contains, removing the stones will not remedy the evil, as the only effect would be to render the soil shallower. Stones check capillarity in the upward motion of the moisture, and so indirectly retard evaporation. However, if the subsoil contains material of sufficient quantity and it is practicable by deep trenching to form a soil of right depth and texture for plants' growth, then removing the stones might prove an advantage.—REMLE.

1009. **Cornflowers.** These belong to the family of Centaureas, which includes many species, among which are the well known tender annuals, C. candissima and C. gymnocarpa. The Cornflower (*C. cyanus*) is also called Bachelor's Button and Bluebottle, and is largely grown for the flowers, which bloom in a variety of colors ranging from rich blue through pinks and purples to white. It is justly a favorite garden plant for cutting from, but for pot culture it may be said to be rather weedy looking. In this respect the Dwarf Centaurea (*C. depressa*) might well supersede the Cornflower, as it only grows about one foot high and is altogether neater in appearance while having as large flowers of the same rich blue, with broader, silvery hued leaves.—REMLE.

1012. **Begonia Rex.** The cause was probably defective root action brought about by unsuitable soil or injudicious watering. This Begonia likes a rather moist atmosphere when making its growth in the spring. With a temperature of 55° or 60° from March to June this fine-leaved Begonia will grow very well, but not without. From now on 50° will be enough with just keeping the soil moist. During March shake away the old soil and put in a pot only large enough for the roots, using fibrous soil with plenty of sand. Be careful only to water as the soil gets dry, giving good light but not sun.—E. E. S.

1007. **Dividing Fern Roots.** As the variety is not mentioned definite advice cannot be given. Usually the best time to divide them is in the spring, just before they start into growth, but some species of fern do not take kindly to division and others are not at all injured.—REMLE.

Jacqueminot--Fame in a Rose.

Who is there now knows aught of his story?
What is left of him but a name?—
Of him who shared in Napoleon's glory,
And dreamed that his sword had won him his fame!
Ah! the fate of a man is past discerning!
Little did Jacqueminot suppose,
At Austerlitz or at Moscow's burning,
That his fame would rest in the heart of a Rose.
—*Bessie Chandler in American Magazine.*

The Elm and the Apple.

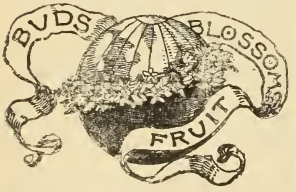
The Elm in all the landscape green,
Is fairest of God's stately trees,
She is a gracious-mannered queen
Full of soft bends and curtesies.

And though the robins go, as guests,
To swing among the Elm's soft leaves,
When they would build their snug, round nests,
They choose the rough old Apple trees.

The Apple has no sinuous arms,
No smooth obeisance in her ways;
She lacks the Elm's compliant charms,
Yet she commands my better praise.
—*Wide Awake.*

Tree-Snow.

The Beech is bare and bare the Ash,
The thicket's white below,
The Fir-tree scowls with hoar moustache—
He cannot sing for snow.
—*Bayard Taylor.*



Make up a label supply.

Taste may be cultivated.

Get sunshine to the plants.

Add to the Celery pit cover.

Squirrels are great Nut planters.

Why not scrape the tree trunks now?

Herb-trinity was the old name for Violet.

A Popular Act: Subscribing for this journal.

Hardy shrubs are becoming more appreciated.

The bark of Magnolias is enticing to rabbits.

For a shipping market dark Cherries are the best.

Plants have the "blues" in these short, dark days.

The Cucumber Magnolias can be easily raised from seed.

Good drainage is the best aid to winter protection.

The manure pile should now be making its best growth.

Pot Hyacinths should be opening the 1889 flower season.

We don't dote on chip dirt for plants. Rotted turf with manure is better.

The florist will tell you that the size and beauty of flowers depend on good culture.

The Cherokee Rose so common to the south is not a native but is of Chinese origin.

Has any reader had successful experience in butting instead of lapping greenhouse glass?

If the leaves of Hyacinths grow faster in water than the stalk, cut off a third of the roots.—*H. S. French.*

Insects numerously found in the greenhouse are a sure sign of shiftless management; no excuse for that!

Are We to Have Blue Gladiolus? Now comes word that that expert hybridizer, Monsieur Lemoine of France, has raised a Gladiolus of a positive blue color.

An investigation of the seed purchasing business of the Department of Agriculture is on the boards as part of the work of the Senate Agricultural committee.

Evergreen Trees. Lift the beautiful evergreens that are in near view from the writer's window and the greatest charm of the winter landscape would be gone.

On the Popular Gardening Farm winter closed in with the fall plowing, subsoiling and under draining not so far ou as we would like, owing to an excessively wet October and November.

The Keiffer Pear. One tree of this variety planted in the spring of 1887 ripened seven large Pears. We consider the quality very good, having ripened them in a cool room.—*Frank Aikin.*

Phylloxera in Spain. A royal decree advises the importation of American Grape vines and periodical inspection of vineyards by officers as a safeguard against the further spread of this scourge.

A Hint for Florists Tasteful arrangement with cheap flowers can make better for trade and reputation than poor arrangement and the most costly blooms. Aim first of all for simple, tasteful arrangement.

Make Home Beautiful. A good season this to study the landscape from the windows of the living rooms and decide on where one or more clumps of Evergreens could next spring be introduced with the best effect.

A Gardening Pastime. Procure a large sponge, wash it clean, scatter grass or other seeds thickly over it, hang it in a warm window, moisten the sponge daily and enjoy the result of a bit of natural winter greenery.—*Emma L. Wales.*

As to the Matter of Weeds. One of our exchanges encourages the idea of composting weeds and thus reap some benefit from them. Perhaps all right if you have weeds, but good gardeners don't need any such suggestions for they don't grow weeds.

Cosmos hybridus, bearing pink and white flowers, is one of the most floriferous of plants, either in the window or greenhouse, and is worthy of being extensively grown. Sow the seed in early spring and keep the plants closely cut back during the summer.—*E. E. S.*

The Feet at Work. Mr. Peter Henderson never tires of discoursing on the use of the feet in seed sowing through firming the soil over the drills. For winter POPULAR GARDENING suggests a similar use of the feet in firming the snow against orchard trees to prevent the attacks of mice.

It Might be Tried. An amateur in England recommends the immersion of plants—that is their tops—in cold water for from 20 to 40 or more hours as a cure for plant scale and other insects. He says: "Gardenias thus soaked for 48 hours were none the worse for it while the insects were used up entirely."

Some Noted Trees Destroyed. President Garfield's memorial tree, a Locust in the Botanic Garden at Washington was, by the severe storm last fall, overturned; at the same time also, Vice-President Hendrick's Buckeye or Smooth-fruited Horse Chestnut was uprooted. Considerable other damage of the same nature was sustained.

Mice and Peach Trees. A near neighbor of the editor at "Woodbanks" successfully diverts the attacks of mice from Peach trees by strewing the ground here and there in the orchard with superfluous branches cut from the trees. The mice will never trouble old trunk bark if they can get that which is young and tender. In ten years this remedy has not failed him.

Agricultural Education East and West. A recent report of the number of students at the Agricultural College of California would not indicate a great hunger for an advanced agricultural education among California youth. There is but one student each for the half dozen professors at their State College; while at the Michigan Agricultural College there is an attendance of over three hundred students.

Reader have you had a share in extending the acquaintance of this Journal among those who know it not, or in swelling its circulation through forming a club? The more subscribers we have the better paper we can make. This is why we offer such liberal premiums for new names. A lift from you here is a lift for an improved American Horticulture. This is the time for good resolves and for entering upon and carrying them out.

Natural Gas and Insects. Our esteemed friend of the Indiana Farmer, we fear, may be jumping at a hasty conclusion. He is disposed to link the fact of a noticeable decrease of insects on fruits in certain towns where natural gas is used as fuel, to the presence of this gas. It now seems to be accepted that most kinds of insects destructive to fruit were less prevalent everywhere during the past season than for some years previously.

"Our Rose Hedges have done remarkably well this past season," writes Mrs. Wade Burden from southwest Missouri, "some varieties like Madame Chas. Wood, Appolina, Louis Odier and Hermosa blooming almost continuously. A recent fall wedding brought out a most conspicuous design composed of Nasturtium flowers and leaves combined. A fine funeral decoration consisted of a flat wreath on casket, surrounded by loose bunches of blooms, nearly covering the lid."

Easy Rose Propagation. Last August I made a six inch cutting of the Hybrid Perpetual Magna Charta and inserted it into the ground at a depth of two inches in a partially shaded spot covering it with a glass fruit jar. I kept the cutting well watered. About the middle of October it was callused and putting it in a two inch pot I removed it to the house. It has now (Nov. 9) a shoot on it two inches long and looks very healthy. Another year I shall try my cuttings in July for this certainly is a very simple method of increasing Hybrid Roses.—*S. T. White, Kings Co., N. Y.*


A Convenient Thermometer Box.

Potato Blight and Rot. This disease appears when rain follows a drouth or when cold damp weather follows hot weather. Brown spots appear all over the leaves and soon they look as though frosted and dry up. The diseased top is disastrous to the tubers unless they are dug at once. The sap flows back carrying the germ to the tuber where it begins its work and which nothing can then stop as it works on the inside, the very opposite to dry rot, which latter may be stayed by dusting thoroughly each basketful with a handful of dry air slaked lime.—*W. T. Alan, Mercer Co., Pa.*

The Horse Chestnut is not such a bad or valueless nut after all as is generally supposed. In this country, according to a recent report of the Agricultural Department, bookbinders make a paste from the flour that is prepared from these nuts, the bitter principle in it serving to prevent the attack of insects on the paste before and after use. In France a number of uses are made of this fruit among which may be mentioned: A charcoal from the skin of the nut forms the base of different printing inks, a sort of soap, yellow matter for dyeing, potash, as a substitute for chinchona and for bleaching various fibers.

Perfumery Humbuggery. Have you walked along the street of some city and observed the fragrance arising from the baskets of certain "Rose seed" or "Lavender bloom" venders? Well when you do see them don't invest in these wares unless you enjoy being fooled. The articles are offered for placing among clothes and are "warranted" never to lose their fragrance, but a dozen times a day the venders retire for a bit and in some unobserved place squirt perfume over their stock to keep an odor about it; anything that rattles in the envelopes does duty for the seeds or dry leaves.

The Strelitzia regina, or Bird of Paradise Flower as it is sometimes called, is well adapted for common greenhouse culture and also for the window garden; its brilliant orange and purple flowers, produced from a horizontal sheath, one above another, together with its ornamental leaves, form a most striking object well worth a place in any collection. Its culture is not difficult, as a temperature from 55° to 65° is needed. The plants require rich, sandy loam, plenty of pot room and a light situation, being kept out doors during July and August. Propagation is slow but is most easily performed by means of suckers or dividing the old plants.

A Simple Feat in Flower Forcing. Try it. A year ago in January I placed some Cherry branches having fruit buds in water and set them in a light window. In two weeks the branches were covered with the beautiful white blossoms which lasted some time. Of course any shrub that naturally flowers as early or nearly so in the spring as does the Cherry, will be likely to do as well. I have seen the statement that the Andromedas, both the dwarf foot-high shrub, so familiar to Cranberry men, or the Southern (*A. floribunda*) will, if treated as above, in a short time put forth its Valley-Lily-like flowers. Our popular yellow flowering Forsythia should do as well.—*Remle.*

Growing the Hollyhock as an Annual. For this purpose the seed should be sown now in January, or at latest in February, and the most generous treatment given at every stage of growth. Sow thinly in pans in good soil, giving 60° or more of heat with something over this at the bottom. When seedlings appear place them on a shelf near to the glass to prevent a spindling growth and let them occupy the seed pan until March 15, when they may go into 4-inch pots, to remain in these until planted out, keeping them after potting a little cooler. With this treatment fine flowers (if not quite so fine as from second year plants) may be expected the same season. The Hollyhock, as a rule, comes quite true from seed.

A Word for Frames. Growers of vegetable and flowering plants do not as a rule sufficiently appreciate the value of cold frames and mild hotbeds for finishing out the growth of most any kind of plants before the setting out season in spring arrives. Plants transferred in April from the greenhouse to frames will become more healthy and far more stocky and handsome than they possibly could do if kept in the greenhouse from that time on. Being comparatively cheap to construct frames may serve most profitably as adjuncts to the greenhouse by permitting of the raising of one half more stock than could be done without them and this should, through not being crowded, be a half better in quality. Frames are easily managed. This is a good season to provide the sash for such a use.

Callas. Why don't my sister plant-growers have Callas? Even without their pure and graceful flowers the leaves are elegant, and a great ornament to the plant shelf; but a little study of the needs of the plant will give a succession of flowers for a long time in winter and up to planting-out time. I put hen droppings in the bottom of large sized pots, on that, rich meadow earth, then the bulbs, looking as dead, after their summer's rest, as a last year's Cat-tail. After the leaves begin to grow, stimulate, stimulate, stimulate. A Calla is as hungry as a little boy. I wish some of our scientific POPULAR GARDENING readers would explain why a Calla likes raw oysters. I have tried it time and again tucking one or two under the soil each week; in a few days you cannot find them. They easily absorb into the earth, or the plant digests them. At all events they make splendid blooms. Let others try it.—*Sister Gracious.*

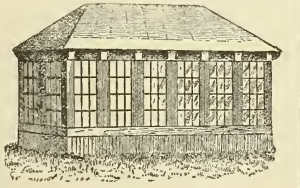
Thermometer Box. At the side of our greenhouse entrance door we have a convenient arrangement for handling the thermometer in the winter. This is shown by the engravings opposite, the lower one of which is a cross sectional view as seen from the bottom looking upwards. Here *a* is the thermometer attached to the upright board *c* on the top of which and slanting is attached the roof *b*. On the board marked *e*, which is the base of the whole, being secured to the building by screws, are two flange pieces, *d d*. Into these flanges the piece *c*, holding the thermometer and having the roof piece as alluded to, may easily be slid. Then when one desires to consult the thermometer at night by reaching out and taking hold of the roof piece the parts *a*, *b*, *c* in one, slip up and can be brought quickly to a light inside the door to be read and then returned. The wind has no chance to blow away or otherwise disturb the thermometer.

Some Southern Chrysanthemums. For some weeks our grounds have been an attractive Chrysanthemum show the like of which has never before been seen, so visitors say. Gloriosum, a fine yellow Jap, was the first to open, but all were more nearly November, than "October flowers," the common name for them here. Blanch Coles, recommended as early, was only medium early and like an Ox-eye Daisy. Tuberiflorum seems to be a misnomer and probably should be Tubiflorum, as each leaf is round or tube-like; any way it is an odd variety, rosy maroon in color and quite pretty. Mrs. Cleveland is much like it but white, and the flowers I saw (not on our grounds) were inferior. Mrs. Vannaman is probably the finest one we have. It is bright red, tipped and splashed with yellow, and the flowers form great masses that seem almost like one blossom. Diana is a beautiful white and attracts much attention. Many of the varieties lasted well into December.—*Henry A. Green, Chester Co., S. C.*

Thoroughness with Insects. In cleaning such hardwooded plants as the Ivy, Oleander, Laurestinus, etc., and which are quite subject to scale insects, people often are puzzled to know why a new lot of these pests show up so soon after the plants have been cleaned of them. Plain enough: the means employed for destroying these were not effective against the young broods, so small as to escape detection when the plants were gone over. Now to prevent just such vexatious happenings we use water in washing plants, that is sharpened to about 120° of heat, and by the addition of Tobacco juice to give it a color like weak tea, or else whale oil or common soap to create suds freely. Such a liquid starts up young and old alike, and the former, if they should not happen to be brushed away, because from their minuteness overlooked, are not likely to settle back and thrive. Some advocate the use of hot water alone, we prefer the addition of either Tobacco or soap. The washing thoroughly done then wait a little, after which drench off the strong liquid with clean water.

First Greenhouse in this Country. To convey an idea of the advances made in constructing greenhouses in this country an illustration is given of the first known structure of the kind. The building was erected in 1764 in New York city on the grounds of James Beekman, the site being the center of what is now 52d street; the sketch shown was made by Mr. B. J. Lossing, L. L. D., in 1852. This style, according to an account before us, gave way to a sort of hooded greenhouse, with partially slanting windows, and it was a great improvement. Then came the lean-to, as it is called, or one with a back wall of brick, 12 or more feet high, with a front wall of 4 feet or so, with sloping glass top. This was a vast change for the better, and it was only necessary to join two of these together, back to back, to produce the span roof, and except in variations of building, the greenhouse of the present day is the result. The main object of the greenhouse is to admit light—the more the better—and exclude cold. Glass does the one, and fuel the other. With these appliances and a skilled gardeuer, an atmosphere exactly suited to the wants of a particular plant can be produced with no drouth or winds to destroy. Nature alone rarely shows her produce so faultless as she does with the aid of man.

Of Course Keep a Diary. Because, three persons out of four who start in at the beginning of each year to keep a diary, indulge in skips after a few weeks and eventually quit, is no reason why the fruit grower or gardener should not resolve at this New Year to undertake it with the idea of keeping at it permanently, for it should



The First Greenhouse Built in America.

be business to him. That it can be done the writer knows for he has done it year after year. One of the most valuable books on his shelves to day is a dairy kept up on the following plan, and which he now believes is by all means the best plan for a horticulturist's dairy. Instead of starting off with a small dairy such as can be bought at the stationers, he invested in a common well-bound blank book, size 12 by 15 inches when open and having 370 pages, or a page to a day. This book served him for four years, by entering the record for the same date on the same page year after year, keeping the matter for each year well separated from that of the next preceding one. After the first year especially, a diary of this kind becomes a fascination, and this increases with other years for one enjoys looking back to see how the work and the weather compare year after year, a thing far more easily done when the record of years is at once under the eye. Of the outright value of such a book no arguments would seem to be needed. Not the least of this is the inspiration to better efforts for the future that arises from seeing a record of the sum of past operations with their attendent results, successful or otherwise.

New York Flower Notes.

Chrysanthemums are over now to the joy of many growers; they have been as fashionable as ever, both for decorations and bouquets. At several pretty weddings a screen of these flowers covered the wall, the clergyman standing in front of it while performing the ceremony. The bridesmaids usually carried bunches of Chrysanthemums. The arrangements of these flowers at the various shows around New York were usually of little merit, and displayed no originality. A big case or jar filled with a harmonizing mass of Chrysanthemums is very tasteful, but baskets where they are jammed together tightly with the additional insult of light Ferns for garniture, utterly ruin their original beauty.

The original design which received first prize at the New York Horticultural Society's autumn show was the work of John Finn; it contained no flowers whatever. It was an irregular pyramid of small foliage plants half buried in Adriantum, Little Marantas, Pandanus Veichtii and the like. The whole erection, which was about four feet high, was crowned by a small plant of Anthurium Criptallinum. It was charming in effect, harmonious in coloring and attracted much more admiration than the pretty but hackneyed baskets of Roses which were in competition against it.

One beautiful arrangement seen at the Orange N. J., show was a tall trumpet shaped tazza about four feet high. This was loosely filled with Roses mingled with a few smaller flowers with trailing vines hanging over the edge. Such a vase is placed on the floor in a reception room in some prominent position. The high-class florists display very handsome bowls and vases in new styles of French ware for their decorations. What is known as "tapestry ware" is new and beautiful. The surface is slightly rough and displays bold patterns in gobelin colors, giving an effect greatly like tapestry; other Haviland and Limoges ware has a satin cream surface with large figures in dull gold. These vases are loosely filled with fine flowers.

Undoubtedly the reigning sensation in the horticultural world is the wonderful new Chrysauthemum, "Mrs. Alpheus Hardy." All the authorities describe it as the most remarkable and unique introduction of recent years, a verdict in which the general public concurs. One who has only seen illustrations of it, which have all been poorly done, can scarcely conceive its real beauty. The tower is a remarkably pure white, to begin with, and the incurving petals firm of substance. This displays to the fullest extent the strange glandular hairs covering the backs of the petals and it can only be likened, for the fiftieth time, to a snowy ostrich tip. This received special honors at the New York Horticultural Society's show and at Orange, Boston and Philadelphia.

The prettiest show this autumn, taken all round, was an exhibition of decorative plants held by Siebrecht & Wadley, in the Eden Musee. Quantities of Palms turned the winter garden into a bit of the tropics; there were just enough Chrysanthemums to make a show, and a lot of other good flowers. A miniature Japanese garden, arranged on the platform with beds of Primulas and Hyacinths and stiff hedges beyond the little gravel paths, was really very pretty in its prim formality.

The florists report few notable festivities so far, though they say the season is not really dull. The weddings are over and dinners have not begun; decorations at lunches and teas are not so elaborate as they were. A great many debutantes are being brought out, and to the joy of the florists, the fashion of presenting them with bouquets is again revived. A popular girl may receive auy number from two dozen to two hundred. They are usually made of Roses, first quality flowers only being used. Siebrecht & Wadley recently made a very beautiful bouquet for a Chicago debutante, it being sent there by special order. It was composed of Cattleyas, Laelias and Cypripedium Spicerianum with a veiling of fine Ferus

Some very good American Holly with plenty of berries is to be seen, but the best in the market is imported. One firm is importing small Holly trees three to five feet high, and covered with berries. There is plenty of English Mistletoe too. Another very handsome Evergreen is the so-called California Needle Pine, with very long leaves. It does not, however, owe its origin to California. Beauties are the most popular Roses; they ranged from fifty cents to one dollar each at retail in December and would go higher at the holidays.

EMILY LOUISE TAPLIN.

Pansies in fifty-five distinct varieties were shown at the Wisconsin Horticultural Society's late meeting by Wm. Toole.

Wonder Raspberries of fine quality were shown the last of September at the Indiana State Fair. It is an everbearing variety of considerable promise.

A Cabbage trust is reported from Ohio, the members of which refuse to sell any of their immense crop for less than five cents per head.

Early Potatoes. I grow these early by starting in greenhouse or hot-bed, because I like to raise Potatoes better for 40 cents per peck rather than for that much a bushel.—*A. I. Root.*

A Dove Flower (*Peristeria elata*) was exhibited by Miss Baldwin, of Philadelphia, at the Pennsylvania Horticultural Show. It did not fail to attract the attention it deserves, being one of the finest Orchids.

Sulphate of Ammonia. It is a powerful nitrogenous manure and should be handled carefully, as if put on too strong it will kill the Roses, but if needed, and applied in a very dilute state, the effect will be beneficial, though as a rule it would be better to apply ordinary liquid manure.—*J.H. Taylor at Florists' Convention.*

Some Grapes that have proven hardy and good, both in flavor and yield, at Ottawa, Canada, at an elevation of 1,200 feet, out of nearly a hundred varieties planted six years ago, was reported at a meeting of the Ontario Fruit Growers' Association to be: Black,—Wilder, Worden, Moore, Concord, Barry; Red,—Delaware, Brighton, Lindley, Agawam; White,—Niagara, Lady, Martha.

Vegetables on Muck or Upland. You cannot get such quality nor the best keepers from a muck bed as from upland, even though the former are larger and better looking. On high land it may be more expensive, and if the best conditions do not prevail, failure may ensue, yet where quality is desired these risks must be taken.—*Robert Graham to the Michigan Horticultural Society.*

How to Get Early Strawberries. At a recent Strawberry meeting it was stated that by summer mulching a late variety the season can be prolonged a week, and the greatest earliness can be attained by not mulching early varieties. Grown beside the early May King, heavily mulched, a variety no earlier could be advertised as a week earlier and inexperienced growers induced to buy plants.—*L. B. Pierce.*

Large vs. Small Fruit. Peaches that averaged sixty-four specimens to the bushel were worth four times as much per bushel as those averaging two hundred to the bushel. The cost of growing, picking and marketing two hundred medium sized Peaches is more than it would be to grow and handle sixty-four, and when grown and sold they bring only a fourth as much. It pays to raise the best.—*P. M. Augur at the American Pomological Meeting.*

Irrigation, or No Irrigation. Many members of the Sutter Co. (Cal.) Horticultural Society, after 25 years' trial urge the more thorough cultivation of orchard and vineyard, as producing better flavored fruit than artificial watering, besides being more certain and cheaper, for the fruit grower cannot depend on other than average conditions, and it is not profitable to build extensive irrigating works which at most are but seldom really required.

State Horticultural Meetings. The annual meeting of the New York State (formerly Western New York) Horticultural Society will be held in Rochester commencing on Wednesday, Jan. 23rd, 1889. Full particulars may be had by addressing Secretary P. C. Reynolds, Rochester, N. Y. . . . . The next meeting of the State Horticultural Association of Pennsylvania will be held at Lewiston, Pa., January 16 and 17. Circulars with programmes and full particulars will be issued shortly. Meanwhile further information and orders for excursion tickets may be had by application to the Secretary, E. B. Engle, Waynesboro, Pa. . . . . The Mississippi State Horticultural Society will hold its next annual meeting beginning with January 16th, at Crystal Springs, Miss. About 150 members are expected to be present.

At the Ohio Horticultural Society meeting it was suggested by Entomologist Alwood, that fruit suffered less this season from insect depredations because the year before there was a scarcity of fruit and vegetables, and that therefore the coming year will be greatly exposed to the ravages of insects, because everything that insect life needed for their development and hibernation was abundant. The canker worm, coddling moth and fall web worm, and all other insects which pass the winter in cocoons may be largely destroyed during the winter by careful search. It is well also to scrub the trunk and branches of trees with an alkaloid solution.

Six Roses for Canada. At the Picton meeting of the Ontario Fruit Growers' Association, Mr. F. Mitchell, a successful Rose grower, gave the following as his choice: Gen. Washington, Victor Verdier, La France, Madame Gabriel Luizet, Coquette des Alps, and Prince Camille de Rohan. In treating them he advised showering with Tobacco water, for thrips, aphides and other pests. Pruning after the first blooming will cause the shoots to send up fresh shoots with later bloom. During the winter the bushes should be covered with Cedar boughs, rather than straw, as the latter favors mildew, and sometimes kills the bushes; all kinds of Roses are the better for a covering; a little digging on one side will render them easily bent over.

How Farmers Can Grow Raspberries. Philadelphia, Turner and Cuthbert are the best for our climate, and will grow on any good Potato ground. Plant four feet each way, and cover the ground so deep with straw or other mulch that no grass or weeds can grow, and there will be no trouble with suckers. Late in November with a load of straw drive astride the row, bending the canes all one way with the wagon axle, throw over them enough straw to hold them down and cover them. This gives protection from freezing and thawing and exhausting winds and leaves the vitality in the canes where it is needed to produce a good crop of fruit. The Turner will not kill down if left uncovered, but the cane becomes so exhausted that it will not produce much fruit. The increased yield, when protected, will pay the expense ten times over. Uncover early in the spring, stamp the straw well in around the roots, cut out the old dead canes, shorten the new ones to about three feet and tie to stakes or wires.—*C. L. Smith, at a Minnesota Farmers' Institute.*

Does Girdling Effect Grape Vines? It has been thought that where the renewal system was practiced, the bearing cane (the growth of the last year), which would in any case be cut away at the autumn pruning, might be girdled without injury, and this has been tried to a considerable extent by some of the Concord growers, including Mr. Wright, whose place was the one visited. After a careful examination the committee were of the opinion that the vines had become lessened in vigor by the girdling practiced, and that this effect was especially to be seen in the shoots of this year, which will form the bearing canes for next year. Mr. Wright's views were quite decided in regard to the deterioration in the quality of the fruit. But its effect in increasing the size of the fruit and hastening its maturity was plainly seen. On part of the vineyard Concords were only beginning to color, and apparently would not be fit for market before frost, while where the vines had been girdled they were about ready to cut.—*Report of the Garden Committee of the Massachusetts Horticultural Society.*

The Value of Organization. Montgomery County, (O.) was the winner of the first prize offered at the Ohio Centennial Exposition for the best county display of horticultural products. This result shows plainly what may be accomplished by organization and co-operation. The County Centennial Commissioners organized working forces and held meetings in every township. About one thousand dollars of public funds were used (though other countries used from two to eight times this amount) for premiums to the various townships as a special incentive, thus centralizing all the resources of the county upon the Columbus exhibit. In the arrangement of the display nothing but plain tables and plates were used, no extraneous devices being employed to attract attention, but the intrinsic merit of the exhibit was relied upon for favor, also conforming themselves strictly to the rules, showing but one plate for each variety, not seeking advantage from largeness of display by duplicating. A scale of points as devised by the authorities was used by the judges in the difficult matter of making the awards. Three different judges made three separate examinations, each working independently, and strange to say the successful county did not receive a single mark on the first examination, while on the other two it was far ahead, and it is a just pride which any county might feel at standing at the head of such an exhibition of the best efforts of the State in so fruitful a season.

Improving Country Cemeteries.

[*Abstract of Paper by A. H. Sargent, "Glendale," Akron, Ohio, before the Association of American Cemetery Superintendents.*]

Many plans have been adopted in establishing "grave yards." Some have been opened in connection with our churches and at various "four corners" in the country. Others have been opened (not maintained) by township and other public authorities, and very many as private family burial places, but afterwards became common property. About all are in a most luxuriant state of neglect. It seems as though they were set aside merely for the purpose of furnishing a place in which the people could bury their dead with as little expense as possible, and for the erection of a slab with inscription, etc.

The church yard is perhaps not quite as bad as the family burying ground, for it is oftener used, and consequently oftener mowed, so that it presents a little more tidy appearance; but the congregation, who will worship in a church in whose back yard the graves of their brethren and sisters in the church are neglected, as nine tenths of them are, I have little confidence in. "By their works, ye shall know them."

The village or township cemetery is more modern, and can at least be cared for, provided the trustees have any taste for the care and embellishment of them, and are not afraid of losing their office by making the requisite levy upon the citizens for their proper maintenance. I have just noticed that in the county where I live, six out of 18 townships have made a levy of from five hundredths to two tenths of a mill for graveyard purposes, certainly not an extravagant outlay of money.

Cause of Neglect. The principal cause of neglect in these graveyards is the want of adequate provision for their proper care. No provision has been made for the sale of lots, from which a maintenance fund could be established, and neglect naturally follows. I would abandon the private burying ground, and only maintain the churchyard and the village or township cemetery, and remodel the form of management. I would charge per lot, or grave, enough to cover the permanent care of each lot sold, and then let an investment be made in such a manner as would insure proper care for all time.

The Cemetery as It Should Be.

Nearly every State has a provision for the establishment of cemetery corporations, composed of lot owners, who have entire control. There is no sense in having a village or township cemetery paid for from the public funds and controlled by the votes of a majority. Let those most interested run and control it, and then have a permanent fund for its permanent care. The argument will be the cost. Well, my dear friend, a good horse or buggy costs, and do you not expect to see your kin decently buried, as you have tried to have them live, at least respectably?

Site and Improvement. Having purchased our ground, it must be laid out and graded for use. Much can be done by selecting a piece which will need but little grading. Probably from five to twenty acres will be all we shall ever need; I would locate far enough away from the possible growth so as not to be encroached upon. If possible, a pleasant site should be selected on the elevated bank of a river or lake, or on one which commands a good view of the country around, if no water view is obtainable. Next best is a gently undulating piece of ground, where quiet views may be easily made.

Having determined your boundaries, lay out roadways, 12 to 18 feet wide in small grounds, following the base of your undulating surface, as far as possible, without making too many roadways. This will give curved lines, which are always beautiful if properly followed. Your lot sections have been naturally formed by your roadways and the former should follow the lines of the latter, and far enough back to secure a border, for trees to not interfere with either the roadway or the lots. Irregular spaces may be left throughout each section for trees, which will give opportunity to occasionally straighten a lot line, or turn an angle in a roadway.

Lots. The size of lots will depend very largely upon the size, shape and location of sections. It is sometimes desirable that certain sections should be laid out into larger lots than others, so as to avoid any undue number of monuments upon the lawn in those particular localities. As a rule, do not make front lots less than 16 feet square, back lots smaller, and none less than 150 square feet.

Every second row of lots should be separated by a pathway at least five feet in width, which should be reached by a pathway from the front, about every sixth or eighth lot. All pathways should be kept in grass, and regarded as reserved ground, but not sunk below the grade.

No hedges or enclosures of any kind should be permitted upon lots. But one monument should be allowed upon an entire lot. No headstone or marker should be over 16 inches above ground, (six inches is better) and no footstone allowed. The deepest grief is of the quiet kind.

Trees. Trees are essential, and places must be provided for them, so that once planted and growing they will not be disturbed, as they surely will be, if planted upon, or too near, lots where burials are eventually to be made. I have often thought whether or not Abraham, in purchasing the field of Ephron, did not think as much of "all the trees that were in the field, that were in all the borders round about," as he did of "the cave (Machpelah) which was therein." If not why are they so especially mentioned?

Deciduous trees and shrubs should form the largest part, having enough evergreens to form a border around the ground, and enough throughout for contrast, and to relieve the dreariness in winter. Wherever largely used they should form a background for lighter colored deciduous trees. One great mistake is too many evergreens, for they become monotonous.

I recommend, when the soil is adapted, Maples in variety, Sycamore Maple, Silver-leaved Maple and the Sugar Maple. Then the American, English and Scotch Elms, Lindens, European and Cut-leaf Birches, Purple-leaved Beech, Hawthorn double-flowering, Judas tree or Red Bud, Purple-leaved Plum, and many others. Evergreens may be selected from the Spruces for borders and large trees, Norway, Black, White and Hemlock, Arbor vitæ in variety, Retinisporas, Junipers and English Yew, and others.

Shrubs may be selected from Althea, Berberry Deutzia, Hydrangea paniculata grandiflora, Japan Quince, Spirea, Hardy Roses, etc.

Care must be taken that no crowding will take place at maturity. If it is decided to fill the border with Spruce, for instance, at least 20 feet should be reserved for that purpose. Do not use the knife too freely, as many trees should be allowed to grow as nature intended they should. Evergreens should never be trimmed higher than to allow the ends of the limbs to touch the ground, and if they are planted in a location where this cannot be allowed, remove the tree but do not deform it and allow it to remain. It is exceedingly painful to go into some cemeteries and see every evergreen trimmed from six to eight feet from the ground. The grace and beauty of the tree is spoiled, and it would be much better to remove it and replace it with a deciduous tree. The Lindens and Beeches should also be allowed to grow to the ground, when they will form beautiful pyramids. I have seen them growing 30 and 40 feet high, and perfect pictures of beauty with their contrasting foliage.

Vegetable Gardening: Past and Present.

[Prof. W. W. Tracy, before the Michigan Horticultural Meeting at Saginaw.]

In the garden of thirty years ago the beds

The Cemetery as It Too Often Is.

were four feet wide and 10 to 20 feet long, and each filled with such vegetables as Onions, Beets, Radishes, Turnips, etc., planted in rows across the bed and every part easily reached from the narrow paths. Beyond this were the Cucumbers, Squashes, Melons, Corn, Potatoes, Tomatoes and others, making a complete assortment of the vegetables and herbs in common use. Around the outside were the rows of Currants, Raspberries, Gooseberries, etc., on one side a bed of Strawberries; at the end were Grape vines, and back of all the orchard.

Now what do we have in its place? Two, three or five miles from the center of some large town we find a five or ten acre lot. As we drive in, by our side, not three inches from the wheel track, is a long, narrow bed filled with young Cabbage and Celery plants, and on the other side a half acre each of Rhubarb and Asparagus, and beyond this a quarter of an acre of hot beds filled with Radishes and Lettuce. Every foot of the rest of the lot, except barely room at the side of the house and in front of the barn to drive in and turn around, is occupied by long rows of Onions, Lettuce and Radishes, and as soon as pulled their places are occupied by Cabbages and Celery.

As we enter, the proprietor, usually a German, advances from the hot-beds. We try to learn something of his methods, and can only bring out the fact that he asks so much a bushel for his Lettuce, and so much a bunch for his Onions, and that he hasn't any Tomatoes, Melons or any vegetables, but those mentioned.

Every morning before light he fills the great wagon with Rhubarb, Asparagus and green Onions (often with only one of them) and drives to town. There he is met by buyers, and soon the bargain is made and he unloads. During the day, or the following one, a part of the load is packed in crates and shipped to some village or town 50 to 200 miles away; there it is displayed in a commission house and sold to retailers, who get it to the consumers in from one to four days from the time it was gathered.

Now as to this change in methods. Does it not tend to the almost exclusive use of these varieties which have good market qualities? My acquaintance with the seed trade enables me to answer most positively in the affirmative. I believe it to be true that in most species of our common vegetables, where a dozen varieties are listed, nine-tenths of the seed sold is included within as few as three sorts; and, quality for the table to rule, not more than one of these would be included in what a competent judge would consider the best six varieties.

By growing large quantities of the particular vegetable suited to his soil, selecting the sort which is most profitable for market, and makes the best show there, without regard to its actual table quality, by delivering direct his entire daily product, the modern market gardener can put into the market his particular vegetables at prices which a few years ago would be considered much less than cost, and a general collection is made up from different localities, so that the city markets are filled with great quantities of fine looking vegetables at low prices.

But when the old time gardener brings in his stock he finds that he can get so little that he declares it is useless for him to grow them, and that henceforth he will buy what he needs, and so gives up his garden, but fails to buy as he expected and gradually gets out of the habit of using vegetables at all. The result is an increasing consumption of vegetables in the cities and larger towns and a decreased use in the villages and on the farms.

Vegetables as now grown and brought to the table are merely articles of food, to which there is attached no interest outside of simply satisfying hunger; for the vegetables do not reach the consumer until long past their freshness, and lacking all flavor and quality. I believe there is no opening in a horticultural way that promises such large pecuniary returns as the establishment near our cities of gardens where a variety of vegetables can be grown and delivered fresh, direct to the consumer.

I think the tendency of this change is to make a mere vegetable grower instead of a gardener, to make gardening a mere trade instead of an art; to cause the producer to lose all pride in his product save as it brings dollars and cents. This is evident in our exhibitions, which used to be a contest for acknowledgement of superior skill in producing the exhibit.

But at the fairs I have visited, not 1-20th of the space was occupied with exhibits made with any such view; it was all taken up by displays which were made up simply to take the premium for the sake of the money; often not even growing them but collecting them where they could, because the premiums would pay them for doing so. To correct the evil, a feasible way is to change the character of our premium list, giving much more prominence to exhibits by amateurs and making the awards attractive and intrinsically beautiful and honorary rather than of pecuniary value.

On the More Natural Pruning of Apples and Pears.

[Shirley Hibberd, before the English Fruit Conference.

It is commonly asserted that pruning tends to augment the vigor of trees. But there can no longer be entertained a doubt of the fact that pruning, so far from augmenting, actually diminishes the vigor of the subjects operated on, and the one reason that this is not so noticeable in the outdoor world is that Nature is generous and a certain amount of pruning may be done without harm, and even with positive benefit. But we must prune in a way to ensure a maximum advantage for ourselves, with a minimum of disadvantage to the trees.

With standard orchard trees that bear abundantly it may be observed that pruning neither augments the vigor of these trees nor does it promote their fruitfulness, for as, generally speaking, they are not pruned at all, they teach a lesson of its non-necessity. Now the pyramids of Apple and Pear formed by years of pruning and pinching are perfect of contour, dense with foliage, with scarcely room anywhere to allow one to thrust a hand in, and they are healthy and bright from the ground to the summit, but they produce so little fruit as but rarely to pay for the land occupied. To increase the production of fruit we avoid trees of this form, or if we have them we will, having fruit in view, rather promote an open growth, as loose bushes, and the difference between them and the pinched ones is seen, not only in the form and furnishing, but in superior fruitfulness.

Summer pruning tends to promote secondary growth, often immature when the season closes, that therefore has been obtained by a false system, and is a proper commentary on the violence to Nature, as seen in the pyramid. While the free bushes that are not pruned at all, or but moderately, are, as a rule, far more fruitful, and the free standards are ahead of either. Thus the order of fruitfulness is usually in an inverse ratio to the order of pruning.

The natural growth of a fruit tree is definite and orderly, but our practice appears based on

the hypothesis that it is accidental. There is sent forth a certain number of long rods, when these are cut back secondary rods appear, and by stopping these we obtain a lot of soft spray. But the long rods if left to themselves would throw out side branches and form fruit spurs the greater part of their length. The obvious lesson is that long shoots admitting light and air freely, are more serviceable than such as are systematically cut back, and forming compact trees impervious to light and air.

I place before the meeting a number of trees that were selected for their ugliness, but which, having for some years occupied a good soil in a suitable situation, have acquired symmetry and fruitfulness without the pruning knife; each annual growth allowed to mature, and no secondary growth promoted by summer pinching.

Nature has something to do with the production of fruit and since 1876 we have entered upon a new career in fruit culture, common sense guiding the way. While we repudiate reason Nature destroys our false work.

Observation and experience have taught me that summer pruning is too promotive of useless secondary growth to be advantageous; and it tends also to keep the roots in action until late in the year, when they ought to be at rest. The effort of the tree to ripen useless wood is detrimental to its more profitable duties. Prune immediately after the fruit is gathered, first cutting out all dead wood, then cutting out cross and ill-placed shoots that would interfere with the free play of light and air, and then stop.

Trees of many sorts of Pears will acquire beauty of coutour, become regularly furnished and will produce an abundance of fruit without any pruning whatever, as I have shown by trees that for fifteen years continuously were never touched with the knife. The lower branches of pyramid trees never bear fruit, probably from proximity to the ground and its exhalations, as well as from the low temperature that often prevails at that level. When left to form themselves or aided in quite an infinitesimal degree they remain open to light and air, and soon become well clothed with spurs that ripen perfectly and do their duty. The dense, leafy pyramids are useless in proportion to their leafiness, and it must be owned that many of the lean trees are amongst the most profitable. Long rods pay; short rods are more plague than profit.

Annual Meeting of the New Jersey State Horticultural Society

[Abstract of proceedings of the meeting held at Trenton, N. J., Dec. 12-13, 1888. Reported by T. Greiner.]

As an extra good new variety of Potato the *Crown Jewel* is mentioned. The *Early Cory* Sweet Corn lacked sweetness and was generally badly affected by the black fungus. *Triumph* and *Minnesota* are recommended for early, and *Evergreen* for late. The following vegetables are mentioned as among the very best of their respective class. *Rosy Gem* and *White Strassburg* Radishes; *California Cream* Lettuce; *Eclipse* Beet; *American Wonder* and *Bliss' Everbearing* Peas; *Rochester* Tomato; *Emerald Gem* and *Princess* among the red-fleshed, and *Improved Early Hackensack* among the green-fleshed Melons; the true white-seeded *Ice Cream* Watermelon.

Report on New Fruits. Dr. Ward of the committee reported *Golden Queen* Raspberry as a strong grower, very prolific, of excellent flavor, but its color against it for market. Suckers excessively. *Crystal*, Mr. Caywood's new Raspberry, is four or five days earlier and handsomer than the preceding, perhaps not quite so prolific; bright yellow or straw color. *Cohanzie* Strawberry is a complete failure. Unprolific, with fruit hard and very acid. *Minnewaski* Blackberry holds its own, and improves on acquaintance. Ripens with Wilson; fruit large, very sweet; plant a heavy bearer; hardy even where exposed. Neither rust nor double blossoms have been noticed thus far. Fruit does not turn red after being picked as some varieties do.

Worthy Fruits Not Much Disseminated. Many older varieties, says Mr. W. R. Ward, are new to some people, and often prove as good as the newer ones, and could be grown with as much profits. The *Kieffer* Pear, for instance, is one of these older sorts that are not yet fully disseminated. Growers now coucede it to be a good cooking Pear and a valuable and profitable market fruit. His Kieffer crop this year brought him $1.40 per bushel in the Newark market; and while his Anjous sold for $1.65 per bushel, it should be considered that the Kieffer in the average produces double. The loss in ripening and from insects is very slight. It is popular in New Jersey and profitable. *Dana's Hovey* is one of the oldest of our Pears, yet very little grown. Its high flavor and other good qualities make it worthy of wider dissemination. The *Quinn* Pear is one of the very best late Pears, and a good keeper. The *Lawson* tree is a good grower, but has not been fruited enough to give us an estimate of the value of its fruit.

Many Strawberries have been introduced, but few are receiving field culture. The *Jessie*, especially on heavy soil, is doing well and growing in popularity. *Shaffer's Colossal* Raspberry is objected to on account of its dull, unattractive color, and its place is satisfactorily filled by the *Marlboro* and the later *Cuthbert*. *Marlboro* is gaining in popularity. *Fay's* Currant is sustaining its reputation, and justifies the claims made for it. Some of his three year old bushes bore as much as twelve quarts each, which brought ten cents per quart in the Newark market. Of Cherries the *Montmorency* and *English Morello* are named as valuable older sorts that are but little grown. *Moore's Early* is one of the very best early black Grapes. In Newark this season it sold for eight cents a pound. The later Concord in its height, dropped to four cents. *Moore's Early* finds hardly any competition in market, except poor Ives and Champions and Concords from States further south.

Mr. Beebe speaks highly of *Grimes' Golden* and *Wagner* Apples. These are hardly much disseminated and deserve better. The new *Russian* sorts find little favor with him. *Canfield* is a tough sweet Apple, perhaps good for cooking and for cider. Mr. J. T. Lovett thinks highly of the *Yellow Transparent* Apple. The *Delaware Winter*, he is quite certain, is the same as *Lawver*. *Grimes' Golden* is a fine handsome Apple and worthy of being grown more largely. Mr. Wilcox pronounces the *Lawver* a good keeping Apple, but of poor quality, never fit to eat.

Concerning Certain Other Fruits. What is the difference, if any, between the *Erie* and the *Lawton* Blackberries? Mr. Black states that he has been unable to discover a difference in vine, flavor, shape or any other way. The Erie has the same tendency to turn red after being picked, and if not the same as the old Lawton, may be a seedling of it. Mr. E. Williams, also, cannot recall any difference. *Triumph* Gooseberry is highly praised by Secretary Williams, who considers it the best sort now in cultivation. Has as yet seen no mildew on it. Mr. Wilcox states that it confined to one variety of Strawberries he would grow *Pearl*, which is a seedling of Crescent. As to the best varieties of Grapes for general culture, named the following: *For black*, Worden, Concord, Moore's Early; *for red*, Brighton; *for white*, Niagara, Empire State.

Remedy for Bark Lice. In reply to the question found in question box of the secretary, how to destroy bark lice on trees, Mr. Nicholson recommends a solution of salsoda in one gallon of water, applied to the affected parts of the tree by means of a brush. The solution will go through the scale and kill the pest. This remedy is also good for the woolly aphis.

Market Value of LeConte Pear. Mr. W. C. Idell says it is very popular with the Italians. Large shipments are received from the South, but there seems to be no difficulty in disposing of the fruit. It is a much abused Pear, but is really the only one reliable for cooking.

Are Quinces Profitable? Mr. Idell complains of the great abundance of poor Quinces last fall. They could be bought by the truck load at $1.00 a barrel. There were generally a few good ones on top, and the rest were culls. Many did not bring over 50 cents a barrel.

Fungus Destroyers of Insects. Mr. Nicholson speaks in favor of introducing among injurious insects such fungus diseases to which they are subject elsewhere. The Cabbage worm, for instance, is not very troublesome in Europe because its excessive increase is checked by fatal diseases. This is also the case with many other insects, and these fungus diseases would undoubtedly prove quite effective weapons in our hands against such insects, if we were to introduce diseased specimens and set them at liberty here, thus spreading the disease among them.

(To be Continued.)

Growing Ferns for Market.

[C. D. Ball, before the Florists' Convention, New York.]

Ferns are increased by spores or seed, and by division. Davallias, and some other varieties, produce creeping rhizomes or runners, which, when pegged down and allowed to root, can easily be separated from their parent. Aspleniums form small bulblets along and at the ends of the fronds, which can be rooted. Those varieties that produce spores freely are by far the most valuable to the grower; and nearly all the Adiantums and other Ferns most useful for florists' work are propagated in this way.

The collection of spores at the proper time is the first and all-important matter; close examination, and the dark color of the sori, and the bursting of the cases containing the spores, will indicate when they are fit to remove. The fronds should then be cut and carefully folded in smooth wrapping paper, placing the packages in some warm and perfectly dry place. After a week or so the spores will have been shed, then clean them and either sow or store them away in tightly corked vials until ready to use, but many varieties soon loose their vitality.

Those sown in the fall will make plants for spring and summer sales, while the spring sowing will make stock for fall and winter. Some rapidly growing kinds, such as Pteris tremula, argyrea, etc., may be allowed several months less time, or they will become too large. The soil used for sowing in should be about three parts peat or leaf mould, two parts loam, and one of sand; sifted fine and baked, to destroy all of the life that otherwise is sure to be in it, and which if allowed to grow would soon crowd out the minute Fern plants.

Use shallow pans, six inches square and two inches deep, which should be prepared by placing a thin layer of broken pots or charcoal in the bottom for drainage, then filled with prepared soil, with the surface pressed firm and even. After thoroughly saturating the soil with water the spores must be lightly dusted over the surface. This one watering will generally be sufficient until the green scum denoting the first stage of growth appears, if the pans are placed an inch or so apart in the rows, for watering between.

Watering overhead is to be avoided while in the earlier stage of growth. The pans are arranged in a well-shaded frame, that is kept close until the pan is covered with the mossy-looking growth, only raising the sash a little every day to permit a change of air; of course judgment must be used; if the weather be wet and hot more air should be admitted. Fungus and damp are to be prevented if possible.

As growth advances more air should be admitted until such a time when it will be necessary to only partly close the sash during the sunny dry part of the day. Do not allow to get dry, but do not keep too wet. When large enough transplant put small clumps into other pans, as a precaution against damp and fungus, for when crowded together they damp off very easily, besides many will be crowded out, and when less crowded they make much better headway.

The next stage is to separate and transplant individual plants again into pans, leaving them there until well enough rooted for thumb-pots.

The young plants should be kept close for a week or so after being potted, using seed bed soil and never be allowed to get the least dry. After this the potting soil is made of light fibrous loam and sand, not sifted, but mixed and chopped sufficiently fine for use, when growing them for fronds, as they will be harder and keep better after being cut. When once established in thumb-pots they are comparatively safe, as it is merely a matter of repotting as larger plants are required; want of a larger pot will seldom kill them, as they can be kept a long time if necessary in this condition, and then, if shifted, will start ahead immediately. Established plants should be allowed plenty of fresh air and water when weather will permit, keeping the houses well shaded during the warm months of the year. In winter, less water and no shifting is required.

My remarks apply only to those easily cultivated varieties of Ferns that are grown in larger quantities to supply the store trade. Some choicer kinds require far more careful handling.

The best varieties of Ferns to grow for a general retail business, can be answered by giving a list which Mr. Craig, of Philadelphia, has prepared, being only those that can be grown in quantity at moderate cost: *Adiantums* Aneitense,

ciliatum, caudatum, cuneatum, cuneatum grandiceps, gracillimum, dolabriforme, decorum. t. farleyense. mundulum, pubescens, Roenbeckii, and Williamsii; *Aspidium* sodida and trifoliatum; *Asplenium* Belangeri; *Davellia* Mooreana, tenuifolia stricta and hirta; *Dicksonia* Davalliodes and regale; *Polypodium* aureum; *Pteris* serrulata, cretica alba lineata, palmata, nobilis, argyrea, tremula, Sieboldii, and serrulata cristata major; *Onychium* Japonicum; *Nephrolepis* Davallioides furcans, exaltata, rectinata and Duffii; *Nephrodium* Immer-sum and F. m. cristata.

CONDENSED GLEANINGS.

Concerning Arbor-Vitæ. Though its native place is swamps and low grounds, it has learned to accommodate itself to most of our wants, except that of growing under the shade of trees. Indeed, in our garden culture, it seems to prefer a high and dry place to a low and wet one. One of its best offices is to serve as a screen from unsightly buildings or objects. It occupies little room, seldom extending more than two or three feet, and though it grows up tolerably rapidly it keeps itself clothed with branches close to the ground and is very hardy. For hedges to mark boundaries we have nothing so cheap or tractable. Vegetable and fruit gardens would be especially benefited by tall Arbor-Vitæ around them particularly where early spring vegetables are aimed at, being often as good as two weeks added to the earliness of the crops. As single specimens on a lawn there are few things that will command more respect than a well grown Arbor-Vitæ. To be well grown means to have a good open place all to itself and to have only one good leader allowed to grow. When several shoots are permitted to grow up together the time will come when rain, or snow, or winds will separate them, and then the beauty of the Arbor-Vitæ is gone forever; but keep one leader and the plant's beauty is not only maintained for years but is annually added to.—Germantown Telegraph.

A Curious Strawberry Growth. The so-called Strawberry is not a berry at all, and, except in a very loose sense, not even a fruit. In point of fact, the true fruits in the Strawberry are the little dry pips commouly but erroneously called seeds, and which spring from and are more or less imbedded in the fleshy end of the flower stalk. On most plants the flower stalk or axis, after having given origin to the several parts of the flower, ceases to grow, and disappears from sight; but in the Strawberry it swells out into that delicious succulent mass which is so nice that the partaker heeds not for a moment the botanical pedant who tells him that it is not and could not be a berry. That it is really the dilated top of the flower stalk is, however, shown on various grounds which it is unnecessary to discuss. Suffice it to say it is the office of a stalk to produce leaves, leaf-buds, shoots or flowers, or all of them, as the case may be; and in the illustration we have three or four such buds springing from the sides of a Strawberry, and one of them so perfectly organized as to have not only leaves (A) but adventitious roots (B) the commencement of a runner (C), and a terminal flower.—Gardener's Chronicle.

The Violet Disease Remedy. At this period of the year that dire fungoid disease begins to assert itself among the Violets which have been grown for winter blooming, and it needs no practiced eye to detect the spotted leaves, the forerunners of complete destruction. No one can account for this discase which has rendered Violet growing almost a failure. It no doubt was encouraged by the custom of propagating plants from the parent plants which had been grown in a high temperature for winter blooming. In this way the vitality was lessened until the disease found an enfeebled race of plants with no strength to resist. Many remedies have been tried with slight success. This season the writer experimented with air-slaked lime, dusting the plants over with the lime when any appearance of the discase had been noted, and in consequence the spots have entirely disappeared. It is a nice thing to use no manure in the soil where Violets are planted; good strong loam possesses all the essential food elements, without the addition of manure, which seems to favor the development of the disease.—Am. Cultivator.

The Meaning of Substitution. The following instructions are posted up in the packing room of a certain establishment for the employees who fill catalogue orders. After noting this it would seem largely an "error" for a customer to get even one variety ordered true to name. For Perle des Jardins give Safrano, Jean Pernet, M. Margottin, Isabella Sprunt or Marie Van Houtte. For Duchess Edinburgh, either Mme. de Vatry, Aline Sisley or Souv. de David. For The Bride give Cels Tea, C. Cook, Bella or Mlle. Rachel. Substitute for Mabel Morrison, Couquette des Blanches, Olga Marix or Perfection des Blanches. We are informed that this list is changed from time to time to suit the stock on hand, so that they are always able to "fill complete" any order received. Let us no longer dally with this matter, but act decisively. The substituter is a criminal guilty of obtaining money under false pretenses, and should be punished. If the trade or the National Society of Florists would crush out this practice let them take legal action in every case where conclusive proof can be obtained. Fear of the consequences would then deter those who have lost all sense of honor.—Amer. Florist.

Transplanting Large Trees.

The Chinese Pumpkin. We have a new vegetable which no seedsman has ever advertised, that is called the Chinese Pumpkins. It was brought here in 1870 by a Chinese coolie and was given to us. Its Chinese name I forgot, but in describing it he said "Punkee," and Chiuese Pumpkin it has been ever since. It often weighs 25 pounds, has a vine resembling the Cucumber; and flower like a Pumpkin, but one half as large. The young fruit borne very prolifically which is covered with stiff bristles, fall off as the plants grow larger; when the fruit is half grown it has a thick covering of white powder, resembling whitewash, that rubs off easily, but when the fruit is ripe but very little powder remains. It is a light green, solid color, and greatly resembles a Watermelon, with a rind similar, tender flesh very white. When cooked with sugar or molasses it tastes much like Watermelon preserves, Stewed, with some acid added, it makes a fair substitute for green Grape pie.—Southern Live Stock Journal.

How to Choose Fruit Trees. In selecting fruit trees for a home supply one may choose the best varieties irrespective of appearance or yield, for the popular and most salable fruits are not by any means always of the best quality, and productiveness is preferred before quality in market sorts. The same is true of small fruits, of which the finest are either too soft for shipping or not sufficiently productive. But for selling, one kind only will be preferable. In Pears, the fruit of a certain orchard of 2,000 Duchess has always sold at prices 50 per cent in advance of the market, because the fruit could be graded evenly in quality and packed separately. An orchard of Newtown Pippin Apples has its crop engaged in advance for ten years on a regular contract, and auother of Northern Spy is under contract in the same way. Had these orchards been made up of 20 or more different kinds the product would had to have been peddled about.—New York Times.

How to Grow the Bennett Rose. It has been found that two-year-old plants almost invariably produce better flowers and have a stronger and more rapid growth than yearlings. In many of the large Rose establishments the houses are replanted each year, and the Bennett should be treated on the same plan, except that, with the majority of varieties, young stock struck during the preceding winter should be planted; but the Bennett may about March be lifted out of the beds in which they have been growing for one season and potted up into such pots as the size of the plants may require, and the plants grown afterward in the same manner as young stock, until the usual planting season arrives, when they should be planted in fresh soil. It is not advisable to use the same plants after the second year. A temperature of about 50° has given satisfaction.—Garden and Forest.

Errors in Landscape Gardening.—The object of the so-called landscape-gardener in many cases seems to be to have as many walks as possible where not needed; to plant trees and shrubs in inappropriate places; to use as many plants as possible, without regard to suitability. It is surely worth the attention not only of those engaged in the business, but of gentlemen who have country houses, for everyone doing such work should at least consider the fundamental features of landscape art. There can be no stereotype plans for the embellishment of grounds; each domain calls for different treatment. The natural surroundings should be the first consideration, and not ignored, and yet with all this malpractice, and although we have but few good works which treat the subject in a right manner, it is evident that we are slowly progressing.

Transplanting Large Trees. This operation is performed in the winter while the ground is frozen. Considerable of the earth is removed from around the outside before frost, care being taken not to disturb the roots any more than is absolutely necessary, the amount of earth left depending upon the size of the trees, and when frozen hard enough to stand moving, the apparatus (consisting of a swing made of scantling to which the tree is lashed and then a stone boat to be reached by the mass of earth) is applied as suggested by the illustration and the tree well protected after it reaches its new home which is of course prepared before the ground freezes. The size of the arms of the standards is governed by the weight they must sustain and for very large trees guy ropes will have to be used.—Orange Judd Farmer.

Where Pampas Plumes Grow. Pampas Grass, bearing plumes, are in Southern California cultivated as a profitable industry, producing large bunches of silvery plumes, which always find a ready market. Santa Barbara has until lately been the only producer of this ornamental Grass, but now nursery men of other sections have given their attention to the cultivation of the Pampas for export. The plumes are harvested in September by carefully cutting the stalks, and are then sun dried for several days, when they are ready for shipping. Aside from gathering the plumes, there is little expense attached to this industry, and an acre of land will produce $250 worth. A constant market is found for these, dyed with various hues, in the Eastern States and Europe.—American (Cal.) Paradise.

Replanting an Old Orchard. The trees were 36 feet apart each way, and we reset by planting in the center of each four trees, and wherever any had died we planted another, first digging up the old stump and getting out all the old roots. For each of the young trees we spaded a space eight feet square, planted our tree in the center, and then kept the ground loose for three or four years after planting, by digging around it. I never saw trees grow more thrifty on fresh land. I have tried plowing old orchards, but without good results, as it appears to make the soil so loose that many of the trees blew up by the roots, so that to destroy the weeds and grass under and about the trees I mulch with coarse manure, old straw, Corn stalks, or almost anything that will cover the ground.—National Stockman.

Success with Cottonwood Cuttings. Of cuttings ten inches long, taken in the spring from the last year's growth before the buds have expanded, a large per cent will grow. If cut any length of time cover with water for one or two weeks, then plant, taking care not to let the cuttings get dry. Set in ground perpendicularly, all being buried but one or two buds, which should not get covered. A great deal depends on the season—if wet, nearly all will live; if dry a large per cent die. In planting use a spade, go down its full length; put in the cutting and press down the earth around it firmly.—Farmer's Review.

A Curious Strawberry Growth.

Plant Growing in Frames. Those florists who grow bedding plants and have but little frame room, should employ an increased surface. Not only is their value great for relieving the overcrowded greenhouses in early spring, but plants grown in them are much more stocky, and will give far better satisfaction. This is especially uoticeable with Geraniums, and we hope that those florists who have been growing those "long drawn out" specimens, will adopt this method and have for sale the coming spring plants which have less length of leaf-stem.—American Florist.

Proper Care of Raspberries. Last fall I mulched my Raspberries heavily with long manure, and in the spring after raking off the

loose straw, the rotted portion will be dug in and the soil given a heavy dressing of wood ashes. The canes will then be severely pruned and freely thinned and tied to stakes. I am more than ever convinced that to raise fine berries one must fertilize freely, retain but few canes, and head them well back in early spring. My experience is that for home use the following furnish an abundance: Hansell for the first of the reds, Marlboro of the same color for later. For black, Gregg is all I desire; and for yellow, Caroline is difficult to excel for productiveness and quality, its darkness being the drawback to its really fine character.—Josiah Hoopes, in Tribune.

Five Crops a Year at the South. Mr. B. W. Holmes, Norfolk Co., Va., sowed Spinach in September; cut and sold the same the next January, then plowed the land and put in Radishes, which were cleaned up April 4th; after plowing a second crop of Radishes were sown. About the middle of April, Canteloupe seed was planted at proper distances among the growing Radishes, and for fear of frost the hills were covered with glass; both crops came off about August 10th, and the land was sowed to Millet, which came off inside the 12 months, making five crops in one year from the same piece of land!—The Southern Cornucopia.

Packing Lettuce for Market. The delicate Cabbage Lettuces sent throughout the winter to our markets, are sometimes objectionable from the fine earth adhering to the roots spreading over the Lettuce leaves. This necessitates the Lettuce being washed, which to many salad lovers greatly injures its flavor. The Cos Lettuce, however, which comes in early spring, is generally packed in paper, as shown in the accompanying little cut, and in this way there is no danger of its being soiled by the root-earth. The simple plan is worthy of general adoption in the packing of early Lettuces.—Gardening Illustrated.

Reliable Strawberries. Crescent, Downing, Sharpless and Wilson are the only varieties recommended for either market or family use in Illinois or Indiana, though of course many other kinds are grown by amateurs. It is estimated that only about 18 per cent of the farmers of these States grow Strawberries for family use, and those who are in the business for commercial purposes are discouraged.—Farm and Home.

How Foreigners Make Floral Designs. Among the set pieces recently shown in Cologne, one represented a life-size baby in swaddling clothes, and in another a swan was figured by means of the detached petals of Water Lilies. Beyond this last, misplaced ingenuity could hardly go; for, to dismember the flowers employed, is, of course, to deprive a result of all right, even to the name of a floral arrangement.—Garden and Forest.

About the Giant Zittan Onion. This is said by English authorities to be one of the best Onions introduced during the last 20 years. It is of Italian origin, and is somewhat like the Tripoli, but of a chamois-yellow color. The neck is fine for size of bulb, the outer coats are firmer and tougher than the Tripoli, and it is a very good keeper.—Prairie Farmer.

Lettuce done up for Market.

A Good Market Pea. The Stratagem is a fine and very salable Pea for mid-season, because of its large size combined with good flavor. Yet for home use some of our older favorites yield more of an eatable supply from the same space of ground.—Tribune.

California Grape Disease. A new disease has broken out among the vines of the Santa Anna and San Gabriel valleys of California that is termed the sapsour, the cause being unknown; the vines wither and die, and the disease being infectious, spreads very rapidly.—American Cultivator.

Le Conte Pear in Florida. We began eating Le Conte Pears early in July, and continued to enjoy the first crop of this delicious fruit until along in October, the second crop coming later.—Tallahassee Floridan.

Manuring Asparagus. A heavy dressing of manure means one that covers the crown two or three inches deep. Such an application is profitable in sections where earliness means big prices.—Farm Journal.

How to Soften Putty. A simple but practicable way is to heat a piece of iron and rub it up and down the putty, which will soon soften and can then be readily removed.—Amateur Gardening.

The Endive-leaved Celery. It grows about five inches high with a multitude of little stems and luxuriant leaves, which when blanched are said to be useful for salads. That may be true. But it is not worth growing.—Rural New-Yorker.

We hear less and less every year about overdoing the fruit business, for every year it becomes more possessed of the regularity of a well-established business.—Farm and Vineyard.

Many fruit growers would make good farmers, but few farmers would make good fruit growers, as they have no time to bother with such little (?) things.—Ohio Valley Farmer.

Buying or Raising Fruit. Purchasing means going without much of the time; raising means having a cheaper and better article most of the time.—Farmers Call.

The Potato beetle, it is said, has more than twenty species of parasites that prey upon it.—Prairie Farmer.

One pound of seed will yield about 10,000 Asparagus stalks.—American Cultivator.

Plants and flowers are better pets than lap dogs.—Agricultural Epitomist.

Bear in Mind. Potash is found in all plants.—R.N.-Y.

Vegetable Products on the Table.

Cooking Turnips. Boil sliced Turnips in water until tender, then throw off water and boil in milk thickened with flour, adding butter, pepper and salt to taste.

Apple Marmalade. Peel the Apples, and grate cores and all. For every pound of pulp, use one pound of sugar, boiling and stirring until done.—Mrs. S. Bernstein.

Date Pie. For two pies take one pound of Dates, one quart of milk and three eggs; no sweetening. Boil the Dates in the milk until soft enough to sift.—Farm and Home.

Vegetable Oyster Cakes. Grate good-sized Salsify roots, add milk and flour sufficient to make a stiff batter, salt, drop tablespoonfuls into hot lard. Fry till brown.—Boston Budget.

Parsley Vinegar. Fill a jar with fresh Parsley and cider vinegar, cover tightly. After several weeks strain off the vinegar, add salt and pepper, bottle and cork. Use on meats, etc.—Farm Life.

Onion Soup. Cut Onions fine and stew them with butter; when brown pour on water and season with salt and pepper, and also add Rice for thickening, then boil an hour, and milk may be added.—Florida Dispatch.

Pineapple Jelly. Soak three-fourths of a box of gelatine in one and a half cups of water for an hour. Then add one cup of boiling water, a large cup of sugar, and one sliced Pineapple. Keep cool for several hours before serving.

Cranberry Pie with Two Crusts. Slit unstemmed berries with a knife, to preserve the fresh flavor of the fruit. Use equal quantities of berries and sugar, add two thirds of a cup of water to each pie and a tablespoonful of flour sprinkled over it before the upper crust is laid on.

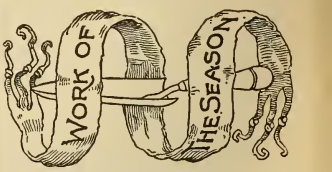
Potato Croquettes. Mash boiled Potatoes very finely, add milk, butter, salt and pepper, mix a beaten egg through the Potato and make into oblong shapes. Dip each first in egg and then in cracker crumbs, and fry in hot lard suspended in a small wire basket while cooking. Drain the grease, and serve.—Rural New-Yorker.

Dried Apple Cake. Two cupfuls of sweet dried Apples, soaked over night and chopped with two cupfuls of molasses, are simmered two hours; when cold add one cupful of sugar, two eggs, one half cupful of sour cream, sour milk and butter, two tablespoonfuls of soda, four cupfuls of flour, four teaspoonfuls of cinnamon, one teaspoonful of cloves and one of nutmeg.

Banana Cake. Put two teaspoonfuls of baking powder with three cups of flour. Thoroughly beat one cup of butter with two cups of sugar, add three eggs, and beat together, stir them into the flour, first adding one cup of milk. Now mix all together lightly, and bake in layers. Make an icing, and when the cake is done spread each layer and then cover thickly and entirely with thinly-sliced Bananas.

A Rat Proof Platform. After one winter's experience with rats we adopted a contrivance which effectually kept rats out of barrels, etc. We made several platforms having blocks of wood, 10 inches high, for supports. On top of each block we placed an inverted tin pan, and whitewashed the blocks and pans. On these pan-capped blocks we laid boards, on which we set our barrels, Apples, vegetables, etc.—Prairie Farmer.

Swiss Apple-tart. Butter a round plain mould, and line with short-paste; fill with Tapioca, mixed with suet; bake, turn it out, and scrape out the Tapioca. Apples stewed with sugar, the peel of half a Lemon and some Cinnamon, are when done passed through a sieve, and mixed with the yolks of two eggs; fill the mould with the Apple, and lay strips of paste on the top; bake half an hour. Serve cold with Red Currant or Apple jelly.—English Farm and Home.



HOUSE PLANTS.

Alyssum. Attention should be given to propagating a good stock in season, either by sowing the seed or shipping.

Begonias. After blooming prune out the older growth, keeping rather dry at the roots. Sometime later they will start. After new shoots have started shake out the present soil, then repot into the same sized pots, using fresh soil.

Callas. They are sub-aquatic, so there is but little danger of over-watering, but do not have them in crocks without drainage, for the soil will be little else than sour mud. Their wants summed up are, very rich soil, good drainage, plenty of water, and not crowded.

Camellias in the window want a temperature of not over 50°, and their leaves sponged off several times a week.

Fern Cases. If over-watered the soil becomes sour. For several days after watering keep the case somewhat open to lessen the excessive state of moisture within. Daily airing is also in order by tilting up the glass when no dust is moving.

Fuchsias brought from the cellar at intervals for succession of bloom should be pruned as needed. Then week or more later, as new leaves show, repot into light rich soil, using pots a size smaller than they were taken from.

Heat. With burning coal there is no great trouble to keep up continuous warmth. A light wooden frame of a size convenient to handle and covered with paper on both sides, set between the plants and the glass will help to keep out cold. On a cold night a lamp burning near the plants is a benefit. Or place all movable plants on a table away from the window and cover with newspapers.

Hydrangeas, if wanted specially early, may now be started. But for general use a month or so later will be better.

Insects. With a few plants the thumb-nail remedy thoroughly applied does well in the case of the aphis, scale and mealy bug. Red spider can only be well dealt with a wet sponge or otherwise applying water. A grayish discoloration on the under side of the leaves shows its presence.

Lemon Verbenna. Grown for its pleasing foliage may be treated as directed for Fuchsias.

Propagation. With a view to having good early plants for spring use, all cuttings of a suitable size can be started in a box of sand having a warm sunny place. Keep the plants that furnish the slips rather pot-bound.

Seed Sowing. Mignonette, Petunia, Maurandia, Centaurea gymnocarpa, Stocks of ten week section can be sown for strong early plants.

Sponge off the leaves of all large-leaved plants at least once a week, using tepid water. This is beneficial to the health of the plants in keeping them free of dust, which otherwise would soon accumulate.

LAWN AND FLOWER GARDEN.

Borders. Perennial plants may have manure roughly spread over them. This protects the roots and provides food to replace that used by the past season's growth. Such treatment will bring finer bloom the next year.

Hedges of deciduous kinds might now be clipped.

Pansies. Where fall sown plants are not at hand seed sown this month will make spring blooming plants.

Perennials. Delphiniums, Sweet Williams, Hollyhocks, etc., by sowing seed now in the window or greenhouse, with fair treatment until planting out time, will bloom by September. Summer seedlings of these plants should have winter protection.

Plans. Study up ways and means of making improvements about the place at this season, for the best gardens cannot be planted in the haste of spring work, but during this month of leisure planning should be done, as the success of our work largely depends upon the intelligence and foresight given to it. Then again early orders receive the first attention at the nurseries, so send them on a month or two in advance of planting time.

Roses of the hardy class if not earthed up a foot or so may be helped by the use of coal ashes for this purpose, and their safety be insured.

Snow often injures deciduous or Evergreen Shrubs, and should be shaken out and a light board shelter

placed over each. Where drifted about young trees above the limbs it should be shoveled away to prevent injury when it settles.

Trellises, stakes, labels, hand glasses, arbors, rustic vases, etc., which are required in every garden, should be made during the winter. Where Cedar is used when the swamps are frozen affords the best time to lay in a supply. The roots of the Laurel is also a favorite material.

Walks ought to be neatly cleared after each snow storm. Be prompt also in scattering ashes over those that are slippery.

PLANT CULTURE UNDER GLASS.

Azaleas. Those for coming bloom may be had for a longer time if part are kept in various degrees of temperature, some, the last ones, to be quite cool, others warmer, and those for immediate flowering can have considerable heat and an abundant supply of water. Plants, as they go out of bloom, ought to have a warm place and plenty of water on top and root, to induce growth for next season.

Begonias. To propagate the Rex division, take well matured leaves and cut the main ribs on the under side at half a dozen or more places, just below their dividing point. Lay the pieces on the cutting bed with a little sand on top to keep them well down. The flowering sorts are increased from cuttings kept rather dry while rooting.

Caladiums, Cannas and such tubers stored for the winter should be overhauled to make certain of their safety and well-doing, for mice, wood-lice and other enemies often destroy them.

Carnations. After a heavy crop of bloom retie and clean out the old stalks. If red spider has affected them, syringing them in bright weather will help. Lime water may be used on them once in a while.

Dahlias. See directions for Caladiums.

Geraniums should now advance rapidly. Repotting old plants should be done in each case a few days after the cuttings have been taken. In the Tri-colored section nothing suits them better than shelves near the glass in a rather dry house, with about 55° of heat.

Hyacinths and other Dutch Bulbs should generally come in bloom this month. Sun and an abundance of water is what is wanted, as may be inferred from their growing in water alone. As they pass out of bloom remove the flower stalks and set the pots in a cool but not dark place, keeping moderately watered until spring, when they may be planted outside.

Ice and Snow are a fruitful source of glass breakage Where the edge of a roof over-hangs any kind of lean-to or the end of an abutting glass house, an ice shield should be provided for the winter. For removing soft snow the use of a light scraper, some three feet long to ride on the glass bars is an excellent tool. For a shovel, one having a blade fully eighteen inches wide, is the best,

Lilies of the Valley that were started earlier in sand or are now to be started, can be brought in twice a month. If the clumps are of good quality and rightly treated these will hear above 80° bottom heat, and nearly as high for the house. For the finest blossoms shade with cloth to keep off the sunlight and cold air.

Mignonette of the earliest should now be in bloom in a temperature of 45° to 50°, plants for spring bloom to be kept somewhat cooler, but guarding against frost and have them near the glass.

Orchids now at rest ought not to have more water than enough to prevent the buds shriveling; Vandas Aerides and similar ones may require some more than the fleshy Oncidiums, Cattleyas, etc. The required watering must be done with care so that the foliage does not become wet and the early part of the day is the best time for this. The temperature ought to be kept quite regular all through the dormant season.

Over Crowding. With more light weather more room between the plants must he given, for nothing injures plants more as to appearance than standing too close, when growing rapidly.

Pelargoniums like a warm place with air and sunlight. Much of their beauty depends upon their free growing at this season.

Petunias. Propagate from cuttings as fast as good growth permits. Seeds also can he grown this month.

Pots. Carefully estimate the quantity required, heing sure to calculate on enough, then engage them to he promptly delivered. Wash the old pots before putting new stock in them.

Primroses of the Double White class ought to receive careful attention in the way of space, cleaning hoth plants and pots in good shape for propagating later.

Propagating such as Heliotrope, Geraniums, Carnations, Verbenas, and other summer blooming plants should he well under way this month. Geranium cutting may at once he put in thumh pots for rooting, being watchful in the matter of watering them.

Seed of Golden Feather, Lohella, Verbenas, Salvia splendus, Sweet Alyssum, Sensitive Plant, Dianthus, Antirrhinum, aad Mimulus may he sown for early. See under House Plants.

Schizanthus. These want something like a heat of 50° with air and light. Staking also will prohahly he needed.

Ventilation on all favorahle occasions is highly necessary for the hest health among the stock.

FRUIT GARDEN AND ORCHARD.

Fruit in storage should he kept cool, almiug at a temperature of ahout 34° and well ventilated.

Insects. A sharp inspection of the young twigs should detect the rings of tent caterpillar eggs on them near the ends, and of cocus insects, when present. Each lot of eggs destroyed now will lessen the next season's caterpillar crop hy hundreds.

Labels that are on the trees when purchased are not to he trusted. A heavy pine label painted white and written on hefore dry with soft lead is excellent, while one made of zinc and similarly written upon is still hetter. Fasten to the trees hy copper or hrass wire, making loops so large that they will not injure the tree in many years of growth.

Manure may he more easily drawn over frozen ground than to wait until soft spring weather. By spreading at the same time under the trees, extra protection is provided with benefit to the roots.

Orders for trees and plauts that are wanted for spring setting should he sent early to the nursery. As a rule give little ear to the tree agent, for even if they are reliahle (often they are not) there is usually an advantage in dealing with the nurseries direct.

Protecting material on Strawherry and other plants, if in danger of heing hlown off, should he secured hy hranches and hoards. Coal ashes are also good for this purpose.

Pruning of the hardier kinds of trees to go on in all suitable weather, hut bear in mind that more harm comes from over pruning rather than not doing enough, Aim to open the head to sun and air.

Root-graft during the winter, packing the grafts in sand or saw-dust ready for spring setting.

Scraping the trunks of trees, by which means many insects are driven off, is heneficial to the trees. A good hark wash is made of lime, soot and clay, stirred up with water, and should he well applied into every crevice. Some growers also use linseed oil.

Scions cut in mild weather should he packed in saw dust or sand, the former being, perhaps, preferable.

THE VEGETABLE GARDEN.

MANSFIELD MILTON, MAHONING CO., O.

Cold Frames containing vegetable plants of any kind should have all the air possihle on suitable days. Clean off all decaying leaves and stir the surface of the soil should it incline to hardness.

Boxes for Seed. As a good many seeds have to he sown next month, hoxes should be got ready for use when required. Use hoxes of uniform size, 2ft.x18in., and three inches deep, made of half inch hoards sawed at the mill to three inches wide, and of a suitable length for cutting without waste, the same material heing used for sides and hottom. Where only a few are needed shoe or soap hoxes can he cut to this size.

Lettuce which has been kept growing in hot heds should be watched for green fly and damping off of the leaves, which often takes place after a long spell of cloudy weather. Fumigation should be done with care as the tender leaves are easily destroyed with the hot smoke. The hest plan to ward off green fly in the Lettuce hed is hy sprinkling short cut tohacco stems over the surface of the soil ahout the plants.

Manure for Hotbeds. But little can be done during this month, with the exception of hauling and composting manure both for putting on the ground and for early hot heds hy placing in loose piles to encourage fermentation. Horse manure with considerahle straw or leaves makes one of the hest materials for hot heds. Where spent hops can he secured from the brewery one third hops with two thirds horse manure mixed thoroughly makes a material which will retain heat double the time manure alone would, he lt ever so well prepared. In preparing material for hot heds eare should he taken to have it sufficiently moist through the entire heap, so that every part may he warm alike, none being dry enough to create burning.

Mice in Celery trenches at this season often do lots of damage. Poison them with a mixture of cornmeal and arsenic. Where unsafe to use this, try trapping.

Seeds. If not already procured attend to it at once; it is bad practice to wait until they are required. Upon no consideration buy cheap seeds, that is, seeds of inferior type and quality, and purchase only from reliahle firms. Nothing is more discouraging than, after spending time and money on raising some important crop, to find we have heen caring for some worthless variety.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus to do its best must be watered without stint.

Cucumbers will require a heat of 70° at night, 80° in the day, and above this in the sun. Do not encourage too much with stimulants unless the plants are quite strong. Train the leaders their whole length before stopping; side shoots to he stopped at second joint.

Graperies now starting should not have above 35° of heat at the first and he well syringed twice a day to assist the breaking of the huds. As the young growth appears air should he given sufficiently to prevent its heing weak and the foliage thin. Advautage should he taken of mild days for this.

Lettuce. For some weeks yet this will require great care in watering and airing, not giving too much of the former or too little of the latter. The fumigating is not to be neglected. See under Vegetable Garden.

Mushrooms. The nearer the temperature of bearing heds can he kept to 60° the hetter. A steady temperature will greatly prolong the crop. Manure should be saved for new heds.

Rhubarb. Directions for Asparagus will apply.

Strawherries must not be allowed to overbear or small fruit will result. Apply the syringe for keeping down red spider and for the best results avoid both under and over watering at the roots.

THE POULTRY YARD.

Small Eggs are likely to come from too much fatness.

Clover hay for laying hens is recommended by good authority.

Cold Weather Fowl has a small comb, thick feathers and does well when confined.

Frozen Eggs taken in a warm room and scalding water quickly poured over, then cooled, are said to be uninjured for use.

A Good Feed. 20 pounds of Corn, 15 pounds of Oats, 10 pounds of Barley, and 10 pounds of Wheat bran, ground fine and well mixed.—Poultry Monthly.

The Chicken that commences its development with nature, in the spring, makes the most perfect one, both physically and as a breeder.—Farmers' Advocate.

A Louse-proof Perch. We have found that perches made of Sassafras poles, with the bark on, will make lice run. This wood is a native of so many places that no difficulty is found in procuring it.—Poultry Keeper.

The Winter Care. Let the fowls run out on dry days. In a place that is dry and sheltered against the winds they will not care for the cold. An open shed, facing south, with no draughts of air, is better than a poultry house full of cracks. —Mirror and Farmer.

To kill as humanely as possible, hang the fowls up, heads down, and stick them in the throat, giving a cross cut, severing the large vein at the back of the throat, and at the same time letting the point of the blade euter the brain.—Farm and Fireside.

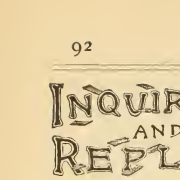
Cleaning a Poultry House. The best and warmest floor is of boards, and the proper way to clean out a poultry house is to use a broom, and this is very easy when there is half an inch of dust of some kind on the floor to absorb the moisture from the droppings and prevent them from sticking to the floor. The dust mixed with the droppings should be stored in a dry place.

Eggs for Hatching should be of a uniform size. Such as contain double yolks are of no value, and eggs from immature pullets produce immature chicks. Usually when eggs are placed under a hen they are taken without any knowledge of from which hens they were derived. Select eggs from vigorous parents and more chicks with less difficulty will be raised.—Mirror and Farmer.

Warm Food for Poultry. In a large pot, standing on the stove day and night, the refuse of every vegetable prepared for the table is thrown. The ou tside leaves of Cabbage, Potato, Apple peelings, all go in together, where they are boiled until tender, then chopped fine, and thickened with Wheat bran or Corn meal. While many declare milk unwholesome for fowls, ours drink nothing else and no flock can be healthier.—Country Gentleman.

Sunlight for Hens. Sunlight is healthful and necessary to provide it in winter without exposure to the cold. As good a way as any is to have a room separate from their roost and laid with dust and coal ashes, but filled at least on its east, south and west sides with large windows. Here the hens may be fed and watered in the morning, and then allowed to roll in the dust in the sunlight. The effect of this treatment in promoting winter egg production is really wonderful. Many hens do not lay at this season because they are kept in the dark aud not stirring around enough.—American Cultivator.

The Profitable Way with Incubators. Incubators are of great advantage in large poultry yards. For fully 20 per cent of all chickens hatched by hens get crushed in the nest. But by taking the eggs after the hen has been incubating 16 days and putting them into the incubator, this 20 per cent is saved, and all the hens kept incubating until they can be given 20 healthy chicks to rear. In this connection the brooder has even more to commend itself for, during the first two or three days the hen, by scratching, is apt to kill one or more, while chickens kept in the warm brooder for three or four days become strong. From April to July there is no better way than to give each hen 20 chickens to raise. But for the early broiler trade, whether the chicks be hatched by the machine or by the hen, from February to April, the brooder is the best mother, for until May meat and green food must be furnished, and this is accomplished easily in a brooding house, where green oats can be raised.—American Poultry Journal.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 30 what Peas best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 15th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of impiements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,045. **Selling Evaporated Fruit.** Where is the best market for this, especially small fruit?—H G. W., *Westfield, N. Y.*

1,046. **Lawn Grass Seed.** Is the use of White Clover advisable and if so the proportion to be used?—MAX., *Akron, Ohio*

1,047. **Remedy for Tomato Rot.** This was very prevalent the past dry season. Is there any remedy?—A. Y. L., *Belmont Co., O.*

1,048. **Soot for House Plants.** What is the difference in value between the soot from bituminous coal and wood? In what way is it tbe best used?—E. E. B., *Norfolk, Va.*

1,049. **Rubber Plant Treatment.** Will daily sponging injure the leaves? When is the proper time and way for watering?—F. D.

1,050. **Watering Passion Flowers.** What is the right course with this plant?—F. D., *Philadelphia, Pa.*

1,051. **Keeping Canna Tubers** How are they best preserved over winter?—W.

1,052. **Floor for Greenhouse.** What is the best material to use where a basement is wanted?—W., *Natick, Mass.*

1,053. **Snails in Rose Soil.** Will these injure hardy ones at any time? Tbe soil is fresh about them.—H.T.

1,054. **Amaryllis Failing.** After starting well in the fall, the leaves later turned yellow. Can it be due to overwatering?—H. T.

1,055. **Chrysanthemum Leaves Burnt.** Last fall the affected plants were twice a week given water from cow manure,fresh wood ashes and soot combined. Could this have hurt the leaves?—H. T., *Frederick,Md.*

1,056. **Orange Tree Leaves Dropping.** This has grown well for five years in a 18-inch tub, in a living room in winter, (and the latter not but little), but now all of the leaves are off, although the tree is not dead. What's the trouble?—E. D. M., *Fitchburg, Mass.*

1,057. **Spent Hops as Manure.** Are these of value, if so bow to be used?—A. P. W., *New York.*

1,058. **Salicylic Acid for Preserving Fruits.** I would like some further information as to the use of this article than is given on page 53.—H. P. S., *Yuba City, Cal.*

1,059. **Stopping Rot in Trees.** Can decay in the trunk coming from limbs which were improperly cut off he stopped ?—G. M. W., *Lotus Club.*

1,060. **About Artemisias.** Are they hardy perennials? Wbat treatment is required?—T. T., *Charleston, Ill.*

1,061. **Smilax Blooming.** How old must it he from seed? Does it need a season of rest ?—T. T.

1,062. **Using old Musbroom Beds.** For what special purpose can the worn out material be used ?—M. C. R., *Amherst, Mass.*

1,063. **Lilium Auratum Failing.** In large pots, first in a cold frame then in greenhouse they made a good start, but when a foot high, turned yellow and decayed. Why?—L. A. J., *Jamestown, N. Y.*

1,064. **Ferns Eaten by Snails.** On account of tbese pests I am unable to grow such plants. Can tbe matter be remedied?—X., *Iowa.*

1,065. **Cyclamen Infested by Grubs.** My plants appear all right but some, if bandled, pull out of the ground, the roots and lower half of the crown being eaten by a small white grub. Can anything he done? R. O. N., *Meriden, Conn.*

1,066. **Poinsettia Treatment.** After blooming my plants droop and loose their leaves. How ought they to he treated?—O. L. C., *Xenia, O.*

1,067. **Are Angleworms in any way hurtful?** Or are they beneficial in the way of keeping the ground open and pulverizing it ?—P. B. M., *Indianapolis, Ind.*

1,068. **Cypripedium Spectabile.** I would like some directions as to the culture of this Orchid.—AMATEUR, *New Jersey.*

1,069. **Ferns as House Plants.** Will the Maidenhair succeed in the window under fairly good conditions? Are any other kinds better?—E. R. N., *Vermont.*

1,070. **Strawberry Fertilizers.** Aside from stable manure, what fertilizers are the best?—H. N. J., *Concord, N. H.*

1,071. **Peat ashes for Strawberries.** Are these of any value ?—O. L. D., *Canton, O.*

1,072. **Failure with Spinach.** Although usually successful, this season this crop is a failure and I know of no cause.—MARKET GARDENER.

1,073. **Carrot Leaves Turning Yellow.** This occurs here each year when the plants are half grown and is thought to be caused by the worms. Is there any remedy ?—W. H. G., *Jackson, Mich.*

1,074. **Manures for Vegetables.** My soil is sandy and stable manure hard to obtain: I desire to know the best other fertilizers for growing general vegetables.—L. N. T., *Pelkton, N. C.*

1,075. **A Climbing Rose.** Would Md. Margottin be suitable for such purposes?—MRS. L. A. O., *Kentucky.*

1,076. **Tuberoses after Blooming.** Are these of any value and how should they he treated?—F.D.T., *Illinois.*

1,077. **Toadstools on the Lawn.** Last summer these were a nuisance. What will kill them?—HARRY.

1,078. **Onion Seed Saving.** What method is followed in raising this seed for market?—B. P. A., *West Virginia.*

1,079. **Rose Nomenclature.** Why is the term Hybrid Perpetual so improperly applied to a certain class of Roses ?—G. M. C., *New York City.*

1,080. **Camellia Buds Falling.** What causes this and bow can it he avoided ?—ANXIOUS.

1,081. **Passion Flowers for Greenhouse.** Which are the most suitable and what treatment is required ?—Y. O. J., *Hartford, Conn.*

1,082. **Chinese Lily Treatment.** Are all bulbs after blooming good for next season, aud how cared for?—E. S. J., *Salem, Mass.*

1,083. **Mailing Cut Flowers.** Is the rate the same for these as for seeds, bulbs, plants, etc.?—C. F. G., *St. Johnsbury, Vt.*

1,084. **Chrysanthemums Not Blooming.** Wbat is the cause and remedy for these coming blind.—C. E. G.

REPLIES TO INQUIRIES.

998. **Best Blackberry.** One of the best Blackberries for market is the Dorchester. It is perfectly hardy and very productive; in quality the best.—M. B. FAXON.

1008. **Moving Large Rhododendrons.** These, in late fall, may be safely moved, large or small, the size mentioned not being too great. A round hole should be dug out, deep and large enough to amply accommodate the root ball, then fill it up with a compost.—REMLE.

856. **Raising Cauliflower Seed.** The raising of Cauliflower seed has been made a success on Long Island, the climate and soil there being very congenial to this vegetable, the raising of which has reached enormous proportions. Beyond a doubt it is the humid saline atmosphere of that section which makes the cultivation and raising of seed of this vegetable a success, therefore I should deem it quite unlikely to succeed in Colorado where the air is generally of a dry and rarified nature.—G. H. M.

980. **White Grubs Eating Strawberries.** To avoid these set the plants in ground that for several years previously has been planted to Potatoes or other hoed crop. This year of two small beds one after Potatoes none have been injured by the grub. The other planted where Strawberries had been the previous two years, about half of them were destroyed by grubs,although by digging the plants out when they first began to wilt the grub could often be caught and killed. MRS. E. S. E.

980. **White Grubs Eating Strawberries.** In this part of the country it is best not to set Strawberries on land the first year it is broke up from the sod. Better set them on land that has been cultivated a few years. Kill all the horn bugs that you can, for they deposit their eggs on your mowing ground near the roots of the grass. Even after mowing the grass many of the eggs are left in the field, and when hatched they produce the grubs which go into the ground. Some of the eggs are on the hay which is carried to the barn, and when fed you will find some of the grubs in the manure heap. When you plough up the grass-ground do it late in the fall, so that the grubs may be exposed to the cold of the following winter. When you plant or cultivate the ground, which should be done two or three years before setting Strawberries, kill all the grubs you find. If a few days after setting the plants you notice that any of them wilt and appear to be dying, take a garden trowel and dig at the root; you will probably find a grub at work there; kill him and set out another plant.—WM. HALE, *Essex Co, Mass.*

970. **Black Lice on Chrysanthemums.** The remedy for black lice is so simple and certain that there is little excuse for their presence. Tobacco stems thrown on the ground under the plants, say an inch deep, will soon cause them to disappear. A syringing will help to clean up the plants. The simplest way is the best in the garden, and nothing can be simpler and more effective than this. Snuff or powdered Tobacco is dirty and not always efficient, while Persian insect powder produces no effect, its action being to strangle not poison, and you cannot strangle aphides.—J. N. GERARD, *Union Co., N. J.*

994. **Lapageria Growing.** They need to be planted out on the shady side of a cool house, using peat chopped up in rough lumps, with broken bricks mixed through, taking care to have good drainage, as Lapagerias need abundance of water during the season of growth. There are only two species, L. alba and L. rosea, though there are many forms of both. See that you get good ones, as some varieties are vastly better than others. Plant them that they may intertwine and the effect will be pleasing.—E.O.O.

997. **Lilium Longiflorum Hardy.** This is quite hardy here when covered with plenty of dry leaves in fall, and boards placed over to throw off the wet.—E. O. O., *Passaic Co., N. J.*

970. **Black Lice on Chrysanthemums.** These may be killed by dusting with Tobacco powder. —E. O. ORPET.

975. **Japan Iris.** To grow well a moist, rich soil is necessary. It can scarcely be too wet. Obtain good named kinds, not seedlings, and plant two feet apart if arranged in masses, taking care to arrange the colors effectively. We have over 40 kinds, from the purest white to deepest blue and purple, planted in low swampy ground where the water stands during fall and winter, and they thrive amazingly.—E. O. O.

984. **Caring for Banana and Pineapple Plants.** Bananas need plenty of water at all times as it is necessary to keep them growing right along to mature the fruit quickly and well. Pineapples need to be kept on the dry side during winter, as a superabundance of water speedily causes them to lose their roots, sicken and turn yellow. When water is applied let it be warmed to the temperature of the house, which should be 70° to 75° by day and 65° at night during winter.—E. O. O.

992. **Planting Lilies.** This work should always be done in fall, as there is great danger of breaking shoots and roots in spring. If manure is used see that it is well rotted, and be careful not to let it come in contact with the bulbs or they are liable to rot. Decayed leaf soil is preferable to stable manure.—E. O. O.

993. **Hemerocallis Varieties.** Hemerocallis fulva is tawny colored as the specific name implies. H. flava is clear yellow; H. graminea is similar in color, but has narrow foliage, resembling grass. All three are good distinct species, to which might be added H. Thunbergii; this grows five feet high with flowers similar to H. flava, but is produced in July and August. The best of the genus H. Mittendorfiauum and H. Dumortierii have orange colored flowers, and are pretty dwarf species —E. O. O.

1,002. **Pineapple Salvia.** Salvia rutilans is so called on account of the pleasing odor of the foliage when rubbed.—E. O. ORPET

995. **Canned Fruit Spoiling.** While we do not know the cause of your fruit spoiling, we believe that the cause of ours spoiling is owing to the shiftless way in which the cans are made. We use the "Mason" jars and used to have much success in keeping things. But they are not as well made now as formerly, there being a large seam or ridge of glass on one side where the cover screws on and comes in contact with the rubber. By taking pains and using new rubbers the covers may be made to fit tightly on some of the jars; on others it is simply impossible. We are getting disgusted trying to use them, for after all the care taken, there will be a good many jars the covers of which have proved to have been fastened securely, will loosen up enough to let in the air and thus spoil the preserve.—W., *Natick, Mass.*

1,004. **Peach Stones Splitting.** No remedy is known to us.—C. E. P.

1,007. **Fern Roots.** The proper season for dividing Ferns generally is early in the spring or just before they start into growth.—C. E. P.

1,008. **Moving Rhododendrons.** With a little care and attention you can remove Rhododendrons five or six feet in height. The best season for removing them is from April 18th to May 18th.—C. E. P.

1,012. **Begonia Rex Failing.** The roots are evidently in an unhealthy condition. I think that their pots are imperfectly drained. Or you may be keeping your plants too cold and wet. At this season Begonia Rex and its varieties should be more sparingly watered, especially if grown in a temperature of less than 55°.—C. E. P.

1,023. **Coal Ashes as a Fertilizer.** Unbleached hard wood ashes are far superior to coal ashes as a fertilizer, in fact my experiments with coal ashes have been very unsatisfactory.—M. B. FAXON, *Suffolk Co., Mass.*

1,009. **Corn Flowers.** One of our easiest cultivated hardy annuals (Centaurea cyanus) commonly called Bachelor's Button or Bluebottle.—M. B. FAXON, *Suffolk Co., Mass.*

1,011. **Heating Small Greenhouses.** You do not state what the structure is to be specially used for. If for what is generally termed a "Spring house" for the forwarding of garden and bedding plants, then the "flue" is what is most commonly used in this section. But if to be run the year round for a general collection of greenhouse plants, where the first cost is not so much of a consideration, then heating by hot water or steam would be preferred; but as you ask tor the most economical plan, I take it for granted that you do not desire to go to the greater expense of putting in hot water, although uo system of heating by smoke flues is as satisfactory. But to many the smoke flue method is one that will commend itself both in point of simplicity and cheapness, together with giving general satisfaction as it does with my house of about the dimensions spoken of. Plans for constructing a brick flue have been from time to time published in POPULAR GARDENING (pages 84 and 109 of the January and February issues respectively) to which you are referred.—G.H.M.

1,005. **Apple Trees for Mississippi.** The following varieties can be recommended: For summer, American Summer, Carolina, June, Early Harvest, Horse and Red Astrachan for fall, Taunton and Fall Pippin for winter. Tillaquah and Stevenson's Winter.—M. B. FAXON, *Suffolk Co., Mass.*

1,032. **Renovating Apple Orchards.** Yes; plow, trim, and use largely of manure.—M B. FAXON.

1,014. **Grapes in Orchard.** I would not advise any one to plant Grape vines between trees in an orchard, no matter how much fertilizing material they intended to apply.—C. E. P.

1,009. **Corn Flower.** Centaurea cyanus is the plant referred to. It is a showy free flowering hardy annual growing about a foot and a half in height, and producing its variously colored flowers in the greatest profusion during the summer months. The flowers, which are very useful for cutting, are of every conceivable shade of blue, pink, purple and striped, and the seed can be procured in separate colors or mixed varieties. The plants will do well in any common garden soil, and the seed can be sown in a gentle hot-bed about the first of April, or on a nicely prepared border about the first of May; but then they will not flower so early. Sow very thinly or else transplant as soon as they are strong enough to handle, and remove to their blooming places before they become too large. Keep the plants at least 16 inches apart to allow them space to properly develop.—CHAS. E. PARNELL.

993. **Hemerocallis Varieties.** Hemerocallis flava and graminea are distinct varieties. Graminea is more dwarf and the leaves are narrower. —M. B. FAXON.

977. **Transplanting Celery.** All plants, and especially Celery plants, should be transplanted twice at least before they are set where they are to remain.—M. B. FAXON, *Suffolk Co., Mass.*

928. **Plums.** (*a*) At the last American Pomological Society Meeting Dr. Hoskins of Vermont said that Moore's Arctic was the only hardy Plum he had. It is also claimed to be curculio proof. (*c*) President Berckmans believes that the Kelsey Japan will not be profitable further north than the 30th parallel, but is a promising variety for the South.

929. **Cherries.** Montmorency of French origin, ten days later than E. Richmond and sub-acid is hardy and prolific, and together with Dyehouse, which comes from Kentucky, is claimed to be a week ahead of E. Richmond; hardy, of better quality, and as productive, we think may prove profitable as market fruits. As to the value of Sudas Hardy we cannot speak.

952. **Iris or Fleur de Lis.** Their culture is very simple as they only need good soil, well drained during the winter, yet having plenty of moisture during the summer blooming season; they are impatient of much disturbance at the roots by replanting or otherwise. This applies to the German and similar species more especially which are entirely hardy; the Spanish and English sections are too tender for out door cultivation north of New York City, but are well worth growing in pots for early spring blooming, being potted in the fall as for other bulbs. Directions for the Japan Iris are given in answer to No. 975, in this and the last issue.

961. **Asparagus Forcing.** A satisfactory method is to place strong three year old root clumps in a strong hot-bed, digging them carefully and packing in the frame quite closely, filling in with light rich soil and watering at first with tepid water, not giving any air until the shoots show, when some may be given each favorable day. By this method the plants are rendered useful for the future.

964. **House Plants.** For gas lighted rooms as well as those heated by burning coal there are few plants that last any length of time but among the best are Aspidistra lurida and its variegated variety, Dracena congesta and rubra, Chamærops excelsa, Rhapis flabelliformis and the Rubber plants (*Ficus elastica*). The leaves of these must be washed off several times a week, both upper and lower sides, in order to be at all satisfactory.—REMLE.

955. **Azaleas.** The main points in their treatment is to give a light position and the soil moist; neither dry nor soggy.

1,005. **Apples for Mississippi.** The following kinds are recommended as doing well in the South, and in your particular section may prove of value: Summer—Julian, Early Harvest and Red June; autumn—Buckingham, Disharoon and Taunton; winter—Kittageskee, Cullasaga, Carolina Greening, Etowah and Stevenson's Winter.

953. **Everblooming Plants.** Strictly speaking there are no everblooming plants, but the following will yield flowers a good share of the time, and from which a selection can be made: Of Climbers, Smilax, Passion Flower, Cobœa scandens, Thunbergii, Maurandia, Clematis and Stephanotis, can all be grown in pots. The flowering plants can include Orchids, Roses, Heliotrope, Geraniums, Carnations, Pansies, and in fact any plant that one desires.—REMLE.

960. **Azalea Forcing.** Begin with a night temperature of 45° to 50°, with 5° or so higher during the day, as more heat may injure the buds; after several months it may go up to 60° or even higher; occasionally to renew weak guano water occasionally, also use soot water, but be very careful not to over water.—REMLE.

958. **Seed Grown Roses.** The seed vessels of each sort are, when thoroughly ripened, taken off, separately mixed with sand and kept in pots until February, when the seeds are cleaned and sown in light sandy soil, covered about an inch deep in shallow pans or boxes. Place them in a somewhat shady situation, with a uniform temperature of about 50°, and do not allow them to become dry. In these months some seedlings usually appear but the most will not vegetate until the following spring. As they become strong enough to remove they should be picked out into other pans, kept shaded and watered until large enough to plant out, many will perhaps bloom the first year, but except the color no certain characteristics can be known until the second blooming.—C. S. SAVEL.

973. **Liquid Manure.** Doubtless the most satisfactory article for all general purposes may be made by the use of fresh horse or cow manure not too strong. About a peck well stirred in a barrel of water, rain water preferably, and allowed to settle before using. When the barrel is half emptied the rest may have a third of clear water added. It is hardly possible to do harm with this liquid, while guano or other similar fertilizers in liquid form must be handled with care to avoid injury to foliage or other parts.

974. **Carnation Buds Turning Yellow.** This is probably due to over watering which is one great cause of Carnations not doing well in the winter. Carnations, with most others plants, only require water when the top looks dry; then a soaking is required and it must be seen to where bottom heat is used, that the lower soil is wet through.

976. **Fruit for the South.** You will find the information you desire in White's Gardening for the South, a work which also treats on vegetables. Its price is two dollars.

999. **Preserving Fruit.** We think that for such purposes the use of salicylic acid would be excellent. An English authority recommends its use at the rate of one ounce to three gallons of water, and one pound of sugar heated until the sugar is dissolved. It is claimed that fruit can be preserved for a year with a natural appearance. For various fruits the proportions probably will vary, and experiments with the acid will be necessary to show the extent of its powers in this direction.—REMLE.

1004. **Peach Stones Splitting.** This has been attributed to deficiency of lime in soil.—REMLE.

1057. **Spent Hops as Manure.** Hops which have been used in brewing make a valuable fine manure when rotted down to appear like leaf-mold. The best way of preparing them is to expose to the atmosphere where they quickly decompose and become fit for use, the pile being turned frequently. When mixed with potting soil they suit Pelargoniums, Fuchsias, Coleuses, and other plants that require rich porous soil, being a good substitute for leaf-mold. As spent Hops produce strong heat, they are used in frames for striking cuttings off rapidly; also for starting Asparagus and Seakale roots. When mixed with leaves and stable litter they form a good manure for many garden purposes.

1,043. **Starting a Market Garden.** Various works on market gardening are to be had from the several horticultural news publishers, among which may be mentioned as desirable, being Henderson's Gardening for Profit, and Garden and Farm Topics, and Brill's Farm Gardening and Seed Growing. I would also advise the careful perusal of the many excellent articles touching on the subject, which have appeared notably in POPULAR GARDENING and other standard horticultural periodicals of the day, thereby gaining the knowledge and profiting by the experience of others, bearing in mind that in market gardening like any other pursuit upon which one may enter, unacquainted perhaps with many of the smaller but nevertheless important details, it is always best to begin on a moderate scale and enlarge as experience and necessity demand. While competition is very brisk now in most markets on vegetable and fruit products, yet the ambitious and truly deserving gardener may content himself with the thought that remunerative prices can always be obtained for A 1 articles put up in attractive shape.—G. H. M.

1,027. **Begonia rubra Ailing.** If the plant has been permitted to become too wet or dry at the roots the buds will drop; or it may be becoming exhausted by excessive blooming. In such cases a little liquid manure will be beneficial. If the plant is growing in a cool temperature many of the buds will drop.—C E. P.

1,034. **Liquidized Cow or Horse Manure.** For general purposes I don't think there will be found much difference between them. I would use whichever could be readily procured.—C. E. P.

1,013. **Maiden Hair Fern Wilting.** They have been growing in a close, warm, moist atmosphere, and this is the reason why their fronds shrivel so quickly after being cut. You cannot remedy this now, but another season give them more air while growing, and do not keep them so close and warm. Thus treated the fronds will not be so large, but will have more substance and last much longer after being cut.—C. E. P.

1,016. **Chip Manure Insects.** While the insects in the cow manure will not prove to be injurious, I would not advise any one to use chip manure, as I am of the opinion that it will harbor many funguoid or insect pests that might eventually destroy or injure the crop.—C. E. P.

1,017. **Lake Bed for Grape Cuttings.** The Grape cuttings will succeed providing the bed does not contain too many shells or stones. You will have to be the best judge of this, and if you are unwilling to run any risk prepare another bed.—CHAS. E. PARNELL.

1,018. **Grafts From Nursery Trees.** I would purchase the grafts.—C. E. P.

1,021. **Name of the Monthly Honeysuckle.** The plant cannot be named from your description.

1,022. **Blood Peach.** Persica vulgaris follis purpuris is no doubt the plant referred to. It is a pretty dwarf tree in spring having leaves of a deep blood red color and which is preserved on the young growth the entire summer. To ensure handsome compact specimens pruning must be resorted to.—C. E. P.

1,023. **Coal Ashes as a Fertilizer.** I have tried them on Potatoes alongside of phosphate and wood ashes, and find the coal ashes did as well as the wood ashes and nearly as well as phosphate. The tubers raised in coal ashes were very smooth. My farm is moist hill land.—WM. N. HOYT, *Hampshire Co., Mass.*

1,010. **Removing Stones.** I own a farm on which stone is a familiar object, and I have found it the best policy to make walls of them and cultivate the soil.—WM. N. HOYT.

1,032. **Renovating an Apple Orchard.** My experience with an orchard which was not pruned for 14 years, is that by careful pruning for 10 years I have managed to get a respectably good crop. Care should be used not to trim too much the first year.—WM. N. HOYT.

1,042. **Cutting Scions for Grafting.** I am not a grafter, but the best results I ever saw was where scions were cut in the spring and immediately set.—WM. N. HOYT.

1,023. **Coal Ashes as a Fertilizer.** I am of the opinion that these possess a manurial value if spread rather thickly and well worked in the soil. They tend to lighten up heavy land and in this way alone are decidedly beneficial —C. E. P.

1,026. **Scale on House Plants.** You can wash them off carefully with common soap suds or with Tobacco, soap and water, which is better. If the fronds of the Ferns are badly infested it will be better to cut off and burn them. After you succeed in cleaning your plants, watch them closely and remove every scale the instant it is noticed. In cases of such pests as these, prevention is better than cure.—C. E. P.

1,037. **Wild Everbearing Raspberry.** This may prove to be a valuable addition to our list of everbearing or autumnal Raspberries, at least for amateur cultivation. Before increasing or distributing it however, I advise you to wait until another season, and then send specimens to some of our prominent small fruit growers for an opinion as to its merits.—C. E. P.

1,039. **Pruning and Grafting.** To answer these queries as fully as their importance demands would occupy more space than could be spared in this department. You should by all means procure Downing's Fruits and Fruit Trees of America, and Barry's Fruit Garden, and study them up carefully during the winter months. Valuable articles have also appeared in POPULAR GARDENING.—C. E. P.

1,042. **Cutting Cions for Grafting.** I prefer to cut before hard freezing weather sets in.—C. E. P.

1,043. **Starting a Market Garden.** Henderson's Gardening for Profit, Quinn's Money in the Garden and Rawson's Success in Market Gardening books that could be studied with profit.—C. E. P.

970. **Black Lice on Chrysanthemums.** These do injury by feeding on the juices and thus weakening their vitality. They may be destroyed by dipping the infested plants in a strong decoction of Tobacco, made by pouring hot water (not boiling) over a quantity of Tobacco leaves or stems, and permitting these to soak in the water for an hour or so.—E. S. G.

997. **Transplanting Celery.** It is better to prick out young Celery plants in boxes before the final transplanting. The root pruning that takes place during the process stimulates the growth of new fibres close to the base of the stem, and renders the plant better able to endure the removal to its final place. Set the young plants two inches apart in shallow boxes filled with rich compost. Water thoroughly and shade for a day or two.—E. S. G.

What Causes Tomato Rot?

G. H. MAHAN, CHENANGO CO., N. Y.

It is variously claimed that this disastrous disease is the result of either extremes in temperature, an exceedingly wet or dry season, the using of plants grown from seed saved from a previously affected crop, etc. Now while I would not say that these causes may not tend to this effect, yet I am inclined to the belief, based on experience, to attribute it more directly to the fact that the plants had suffered a sudden check at some period of their growth.

Each spring I raise large quantities of garden and bedding plants, Tomatoes being one of the principal ones of the former. After being transplanted once or twice in the boxes or "flats" in which they are grown I usually set them in the open ground quite closely together, removing them from there as wanted for selling. I usually try and leave a plant every three or four feet in the row to mature its fruit.

The foregoing is what was done the past season, and now the point I am trying to make is this: plants were taken from this bed and removed to three different locations in town widely separate, combining at least two very different soils, and in each instance three fourths of the fruit borne on these vines were affected with rot at the blossom end, while the plants left remaining in the rows bore exceedingly fine fruit perfectly free from the affection. Now why was it?

Certainly the season was the same in each case and they were all from the same seed. To my mind it was clearly the cause given above; that at the time they were taken from the bed and set out, the weather being very dry, the plants sustained a check in their growth which so weakened their vitality that they became an easy prey to their most common ailment. Care should therefore be exercised at all times in setting such plants to arrange to do so in a wet or cloudy time and thereby remove the tendency to this fatal disease.

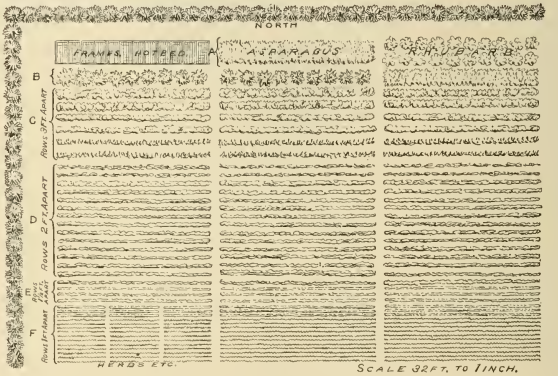


Fig. 56. A one-fourth Acre Garden, arranged after the Chart on opposite page.

Botanical Gardens in America: Interest in the Subject in New York City.

When it comes to the making of large outlays for magnificent parks and garden cemeteries, the cities and towns of America in this latter part of the nineteenth century, no doubt excel those of all other countries.

But, in what some would term a characteristic American way, we seem to have more regard to grand general effects in our parks and park systems than to that completeness of detail which should make the work also in the greatest degree useful. We plant thousands of ornamental trees of large variety in these, but where is the park in which the trees and other plants are systematically and plainly labelled for the education of the public? Large sums of money are annually spent by the managers of parks for bedding plants to please the eye only, and which pass entirely away with one season's use, but in what American city does the park system include anything worthy of being called a botanic garden where instruction may be coupled, with the admiration of plant beauty and the breathing of pure air?

In these latter respects we stand far behind our European brethren, for in Europe so high is the appreciation of the value of botanical knowledge that in the parks of even the smaller cities a portion of the land is usually devoted to a systematic botanic garden. It is gratifying, therefore, to see that an interest is at last being awakened in this matter in some quarters of America. The people of New York city, for example, are quite earnestly agitating the subject of a botanical garden in their Central park, as may be seen from the following account from the Herald of that city. It is a subject that should be agitated in other cities also.

"The prominent florists of this city, in interviews published in the Herald, showed conclusively that we are in urgent need of the study ground that would be afforded by a botanical garden. The necessity admitted the next thing to be done was to find out how such an institution could be established. Consequently I called at the Corporation Counsel's office in order to obtain a legal view of the situation.

"Sections 694 and and 695, Consolidation act, say in effect that the Park Department shall have the power to establish and maintain in Manhattan Square or in any part of Central Park, a botanical and a zoological garden, and that admission thereto shall be either free to the public or on the payment of a small fee.

"The management of said garden may be delegated to any society heretofore incorporated but the above mentioned grounds shall always be under the control of the park department.

"This was interpreted to mean that the botanical garden would be ostensibly under the control of the Park Commissioners and that they would police the grounds, but the Park Board is willing to have some properly qualified society manage the proposed botanical gardens.

"President Robb of the Board of Park Commissioners, declared himself a warm supporter of the idea. He said: 'We suffer considerably from the want of a botanical garden. The proposition to establish one in New York forms a splendid opportunity for some rich man to hand down his name to posterity by founding it and thus benefiting the whole community. All suggestions are welcome, and if any society is prepared to take the initiative the Park Board will be pleased to consider them. The direct management of such a garden is a specialty and should be in competent hands.

"'I would suggest, for instance, that a school of gardening should be established in connection with the botanical garden and perhaps the Bureau of Design, of the Park Department, might be converted into a school for landscape gardening, for it is very hard to get competent landscape architects. We want them now and shall need them more and more when we get to work on the new parks.'

"'We should have everything good here that they have in the great cities of Europe. We have great wealth and a great nation behind us. So far as the idea of making the botanical garden a State affair is concerned I am opposed to it. I am in favor of home rule. If the State feels the want of a botanical garden let the State establish one at Albany.'

"Park Commissioner M. C. D. Borden said: 'The argument that, as we could only give about twenty-five or thirty acres to the proposed botanical garden in Central Park an admission fee would have to be charged to prevent overcrowding, is not a good one. The public should have free admission into public grounds. I feel very strongly in this matter and shall be pleased to meet members of the Horticultural or any similar society and discuss the matter with them.'

"Mr. Peter Henderson, one of the oldest seedsmen and greenhouse proprietors in this city said: 'When the subject of New York city having a botanical garden under the control of the Park Commissioners is proposed, every one interested in horticulture, will most heartily acquiese.

"It should, in my opinion, be controlled by the City rather than by the State, and, if possible, be located in Central Park for even if a hundred acres of the Park were devoted to such a purpose it would not in any way lessen it as a breathing space; it would simply change the landscape to be one of instruction as well as ornament, and if its management be properly administered by practical horticulturists—not by kid glove professors, or worse yet, political place hunters—it would be of vast benefit.

"'There is no botanical garden worthy of the name in this country except at Washington. The superintendent there, William R. Smith, has probably no peer as a botanist in this or any other country, and is enthusiastic in his work. But the way that the United States doles out its appropriations for botanical science is miserly compared with that of England and other European countries.

"'The Botanical Garden of Kew, near London, has been not only a great filed of instruction for the masses, but it has also served as a training school for horticulturists not only for Europe but for America, as is well known by the fact that many graduates from Kew are prominent in this country both as managers of private horticultural establishments and as successful commercial gardeners.

"'In this country there is estimated to be nearly two hundred thousand men engaged in commercial horticulture in its various branches, employing many millions of capital, so it can easily be seen that a botanical garden would be valuable as a training school as well as a pleasure-giving result.'"

Coal Ashes as a Fertilizer.

These contain little or no plant food. They, however, exercise a beneficial effect on heavy clay soil by preventing baking and increasing the capillary power for water. They form an excellent mulch.

THE COMPLETE GARDEN.*

XXII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 72.

HERBACEOUS AND SEED-GROWN PLANTS.

In the preceding sections of this serial the attention has been confined, with a single exception (that of the Strawberry), to growths of a woody nature—trees, shrubs and vines. Now we will take up that division of vegetable life suited to use in a Complete Garden which embraces plants of a herbaceous or succulent nature, a chief characteristic of which is the producing of a new growth from the ground upwards annually and which dies down as often either soon after maturity or in the fall. The plants under this head may be classified according to their habits, duration and other characteristics as follows: Annuals, Biennials and Perennials.

Annuals. All those plants that flower the first year from seed, and, after yielding a new crop of seed, die, root and all, are included in this class. Among familiar illustrations are Peas, Corn, Asters, Morning Glories, etc. The Annuals may be again divided according to hardiness, as Hardy, Half-Hardy and Tender Annuals. *Hardy Annuals* readily germinate their seeds and make their growth to maturity, if planted in the open air early in the spring and without the aid of artificial heat. *Half-hardy Annuals* are more tender than the hardy class on which account the seeds should be started either under glass or else sown in the open ground only after danger of frost to the young seedling is over. *Tender Annuals* are yet more susceptible to injury from cold than the last named. To sow the seeds of these in the earth before it is well warmed, either artificially under glass or by the sun in the open air, is to invite their loss. To this class belong such lovers of heat as the Squash and Gourd, Castor Oil Bean, Salvia, etc.

Biennials are plants that ordinarily flower the second year after sowing and then ripen their seed and die, root and all. They may be *hardy*, as the Parsnip, Salsify and Canterbury Bell, or *half hardy* like the Beet, Celery, Brompton Stock, etc.

Perennials live from year to year producing a new herbaceous growth above ground annually, but which dies to the earth as often while the root continues alive. This class is divided into *Hardy Perennials* and some *Half Hardy* and *Tender Perennials*, each of which includes some bulbous and tuberous plants. Peonies, Hyacinths, Rhubarb and Asparagus are representatives of the hardy perennials.

A most important division of the seed grown plants is that of the culinary vegetables which form such an important article of food, and to these some attention will now be devoted.

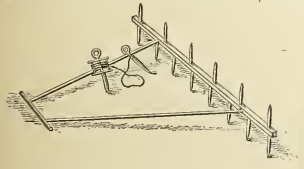


Fig. 57. Garden Marker and Line.

THE VEGETABLE DEPARTMENT OF THE GARDEN.

In no department of horticultnre has there been greater advances made in recent years than in that which relates to the culture, use and wonderfnl variety of culinary vegetables. Not only is the light, pleasant and excellent food afforded by the green vegetables more sought for and eaten than ever in the past, but it is also of better quality as a result of selection and improved cultivation. That the improving health and increasing length of life, which statistics prove to be certainly gaining in the present age, are in some part due to the increased consumption of vegetables and fruits in large variety, cannot be doubted.

Admitting all this, as readily can be done, there is yet vast room for improvement in tivation. The improved horse or hand implements, which are such a great help in keeping a garden clean, can be used to far better advantage through long rows than through short ones. In the engraving opposite I aim to show the most desirable and simple form of a quarter acre vegetable garden.

Another advantage of the elongated garden is that the plowing and other operations of preparing the soil can be better done than when the turns are shorter. Such a garden as I refer to does not necessarily do away with the idea of plenty of walks. In the engraving it will be observed that there are two main central crosswalks, besides several shorter ones in the lower left hand corner and those skirting the plat. But the former are mere temporary walks, being formed by discontinuing the rows crosswise of the area wherever the walks are wanted. It may often be convenient to bring in such temporary cross walks as are shown in the herb garden of the lower left part wherever kinds are to be grown that require but a short length of row. The only permanent features of such a garden as is here outlined are the lines of perennial plants like Rhubarb and Asparagus at the upper side, the space for frames in the same line and the screen of evergreens which skirt the plat to the north and west.

Distance of Planting and Successional Crops. To keep the garden ground very rich and then useing it to the best advantage is an excellent rule in vegetable culture. To use it to the best purpose implies the planting of the crops at proper distances apart so that there shall be neither a waste of land or a crowded state of the plants. And in addition to this due regard must be paid to have the early crops succeeded by later ones throughout the season. These are matters in which many err. In order to render the subject very clear even to the inexperienced, the engraving figure 56 and the chart pertaining thereto are offered.

CLASS A — PERMANENT KINDS.	Asparagus, 2 ft. x 1 ft.	Rhubarb, 4 ft. x 4 ft.	
CLASS B — KINDS FOR ROWS ABOVE 3 FT. APART.	Tomatoes, 4x4 ft. Sweet Potatoes, 3 to 4x2 ft.	Celery, tall, 4x½ ft. (See under C).	Squashes, Melons, etc., See under D.
CLASS C — INCLUDING KINDS FOR ROWS 3 FT. APART.	Artichoke, 3 to 4 ft. apart. Artichoke, Jerusalem, 3 ft. x¾. Borecole, 3x2 ft. *Beans, running, 3 ft. x 4 ft. *Sweet Corn, 3 or 4 ft. apart. *Egg Plant, 3x2 ft.	Peas, Tall, D 3 ft. Potatoes, Early, 3x¾ ft. Cardoon, 3x1½ ft. *Cucumbers, 3 or 4 ft. apart. *Nasturtium, D.	*Celery, Dwarf, 3 ft. x½ ft. May also follow Early Beets, Early Cabbage, Onions.* *Cabbage, Late, 3x2 ft.*
CLASS D — INCLUDING KINDS FOR ROWS 2 FT. OR MULTIPLES OF 2 FT. APART.	Cabbage, Early, 2 ft. x1½ ft. — *Plant Early Spinach, Lettuce, Radish, Horseradish, midway between rows or follow with Celery.* Peas, Dwarf, D 2 ft. — *Follow with Late Cabbage, (2x3 ft.) Celery, (3x½ ft.) Plant at intervals in Pea rows to occupy ground later. *Summer Squash, (4x4 ft.) *Marrows, (8x8 ft.) *Fall and Winter Squash, (10x10 ft). *Musk Melons, (6x6 ft.) *Water melons, (8x8 ft.)* *Horseradish, 2x1¼ ft., may follow Early Beets and Early Cabbage.* Broccoli, 2x2½ ft. — Brussel's Sprouts, 2x2 ft. — *Beans, (Bush), D 2 ft. *Martynia, 2x2 ft. — *Okra, Dwarf, 2x2 ft. — *Pepper, 2x2½ ft.		
CLASS E — INCL'D'G KINDS FOR ROWS 1½ FT. APART.	Carrots, D 1½ ft. or less. — *Drill Early Radishes or Early Spinach between rows.* Parsnips, D 1½ ft. Kohl Rabi, 1½x¾ ft. — Celeriac, 1½x1¼ ft. — Chervil, 1½x1¼ ft. *Turnips, D 1½ ft., may follow any early season crops.*		
CLASS F — INCLUDING KINDS FOR ROWS 1 FT. APART.	Beet, Early, D 1 ft. — *Follow with Celery, (3x1½ ft.), and Horseradish, (2x1¼ ft.) Fall Spinach, (D 1 ft.)* Beet, Late, D 1 ft. Onions, D 1 ft. — *Follow with Celery, (3x1½ ft.), Fall Spinach, (D 1 ft.), Turnips, (D 1 ft. or lightly broadcast), Winter Radishes, (D 1 ft. or lightly broadcast.)* Spinach, Early, D 1 ft., *follow with Tomatoes, (4x4 ft.)* Salsify, D 1 ft. — *Endive, 1x1 ft. *Collard, D 1 ft. — Corn Salad, D 1 ft. *Spinach, W. Radish, D 1 ft. — Lettuce, Radish, D. 1 ft., or between Early Cabbage.*		
POT HERBS.	*Anise. Balm. *Basil, Sweet. Caraway. Catnip. Coriander. Fennel, Sweet. Lavender.	POT HERBS. *Marjoram. Mint. Rosemary. *Savory. Saffron. Sage. Thyme.	Cress, D 1 ft. Dandelions, D 1 ft. Garlic, 1x1½ ft. Leek, 1x1½ ft. Mustard, D 1 ft. Parsley, 1x1½ ft. Schorozonera, D 1 ft. Chives, 1x½. Onion Sets, 1x1¼ ft.

A * indicates the kinds that are more tender. D kinds for drills. Successional crops are printed in Italics.

A Chart for Guiding the Arrangement of the Vegetable Garden, showing the Distance apart for Kinds, Successive Crops and other Information. Copyrighted.

The principle in the main observed in this plan is the simple one of classing the kinds that require rows the same distance apart, or multiples of that distance by themselves. Six classes are employed, varying in the distance between rows from upwards of three feet apart (A, B) to 1 foot apart (F), and into one or another of these all vegetables likely to be cultivated are brought.

In the chart the vegetables of each class are named, in ordinary type, with the second or other successional crops in italic type. Another important distinction made is that of indicating which are the more tender kinds of plants all such being preceded by a star. These kinds are half-hardy and tender, hence sensitive to cold and cannot safely be trusted out in the spring so long as there is any danger of frosts. All other kinds, as a rule, may be sown as early in the spring as the soil can be worked up finely. By keeping this chart before one the intelligent laying out of the vegetable plat becomes an easy matter, whatever may be its shape or extent.

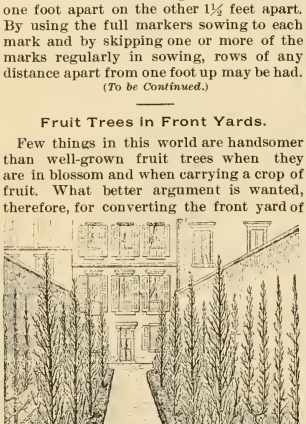
Half of the beauty of a vegetable garden depends on having the rows, which extend from end to end, without reference to cross walks or the length occupied by any particular kind of vegetables, as nearly straight as possible. To thus lay it out, providing at the same time for rows of the different widths apart, the implements shown in figures 57 are needed. The first is the common iron reel with line, used for guiding the other implement, namely the marker, in its first trip across the garden. If after one or more rounds of the marker any material deviation from a straight line is observed in its course it is well to again stretch the line to correct this.

This marker is a simple affair to be drawn by hand and which can be made by anyone who has a few good tools and the lumber. On one side the marking teeth should be one foot apart on the other 1½ feet apart. By using the full markers sowing to each mark and by skipping one or more of the marks regularly in sowing, rows of any distance apart from one foot up may be had.

(To be Continued.)

Fruit Trees in Front Yards.

Few things in this world are handsomer than well-grown fruit trees when they are in blossom and when carrying a crop of fruit. What better argument is wanted, therefore, for converting the front yard of



A Front Yard Planted with Fruit Trees.

many small places into dwarf Pear or dwarf Apple plantations.

In the accompanying engraving is shown one of a type of gardens common near Paris, France, planted to fruit trees and this shows how much may be done in such a direction. A mere spot of ground is planted with carefully-selected and choice trees, well-trained, and the result is, even from an ornamental point of view, better than it often is where subjects that have only beauty to recommend them are planted.

It will be observed that the trees are set in cultivated areas outlined by tile edgings. Beneath the trees, Pansies, Pinks, and other hardy flowers grow, and the presence of the trees does not prevent the little garden from being made gay with flowers. In winter, the graceful pyramidal Pear trees and well and simply-formed Peach and Plum trees against the walls, certainly often look better than little gardens arranged otherwise; in spring there is the beauty of fruit-tree blossoms; and in autumn, the crown of trees—good fruit.

A New Enemy to the Apple Tree.

In addition to the list of 179 species of insects that, according to Prof. Lintner, prey upon the Apple, Prof. Popenoe, in Bulletin No. 3, of the Kansas Experiment Station, reports on another one that has been found quite extensively distributed throughout Kansas. The insects, which he suggests might be called the Apple flea-beetle, is known to scientists as *Graptodera foliacea*, usually occurring upon plants of the Evening Primrose (*Onagraceæ*) family, being especially partial to the Silky Gauras (*Gaura parviflora*), the leaves of which are often riddled by the beetle in question, and which attracted attention during May and June on the college grounds by its attack upon the Apple trees. In orchard trees only the branches near the ground suffered, and these but slightly. The greatest injury was done in the nursery where the beetle often defoliated the spring-set root-grafts, the yearling trees, and seriously injured even the 2-year-old trees. The insects are most active in bright warm weather and are then attracted to the trees in great numbers, where they feed upon the parenchyma of the leaf as in the illustration, avoiding the veins and midrib. But on young shoots of the root-grafts their work is most injurious for they keep the new growth cut so close that the graft sometimes fails to recover. The yearlings though denuded, usually recover and throw out new leaves after their attack is over.

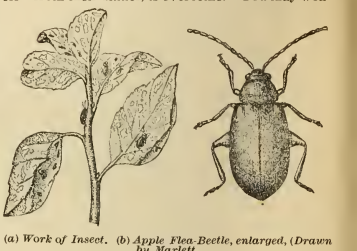
Like its near ally, the steel-blue Grape beetle, the species is easily alarmed, and on being approached, springs off the leaf, and seeks safety in flight, but only to return, however, and occupy its feeding ground when the danger is past.

The advance of this beetle was easily checked by timely spraying with the mixture of arsenical poison (Paris green or London purple) in water, as used against the codling moth. As the beetles fly well, they may come in from time to time through three weeks or more from other localities, it may be necessary to repeat the application especially if heavy rains should occur. The strength employed, about six ounces of London purple to a barrel of water we found did some injury to the tender leaves.

The following is a brief description: The Apple-flea beetle measures from 4 mm. (.15 to .19 inch) in length, is ovate in general outline, and is in most parts highly polished and brassy green in color. The antennæ, except the first-three joints, are usually dark-brownish black, the color obscured by a short gray pubesecence. The feet are dull or reddish brown, and, with the legs and under parts generally, are thinly clothed with gray pubesceuce.

Window Gardening Association.

A reference is made to an association of this kind at Boston, Mass., as if it existed independently. This is a mistake. The thing referred to is simply one of the committees of the Massachusetts Horticultural Society—the committee on Window Gardening—and our society offers prizes and awards gratuities just in the same manner as they do for flowers, fruits or vegetables, except that all the exhibitions except of window gardening are held at the society's hall, while the exhibitions of window gardening are held in various parts of the city and suburbs, in order to save the children the journey to Horticultural Hall; and the great drawback this committee first encountered (that of keeping children from their dinner) is overcome. You may won-



(a) *Work of Insect.* (b) *Apple Flea-Beetle, enlarged, (Drawn by Marlett.*

der why our exhibitions could not be in the forenoon or afternoon, but that plan was tried and found wanting in time, as it is an immense amount of work to look over 200 or 300 plants, repot a lot of them, trim and tie to trellises, etc., in so limited a time. Now we have the children bring their plants in the morning, go home to dinner at noon (they can, living near the exhibition) and return in the afternoon to find the prizes awarded. The plan works perfectly, and is leading to an immense amount of good.

Grubs Eating Strawberry Plants.

To avoid loss from this pest do not set plants on an inverted sod or near decaying stumps. Their presence at the roots of a Strawberry plant may be detected by the foliage withering in dry weather. The infested plant cannot often be saved, but by killing the grub its neighbors may escape destruction.—E. S. G.

New York Market Quotations, Showing Tendencies.

	Week ending Dec. 18.	Week ending Dec. 4.
Apples—King, per bbl,...	$1 75@2 50	$1 75@2 00
Pippin, per bbl,...	...	1 50@2 00
N. Spy, per bbl,...	1 00@1 50	
Baldwin, per bbl,...	1 00@1 37	75@1 25
Greening, choice, per bbl,..	1 00@2 00	1 00@1 75
Snow, per bbl,...	...	1 50@2 00
Cranberries—Cape Cod, per bbl,.	2 50@8 50	2 50@8 50
Grapes—Concord, per lb,...	2@ 2½	1½@2½
Catawba, per lb,...	2@ 3	2@ 3
Niagara, per lb,...		4@ 7
Delaware, per lb,...		2@ 7
Pears—Duchess, per bbl,...		4 00@4 50
Virgalieu, per bbl,...		4 00@5 00
Vicar, per bbl,...		2 50@3 00
Kieffer, per bbl,...		3 00@4 50
Quinces—per bbl,...		50@1 25
Apples—evaporated, 1888 fancy..	6½@ 7	6¾@8
Evaporated 1888, common....	4½@ 5	5¾@6¾
Evaporated 1887, per lb,...	4@ 5	5@ 6
Chopped, per lb,...	1½@ 2	1¾@2¼
Cores and skins,...	1@ 1¼	1¼
Blackberries—evaporated 1888,...	5@ 5¾	5@5¾
Cherries—evaporated 1888,...	13@ 15	13@ 15
Huckleberries—evap'ed per bbl,.	10½@ 11	10½@ 11½
Peaches—Del., evap't'd, peeled,.	18@ 20	18@ 20
Del., evap't'd, unpeeled,...	7@ 9	7@ 9
Southern, peeled,...	7@ 10	7@ 10
Southern, unpeeled, 1888,...	3½	3½
Plums—Soutb. Dawson, per lb,..		7
Raspberries—evap't'd 1888, lb,...	21@ 22	22
Sun-dried 1887, lb,...	19@ 20	20
Cabbage, Long Island, per 100,..	1 00@3 50	3 00@4 00
Cauliflower, per bbl,...	1 50@4 00	50@2 00
Celery, L. I., per doz. bunches..	75@1 00	75@1 00
Kale, Norfolk, per bbl,...	50@ 75	
Onions—State yellow, per bbl,..	1 00	1 00
Eastern, white, per bbl,...	2 75@3 75	2 75@3 25
Potatoes—State Burbank, 180 lb.	1 12@1 25	1 00@1 25
State Rose, per 180 lb,...	1 87@1 75	1 25@1 50
Sweet Jersey, per bbl,...	2 00@2 50	2 00@2 75
Squash, Hubbard, per bbl,...	2 00@2 50	1 00@1 25
Spinach, Norfolk, per bbl,...	1 50@2 00	
Turnips, Russia, per bbl,...	40@ 75	75@1 00
Hickory Nuts,...	1 00@1 75	1 50@1 75

EXPORT APPLE TRADE.

Liverpool quotations given by De Long, Mayer & Co.

	Week ending Dec. 17.	Week ending Dec. 10.
Baldwins, per bbl,...	$1 69@2 18	$1 93@2 54
Greenings, per bbl,...	1 81 " 2 00	2 18 " 2 66
Newtown Pippin, per bbl,...	1 45 " 6 65	1 93 " 7 50
Boston Baldwin, per bbl,...	1 45 " 1 81	1 81 " 2 25

Shipments	Week ending Dec. 15.	Week ending Dec. 8.
From all ports to Liverpool,...	18,206 bbls.	44,897 bbls.
From all ports to Glasgow,...	7,494 "	27,355 "
From all ports to London, ...	5,641 "	17,416 "
From all other outside ports,	400 "	4,923 "
A total export for week of...	31,741 bbls.	94,591 bbls.

The total exports for the season, up to Dec. 15, had aggregated more than 1,000,000 bbls., as against totals for the years of 1887 of 591,000, and for 1886 of 744,589 bbls.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. FEBRUARY, 1889. No. 5.

The Voice of Spring.

I come, I come! ye have called me long—
I come o'er the mountains with light and song!
I have breathed on the south and the Crocus flowers
By thousands have burst from the hidden bowers,
And the ancient graves and the fallen fanes
Are veiled with wreaths on Italian plains;
But it is not for me in my hour of bloom,
To speak of the ruin or of the tomb!
From the streams and founts I have loosed the chain,
They are sweeping on to the silvery main,
They are flashing down from the mountain brows,
They are flinging spray o'er the forest boughs,
They are bursting fresh from their sparry caves,
And the earth resounds with the joy of waves.
—*Felicia Hemans.*

LOOK OUT for sharp night freezes after bright days.

FEW TREES are better suited to cemetery planting than the Thorns; fine form, foliage and bloom.

OFF WITH THE BLACK KNOT. A fine of five dollars is the just Canadian penalty for permitting this fungus to grow.

IN TIME OF PEACE PREPARE FOR WAR. Every cultivator of the soil should make a study of our common foes, the insects; howbeit some insects are friends and should be cherished. Do you know the good from the bad? It is possible to know for Harris, Saunders, Cook, Packard and others in their works will tell you. Knowledge here is power to the plant grower.

COMMISSIONER OF AGRICULTURE. A successor to Commissioner Coleman will be chosen by the incoming administration. It is important that an able agriculturist be selected for the place. Could a better man be named than Professor J. L. Budd of Ames, Iowa? He is progressive and wide awake and for many years has devoted his time largely to the interests of the soil products of the country. His observations have been widened by extensive travels abroad in the interests of new fruits. He is near to the people as is shown by his numerous valuable contributions to the agricultural press of the entire country. He is an able practical cultivator and student not a theorist.

ON TO FLORIDA. Arrangements have now been completed for what promises to be one of the best meetings the American Pomological Society has ever held, to take place at Ocala, Florida, on the 20th to the 22nd of this month. This will be the first time that a meeting of this society has been held in the extreme south and extensive preparations are being made by the Pomologists of the south for the reception of their northern friends. The session will open February 20th and continue three days at Ocala, located in the central part of the peninsula, in the midst of the Orange region. The climate is salubrious and healthful. No cases of yellow fever have occurred in that region, and the direct railroads leading to Ocala from the north pass through none of the districts where it has existed. No fear, however, need be entertained of visiting any portion of the state on this account. Since the occurrence of severe frosts the last quarantine, that of Jacksonville, has been raised, and the tide of winter travel is in progress. The Florida International and Sub-Tropical Exposition, which opened in January, will be held at the same time and its commodious buildings have been tendered to the use of the society. A matter of much importance to northern visitors is that 25 trunk railroads offer to carry passengers the round trip for a fare and one third. All persons who think of attending the meeting should apply to Secretary A. A. Crozier of Washington, D. C., for a list of these roads and instructions. The programme of the coming meeting is a most excellent one as follows: Results of Recent Experiments in the Treatment of Vine Diseases, B. T. Galloway, Washington; Orange Culture in Louisiana, A. W. Rountree, New Orleans; Cherries for the Mississippi Valley, J. L. Budd, Iowa; Nomenclature Reform, T. T. Lyon, Michigan; Improvement of our Native Grapes, Geo. W. Campbell, Ohio; Relation of Hybridization to Acclimatization, Prof. L. H. Bailey, New York; Judging Citrus Fruits, H. E. VanDeman, Washington; Gluts, their Causes and Remedy, Barnett Brothers, Chicago; American Fruits in Foreign Markets, H. G. Foster, Florida; Co-operative Selling, Westley Webb, Delaware; Insects Injurious to Fruits, C. V. Riley, Washington; Peach Yellows, Erwin F. Smith, Washington; Problems in Pomology, E. S. Goff, New York; Pine-apple Culture, G. L. Lucas, Florida; Cross-fertilization, J. C. Neal, Florida; Peach Growing in Florida, G. L. Taber, Florida. Other important topics will also be presented; while the discussions upon new fruits, methods of judging fruits and the subject of markets will be of special value.

The Points of Good Pruning Summed up.

P. M. AUGUR, CONNECTICUT STATE POMOLOGIST.

To have an ideal tree, one should commence at the outset and prune annually at least. A young tree should have only three or four leading branches, all others should be pruned out; and as the tree grows, superfluous branches should never be allowed to remain. Thus in the earlier years we have a very open tree which becomes a model at maturity; but let no year pass without its annual pruning.

Varieties vary as to needed pruning, thus the R. I. Greening needs a different plan from the Baldwin or the Ben Davis. The Northern Spy needs spreading, the Greening needs throwing up, and all need keeping in evenly balanced heads.

With Pears, those varieties like the Buffum and Sheldon need spreading, and the Seckel always much thinning out, but neither the Apple nor the Pear usually need shortening in unless one sided in shape, never let branches crowd for sunlight and free circulation of air are indispensable for welldeveloped fruit and a superfluous branch is a needless drain upon the resources of a tree. A good pruning knife, and an iron mallet and thin bladed chisel are excellent tools for pruning.

When trees are properly attended to no large branches should need removal, but when that is the case a good saw is required, but not one orchard in one hundred is what it might have been with proper pruning.

First have the ideal in mind, and then step by step, year by year, proceed towards its attainment.

Successful Violet Growing.

JAMES CURRIE, MILWAUKEE CO., WIS.

Within the past few years the cultivation of the Violet, for winter bloom, has been attended by such doubtful results that many of the growers who used to devote large areas to its culture, are now rejecting it altogether, as the flowers, though yet popular, are not so much in demand as they were five or six years ago. It has been our fortune to escape the disease which has been so destructive in certain sections of the country; and we have also been remarkably free from the attack of red spider, which in our neighborhood has been very annoying, and no doubt in sections where dry weather prevailed,similar troubles were experienced.

Our exemption from red spider is, no doubt, wholly attributable to the treatment given our plants during the hot dry weather; whether this also accounts for the non-appearance of the disease we will allow those of our readers who have had sufficient experience with it to be the judges. The general plan of culture of this plant is simple and familiar; but that nothing of the plan which proves so successful with us may remain unexplained, a brief account is given:

In the spring in preparing our plants for the following season, we use young shoots or runners, whether rooted or not, rejecting the old plants. These young plants, if not rooted, are put closely together in boxes until roots are formed, after which they are potted in three inch pots about the middle of April. They are kept in cool houses for a time, and as early as the weather will permit are set in a cold frame. When the ground is in proper condition, and danger of severe frost is over, they are planted out in beds, when begins the treatment to which we specially refer.

First we carefully avoid doing that which many growers favor, namely, planting in a somewhat shady place. We are convinced that a fully exposed situation is of the utmost importance to secure a strong, stubby, healthy growth, and we plant accordingly, in soil that is moderately rich and thoroughly pulverized; and when dry hot weather sets in water is liberally supplied by means of an ordinary lawn sprinkler, regardless of how hot the sun may shine on the plants, which grow thriftily throughout the summer, no matter how hot and dry it may be. The sprinkling is continued as the weather and soil demands; and on very hot days, even if the soil is wet, the plants are given a bath.

All runners are removed as they appear, and the soil is kept loose by frequent stirring with the hoe until steadycold weather sets in, then the plants are taken up and housed, generally about the 10th of October, at which time the plants are invariably well supplied with buds; and under the sprinkling treatment, however hot and dry the summer may be, the plants are always free from red spider, which under favorable conditions often utterly ruin the plants.

While it is our practice to propagate by the young plants only, yet single cuttings from the old plants sometimes succeed, but cannot be relied upon to do as well as the young ones. It has been proven to our satisfaction that plants which have once been forced are of no further value, and it is a mistake to grow them a second year, and we would advise growers who have been in the habit of growing old plants, or even portions of them, year after year, to propagate by runners or young shoots. If growers who allow their Violets to depend on the rain for watering were to liberally supply them with water in any way most convenient, they will have instead of small sickly plants at the end of the summer large thrifty clumps, with clean, healthy foliage and innumerable flower buds.

On the Grafting of Trees.

Can you graft? No doubt a majority of our readers could answer this question by "yes." But we are aware also that thousands who have an interest in gardening and horticulture yet feel that in some way grafting is a practice beyond their reach. They would feel timid about undertaking the operation even when marked advantages were in sight. This should not be, for it is an art that may be easily understood and practiced by any intelligent person, man, woman or child. Let us look into the matter somewhat.

The Gains from Grafting. The principle of grafting is that of setting a scion of one tree, usually such as has some specially desirable quality, on the stem branch or root of another, usually of inferior quality, to have them unite by growth, and eventually form an improved tree. Thus by means of grafting, rare and improved ornamental or fruit trees may be secured in a few years through setting scions of the same upon a well established stock of some related kind. An improved seedling Pear tree that would not fruit in a dozen years might be made to do so in three or four years by grafting it on the extremities of a mature tree.

Some other desirable points to be gained through grafting are: Adapting kinds to soils and climates for which they would not be suited on their own roots, by grafting such on species more hardy, thus the Peach and Apricot on Plum to adapt them to heavy soils; delicate Apples on hardier stocks for northern regions; to render dwarf certain kinds of trees suiting them to smaller grounds, by grafting on suitable stocks of slower growth, as the Pear on Quince, the Apple on Paradise stocks, the Cherry on Mahabel stocks, etc.; grafting several kinds on the same tree for securing fruit in a succession of varieties in a small garden; in ornamental trees of two sexes, bringing both on one stock in order that fruit bearing may be promoted.

Conditions to Success. *Contact of Cambium-layer.* The fundamental principle which applies to all grafting is the necessity of forming a direct communication between the line of division, consisting of cells gorged with sap that lays between the wood and the bark, in order that the sap may pass to and

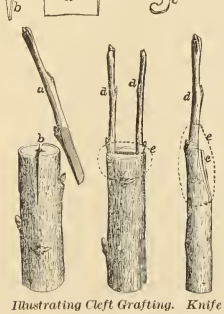


Fig. 1. Illustrating Cleft Grafting. Knife above.

from the inserted scion. This narrow circle of cells is called the Cambium-layer, and it is the point at which the growth of both the wood and the bark proceeds. In the season when the sap flows freely the bark may easily be separated from the wood at this layer. It is discernable without any difficulty, and in the engravings annexed this layer is shown by the inner mark which defines the bark of the shoot, where a cross section of wood is represented.

Relation of Stock and Scion. There must be near relation here, either as varieties of the same species (e. g. one Apple on another Apple) or as species of the same genus (e. g. an improved Grape on the wild one, English Elm on the American species etc.), or at farthest as genera of the same natural family (e. g. the Pear on the Quince, the Peach on Plum, etc.) Outside of grafting one variety upon another, no absolute rule as to what sorts will "take" upon others,

Fig. 4. Veneer Grafting at various stages, and Showing the point of Union after one year.

even of the same family, can be laid down. This is an interesting field for experiment.

Time for Grafting. The proper season for trees growing in the open air is in early spring when the sap is in motion, previous to leafage. In fruit trees this commences earliest with the Cherry and Plum, and ends with the Apple and Pear. If the grafts are cut in the winter and kept as nearly dormant as possible, they may be set some weeks later than if they are cut as used. Many ornamental trees, such as Magnolias, Dogwoods, Oaks, Japan Maples, Horse Chestnuts, Pines, Spruces, are grafted in August, in the close atmosphere of a shaded greenhouse, using young potted plants for stocks.

Other Requisites. Properly setting the graft so that it will be secure against being displaced by the wind, properly protecting the place of union from drying or from external moisture, by applying grafting wax, and a healthy condition of the stock and scion are ot these. A sharp knife with flat blade should be used for dressing all faces, and another one for other uses.

Some Modes of Grafting. *Cleft Grafting.* This is the most common method in use in the United States. It is especially adapted to trees of some years of maturity. For the operation a grafting knife such as is shown in the upper part of figure 1 is desirable, and which may be made of iron, with the part *a* of steel, by any blacksmith. A scion ready to be set is shown by *a* (of the lower part), in which the bottom end is neatly shaved to a wedge. *b* represents the head of the stock after being cut off horizontally with a saw, smoothed with a knife and split ready to receive the scion. The split is made with the blade *a* by slightly tapping it. The part *b* of the knife is inserted in the center of the split at the top to slightly pry it open for receiving the scions at each side; after removing the blade the spring of the stock should hold the scions securely. *d d d* represent scions properly in place. The right hand figure shows a shoot only sufficiently large to receive a single scion. The dotted lines *c c* represent the probable outline of the wax to be applied.

Crown or Rind Grafting. This method shown by Fig. 2 is a favorite one with some grafters. Its advantages are that the stock is not split, and less wax or other substance will suffice to keep ont the moisture from the wood than by cleft grafting. In preparing the scion *a* it is cnt in only from one side and abont half through, and then is cut out smoothly to the end. To set the graft, directly between the bark and the wood, a smooth wedge of hard wood or bone is first inserted to make a way for the former. Some do not tie the parts, as shown in the cut, previous to applying the graft, but tying is the safer way.

Tongue or Splice Grafting. This is usually applied to young twigs or to root grafting on a large scale in nurseries, and is also called whip grafting. For a stock the root of a seedling that was stored in earth or sawdnst in the cellar in the fall is used. This should be about the size of a lead peneil on an average. The scion may equal the stock in diameter or be a little smaller. In grafting the root *b* is taken in hand, and with a sharp knife a smooth sloping cut is made upwards at the collar, and in this a tongue or split downward as is shown. The scion *a* of the desired kind and three or four inches long is then cnt in a similar manner, excepting that the slope is downward and the split upward. the two are united as at *e*, making snre that the two parts are even on one side. The aperture is compressed by tightly winding the joined parts with a strip of paper or cloth saturated in grafting wax. This work is usually done in the winter, the grafts then being set into boxes of earth until planting-out time in the spring.

Veneer or Side Grafting. This mode for small twigs and roots, like crown grafting for larger stocks, obviates the need of splitting the wood, and this is by some is claimed to be a gain, while others estimate it but lightly. Our engraving, taken directly from nature, shows first to the left the stock (in this case a root), prepared for the scion. This is done after cutting off nearly square above by a simple downward gash into the bark with a sharp knife, and then taking a shaving off on the side above this cut, but not deeper than the bark, with a downward slope of the knife. The scion is shown above the root, having been prepared by taking a shaving from one side above the lower end, and cntting this end obliqnely below to fit the cut in the stock. In the centre the parts are shown united and tied. The right hand figure represents a graft as united after one season of growth. This is the mode of grafting usually practiced on young trees under glass in August. It is not considered necessary by this method to use wax, especially in the case of root grafting and grafting in a close greenhouse.

Grafting Wax. The ingredients used in making wax are rosin, beeswax and tallow. These are melted together in the proportion of three parts of the former to three of beeswax and two of tallow. Sometimes the proportion of rosin is increased, and that of beeswax, the most expensive ingredient, diminished, but such a composition does not work as nicely as the first named. For use the wax is either rolled into sticks as it hardens from the pot, and then is drawn out into a ribbon with the warm hands as needed for applying, or else is thinly brushed over sheets of weak cotton cloth, which then are torn into strips an inch wide and wonnd on a ball; or the cloth may be loosely wonnd up on a ball first and then be soaked in the melted wax. In the latter cases the strips are wound aronnd the parts until snugly closed up, and then are torn off. In all outdoor grafting care must be taken to exclnde the air from the wounded parts.

Some Flower Notes.

L. W. G., HAMPSHIRE CO., MASS.

AMARANTHUS GIBBOSUS is an excellent plant for decorative purposes, differing from Caudatus in the spikelets being fewer in number, but much longer, often two feet or more; only about 50 per cent. of the plants come true from the seed.

CANDYTUFT, "SNOW QUEEN," is the old sweet-scented Candytuft (*Iberis pectinata*), with a new name. The flowers being tinted with Lilac. The best white Candytufts are the Dwarf or Tom Thumb, and the Mammoth or Empress.

PHLOX DRUMMONDII ASPIDATA, or Star of Quedlinburg is a very singular form with toothed petals, the center of each being prolonged to a point, thus the flower is star-shaped, deep bluish purple with a narrow white margin, and is likely to be popular.

SALVIA PRUNELLOIDES is an annual from Mexico, of a fine blue color, but the flowers are too inconspicuous for garden culture.

CHENOPODIUM ATRIPLICIS "VICTORIA." A European novelty with variegated foliage that turned out to be a poor, sickly thing which soon died and is of no value.

VERBENA HYBRIDA COMPACTA makes a poor growth, has flowers of dull color and is of no account whatever.

ANCHUSA CAPENSIS. A seed grown annual, although not new, is one of the finest of flowers for cutting. The plants grow about 18 inches high, bloom freely; flowers of a rich blue color, about the size and shape of the large-flowered Forget-me-not.

CELOSIA, FIRE FEATHERED, is a poor, weedy plant in no way different from the old feathered Celosias discarded a dozen years ago. The only one that is worth growing is Plumosa superba, and this, if well grown, is elegant.

A Fine Rustic Stand for the Lawn.

THOMAS HARVEY, DEARBORN CO., IND.

There is a charm about rustic work in the garden that will always make it popular. This fact, coupled with an additional one, namely, that it is easily within the province of the average amateur to construct some of the finest specimens of this kind of work, and at a very small outlay, renders the subject a particularly interesting one. I desire in the present article to illustrate how I made a rustic vase which when filled with fine plants and flowers was the admiration of everyone. A neighbor's vase of iron, which cost fifteen dollars, has not attracted as much attention as this one, which cost, aside from the time of making, less than $2.

The foundation shown in Fig. 2 is constructed of inch pine free from sap and strengthened at the corners with scantling. The pieces for the bottom part (without slope) are 18 inches long and from this the base tapers upwards to be 13x13 inches at the point of the projecting board which surmounts it. On this board is set a square box 12x12 inches and 5 inches high, which in turn supports the earth receptacle, 11 inches high and about 11 inches square at its top.

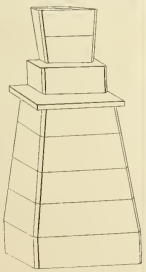


Fig. 2. Stand and Vase Begun.

The material used for covering this foundation is rough-barked branches of Cedar and Oak split through the center, smoothed off and nailed on with the bark side out. Any design that one chooses to use may be worked out in the manner suggested. If all the wood used, and especially the foundation boards, are well soaked in crude petroleum, it will last much longer than otherwise, while to secure the longest and most satisfactory service one can have a watertight zinc or galvanized iron form made to receive the soil and which will fit into the upper box.

In the way of plants for such a vase I use ordinary greenhouse plants of full growth, taking care to fill the center with tall upright growing kinds like Geraniums, Coleus, or even a Palm, or Begonia.

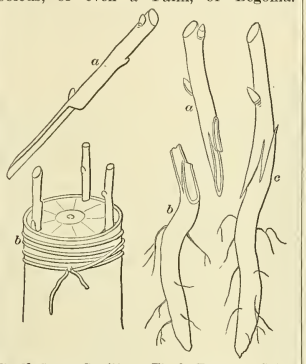


Fig. 2. Crown Grafting, illustrated. *Fig. 3. Tongue or Splice Grafting.*

Around the edge such plants as have trailing habits, among which may be included nearly all climbers, Ivy Geranium, Lobelia, Tradescantia, Thunbergia, Maurandia, Verbenas and others are used.

With good, rich soil and proper attention to watering during the summer (bearing in mind that all lawn vases dry out quickly) nothing can be more effective in the line of floral decorations for the lawn or cemetery; the plants will grow and bloom freely during the whole season. These notes may suggest to those who desire to construct window or verandah boxes for plants, of rustic material, how to proceed in doing the work.

Some Strawberry Experience.

S. P. SHEPARD, LORAIN CO., O.

In the year 1882 I bought eleven acres partly planted to Apples and Peaches, about one-half of the latter being too old to be of any use. I cut them down, plowed the ground the following spring, and planted part of it to Strawberries.

I did not get many berries the next year, taking most of my pay in experience. The first season I noticed that the plants began to wilt along in August, and it seemed to be contagious, and I did not know what to think of it, but upon taking a plant up I found it eaten off just below the ground; old fruit growers know what the trouble was, but I will say for the benefit of beginners, don't plant Strawberries on new or sod ground, as they are likely to be eaten by the white grub.

In the spring of 1885 I interested a neighbor in the matter, who agreed to pay for the plants, furnish the land and the necessary straw for mulch, oversee the picking and pay for half of it, while I was to see to getting the plants, plowing, planting, cultivating and harvesting, and pay for half the picking, we to run the patch four years.

I got 42,000 plants of standard varieties of a nurseryman near home at $3 per thousand.

He bought 25,000 of them from an eastern firm a very poor looking lot, as they had heated some and looked dead; 8,000 he got of another eastern firm which did well; the balance he secured somewhere near home, and they became homesick before I had them a month. I did not get much of a growth the first year as the plants were poor and the season dry.

Our first crop was about 150 bushels and sold for about $300. Though the land was somewhat poorer than I expected we put no fertilizer on, as there was nothing said about that in the contract. Our next crop sold for about $200, and that year we burnt the straw off of the patch after fruiting, but as the season was very dry, the plants got a poor start, so our crop in 1888 was light, and we concluded not to run the patch another year.

During these years of experience I was getting my own ground in condition for Strawberries, and last spring I set about 5,000 plants of three different varieties between Raspberries, which were planted at the same time, and I got a splendid stand; rows all full and about two feet wide. They are all mulched with fine manure and coarse manure, and clean wheat straw; and last week, just before a rain, I applied about two hundred pounds of phosphate to about two-thirds of the patch.

I have had experience in Strawberries, Raspberries, Blackberries and Peaches; have bought it in large lots and paid well for it.

But these lessons learned by experience will not be soon forgotten, and while I know several fruit growers who think they know it all, and do not take horticultural papers, I certainly have learned that I cannot get along without them.

1,053. **Snails in Rose Soil.** The snails may give you considerable trouble when the Roses start into growth and you should take measures for destroying them. By placing Cabbage leaves among the plants the snails may be readily captured as they will collect thereon and can then be destroyed.—C. E. P.

1,057. **Spent Hops as Manure.** These are fully equal to the best stable manure and may be used in the same manner. They heat more rapidly and require attention in this respect. As a top dressing or mulching in summer or winter they have no equal. I consider them so valuable that I use all I can procure.—C. E. P.

1,059. **Stopping Rot in Trees.** In many cases the decay or rot can be stopped by carefully removing all the decayed portion to the sound wood, then covering it with liquid shellac or common white lead, being careful not to paint the bark.—C. E. P.

1,060. **About Artemisias.** I don't know what plants are referred to. The Chinese Chrysanthe mums are frequently miscalled Artemisias and full directions for their cultivation can be found

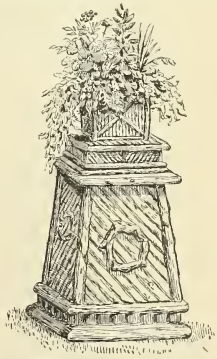


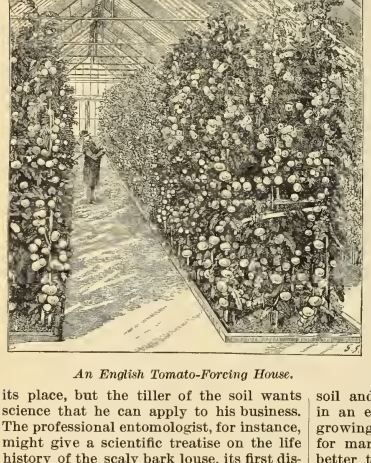
Fig. 1. Fine Rustic Vase and Stand.

in back numbers of POPULAR GARDENING. The genus Artemisia contains among other plants the Southernwood or Old Man (*A. abrotanum*) and the Wormwood (*A. absinthium*). These are perfectly hardy and will thrive in any common garden soil.—C. E. P.

1,064. **Ferns Eaten by Snails.** You can readily capture these pests by placing fresh Cabbage leaves among the plants early in the evening. Underneath these the snails will collect and the next morning they can be gathered and destroyed Repeat until all are captured.

Horticultural Experience Meetings.

The idea of holding "practical experience" meetings, instead of tiring an audience of practical fruit growers and gardeners with long and learned dissertations of theorists, as is so often done on the occasions of horticultural meetings, we believe originated with the Secretary of the N. J. State Horticultural Society, and seems to be quite a success judging from the general tone of the meetings which have been conducted on that plan. Other Societies might very profitably follow the example set by the N. J. Society. Abstract science is well enough in its place, but the tiller of the soil wants science that he can apply to his business. The professional entomologist, for instance, might give a scientific treatise on the life history of the scaly bark louse, its first discovery, local distribution, emigration, or scientific classification. The average cultivator will care very little about it, and may not retain a vestige of it in his memory. But when told that a salsoda solution is a sure cure, he will go home rejoicing, and prepare at once to apply the solution, and save the affected trees in his yard.



An English Tomato-Forcing House.

Forcing Tomatoes and Training to Single Stakes

In the November issue, page 47, a subscriber gave some directions for Tomato forcing under glass by a method which requires a trellis and pruning for the best success. In England where the open air culture of Tomatoes is not generally practiced owing to the cool summers, forcing the fruit under glass is the main reliance for securing it, hence English gardeners are proficient in the art and which might undoubtedly at times be of use to Americans.

On this page is presented a view of an English Tomato house, the variety in use being the Ham Green Favorite which is considered the best and most generally useful sort for market purposes; the plants are grown to a single stake, ten or twelve feet in length, and are not stopped, nor is any pruning done excepting where the foliage is so thick as to injuriously shade the fruit, and here it is removed without stint for it is natural that such a course does not effect the abundance of the crop.

The stakes being so tall, require cross braces to prevent any swaying or possible accident. There is no doubt but that this is the most economical plan both in time and space, that could for good results be adopted; having no masses of side shoots to keep in order, as is the result when stopping at 3 or 4 feet high is practiced and it would be hard to exceed the crop shown and no doubt it would be as profitable for the establishments in this country that make a business of winter growing of Tomatoes as it is in England where growing this fruit by any course out of doors is the exception rather than the rule.

The average wholesale price of Tomatoes grown under glass in England is equal to 12 cents per pound of our money, though the fruit in the particular instance which we have had engraved (from the London Journal of Horticulture), by its superior quality brought 16 cents per pound and over.

Hot-Bed Lettuce. How to Grow.

ALBERT WILLIAMS, MERCER CO., PA.

The best and cheapest way to grow Lettuce in the early spring is this: About February 1st sow one-half ounce of Black Seeded Simpson Lettuce seed for every 200 plants wanted, and as soon as large enough to handle, transplant two inches apart each way into boxes filled with three inches of good rich soil. In four weeks these plants will be in nice shape for planting out in the hot-beds, which in the meantime should be gotten ready as follows:

Dig out a pit to the depth of a foot or fifteen inches of the right length, and line up the sides with rough lumber to the level of the ground. Then set on your sash frame, 16 inches high at the back, 12 inches high in front, and as long as the pit, 12 or 15 feet being a good length, and bank it up well with soil and manure. For heating material in an experience of over twelve years in growing large quantities of hot-bed Lettuce for market I have never found anything better than good fresh horse manure. If steam should be coming out of the top at the stable, pile it in a conical heap as it is unloaded, and tramp it down thoroughly; the heap then becomes heated all through, and does not need any further turning before putting it into the frame. But if there is no heat showing when handled there is no necessity for tramping it, as it must be turned before putting it into the frames. It is ready to turn as soon as it begins to steam freely; pack it down and tramp it firm as it is turned, so that the heat will permeate all through the pile. Many hot-beds are made that are hot only in name, for down under the soil they are as cold as icebergs from neglect of this point.

When the manure is well heated through, which may be known by thrusting your hand into the heap, throw it into the frame, and tramp it down evenly all over the frame, in the corners and under the cross bars, so that it will settle evenly up to within a foot of the top, leaving the surface level. Now put on from four to six inches of soil; it can't be too rich for maturing a good crop of Lettuce; rake it down evenly, put on your sash, leaving about three inches open at the back for three days to allow the rank heat to pass off, then open up the beds and plant sixty plants to each 3 x 6 sash. Water thoroughly after planting, even if the soil does seem wet. Give plenty of air on all mild days, especially in sunny weather; about 9 o'clock in the morning the beds should be freely aired. Neglect in this particular will do more towards failure than any other one thing.

In four weeks from the time of planting the crop ought to weigh 15 pounds to the sash; I have raised Black Seeded Simpson Lettuce that in six weeks from planting weighed 32 pounds. These beds may be replanted as the first crop is cut out, and after the second crop comes out, a hill of Cucumbers may be planted in each. These will fruit a month earlier than those planted in the open ground.

The Remarkable Chrysanthemum, Mrs. Alpheus Hardy.

This remarkable flower first described, so far as we are aware, in POPULAR GARDENING AND FRUIT GROWING for April, 1888, has all through the past Chrysanthemum season created a great stir and received premiums wherever it has been exhibited. It has well fulfilled its early promise of distinction in the way of special attraction by its admirable growing and blooming qualities and its high rank now seems to be unquestioned.

Whether this peculiar form is but the first of a unique race differing materially from the familiar type of Chrysanthemums, remains yet to be seen. The peculiarity of this new variety is well shown in our engraving. The pure white petals, which are somewhat incurving like the Chinese class, being covered with a fleecy fringe on their surface a quarter of an inch and less in length. This very noticeable feature is becoming more pronounced with each year of its growth. In addition to the excellence of its flowers the plant's character of growth seems all that is desirable, being one of the freest growers even in large collections.

One grower reports that some August stuck plants the past autumn gave proof of its vigor by each bearing three fully developed flowers that measured four inches across. Those most intimate with the variety ask the horticultural world not to be surprised if within a few years we shall have red, yellow and other colored blooms with its characteristic hair-like appendages.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

THE TURNER HYBRID TOMATO. I see some subscribers object to this on account of its roughness. My experience with Tomatoes is that we may raise rough or smooth Tomatoes from the same variety. My plan is to remove the rough fruit as soon as the shape is seen; by this means those left will be much better.—*Purlin Baird.*

NO CURCULIO PROOF PLUM. A curculio proof plum does not exist. Spend your time and money shaking the best sorts twice a day over large cloths; catch the curculio and crush it. That is the only sure cure; and it is sure.

ORNAMENTAL BEETS to my taste (others say so too) had as well give way to better things.

ON SUBSTITUTING BY NURSERYMEN. Nurserymen should not assume to fill orders for stock different from that which is ordered without a permit from the person so ordering. A prominent nurseryman the past season received an order with the money for special kinds of Apple trees. He being out assumed the privilege of sending dwarf Pear trees for the money in his possession. Is that right and just? Would he be satisfied with his groceryman if he sent him money for a barrel of sugar and he being out sends him a barrel of vinegar? Should one set of business men have greater privileges than others in this respect? With the wonderful growth of the fruit and vegetable business in these United States the time will come when some of these obstructing evils in its progress must and will be remedied.—*A. M. Nichols. Licking County, O.*

EVERGREEN PLANTING is a thing I wish also to speak of. I think there is nothing more cheerful and pleasant in the winter season especially as Evergreens, as they retain their green foliage when everything else is almost dead. We can all beautify our homes by these beautiful trees, and a row of Evergreens make such a nice wind break, besides adding cheerfulness to our homes, yet so few are planted.—*M. T. Thompson.*

TARTARIAN HONEYSUCKLE FOR HEDGES. The best ornamental hedge plant is the Tartarian, or Bush Honeysuckle. It is of rapid and easy

growth, filling any gap in a single season. There is also this advantage that it bears large quantities of berries that the birds like, and are thus kept off from our Raspberries.

FRUIT TREES FOR ORNAMENT. Your recommend of fruit trees for a fine lawn is judicious. There are no handsomer trees, either in flowers, frnit, form, or color than English Cherries, and some of the Pears. I recommend the Buffum Pear for an avenne or drive way. Dwarf Apples make nice groups of large shrubbery, so do dwarf Pears, especially Howell's. Bear in mind that no foliage in autnmn colors more finely also than Pears. Can you conceive a handsomer picture than a Montmoreney or Morelo Cherry tree hanging full of fruit?

UNWORTHY NEW FRUITS. If yon do any better service to horticnltnre than to squelch the new sorts of fruit that do not eqnal the old, in other words, are not needed, you will be wise indeed. The torment of fruit growers now is to sort ont. To test all the new candidates is a serions tax. I have long felt the fact that many very excellent horticnlturists are incapable of analyzing the claims of a new frnit. They sometimes are too excitable and enthusiastic. Others have not nicety of taste. I have friends who cannot tell a Sheldon Pear from the Bon Chretien, except that one is more juicy.

THE JEFFERSON, GŒTHE, AND OTHER GRAPES. Mr. Goff's endorsement of the Jefferson is none too strong. Grow it even if you get its fruit only in the best Grape years. It is delicions even if not fully ripe. I add a note for Gœthe: I have always found it too late for us; but this year I left it out after several freezes, such as had spoiled many sorts, like Concord; then picked it, and now in January, it is delicious. My three sorts now in best condition are Herbert, Iona, and Gœthe.

A NEW GLADIOLUS. Among my seedling Gladiolns I have one that holds its flowers up like Tnlips, and nnlike other Gladiolns the corolla cnp is uniform in petals, or nearly so. I shall carefnlly propagate it. I have also two double sorts. This is a grand flower to experiment with.

HYBRID BEANS. Among my cross bred Beans I have a snceulent sort, that goes all to pod, and is solid as large around as one's finger. The problem is to get seed enongh to propagate it. It is delicious eating. I have white and golden pods eight inches long, and nine Beans to a pod. Some pods are three inches in circumference.

WHITE AND RED CURRANTS. A reference in your Jannary nnmber to red Currants, reminds me that few people know the advantages of white Currants. They are better in quality to start with, sweeter and richer. The worms know this and attack the bnshes more readily than they do the Reds, which is the only drawback. But the birds mistake white Currants for green ones and rarely touch one. They will hang on, growing better and undistnrbed, a month beyond the Reds.

MONTMORENCY AND DWARF CHERRIES. Speak even more strongly than you have of Montmorency Cherry. It is grand every way; late, hardy, prolific, fine quality. Dwarf trees of Early Richmond I have long grown to great advantage. Dwarf Cherry trees can be easily covered with mosquito netting against the birds. Two or three trees will keep you in eating all summer. I ate my last Morellos in October, in 1888.

ABOUT WARDIAN CASES. Boys and girls should resurrect the Wardian case. Nothing finer for amnsement or for instrnction was ever popularized. For window plants I have used to great advantage a case half Wardian and half Waltonian; that is, a large Wardian which could be opened by doors at either end. You can in such a case grow any greenhouse plants.

HOW TO TREAT ROSE SEED. In growing Roses from seed I have had best success since following a plan I somewhere saw suggested of putting the seeds over winter in a bag and burying a few inches in the ground. In the spring dig out and sow them in a cold frame. In this way I succeed in starting the seed readily. Plants will sometimes blossom the first season.

USING COAL ASHES. You cannot say too much in favor of coal ashes as a fertilizer for clay soils.

THE NEW CHRYSANTHEMUM, MRS. ALPHEUS HARDY.

Their office is mostly to open and loosen the soil to the fertilizing effects of the air; but they work wonders. As mulch for Raspberries, trees of all sorts, and even Strawberries they are superb. On sandy soil I should say they would prove of little use.—*E. P. Powell, Oneida Co., N. Y.*

IMMERSION AS AN INSECTICIDE. Have tried plan of immersing plants to kill insects. I pnt a Coleus under water 48 honrs; result, the tips of the plant are killed, but otherwise it is all right, and so are the mealy bugs. It took off their jackets and that seems to be all, but will try it for scale.—*James Frost, Jefferson Co., N. Y.*

"FIRM THE SEED IN THE SOIL." Good advice generally, but I made a failnre of it in the first season. A piece of gronnd having been prepared for seed and moderately firmed with the feet; Pansy seeds were sown in rows and pressed firmly into the soil with the back of a narrow weeding-hook. This left the seed in gutters ¾ of an inch deep and slightly covered with earth. Now had we not, following on this, had a heavy rain which washed the ground and filled the gutters with soil, burying the seeds too deep, all would have been well, for another piece not so washed came up nicely. Thus, to always be successful with small seeds, care shonld be taken to have the whole surface of seed bed, especially such as are exposed to the weather, evenly firmed to prevent such washing.—*W. C. Jennison.*

BUTTING OR LAPPING GREENHOUSE GLASS. On page 84 you ask for reports on experience in butting instead of lapping glass. Have had butted glass in use for the last four years on a lean-to 40 feet long, the size of glass being 12x15 and the broken glass from all causes has only been five lights in that time. The firm of W. W. Green, Son & Sayles have pnt np over 6,000 feet using 12x16 glass, all butted, being laid in white lead mixed with whiting and spread with a Scollay pnttying bulb; it makes a tighter, lighter and to my mind a stronger roof than lapping, for the reason that the glass has a bearing the whole length on the bar, a thing it can't do in lapping and nsing pntty, as the pntty will work out by freezing. In butting, with a little care to keep the rafter straight, there are few lights but what will make a nearly tight joint, and what won't can go at the top or bottom; a man will glaze more than half as fast again by butting and there will not be half the drip from inside moisture as the water has a clear course to the bottom of the roof.—*J. Frost.*

THE NEW GLADIOLUS-FLOWERED CANNAS. Mr. Henderson does well to call attention to these. I have seen some fine collections of them in bloom, and consider they are one of the finest things lately given to the horticultural world. And not only are they available as out-door summer plants, but as many of them are of dwarf growth they are also well adapted for greenhouse decorations in the winter. —*Wm. Falconer.*

ERRORS IN THE GARDEN. The writer of these is wrong in saying there is no such thing as a Squash vine borer. I have often pulled up wilted Cucumber vines and cut away the stem near the gronnd in slices, and have nearly always found the borer in the heart of the stem. It goes in near the ground, then makes its way upward, boring as it goes. The borer is 3-16 or ¼ of an inch long.—*Frank Aiken.*

VINEYARD TRELLIS, NO. 890 DEC. NO. I see that my recent contribution on this point is not as clear as it might be, Where it reads "it wonld require 1,300 pounds of No. 12 wire to trellis four acres of vineyard with two straight rows planted eight feet apart," it should read, "with two strands, rows planted eight feet apart" And where it reads, "Charring would still be good, petrolenm nseless," etc., it should read, "Charring wonld still be good, petrolenm useless," etc., that is, if not seasoned.—*L. Roesch.*

ONE COMMISSION MAN'S WAY. In the December nnmber is the statement that a committee is appointed to present a bill to the New York State Legislatnre aiming to compel the commission houses of that State to give on bills of sale the names of purchasers of consignments. That is a move in the right direction. If a commission honse is disposed to deal fairly and squarely with its consignees it will do nobody any hurt; if they are not so disposed it will bring them to time or shut them up. The past season I consigned some produce to a prominent commission house in a certain city. They sold it and were prompt in returns at fair prices. A month later they made returns for other shipments and included by mistake a second bill of sale on first shipment; in the latter the freight was more and sales about one half of first statement, showing they made the figures to suit their own pocket-book when they could. Can we producers consign our property to such rascals? Not if we know it.—*A. M. Nichols, Licking Co., Ohio.*

A Hudson River Grower's List of Pears.

H. HENDRICKS, ULSTER CO., N. Y.

Mr. Powell brings together a very excellent list of Pears for market and house use on page 78. It is not often that another man's list corresponds so nearly with my own notions. An orchard could be planted on this basis pretty safely. I would be inclined to add three or four varieties to the selection, and yet I deprecate a multifarious list of any fruit.

What surprises me, however, is that Mr. Powell should have left out the Bosc from his regular list and only alluded to it in his addenda of good sorts. My own experience and observation of late years have almost led me to give this magnificent and excellent Pear first place. In flavor it is not excelled. In shape and appearance is it not an ideal Pear? In habit of growth and regularity of bearing it is almost perfect. The American Pomological Society's catalogue gives it 28 stars.

What then is the matter with Bosc for first place? The only thing I know against it is the tree does not begin to bear so soon as most other sorts. Even this may be an advantage in the end. Look at its graceful pyriform proportions. It's a Pear! no doubt about it. There is no suspicion of any cross with au Apple, a Tomato, or a Squash, nor is it an "Idaho" Pear. Put your teeth in it and all your other impressions are confirmed and enhanced. These are some of the reasons why I would plant the Bosc in every family garden and market orchard. This Pear is now 82 years old, having been produced by the distinguished Belgian Van Mons in 1807. Any man might be proud to leave such a legacy to the garden.

Mr. Powell's estimate of the Tyson is quite correct. It is a valuable early Pear, not of high flavor, but sweet and pleasant, an abundant bearer, good size, fine shape, good grower. I should also add the Summer Doyenne to this early list. It is really a beautiful little Pear, almost the first juicy gem of summer. It has a rich yellow color often with a red cheek when properly thinned, as it always should be. The fruit is always fair, solid and delicious. The tree is hardy, grows freely, and bears heavily.

The Bartlett is still the leading market variety, and perhaps justly so, but I would uot exclude Clapp's Favorite by any means. It is too valuable in quality and appearance, and the tree is a vigorous grower and great bearer. It is an American Pear.

The Howell is a handsome and valuable Pear, not high flavored, but sprightly and attractive to the eye and palate, a fine grower and bearer. Flemish Beauty is a little more uncertain in behavior under varying conditions, but when it don't crack or mildew, and when it is fully exposed to the sun on all sides it is a fine Pear. But it has been cranky with me of late and I almost forget how a decent specimeu looks or tastes. The Sheldou Mr. Powell calls "the finest table Pear in the world." I like it too, but am unwilling to accord with this broad statement. I would name several other varieties in preference, for flavor, such as Bosc, Seckle, Dana's Hovey, etc. It is also easily excelled in external beauty. The Onondaga is scarcely worth a place in this list, being too coarse in texture and somewhat indifferent in quality.

The Clairgeau is a fickle-minded French contribution which is indeed difficult to classify. It has iu turn challenged my admiration, elicited respect and awakened my disgust. In growth and appearance it is uniformly handsome, and some seasons the quality has been really good. But at other times when the fruit was equally attractive to the eye the flavor was positively bad; sawdust would be as good. The magnificent specimens of it seen on our fancy fruit stands, mostly from California, are usually a delusion to the palate.

The Anjou which Mr. Powell forgets to write without the French prefix "D'Anjou," as now decreed is indeed a grand and valuable Pear. Its brisk vinous flavor is very pleasing and it grows vigorously. It keeps well, and is very slow to rot. But I have found it shy in bearing at least while young. It presents no very attractive coloring, but no collection should be without the Anjou. The Lawrence is a small sweet Pear that comes in nicely during early winter, and it is an abundant bearer. There is no special character about its flavor. The Winter Nelis is better and the Josephine of Maline better than either. This is the most valuable of all winter Pears to my thinking. It should certainly have a place in every family garden and amateur collection, and will make itself profitable in the market orchard. Its melting, juicy, salmon-colored flesh is most delicious along in January, February, and even through March. The old Virgalieu or White Doyenne, is also a valuable Pear when it behaves well, as it has lately.

As to the training of Pears, I should keep the trees low by frequent heading while young, and do away with long ladders. In fact I am almost inclined to let the branches grow from the ground up, or within two feet of it, making a pyramidal tree, of course keeping the interior properly thinned and having an eye to symmetry. I think the plan has advantages which are not overshadowed by the ground space taken or the consequent inconvenience of tillage and cultivation. Except in a small private garden dwarf Pear trees are in my judgment a poor investment. Standing as I do in the retrospect of some years of experience and careful observation in the culture of fruit, I incline to the opinion that the man who plants an orchard of standard Pears, of the best varieties, in proper soil, with an earuest determination to take care of the trees, makes about the safest investment which is open to him in fruit culture to-day.

On Utilizing Certain Waste Heat.

REMLE, NEWPORT CO., R. I.

Cases are not altogether wanting in which the steam or water pipes used in heating greenhouses, are extended for heating the dwelling house also. Naturally there is a chance for some loss of heat from the pipes between the glass structures and the dwelling, unless the latter adjoins.

To overcome such a loss of heat considerable ingenuity has at times been brought to bear. A florist in Fall River, Mass., having no great extent of glass, but using steam for heating both greenhouses and dwelling, utilized the heat of the connecting pipe for a distance of 30 feet in this manner.

The pipe runs along the bottom of an excavation several feet deep, and is not covered with any thing in the way of nonconducting material. This space is six feet wide; over it a hot-bed frame, one foot above the surface at the back, and six inches high in front, is placed and furnished with the usual cross bars for the sash. One foot above the steam pipe scantling are laid a sufficient distance apart to admit of roofing slate being laid flatwise across for a bottom, on which soil is placed. A hot-bed is thus had with no extra heating expense, and one that in various ways can be used all winter.

It is to be observed that as a rule,as in the case referred to, pipes enter the cellar of the house and here also can this warmth be used to great advantage, by fittiug up Mushroom beds. With due regard to moisture a bed could be formed on the floor, of any desired dimensions, and shelving beds be arranged along the walls in tiers above; no great space is needed. Nor is light essential for all does well if the temperature is kept at as near 60° as possible.

In one instance a frame such as we have referred to was fitted up properly and early fowls were raised therein until the broiler age was reached and I was assured that nothing had ever proven more satisfactory for the purpose.

Samuel Miller on Horticultural Progress.

In looking over the collection of fruit at the exposition in St. Louis, exhibited by the Missouri State Horticultural Society, it struck me forcibly that our favorite pursuit has advanced fully up to that of the arts and sciences of this marvelous age.

My earliest recollections are of Green Gages, Blue Plums, Purple Mignon and Apricots on terrace wall, Golden Chassele trained against the wall, choice Cherries, Pears, Peaches and Apples as far as they could be obtained. But what was that compared with the present? Had all the fruit growers in the United States joined together they could not have gotten up a show to compare with what was shown at St. Louis. Varieties without number of recent years were shown that will have a place in the future and still new ones are coming.

Of Grapes we then had the native Fox Grape of the woods, the Frost or Chicken Grape as it was called, with here and there a Cape or Alexander vine; the Isabella and Catawba were just then being introduced. What have we now, sixty years after? Of Grapes more than 200 varieties, among which are many good enough for the most fastidious, and Apples, Pears, Peaches and Plums without end in variety.

Then there were a few nurseries scattered over the country and when a man wanted trees he would go with his wagon ten, twenty or fifty miles if necessary. Now the tree agent traverses every nook and corner of the country and it takes carloads of trees to fill the orders. Then nurseries were conducted on a primitive scale while now they have become among the collossal institutions of the age. Take, for instance, the firm of Ellwanger & Barry of Rochester and compare it with nurseries sixty years ago; and of such there are scores in the country. The seed business has kept pace with the other branches of the industry.

The small fruits were scarcely thought of. Then all the Strawberries I saw until 1832 were the little wild ones of the field. Of Raspberries we had a tame red one in the garden and the wild black caps of the woods. I have had as many as sixty varieties of Strawberries and twelve of Raspberries. Then the selling of Strawberries was scarcely thought of; now there are places where a special train of cars daily carry away loads.

The diseases of plants and trees and also the way to fight the destructive insects, are becoming better known so that there seems a fair prospect for the good cause to prosper until perfection may be nearly reached. Judging from the past what may the future bring? The rising generation seems to take an interest in horticulture that bids fair to see its development in all the various branches. Amid all the improvements there are still some old varieties of fruits that hold their place on the list: Select, Rambo, Red Romanite, Yellow Bellflower, Newton Pippin and Winesap, all these were among the first Apples I can remember and to-day, sixty years after, I have still the pleasure of seeing them, not only in their original glory, but so far surpassed that one not posted would scarcely recognize them, Bellflowers weighing 1 lb. and Winesap 11 inches in circumference, etc.

But it takes Missouri to grow fine Apples. My Rhode Island Greenings this season

were unusally large and so superior were those shipped to Lucerne Co., Pa., on failing there, that no one would believe them to be that Apple. The art of representing fruit and flowers on paper has advanced like everything else. I can now buy colored plates of fruit at ten cents a copy that cost me $3 to have painted forty years ago, and the cheap work of to-day is quite as well done. So much for lithographing. Let the young men of to-day take hold of the fruit business and keep the ball rolling. Even if there is not dollars and cents in it from markets, at least have enough good fruit for yourself and family.

A few days ago we put into the cellar about eighty bushels of select winter Apples besides selling forty bushels. I have enough left to boil for Apple-butter besides putting away cider to do us the whole winter. All these trees I raised from their infancy and it is a comfort to know that they are rewarding me for the labor spent on them.

New Jerseyans on the Peach Yellows.

T. GREINER, MONMOUTH CO., N. J.

Those members of the New Jersey Horticultural Society, who had been in hopes that Prof. E. F. Smith, the specialist of the Departmeut of Agriculture, who has been giving his best efforts to the investigation of the yellows during the past eighteen months, would bring out some new information about the true nature of the disease, or suggest some line of successful treatment, were destined to be sorely disappointed. The results of his labors, thus far, seem to be mostly of a negative character; and we fear that all of his conclusions are not altogether correct.

The arguments and data making out the bulk of his recent address before our State Society, and purporting to establish the fact that the disease is not the result of soil exhaustion, were hardly needed, since this fact has long since been accepted by the observant general grower; and the deduction, that special foods, such as potash in one form or another, nitrates, and other substances applied to the soil are very unlikely to have any curative or preventive effect, must necessarily tend to discourage the Peach grower and prevent him from making further experiments with just such substances as kainit and muriate of potash, which in many cases under our own personal observation have effectually cured what every grower of experience pronounced the genuine yellows.

Prof. Smith suggests that there may be a true disease, for which a remedy has not been found as yet, and a similar one caused by starvation which is curable. The disease is now less prevalent in districts where the law compelling growers to tear out every diseased Peach tree is strictly enforced, [very naturally, Ed.] The query, whether the yellows is a fungus disease or not, cannot be answered by Prof. Smith, as he has not been able to find the incipient disease with the microscope. The investigation is not completed, and the matter as unsettled as ever. Neither could we take much comfort from Prof. Smith's assurance that the Department will be able, after some years, to give more definite information.

A member of the Society states that he has cured apparently diseased trees by the free use of salt, and also of muriate of potash (700 to 800 lbs. per acre), and that vigorous accidental pruning (in consequence of the breaking down of the greater part of the branches when overloaded with fruit), has given good results in improving the health of Peach trees. Another member, however, protested very vigorously against the practice of pruning, especially that of the roots, and the cutting away of the tap root in transplanting. It is safer to grow trees trom seed and leave them standing where they came up.

How I Crew a Crop of Cauliflowers.

E. H. CUSHMAN, CUYAHOGA COUNTY, OHIO.

The growing of this vegetable the past season has been an experiment with me, previously I knew very little of its culture. The public as they passed by have shown their interest, for the reason that early Cauliflower growing is not common in our community.

The first move made was to learn what the product usually sold for; inquiry in Cleveland revealed that $1.25 to $2.50 per dozen were near the outside figures. These prices looked pretty fair when 1000 dozen plants could be grown on an acre. To learn how to grow it, an old English gardener was consulted, and as usual, good seed, thrifty young plants set out early in rich, moist, well prepared soil, and well cultivated were the directions. It looked easy, especially in the winter time when there was no other work to hinder.

Here let me say is a mistake that many make wheu plans are maturing for the next season's work. They lay out more than it is possible for them to do well when the time comes. The seed I purchased consisted of one ounce of Early Erfurt, one ounce of Le Normande, two papers of Early Suowball, costing $2.50 together. An eighth ounce of Snowball at 50 cents would have been cheaper than two papers at 25 cents each.

A troublesome point was the proper time to sow the seed. Done too soon the plants would get too large, and sown too late valuable time would be lost in promoting their early maturity. I sowed March 6th on prepared soil, consisting of garden loam, leaf mould, and lake sand, placed in shallow boxes, in rows an inch apart. The boxes were placed in a warm room and kept watered; seed nicely up in a week.

On the ground selected eight large two horse loads of fresh horse manure were drawn in the spring. These piles were turned over several times, and later were spread over the ground and ploughed in. A hot bed of four sash was also made, and was ready on the 6th of April for the plants. Previously the plants had grown a little spindling and had damped off. The plants grew in the hot bed until the 11th of May. Hot weather prevented planting out earlier and many plants rotted off in the hot bed, so that my 3000 plants had been reduced to 1500; many of these died and about half of the ground planted was not fit for their growth. They received three hoeings and twice as many cultivatings.

The first cutting for market was made on June 28th, but might have been done at least 10 days earlier. The cuttings for market lasted until Aug. 22nd, when 25 heads were cut. On July 17th, 72 heads were sold for $8.10; on July 26th, 96 heads were sold for $6.00, these were the largest cuttings made at any one time. The total number of heads sold were 554, bringing $51.05.

We can very fairly judge the expense of the main operations as follows:

10 loads of manure, hauling, turning, and spreading	$22.50
Seed	2.50
Transplanting to hot bed	2.00
Ploughing and transplanting to the field	4.00
Three hoeings	3.00
Six cultivatings	3.00
Tying up heads	1.50
Preparing 554 heads for market	5.54
Total	$46.04
Balance in favor of the crop	5.01

These figures do not take into account the marketing, as they were sold with berries. Five dollars is not a large sum, but there are some circumstances which will change the view a little. Only half of the ground produced the crop sold, the other half was too wet; that would reduce some of the expenses about as follows:

Manure	$11.25
Seed and work	7.25
	18.50

To this add the $5.01 and you have the respectable sum of $23.51, now the area of crop producing ground was one-seventh of an acre, if we multiply $23.51 by seven we have the profit of $163.57 per acre.

Some things learned are that oue ounce of seed will produce about 2500 plants; that Early Erfurt did the best; that Le Normande is not a variety for early or late planting; that the best way would be to sow the seed in the hot-bed about the first of April; that the plants must be kept growing without a check if possible; that to have fine white heads the leaves must be tied together as soon as the little heads begin to show; that green rye straw about eighteen inches long is an excellent material for tieing; and lastly, that it is not best to base your operations on the expectation of 1000 dozen to the acre, at $1.50 per dozen. It is better to wait and take what you can get.

Fruits for Cold Climates.

Mr. T. H. Hoskins, of Vermont, says in Garden and Forest that as a rule a fruit-tree should be a variety that will endure all weathers in the place where it is planted. It must be hardy enough to stand the test winter; otherwise, just when the owner is looking for a first full crop, he may find only a dead tree.

Experience has proven that the fruit-trees of western Europe and their seedlings will not, as a rule, endure the winter climate of similar latitudes on the American Continent. All of Europe north of Rome is north of Boston. Boston is nearly the extreme north limit of the Peach, Plum, Quince, and Apricot; and of the Apples and Pears of north-western Europe very few can be planted with profit more than 100 miles north of Boston. Seedlings from these do not, as a rule, show more resistance to cold than their parents. So seldom do they, that those of us who have had most experience, at once suspect that such a seedling is an accidental cross with a hardier variety, like those of Russia and Siberia.

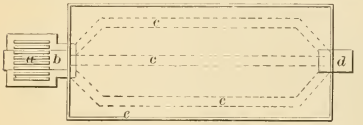
The Russian tree-fruits are undoubtedly of hybrid origin. Those of Poland and the Baltic Provinces are much mixed and crossed with west European species. But, working eastward in the empire, less and less of this blood is found; and in the valley of the Volga and the Steppe region the influence of north Asia stock preponderates. It is from these trees that we get our most perfect "iron-clads" of all the tree-fruits.

Our north-eastern states and provinces require hardiness against cold alone; but in the Prairie States this is not enough. Intense summer heat and drought, and the fatal sap-blight, must also be encountered there; and trees for that region must thus be triply clad. The fruits of the Russian and Asiatic steppes furnish the best material to meet these contingencies.

As New England lies mostly on the latitudes of southern Europe, so Canada lies mostly on the latitudes of Russia and Siberia. Not only climate, but the length of seasons and of days, should be considered in estimating the value of fruit-trees. The winter Apples of Russia are many, but south of 45° they are only early winter or fall sorts. This lessens their value for our Northern States; but as they can be grown among our tender long-keepers, there is a fair probability that iron-clad crosses can

be obtained that will prove long-keeping below latitude 45°.

Unquestionably many European trees are, in their seedlings, gradually adapting themselves to the American climate. The law of the survival of the fittest is all the time in operation, and interested parties are finding along the northern limits of our orchard region (and even within it) seedling varieties which show unusual resistance against cold. After trying several hundred of the



Hot Bed Heated with Fire.

hardiest Apples of Southern Maine, New Hampshire, Vermont and Massachusetts in vain, and after coming to believe that there were no iron-clads among Massachusetts Apples, it was accidentally discovered (at the Centennial, I believe), that an Apple which I had received from Canada as the Strawberry of Montreal, is really the Foundling, which originated in Gorton, Mass.

Now that an interest has been aroused by the practical successes already attained, hardy seedlings are being sought out and tested all along our northern borders and in Canada. Scott's Winter is one of the Apples thus obtained, and though not an Apple of high quality or large size, it is a reliable keeper and a useful fruit, not only in itself, but as a future beacon of hope.

As for the Pears and Stone fruits, the future is pretty secure, not only from the improvement of our native species of the last, but in the importation of the highly satisfactory Russian, Siberian, and North Chinese varieties. I see no reason to doubt that, by discoveries already made, the orchard region on this continent can be extended from two to three degrees of latitude northward. That this is a wonderful gain, as the result of scarcely two decades of effort, is manifest; and there is more to come, for the work is scarcely begun.

Hot Beds With Fire Heat.

CHRISTIAN WECKESSER, WAYNE CO., O.

My experience has demonstrated that in many cases these are more satisfactory and probably cheaper than where manure is used. They can be started earlier, be regulated better and can be cheaply and easily constructed. The first one I put up was somewhat defective; profiting by my experience I shall construct the next one pretty much after the following plan:

As coal is best for heating, being easily regulated, a simple furnace to be constructed of brick, or a large coal stove that is of no further house service, can be put in instead of a furnace, throwing the ground against and around it on all sides except the front one, but in either case leaving a large opening by which the flues can connect; this can be made by setting up several flat stones on edge and covering with a larger one and connecting three six-inch tiles with this, closing any openings at the connections with stones or brickbats to prevent the soil from rattling in. Common hard burnt drain tile will do for the flues, one of which is to run through the middle of the bed and the other two branch out on each side running near the border of the bed.

They should be three to four feet below the surface where they start from the furnace, gradually rising about one foot in fifteen. They may extend about sixty feet where the tiles again unite in the same manner as at starting, into an upright flue, which may be made of planks for use as a chimney. For raising Cabbage and other plants requiring less heat it could no doubt be advantageously extended an additional forty or fifty feet.

On a gently sloping side hill would be the most suitable place for the construction of such a bed, as then no excavation for the furnace would be necessary. Where available the basement of a building is a convenient place for the furnace. If properly made a comparatively small amount of fuel will keep up the temperature to a sufficient degree in any weather and usually will not need to be fired up more than three times a day. The great advantage of such a bed lies in the fact of its being ready for use at any time.

In the annexed engraving *a* indicates the furnace, *b* the head of flue, *c c c* the tile flues, *d* the chimney, *e* the margin of the bed.

Short Notes on Some of the Newer Vegetables and Flowers.

BY A PENNSYLVANIA GARDENER.

Bush String Bean Extra Early Flat is the earliest and most productive, with large green pods of robust growth and should be sown thinly; it does well on all soils; its abundant foliage also protects the pods from early frost so it is valuable for a fall crop. The Extra Early Refugee is an enormous cropper with large, succulent pods, both early and late, and has given great satisfaction the past unusually cool, wet September.

Stablers' Sugar Corn has proven very good, of medium height, fine full ear of best quality, used either fresh or evaporated. Free from smut and yields well on ordinary soil; medium early. Corn Banana is a dainty high flavored variety, tender, and of a beautiful color, but more suitable for amateurs as the ears are small; but two to four are borne on each stalk. It roots so firmly that storms seldom injure it. Carrot St. Valeroy is one of the finest, in shape tapering regularly from crown to tip; large, of a beautiful color and mild in flavor.

Lettuce, Yellow Seeded Butter, supplies every requirement. It is remarkably tender in every stage of growth and heads when others fail; delicate color, crisp and free from bitterness all through the summer. Okra, White Velvet, made a stately growth but is not as productive as some of the older sorts. A group of it would present an ornamental aspect on the lawn.

Pea Stratagem has proven quite recommendable. Extra large pods, fine flavor, long and late continuation of bearing, requiring no brush. Minimum, very dwarf, extra early, productive and more satisfactory than American Wonder. It fills every requisite for fine quality and in rows 1 foot apart yields more per square than taller varieties. Melting Sugar is one of the best edible-podded Peas. Large, fleshy, tender and sweet. Much superior every way to the older Tall and Dwarf Sugar sorts.

Pepper, New Celestial, forms a fine compact bush, setting fruit early and by late summer is thickly studded with green, cream colored and bright scarlet sharp flavored Peppers. Golden Mango is of good size, thick flesh, mild, of a fine shape for mangoes and superior to Dawn in every way.

Tomatoes have been a specialty with me for years and of many varieties none had as many good qualities as the Cleveland, sent out in 1887. It is a most vigorous, healthy grower, the foliage protecting the fruit well from scorching sun and early frosts; medium early and very prolific with extra large, round, smooth, bright red fruit. Mikado is an immense cropper, good for canning but too irregular in shape for a profitable market fruit. But why grow a small or irregular shaped Tomato when so many good round varieties are to be had? Volunteer stands next to the Cleveland.

Salsify Mammoth Sandwich Island is so much superior in size and vigor to the common that it will doubtless supercede it.

The new Aster Comet has proved highly satisfactory the past two seasons. It is a compact grower, with many large double Rose colored blooms like a Japanese Chrysanthemum, each petal being bordered with white. Delphinum Hybrids are very fine and showy, bloomieg the first year from early sown seed. They are various shades of blue, with attractive distinct centers, very hardy and when planted in clumps is quite effective.

Mina lobata is a rapidly climbing vine, with vivid scarlet buds, slowly changing to creamy white flowers in racemes; very attractive, but begins to bloom late and is injured by the first frost so it must be started early in pots and somewhat starved until planting out time. Pansy Giant Five Spotted, is among the vanguard of this much improved flower. They are stronger growers than some others of the fancy types, with very large blooms of finely penciled, brilliant shades.

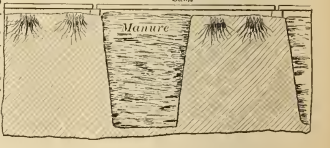
Petunias, Yellow Throated, have been improved amazingly by careful selection. Their strong, sturdy growth and abundant foliage set off the fine delicate flowers very effectively. The blooms are abundant, but not so variously colored as some other strains. Striped Zinnias have so far made but a poor show. Among over 100 seedlings less than a dozen were really fine, but as the season of '88 was an improvement on '87 there is some prospect that this strain can be established.

How I Force Asparagus.

CHAS. B. BROWN, BENTON CO., IND.

It is well known that the one great drawback to lifting and forcing this highly esteemed vegetable under glass is that the strong three year or older plants required can only be used a single time, the strain upon their vitality being such as to render them practically worthless for future use.

Now I would like to describe how I have for several years secured a crop of Asparagus earlier by two weeks than usual and the means are very simple, as may be seen by referring to my sketch. A trench some three feet deep and as wide as the distance between rows allows, is dug lengthwise of the rows



On Forcing Asparagus in the Open Air.

and then packed full of manure as in hotbed making. Some scantling are set up along on the ground at the right distance for supporting the sash, the idea being to cover the whole surface, having the glass sufficiently high to permit the stems growing up for cutting. Before the tops show themselves above the ground the sash should be kept closely shut to retain heat and to hasten root growth, but as soon as they appear some air is admitted in suitable weather.

While by this method we can not get a supply as early as under glass, yet it has this advantage: the same plants can be used indefinitely by giving natural culture in alternating years, not repeating the forcing business on any one part for two years.

Hints by Two Growers on Plant Raising for Local Sales.

M. MILTON, MAHONING CO., O.

In many a locality a good profitable business could be built up in raising vegetable plants for sale and I shall give a few details of the business taken from a fifteen years' experience. Two requisites are necessary from the start, namely, to raise the best varieties and to have strong, stocky, healthy plants. Don't expect to build up and retain trade unless good kinds are raised. Purchasers once disappointed when the crop matures will not be likely to come again. Another thing; if, for instance, you are sold out of Henderson's Summer Cabbage, but have a lot of Fottler's Brunswick and a customer comes for the former variety, do not sell him the latter for the former but tell him honestly. You may loose an order or two but people will soon gain confidence in you and become satisfied purchasers.

For early plants, now (early February) is the time to sow the seed in either hotbed or greenhouse. As they are better for being transplanted, they can be sown in boxes or in the frames. Cabbages, Cauliflower and Lettuce require a temperature of 50° to 55° to start in and should be transplanted into boxes as soon as they show the first two characteristic leaves; set them about two inches apart each way to secure strong plants. The reason for recommending boxes for planting them into is because purchasers often prefer buying them in boxes and setting them out when the weather is suitable. Another reason, the frames can be used in raising Tomatoes, Peppers, Egg Plants and Celery.

Tomatoes, Peppers and Egg Plants for early are best grown singly in pots or small boxes manufactured for the purpose. For late planting they can be grown in boxes or in hotbeds, bearing in mind that a high temperature is needed and plenty of water to prevent their getting stunted and dropping their leaves. On all occasions give them plenty of air, at the same time do uot allow a cold current to rush against them. For raising all kinds of vegetable plants the waterproof cloth makes an excellent substitute for glass and is much cheaper.

In this locality we have to raise early Celery in frames or half spent hot beds. There is always a good demand for early plants and in order to secure strong growth transplant in rich soil and give abundance of water.

For raising later plants of Cabbage, Cauliflower, Lettuce and Celery, the ground has to be gotten in the very best condition by deep digging or plowing and applying a heavy coating of rotten manure to the surface and thoroughly incorporating it with the soil. As a sandy loam well enriched is the best soil for raising vegetable plants of all kinds, a clayey soil should have sand or ashes applied to open it. Having the ground in good condition and the surface level, where large quantities are wanted sow the seed with a drill, wide enough apart to admit a hand cultivator, working just as soon as the plants appear above the ground.

The best and only satisfactory remedy I know of for that pest of the Cabbage seed bed, the flea, is a continued stirring of the soil between the rows. It encourages growth and keeps the insects on the move. For the Cabbage maggot in the seed bed the only effectual remedy I have ever found is an emulsion of turpentine; while the kerosene emulsion sometimes does considerable good when applied in the early stages of the plants' growth, it has not always the effect of the turpentine.

During dry weather Celery seed is sometimes difficult to vegetate and even after vegetating the plants dry up before the roots get a good hold of the soil. Shading the bed after sowing is a great benefit but as soon as the seedlings are large enough, begin to cultivate and keep it up. No better safeguard have we got against drought than cultivation.

GEO. H. MAHAN, CHENANGO CO., N. Y.

To obtain the best results one should have a greenhouse or rather a spring plant house used with heat only in the spring and which may be a lean-to or span roof affair covered by 3x6 feet sash, and usually warmed by a simple flue. Nearly or quite as good returns may, however, be had from the use of hot beds or frames, but with increased labor to say nothing of the inconvenience of the latter in not permitting one to enter at all times. Yet a few frames will be found of great service in the hardening off process of certain plants.

The kinds of plants usually grown for sale are Tomato, Pepper, Early Cabbage, Cauliflower and Celery, and sometimes Cucumber, Sweet Potato, Egg Plant and flowering annuals such as the Aster, Balsam, Pansy, Petunia, Phlox, Verbena, Zinnia, etc. A supply of good friable, moderately enriched loam secured under cover last fall, should be on hand. Next obtain a lot of soap or store boxes of your grocer about 18x24 inches in size and cut them up for making shallow boxes or flats each about three inches deep.

Some prefer sowing in these flats, others directly on the greenhouse benches; the advantage in favor of boxes is that they can be moved to different parts of the house in case more light or heat is needed for certain kinds.

TOMATOES. For extra early plants sow about February 15th. Such early plants will require considerable space before planting out time. For main crop, seed sown March 1st to 15th will be about right. In two or three weeks from sowing the first transplanting will be in order, doing so into additional boxes or on the greenhouse benches, planting one or two inches apart. A second transplanting should follow about two weeks later, giving more space as they increase in size. Above all else never allow the plants to become drawn and spindling for want of room or air. After this they generally must remain in this way until about May 1st or till such a time when it would be safe to remove them to a mild hot bed or a cold frame provided with straw mats or boards on cold nights to gradually harden them off.

By May 15th, about the time Tomato plants can be set out in this latitude, they will be fine, stocky, well rooted plants. They may be disposed of directly from the bed or, to meet the demands of the store trade, may be placed in boxes of a size of 4x4x12 inches containing four plants per box which retails for 15 or 20 cents. Some, however, put them into flats containing several dozen plants and wholesale them in that way, 40 cents per dozen being the usual price. The above instructions and dates will also apply to Peppers except in consideration perhaps, of their being less rampant growers, they will require less transplanting, and selling for 25 cents per dozen.

EARLY CABBAGE AND CAULIFLOWER. The seed is usually sown from the middle of February to the first of March, or even later for second early, and the plants transplanted when they have made their first true leaves, either into flats or into a slight hot-bed, where by careful attention to watering, airing, etc., fine plants may be had as soon as they can be planted out. Plants intended for retailing are generally transplanted into flats, being more easily handled, although often grown entirely in this way, as, being usually sold in lots of one or more hundreds it is more convenient; 50 cents and $1.00 per hundred is the general price for Cabbage and Cauliflower respectively.

CELERY. Although this is a second crop with most growers yet the early demand for transplanted plants is greater each year; seed may be sown at intervals from Feb. 15th the young plants being transplanted to flats when quite small even if at considerable disadvantage, as the roots are very fine and and extend into the soil six or eight inches when the young plant is no more than an inch in height. When established they may be removed to the frames, with due attention to airing lest they become drawn. Prices range from 50c to 75c per hundred.

FLOWERING ANNUALS. While these may not be strictly in the line of market garden plants, yet where the grower is so inclined he will usually find a ready sale for any of the plants previously mentioned. As a general thing March and April are the best months for sowing and many of the seeds being very small, daily attention as to watering, shading, etc., will be required. Transplant as soon as large enough to handle, which will tend to prevent them from "damping off." The selling price is from 25 cts. to 50 cts. per dozen.

The prices mentioned are for this section; in some places double the prices could be realized while in others it will be otherwise.

1,061. **Passion Flowers for the Greenhouse.** Passifloras incarnata, Decaimcana, Princeps and Imperatrice Eugene are the most desirable for a cool house where an average temperature of 45° is maintained. Where 10° more is given Tacsonias Buchanani, Exoniensis and Van Volexemii are quite indispensable, as when well grown their brilliant colored flowers and profuse blooming habits rank them as the finest of Passifloras. All require about the same treatment, a compost composed of two thirds turfy loam and one third well decayed manure, abundance of root room, to be syringed freely, and watered occasionally during their season of growth with liquid manure. In the winter or during their season of rest they should be kept rather dry at the roots.—CHAS. E. PARNELL.

1,069. **Ferns as House Plants.** The Maiden Hair Ferns will succeed in the window under good conditions, but, in my opinion, the Pteris will prove more satisfactory as they are of a more robust habit of growth and will thrive in a lower temperature than the Maiden Hair (*Adiantums*). Pteris argyrea, P. cretica albilineata, P. serrulata, P. serrulata aristata, P. hastata and P. tremula are excellent window garden Ferns, while Polypodium aureum, Lastrea aristata variegata, Lomaria gibba and Dicksonia antartica will also do well in such a situation.—CHAS. E. PARNELL.

1,070. **Strawberry Fertilizers.** There is no better fertilizer for Strawberries than good well decayed stable manure, but where this cannot be procured in sufficient quantities cover the ground with ground bone dust, poudrette, dry blood fertilizer, or blood and bone fertilizer and harrow or fork it in thoroughly to the depth of six inches.—CHAS. E. PARNELL.

1,067. **Are Angleworms in any Way Hurtful?** Yes, give your plants a good soaking with lime water and get rid of them.—H. C. T.

1,063. **Lilium Auratum Failing.** The principal cause of failure is not allowing the bulb to fill the pots with roots before the top begins its growth, thus unduly exhausting the bulb and as there are not sufficient roots to furnish nourishment it will turn yellow and die.—H. C. T.

1,065. **Cyclamen Infested by Grubs.** I have found great relief in using Phosphate in small quantities around the plants; it keeps the grubs at a distance and is easily tried.—H. C. T.

1,075. **A Climbing Rose.** The climbing Roses that for hardiness and free blooming qualities seem to recommend themselves to every body are as follows: *Baltimore Belle*, pale blush; *Climbing Jules Margottin*, bright rosy red; and *Queen of the Prairie*, beautiful red and a very strong grower.—M. B. FAXON.

1,083. **Mailing Cut Flowers.** The law says that plants and cuttings can be sent by mail for eight cents per pound and cuttings are flowers, as I understand it.—M. B. FAXON.

1,071. **Peat Ashes for Strawberries.** A good dressing of these will prove decidedly beneficial.

1,075. **A Climbing Rose.** I cannot answer this query as precisely as I could if I knew the purpose for which it is wanted, but if good, hardy, hybrid perpetuals are wanted you have Princess Louise Victoria, Climbing Victor Verdier, Jules Margottin, Glory of Waltham and Charles Lefevre to select from and one will not go astray in choosing any of them.—C. E. P.

Oxalis—The Summer Blooming.

ELDER'S WIFE, DANSVILLE, NEW YORK.

Nearly every one, I think, is acquainted with the winter-blooming Oxalis and very cheerful little plants they are, with their pink or white blossoms and Clover-like leaves. They are not at all difficult to grow demanding only a warm, sunny place, and are content with soil, drainage and watering such as suits other plants.

But I write more especially to say a good word for the other, and I think less known class, the summer bloomers. I have grown four or five varieties of these for several years, and like them very much as edgings of beds, etc. The bulbs are small and require planting quite closely to form a close unbroken line of foliage, above which is borne the clusters of blossoms, resembling those of the winter blooming class, excepting, I think, that the individual flowers are larger but the clusters smaller.

One variety has three-parted foliage and is a robust grower; of these there are two colors, a pale purplish pink and white, while all the varieties with which I am acquainted have a pale green throat. I do not know the name of these two sorts as they were sent to me unnamed and I have been unable to find them sufficiently described in the catalogues to be certain. If anyone can tell me the name of these and a large flowered variety I shall mention later on I will esteem it a great favor.

Oxalis Deppii of this class is a shy bloomer, having pale, scarlet blossoms, but its greatest beauty is the four-parted foliage marked with a zone of bright maroon; it is well worth cultivating for that alone, if it never-bloomed at all. O. Lasiandra has nine-parted foliage which looks like a little parasol; opening in sunshine and closing at night and in cloudy weather. The flowers are a beautiful rose pink.

Another still more beautiful variety has the bulbs covered with a dark colored skin or husk like a Tulip bulb, the leaves all rounded, three-parted, and of a lovely shade of green. They do not spring directly from the bulb, as do the other kinds, but have a creeping stem. The flowers are not in clusters, are large as a dime and bright pink in color. I have tried it as a summer bloomer, but the dry weather perhaps did not agree with it, as it seemed stunted and small, but in pots for winter it has been a grand success.

I once purchased a packet of Oxalis seeds in mixture; these I covered in a box and soon had a quantity of little plants. These bloomed when very small, and among them were several with bronzy brown foliage and yellow flowers; this is of creeping habit and is not bulbous. It makes a very pretty mat out of doors in summer, or is pretty as a bracket pot trailer in winter, grows readily from seeds. This I think is O. tropæoloides.

The summer blooming class with bulbous roots require only common garden culture, planting out when other summer bulbs are planted, and digging and storing for winter as in the case of the Gladiolus.

A Fine Pond Lily, Aponogeton Distachyon.

E. ORPET PASSAIC CO., N. J.

This beautiful Cape Pond Lily is deserving of cultivation by all who can find room in winter for a vessel in which to grow it. The flowers are pure white produced in a curiously two branched scape about 4 inches long, having a delicious perfume resembling Hawthorne and lasting in full beauty for quite a month. The leaves are long and a bright, shining green. For aquaria there could be no more suitable plant.

We grow ours in a vessel filled one third its depth with soil composed of common garden soil, a little well decayed cow manure and charcoal. The tubers are then gently pressed into the soil and water poured on and in a few days growth commences. Flowers are produced with the first leaves and it only needs to add a can or two of fresh water every week till in May when the growth shows signs of ceasing. The water is then allowed to dry up and the tub placed in a cool place till fall when fresh soil is added and the tubers replanted.

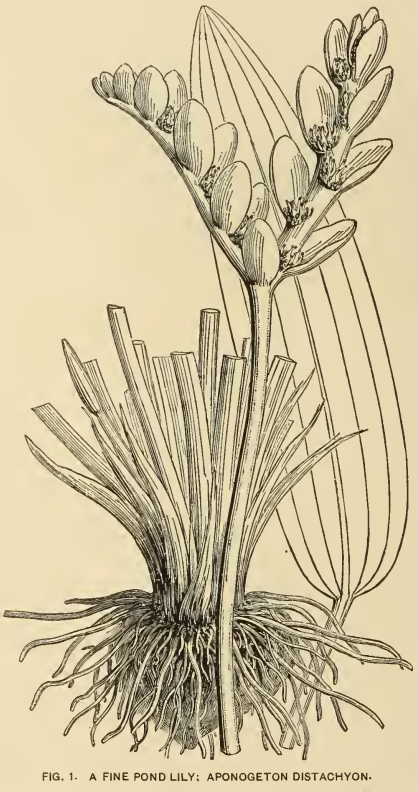


FIG. 1. A FINE POND LILY: APONOGETON DISTACHYON.

Seeds are produced freely. These sink and germinate in about six days and speedily form plants large enough to bloom. It is a pity the blooming season of Cape plants cannot be reversed, that one might enjoy them in summer and store in winter, but in the case of this plant it is not easily done.

The Culture of Heliotrope.

G. BASTING DIEMER.

The Heliotrope is a favorite of the window gardener, and indeed no collection of plants would be quite complete without it. The great charm lies in the rich perfume, though the flowers themselves are entitled to no small consideration as they are useful in floral work, although the range of color is only in the varied shades of purple, lavender, lilac, and white, for they blend harmoniously with all other flowers if a little care be used.

The Heliotrope is also of much value for bedding, if planted in full sunlight and given a rich soil; cultivate the ground about them, and not let them suffer for water, and immense trusses of delightful blossoms will result. The leaves of Heliotropes are easily turned black by gas or Tobacco smoke, but if the foliage is well sprinkled before fumigating, they will not be injured.

Of many beautiful varieties, the best may be mentioned as follows: Queen of Violets, is a good bedder, the color being deep violet purple with large white eye; White Lady, also known as Md. Blomage and Snow Wreath, is fine for the greenhouse, foliage large and strong, with very large trusses of almost pure white blossoms; Albert Delaux, is a grand novelty which probably will be quite popular on account of its beautiful foliage, which is golden yellow, marked with bright green, and the flowers deep lavender, making a fine contrast of foliage and bloom. It is good for bedding and free flowering.

On Growing the Auratum Lily.

JOHN LANE, AMATEUR FLORIST, CHICAGO, ILL.

Two years ago I called upon florist Mr. A., and asked him how to grow as fine Auratums as he had last year, my own not being satisfactory, "Pot them John, pot them." "But is there no special directions as to when and how to pot them, and the after treatment?" "No, just pot them." 'Twas in February I potted them.

Thinking that Mr. A. did not care to give away secrets, I bought a plant, took it home and examined how it had been potted, I found good drainage, covered with moss, and the pot filled with heavy loam, in which considerable coarse sand and some peat had been mixed, and the bulb about the middle of the pot with more soil above than below it, I also found two sets of roots, one set seemingly perennial, large and fleshy, from the bottom of the bulb, another set annual, smaller and fibrous-like from the flower stalk just above the bulb, apparently one set for preserving the life of the bulb, the other for the support of the stem and for the producing of flowers.

Here was new teaching. I had read catalogues, papers, and some books, little of which agreed with what I gleaned from the pot. I procured some good imported bulbs, placed one inch of cinders broken finely, (worms don't like such), in eight-inch pots, covered with moss, to keep the soil from settling below. Then with prepared heavy loam having some coarse sand mixed therewith, under and about the bulb, just covering it, firmly packed about the sides to close up the scales of the bulb into a solid mass. Then as the finer roots above appeared to require a finer and richer soil I added about one third of rich, light or peat-like soil to the already prepared soil and filled the pots, packing lightly, and placing on the damp cellar floor to await spring time, the three lots of December, January and February, all being potted in the same way.

I gave no water to the potted bulbs until I saw the stem above the soil, then I moved them to the greenhouse and gave water moderately until the flower buds had formed, then gave water more freely for a time until the flowers were out. Then I called my friend Mr. A. to see my Auratums, "John, you beat me, I never had such fine Lilies, how did you make them so grand?" "I just

potted them, as you told me, though I used some common sense in the mixture of soil in addition to what I found out from the pot I got of you."

In the garden I had some fine ones of the February potting, growing in the borders, but kept in the cellar until April 25th, then plunged pot and all four inches under ground. But I should add that these pots are old peach baskets, about the size and shape of an eight-inch pot; leave these out over winter with protection from frost, and they will be good for several years. Two years have passed since they were planted, but my Lilies have been very fine.

Auratums that have flowered in the greenhouse had better be ripened in the house before returning to the cellar, and in September replace the top soil with fresh; I do not dry them dust dry but keep them cool and moist through their resting season, and when I notice they want to grow I move them to the greenhouse and let them.

Tying up the Stalks of Gladiolus.

JAMES HUNTER, BERKSHIRE CO., MASS.

I can give a plan which I think is much better than any other I have yet seen. On three sides of several plots about 50 feet square in my vegetable garden I plant out about two thousand Gladiolus bulbs each season. I set them in double rows, the first one being nine inches from the grass border, and the second row nine inches from the first, alternating the bulbs, planting both rows with a garden line at the same time, setting the bulbs four inches deep and six inches apart in this style:

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• • • • • •

As they look better this way than if exactly opposite or in squares.

As soon as the flower stalks begin to appear I drive a stake one inch square sawed from good straight grained pine, and about 3½ feet long, at the end of each row and one near the centre. Then I tie a strong cord (that called wool twine is excellent) to the first stake and run it along on the outside of the double row about 18 inches from the ground as it is much easier thus to tie the stalks to the string.

When the buds are all above the cord, I pass a piece of string around the stalk, wind it once around the cord, and tie, being careful not to make it too tight. The sun will likely cause the cord to become slack by drying it, and this trouble can be remedied by nailing a small cleat crosswise of the stakes, then as soon as the string loosens wind it on the cleats until taut again.

Fig. 2. Aponogeton growing in water.

The Ornamental Brambles.

Besides those members of the Bramble genus that are cultivated for their fruit, namely the varieties of the Raspberry, and Blackberry, there are still others that are of interest chiefly for their ornamental qualities. It is the purpose of the present article to call attention to some of these, in the hope that they may as a result more often find a place among the embellishing material used about homes. The place which they are especially suited to adorn is the Wild Garden—any plat that is given up to free growing ornamental plants which after once they are planted will thrive and bloom without cultivation.

The best known plant of this division is

BRANCH OF THE WHITE POMPONE-FLOWERING BRAMBLE.

the Purple Raspberry (*Rubus odoratus*), a fine shrub that abounds here and there in uncultivated land over a large part of the continent. The flowers are nearly two inches across, of a pleasing purple color, excepting the conspicuous crown of stamens, numbering from 100 to 200, which are of a creamy color. The form of the blossom is not unlike that of a single Rose. The time of bloom is from June to September, especially if the plants have the benefit of a shady location. Indeed one of the best recommendations for this plant is that it succeeds to perfection in shade that hardly another flowering shrub could endure. In town gardening there is a constant demaud for plants that will succeed in the shade of buildings, fences and trees; in this and other Brambles they are exactly found. The present one attains to a shrub form and reaching a height of about five feet.

Quite similar to the foregoing except in the color of the flowers is the White Bramble (*Rubus Nutkanus*). In this as the name indicates the petals are white, and somewhat narrower than those of the last named, but the flowers are large and showy. It is also less free-blooming than the Purple. The leaves are coarsely toothed. Native to the northern belt of the country from Michigan westward to the Pacific.

Among other native ornamental species, the Rocky Mountain Bramble (*Rubus deliciosus*), is one of the finest and this has received more attention from European growers than from our own. Unlike the White Bramble, the canes of this one has neither spines nor prickles. It forms a round spreading bush about four feet high. The flowers are large, single, and snow white, exquisite in form and borne in sprays in June, at which time no flowering shrub can excel it in elegance and beauty. The Salmon Berry (*R. spectabilis*), is spoken of by European authorities as an elegant shrub, flowers bright-red, though somewhat less profuse than is common with the above.

Perhaps the finest of all this class are the double flowering Brambles of which *Rubus fructicosus* is the type, and which has curious, fine, double flowers or masses of narrow petals. This is to be had of several of our nurserymen. A variety of the last named is the Pompone Flowering Bramble (*R. f. pomponius*, or *albus plenus* of some), shown in our engraving. This one, together with its companion the Double Pink Bramble (*R. f. roseus fl. pl.*), is from its picturesque habit, suitable for isolated specimens on the lawn. The flowers of the Pompone Bramble remind one of the miniature Roses more than of their real relatives; they are semi-double, pure white, and afford a charming effect in contrast with the foliage, which is paler hued than are many of its family. It thrives often where no other ornamental plant would grow, and in any soil, though preferring one light and warm. Its full beauty can only be seen where it has a chance to fully spread itself in every direction, making a large symmetrically shaped bush, which from early spring until late autumn bears more or less bloom.

The Cut or Parsley-leaved Bramble (*R. f. laciniatus*), is a distinct trailing variety with finely cut foliage, and bearing a profusion of white bloom followed by a not unpalatable fruit.

One of the Brambles well-known to florists is the half-hardy winter flowering Rose-leaved Bramble (*R. rosæfolius coronarius*), which some years ago was a favorite in all greenhouses. It has a small dense bush like form, of upright habit, and bears miniature double Rose-like white flowers.

1026. **Scale on House Plants.** Wash the plants in strong soap suds, taking care that the liquid touches all parts.—E. S. G.

1065. **Cyclamen Infested by Grubs.** I am not acquainted with this pest but advise you to destroy by burning all infested plants promptly and not to use any soil contained in the pots for other plants.—C. E. P.

1038. **Apple Tree Borers.** Cutting the trees down and regrafting would hardly be advisable, though if they are very badly infested they may as well be abandoned. If, however, a tree contains but a single borer this may often be destroyed by probing the hole with a flexible twig. Then wash the trees thoroughly the latter part of next May, and again in August with a strong solution of soap in which is dissolved a little carbolic acid. In addition to this keep a lookout for the entrance of borers during the summer and autumn.—E. S. G.

988. **Book on Flower Growing.** Practical Floriculture, by Peter Henderson; and the Home Florist for sale at this office.

1016. **Chip Manure Insects.** Cover the chip manure with fine soil, make holes in it with a crow bar into which pour a few ounces of bisulphide of carbon. Then fill the holes with the earth and let the heap remain undisturbed for a few hours. Bi-sulphide of carbon may be purchased at the drug stores. It should be handled with care as it is very poisonous and explosive. —E. S. G.

1024. **Storing Cabbage.** Set a barrel in the soil in a well drained place, up to its top. Place the Cabbage heads cut from their stumps in this, cover with a top made of boards (not too tightly) over which throw a little straw. Or by another method; place a thin layer of straw on the ground floor of an outbuilding on which place the heads cut from their stumps, only one layer deep. Cover with two feet of straw, In this situation the heads will not readily freeze, but having frozen they will remain frozen throughout the winter or until taken out.—E. S. G.

1014. **Grapes in Orchard.** It would doubtless answer well to plant Grapes in the orchard while the trees are small, as the shade will not be great and the vines would bear several crops at least before the trees would spread sufficiently to obstruct the sunlight much. If the trees are already full grown they would probably shade the vines sufficiently to retard the ripening and injure the flavor of the Grapes.—E. S. G.

Ever the Same.

God does not send us strange flowers every year;
When the Spring winds blow o'er the pleasant places,
The same dear things lift up the same fair faces.
The Violet is here.

It all comes back, the odor, grace and hue,
Each sweet relation of its life repeated,
Nothing is lost, no looking for is cheated;
It is the thing we knew.

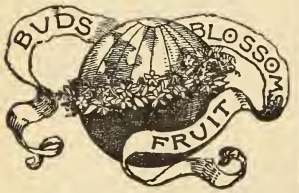
So after the death-winter it will be.
God will not put strange sights in heavenly places,
The old love will look out from the old faces;
Veilchen, I shall have thee.
—*A. D. T. Whitney.*

The Tired Foot.

The potter stood at his daily work,
One patient foot on the ground;
The other with never slacking speed,
Turning his swift wheel round.
Silent we stood beside him there,
Watching his restless knee,
Till my friend said low in pitying voice,
How tired his foot must be.

The potter never paused in his work
Shaping the wondrous thing;
'Twas only a common flower pot,
But perfect in fashioning.
Slowly he raised his patient eyes,
With homely truth inspired;
"No ma'am; it isn't the foot that kicks—
The one that stands gets tired."
—*The Continent.*

If the winds have an alphabet,
And the trees know it well,
Then it is natural to suppose,
That they can read and spell.
And when their boughs are swaying,
Full of green leaves and bare,
They still are practising the art
Of writing in the air.
—*Youth's Companion.*



Is the 1889 planting planned?

Botany is a good winter study.

Early orders secure early attention.

A delightful art is plant propagation.

Wait until April to prune Evergreens.

Plowing at Woodbanks on January 5th.

We like to sow our Dianthus seeds early.

There is a crimson Calla (*Arum Palestinum*).

Cabbage succeeds remarkably on Clover sod.

Have the Spring open on all pot plants clear of insects.

Peas can be grown with less manure than most crops.

An ounce of fresh Cabbage seed should give 2,000 plants,

Wanted. More brief pointed notes of information from subscribers.

The commission seeds are abroad, seeking whom they may defraud.

Growing plants show their liking for these longer days plainly enough.

The robust Hyacinth candicans is well adapted to pot culture, setting the bulbs now.

The re-naming of varieties for commercial advantage is the meanest kind of fraud.

Look out for the Cinerarias when about to fumigate; they'll not bear much smoke.

Sow a little Radish seed in the Parsnip row to mark the line for aiding early cultivation.

If your Wax Plant (*Hoya carnosa*) does not bloom, too rich a soil or too much is the cause most likely.

Moderate dryness at the root is one condition for securing the best colors in most variegated-leaved plants.

In choosing annuals as well bear in mind that the blooms of Phlox Drummodi are rarely marred by bad weather.

These long evenings should give you time to write out some of your best ideas for the good of the POPULAR GARDENING family.

In your selections of small sized ornamental trees don't overlook the Cork-barked Maple, (*Acer campestre*) As a handsome, small cemetery tree it stands without an equal.

Christmas Roses. I protected my plants in a very simple way; four sticks with crooks in them to support two pieces of scantling upon which rested the sash secured by wire.—*M.*

Would you have magnificent shrubs of the Panicle-flowered Hydrangea the coming season? Then prune severely back and thin out the growth somewhat the coming spring, and manure liberally.

Camellia plants dislike drouth; I help matters by suspending one or two good sized sponges in the top of the tree and keeping them constantly saturated with water.—*Mrs. L. E. Perrine. Orange County, N. Y.*

It is Vile Smelling Stuff. Bisulphide of carbon has the endorsement of M. Pasteur as a superior insecticide in the case of root lice of all kinds. It is applied by puncturing the soil about the roots and depositing a little of the article in the hole formed.

Bulbs at the Paris Exposition. The Holland nurserymen, E. H. Krelage & Son mean to see to it that Dutch bulbs are fairly represented at the great exhibition of this year. Large beds of late Tulips were planted last autumn with a view to their being in blossom at the opening next May.

Twenty-five Superior Dahlias. Mrs. Bunn, Cupid, Miss Browning, Mrs. Langtry, Constance, James Stephens, Purity, Marmaduke, Dawn, Gladstone, Maud, John Dawkins, Bird of Roses, Orient, Emotion, Peacemaker, Khedive, Polly Landell, James Corker, Sappho, Picotee, Woman in White, Magician.—*E. P. Powell.*

Electric Light and Plants. Has any reader, in this day of the wide use of electric light in towns, studied the effects of this light on plants that are brought within the near influence of its rays? Would Tulips, for instance, close at night under a strong electric light? Notes on this subject in general would be welcome.

Three common wild flowers which should be in every garden: The Bloodroot, *Sanguinaria Canadensis*, beautiful white flowers, handsome foliage; the Liverwort, *Hepatica triloba*, blue flowers, handsome leaves; the Wake Robin, *Trillium grandiflorum*, large white flowers. There is also a desirable crimson flowering species of Trillium.

A Veteran's View. When I peruse a copy of this journal and compare it with those of a similar character fifty years ago, it shows the vast progress made in that time. Why one number of POPULAR GARDENING AND FRUIT GROWING is a whole volume of information; it would be unjust to the good cause for me to withhold what little I can do for it.—*Samuel Miller.*

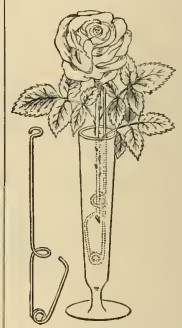
Shipping Plants in Pots. The course of the careful old lady who would have a distant florist ship in their pots the plants she ordered is not to be commended. Need we say to our intelligent readers why? An increase of the weight and bulk of the shipping case to almost double; extra labor in packing, and most important of all, the average of plants can be packed to carry with greater safety without pots than with.

Easy Refrigeration. A subscriber who recently visited Woodbanks told how he reduced the temperature in his Apple cellar by some degrees. He has a large rough box inside of each window to reach to the floor and these he filled with snow, packing it down. The cellar floor being well drained no inconvenience was met with from the melting snow, while the increased moisture and dampness was good for the fruit.

The Ailanthus for Rapid Growth. A writer in Garden and Forest points out the advantages of this tree for rapid growth by saying that it makes fuel twice as fast even on poor soil as do any of our other trees of like value, including the White Oak, Black Walnut and Birch, the amount of ash left being remarkably small. The proper way of avoiding the disagreeable flowers is to propagate by root cuttings from trees which do not blossom.

The White Grape Niagara. From two year old vines of this variety planted in 1886, I in 1887 gathered a few very fine clusters and in 1888 had the finest lot of Grapes ever seen hereabouts, many of the clusters weighing from 16 to 20 ounces each. I have Delawares, Brightons, Champions, Moore's Early, Dracat's Amber, Empire State, Wyoming Red, Moyer (not yet fruiting) and others and while all are good the Niagara suits me best.—*A. A. Halladay, Windham County, Vt.*

The Value of Carrots. The past season, from eighteen rows, thirteen inches apart and 180 feet long I harvested 105 bushels, making a rate of 1,300 bushels per acre worth 25 cents per bushel. I gave a neighbor twelve bushels of Carrots for ten of Oats. At this rate the yield of my plot was equal to about 90 bushels of Oats. A careful experiencced feeder said that he would rather give his horses eight quarts of Oats and four of Carrots than twelve quarts of Oats per day, while such as are not subjected to steady, hard labor will do finely on them alone.—*Fred. W. Card, Bradford County, Pa.*


Support for Flower in Glass.

Earth Mulch for Grape Vines. In the fall of 1887 I buried a part of my vines, just before the ground closed for the winter, with about eight inches of dirt. Other nearby vines were treated the same, except being covered with Spruce boughs. Those that were buried came on vigorously when taken out late in the spring and the abundance and quality of the fruit was convincing evidence that this was good winter treatment. The yield of those under the boughs uncovered at same time was about fifty per cent less and the quality was inferior in about the same ratio.—*J. C. Webster, Hartford Co., Ct.*

The Fruit of Ficus Repens. Subscriber A. S. Cox, a plant grower of long experience, living in Pennsylvania, tells of a fine specimen of Ficus repens or stipulata in his vicinity; this plant covered the north wall of a greenhouse for a space of nearly fifty square feet. What made it specially interestiug was the fact of the vine (which as is well known is a member of the Fig family) having on it four or five small Lemon-shaped fruits of a pea green color. Our correspondent asks whether the fruit is edible. A reference to a list of the edible species of the Fig does not find this one included; it is a shy bearer.

The Quince tree cannot be at its best without some intelligent pruning. Unlike other fruits the Quince does not bear from buds that are formed the year before, but on short spurs that form the same season just in advance of the blossoms. To throw vigor into these spurs the oldest branches should be pruned out except to leave enough to give the tree a moderately full top and all the long new shoots of the previous season be cut back to five or six buds apiece. This is all the secret there is for pruning to produce fine fruit—fruit that will sell, when the small stuff from unpruned trees will be lacking a market.

A Point in Growing Seedling Liliums. One of our observant correspondents writes: "It is probable that many like myself have been disappointed in the number of plants that seem to come from Lily seed. I sowed several varieties in March 1885 in pans and kept them in a warm place but it was only late in summer that any plants showed and then but a few. The pans were allowed to stand around carelessly until a year later when I dug the soil over and found so many small bulbs that I concluded that during the two seasons nearly every seed must have germinated. Tell your readers not to turn out their Lily seed pans too soon."

Transplanting Trees at Night. This course finds an advocate in Professor E. Gale of Kansas, according to report. We see no wisdom in it. When trees are planted more light is needed for the nice operation of working good soil among the roots than a lantern or two could well afford. Label reading, writing and attaching would also be inconvenieut not to mention the digging and pruning of trees. If it is the best course for the orchardist or the amateur logically it must also be for the nurseryman who sets tens of thousands of young trees each season. What an absurd sight a nursery would present during planting season if night work was generally to prevail.

Lauristinus. I greatly fear this favorite of old time gardens is being too much crowded aside by less worthy subjects of recent introductions. It is easy of culture, very handsome in foliage and bloom, almost hardy and it preserves the quality of permanency (that is the same plant can be kept in a tractable shape for many years) in a way that is not allowable with many favorites. The leaves are heavy and dark green, the flowers white and borne in great profusion in the summer. I set my plant in the open ground in summer and repot or box it each fall, giving it about the same treatment as the Oleander. The Laurestinus is of the same genus as the well known Snowball tree of our garden.

A Flower Support. A single Rose or other long-stemmed flower shows to so much better advantage in a light glass vase if it is held erect as it grew on the plant, that it is often considered desirable to supply a support for the purpose. Usually a wire stem or even a match stick to which the flower stem is bound with thread or light wire has been employed, but this leads to more or less injury to the leaves. Our illustration shows a device for overcoming the last named defects, and which is the best thing of the kind with which we are acquainted. It is made of wire and is so simple that any one can undertake with a pair of pliers to shape one or more. Just the thing for use in exhibiting cut flowers.

"Insects Injurious to Fruits." A second edition of this comprehensive volume, by William Saunders, Director of the Experiment Farms of Canada, and late editor of the Canadian Entomologist, with the matter brought down to date has appeared from the press of the Lippincott's. In some respects, notably the manner of grouping the enemies of each fruit, the insects being numbered to facilitate cross reference, together with practical remedies, and in the simple language of the descriptions, it is the most desirable volume for the general fruit grower that has come to our notice. It is illustrated with over 400 fine wood cuts which will assist in the identification of insects by other than skilled scientists. The price is two dollars.

The Tulip Tree. A fine specimen of this excellent native tree, some 30 feet in height, is one of the attractions of the editor's farm at La Salle. The foliage is large, of peculiar form, smooth, firm, and always pleasing to the eye. In the spring it is a soft, light green which gradually changes to a dark green, while in autumn it assumes a rich golden hue. But one of the greatest attractions of the tree is its profusion of veritably Tulip-shaped flowers that appear in June. These are of a yellowish color on the outside and orange within and present a fine and substantial appearance. The tree prefers a deep loamy soil and here under fair circumstances it will in time reach a large and handsome form excelled by no other tree. One point of importance is to set none but small trees, say such as are less than four feet in height, as large sized nursery trees rarely succeed.

Shade for Greenhouses. No good plantsman will suffer his Fuchsias, Palms, Callas, Camellias and other plants to be burnt during this and the coming months by the action of the sun's rays. Shading the glass is the preventive, doing so over the parts most susceptible to injury. The standard mixture now is that of white lead reduced by naptha to a milk like liquid. From an English source we cull the following recipe for a greenhouse wash to be applied to the interior: ¼ pound each of white lead and Brunswick green are stirred into a half pound of boiling glue; continue boiling and stirring for ten minutes then allow it to get cold, when it will be like jelly and before using soften a little. Then it can be very easily painted on glass as thick as desired. Warm water applied with a sponge or cloth is said to easily remove it in autumn, afterwards syringing with clear water.

The Maiden Hair or Ginkgo Tree. This remarkable and elegant tree is not so often met with in cultivation as it deserves to be. Its most striking peculiarity is the form of the leaves, which as our engraving shows, resemble in shape the fronds of the Maiden-hair Fern but are about three inches broad. Another remarkable fact is that botanically it belongs to the Conifers or Gymnosperms, embracing the evergreens like Pine, Spruce, Fir, Cypress, etc., although singularly enough this one is strictly a deciduous tree, that is, it sheds its leaves in the fall. The growth is naturally rapid and upright, but it can if one chooses, be trained against a house or over a trellis like a climber and in this way be made to present a most singular appearance. This interesting tree is a native of Japan but like the Weigelia, Deutzia and many other Japanese plants, is entirely hardy. Botanically it is known as *Ginkgo adiantifolia*. The genus has been called *Salisburia*, a name which must give way to the older Ginkgo.

A Subscriber on Sending Orders. As the season is at hand when dealers send their catalogues of seeds and plants to their customers and those whom they desire as such, a few hints to those sending orders for seeds or plants may aid them to make out their orders so as to be a comfort to the one that fills them and a benefit to themselves. As I have filled some nicely made out orders and

Twig of the Maiden Hair or Ginkgo Tree.

also many that were otherwise, I know of the pleasure of filling the former and the vexation of the latter. First use the order sheet, if there is one in the catalogue, and make each successive order somewhat like it in form. Have your order for seeds plainly written; first naming the flower seeds, then the vegetable, then the greenhouse and bedding plants, hardy plants and shrubs, and so on. As these things are in different departments, it will be plain to see what a time one would have in filling an order where every thing was mixed up. It would necessitate the running from one department to the other, or else rearranging the order, which does not make one feel very good about it, seeing there is so much to do. Make out your orders plain and you will be better served, get nicer stock, and likely some extras. Put down your seeds in alphabetical order, write kindly, and don't blow up your florist every time you write, for sometimes you yourself are to blame, not he.—*G. Basting Diemer.*

In Suspense. Messrs. Putney and Woodward, nurserymen in Suffolk Co., N. Y., enclose to us a letter lately received by them and which they think might be made a text for some remarks on the carelessness of correspondents. This letter was from a reader of POPULAR GARDENING, as its contents state, and ten cents were inclosed to pay for the little work on Strawberry culture issued by the firm named, but no clue is given as to who the writer was, both the name and post-office having been omitted. To our correspondent we would say that every advertiser and dealer doing a large mail business is sure to frequently meet with cases similar to this. In our own office we have a drawer labeled "suspense matter" to which communications of this kind are often committed. Usually the writers are heard from again and by this means the way is opened for properly attending to their orders, a thing that never could be done but for such subsequent letters in which the name and address are given. Not infrequently when a second letter comes it shows great impatience on the part of the writer if it does not prove satisfactorily to himself that we are swindlers. Cases have occurred in which we never again have heard from the writers. While on the face it would seem as if the public could be instructed against such a habit, the trouble is that the very persons who send such letters would think it impossible that they could be the ones to make such blunders. All know enough to sign their names and addresses to the letters they write and obviously when this is not done it may usually be attributed to pure oversight. Let us however strive to be more careful in such matters.

Floral Notes From New York.

A dull season, say the wholesale men, and the same cry is echoed by the retailers. A great many growers complain that their crops are poor, but the increase in glass prevents any decrease in production.

Tulips seem to be out of date. Comparatively few were sent in at the holidays, but they were hardly salable. The market was glutted with them last year—they were forced by the hundreds of thousands, and consequently they formed all the cheap and showy decorations. The natural result followed, people tired of them, and the demand is now limited. Freesia is another flower in less demand. It is more than likely that these bulbs would still bring paying prices if the market had not been so greatly overstocked.

The Christmas trade was fairly good—New Year's very poor. Most of the large decorations around the holidays were chiefly composed of Christmas greens, and called for few flowers, thus giving showy effectiveness at small cost. The small Holly trees imported for this purpose were very pretty—in fact the Holly generally was good, but the Mistletoe was very poor, having lost most of its berries. Palmetto leaves and a handsome Southern Pine were used with the Holly and Mistletoe.

A very pretty conceit was carried out at one New Year's dinner, where the meal, entertaining over one hundred guests, was served on small round tables. Over each table swung a gay Japanese umbrella. These umbrellas were covered with loose flowers. Just as the clock struck twelve, and the guests began to offer New Year's wishes, all the umbrellas were closed simultaneously by a clever mechanical contrivance, sending a shower of flowers over the people seated below. At this entertainment the walls and ceilings were completely covered with Holly, Pine, Palmetto and other greens, turning the room into an absolute bower.

The Patriarch balls have shown no new features in decorations this winter—in fact, to tell the truth, the display has been rather meagre. Some fine effects in Palms and large foliage plants have been seen at private houses.

There has been a decided effort on the part of some fashionable men to make the Camellia the correct thing for a boutonniere. It is truly British, and also cheap, but Violets take first rank for this purpose, or for women's street wear.

A beautiful funeral wreath seen lately had at one side a large loose bunch of Violets. On the opposite side were two delicate mauve Cattleyas, resting on a bed of Roman Hyacinths; the remainder was filled with small Callas, backed by Hyacinths and Narcissus. The whole arrangement was extremely loose, but very graceful.

A handsome basket was one of the French fish basket shape with rather a high square handle. One half of it was loosely filled with Papa Gontier Roses, the other with Cypripedium insigne, mingled with light Fern. The effect of the flowers was charming, but the basket was marred by an unsightly sash of scarlet satin ribbon tied on the handle. The scarlet absolutely swore at the color of the Gontiers, and it was surprising to see such a combination made by a good florist.

Some very pretty baskets are made of Lilacs and Beauty Roses. Lilacs are much used in bouquets; white Lilac, Lily of the Valley, and Bride Roses make a favorite arrangement for fashionable wedding bouquets.

There was some rumor of forced wild flowers for the holidays, but they did not appear; it is likely that there will be something of this sort at Easter. Some of the forced shrubs were in for Christmas, notably, the Japan Quince, both red and white, which met with much favor. A lot of good Cyclamens are in now, many varieties with extra fine foliage. These are used for table decoration, and also in banks and clusters about the room. To be salable they have to be well covered with flowers; in many cases the white ones sell the best.

As for Orchid blooms, quite a lot were sent in before the holidays, and at that time they did not bring large prices, though a good many doubtless paid fairly well. The commission men complain that they can scarcely sell the darker colored Cypripediums; insigne is the only member of the family in regular demand.

Cattleyas and Calanthes are fairly in demand, but these flowers, while gradually growing in favor, have not yet caused the revolution predicted. They form a beautiful finish to any basket or design, but of course they cannot take the place of other flowers.

Madame de Watteville Rose is being used with favor; some predict that it will supplant Cusin, but the latter, in addition to its beauty, keeps so well that it will always be a favorite.

EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Ben Davis. Willow Twig and Jonathan are the Apples recommended by the Missouri Society for that State.

Apple Scab is caused by a parasitic fungus which also attacks the leaf and is then called leaf blight or mildew.—*A. L. Hatch.*

The Missouri Horticultural Society has for one of its objects the improvement of the grounds about railway stations, and a beginning has been made at Kidder, Mo.

Cultivating Strawberries. The best thing that I have yet found for cultivating Strawberries is a one-horse harrow. It keeps the ground loose and throws no dirt on the row.—*J. S. Brown*

Bagging Grapes. While I follow it successfully yet I find the following objections to it: It retards ripening 7 to 10 days; the expense; the resulting thin skins which render shipping impracticable.—*G. B. Northern at the Illinois Society Meeting.*

Remedy for Black Spot. At the Florists' Convention Mr. B. O'Neill of Illinois stated that sulphur added to boiling soft water in which soup powder has been dissolved, makes a wash which has been valuable in cases of black spot and mildew on Roses, and Verbena rust.

Trees for Arbor Day Planting. I am emphatically in favor of planting younger trees than has been the former custom of roadside planters of growing them in nurseries instead of digging them up in the shady woods, and of thus creating a taste for tree culture in the minds of the young.—*Hon. B. G. Northrop.*

For English Industries. An increased interest in canned fruit is shown in England by the offering of prizes by the Royal Agricultural Society for preserved fruits, both to fruit growers themselves and to manufacturers who are not growers, on the condition that the jellies, jams or other preserves must be made exclusively of British grown fruit.

Spring-grown Pansies. I sow the seed about the first of March in a box, wetting the the earth with warm water before sowing; cover lightly with sand, then I lay a newspaper over it which I keep moist and leave on until the plants appear. Transplant them as soon as they can be handled; do not keep them too warm and later plant them outside into rich soil.—*Mrs. J. B. Lathy, before the Alton Southern Society.*

Early Beets. The middle of March the seed is sown in shallow boxes of a size 18 inches wide, 24 inches long and 4 inches deep, getting four to five hundred plants from a box. They are placed in a warm house to grow rapidly until the middle of April, then put out into cold frames to gradually harden until a light frost does not hurt them. By the first week in May they can be transplanted to beds previously well worked and warmed. Turnips, Onions, and similar crops can be treated in the same way.—*Joshua Allyn, Red Wing, Minn., to State Horticultural Society.*

Easy Orchid Growing. A house in which Roses and Ferns grow will answer very well for Orchids; put them together in a shady corner where the leaves will not burn, as these must be retained for the next season. While growing all Orchids need a good quantity of water, but little usually while resting, when they require a low temperature. By placing the Cattleyas, Lælias and others of like nature in the warm end and Odontoglossums and Cypripediums in the cool end of a greenhouse, one can have a good number of flowers simply by having a difference of 10° in the temperature.—*Benjamin Gray.*

Orchards and Underdraining. Underdraining makes the orchard grow twice as well. An orchard underdrained is always more healthy, and stands the changes in the seasons better than one not underdraiued. Underdraining, too, helps to make the soils more porous, so the water that falls on it gradually sinks in and the excess is carried off by the tile though it retains more water down in the soil, not on the top; roots run farther through the soil and reach more of the moisture held in the porous soil than they could if the soil was harder. I have a drain every two rods on 250 acres, and the drain has been an advantage in both wet and dry seasons.—*Dr. Townsend at a Columbus, O., Horticultural Society Meeting.*

Apple Tree Planting in Kentucky. Of an orchard the greater portion should be good, hardy, salable wiuter varieties, with not too many kinds in one orchard. The distance to plant is from 30 to 35 feet with the trees leaning about 40° to the one o'clock sun as a protection to the body of the tree from the effects of the sun. Young trees should be well cultivated,and a most excellent tool for the purpose is a two pronged steel hoe, also being careful not to plow too close to the tree. Head Apple trees low, this being essential both in protecting the body of the tree, and gathering the fruit. Keep the tree properly shaped and pruned when young, and later on it requires very little cutting. In this latitude the Apple, Peach, Cherry, Plum, Pear, and Grape grow to a great degree of perfection. —*J. H. Stewart at a Kentucky Institute.*

A List of Good Chrysanthemums is the following, nearly all Japanese, as given by Mr. Charles Anderson, of Loug Island, before the New York meeting of florists, and comprises those which he grows for the cut flower trade: The earliest section includes, white—Precocite, Mme. Desgrange, Planchenon and Timball d'Argent; yellow—Mme. Desgrange and Gloriosum; pink—Foisure, Planchenon, W. F. Piercey and Mme. C. Audiguer; orange red—Tokio. Intermediate section: white—Elaine, Mrs. Geo. Bullock, White Dragon, Lady St. Clair and Diana; orange—Barbara, Lord Byron, Source d'Or, Mrs. Wm. Barr, Julius Cæsar, and Pietro Diaz; piuk—Mrs. M. Morgan, Admiration, Lady Slade and Fragedie; yellow—Golden Dragon, Mrs. Brett, Mrs. C. Wheeler, Glow and Jardine des Plantes; amaranth—John Welsh and Mrs. Norris. Late section: white—Robert Bottomley, M. F. Carcy and Syringa; yellow—Golden Eagle, Sadie Martinot and Temple of Solomon; pink—Pres. Arthur, John M. Hughes and Mrs. F. Thompson; crimson maroon—Cullingfordii.

Water and Soil. A coarse sand may hold 25 per cent. of water; a very fine sand or clay will hold 50 per cent or more, while a good loam may hold more than its own weight of water, and peat two or three times its own weight. When the upper layers of the soil dry out the water moves upward to supply that lost by evaporation and transpired by the plants. In soil composed maiuly of gravel or coarse saud, the spaces between the particles are so large that water passes through them too rapidly and they have not the power to lift the water from below more than a few inches. Green manures improve the water holding capacities of such soils. With clay or very fine sand the spaces between the particles may be so small that the movement of the water is very slow from the increased friction and will not let it come up fast enough to supply the loss from the surface, and to these an application of lime or nitrate of soda or other saline matter often improves the drainage and capillary powers by causing the clay to shrink.—*Prof Whitney before a South Carolina Institute.*

Girdling Trees for Fruitfulness. At a recent meeting of the Summit Co., O., Horticultural Society, there was much discussion of this subject and with no great difference of opinion as to the utility of this treatment of otherwise unfruitful trees, or to induce earlier bearing. The Secretary mentioned the case of a Pear tree which had never borne fruit, but was brought into bearing by having most of the bark accidentally torn off from the lower branches late in the spring; each limb so injured was loaded with fruit the following season and the tree has been productive ever since. Several similar instances were cited, all of which seemed to result in no harm to the subjects so treated. A tree that continued to bear for nearly forty years after the bark was peeled off, was spoken of by Dr. Feun, and an Illinois Apple-grower was said to plant his trees only half the permanent distance apart then bring a portion into early bearing by girdling; when the permanent trees need the space the girdled trees are then removed. Matthew Crawford thought that any branch might be caused to fruit by removing a narrow ring of bark from it late in the spring when it may be peeled easily; by tying a wire very tightly around the limb in the spring and leaving it on two or three months; by running a knife or saw around the limb cutting through to the wood and by bending the limb by hanging a weight on the end. The crude sap passes up through the sap wood but in descending it passes between the bark and the wood, and if hindered in any way, it must remain above, and cause a development of the fruit buds, but that while we may use any of these means for a purpose, it is well to remember, however, that a wound to any part of the tree is a blow to its vitality and will shorten its life.

Apple Culture. Cost and Value of an Orchard Figured up.

[Jacob Faith before the 31st Annual meeting of the Missouri Horticultural Society, at Nevada.]

There is no farm crop, which on the average will produce half as much income per acre as a good Apple orchard. But as it takes five to eight years to come into bearing, some people hesitate to plant, regarding the time and expense in a great measure lost.

Fifty Apple trees is about the number on an acre, but as small trees should stand thicker to protect each other from the wind, therefore plant double that number.

100 trees costing	$ 8 00
Planting one acre	2 00
Protection from rabbits and borers	50
Culture of trees	2 00
Rent of ¼ acre (¾ planted to other crops)	50
Total first year	$13 00
2d year, interest at 10 per cent	1 30
Rent	50
Pruning	50
Culture	2 00
Washing for rabbits, etc	50
Total	$17 80
3d year, interest	1 75
Rent	50
Pruning	50
Culture	2 00
Washing	50
Total	$23 05
4th year, interest	2 31
Rent	50
Pruning	50
Culture	2 00
Washing	50
Total	$28 86
5th year, interest	2 88
Rent ¼ acre	70
Pruning	50
Culture	2 00
Washing	50
Total	$35 44
Credit, the 5th year, 1 pk. per tree, 25 bu. at 20 cts. per bushel	5 00
Leaves balance	30 44
6th year, interest	3 01
Pruning	50
Clover seed, sowing and plowing	8 00
Rent, the 1 acre	2 00
Total	$43 95
Credit to ½ bu. per tree, 50 bu	10 00
Balance	$33 95
7th year, interest	3 40
Pruning	50
Total	$37 85
Credit 1 bu. and 1 pk, 125 bu	25 00
Wind fallen Apples and Clover	10 00
Baiance	$ 2 85
8th year, 3 bu. per tree, 300 bu	60 00
Pasture	10 00
Total	$70 00
Deduct balance	2 85
Washing and pruning	1 00
Leaves credit for orchard	$ 66 15
9th year, 500 bushels	100 00
Pasture over pays washing and pruning	10 00
Leaves a total of	$176 15
10th year 700 bushels	140 00
Total	$316 15

The tenth year one half of the trees should be cut out, the wood paying for that work and the Clover turned under, when the seed ripens enough to seed the ground again, for which

Deduct labor	$ 2 00
Washing and pruning	1 00
Total	3 00
Leaves balance	$313 15

At this rate one acre of Apple orchard would bring $313.15 over the expense the first ten years. These figures both in yield and price have been

doubled, as I picked over one bushel of Apples from a five year old tree, and over twelve bushels from a ten year old tree. But, like Corn, one hill is too much for profit, if no care and culture is given.

Distance to Plant. Remember the above described number. If the object is to have the standard Apple trees 32x32 feet each way in a diamond form instead of 30 feet in a square; in the planting, say in the row running north and south opposite each 30 feet or standard tree, is the tree to be cut out when their room is needed. 50 trees on an acre 32x32 feet each way set in a diamond form, are left after the middle tree is cut out. It would be inconvenient for culture, were more than the 100 planted as described.

California for Fruit Growers of Moderate Means.

[Extracts from an Essay by J. M. Smith, before the Wisconsin Horticultural Society.]

With the advent of the trans-continental railroads came the development of the fruit growing interest in California, and the marvelous real estate boom which greatly increased the value of land. Some, in the earlier days had made fortunes in fruit growing, and this attracted thousands of others from the Eastern States into the same business. Those there first had land at the original low cost, but values constantly increased in the Orange growing districts of Los Angelos, Santa Ana, or Riverside, to almost a prohibitive figure, ranging from $1,000 per acre for wild uncleared land, up to $1,500, and more, for improved property.

The only place where anyone with small capital can begin Orange or Raisin growing with any chance of success is in a new part, say ten miles back from the railroad or market, where the price is $150 to $200 per acre. Then one-half is required to be paid down and the land must be cleared and leveled to allow of irrigation.

The cost of Navel Orange trees is at least $200 per acre planted, and for five or six years ceaseless care must be given; watering and cultivating afterwards seven times yearly; taxes, interest, water rent, and living expenses must be paid during this time. Later on the grove will yield an income rather over expenses, unless the scale appears, in which case the fruit commissioner is likely to order the orchard cut down, for this pest is much dreaded. Then again a sand storm may destroy the crop so that not a single box may be fit for market, and also injure the next year's crop. When there is a full crop of fruit for market on 40 acres, it is worth about $10,000, gross, at the very highest calculation, while my own Wisconsin farm, of 40 acres, yielded a gross return considerably larger than that.

For Raisin growing, the expenses are less and the time of waiting shorter than for Oranges, but the returns are not so large either. Four tons of Grapes per acre is a good crop, which would make one ton of Raisins, that would be worth, if first-class, about $80, while the lowest they could be sold at to make any kind of a living would be $60 per ton.

The question of fertilizers is most important to fruit growers there. The idea that the irrigating water will supply all necessary elements of growth has proven to be pure nonsense. Through the absence of pasturage for stock the only way is to import fertilizers at a heavy cost.

Nearly all fruit can be grown, but these two mentioned seem to be the most profitable. One of the largest fruit growers, who had been in the State fifty years, claimed that none were very profitable as yet, but he hoped to do better in the future. A former Wisconsin man, who went to California in 1845, said on the subject, "If you have a property in Wisconsin that will take care of you, stay where you are." The literature of the real estate or railroad agents tell a different story it is true, but I tried to get facts while I was there and so give them.

The treatment of our party, at the hands of wide-awake citizens of California, was simply magnificent, but with the high price of land, and the great expense necessary in getting started, it is in my opinion entirely unsafe for a man with even $2,000 or $3,000 to attempt the business.

Roses from the Grower's Standpoint

[Edwin Lonsdale, before the 1888 Meeting of the Society of American Florists.]

No matter how desirable a Rose may be, if the cost of production exceeds the amount realized, it is of no value to the commercial florist. The varieties that can be grown satisfactorily for winter blooming are few compared to the number in cultivation. Some seasons one variety may thrive better than another, or fashion may increase the demand for some variety more than another.

The most free bloomer is not the most popular; people want that most which is the hardest to obtain. The plan to be followed generally, is to grow a variety of those Roses which are recognized as winter bloomers. As for novelties, try them, for as the world moves we must also move with it.

Fertilizers. It is unwise to give the beds a heavy top dressing of cow manure in the late fall months; much damage has been done in the past by the injudicious use of cow manure at the season mentioned. It excludes the air from the roots, and if the beds are wet at the time of application, there is little chance for evaporation in those dull, sunless months. More satisfactory results are obtained by applying a light top dressing soon after the Roses are planted in July or August, and if it is thought necessary to feed the plants at any time during the winter, a weak solution of guano may be given at intervals of ten days or two weeks, occasionally varied by some other liquid manure as a change of diet. Too often there is more harm than good done by the application of a fertilizer in a liquid form, on account of its being used too strong. How strong to apply it with safety is best determined by experiment. To begin with, a thumb-pot full of guano to eight gallons of water will be far safer to use than to give double that quantity. It could be administered at more frequent intervals with less danger than if given in stronger doses.

Varieties. Bon Silene, an old favorite, is still one of the most profitable varieties to grow in many localities; its fresh pink color, sweet scent, and ideal shape commends itself to all flower lovers, and its productiveness will keep it on the list for some time to come. During the season just passed of 1887 and 1888, it was two per cent more profitable than the second best and about eighteen per cent. better than the lowest, which was in this case Papa Gontier.

Catharine Mermet has been described as one of the most beautiful varieties in cultivation. Its delicate coloring and exquisite form has made it a deserved favorite, but Mermet requires special treatment to bring out its paying qualities. It is much inclined to run to blind wood in too light a soil; so it is better to grow it in rather stiff soil, although it must be porous, for no Rose is more impatient of excessive moisture at the roots than Mermet, and a night temperature of not higher than 55° produces the finest flowers.

The Bride is a "sport" from the last named variety with which it is identical, excepting that it is white, and one of the best, though it does not compare with the Puritan at its best, nor with Niphetos for productiveness. It has almost entirely displaced the Cornelia Cook, and will hold its own for some time to come. With Mr. C. F. Evans last winter he realized more cash per square from it than from any other variety.

Niphetos. It has been said that the old Niphetos will be grown when all the white Roses now in cultivation have been forgotten. For productiveness, taking quality all through the crop, I think it leads them all.

Puritan. The majority of the many buds formed produce only imperfect blooms. After the experience of last winter it cannot be placed on the list of Roses at all likely to prove profitable.

Perle des Jardins. For general purposes it is today one of the best varieties that we have. It is true that some of our very best Rose growers do not find it profitable on account of so many flowers coming malformed. It is believed by some florists to require a more porous and lighter soil than some varieties do, and a night temperature of sixty to sixty-five degrees.

Sunset is a sport from the last named, and requires the same treatment. It has almost entirely superseded Safrano and Md. Falcot and is likely to be more popular than it has been.

Papa Gontier. Its color, and coming as it does with long stems and grand foliage, places it high on the list. Its tendency to lose leaves in winter is a fault with another wise first class variety.

Sou. d'un Ami. Its popularity is evidently on the wane in New York, possibly on account of the larger hybrid Roses being more plentiful.

La France is a great favorite with all flower lovers and generally speaking it is profitable to the grower. More than a dozen florists have told me that it has been the best paying variety amongst the list that they grew. La France, and in fact all the hybrid Teas—under which head may be classified Duke of Connaught, Wm. F. Bennett and Countess of Pembroke—are more susceptible to the attacks of black spot than the true Teas are. A cool moist atmosphere seems to cause it. So as a preventive avoid too much moisture during cool weather. The American Beauty is liable to the same disease.

Those florists, with few exceptions, who invested in Wm. F. Bennett when it was first distributed have had little cause for regret. It is a hard Rose to get started on account of its free blooming qualities, but by persistent disbudding and if planted in a rich light soil not more than three or four inches deep on a well-drained table it will prove to be one of the most profitable varieties grown. Many growers find that it is an advantage to let it remain undisturbed for two or three years, while others prefer to transfer the old plants to fresh soil. It requires more heat than most of the Teas; 60° to 65° at night suits it well, and if planted in porous soil, it delights in plenty of moisture, taking care of course that the temperature is not below 70° when the water is applied. It seems to improve in constitution every year. For general planting so far, it is the best of the crimson everblooming sorts that we have.

Duke of Connaught. For the fall and early winter trade and for the time the space is occupied few Roses pay so well. If flowers so freely that if the disbudding is not attended to it will not prove satisfactory.

Md. Cuisin, if cut too soon has a diminutive appearance, but when allowed to get two-thirds blown, at which time it is at its best, it looks to be "ready to drop." It is, however, one of the best varieties in the whole list for keeping. In some places it has a tendency to drop its leaves. Several growers place it at the head of their list for profit during the past winter.

American Beauty is perhaps the most remarkable Rose on the list. A Rose of its size, form and fragrance, and at the same time a perpetual bloomer, is indeed a grand stride onward. Good flowers of it should never sell at wholesale for less than $25 per 100 so long as the fires are going. It is obtainable from January to December. Its extreme vigor, throwing up shoots several feet high, on top of which is a large, finely-formed, sweet-scented Rose, would make even its severe European critics change their tone. It seems to do better the second year after planting out than the first. The plan of bending down the strong shoots seems to be the best for this Rose, for it causes flowering shoots to break from the base, which generally produce fine blooms.

A Few Points from the Ohio Society's Recent Meeting.

Irrigating Strawberries. Prof. Green of the Experiment Station described his attempt to irrigate a half acre of Strawberries during last summer's severe drought, but with water at the rate of 600 gallons per hour, he could not run the water to the end of rows 13 rods long. He estimated that to have thoroughly soaked the ground it would have taken over 1000 barrels per acre, which at the price paid for city water, would cost seven dollars.

Of the new Strawberries he thought that Jessie and Bubach were reliable enough to warrant planting largely. Haverland, Gandy and Pearl were the most promising of newer sorts. Palmer's Seedling Raspberry compared favorably with the Tyler in earliness and was a better yielder and a larger berry.

Grape Culture in Ohio. Figures presented by E. H. Cushman of Cuyahoga County, showed that there was grown within a radius of 12 miles from Cleveland and marketed in that city, about 7,500 tons of Grapes.

About Currants. Successful results in growing Currants was reported by W. W. Farnesworth of Lucas County, whose crop averaged at the rate of 6 quarts per bush or 320 bushels per acre, the price he received being $2.50 per bushel. It was generally agreed that the Currant worm was being gradually gotten rid of through the use of hellebore, at least it was less destructive the past season.

Profit from Small Fruits. From 20 acres of Gregg Raspberries, and Taylor and Snyder

Blackberries, Mr. N. Ohmer of Montgomery County, reported a net return of $2,500. He stops the new growth of Blackberries at 4 feet and cuts the laterals back to 1 foot.

The American Association of Florists. The Recent Executive Session.

The Society of American Florists, as represented by its executive committee, enjoyed its first introduction to the City of Buffalo on January 15th to 17th last. The occasion was the meeting to arrange for the fifth annual convention of the Association, which is to take place in this city in August next. The committee, consisting of 15 men, includes some of America's most eminent florists; men who, for what they have achieved in fostering a love for the pure and elevating art of floriculture and of the general use of flowers, would honor any city by their visits.

About the Society. Although only in its fifth year, the American Society of Florists is in numbers and intelligence without doubt the strongest horticultural association in the world. Even now it is the wonder and envy of Europe, notwithstanding her old and famous Royal Horticultural Society of London and similar organizations on the Continent which have become famous for their accomplishments in advancing the art of horticulture. Our own society numbers at this time over 1,000 members, residing in all the States and in Canada.

The annual attendance last year reached almost 1,000 members. It is expected that the coming Buffalo meeting will excel all previous ones in the number of visitors present. If the high appreciation, amounting indeed to enthusiasm, which was shown by the executive committee for the City of Buffalo, her hospitality, her Music Hall in which to hold the meetings, her excellent hotels, the various attractions of the city and vicinity, and more important still, if the really superior programme decided upon are to count, we feel sure that the next meeting will be the most successful one in the history of the society.

The Programme. That the executive committee did most excellent work at the meeting is evident from the programme that follows, which is subject to some slight changes. Main essays:

On the Elevation of our Business, Robert Craig.

Education of the Florist, H. H. Battles.

Establishment of an Experiment Garden in this Country, John Thorpe.

Relation of the Horticultural Press to the Florist, M. A. Hunt.

Summer Blooming Flowers, A. E. Whittle.

Roses from a Nurseryman's Standpoint, William C. Barry.

On Landscape Gardening, William McMillan.

What shall be done to make Exhibitions more Popular and Profitable? E. Lonsdale.

Questions, with names of persons to whom answers were assigned, as follows:

Orchids for the Commercial Florist, W. A. Manda.

Best Methods of Utilizing Space Under Greenhouse Benches.

The Winter Flowering Heaths, Mr. Gardner.

The Best Way of Keeping Green Fly from Roses, W. J. Palmer.

What Varieties of Roses Recently Introduced are of Value to the Florist? E. G. Hill.

The Benefit of Electric Light, James Park, of Orange, N. J.

Where Does the Rose Bug Secrete its Eggs? Mr. Benjamin Grey.

Will the Rose Bug Stand Frost? Assigned to Charles Anderson.

Slate versus Wood for Greenhouse Benches, for general discussion.

Can the General Plant Florist Increase on the Hardy Plant and Shrub Business for Lawn Decoration to Advantage? Wm. Scott.

The Best Method of Caring for Wrought Iron Boilers During the Summer when not in use. M. A. Hunt.

In What way can a Florist Most Successfully Start in a Country Town? A. Giddings, Danville, Ill.

On Southern Roses. Mr. Forsterman.

How can our Local Clubs and the Society Best Work Together? J. D. Raynolds, of Chicago.

Palms, Ferns and Foliage Plants for the Retail Dealer. M. H. Morton.

The Forcing of Hardy Shrubs. Henry Bird, of New York,

How to Prevent Excessive Waste in Fuel? Open for general discussion.

What Present Advance over cost Should be the General Basis in Conducting a Retail Flower Trade? John Westcott.

Is the Practice of Advancing the Price of Cut Flowers Certainly Injurious to the Trade? J. C. Vaughn, Chicago, Ill.

What Materials are the best for Building a Flue for Greenhouse Heating? For general discussion.

What is the Experience with Crude Petroleum in Heating Greenhouses? Expected that Detroit florists will give points on the subject.

What would have to be the Cost of Water Gas before it would be as Cheap as Coal? J. T. Temple.

Does the Early Housing of Violets have a Tendency to Create Disease? H. A. Seibrecht.

Will Carnations that have been Propagated from Plants grown on Light Soil reach Perfection when Grown in Heavy Soil, and vice versa?

The Men who compose the Executive Committee. Of the men composing the executive committee of this society, John N. May, of Summit, N. J., is the president. Still a young man, he is one of the founders of the present society, and by his activity and enthusiasm in its work he begets the same spirit in others. This gentleman is exclusively a grower of choice Roses, having a glass area of over one and one fourth acre devoted to this crop. Many of the finest Roses that reach New York market are cut from his Rose-houses, while not a small part of the product finds its way also to other inland cities to delight the lovers of the superb in the queen of flowers. The famous American Beauty Rose, a large, fragrant crimson flower, occupies the first position in importance in his collection of decorative Roses. Following on this, his list of favorite Roses includes the W. F. Bennet, Bride, Catherine Mermet, Sunset, Perle des Jardin, Niphetos, Bon Silene, Marechal Niel, Glorie de Dijon, in the order named, and yet others.

The most famous man of the entire committee is Mr. Peter Henderson, of New York City, a gentleman whose influence for an Americanized horticulture has been far in advance of that of any other horticulturist. As is well known he is the author of numerous standard works on gardening, including a "Dictionary of Plants," and is a prolific writer for the press. As the head of an extensive seed and florist establishment, in the prosecution of which he has realized a fortune, he has tested more novelties and introduced to notice more meritorious new flowers, ornamental plants, vegetables, and fruits than any other man in America. His glass and greenhouse range, covering four acres, are the most extensive of their kind in the world. Mr. Henderson has been engaged in the florist business for 40 years, and has seen wonderful advances in the art during that time. In appearance he is tall, and has a distinguished air. Although upwards of 60 years old, he still preserves the bright, clear eye, ruddy complexion, and elastic movements of a young man. A Scotchman by birth.

Mr. John Thorpe, of Pearl River, N. Y., enjoys the distinction of having been the first president of the society, and to him more than to any other man is due the founding and the remarkable success of the present organization. He is president of the New York Horticultural Society at this time. This gentleman is one of the most skillful growers of choice plants in the world—a botanist of note, and especially familiar with the culture of Orchids and Chrysanthemums. His favorite branch, however, is the originating of new varieties of flowers from seed, assisted by the art of hybridizing and cross fertilization, in which he is an expert. He has originated numerous valuable varieties of Chrysanthemums, and has contributed largely towards the movement which has brought these flowers to the front in recent years. He is also an extensive grower of improved Carnations. Mr. Thorpe is one of the strongest men of the executive committee, and his word is respected as authority on all matters pertaining to floriculture.

A shining light of the society, one of its ex-presidents, is genial Robert Craig of Philadelphia, a magnetic speaker, and a ready, able writer. His establishment has become noted in disseminating new varieties of Roses and other novelties in plants. As a whole-souled man of progressive mind, who loves his business for the love of it, and is ever ready in helping others, he is looked up to as a leader in his chosen profession.

E. G. Hill, Ex-President of the society though born in this State, is a Western man of Richmond Ind. He is an active, wide-awake business man engaged extensively in the growing of young plants rather than of cut flowers, while Rose bushes, new Geraniums and Begonias are given special attention. He is an authority on heating hot-houses with natural gas as fuel.

Mr. W. J. Palmer, vice president of the American Society is an extensive florist of Buffalo and president of the Buffalo Florist Club. He is a veteran in his line, having been engaged in the florist business continuously since 1862. His greenhouses are located at Lancaster, N. Y., and here he has about 30,000 square feet of glass alone devoted to the forcing of Roses. He is one of the largest growers of cut flowers in the country outside of the New York city vicinity.

W. J. Stewart of Boston, Mass., the secretary of the society, wields a ready pen in a forcible style. Mr. Stewart has been a member of the executive board from the organization of the society, and, being a clear-headed business man who handles at wholesale the produce of hundreds of growers, "knows flowers." His counsel is always highly esteemed.

Charles D. Ball of Holmesburg, Philadelphia, is a grower of Palms and Ferns and a ready writer on topics relating to them. His suavity of manners has rightly entitled him to the reputation of "the genial man" in the society.

The other members of the executive committee are: Treasurer M. A. Hunt; Robert J. Halliday, Baltimore; A. P. Calder, Boston, specialist in Violet culture; Frank Huntzman of Cincinnati, retail florist; J. M. Kellar, Bay Ridge, L. I., a Palm and Rose grower; A. E. Whittle, Albany, N. Y.; J. D. Raynolds, president of the Chicago Florists' Club; J. T. Temple, a florist of the west, being situated at Davenport, Iowa.

Annual Meeting of the New Jersey State Horticultural Society.

Continued from page 88.

Insects. Beneficial and Injurious. The destruction caused by insects is not an unmitigated evil, says Prof. Geo. D. Hulst, the entomologist of the experiment station. It makes production of fruits and vegetables a little more laborious, and relieves the careful and industrious manager of a great deal of competition. In order to fight injurious insects successfully, the grower should acquaint himself with the life history of his enemies, and learn in which of the four stages of development—egg, larva, chrysalis, or perfect insect—they can be got at most easily. Some insects are exposed in one, others in more or all of these four stages. The Cranberry fly lays its eggs on the outside of the berry; and can only be fought in this style, as the worm enters the berry immediately on being hatched, and the perfect fly takes wing, lays its eggs and soon dies. The remedies must be applied in accord with the natural habits of the insects. We may pick the eggs, or kill the caterpillars or maggots by application of poisons, or catch or poison the beetles and butterflies. Arsenical preparations answer the purpose for destroying leaf-eating caterpillars in almost every instance. But these remedies, Paris green, London purple, etc., should be used in very weak solutions. By touch we can kill insects with kerosene emulsions and Pyrethrum. Best of all is a mixture of arsenical poisons and either kerosene emulsion or pyrethrum. The grower thus secures two chances of success, killing by poison or by touch.

Birds do much good in destroying injurious insects. The destruction of birds ought to be strictly forbidden by law, except under certain contingencies. A live game bird is worth more to the farmer than a dead one for the sportsman. Prof. Hulst's defence of the English sparrow was not relished by his audience, however. Among the gardener and fruit growers' friends the essayist names toads, snakes, moles. Rosebugs in larva state have almost no enemy except moles, and the latter have been greatly decreased by the traps set for them in garden and lawns. Lady bugs destroy myriads of aphides.

Can Wild Goose Plums be Made to Fruit? Mr. Dye says he has a number of trees. Those exposed to the fury of the last blizzard in March did not bear this year. One tree standing in a protected situation near a building was loaded with fruit, no other Plum or Peach trees being near. Mr. Wilcox tells of a neighbor who has one large lone tree, no other Plum or Peach tree being within fifty rods of it, and who claims to have realized the amount of $50 from fruit sold off this one tree during the last three years.

Application of Manure. To the query whether there is any loss of plant food by applying

manure in the fall on the surface without plowit under, Mr. Theo F. Baker says he prefers to apply manure broadcast in the fall after plowing. This method gives him good results. His aim is to store plenty of soluble plant food in the soil water. Most of the members also express themselves in favor of fall application, and do not fear as much loss of plant food by evaporation or leeching as would occur from the same causes in the barn yard.

Chemistry and Agriculture. Dr. P. T. Austin, chemist of the Experiment Station, in the course of a most interesting lecture, gave us the gratifying assurance that the mineral elements of plant food are not liable to be washed or leeched out of the soil. A solution of phosphates applied to the soil soaks in but leaves its phosphoric acid near the surface. The upper few inches of the soil hold it fast and retain it there until plants appropriate it. Potash when applied in solution sinks in a little deeper, but is held fast there. Nitrates, however, go through the soil as through a sieve, and the excess of it may escape through draius, etc., and be lost. Since phosphorid acid exists in the soil in smaller quantities than potash, neither of which can be replaced by natural agencies, while nitrates are constantly carried down to the soil by rains, or absorbed by the soil from tae air, we see that the soil holds these fertilizing substances according to the degree of their rarity. A knowledge of this fact may be used with profit in the applications of the various plant foods to the soil.

Napthaline. Dr, Austin calls attention to the new substance "Napthaline" which was formerly considered a waste product, but is now largely used for coloring. This is particularly adapted to kill the lower forms of life, and may prove valuable as an insecticide. It may be purchased of the N. Y. Coal Tar Co., Warren Street, N. Y., and is a harmless substance, not soluble in water but very volatile. May be put into the soil around the roots of trees without injury to them. Costs about 12 cents a pound and our fruit growers should test its virtues as it may prove to be one of our most valuable fungicides. In consequence of its volatile nature a plant or tree might easily be enveloped in an atmosphere of naphtaline, effectually protecting it against fungus and insect attacks.

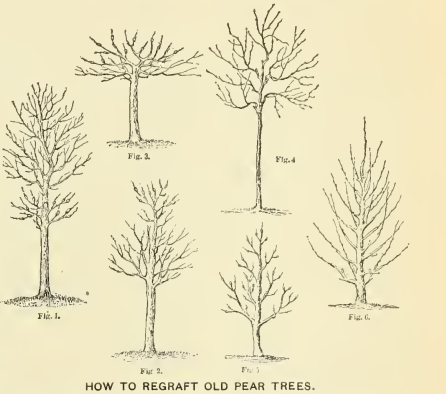
Bisulphide of Lime. Bisulphide of lime is also spoken of by Dr. Austin as a valuable deodorizer and antiseptic, and should be more generally used by farmers in stables, outhouses, cellars, etc. There is really no better antiseptic in existence than sulphur (sulphurous acid) but its use in the old way, by burning sulphur, is attended with danger and inconvenience. Bisulphide of lime is manufactured in large quantities, is cheap and has a thousand and one uses around the house and on the farm, and is just the form of sulphur acids to be applied with least inconvenience and risk. It may also turn out to be effective as a remedy for fungus diseases of trees, like leaf blights, etc. Experiments are in order.

An Effective Mode of Crown Grafting.

Bran and Cotton Seed Meal as Manure. Prof. George Cook, director of the Experiment Station, says farmers here do not use our waste products as largely as they should, especially bran, Cotton seed meal, etc., and are not willing to pay for them what foreigners do. Hence Wheat and Corn and Cotton seed is largely exported in the grain, while we should diversify our industries, export the flour, keep more stock and feed more bran, Cotton seed meal and retain for our use the plant food now exported in the grains. Cotton seed meal as a fertilizer is worth all it costs. Feeding it to animals is the most profitable way in which to use it. The farmer thus gets part of it in the growth of the animal and 70 per cent of its fertilizing elements in the manure.

CONDENSED CLEANINGS.

How to Regraft Old Pear Trees. Fig. 1 represents a tree with a dozen grafts inserted into the lower branches for forming a new rounded head; to prevent the upper branches from reducing the vigor of the newly started grafts, a broad ring of bark is shaved from the stem just above the inserted grafts. The next season the portion of the tree above the ring may be sawed off, and the wound covered with grafting wax or shellac varnish, and the grafts will soon take possession and form a well rounded head. The new trees bearing from half a bushel to a bushel of handsome Pears the third year. If the whole of the tree were to be headed back and grafted the same year, many water-sprouts would spring up among the grafts and a check be given to the tree. Grafting at the top of the tree to prevent undue shading of the newly started grafts would do for a tree of horizontal growth like the Apple, but in an erect growing Pear tree it would throw the new top too high. As represented in Figure 2, where the dozen inserted grafts would be seven or eight feet from the ground; if the lower limbs were worked the following year, the larger grafts above would shade and abstract the vigor from the new ones. Fig. 3 with a naturally horizontal growth has enough of the smaller shoots sufficiently near the ground for forming a new top in the centre above the lowest branches, to allow a portion of them to remain till the next year, when the grafting of the whole may be completed. Fig. 4 represents a tree of that excellent but crooked growing variety, the Winter Nelis, grafted at standard height on a straight stem, and is thus transformed into a shapely tree; varieties of slender and feeble growth may be placed upon such beautiful growers as the Buffum. Fig. 5 shows a pyramidal dwarf a few years old, from which all the branches have been cut, except those into which thrifty grafts have been inserted quite near the main stem in order that the bearing portions may be near the centre. The appearance of such a tree, after a year's growth, is represented by Fig. 6, the shoots having already grown two feet or more, and require the same care and skill as would be needed for other dwarfs.—Country Gentleman.



HOW TO REGRAFT OLD PEAR TREES.

The Finest Weigelias. Among the most distinct of the newer introductions is a beautiful dark red called Pecheur fils, somewhat in the way of W. floribuuda. Another similar form is Voltaire, a very vigorous grower with large, coarse foliage. None of the recently introduced variegated Weigelias are equal to the old W. variegated nana in effectiveness, although Looymansi has a yellowish tinted foliage which is good early in the season. Gigantiflora is only noticeable for a few very large flowers. Candida, not strictly new, but is little known, is a strong grower, and produces an abuudance of pure white flowers, which gives it precedence as a valuable hardy shrub as, W. hortensis nivea, heretofore our only white form, is not reliable. Another excellent form is Groenewegenii, producing dark rosy-red flowers in the greatest profusion. A specimen ten feet high and the same in diameter was, the past season, a perfect ball of flowers. One of the most valuable of the newer Weigelias is Abel Carriere, a profuse bloomer of a deep rosy pink, and a fine grower.—Josiah Hoopes in Tribuue.

Growing Currants. Satisfactory crops of Currants are only possible with good culture and a soil enriched with plenty of manure. Of the large Cherry and Versailles Currants, I have found the latter to be the more productive of the two, while the White Grape is the best of all in quality, and for the last decade these three varieties have been the most popular. But now Fay's Prolific has been duly tried and found to be one of the few new fruits which justified the promises of the advertiser. Such a fruit is a fitting monument to auy man's memory. A white Currant of as fine flavor as the White Grape with the other merits of Fay's would be a welcome addition to the list. In black Currants we have not found any great improvements. The most recent addition we have tried is Lee's Prolific but the improvement over the old Black Naples is is very slight. The demand for this fruit seems on the decline, as its peculiar puugent flavor and aroma are disagreeable to most Americans, but when made into jellies or preserves it is distinctly good.—E. Williams, in Garden aud Forest.

An Effective Method of Crown Grafting. Saw off the branch at right angles to the stem to be grafted, as at *a* in the illustration. Then cut a clean slit in the bark through to the wood, as shown—the same as in budding. Separate the bark from the wood and insert the cion *b*, one tor each slit. The number of slits for each stock will be determined by its size. We will suppose the stock illustrated to be six inches in diameter, and that six cions are to be inserted. The stock after receiving the cions is shown at *c*. A thick paper is wound about the top of the stock extending about one inch *above* it and securely tied with strong twine, as at *d*. The space above the stock formed by the inch of paper may then be filled to the top of the paper with a puddle of soil and water. This mud protects the surface of the wood of the stock aud excludes the air from the insertions, giving every advantage of wax without its objections. Stocks of any size may be worked in this way, and one, two or any number of cions inserted.—Rural New Yorker.

Vegetables in Medicine. Asparagus is a strong diuretic, and forms part of the cure for rheumatic patients at health resorts. Sorrel is cooling, and forms part of the soup which the French order after a tiring journey. Carrots contain a quantity of sugar, so are avoided by some people, while others thiuk them indigestible, but it is only the yellow core that is difficult of digestiou—the outer layer being quite tender. The Onion is rich in alkaline elements which counteract rheumatic gout. If slowly stewed in weak broth, and eaten with a little Nepaul pepper it is an admirable article of diet for patients of sedentary habits. The stalks of Cauliflower have the same value, but is so ill-boiled and unpalatable that few persons would make part of their meal to consist of so uninviting au article. Turnips, in the same way, are often thought to be indigestible, but the fault lies with the cook quite as much as with the root. The Lettuce has a slight narcotic action, and when properly cooked is easy of digestion.—Medical Record.

How Contagious is Yellows? The first diseased one (imported) conveyed the malady to the nearest branches of the four which surrounded it, by pollen in the wind, through the agency of bees, or by other means; a knife used in pruning a diseased tree gave the malady when used on healthy trees. Peach stones, if slightly affected, will carry the yellows to future trees grown from them, but if badly diseased the stones will not grow. We have also known the disease to appear in healthy old trees miles from any known to be affected, which may have been carried by bees. Different degrees of virulence seem to appear in different localities; sometimes it affected but a few trees and disappeared when these were destroyed or it yielded to the copious application of muriate of potash; in other places it has made a clean sweep, potash remedies or rich soil not checking it in the least.—Albany Cultivator.

How to Grow Ardisia Crenulata. This is an Evergreen plant of considerable beauty adapted for window culture. It is of erect habit, leaves dark green, flowers reddish violet, small but produced in great abundance, and are followed by bright coral-like berries, which, with the bright, glossy foliage, makes the plant one of the finest for decorative purposes. It is propagated

from cuttings, but preferably from seeds early in the spring; they will generally vegetate in about two weeks. When large enough to handle put the strongest plants singly in small pots, keep close until a fresh start is made, shift into larger pots as they increase in size, giving plenty of water while making their growth. After flowering and fruiting, if kept cool, the berries will remain on the plants for over a year, or until fresh ones are produced.—Country Gentleman.

The Lucretia Dewberry not well Thought Of. Everybody praises it except the reports from the Rural Grounds. The berry is large, early to ripen and of fair quality, but the same might be said of a score of upright varieties like Minnewaski, Kittatinny, Agawam, Lawton, Taylor, Erie. But with the Dewberry the berries are well concealed by its prickly foliage which spreads out over at least 12 feet and one has to stoop low and try his patieuce sorely in gathering the berries without tearing his flesh. Our final opinion of the Lucretia is that if we were obliged to have Lucretias or go without Blackberries we should go without.—Rural NewYorker

Sparrows Eating Potato Bugs. The vineyardist in charge for Messrs. Ellwanger and Barry for the last fourteen years, says that he has never seen a sparrow puucture or eat a single Grape, and so far as his observation extends the charge of Grape eating must be considered not proven against the sparrow, and he also said that he does eat the Potato beetle. Not the mature, old hard shelled fellows, but the little tender half or quarter grown bugs. I have seen the sparrows feeding on these and have known them to clean up a Potato patch in short order. Farm Life.

Preparing the Soil for Raspberries. A successful grower depends largely on thorough preparation of the soil, summer-fallowing the ground if it is necessary to kill the weeds, but not otherwise. He manures heavily and reduces the whole to fine tilth. He estimates that this thorough preparation aids principally in giving him a crop worth about three times as much as one from ordinary management, the berries being larger, finer and in greatly increased quantity. —Country Gentleman.

Getting the Best Seed. It seems as if it would pay to pay a good deal extra for large, perfect, plump seeds, and we can all of us send for samples of the seeds we waut before purchasing, getting a five ceut package; then compare the seeds obtained from different seedsmen and purchase the best. When you send your order state that the seeds sent must be fully equal to the sauple and though this will take time and trouble it will pay.—Gleanings in Bee Culture.

Weed Law Wanted. Every State should have a weed law. One man finds it nearly useless to destroy the weeds on his place because his neighbor lets them grow and ripen their seeds to scatter everywhere. This matter is serious. It costs too much money to keep land free from weeds. Hence we hope to see more stringent legislation tor if people will not do the proper thing voluntarily they should be made to do it.—Western Rural.

Recreation in Soil Culture. Most of our public men have found their chief delight in the cultivation of the soil and in pursuits closely connected therewitb. Jefferson was an indefatigable gardener and planter of trees. He had everything growing on his place wbich could be coaxed to live in the latitude of Virginia. Voltaire was an enthusiastic farmer wbo cultivated a great deal of land. He kept hees, cultivated vineyards, and had plantations of young trees, in all of wbich he took an extraordinary interest, and maintained a force of thirty laborers working upon them.—Youth's Companion.

The Best Way to Plant Cherries. Alternating varieties in the Cherry or Plum orchard favors regular fruitage. A variety tbat might be a poor bearer when depending on its own pollen may greatly improve wben intermingled with other sorts. Again if the weather during the blossoming period is hot and windy, a variety may waste its pollen before the stigmas are ready and in such the pollen of adjoining sorts may supply the waut.—Garden and Forest.

The White Plume Lettuce. I got one nice plump head of Lettuce that is almost entirely milk-white only the extreme ends of the leaves having patches of green on them; but it is quite evident that the goal is not very far off as the main thing now is to get this head to send up a seed stalk and form seed.—Gleanings.

Timber Screens. The continued experience of orchardists of the high autumn winds in having a large portion of good market fruit blown off shows the great value of windbreaks on the exposed sides of orchards.—Rural Home.

The Variegated Dogwood. Of the conspicuous form known in the catalogues Cornus Siberica variegata, the leaves are almost entirely white and retain their tint bravely all summer long.—New York Tribune.

Three Good Grapes. Mr. P. M. Augur recommends for a garden where there is only room for three varieties, Concord (black), Brighton (red), Pocklington (white).—New York Voice.

As the canned fruit jars are emptied refil with Apples for July. It takes ten busbels for each member of the family through the year, and we count it cheap food.—Farm Journal.

Poor Tree Seeds. Those who buy new seeds know those emanatiug from the Department at Washington often to he the veriest trash.—Prairie Farmer.

The Blue Spruce requires constant moisture until well established.—Americau Garden.

English Walnuts, we believe, will thrive wherever Peaches do.—Orchard and Garden.

Thinking must he done to raise a good crop of anything.—Rural New Yorker.

Vegetable Products on the Table.

Loosening Fruit Jar Covers. Invert the jar aud place the top in hot water for a minute; then it will turn easily.

Cooking Sweet Potatoes. Pare, slice thinly boil until tender, then fry brown, sprinkle sugar on to taste, serve hot.—Henry A. Green.

Cranberry Sauce. To one quart of berries add a pint of sugar and a cup of water. Cook ten minutes and with neither stirring nor straining this will be clear and delicious.

Cabbage Soup. To water in which bacon has been boiled, add a Turnip, one half head of Cabbage, three Onions and two stalks of Celery seasoned, chopped fine and stewed till tender.

Nut Cake. One half cup of butter, one cup of sugar, one half cup of milk, two cups of flour, one cup of seeded raisins, one cup of nut meats, two eggs, one aud one half teaspoous of baking powder.—American Cultivator.

To Stew Parsnips. Boil several slices of salt pork an hour and a half; cut half a dozen or so Parsnips in quarters lengthwise and add to the pork and let boil one-half an hour, then add a few Potatoes and boil until soft.

Frosted Apples. Pare, core and slice the Apples aud bake until nearly done. Allow them to get entirely cold, then pour off all the juice and lay sugar icing thickly on the tops and sides and return to the oven to harden a little, then serve with cream.

To Make a Fig Pudding. Take a half pound each of new fresh Figs, bread crumbs, sugar, beef suet and 3 eggs. Chop the suet and Figs fine, mix them with the bread crumbs, then add the sugar and eggs beaten. Boil steadily for two hours and eat with a hot sauce.—Prairie Farmer.

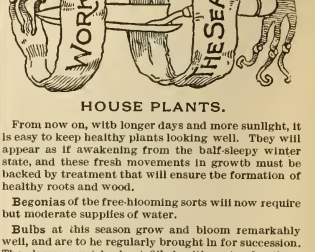
How to Cook Lettuce. Cut off all outside leaves, wash and put into boiling water until they have become nearly white, then put into a stewpan with Carrots, Onions, butter, pepper and salt. Cover with water and boil for two hours, then put into another stewpan with butter a pinch of flour and sauce, cook for ten minutes and serve.

Canned Fruit Pudding. Place in the bottom of a pudding dish fruit of any kind, as Peaches, Strawberries, Plums with but little juice and sweetened to taste. In one pint of milk stir in the yolks of four eggs, a little salt and sugar, one teaspoonful of corn starch and let it cook till stiff, constantly stirring, then turn over the fruit and let it get cold.

Salsify Cakes. Pass half a pound of boiled Salsifies and half a pound of boiled Potatoes through a sieve; add the yolk of an egg, the juice of a Lemon, half a teaspoonful of salt, a pinch of pepper and one ounce of melted butter. Beat until well mixed, then form into flat round cakes half an inch thick; roll each cake in flour, dip into a well beaten egg, after which cover with bread crumbs and then fry in boiling fat.—English Farm and Home.

Puree of Lima Beans. Soak one quart of dried Limas. Put in boiling salt water and add two ounces of butter, and any vegetables and herbs desired, including a Carrot, Onion, Cloves, Parsley and Garlic, boiling until soft. Drain off the liquid and mash the Beans. Dilute with the liquid. Press through a sieve, then boil and add more liquid if necessary, skim well and finish with four ounces of butter, chopped Parsley and one cupful of cerealine flakes. Season to taste.

Orange Pudding. Put into a bowl four ounces of crushed loaf sugar, the grated rind of one large Orange, three ounces of stale sponge cake finely crumbled, nutmeg and salt. Pour over these ingredients half a pint of boiling milk, the strained juice of three Oranges, and three well beaten eggs. Mix all thoroughly; line a pie dish with good puff paste, pour in the mixture, and bake half an hour. Sprinkle white sugar, mixed with grated Orange rind, over the top before serving.—N. E. Farmer.



HOUSE PLANTS.

From now on, with longer days and more sunlight, it is easy to keep healthy plants looking well. They will appear as if awakening from the half-sleepy winter state, and these fresh movements in growtb must be backed by treatment that will ensure tbe formation of healthy roots and wood.

Begonias of the free-blooming sorts will now require but moderate supplies of water.

Bulbs at this season grow and bloom remarkably well, and are to be regularly brought in for succession. The glasses must be kept filled with water for those growing therein.

Camellias in bloom want a temperature of about 45° at night and 10° to 15° higher through the day. Keep somewhat warmer after blooming, with a moist atmosphere; and they should have air freely (but not cold draughts), in all suitable weather; frequently sponge the leaves on both sides.

Chrysanthemums. Start up the old plants of the varieties from which it is desirable to propagate, and also decide upon tbe new sorts to be purchased.

Fuchsias that have been repotted and started up, may have slips, if good and strong, taken from them, to root. Old plants are more satisfactory for being at this season cut back. Young plants for tbe first year usually reach a better shape without cutting back, except it be of any strong side-shoots for inducing symmetry. Guard always against their becoming pot-hound, for growth should be constant.

Geraniums of the Scarlet or Zonale section, with the exception of some wanted for present bloom, may he severely cut back for propagation; the slips taken now will make fine plants for bedding, and tbe old ones come along well for summer bloom in pots or beds.

Heliotropes struck now make fine plants for summer. Shift old plants as they get pot-bound.

Oleanders may be started up for extra early flowers. Free watering and later some stimulant to the roots is necessary.

Plants in cellars and pits to be given air occasionally for hardening them. If the earth in the pots or boxes is very dry, give water.

Pruning. Amateurs are needlessly afraid of the knife; soft-wood growths may be pruned freely and fine, bushy forms from the ground be the result; otherwise one is liable to have long-legged, unattractive plants.

Roses will begin to show growth and bloom; give a sunny situation, but avoid too much warmth. Keep down all vermin. Hybrid Perpetuals, (wintered in pots) now in heat, quickly start up, and when buds appear, stimulate with liquid manure in small doses.

Seed Sowing. Mimulus, Maurandia, Icc Plant, Sensitive Plant, Snapdragon, and Chinese Pinks may continue to be sown for summer decoration. All annuals may be sown in heat by the end of the month.

Sweet Alyssum. Propagate from slips or seed.

Watering. Let no plant suffer from dryness, neither from over-watering, and keep a watchful eye as to which kinds dry out soonest, as their is mucb variation both in plants themselves and also in their situation as to this. To water all kinds alike is not tbe best of management.

LAWN AND FLOWER GARDEN.

Bedding Plants. Whatever stock that will be wanted, if to he bought, may usually be contracted for with tbe florist's thus early at reduced rates.

Hedges of deciduous kinds should receive their winter pruning in mild weather. Tramp down the snow to prevent any injury from mice by girdling under it wben loose.

Hot Beds are of almost invaluable assistance in bringing along pot and bedding plants for summer.

Labels, stakes and like necessaries to the garden, should he made or bought for spring use.

Lawn. A three inch dressing of fine, well-rotted manure is needed by the turf every second or third year. A liberal application of a good commercial fertilizer may be given instead if the manure is objectionable.

Pansies. If no stock bas been wintered over, by sowing seeds now, in moderate heat, good spring-blooming plants may be had.

Plans. Tbe main operations to be carried out tbe coming season should be decided upon before tbe time

for the work is actually at hand. Well-laid plans are more economical than in waiting until busy, then jumping at conclusions.

Root Grafting may be applied to ornamental shrubs, climbers and trees.

Seed Sowing. At the South the hardier annuals may be sown out of doors. In the North, Balsams, Cockscombs, Globe Amaranths, Portulacas, Schizanthus, Phloxes, Brachycomes, Stocks, Tropcolums, Cobæas, Lophospermums, Acroclinums, and the kinds named under House Plants, may be sown in heat before the month is out.

Shrubs. Pruning in the South may now go on. North, however, it may be deferred several weeks. The class including Roses, Hardy Hydrangea, Burning Bush, Coronilla, Amorpha, Hypericum, Althæas, Late-flowering Spiræas, and a few others that bear their bloom on the new growth, may be cut back very severely at this season with good results. But nearly all other shrubs bloom from buds now on the old wood, and to prune these now is only to cut away many of the flowers, so that but little more should be done at this time, than to improve the general shape. Just after the blooming season, some months later, is the time for the main pruning of these.

PLANT CULTURE UNDER GLASS.

Angle-worms. A perfect remedy for them in the pots, is to soak the soil with lime water once a month.

Begonias of the tuberous section, that were wintered in pots to be started, and later given fresh rich soil; those out of pots may be potted, and seed sown for late summer flowering plants.

Carnations for next winter's flowering should be struck from cuttings this month. Later, keep the young plants robust by free airing. Flowering plants should be restaked and retied.

Cinerarias. For greatest beauty, fine foliage is as necessary as good flowers; watering regularly, with considerable air, will help in this matter.

Cytisus, when done blooming, should be cut back.

Fumigating with Tobacco is now to be attended to regularly, at least twice each week; with so doing little trouble will be bad. If neglected, however, it will be almost impossible to clean out the green aphis, etc., by plant selling time.

Hollyhocks are easily raised from cutting if a stock is at hand in shape to start up.

Insects. The usual remedies of fumigating twice a week with tobacco smoke, for green fly, and others; syringing daily for red spider, in houses of high heat, must not be neglected for they increase with great rapidity at this season of high sun-heat and closeness. Scale and mealy bug, though increasing more slowly, do not yield so easily; hand-picking, washing or brushing are the best remedies.

Mignonette may be sown now with advantage. The plants will, during the summer months, make rapid growth, and later on be prized for window and conservatory decoration.

Orchids that begin to grow during the time they are in flower, should be shifted immediately, as the beauty of the flower wanes. The materials for use in shifting are good fibrous peat, sphagnum moss, broken crocks and charcoal. Aerides, Vandas, Saccolabiums, Dendrobes, Cœlogynes, and several others do best in sphagnum with small crocks or sharp sand. Cattleyas, Lælias, Oncidiums and Odontoglossums do equally well in peat mixed with crocks and a little coarse charcoal; a mixture of peat and moss is more suitable for some others.

Pelargoniums. Water freely, in warm, bright days, but over-watering will cause spotted leaves; light rich soil, free airing, and fair pot room are needed.

Poinsettias after drying off, are best placed in a somewhat cool place, even if not very light.

Potting. All cuttings, as roots appear should go into small pots, using light, rich soil, potting rather firmly. In potting or shifting plants, broken pots or gravel in the bottom of every pot larger than six inches is usually required for drainage. In six-inch pots or larger, there should be a layer of sphagnum or hay on top of the hard drainage before filling in the soil, to prevent clogging.

Roses. For propagation use cuttings from the best wood of recent growth; after the cuttings are put in they must never suffer from lack of water, as this would put them in a bad condition.

Salvia splendens. If the growth, of stock plants be greatly checked at any time in the winter, it is difficult to get good plants for the following season. The proper conditions are ample root room, and a rather cool temperature.

Schizanthus. Use open soil that is one-third dry rotten cow manure. Shift from now on until they are in 4-inch or 5-inch pots for flowering; air freely.

Sedum Seboldii to be taken from their winter quarters, started and then repotted, in good soil.

Stove plants need a general going over at this time or a little later. Such as have been blooming in the winter, require to be cut back, and encouraged to break, then to be shifted if needful, or have top-dressings. Any of these plants in flower, must be kept dry over-head.

Verbenas. If the plants are at a stand still, by shaking out and repotting in rich, fibrous new earth, they will usually improve quickly. Keep near the glass and give plenty of air.

Watering. See under House Plants.

FRUIT GARDEN AND ORCHARD.

Firming the soil over the roots of Strawberries or any fall set plants or shrubs, by tramping it as soon as it thaws, is a good stroke of work for early spring.

Grapes. In a dry place, a good fertilizer is stable manure, but avoid using it on wet ground, else the vines may become diseased; wood ashes, bone dust, and similar material would be better.

Manuring. Top-dressing orchards that are not growing with vigor with fine old manure would be in order. Spread the manure evenly.

Pr ning. Push in comfortable weather. See last month under this head.

Recording Maps of the orchard and fruit garden, should be kept to ensure against loss of names by loss of labels. Such are easily made by using smooth, strong, heavy paper, striking lines and cross lines as many as there are rows of trees or plants, and then clearly write the name of every variety in its place.

Root Grafting is seasonable work, and is much practiced for increasing the Apple, but answers as well for many other subjects. See page 98 for further directions.

Soil. For an orchard site, a deep, even if rather a poor soil is to be preferred to one much richer, but shallow.

Top Grafting. If the grafts have been cut and properly buried in earth (this may yet be done, if at once,) to keep them naturally moist, late grafting, say at the time the leaf-buds burst, is better than earlier. See page 98 this issue.

THE VEGETABLE GARDEN.

MANSFIELD MILTON, MAHONING CO., O.

Cabbage and Cauliflower. Sow seeds for early plants about the middle of the month in boxes if to be started in a greenhouse; if in hotbeds in drills six inches apart. Secure the best seed and sow thinly Water after sowing with tepid water and keep close until vegetation takes place. Any heads that are buried, lift and market as soon as possible: the frequent freezing and thawing from now on causes rot.

Have all your plans made now about cropping. Know just exactly how many plants of this crop you intend planting, how much ground you require for that crop and the place you are to plant them. If you are a market gardener raise what your marked demands; if for family use put in what your family likes best.

Hotbeds should now be made for the raisiug of early plants. See that the heating material is in good condition by being thoroughly heated all through. Whether pits are used or surface beds, spread the manure and shake it up well with the fork so that it settles evenly.

Mats for covering the glass cold nights should be on hand and should be large euough to lap over the sides of the sash.

Onion Sets wanted for early can be profitably raised in hotbeds and greenhouses. Plant them deep so that they will have a long white neck. The Silver Skins are best for early.

Parsnips. Dig in favorable weather and have ready for use.

Radishes may now be sown, the Turnip-rooted varieties being the best for forcing.

Salsify. See under Parsnips.

Soil for Hotbeds should be of a light nature, half loam and half leaf mold or well decayed hops or manure; use sand if the loam inclines to clay. If there is a depth of two feet of heating material place six inches of soil; if less manure use less soil.

Tools. Look them over and see that they are in good condition. Repair such as are out of order and purchase any new ones wanted. Good tools save labor

Tomatoes in localities where they can be planted in the ground the first of May, and a few seeds for extra early plants should now be sown.

Ventilation should be carefully attended to on all suitable days. Be careful not to allow the sun to shine bright on the bed with the sash closed, as the young plants are easily scorched. Sometimes the bright sun shines with a cold wind; shade the glass with some light material instead of raising the sash and allowing a cold current to pass over the plants.

FRUITS AND VEGETABLES UNDER GLASS.

Cucumbers. Keep down any fruit that shows before the plants are quite strong. When ready for fruiting the hills will want earthing up somewhat with nice light loam, and the vines stopped regularly one joint beyond the fruit.

Figs that are being forced should now be freely syringed. They need more water also at this time, and weak, useless growth, thinned out.

Grapery. In early houses keep the vines well trained, and the laterals disbudded. After blooming, do not syringe the bunches. but every inch of wall and path should be well moistened to keep down red spider. Do not, however, create so much molsture as to cause mildew. As to newly startiug up vines, see directions in the January issue.

Lettuce is a crop that grows finely under glass during this month and later. Provide about 45° of heat at night. Give an abundance of air in mild weather. Water liberally, but not to excess, and fumigate or lay cut Tobacco stems about the plants to destroy or prevent the green fly.

Orchard House. The trees will set their fruit better for free airing while blossoming is going on. Keep the atmospbere dry at this important stage, but after the fruit is set, syringe freely with tepid water.

Rhubarb. Continue to bring in for succession.

THE POULTRY YARD.

Fowls that are kept supplied with gravel, charcoal and green food are not often troubled with indigestion or diarrhœa.—O. J. Farmer.

Turkeys for Setting. Set a good hen to hatching chickens; take her first brood away as soon as out and let the incubator keep right on for raising two or three broods.—Am. Farmer.

The best hatching eggs are those first laid in spring though the first laid by pullets should not be set. After a hen has produced thirty or forty eggs in regular succession, the system becomes enfeebled and the eggs are more or less wanting in vitality.—Poultry Monthly.

Variety in Feeding. By this we mean both raw and cooked food—meat, vegetables, scraps, green food, Corn, Oats, Rice, Barley, Wheat, pounded bones, etc. For any class of fowls, the varied feeding plan is always the most beneficial.—Poultry Yard.

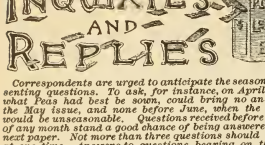
The Season for Profit. The winter season, though laborious, is really the most profitable, for poultry and eggs are then usually high and but little other work could be done, and, while the hens lay best in summer, when eggs are cheap yet, if warm quarters are provided, the eggs received in the cold season will be a large item. One source of winter profit is from the usually scarce winter broilers.

Care of Young Chicks. No food is allowed for thirty-six hours after hatching, being kept in the brooder where a temperature of 90° is maintained. The first food should be stale bread dipped in fresh milk and squeezed dry giveu a number of times daily, with fresh water. Granulated Oatmeal is also placed so they can help themselves at any time. Three times a week a beateu raw egg, at the rate of one for 25 chicks, may be mixed with the bread and milk. Hard boiled eggs and much meat cause bowel disease, but a little may be given twice a week. Mashed Potato is always excellent, and after the first week give cracked Corn and screenings instead of Oatmeal.—Farm and Fireside.

Improving Poultry. The old proverbial "barn-yard fowls" are rapidly disappearing, making room for thoroughbreds. By systematically selecting the best fowls for breeding purposes, the stock will improve constantly, and there are realized, not only the profits of general poultry raising, but the breeding stock will soon become known and bring extra prices. Plymouth Rock, Wyandotte, and Langshan stand foremost as all-purpose fowls, while the Java, Houdan, and Dorking have also strong claims and meet many general requirements. Whatever breed is chosen success depends upon the careful selection of the breeding stock in poultry, as much as in other animals.—American Agriculturist.

Food for Fowls. Buckwheat is fattening, and fed sparingly, there is no better food. Wheat is one of the best egg producing foods, Oats coming next. Corn is excellent for a night-feed and for setting hens, as it keeps a continual body heat. Rye occasionally, gives life to the stock, while oyster shells and ground bone form egg shells; sand and gravel helping to grind their food. Beef scraps, mixed with corn-meal mush, fed several times a week increases the egg supply. Wood charcoal is tasteless, so feed that made from Corn cobs, in liberal quantities. Fed with cornmeal scalded in a stiff mass, is relished and is good for eggs. Sunflower seeds promote laying and health.—Farmer's Magazine.

Eggs in Winter. I have for a few years past been able to secure a good showing of eggs in winter and from old fowls at that. My first point is to feed well during moulting season thus helping the fowls over this trying period, so as to get them to laying again before severe weather. Farm fowls are neglected at this most important period, and not being profitable are allowed to grub as they can. With feathers half off they are chilled and weakened; and then bitter weather comes on and they are too weak even to lay before spring, so give plenty of warm feed in October and November. My next rule is to house them warmly in roomy winter quarters. Their room is a part of an underground stable open to the south with a sunny window. From this they can go out as they like into a yard and into the stables. The ground is covered with shavings and cleaned once a week; while at the same time kerosene is poured over the nests and roosts. I have a mixture of White Leghorn, Brown Leghorn, Silver Hamburgh, Plymouth Rock, and Brown Game. Roosters have been Hamburghs. The cross is a laying stock and mostly non-setting. It does not pay a farmer to raise chickens. He can buy his pullets more cheaply when he counts the loss of chicks from weasels, skunks and rats. What I want is eggs.—E. P. Powell.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 15th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name-at-next-following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,085. **An Underground Cellar for Celery.** How can I best construct a cellar in a sand hill for both Celery and root crops.—B. S., *Huron Co., O.*

1,086 **Red Mites in Greenhouse.** First appeared about the windows of dwelling house, then in greenhouse, mostly on Centaurea gymnocarpa. Cold does not hurt them but they disappear towards spring, returning in the fall. They infest plants somewhat as red spider does, yet many stay on the glass apparently eating nothing. Bright red, becoming black as they grow, and have appeared in several places in this vicinity. Tobacco smoke and whale oil soap do not affect them. Can any one help me?—W. E. S., *Liberty, Ind.*

1,087. **Buckwheat Remedy for White Grub.** Is it a fact that a crop of this grain on infested land will rid it of them?—A. N. S., *Mauston, Wis.*

1,088. **Forcing Tomatoes, Cucumbers and Musk-Melons.** When should the seed be sown to ripen fruit in April and May? Steam heat is used, would like any points essential to success.—A. G. C., *Peperell, Mass.*

1,089. **Growing Bletia Tankervilliæ.** What treatment is required for this Orchid?—J. W. C., *Akron, O.*

1,090. **Springs for a Fruit Marketing Wagon.** Can any one tell me how to satisfactorily attach platform springs to a lumber wagon (lumber springs being too stiff) so they may readily be removed for ordinary farm work.—W. W. F., *Waterville, O.*

1,091. **Worm Eating Currants.** Last year a small green worm ate the inside out of the green fruit, the bunches being left with a shell. What is its name and how to be gotten rid of?—E. W. R., *Providence, R. I.*

1,092. **Dahlias Turning Yellow.** A year ago, I had a choice variety of flowering tubers, carefully wintered, which seemed all right when planted in the spring; in the summer however the flowers all came yellow. Can any one explain it?—H. M., *Cardinal, Ont.*

1,093. **Building a Rockery; Suitable Plants.** I would like to make one that will not appear more like an ordinary stone pile than anything ornamental. What plants are good?—Mrs. C. G. J., *Portland, Mich.*

1,094. **Buying Rhododendrons.** Where can I get such as would grow here; the culture required, etc.—Mrs. H. E. Twiss, *Fairhaven, Conn.*

1,095. **Pear Growing.** Will they do well on low ground, near a creek, if it is underdrained?

1,096 **Beurre D'Anjou Blighting.** Is this as liable to blight as other varieties? Will it grow on clay?

1,097. **Kieffer Pear Hardy.** Would it be hardy in Northern Ohio?

1,098. **Quince Trees.** Will 20° below zero hurt them? To what age do they grow?—H. B., *Brooklyn, O.*

1,099. **Chrysanthemum Foliage Dying.** After pottlug outdoor grown plants which did not even wilt, but seemed perfect in health and appearance, the lower leaves began to blacken and die off and this continued until not a healthy leaf remained, they bloomed finely. Is this disease liable to occur in plants? Is there a special point in management that might prevent or cause the trouble? Have others been troubled in a similar way?—L. H., *Wyoma, Ont.*

1,100. **Japan Persimmons in Illinois.** Are they hardy in this section, if not what protection is needed?

1,101. **Japan Chestnut Grafting.** Can this be done on Black Walnut or Hickory?—P. B., *Mt. Carmel, Ill.*

1,102. **Chrysanthemums Mildewing.** After getting them in the house they became as white as a Dusty Miller. Can any one give name and color of four that will not do this in the house?—T. G., *Balcaygeon, Ont.*

1,103. **Preparing Horseradish.** Will this keep long after preparing? What is the best method? Can other than cider vinegar be used?—W. H., *Rockport, O.*

1,104. **Good Grapes for Virginia.** I would like a list of the finest that will succeed here, even if necessary to give protection. J. S., *Elizabeth City, Va.*

1,105. **Apples Exported.** I would like to learn how many were exported for the year 1883.—C. E. B., *Columbia, S. C.*

1,106. **Manettia Rose Cuttings.** Where can they be obtained?—H. J. S., *Woodland, Cal.*

1,107. **Sending Cut Flowers by Mail.** How can they best be sent fresh.—T. M. Cold, *Key West, Fla.*

1,108. **Salsify Losing Flavor.** That left in the ground over winter was so affected the last two seasons. Why?—W. S. W., *Shawnee, Wis.*

1,109. **Name of the Beefsteak Geranium.** What is its botauical name?—E. R. L., *Cornwallis, Oregon.*

1,110 **Mulberry Leaves for Silk Worms.** Are Russian Mulberry leaves good?—J. M. S., *Blackfoot, Idaho.*

1,111. **Brown Fly on Chrysanthemums.** For several years this insect has destroyed and poisoned the ends of the shoots so that they come blind. Hellebore has no effect on them. They are neither black lice or aphis, as I have no difficulty with these. Can you tell me anything about them?—H. W. C., *Hingham, Mass.*

1,112. **Killing Locust Trees.** How can this be managed, the sprouts come up all over and robbing other crops?—Mrs. O. G., *Walla Walla, W. T.*

1,113. **Sowing Sweet Peas.** When is the best time?—A. B., *Fulton, N. Y.*

1,114. **Onion Seed.** How long is it good?—X., *Gale, I.*

1,115. **Peas for Market.** What are the best varieties for early, medium and late crops for home use?—A. P. W., *Galloway, Ill.*

1,116. **The Best Hardy Roses.** Will some reader kindly name the twelve best hardy Roses in cultivation?—Flower, *Fyan, Pa.*

1,117. **Potato Growing.** What is the best Potato for New England?—Farmer, *Freetown, Mass.*

1,118. **Some Good House Plants.** Will some reader kindly name a good list of plants for my library window; plenty of sun and no furnace heat?—X. Y. Z., *Frederica, Iowa.*

1,119. **Watering Plants.** When should it be done; how much at a time?—H. A. Eastman, *Freeport, Me.*

1,120. **Making a Garden.** I have a small lot of land that is all run out; how shall I prepare it for vegetables and flowers?—Amateur Gardener, *Gainsville, Miss.*

1,121. **Manure for Celery; Hoes.** (*a*) What kind is best for this, (*b*) is there any hoe made specially for banking up?—D. F., *Peekskill on Hudson, N. Y.*

1,122. **Chilian Beet Seed.** Where can it be obtained?—A. A. N., *Chafee, N. Y.*

1,123. **Russian Apricots for Illinois.** Can they be grown where the Peach fails? How about Curculio?

1,124. **Orchid Information.** Are they bulbs or raised from seed; hardy or greenhouse plants? Are they of easy culture or not?—J. W. M., *Farmer City, Ill.*

1,125. **About the Non-kinking Hose.** Can you tell me where these may be had, the probable cost, etc.—C. H. H., *Hickman, Ky.*

1,126. **Propagating Grapes by Grafting or Cuttings.** What is the proper time and method.—A. A. W., *Grand Rapids, Mich.*

1,127. **Onion Sets Growing.** Mine always grow too large though I sow 150 seeds to the square inch and cover it with an inch of pure sand; the seeds all come up, and the tops ripen before pulling. Could they be pulled when of the right size even if not ripe?

1,128 **Pruning Apples, Crabs, Plums and Cherries.** I would like some general directions suited to this state?

1,129. **Worden Grape Cuttings.** Do you consider this a variety that it would pay to propagate extensively?—E. C., *Carbon Cliff, Ill.*

1,130. **Pocklington Grape Grafting.** When they were high priced I got a dozen vines, of this variety; I propagated largely, but after fruiting they proved worthless. Can I graft good sorts on these? Can I get damages from the seller?—E. C., *Carbon Cliff, Ill.*

REPLIES TO INQUIRIES.

1,076. **Tuberoses After Blooming.** After the bulb has once flowered it will never flower again and the only value it has is in the offsets which it may have formed.—C. E. P.

1,080. **Camellia Buds Falling.** This is due to many causes. Avoid them by keeping the foliage clean and free from insect pests by frequent spongings with soapy water. In the growing season give them a liberal and constant supply of water both overhead and at their roots and after growth ceases a more moderate supply. When brought inside they should be given a cool temperature and water as often as necessary, being careful to saturate the entire mass. Syringe freely two or three times a week and avoid extremes of temperature.—C. E. P.

1,084. **Chrysanthemums not Blooming.** They must have been given an unsuitable soil, situation and culture.—C. E. P.

1,051. **Keeping Canna Tubers.** I permit mine to remain outside until the first of November then the tops are cut off and on a dry day the roots are carefully lifted and stored in a dry situation underneath the greenhouse bench where an average temperature of 55° is maintained.—Charles E. Parnell, *Long Island.*

1,074. **Manures for Vegetables.** Aside from good, well decomposed stable manure the best fertilizers are ground bone dust, poudrette, dry blood fertilizer or blood and bone fertilizer.

1,072. **Failure with Spinach.** Not knowing your treatment of the crop cannot suggest any remedy.—Chas. E. Parnell.

1,073. **Carrot Leaves Turning Yellow.** Another season plant them on fresh ground and so avoid the loss of the crop. A good dressing of lime applied in the spring would be decidedly beneficial but might not prove a certain remedy.—Chas. E. Parnell.

1,077. **Toadstools on the Lawn.** I wish Harry had said whether the toadstools on his lawn were to be found in shady places; if they were plenty of wood ashes,and some grass adapted to shaded places sown thickly will weed them out, or more properly give them no chance to grow.—M. B. Faxon.

1,078. **Onion Seed Saving.** Like all biennials it takes two seasons to raise Onion seed; plant the seed and raise large Onions one season and the next set out the large Onions and raise the seed. B. P. A. had better talk with some Onion grower who will no doubt give him full information.—M. B. Faxon.

1,046. **Lawn Grass Seed.** White Clover is one of the best seeds that can be used in obtaining a beautiful lawn. About three pounds to every bushel of seed is a good proportion. In this connection I will say that about six bushels of lawn grass seed is required to properly sow an acre. Wood ashes (unbleached) is one of the best fertilizers that can be used on a lawn, being free from weed seeds, They also bring in large quantities of White Clover without using any White Clover seed.—M. B. Faxon, *Suffolk Co., Mass*

1,040. **Remedy for Tomato Rot.** I find my Tomatoes are entirely free from rot if I take pains to stake them well. My Tomatoes always rot badly when I crowd the vines, which should be at least six feet apart each way in a private garden, but eight would be better. Let the sun in between the vines and rot will not trouble you.—M. B. Faxon.

1,049. **Rubber Plant Treatment.** There is no need to sponge the leaves of any plant every day; this is as bad as no sponging at all. Sponge when a plant shows that it needs it by being dusty. Water when dry and do so thoroughly, then wait until they are dry again. Follow nature as nearly as possible and everything will go well.—M. B. Faxon.

1,060. **About Artemisias.** The two best known sorts of this genus are Southern Wood or Old Man (*Artemisia abrotanum*) and Wormwood (*A. absinthium*). Both are very hardy and bear smoke without injury. These kinds are both shrubs of simple culture.—M. B. Faxon.

1,061. **Smilax Blooming.** Smilax seed is usually planted in January or a little later in shallow boxes in the greenhouse, and when the plants are well up they are put into thumb pots and then shifted from size to size until about August, when the plants (now in three inch pots) are transplanted into permanent beds. Set the plants eight inches apart in the rows and make the rows fourteen inches apart. The January following the vines will have made a growth of from nine to twelve feet and be ready for cutting. Growth will begin immediately after cutting and another crop will be ready the following April. After second cutting let the plants rest and thoroughly enrich the bed and the plants will start again in August. Smilax is of easy culture; only one caution comes to my mind: Tobacco smoke will kill the vines. Liquid manure will greatly increase their growth and frequent syringing of the vines with water will keep the plants in a healthy growing condition.—M. B. Faxon.

1,067. **Are Angleworms in Any Way Hurtful?** I have never found a single instance when our common earth worm injured any plant; think them a benefit rather than otherwise.—M. B. F.

1,069. **Ferns as House Plants.** The finest Maiden Hair Ferns I ever saw were growing in a house window, but where they were growing there was no furnace heat; it is hard work to have plants in our city homes on account of the dry atmosphere. There are no handsomer Ferns than these when properly grown.

1,070. **Strawberry Fertilizers.** The best fertilizer for Strawberries is a mixture of unleached hard wood ashes and pure ground bone. Take half of each, mix thoroughly and harrow in this mixture the fall before you intend to set out your plants. Set the plants early in the spring and top dress with same mixture when well started. Use one ton to the acre in the fall and about 300 to 500 pounds to top dress with in the spring. If you plow your land in the fall, harrow, spread with manure and then harrow twice, once each way, and your bed will be in perfect shape in the spring. The results obtained will amply repay for the extra labor.—M. B. F.

1,074. **Manure for Vegetables.** Light soils as a rule require a fertilizer strong in potash; such a fertilizer would produce excellent crops of early vegetables, Cabbages, Melons, Turnips, Tomatoes, Beets, Cucumbers and Onions. Without manure I use about 1,500 pounds of phosphate per acre, say 1,000 pounds spread broadcast and harrowed in, and the remaining 500 pounds in the drill at the time of planting. You will be able to secure such a fertilizer by writing to any of the reliable dealers who advertise in Popular Gardening and Fruit Growing.—M. B. Faxon

1,045. **Selling Evaporated Fruit.** It would be difficult to say where the best market is. If the fruit is of best quality and put up as it should be it will sell well in any large city.—M. B. Faxon.

1,061. **Smilax Blooming.** The plants will bloom when they are about eighteen months old. It will require a partial rest the second year and this should be given after the second crop has been gathered or from April to September.—Chas. E. Parnell.

1,062. **Using Old Mushroom Beds.** The material of which they are composed can be used to good advantage for potting plants, etc. Expose it to the action of the atmosphere for a short time in order to destroy any spores that might be in it and mix with two thirds of turfy loam. It is also an excellent material to use for top dressing lawns.—Chas. E. Parnell.

1,064. **Ferns Eaten by Snails.** The term snail, properly speaking, belongs to a family of Crustaceans, but it is often applied to a slimy black slug which is quite troublesome in greenhouses and is also very common in damp places in the open air. They work only at night, in damp weather, or in shady places and may be found during the day on the damp sides of the pots or concealed under them and they can generally be kept down effectually by searching out and killing them. They are very partial to sweet Apples and pieces of these are sometimes placed among the plants and examined in the evening and the slugs destroyed. I have also found them under pieces of glass which were accidentally left on the soil of the benches.—W. F. B.

1,086. **Red Mites in Greenhouse.** The specimens sent are a species of red mite related to the red spider of the greenhouse. They are so small and often so numerous that it is difficult to get rid of them. Where the windows on which they are present can be washed with hot soapsuds they will doubtless be killed. The Egyptian Insecticide, which is composed largely of powdered Tobacco stems, I presume would kill them on plants. Pyrethrum or the "insect powder" of the drug stores would probably also be effective, as would kerosene emulsion.—C. M. WEED.

1,084. **Chrysanthemums Not Blooming.** I have never heard a good reason given why plants come blind; a satisfactory solution of this point would be a great help to us all.—M. B. FAXON.

1,066. **Poinsettia Treatment.** The plants are passing into a state of rest and from now on should be kept dry.—C. E. P.

1,067. **Are Angleworms in Any Way Hurtful?** Yes, to pot plants, by reason of their obstructing the drainage. In the open ground I do not think they are in any way hurtful.—C. E. P.

1,051. **Keeping Canna Tubers.** Last fall immediately after our first light frost, which only partially killed the tops of my Cannas, I cut them off about a foot from the ground, dug and placed them under the greenhouse benches with large balls of earth attached, covering the roots lightly with sphagnum, and I occasionally sprinkle them a little. With this treatment the new buds continue to grow slowly and bid fair to go through in fine condition; probably if stored in a light, airy cellar with about the same treatment they would keep nearly as well. When frosted clear down to the ground or cut very close, decay is likely to follow, or if the earth is all shaken out and the small roots get dry there is danger that the whole tuber will dry out or if damp enough to prevent that they are liable to mould and destroy the whole plant.—W. F. B.

1,060. **About Artemisias.** This is the botanical name for the Wormwood family, but my earliest recollection of the Chrysanthemum is of two plants, one with pure white and the other with dark red flowers belonging to a lady neighbor, which she called Artemisias and probably this is the Artemisia referred to; if so, some of them are entirely hardy and almost all of them are so with a little protection.—W. F. B.

1,028. **Hydrangea Propagation.** By cuttings taken in the spring just after the sap begins to run; cut the desired size with a sharp knife and place them in wet sand in a cool shady place and do not expose them to the sun under glass until they are potted off and well established on their own roots.—H. C. TOWNSEND, *Dutchess Co., N. Y.*

1,049. **Rubber Plant Treatment.** When you cannot spray the Rubber Plant sponging the leaves frequently is necessary to the health of the plant. Water only when the plant is in need of it; do not let any water stand about the roots.

1,051. **Keeping Canna Tubers.** To keep Cannas in good condition over winter the roots are placed in dry sand in a dark, cool cellar free from frost.—H. C. T.

1,054. **Amaryllis Failing.** Amaryllis may be successfully grown by potting in rich soil with good drainage; water sparingly until the plant begins to make vigorous growth; then and when in bloom give an abundance of moisture but do not let the water stand around the bulb as it is likely to sour the soil.—H. C. T.

1,060. **About Artemisias.** The Artemisias are better known as the Chrysanthemum and are probably hardy in 45° north latitude with protection of straw or leaves as a covering through severe weather. These plants require a rich soil. Set out in spring in a sheltered situation. Mulch well through dry weather, give manure water often and as they bloom very late shield from severe frosts.—H. C. T.

998. **Best Blackberry.** Dorchester may do for a cold climate but is too small and will not yield more than half as much as Wilson. There are a great many varieties offered as best but it is doubtful whether there is any variety yet before the public which will pay better as a market berry than the Wilson where the climate is not too cold.—W. F. B

1,076. **Tuberoses After Blooming.** These are of no value except for raising bulblets and that does not pay as they can be bought much cheaper than the amateur can raise them.—H. C. T.

1,035. **Raising New Gladiolus.** I have successfully increased the varieties of Gladiolus by cutting the bulbs similar to cutting Potatoes, always being sure to leave a portion of the base of the bulb on each piece. The flowers do not come true from seed.—H. C. T.

1,054. **Amaryllis Failing.** The Amaryllis requires a season of repose and I think that the plant had completed its growth and was passing into a state of rest was the reason the leaves turned yellow. You should now place the plant in a dry situation, at a temperature of 55°, and let it remain there until the middle of May when it can be planted out in the open border. Take up and repot towards the end of September and when you wish to throw the plant into bloom place it in a temperature of 55° gradually ascending to 60°. When the leaves appear water abundantly. In potting use porous or soft baked pots and see that they are thoroughly drained as this is very important.—C. E. P.

982. **Rust on Raspberries.** Cut plants off close to ground and burn as fast as it appears. Cultivate well and place phosphate around the plants. Sow salt broadcast over the ground in the early spring.—W. T. ALAN.

1,055. **Chrysanthemum Leaves Burnt.** You do not say in what proportion you used the liquid manure. I would infer, however, that you used it too strong. But there are other causes that would lead to a similar result.—C. E. P.

1,052. **Floor for Greenhouse.** A cement floor is the best in a greenhouse.—C. E. P.

1,003. **Rabbits Injuring Trees.** Rub the trees with a piece of liver or paint with blood from slaughter house in early winter.—W. T. ALAN.

THE COMPLETE GARDEN.*

XXIII.

BY A WELL-KNOWN HORTICULTURIST.

Continued from page 96.

STOCKING THE HERBACEOUS AND VEGETABLE GARDEN.

The plants referred to in the previous paper as being Annual, Biennial and Perennial Herbaceous plants are chiefly propagated from seed. This fact renders it important that the gardener should understand the principles of successful seed planting or sowing and to this subject the present article will devote attention. In the case of perennial plants, it is true, a common method of increasing the stock is by the division of the roots as illustrated by the Iris in figure 58 and of which among vegetables Rhubarb and Asparagus afford familiar examples, but even with such there are few cases in which seed propagation could not also be well applied. Usually propagation by division comes into use for perennials when a moderate increase of plants is desired and by seed when a large stock is wanted. Certain improved varieties of perennials which do not bear seed, can only be increased by root divisions and in some instances by cuttings of the shoots.

SEEDS AND SEED SOWING. The requisites to success in growing plants from seed are as follows: good seed, suitable soil, a proper degree of temperature and of moisture, and right methods of work.

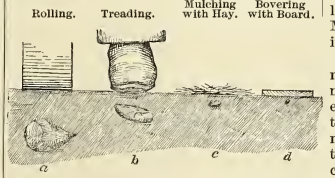


Fig. 59. Covering Seed by the rule of the Seed's diameter. Promoting Germination by Rolling etc.

Procuring the Seed. With many reliable seed houses located all over our country there need be little difficulty in procuring a stock of good seeds for all departments of the garden. To trust one's orders to such seedsmen as advertise regularly in reliable horticultural journals would be a safe course almost without exception. If there is a regularly established dealer in your own town it will generally be safe to intrust orders to him for filling. The seeds that are on sale with grocers, druggists, etc., all over the country and known as "commission seeds" are in many, perhaps I should say in most, cases unreliable, and should generally be avoided by all who aim to possess a complete garden.

The Soil for Seeds. The soil in which seeds are sown should be made as fine as possible by proper tillage so that while fine particles are brought into contact with the seed and the air can readily penetrate to the seeds and roots it will at the same time be retentive of moisture and with having the capillary attraction in the soil broken up. If the seed is sown directly where the crop is to be raised the soil, previously to sowing, should in most cases be tilled deeply and be well enriched after the methods described in previous papers. In the case of starting seeds in beds specially prepared and then transplanting them, as is done with many kinds, the depth of soil in these need not be so great, for transplanting should ensue before the roots have had a chance to penetrate far.

Fig. 58. Dividing a Herbaceous Perennial (Iris), the line a indicating place of cutting.

Temperature. Mistakes are often made by the inexperienced in submitting seeds and seedling plants to a wrong degree of temperature, for to start seeds too warm or too cold, if they grow at all, will be to result in producing feeble plants. For those kinds classed as Hardy annuals, biennials or perennials a temperature of the soil of about 55° Fah. will be the most favorable to growth. Half-hardy kinds will bear from 60° to 70° to advantage while Tender kinds will find above 70° the most congenial. In sowing seeds, therefore, constant regards must be had to adapting the kinds to the temperature, a thing easily done if one will observe the hardiness of each kind as noted throughout the pages to follow. But to plant as one sometimes sees done, the hardy annuals or biennials like Cabbage, Peas, Turnips, etc., in 80° of heat, and the heat loving class, including Squashes, Egg Plant Martynia, etc, in a temperature of 45° is to invite almost certain failure.

Moisture. It is clear that seeds require moisture to induce germination. Very many failures in their sowing arise from either the lack of sufficient and steady moisture or from an excess of moisture which may be quite as fatal. If on the one hand the seed is provided with enough wetness to cause it to swell and start sprouting and afterwards is dried again the germ will be killed; if on the other the seed bed is kept heavily saturated with water the seeds may sprout but fail to grow further for lack of sufficient air. Only the seeds of aquatic plants will bear an unlimited amount of moisture.

Methods of Sowing. Provided the soil of the seed bed is reduced to a proper degree of fineness and its temperature is suited to the seeds, then about all other requirements for successful germination and growth may be secured through the methods applied in sowing. It is clear that seeds may be sown at such a depth that there need be no lack

of moisture, but this might be at the cost of the little plants never being able to penetrate to the surface, or if they did they would be so enfeebled as never to become strong. The aim, therefore, in covering seeds should be to cover so lightly that air and warmth can readily reach the seed while the seedling may easily penetrate upwards through the mellow soil at the same time having the cover thick enough to prevent the seed from drying out needlessly.

The illustration on preceding page (Figure 59) is designed to show at a glance some of the more essential points to be observed in covering seeds as well as some aids to promote germination. As regards the depth of covering no fast rule can be laid down but the old one of covering to the depth of the seeds' diameter will seldom lead one far astray. In the figure four seeds, *a* to *d*, are shown as thus covered, the consistency of the method being quite apparent. It is easy to see how by transposing the depths, that is covering the little seed *d* to the depth of *a* and *vice versa*, the former would be buried too deeply and the latter would lie so near the surface that it might not be able to absorb sufficient moisture to induce complete germination. Sowing in drills either with a machine or by hand is always to be recommended because the depth of covering may thus be more easily adapted to the size of the seed, than by broadcast sowing.

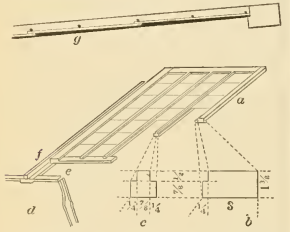


Fig. 60. Illustrating the Construction of a Hotbed Sash and Frame. Figures indicate inches.

Aside from covering seeds the proper depth some assistance to germination may be variously provided after sowing. In operations on a large scale the most important one of these is to properly firm the soil by passing over it with a heavy roller, or what is no doubt better, passing along the row and treading with the feet, placing one foot closely ahead of the other along the line. If the soil is in a condition to work up finely such a course is one of the very best for insuring free germination, as drying out will be largely prevented and the firmness secured should prove no hindrance to the seedling finding the light above.

In small operations to cover the surface of the seed row or bed with a light mulch of straw, hay or other similar substance until the young plantlets appear, is one of the best of courses. Almost as well in the case of drills is it to lay a board over the line of seeds until these are sprouted and starting upward, but the greatest care must be observed to not allow the board to remain on too long otherwise the seedlings will be tender of the light and unshapely.

Hotbeds and Frames as Aids in Raising Plants from Seeds. As a means of advancing the season of vegetables and flowers, desirably, hotbeds and frames are used in nearly all well managed gardens. The principle of the hotbed is that of a close frame protected by sashes of glass (or sometimes cloth) overhead for admitting light and sun heat, and then having a bed of horse manure mainly beneath to provide heat by fermentation. By this means the seeds of many plants can be sown fully a month earlier than it would be safe to sow them in the open ground, bringing them along to a fine size by the time the season is sufficiently advanced to trust them out doors. The hot bed is also useful for starting cuttings of pot and bedding plants, starting bulbs, growing on young pot plants of all kinds and for raising early Lettuce, Radishes, etc. In short it might be termed a miniature greenhouse suited to the early spring months and gotten up cheaply. Its atmosphere, with careful attention to ventilation, is wonderfully congenial to plant life, being somewhat moist.

As the subject of the hotbed is one of wide interest to gardeners I will bestow some attention to describing its make-up and uses. In figure 60 is shown the shape of the sash, with the dimensions of some of its parts, the sash bar, etc. *a* represents a sash with some of the parts broken out to show its construction. *b* gives the shape and dimensions of the side bars and the upper end bar, the latter having a tenon on each end which enter mortises in the side bars. Usually the side bars are extended a half inch beyond the end bars for greater strength to the mortises. *c* represents a center bar, giving dimensions. In this sash the glass used consists of 8x10 inch panes and these being placed lengthwise with the sash, it brings the bars a trifle over eight inches apart between grooves. The lower cross bar is $\frac{7}{8}$ of an inch thick, being equal to the other bars from the groove down, so as to permit the lower panes of glass to rest on top of it for shedding the water from the sash. *d* represents the side of the bed in this case double with an air space in the center, as the writer always prefers to have them. *e* is the cap of the frame on which the ends of the sash rest when the bed is closed. *f* represents the bar that supports the sash, consisting of a $1\frac{3}{4}$ inch piece of planed Pine $3\frac{1}{4}$ inches wide with a 1x1 inch strip along its center on the upper side, against which the sash slides. *g* above shows a lengthwise section of a portion of the sash with the manner of laying, lapping and tacking the panes of glass, the black tapering lines underneath representing the putty into which the glass is bedded. Each pane should be lapped not more than $\frac{1}{4}$ of an inch on the pane next to it—less than this down to say $\frac{1}{8}$ of an inch being even preferable. The tacks the writer has used in recent years for holding the glass in place are shoe nails $\frac{5}{8}$ of an inch in length. Besides using nails as shown at *g* it is a capital plan to drive one against the pane at the bottom end to keep it from sliding. No putty is placed on the upper side of the glass. A sash such as is here illustrated would be about 3 feet 5 inches wide and 6 feet 2 inches in length.

Figure 61 shows a cross section of a double line of hotbeds as used by the writer with much satisfaction in the past. The beds were located between two walks and a space of the width of one bed (about six feet) was provided between the two beds. The beds slope towards the south, as always is desirable. The sash bars are 12 feet long and extend beyond their respective beds into the space between as shown by the figure, those of the south bed to be considerably above those of the other one. The advantage of this arrangement is that the sash need never be handled beyond sliding them and when they are off the bed they are entirely out of the walks and out of danger from breakage thus obviating the greatest evil of movable sash. The frames here shown are double walled as referred to at *d*, figure 60. A more common kind of frame is made of a single thickness of plank. As regards length a hotbed may be made of any size from one sash upwards.

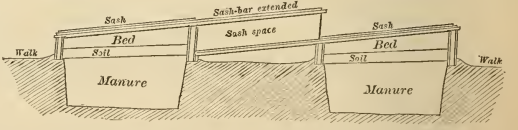


Fig. 61. Arrangement of the Writer's Double Line of Hotbeds.

With frame and sash provided, there are two common ways in which the manure for heating is applied to the bed. One is by having an excavation, as shown in figure 61, the other by forming a mass of manure to extend a foot beyond the bed on all sides and on this to set the frame. The kind of manure preferred for supplying heat is that from the horse and such as has not been "spent" by heating. As a number of loads will be required for a bed of even ordinary size it may be necessary to gather up the dung for some time previously to using it in which case the accumulation should be kept from getting wet and be frequently overturned and to lay loosely to check its heating before it is needed. For most uses a portion of the manure may be from other animals without detriment, for in this shape the heat will be less intense but longer enduring. The mixture of leaves with horse manure has a similar effect. Whatever the ingredients are they should be thoroughly mixed, attention being paid also to working the older and the fresher manure well together. In placing the manure into position it should be done in a succession of even layers over the entire surface, tramping each layer with the feet well and uniformly all over the bed, The object of this is both to promote uniform heating and to prevent the bed from settling unevenly.

On top of the manure should be placed enough fine rich loam to make a seed bed about four inches deep. A thermometer placed into it to reach the manure ought soon to show near 100° of heat—when this has fallen about 20° it will be safe to start on sowing seeds, putting in cuttings, transplanting from other beds and the like. The main points to be observed in attending the hotbed is to admit air in the day time, and especially during sunshine, and to keep properly closed and sheltered in case of hard frosts at night.

Most of the advantages of a hotbed are secured in the cold frame, the difference between the two being that the latter depends only on the glass and frame for warmth and shelter. It cannot be started by some weeks of as early as a hotbed. A very common use of the frame is, after the hotbed has been planted for three or more weeks, to receive some of the plants of the latter as they require more space.

For economy sometimes both the hotbed and cold frames are protected with sash that are covered with factory or specially prepared muslin, instead of with glass. Indeed, for protecting the seed beds of some of the hardier plants, such as Cabbage, Lettuce and Celery, the cloth sash is really by some preferred to those of glass as producing more stocky and robust plants.

In sowing seeds in the hotbed and frame the directious given above will in general apply but the drying out will be far less early in the season when the bed is kept closed most of the time, than it would be out of doors, hence it is not necessary to cover the seeds quite so deeply as a rule. My favorite method of sowing seeds in the hotbed or frames is in drills.

(To be Continued.)

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. MARCH, 1889. No. 6.

March.

Windy and muddy, and fitful and dark—
Sloughs for our footsteps and clouds overhead;
Oh! for the notes of the bluebird and lark,
Whispering hopes that the winter has sped.

Ah! there is blue smiling out of the sky—
Never a day but has one gleam of light;
Never a winter that clouds did not fly;
Never a time but a day followed night.

Here is a blossom right down at our feet,
Pearly and pure as the first flakes of snow;
List to the songs of the warblers so sweet,—
Smiling is hope and forebodings may go.
—*Good Housekeeping.*

SETTING TREES deeply is not a sign of good planting, a lesson many planters have yet to learn.

DUNN'S REPORT says that for 1888 the sales of nursery stock and seeds in our neighboring city of Rochester, amounted to $2,525,000.

POSTAGE RATES ON FRUIT. While the postage on seeds, cuttings, bulbs, plants, etc., has been reduced to a half cent per ounce, yet contrary to the idea of some of our readers the reduction does not include samples of fruit sent by mail; a recent ruling of the Post Office Department being that the old rate of one cent per ounce must apply to these.

HORTICULTURAL SOCIETIES generally might well follow the example of the StateHorticultural Society of Missouri; they seem to have got a very large number of lady members, and we all know where our wives and daughters take a hand, it makes it extremely interesting. I must say that of the many excellent society reports I receive, that from Missouri is ahead in interest.—*M. T. Thompson, Ohio.*

A NEW VINE DISEASE IN CALIFORNIA. Much alarm is being manifested in certain portions of the State over the appearance of a mysterious disease attacking the vines in all southern districts except that of Riverside, seeming especially partial to the vineyards in the irrigated sections. No variety seems exempt, and the study of it by experts offers no relief for this disease, which perhaps might be termed a wet rot apparently resulting from a stoppage of the sap flow.

A NEW DEPARTURE. Early in February the President approved the act to enlarge the powers and duties of the Department of Agriculture, and to create an Executive Department, having a Secretary who will be a member of the cabinet. The functions or limits of this new department are not defined by the law creating it and must be in a degree experimental. That agriculture the most important factor is our nation's wealth and prosperity,thus finds recognition at the hands of our representatives in Congress and the Executive is a most gratifying fact, which augurs well for its future.

ANDREW J. CAYWOOD. In the death of this gentleman a valued coutributor to these columns, at his home in Marlborough, N. Y., in January, the country lost a most intelligent and enterprising horticulturist, one who by his efforts left his beloved art richer than he found it. As a hybridizer and grower of new fruits he gave the world a number of valuable new varieties, among which are the Duchess, Ulster, Poughkeepsie, and other grapes, the Marlboro Raspberry, the Minnewaski Blackberry, etc. He was a prominent member of the leading horticultural societies of the country, and an extensive grower of fruits, in the Hudson River Valley. Mr. Caywood was in his 70th year. He left a wife, two sons and two daughters.

Stick to your Business Looking to the Main Chance.

H. C. SMITH, BROWN CO., WIS.

This past season has been marked by extremely low prices for vegetables of all kinds in the Chicago market, and the growers got very little for their work. But what was our loss was the consumer's gain; they surely could not complain that the prices were not low enough.

Still I do not feel that we should be discouraged from putting forth our best efforts for the coming season's crop. One thing is certain, we don't have to figure on any old crop on hand as the grain grower so often does. So pile on the manure; see that the hotbed frames are ready for business; fix up the tools and running gear; have the teams ready for their work; lookout for first-class seeds and plants; and we may reasonably expect to do enough this year, to make up for at least part of the losses of the last year.

Do not drop your regular line of crops because there has been no profit in them. The man that goes from Cabbage and Potatoes into Strawberries, and then into Onions, and from these into Celery, and then into something else, generally manages to strike low prices all around. One year we put over a thousand bushels of fine Onions into the dung heap. The next year we managed to dispose of the crop at a losing figure, while the next year we sold all we had or could buy in the fall at 60 cents per bushel, and the fourth year averaged very nearly or quite one dollar per bushel. We raised four acres of Onions each one of these years, and the average crop was over 600 bushels per acre all through.

We have had a good many such experiences with various crops; at one time dumping out a hundred or two barrels of Kraut in the spring, because we could not sell it for as much as the barrels were worth, and then two years after selling our whole make at eight to ten dollars per barrel. These things have taught us: First, not to be discouraged because our goods will not sell at a profit in any one season, and next, never run in debt heavily on the strength of what you make one year, thinking to do as well or better the next; more than one fellow has made a failure by going counter to that last point.

Water Lily Culture.

E. P. POWELL, ONEIDA CO., N. Y.

The common Water Lilies may be grown in any dooryard to perfection. I have a neighbor, a lady of great taste, Mrs. Owen Root, who has them in profusion. You must first secure a few tubs that will not leak, and will hold half a barrel, plant them in the ground nearly or quite to the top.

Place in the tub six inches of soil or any good garden sod, plant in this a large piece of Lily root, then fill up with water. Keep the tub full as it evaporates, and you have nothing more to do. In the fall lift the tubs and store in a cellar where they will not freeze. You can pour off the water and leave the roots nearly dry all winter. When a tub is crowded with roots divide, but they blossom best with the tubs well filled.

Tile Draining at "Woodbanks." A Detailed Account of the Work.

The thirteen acres which are embraced by the POPULAR GARDENING AND FRUIT GROWING experiment grounds, at LaSalle, were tile drained years before we came into possession, but the old system of drains does not work. As a chain is only as strong as its weakest link, so any draining operations, however costly, can only be as effective as their weakest features. The work here referred to had been done so obviously imperfectly, and there being no record of the location of the pipes, and the former owner not being available to consult regarding their courses, we saw no other way than to undertake a new system of draining for the place. This we did in part last autumn, beginning in October and finishing the work undertaken near January 1st. As our farm is in a sense our reader's farm, we purpose in the present article to show how we did the underdraining, for we feel satisfied that the foundation has been laid for as perfect a system of work for a moderate outlay as well could be carried out.

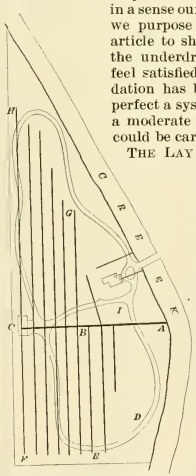


Fig. 1. Drainage Map of the Popular Gardening Experiment Grounds, heavy Lines showing Course of Drains.

THE LAY OF THE LAND. It might at first glance seem a difficult job to drain this place well, for singularly enough the surface of the land, in the main, slopes away from, instead of toward the creek which forms one boundary of the place. To this fact is naturally to be attributed the failure of the former draining done, for without doubt proper levelling was disregarded. When, therefore, we undertook to secure good drainage for the place, the first thing carried out was an accurate course of levelling, indicating the results on a suitable map prepared, as represented by Figure 1.

THE LEVELLING. Before our intelligent readers we will not argue the importance of basing all tile draining operations on a careful course of levelling. Enough to say that the course here adopted was a most simple one, such as can be followed by any person, while the implements employed were gotten up on the place at almost no cost. A first move was to locate at the point indicated by *I* on the map, Fig. 1, and which commands a view of every portion of the farm, the simple device for taking levels, shown in Fig. 2. The level used was a common carpenter's level, its support consisting of a frame 18 inches each way, nicely made of inch stuff sawed to about three inches wide and the entire upper surface smoothly planed to be per

fectly even so that the level might be freely turned upon it. This frame was supported by light stakes with shoulders at the top upon which the frame rested, being secured thereto by nailing. The frame work having been set on the ground at *I* (see also Fig. 3) the stakes were made to enter the earth by careful driving, for firmly steadying it, and then as a finishing touch to have its upper surface come exactly level, as shown by the carpenter's level which was turned in all directions on it as the stake-driving progressed.

THE DATUM-LINE. Now the object of thus locating a level at *I* (Figs. 1 and 3) was to establish what is termed a datum-line or level over the area to be drained, from which to calculate the comparative height of the surface throughout, as well as the depth of the drains. The datum-line at *I* being represented by the upper surface of the carpenter's level, it is evident that inasmuch as the top of the frame (Fig. 2) was perfectly level the entire range, embraced by sighting over the level's top as it was turned in all directions would represent an exact level, hence the desired datum-line, throughout. In all such cases there is nothing arbitrary as to the height of the datum-line, so long as it is convenient.

To make the datum-line available for use, it was needful to locate its height above the surface at numerous points over the place. The points chosen were along the main drain and at the outskirts of the part to be drained, as indicated by letters *A* to *H* in Fig. 1. In Fig. 3 is shown how the levelling was done. It is seen that one man did the sighting over the level at *I*, while an attendant held a measuring pole successively at the various points, and marked on a map the height of the datum-line, as determined by the sighting, above the surface. A permanent stake was also driven at each point, the top to be even with the datum-line. In this engraving the attendant is shown at the point *C* (see also Fig. 1), and as having moved to *F* and *H* respectively. The record of the datum-line measurements from the surface upwards at the different points is given in the first horizontal line of the table presented on this page. It may be said that while the measuring pole held at *A* (at a point partly down the creek bank) showed the datum-line to be 6 ft. 2 in. above the surface, yet at ten feet further back the height to the datum-line was but 3 ft. 6 in. A still higher point on the bank was at *D*, where the measure from the soil to the line was but 2 ft. 11¾ in., as seen by the table.

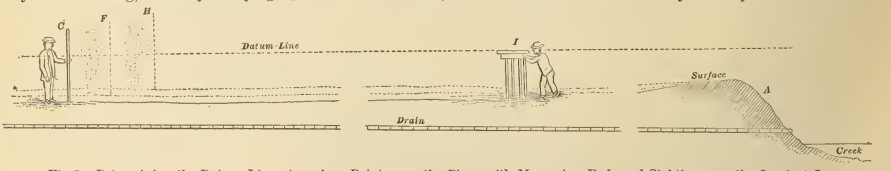


Fig. 3. Determining the Datum-Line at various Points over the Place with Measuring Rod, and Sighting over the Level at I.

Fig. 2. The Level set up; Sighting over it.

THE FALL AND DEPTH OF DRAINS. As the creek's level is amply low to give any desired fall to the drains, it was determined to start these with a depth of ditch of 2 ft. 6 in. at *H*, the point farthest from the outlet (*A*), and then to secure a uniform fall of ½ inch to the rod throughout. The proper place of beginning the work being at the outlet, it was easy to compute the level for the ditch bottom at this point as follows:

It is to be observed by the table annexed that the datum-line at *H* was 5 ft. 3 in. above the surface of the soil. Now as the tiles are to be 2 ft. 6 in. in the ground here, it is clear that the drain bottom here must be 2 ft. 6 in. plus 5 feet 3 inches (7 ft. 9 in.) below the datum-line. And as the distance in rods from *H* along the course of the drain to the desired outlet *A* was found to be 70 and the fall to be ½ inch per rod, so the ditch bottom at *A* must be 35 inches lower here than at *H*, or 10 ft. 8 in. below the datum-line. The surface at *A* where the measuring pole was held is seen by the table to have been 6 ft. 2 in. below the datum-line, so that to start the drain rightly on the above computation it is seen that the ditch bottom was to be exactly 4 ft. 6 inch below the soil's top, and so it was made.

By the heavy lines in Fig. 1 is shown the general arrangement of the drains, the distance apart being 40 ft. for the laterals and the depth below the surface from 2 ft. 6 in. upwards, as shown by the lower horizontal line of figures in the table. With having the proper level of the ditch at its outlet, or point of starting the digging, it followed that with all tile then having been laid by the rule of a rise of ½ inch to the rod as the work proceeded inwards a perfect fall was the result, this fact being shown by the free flow of the water from the drains after the season's work was completed.

FROM DATUM-LINE

	A	B	C	D	E	F	G	H
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
To Soil	6.2,	5.7,	4.11,	2.11¾,	5.1½,	5.6,	5.6,	5.3,
To Bottom of Drain.	10.8,	10.1,	9.6,		8.2½,	8.5,	9.3,	7.9,
Depth of the Ditch ..	4.6,	4.6,	4.7,		3.1,	2.11,	3.7,	2.6,

Table showing Measurements from the Datum-line, Secured at the various Points indicated in Figure 1, by Letters.

DIGGING THE DITCHES. Previous to digging, the lines were staked off according to the plan of Fig. 1. The tools used were such as can be had of most implement dealers, and are shown by Fig. 4. The common spade was used for "topping" the ditch, while the narrow one cut the ditch down to its approximate depth, as determined at each stake left for indicating the datum-lines at points marked by letters on Fig. 1. The hoe-like or bottoming scoop formed the bed for the tile; the digger throwing out the dirt as clean as possible with his spade for a space of half a rod or so, then cleaning the bottom with the scoop which he drew towards him. These draw scoops come in different sizes to fit the tile to be used. Fig. 5 shows an iron that fits the sole of the digger's boot against the heel, to protect the foot in driving the spade into the hard undersoil. With such tools the workmen were able, in the somewhat firm soil of this farm, to throw out a ditch 4 feet deep and being not more than a foot wide at the top.

LEVELLING THE BOTTOM AND LAYING THE TILE. After having located the ditch bottom at its outlet as previously described, it next followed to secure the uniform rise of ½ inch to the rod decided upon throughout. This was done with the greatest ease by the use of the inexpensive level of Fig. 6, constructed by our carpenter. It was made of an inch board one rod in length and nine inches wide at one end (*b*) and a half inch narrower (equal to the fall for one rod) at the other end. At the center (*c*) a small spirit level was attached to the top by screws, being protected by a block at each end. To use this device it was only necessary to apply it to the ditch bottom with the wide end towards the outlet, and when the bubble indicated that the top of the board was level, its bottom edge resting evenly on the ditch bottom, it was obvious that the ditch for this rod had the desired one-half inch fall towards the outlet, and so of every part of the main and the lateral drains similarly treated. If the level showed insufficient fall the draw scoop brought in play soon shaved the bottom enough to produce it. If shaved too deep a quantity of soil returned easily remedied the defect.

Fig. 5. Boot Iron used in Digging.

Another style of level is shown by Fig. 7 directly over the former one, in which a plummet attached to the central upright is used to procure the proper level instead of using a spirit level as in the former one. By marking, for further guidance, the position of the plummet when one end of the level (16½ feet long) is raised one-half an inch, there is no difficulty in securing the same results with this level as with the other.

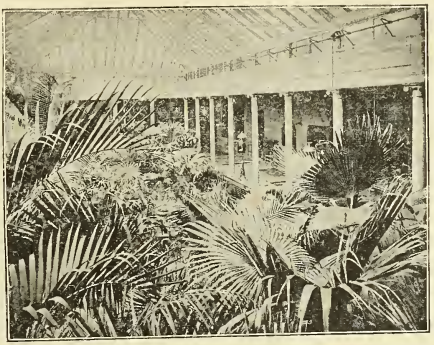
Following immediately on levelling the bottom the tile were laid, working from the surface by using a six foot pole having a piece of ¼ inch iron rod, one foot of which was turned at right angles, fastened into the end with which to handle a section of tile, and firmly placing each one in its proper position. This last operation, next to shaping the bottom, is the most important point in the laying of drains, and one on which largely rests its permanent value. All the joints were made as close as possible and the junction of the laterals with the mains were protected by placing over them pieces of tile. Where in any case the bottom was so soft that the tile did not lay firmly, a thin layer of straw or similar material was placed beneath them. As fast as the tiles were laid a covering of soil at least a foot deep and well packed was put on to keep them in place, the filling having been completed at our leisure. In our work six inch tile, inside measure, were used for the first half, and four inch tile for the last half of the main, and two inch tile for the laterals throughout. The laterals having the greatest length were 42 rods long.

THE SUCCESS OF THE WORK. So far as the work at Woodbanks has been completed it has been entirely successful, the water passing from the outlet with a strong current.

A Fine Hotel Conservatory.

Buffalo's most elegant hotel, the Niagara, is rendered all the more charming for containing as one of its features a magnificent conservatory and a greenhouse. These are located on the ground floor facing the east, and are surrounded on three sides by the main part and the wings of the hotel. Doors from the elegant main hall, from the dining room and from the parlors open directly to the conservatory piazza.

The conservatory proper is 23x60 feet in size and is skirted by a 10 foot wide piazza on three sides. There are also winding walks through the conservatory and leading to the greenhouse which adjoins. Our engraving, taken directly from a photograph, shows a view from the north end of the conservatory, the piazza being plainly in sight at the right and at the further end. The piazza is furnished with easy chairs, tables and lamps and is a favorite retreat and lounging place for guests the year round. The temperature of this apartment even in the coldest weather is kept at about seventy degrees, and hence is always and agreeable agreeable.



INTERIOR VIEW OF THE NIAGARA HOTEL CONSERVATORY.

As our engraving shows, this apartment is stocked largely with Palms, of which there are many magnificent specimens. Not only are the more common kinds like Latania Borbonica, Phœnix dactilyfera, Pandanus, etc., employed freely, but the writer on a recent visit to the place, noticed some fine specimens of rarer kinds including Pritchardia Pacifica, Phœnix reclinata, Areca Verschaffelti, Areca lutescans, Pandanus Veitchii, etc. Numerous large Ferns and other tropical plants also abound. For flowering plants, drafts being made upon the adjoining greenhouse, enough of which former are employed to give vivacity to the tropical scene.

The greenhouse referred to adjoins the conservatory on one of its longest sides, being separated from it by glass partitions and is approached through two doors from the latter. Its size is 20x70 feet. In this structure is grown a large assortment of flowering and ornamental plants, a chief use made of which is the adorning of the dinner tables and the apartments of the hotel on special occasions.

Unlike some attempts made in Chicago and elsewhere to have complete plant apartments connected with hotels this one at the Niagara is an entire success. This undoubtedly is owing to the fact of its being located near to the ground, while others which have failed, notably the one formerly connected with the Palmer House, Chicago, were located on the roofs of the buildings. In a roof conservatory there is met the almost fatal difficulty of a dry and heated atmosphere, which is uncongenial to the plants, and to freely employ water over the flowers or about the house, while it cannot entirely remedy the defect, it is almost certain, sooner or later, to give trouble by leaking into the apartments underneath.

Figs. 6 (and upper one 7.) Two forms of Levels for use in Ditch Bottoms.

The admirable conservatory at the Niagara was visited by the executive committee of the American Society of Florists, in their recent visit to this city, and called forth hearty praise from all. Included, as it is, as one feature of a superior hotel, it finds general appreciation with the traveling public. No doubt when the American Society of Florists meet here in August next, this novel attraction will serve to lead many of the visitors to make the Niagara their temporary home while in the city. The hotel is immediately adjacent to the Front Park, and commands a fine view of lake and river.

Apple Tree Planting in Kentucky.

T. T. LYON, VAN BUREN CO., MICH.

In the February issue it is advised to plant Apple trees leaning about 40° to the one o'clock sun, as a protection to the body of the tree from the effects of the sun. This is by no means a new or even a rare recommendation. Against it, however, we most earnestly protest as being the lazy man's remedy for his own ill-judged errors.

If trees of three or four years' growth are to be planted, already branched at five to seven feet and especially if, as is too frequently the case, the roots have been badly shortened in lifting from the nursery row, and the tops left unshortened, it will require greater wisdom than most planters possess to determine at just what angle the tree must be planted so that the force of the wind shall just exactly lift the tree to the perpendicular by the time that the growth of its branches shall suffice to protect the trunk from the heat of a "one o'clock sun." Better shorten the top to correspond with the less of roots, plant the tree upright and compel it to remain so.

Better still, plant one or two year old trees, which have been dug with the roots nearly or quite entire; head the upright growers down to one to two feet, and the more spreading ones to not higher than three or four feet, for starting the tops at these heights, and plant them upright, assured that they will continue in such position without compelling and that they will become more healthy, and ultimately more satisfactory and profitable trees, and that they will, as a rule, come into bearing fully as early as those first described.

Celery; What Varieties to Grow.

JNO. R. VAN BOCHOVE, KALAMAZOO CO., MICH.

White Plume—For early I decidedly recommend this variety as having many points of superiority over other sorts. Sown at the same time and alongside of other varieties, receiving in all respects exactly the same treatment, it has not run to seed as a large proportion of the others invariably did, and it blanches also in half the time of other varieties. It is a good thrifty grower and with good cultivation it will grow as large as Crawford's half dwarf.

Golden Dwarf—This has been the leading Celery for years past but it is now losing its hold here at least, for we cannot get the genuine seed any more; if we could get the same seed that we bought five years ago it would still be the leader, but the seedsmen seem not to have it.

Perfection Heartwell was grown here a good bit the past season and I have failed to find one grower who was dissatisfied with it. It grows larger than the Golden Dwarf, the hearts are of a fine golden yellow and in fact is more like the Golden Dwarf of the past. It will be grown extensively here the coming season.

Boston Market—For a late Celery and as one of the best keepers I would prefer the Boston Market. It is of good flavor and size but a very slow blancher, hence its superior keeping qualities.

Crawford's Half Dwarf—This variety grows larger than the Golden Dwarf and in some seasons produces excellent Celery, but it is liable to be soft and on that account is not so extensively grown as many others; though one gardener here told me a few days ago that he would grow principally of this variety. It is a good keeper.

Pink Celery—These varieties are not grown here much as the trade does not want them, although it is recommended very highly by some of the seedsmen who say they are much better flavored than the white varieties.

Growers of Celery here will commence sowing their seed in their hotbeds or greenhouses the 1st of March. Some venturesome ones will sow before that time and in consequence their Celery will mostly run to seed. The general practice is to sow every few days from March 1st until the 15th when the main sowing under glass is made, then waiting with all further sowing until we can sow outside.

An illustration in some of the catalogues of the Celery shipping business at Kalamazoo gives some idea of the immense business in this line and which is still on the increase.

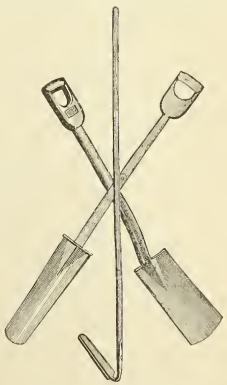


Fig. 4. The Draining Tools used.

It is estimated that over 2,000 acres of Celery are grown here each year. The past season has not been as profitable as other years owing to the working of a combination for the sale of the crop which turned out the wrong way for the growers.

Successful Cultural Experiments With Plants.

MRS. J. S. R. THOMSON, SPARTANBURG CO., S. C.

One must love their work I believe to succeed in it to any great extent. I have become possessed of many things suited to our soil and climate and others easily cared for in an ordinary greenhouse. I read so much of plants requiring such different soils and treatment in which I do not concur; I agree with Peter Henderson when he states that he uses the same soil and treatment for the general run of plants—exceptions of course there are to the rule—but for the general culturist one may safely rely upon it, that if they succeed with one plant success may be hoped for with others.

A florist once gave me this rule for making up potting soil: 1 part sand, 2 parts well rotted cow manure, 2 parts garden or vegetable mould, and following these directions I have had marvelous success. While it is not agreed with all that drainage is essential with pot plants yet my best success came from a liberal use of same.

Liquid manure is one of the right hand measures to a vigorous and thrifty growth of plants; strong enough to color the water and applied regularly once a week the result will astonish you. I have also used, as cleaner and less objectionable, a weak solution of ammonia.

I think in Geraniums I had my poorest luck; I have read of and occasionally seen plants covered with blooms, but I never had the joy of possessing them. My plants made vigorous growth, but rarely had over three clusters of blooms, sometimes not that. I knew I fed them and tended them faithfully, but no blooms, whilst my friends, whom in my conceit I thought I could teach how to grow plants, often surpassed me with these.

I came to learn after a long while that small pots and plants root bound were the best for bloom. I have often bought a Geranium growing in a rusty, dirty Tomato or Peach can and carefully transplanted it into what I considered far better soil and quarters, but which as a rule ceased to be a thing to be desired, though with the scented Geraniums I always succeeded.

I often wonder at not seeing more written about the Apple-scented Geranium, often incorrectly called the Spice and Nutmeg Geranium, though it bears but a slight semblance in leaf to these. On fine specimens the leaves often are as large as in the Zonale section; in habit the Spice and Nutmeg is of shrubby growth, while the Apple-scented is almost a climber, shall I say, or trailer; yet not really a climber, because it does not cling, but its branches have a viney look, long and slender, with no off shoots.

Another peculiarity of the Apple Geranium is its not growing from cuttings, being propagated from seed alone. The plant throws out leaves and branches directly from the crown root, like a Strawberry. One lady who grows these to perfection once had a plant in an eight inch pot with leaves 4 inches in diameter and having a dozen branches, many three and a half feet long. The odor is delicious.

Another plant I have succeeded with is the Garland Flower or Butterfly Lily (*Hedycium*) which is so common in Florida gardens. It resembles a dwarf Canna but the flower is a pure waxy white and deliciously fragrant; fresh blooms appear each day in spring from under a sheath-like or burr-shaped head, one plant bearing from twenty to forty flowers before being exhausted. The blooms are wonderfully like a pure white butterfly in full flight.

This coming season I intend to experiment with two new plants: Freesias in open ground from seed, hoping to prove my belief in our climate being adapted to their successful growing. Lately in trying to procure seed of Freesia I wrote to a German seed grower for price per ounce and pound, but when his reply reached me the price was given in German money and I had to ask the grower to give it in American money, but ventured to guess at the price and said to him: "If my guess of $3.50 per pound is correct send me one pound," but the real price was $37.50 per pound. I was relieved that the pound was not sent and reduced my order to two ounces.

The other plant I had never heard of until last season. An article in the Scientific American, which advised Americans to test it in that part of the country south of Pennsylvania, said that more money was to be made thereby than in growing either Sugar or Tobacco. This plant is the Ambrette or Musk Plant (*Hibiscus abelmoschus*) used in perfumery and by tobacconists and has a delicious musky odor. I have received one pound of seed from an importing house in New York, which in a closed box emits a delicate odor; and coming from India recalls that of Sandal wood.

Concerning Apple Culture.

A. P. REED, SO. BRIDGTON, ME.

Generally speaking Apple trees are thought to be able to take care of themselves after they are once in bearing. True the trees can take care of themselves and remain in a paying condition by virtue of their own vitality much better than the Pear, the Peach, or almost anything else, but it is also true that no other tree will better repay for good care and attention. Here in New England, where some of the finest Apples are grown, both as to flavor and keeping as well as to appearance, we have the past year exceptionally fine fruit.

This should encourage our farmers to push the Apple as a foremost crop. Notwithstanding the past favorable crop it is still true that more care and attention bestowed upon trees, more fertilizing and removing of dead and decaying wood, would cause the Apple crop to average better both as to quality and quantity. In fact the possibilities of this little spot called New England in Apple culture can hardly be estimated, under proper care, and the same is probably true of some other sections of our land. And at the lowest figures there is always a paying demand for Apples.

A Convenient Hot-bed Frame.

M. B. NEWBERN, ONTARIO CO., N. Y.

Useful as the hot-bed frame may be during the spring, it is not only of no use for the greater part of the year, but as ordinarily made and managed, it often becomes a perfect weed breeder.

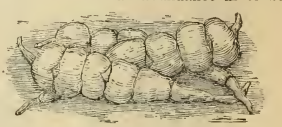
Now I am speaking of the frame as ordinarily made, but I have in use one that overcomes the evil referred to and has advantages besides. It is a cross between the ordinary frame and a wagon box, the peculiar features being that it can be taken apart and laid away compactly in the dry when not in use. The parts, excepting the cross slats, are held in place by rods at each end like a common wagon. The end pieces fit between slats on the side sections as shown in the sketch.

The cross bars are fastened with screws to steady the frame and keep themselves in place, and a stake is driven down against the sides to keep the frame from spreading. After the season is over I unfasten the ends, take off the bars, and having the pieces of each frame similarly marked, I pile them together neatly, and use the ground for late crops, while my frames last nearly twice as long as the other kind.

About Stachys (or Crones) and Dandelions.

JOHN F. RUPP, CUMBERLAND CO., PA.

The peculiar vegetable Stachys tuberitera (commonly called Crones, from the French town of Crones, where it was first cultivated), recently introduced from Japan, proves to be a meritorious novelty in the way of garden products, and is a new departure in the manner of growth of the species. The plants grow in globular form about one foot in height, having medium sized, oval leaves, and small pink flowers. The tubers, which are the edible part, are produced in such an abundance as to be



Tubers of the Stachys or Crones: Edible.

truly wonderful, as many as 300 having been grown from a single tuber in one season.

They average about two inches in length by one-half inch in thickness, growing in shape of a series of circular ridges which give them an appearance of large caterpillars or worms.

Their uses, and best modes of preparation for the table are not yet known. We find by mashing them and preparing as we do Egg Plants, that they closely resemble the latter; having that pleasant, spicy characteristic flavor, and as they are as easily kept as Potatoes, it is a real treat to have this very good substitute in the winter. They are also good when fried or roasted. As they have been cultivated in this country but one season, their real value is not, as yet, fully determined.

DANDELION CULTURE. I refer to the improved varieties, which show but little resemblance to the wild forms. We have grown it for quite a long while and would not do without it since learning its value for an early spring and summer greens. Plants have been grown measuring 20 inches in diameter, having tender and crisp leaves which, when prepared for the table were equal to the best Endive.

If planted in good soil the plants can remain from year to year, and will produce two profuse crops of leaves each spring, if cut closely at the first cutting. It may also be tied and blanched like Endive. A small bed of it should be in every garden, as it is considered most healthful.

1,117. **Potato Growing.** This question the farmers of New England have been for years trying to solve; my favorites in Potatoes are: Early Beauty of Hebron, Early Rose, Clark's No. 1, and Pearl of Savoy. Early Rose are good enough for anyone.—M. B. F.

1,118. **Some Good House Plants.** X.Y.Z. should be able to have a very nice window of plants with "plenty of sun and no furnace heat." No better plants for a window can be selected than Geraniums, Fuschias, and English Ivies; of course there is a long list of plants that will succeed well in windows but the above named are probably the best to begin with.—M. B. F.

1,119. **Watering Plants.** Plants as a rule should be watered when comparatively dry and then watered thoroughly. When the soil becomes dry which may be known by the appearance of the surface and sides of the pot, water should be applied until it begins to run into the saucer. No more water should be given until it again becomes dry, or nearly so,—which will depend upon the dryness of the atmosphere, the amount of soil in the pots and the foliage upon the plant—when water should be used as before; the true principle being to keep the soil as nearly as possible in the same condition as for the best growth in the outdoor garden. More plants are injured by *over-watering* than *under*-watering, yet plants should not be allowed to get so dry as to wilt. Pots should be washed as often as mould or fungus growth appears, to allow evaporation and a free access of air.—M. B. F.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

BUTTING INSTEAD OF LAPPING GLASS (page 84). I built a greenhouse five years ago, on which the glass was butted, and I found it leaked very much, not because the glass was butted but because it was done by careless and disinterested workmen. Last summer I unglazed the whole greenhouse (that is all that the blizzard of March 12 did not uuglaze for me,) and laid it without lapping, but did the work myself and I am well pleased with the result. Moreover I did not use any putty. The glass was laid down on the bare wood and tacked down with little squares of tin, each tin holding four corners of glass (the sash bars are rabetted out only to the thickness of the glass. Rabbets might be dispensed with altogether, and the sash-bars reduced to the thickness of ⅝-in). I then filled all cracks between glass and wood with thick paint, strewing dry sand on the fresh paint. The result was a roof as tight as a drum. I have many hot bed sash glazed in the same manner, and I see no reason why I should ever use any other method.—*C. Everding, New Haven Co. Conn.*

THE PURSLANE CATERPILLAR. You speak of this as having appeared in the West. I noticed several here near the close of last season for the first. Whencever a plant had escaped the hoe I found it stripped of leaves, and then the seeds apparently failed to ripen.

THE MIKADO AND CHAMPION TOMATOES. Despite many crooked and unsalable specimens, the Mikado proved the most profitable the past season, increasing in popularity with my best customers as its merits became known. The Early Champion, quite early, also continued in bearing throughout the season, and showed far less cracking than the Acme or Perfection, and was of good shape and fair size to the end. As a rule in this vicinity, Tomatoes showed an unusual tendency to crack.

THE EMPEROR WILLIAM BUSH BEAN. My experience with this Bean has led me to discard it, as a variety grown by me for years is similar in appearance, its equal in earliness, and superior in quality when grown side by side.

GROWING COLD FRAME CABBAGE AND LETTUCE. I find considerable difficulty in keeping my cold frame Cabbage and Lettuce plants from heaving, but by pressing the roots down I saved them last spring, so they did finely after setting in the open ground about April 1st; this fall I set them as deep as the leaves would permit. The beds were sandy loam with gravelly sub-soil; but, only watchfulness has saved my Lettuce plants so far.—*A. Judson Sill, Montour Co., Pa.*

OILED MUSLIN FOR HOT-BEDS. That this answers a good purpose there is no disputing, but such sash are short lived, as mine which I used last spring began to rust before they were out of use so much that they will not be fit to use again. In fact they are nearly rotten. Whether the lightness in handling them, and the exemption from breakage will warrant us in renewing the muslin every year or not, it will be for those who use them to learn.—*Samuel Miller.*

MULBERRIES IN MARKET. I saw these sold in Cleveland this year for the first time; they sold readily for $3.00 per bushel, and as they furnish fruit for such a long season, I think every one should plant at least one, whether living in the city or the country, as they are a beautiful fruit and very ornamental tree. The American or Downing are much the best varieties for fruit.

RASPBERRY PLANTING. The advice given on page 86, of planting the rows four feet apart does not agree with my experience. I never planted Raspberries nearer than six feet from row to row, as they should be kept. Cultivate up to a few days before picking, and I cannot see how this can be done without injury, as when the bushes are laden with fruit they will bend over and come very close together, even at six feet, or at least mine do, and when so close the pickers cannot possibly get through without knocking off considerable fruit.

THE ILLUSTRATIONS OF A CEMETERY for January were good. We have one in our neighborhood just about like it; some grave stones are in the proper place, some fully a foot out of the way, and some more; but one neighborhood has been aroused, and they are fixing it up by subscriptions, and I hope your suggestions may set a great many more at it. Although it will do no good to the dead, it certainly is more of a credit to the living.—*M. T. Thompson, Cuyahoga Co., O.*

VALUABLE EVERGREENS. Nordmann's Silver Fir is certainly one of our best. Two specimens in a front yard on our main street, about 25 feet high, are just about perfection in all essential points, and are more universally admired than any other Evergreens in the place. Dwarf Mugho Pine is equally fine in its way, but comparatively few appreciate it, and it is not so well suited to all circumstances, though I have one in mind which has been planted nearly 20 years, and is now about four feet in height and still more in breadth. This stands on a large lawn which is considerably elevated above and slopes toward the street, and it just suits this situation. Lawson's Cypress is another very beautiful Evergreen of a different character, being of a light, graceful, feathery habit. This is not always quite hardy when young, but after being well established does well with us. All three grow finely in our lightest New Jersey soils.

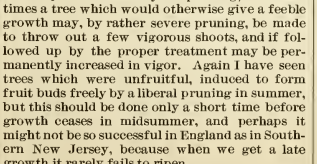
ORNAMENTAL BEETS. I planted all the varieties of Chilian and Brazilian Beets last summer, and do not think favorably of them. A few specimens were extremely rich in coloring, but these were exceptions, and they did not develop their character till half grown; a border which I planted around a bed of Cannas was not more effective than ordinary Beets would have been. Both stems and leaves are very brittle, and easily defaced by insects, by high winds or wet weather, and I'll not try them again, unless they can be bred up so as to come true to name.

A PORTABLE PROPAGATING CASE. This would be valuable not only for starting cuttings, but also for seeds which require a high temperature like Peppers and Egg plants, but I see no arrangement for replenishing the water. If nearly air tight it would propably evaporate very little, but it would be easy to have a small tube pass through the upper tray so that with a funnel it could readily be filled when necessary, and the tube stopped with a cork.

FLOWERS OPENING IN WATER. It might naturally be inferred that if branches of Cherry placed in water in winter flower freely, other shrubs, equally early flowering could be forced readily in the same manner, but experiments do not show it to be so in all cases. Branches of Peach and double flowering Crab Apple treated in this way last winter bloomed finely, but Chinese Wistaria and Lilacs, although the buds swelled and for a time gave promise of success, all shriveled and dropped without opening, and the only way to ascertain which can be forced is by actual trial.

SOUTHERN CHRYSANTHEMUM S. Mr. Green's Chrysanthemum was undoubtedly Tubiflorum, not Tuberiflorum. He should try Lilian B. Bird. This is by far the best Chrysanthemum with tubular florets, and excelled by few of any class.

NATURAL PRUNING. The remarks of Mr. Hibbard upon this subject agree with my observations in the main, especially with regard to trees symmetrically headed back to pyramid form, but pruning in spring or before growth



Hot-bed Frame Put together Like a Wagon Box.

commences, by lessening the number of leaf buds, throws the whole vital force of the tree into the remaining buds, and often causes a much more vigorous growth in these, although the absolute amount of new wood on the whole tree may be increased by the pruning, and sometimes a tree which would otherwise give a feeble growth may, by rather severe pruning, be made to throw out a few vigorous shoots, and if followed up by the proper treatment may be permanently increased in vigor. Again I have seen trees which were unfruitful, induced to form fruit buds freely by a liberal pruning in summer, but this should be done only a short time before growth ceases in midsummer, and perhaps it might not be so successful in England as in Southern New Jersey, because when we get a late growth it rarely fails to ripen.

THE JAPAN QUINCE. This fruit has no great value for cooking, but may be used to advantage with sweet Apples or anywhere that fruit acid is required. They cook readily, but although they have a strong Quince smell, they have very little of the Quince flavor. They can be kept nearly all winter, and if placed in a drawer with clothing give the whole an agreeable perfume. Perhaps they might be hybridized with the common Quince or with the parent and produce something valuable.

ERIE BLACKBERRY. My experience does not differ much from Mr. Black's; it is no earlier than Lawton, and does not differ materially either in plant or fruit from it, but perhaps it does not require to be so thoroughly ripened before it is sweet enough to be palatable, and it may be hardier, but of that we cannot decide. Both are among our best varieties for home use if allowed to remain on the bushes until fully ripe and soft. Now that Erie is offered at moderate rates, it may take the place of Lawton, which is becoming scarce and difficult to obtain.—*Wm. F. Bassett, Atlantic Co., N. J.*

THE ENGLISH NOT SLOW. You attribute slowness to the gardeners of England on page 60. The fact is, the practice of propagating Carnations, Pinks and Picotees by cuttings, has been general in England, Ireland and (last but not least) Scotland to my own knowledge, for the last thirty years at least, and as I have only come within the past year from the Old Country, I cannot quite tolerate the stigma of slowness as applied to Britishers. In fact since my arrival here, I have not found the Americans so remarkably smart as they would lead one to believe—Quite the reverse, I have found that in many things they are far behind Old Country people.—*G. D. C., Ellis, Kentucky.*

THE JAPAN QUINCE SOUTH. In Southern Alabama the trees bear at an early age, and usually a heavy crop of very large fruit. It is valued highly for culinary purposes, as it makes a most beautiful and palatable preserve or jelly. I never heard of their being raised for market, as I suppose there is no demand for them.—*Frank Warren, Mobile Co., Alabama.*

GRUBS AND STRAWBERRIES. One reply to No. 980, page 92, appears to be somewhat mixed. The more we know of an insect, the better able are we to contend with it. When we find the mischief maker at the roots of the Strawberry we know him, but when we meet him in some other place do we know him from others? The advice to kill all the horn bugs we can is well put. A closer observation may convince the above writer that the beetle produced from the white grub which attacks the Strawberry has its horns well drawn in, and that it does not deposit its eggs at the roots of the grass to be gathered with the hay, but in the ground in both grass and cultivated land. In this section we have several white grubs so near alike that they are often mistaken one for the other; the one that usually eats the Strawberry is the larva of the May beetle or dor-bug, probably so called from the humming noise of its flight. It is of a brown chestnut color, about nine-tenths of an inch in length, with two or more elevated lines lengthways on the wing cases and is nocturnal, feeding on the leaves of trees, especially on the Cherry; it can be easily taken by placing large tubs of water near to trees with a light in the center, on the surface of the water; it flies from the middle of May till near the end of June, according to the season, then the males die and the females go into the ground to lay their eggs. The shortness of this period calls for active work to reduce this numerous and destructive tribe. The larva state, which extends over three or more summers, give a longer time for their destruction, provided we can find them. Another white grub closely resembling the foregoing, found in manure heaps and cattle draftings, and with them carried to cultivated fields, is the larva of the dung beetle, and much less destructive. It is commonly called muck worm, and a close examination will show it to be quite a different insect in all its stages. The hornet or stag beetle, which I suppose our friend has reference to in his article, has a formidable appearance, but it is harmless, and not being numerous, its injury must be small. The larva feeds on the roots of decayed trees, and is often found in chip dirt, and its sire will readily distinguish it from the others. It pays the gardener to know his friends and foes in the insect line as well as in the vegetable. If it is important to know what plant each distinctive seed will produce, it is equally so to know what insect each distinctive grub will produce.—*P.P., Worcester Co., Mass.*

Horticultural Notes by Samuel Miller of Missouri.

PLUMS OF 1888. Wild Goose and Marianna ripened about the same time, the first as usual a full crop, and many went to waste. The Marianna is no earlier nor as large, and is inferior in quality, while it is much more injured by the curculio than Wild Goose. Deep Creek came next, and is a superb Plum; Louisa two weeks after Wild Goose, and a much better fruit, about the same size, darker in color. De Soto, although not as large as the pictures represented it, is of good size, very nearly as large as Wild Goose, while it is so much better that if they ripened at the same time the Wild Goose would hardly be touched. The common Blue Damson and the Freestone Damson ripen with the former.

But the crowning one is the Golden Beauty. Young trees here in the bottom lands are dropping some damaged specimens that are half decayed, and some are cracking, which I attribute to much rain and the rich soil in which the trees stand. The trees on a hill ot about 150 feet elevation are loaded with their bright fruit about an inch in diameter, round, as bright and clean as gold, sweet and pleasant, almost a freestone. The tree is a rapid grower and very ornamental. My intention is to graft this and the Blue Damson on alternate branches of a tree to see the contrast, as they ripen about the same time. The yellow and blue would make a picture. Last year I grafted Purple-leaved Plum on the Golden Beauty for the contrast in foliage, but for some reason they failed to grow.

KELSEY'S JAPAN. A friend of mine had several specimens on a bud but one year old and when they were the size of a common hen's egg he thought it would be a show. But the curculio had done its work so that they all dropped prematurely. This refutes the idea of its being curculio proof. Golden Beauty is the only curculio proof Plum that I have formed, not that the curculio does not attack it, but it is so firm during the season when the insect does its mischief, that the puncture don't amount to anything, and if it did, there is always enough for them and us both. A neighbor recently sent me some very fine blue Plums that are new to me, and look very much like a cross between our common Damson and the German Prune. Hardy and productive, with no marks of curculio on them.

THE KIEFFER PEAR AND OTHERS. Close observation and repeated tests of the above Pear for the past two years, convince me that it has come to stay, and those planting for profit will do well to set it out freely. My impression is that it will soon take the place among Pears that the Ben Davis now holds among Apples. The Garber is another that will soon come to the front, on account of the beauty of the tree, the large size of the fruit, as well as its excellence for preserving and canning, and it is also good to eat fresh. My Garbers sold at retail for $4 per bushel the present season, while most others only brought $2 per bushel.

Another old variety, the Clairgeau, has not received the attention that it deserves. For five years in succession my trees have done nobly, and always command the highest prices. When we grow fruit for profit we must grow such as pleases the public eye as well as taste, for appearance more than quality, takes among the masses.

WHAT GRAPES TO PLANT. From my standpoint I would advise the following: *White*, Martha, Lady, Pocklington, Moore's Diamond, Empire State and Niagara. These are all healthy, vigorous vines, productive and hardy. Moore's Diamond is the best in quality; Empire State is an excellent Grape, also very handsome and an good keeper; Niagara is late and valuable on that account, while Moore's Diamond and Empire State are both early. *Red*, Delaware, Brighton, Catawba, Vergennes and Jefferson; the latter the best of the lot, but not entirely hardy here, nor is the Brighton. We lay them down and cover through the winter. *Black*, Jewell, earliest and best; Early Victor, nearly as early, excellent also; Moore's Early, Worden, Defiance, Norton and Cynthiana. If a man has all these there will be a succession from early to late.

PECANS ON HICKORY FAILING. In an article last spring I stated that the time would come when the Hickory trees would be converted into choice nuts and Pecans, and mentioned what I had done in that line. But unless better success attends the operation hereafter, it will be a long time before that takes place. Two years ago two out of five grafts of Nusbaumer's Hybrid Pecan grew; while the past spring out of at least one hundred grafts set of different Pecans on Hickory of improved varieties, not a single one is alive to day. Why this is so I cannot tell, but this spring it will be tried again.

PERSIMMON TREES FROM ROOT CUTTINGS. One asks whether these can be so grown? Yes, easily, and such trees can be transplanted with as much success as any ordinary tree. Take roots one-third to one-half inch in diameter, cut in pieces three inches long and put them upright in sand, covering two inches and most of them will grow. The general impression that this tree is difficult to transplant is an error, for I have done it successfully with a tree four inches in diameter, that took four of us hours to get it out of a land slide in the Missouri river. It remained fresh in the wood but did not put out a single leaf the first summer. The following spring I sawed it off at the ground, and thought our labor had been in vain, but to my delight it sent up three shoots from the stump, and in this, its third year, has borne a few dozen of the finest of fruit. It is an early one ripening before frost.

I gathered from a young tree of the Ruby half a bushel on the last day of December, 1888. It is the smallest of my collection, but is considered a good one. That there may be a cross produced between our natives and the Japanese I think possible; and if we can get a hardy one with the size of the foreign and the quality of our own, it will be a treasure.

HOW TO USE APPLES. I have hit upon a good plan—bring up a good sized basketful every morning, and have them where the family can see them all day; and when strangers come in there is a free lunch for them. As the post office is in my room, it comes very handy to those (and there are plenty such) that have none at home.

NEW VEGETABLES. Of new Sweet Corns, Perry's Hybrid is an excellent one with good sized ears. But the best, in point of flavor, is one, the name of which I do not know; the ears are of good size. The Polaris Potato, which I had from the Agricultural Department last season, and from which we raised half a bushel, has done better this season that Early Rose, and is a week earlier. The Early Ohio is becoming a great favorite here, and this season I invested a couple of dollars in the Chas. Downing, but the Colorado beetle and the black-backed bug are so numerous that with all my warfare they did not have a fair chance.

STARTING EARLY VEGETABLES. Any time after the middle of February seed can be sown in boxes in the house, such as Cabbage, Cauliflower, Egg Plant, Pepper and Tomatoes. In ordinary cases narrow boxes, say six inches wide and five inches deep, long enough to fit on a window sill or on little shelves in the window are very handy.

The seed can be sown in these boxes, which are filled with rich garden soil mixed with well decomposed manure or leaf mould but not sown too thickly nor too deep—one-half inch being sufficient, in drills half an inch broad and one inch apart. The boxes can be placed near a stove or under it if convenient; with a damp cloth laid on the top. It will hurry them up, but as soon as they show themselves the cloths must be removed and the boxes set by the window, where they can get all the sunshine possible.

When they are half an inch high the boxes should be turned every day or they will soon be "leaning towers," and when one inch high draw a finger or a pointed stick along between the rows, going half an inch deep. This will hill the ground up to the plants a little, then fill up the little furrow with fine manure. One important thing is too give the plants just enough water, which common sense will teach any one; for if too dry they will wilt, and if too wet will damp off. When these plants get two inches high they can be filled up a little more.

These will be in admirable order to set in the hot-bed as soon as the weather will permit, which is usually about the middle of March in this latitude. In the hot-bed they should be set one inch by two, and if well attended will give their first ripe fruit long before they could be raised in the open ground. If no hot-bed is provided they can be set in larger boxes, and these set out in the sun on warm days.

My living room faces the south, the door of which is open, and a sash placed upright on the outside. This door frame has a number of shelves with boxes and pots with flowering plants that makes the house look cheerful. On cold nights these are taken down and the door shut, and the fire in a big stove kept all night, even if I must attend to it several times. Those who have no flowers during the winter miss a great pleasure in my opinion.

PERSIAN ROSE TOBACCO. While not a smoker, and never before raised Tobacco, I last spring sowed a small packet of the above that a friend in the East sent me. It is a very handsome plant in leaf and in flower, and will answer as an ornament in the lawn or flower garden.

What A Vegetable Garden Should Mean.

WM. H. YEOMANS, TOLLAND CO., CONN.

It is a great mystery why there are so many owners of land having the opportunity, that are so careless and appear to have so little thought regarding the vegetable garden. When given that attention that it ought to have, and when made what it ought to be, to entitle it to its name, there is no more profitable portion of cultivated land upon an entire farm.

But a vegetable garden is unworthy of the name that produces only a few hills of Corn, Beans, Potatoes and Cucumbers. An ideal garden should contain a full supply of all that can be grown in the vegetable line. Nor is it sufficient that it have only such as may be supposed to be necessary from one planting. The very thought of a vegetable garden should carry with it the idea of a constant and liberal supply of every kind that may be produced successfully.

Vegetables of some kinds arrive at their best condition and then commence to decline rapidly in their desirable qualities. In such cases the planting should be made at such intervals of time as will be likely to secure a succession of the product. However desirable earliness may be, nothing is gained by planting before the soil gets sufficiently warm to cause a speedy germination and a rapid development of the plant. A slow unnatural growth is very likely to produce undesirable vegetables.

Sweet Corn is an important factor in a vegetable garden, and should be planted for

a succession. It is even better to have some that fails of full maturity than to have a wantage before the end of the season. This season we had Sweet Corn continually from the time of the first ripening to the first of October, while others having less care for the garden enjoyed this luscious product for only a short period of time. Success in a garden requires labor and attention, but it must be remembered that it is labor that pays for itself many times over.

Grapes and Grape Culture in New Jersey.

T. GREINER, MONMOUTH CO., N. J.

Col. Alex. W. Pearson, Ex-president of the N. J. State Horticultural Society, whom the writer visited at Vineland, N. J., a few weeks ago, surprised him by several remarkable statements. Three fourths of the thousands of Grape vines in Vineland will in all likelihood be torn out next spring. Some fields have not borne a sound cluster for some time. While it now seems to be settled beyond a doubt that we have a sure preventive for the fatal Grape rot in sulphate of copper when applied properly, early enough and often enough, even some of his nearest neighbors seem to be wholly ignorant of the work done by the department, and of the successful experiments made under Mr. Pearson's supervision in Vineland right under their very noses.

In close connection with this fact is the other stated by him that among fruit growers of that place there are not more than two or three that read a horticultural or agricultural paper. The proposition to destroy the vineyards, and abandon Grape culture seems to be clearly traceable to ignorance of growers concerning the achieved success in treating these diseases, and to the criminal neglect of growers to acquaint themselves with the horticultural literature of the day. It also proves the great cost of unprogressiveness, and the losses to the fruit grower often resulting from their refusal to subscribe for one or more good horticultural journals.

The Ironclad is a wonderful Grape. At its home in South Jersey it ripens about the last week of September, but colors early like Ives. One teaspoouful of its juice in a tumbler of clear water colors it a deep purplish pink, two teaspoonfuls give it a most beautiful royal purple. The vine seems to be disease-proof, as there is no identified case of Ironclad being affected by rot.

The system of training seems to have no influence upon the susceptibility of Grape vines to rot. Vines tied to stakes, or trained to one wire, to two wires or more, and under the various systems of pruning—all were affected alike. The slightest covering above, a coping, a board, a strip of muslin, the foliage of a tree, etc., afford more or less protection against Grape diseases.

Michigan Notes; Spraying Fruit Trees.

W. A. SMITH, BERRIEN CO., MICH.

The winter of '88 and '89 will long be remembered here for its mild temperature. Plowing all through December and down to the 9th of January; 18° being the lowest thus far. The past season, however, has not been favorable for horticultural products in western Michigan. Small fruits averaged reasonably good; Apples nearly a failure (owing doubtless to two full crops and dry seasons the two prior years). The middle, eastern and northern parts of the state yielded a good crop of superior Apples.

Peaches, on the lake shore, in the fore part of the season, gave unusual promise, but a destructive drouth set in when about one fourth grown from which they never recovered. This, added to the low temperature in the latter part of the season, which actually froze the late varieties on the trees, left the crop in poor shape for marketing, or even for home use, and the consequence was a general complaint of over-production, though the main trouble, I fancy, was underconsumption, owing entirely to the worthless character of the fruit.

We have got to learn the imperative necessity of thinning our fruit so as to get size, color and quality. This is an essential precaution wherever drouths are liable to occur during the growing season. This lake shore county has had three consecutive dry seasons and this is the dryest of all. Our forest timber is well nigh gone and the land is being tilled. Apple orchards under cultivation for some years past, have yielded larger crops and better fruit than those remaining in sod.

I sprayed my Apple trees once and had nine tenths of the fruit wormy. In a dry season like the past two or three applications will be necessary to save this fruit though once spraying has saved my Cherries for the past two years, and four or five applications have done the same for my Plums. I have no longer any doubt about saving stone fruits by spraying.

I shall try the same remedy on Peaches this year. If any of your readers have made a trial in spraying Peach trees it would be interesting to hear from them. The foliage however will hardly stand as strong an application as that of other fruit.

Black Rot of Grapes.

ABSTRACT OF THE SPECIAL REPORT BY PROF. F. L. SCRIBNER OF THE DEPARTMENT OF AGRICULTURE.

Black Rot occurs throughout the States east of the Rocky Mountains on all wild and cultivated vines. It is especially frequent and destructive in the States bordering the Atlantic, the Great Lakes, the Gulf of Mexico and along the banks of large rivers, notably in the states of Missouri and Ohio. Its virulence lessens as the humidity diminishes. Thus in Texas its ravages are unimportant, excepting along the banks of the Red, Brazos and Colorado; in western Texas where it is very dry, the disease has not been observed.

Black Rot is the most serious and important disease of the vine in the United States. There is no disease of the vine yet known that causes in a few days such great losses. Mildew is less common and causes less loss to the crop, although in consequence of repeated attacks during several years may cause the death of the vine. This never results from Black Rot. In Vineland, N. J. Seabrook, Md., Charlottesville, Va., the vicinity about St. Louis and Neosho, Mo., and at Dallas, Texas, the majority of the vines lost, in 1887, 80, 90 and 95 per cent of their crop by Black Rot. In Virginia, New Jersey and Maryland vine growers have given up Grape culture where moisture is most abundant during summer. In years of severe attack it was not possible to save Grapes for the table unless the precaution was taken to cover them with paper sacks.

All hybrids of *V. vinifera* are very susceptible to the disease. We have observed Black Rot on the wild varieties in the forests from the Northern States as far south as Texas; e. g., *Vitis labrusca, V. riparia, V. cordifolia, V. æstivalis, Ampelopsis, quinquefolia, A. bipinnati, Vitis Arizonica V. Californica, V. Nova-Mexicana and V. rotundifolia.* The young leaves of *Vitis Arizonica* and *V. Californica*, growing at Denison, had their foliage spattered with spots of Black Rot in some cases, but it is especially *V. labrusca* which in its wild state has its leaves and fruits destroyed by the disease. *Vitis rupestris, V. Berlandieri V. cinerea, V. Linecumii, V. monticola,* and *V. candicans* occasionally have a few disease spots on their leaves, but never on their fruit. Black Rot is seen but rarely on the fruit of *Vitis riparia, V. Nova-Mexicana, V. cordifolia** and *V. rotundifolia.*

Among the varieties which have been cultivated in the United States those with large, juicy berries are the ones most subject to Black Rot, a fact confirmed by our recent observations. It appears also that the later the berries are in ripening the less effect Black Rot has upon them. Cynthiana or Norton's Virginia, is least subject to Black Rot of all American varieties, and on account of this fact viticulture is economically possible in certain parts of Virginia, southern Missouri, and northern Texas. Even this variety, however, loses much fruit during those years when the summer is very moist.

CONDITIONS FAVORING DEVELOPMENT.

At all points where the ravages of Black Rot are most severe the summers are very warm and moist. In the Central and Northern States, when the seasons are dry, little injury is done. The year 1887, during which rains were infrequent in those States, afforded ample proof of this. At Hammondsport, New York, in consequence of the altitude and exposure, dews and mists are rare and Black Rot causes but little damage; the losses, however, sometimes reach 10 per cent.

In the islands of Lake Erie (Kelley's Island, Middle Bass, etc.) in wet years the losses reached 75 and 80 per cent. of the crop; in 1887 it was necessary to search in order to find any berries showing the effects of Black Rot; at Sandusky, on the shore of Lake Erie, where Black Rot frequently destroys 80 per cent of the fruit, the loss in 1887 was only 4 or 5 per cent; the same was true at Fredonia, Dunkirk and Brockton, in New York, and in all these places the absence of dews or fogs during this year was marked.

HISTORY.

The existence of Black Rot in the interior of virgin forests upon most of the wild species of vines of the United States, from the Rocky Mountains to the Atlantic and from Canada to the Gulf of Mexico, proves beyond question that the disease is of American origin. The oldest specimens of Black Rot are in the Curtis herbarium; they were collected in 1850 and named *Phoma uvicola* by Berkely and Curtis.

As the Black Rot appears on the leaves much before it attacks the berries, Grape growers have believed it to be a different disease from the berries and unimportant. The recent study of fresh specimens has demonstrated the identity of these forms, and also of these with Phoma on the fruit.

Black Rot always begins by attacking the leaves, by preference young tender leaves, especially those at the ends of the branches. As soon as the parenchyma becomes firm, the spots, although they may be numerous, are very limited in size, and the leaves thus affected do not seem to suffer. They are generally affected a month or three weeks before the disease shows itself on the berries. At Neosho, Mo., in 1887, the disease appeared on the leaves about May 20 and on the fruit June 10; the first spots of mildew were observed June 12. When the weather is warm and dews frequent, the earliest varieties are attacked when the berries are no larger than small Peas. The berries of late varieties, like the Æstivalis, are not actually attacked much before the period of ripening. In New Jersey, District of Columbia and Maryland, the berries may be attacked by Black Rot by the 1st of June.

*This year (1888) I received from Mr. Hermann Jaeger of Neosho, Mo., clusters of *Vitis cordifolia*, with the berries literally covered with the pustules of Black Rot.—F. L. S.

(*To be Continued.*)

Packages for Shipping and Marketing Small Fruits.

T. T. LYON, VAN BUREN CO., MICH.

The modern requirement, at least at the West, is that such delicate fruits as Raspberries and Blackberries be put up in either pints or quarts; and, in the case of Red Raspberries, pints are always to be preferred.

To be entirely satisfactory the packages should possess the following characteristics:

They must be cheap enough to be given away, with the fruit, when the latter is sold; and yet they must be neat, clean, compact, and easily handled.

For convenient handling, the boxes or baskets should be put up in crates or boxes, properly ventilated, in even parts of a bushel; the crates also to be cheap enough not to require that they be returned to the shipper; which, if required is seldom satisfactorily done; since, if returned, both boxes or baskets and crates soon become so stained and discolored with the juice of the fruit, and otherwise, as to repel rather than attract purchasers.

Crates should be broader than high, so that they will be less likely to be placed upon the side or end, in the haste of handling. Three quarts in width by two in height and four in length, (with a division), is a very good size; as is also a similar arrangement with pints.

Quart and pint boxes are neatly and very cheaply made of veneers, cut partially through at the corners. These are very convenient and in most respects very satisfactory, though fragile. A nearly square, slightly flaring basket, made of splints, is much stronger and better ventilated, but unfortunately, is somewhat more expensive, although intended to be given with the fruit.

Currants and Cherries, being picked with the stems, are decidedly better in baskets, since they yield to slight pressure, without special injury, while these afford more perfect ventilation.

The stands or drawers, from which small fruits were formerly scooped up with a wooden paddle, and measured out to customers, were always a sad drawback upon the condition of small fruits, as sold in the market; but these, we are happy to say, have now been very generally superseded.

Baskets are extensively used for Peaches and Plums, and even for early Apples and Pears, for which they appear to be well adapted, although the use of an open cover, with bright tarletan, to heighten the color of the fruit, should be treated as *sui generis* with "facing" and other deceptive practices.

Canadian Fruit Packages.

E. MORDEN, NIAGARA FALLS, SOUTH ONTARIO.

Until recently the greater proportion of Canadian berries have been carried in box crates containing 54 quart boxes. As these weigh about 100 lbs. and are about 33 inches in length and cost about 75 cents each they are heavy and expensive. Of late years the party who buys the berries usually steals the small baskets, shelves and crates, which of course means ruin to the grower. Commission merchants seem to be able to endure this shape of things but if they were the parties to thus lose about one dollar on each crate we should hear a great howl.

The introduction of a basket crate holding 24 quart baskets and having a thin wooden cover has improved the chances of the growers. They cost about 12½ cents each and are stolen very promptly, being handy and useful. Three of these, containing 72 baskets, rate at 100 lbs. and cost 25 per cent. less for freight than the others, so the saving in freight will enable the shipper to lose the crates and baskets and yet be in as good a position as the user of the box crates even if the latter is fortunate enough to secure the return of his crates. As customers often would not care to buy the entire contents of a large crate while the smaller one just suits, it is only a matter of time when the old crates will be done away with.

For Gooseberries, Currants, Grapes and Peaches we now use a gauze covered market basket containing from 12 to 16 quarts and weighing from 18 to 25 pounds. These cost about 4 cents each and are weighed and sold with the fruit. The old pail shaped Peach baskets without handles have been deservedly dropped. During the past year a smaller basket with a wooden cover and costing a little more has been somewhat used for Grapes. They are I think more largely used in the United States, and, as the gauze is troublesome and liable to other objections, the wood covered baskets will be very largely used here in the future.

The Canadian quart basket is narrower and deeper than most of the American patterns and contains the same amount of fruit when neither is heaped. Our crates are therefore smaller and deeper than similar American ones. A few years since the large Imperial quart was made the legal quart in Canada. Berry baskets, however, are made in one style only and have not been altered.

Getting rid of the White Grub in Strawberries.

M. T. THOMPSON, CUYAHOGA CO., O.

My experience with the white grub in the Strawberry beds, is as follows: Some years ago I had a piece of land of about five acres, one-half of which (2½ acres) had been planted the previous year to Corn, while the other half was in Oats with which I had sown Clover seed, so I had a fair Clover sod to plow under, though I was somewhat afraid of the white grub, but the Strawberries all did well until about the latter part of July, when the plants kept going until not more than half pulled through; when the ground was frozen hard enough I went to work and hauled on about 20 loads to the acre, of good rotten manure. The next season I had bright clean berries of Wilson and Crescent. After fruiting I had the patch cleaned out, and the following winter I hauled on about the same amount of manure, well rotted, and was not troubled by the grub so much. The second year I plowed under the whole patch and gave it another top dressing and planted it to late Cabbage, kept them well worked and clean, and then tried Strawberries again. I never saw better Strawberries, but still there was an occasional plant destroyed, so I did not entirely get rid of them, nor have I ever planted a patch but what I would find an occasional plant taken by these destructive pests. But this has convinced me, that on my soil, plenty of manure, and well working the land, will in some way or other, destroy or get rid of the white grub. I have understood from those that have tried it, that hog manure will not answer the purpose as well as other kinds.

A Handy Garden Implement.

S. MILLER, MONTGOMERY CO., MO.

Instead of a rule and line, I use in my garden what we call a marker, a sketch of which I send. It is simply a piece of inch board, two feet long, three inches broad, shaved to a point like a sleigh runner, and having a handle six feet long fastened to it at an angle most convenient to the person that uses it; it should also be rounded on the bottom edge. With this and three stakes I can mark out rows one hundred yards long, so straight that a four pound cannon ball would clean out a row from one end to the other, a foot from the ground, at a single shot.

Western New York Horticultural Society

MEETING HELD IN ROCHESTER, JANUARY 22D AND 24TH, 1889, REPORTED BY T. GREINER.

In his annual address President Barry stated that owing to the failure of the efforts to obtain the desired State aid of $2,500, the organization of the Society as a State Society has been postponed until further action by the Society. The firm, therefore, is to continue on the old stand, and under the old name, of The Western New York Horticultural Society.

SPRAYING FRUIT TREES. The suggestions of Pres. Barry are always valuable, and few more so than the one in which he emphasizes the great results that have been and can be obtained by spraying not only Apple trees but all other fruit trees, with arsenical poisons. The codling worm and all leaf eating insects, the Plum curculio among them, can be gotten rid of almost entirely by these means.

NO FEAR OF OVER PRODUCTION. The prospect of over production of fruits has no terrors for Mr. Barry. The outlook was never better, he says, and the consumption of fruits is increasing all over the world. But more regard is now being paid to quality than formerly and the slovenly fruit grower must go.

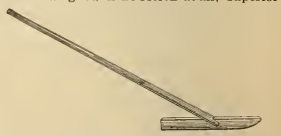
A NATIONAL LOSS. The Society has to record the loss of six members by death the past year. Mr. Hiram Sibley, the great seedsman, died in July, at Rochester. Mr. Dillon M. Dewey's death occurred in January, of this year, also at Rochester. He was well known to the nursery trade as the original publisher of colored plates and plate books. The death of Mr. A. J. Caywood, which event occurred recently at Marlboro, N. Y., cannot be considered other than a national loss. His energy and skill has given to the fruit-loving public the Dutchess, Ulster and Poughkeepsie Grapes, the Marlboro Raspberry, Minnewaski Blackberry, and some other excellent fruits.

ELECTION OF OFFICERS. The old and well tried staff, P. Barry, of Rochester, president, S. D. Willard, first vice president, P. C. Reynolds, secretary and treasury, were pressed into service again by unanimous vote, and the society seems to prosper nicely under the leadership of these good officers.

A NOBLE GIFT. Worthy of imitation by other horticulturists of means is the action of the venerable president, P. Barry, by which he denotes the sum of $2,000 to the Society. The annual interest of this amount will be of material aid in defraying the expenses of a Society which is denied assistance from the state treasury and the usefulness of which is always hampered and limited by want of funds.

WORTHY NEW VEGETABLES. Carried too far is the novelty business, at least in many instances, is what Prof. E. S. Goff of the Experiment Station thinks of the introduction of vegetable novelties by over-enterprising seedsmen. To test all these novelties is a pleasure for those who do not expect too much, for others it is often a disappointment. Many of the extravagantly praised new introductions prove only old sorts renamed, or so closely resembling old sorts as to be unworthy of a new name.

The Mango Melon (or Melon Peach, as named in some catalogues) is no Melon at all; superior



A Handy Garden Marker.

for Mangoes. Of real novelties Mr. Goff mentions the Celestial Pepper as highly ornamental, prolific, and good where a pungent article is wanted. Bears yellow and red fruit at the same time. [The immature fruit is yellowish, with more or less purple, and in ripening turns to bright red; the contrast renders the plant quite attractive.]

White Chestnut and Sibley seem to be quite valuable novelties in Squashes. Indeed the Sibley may prove to be a serious rival to the old and as yet unsurpassed Hubbard. Of Tomatoes the Dwarf Champion deserves to be mentioned as of great value. No fault is to be found with it except perhaps in color. The claim that it is self supporting, however, was not sustained, but the plant is strong, vigorous, prolific, the fruit hand-

some and of excellent quality. Mr. Goff has nothing to say in favor of Ely's King of the Earlies; for home use it is absolutely worthless; Morning Star is identical with Mikado. Rural No. 2 Potato has taken the lead in yield.

A Good Word for Birds. Mr. Chas. A Green has remained a firm friend to the birds, and the denunciations of many fruit growers, it seems, have not been able to convince him that it be to our interest to annihilate the whole bird tribe because they took a few fruits, especially Cherries, which they perhaps prefer on account of the worm that is generally in them. While they do some damage they undoubtedly do more good.

The County Reports. In a general way the reports from the various Counties of Western New York prove that the Apple crop there must have been much larger than was thought, earlier in the season. First sales were made at about $1.00 per barrel for the fruit. After that buyers became scarce and at the present time there are thousands of barrels reported to be still in the hands of growers in each County. They seem to keep remarkably well owing, perhaps to the mild weather, and it is hoped that increased demand both in the cities and abroad will soon increase the chances of sale at acceptable figures.

Apples in the Future. There is no doubt that the supply will yet largely increase in future years. In Cayuga county, for instance, there are now from 300 to 400 acres of orchards in cultivation, and only half of these are yet in bearing. The consumption must increase quite largely if full crops from these trees, after they all have come to bearing age, will find a ready sale at paying prices.

Shipping the Worden Grape. The Worden Grape, although excellent in many respects, is certainly not a very good shipper. Cayuga county people have found a good way to overcome the difficulty. When packing in baskets, a leaf is put under each cluster and the Grapes thus handled have arrived in good condition in the market; the same method might perhaps be profitably employed with other varieties.

The Old Story of Manures. The best results n Strawberries financially, were obtained where the most manure was used and the best care given. Barnyard manures are preferred by most growers to commercial fertilizers for Strawberries. The Wilson is yet largely grown as no new variety has been reported to ship as well.

Fruit Growing is Profitable. In spite of all the complaints expressed of late by fruit growers all over the country that the business does not pay, the general sentiment among the Western New York people is that with the exception only of market gardening no industry makes a more favorable showing in regard to profitable returns than does this. It is the energetic, skillful and painstaking manager who makes money, while the slovenly fruit grower is unable to make the business pay—and surely the latter will have to go. His retirement can only make the success of the successful more assured.

The Foreign Apple Market. A large Newark dealer and exporter complains of the abominable methods of sorting and packing Apples in vogue in Western New York, as also of the confusion resulting from the use of different sized barrels. A change for the better is urgeutly needed and until this is had, it is useless to depend much on a foreign market for profit. On Apples which he bought already put up he often lost money, but when he sent his own men to put up the Apples he made money.

Packing Apples for Export. Apples for export should be packed still tighter than for domestic markets. Well shaken before taken is a good motto. Mr. Hooker says a barrel for export should contain 4 quarts more Apples than for home markets. Can't pack too tight. Ship best fruit only, preferably Baldwins, and only in three bushel barrels. Barrels, after being packed for export, should be kept dry,

Feeding for Plums. From Orleans county, where Plums are grown largely and successfully it is reported that overloaded Plum orchards, when hen droppings and ashes were applied to them in July, with rain following, brought out their excessive crops nicely and perfectly.

The Baldwin Apple. Chas. A. Green says the Baldwin is not good enough for market. We should look for a better sort. The general sentiment among leading orchardists, however, is in favor of the Baldwin as the most profitable market Apple.

A Good Apple Gatherer. A new device for gathering fruit, especially Apples, in a less expensive way than by hand, had been exhibited in the council chamber during several previous meetings of the Society. A number of orchardists spoke in such high terms of the merits of the machine that Mr. Cook was requested to bring one of them to the hall and again show it to the members. This time it attracted greater attention than ever before. It looks like a good thing and has the endorsement of all who have tried it. Members say it picks as well as can be done by hand and at half the expense. Five men in a common orchard could easily gather 200 barrels per day with the machine. If it does not go back on its record now it will become a necessity for every orchard. Thought to be as good for Pears and Plums as for Apples, but it takes good men to operate it; green help will not do. The machine costs $50.

Spraying Trees. Chas. A. Green emphasizes that all fruit trees, not Apples alone, can be sprayed with advantage. Mr. Willard recommends a solution of 3 oz of Paris green in 40 gallons of water kept constantly stirred. For convenience's sake he buys Paris Green put up on his order in 3 oz. packages.

Cultivation of Plums for Market. Mr. S. D. Willard's essay speaks of high cultivation and high feeding as chief requisites of success Not all varieties do equally well on all soils, and the selection of varieties has to be made with reference to the adaptability of the soil, and not less to the peculiar wants of your market. The Reine Claude is best for canning, but not profitable to grow for the canneries as it is not a rugged tree and the fruit is very subject to the curculio sting. Canning factories cannot afford to pay the price that growers can get for the Reine Claude in other markets. In some city markets Damsons are more highly prized than better sorts. Profit or loss often hangs on these questions. Mr. Willard named the Stanton as a newer sort of much promise. Jarring the trees is recommended for the curculio. Spraying with arsenical poisons should be entrusted to careful hands, as the foliage is very sensitive and easily injured by solutions not harmful to Apple foliage. Good culture and rich soil may often ward off the dangers threatening from leaf blight and insect attacks. For black knot no remedy is known except cutting out the affected parts and burning them. A law should be enacted compelling owners of trees to fight the disease with knife and fire. Look the orchard over twice a year and cut. Plums are perishable; handle them tenderly. Pick with stems adhering, pack carefully in 8 pound baskets. Don't denominate "first class" when inferior. Plums, if well grown, properly handled and marketed, will pay.

Pruning Plum Trees. Mr. Willard cuts off from one half to two thirds of the new growth every season. Some varieties make a long wood growth; these must be trimmed more than others. Heavy bearing will stop excessive wood production. Sometimes the limbs may be thinned a little with advantage. Mr. Willard begins trimming his trees when the leaves first begin to drop, and continues until done.

Grapes in Chautauqua County. Concord is yet in the lead. Worden, Moore's Early, Pocklington, Niagara and Brighton come next. The Moyer, which somewhat resembles Delaware in appearance, is a good new sort. The three wire trellis is now coming in favor; formerly two wires were in general use. Mr. Chas. A. Green speaks of the low prices of Grapes. Growers sell Concords for 1½ cents per pound, or $30 per ton, and some say they are doing well. This shows we are learning to produce cheaply. Of all the thousands of women, many not strong, who work among Grapes all through the summer, and until almost winter, few complete the season without gaining from fifteen to thirty pounds in weight. So states Mr. Watson.

Small Fruits in Wayne County. Wilson Strawberry is again gaining in favor. It is emphatically the shipping variety. Shaffer's Colossal is getting to be quite a popular sort among Red Raspberries. Most growers cling to the Ohio as the best Blackcap for evaporating, but by planting Tyler, Ohio and Gregg, the time of ripening can be extended fully two weeks, so that the evaporating business can be carried on with fewer hands. Erie Blackberry is of but little real value.

Cherry Culture. An awakening in Cherry culture is reported from various quarters. Many trees are being set along road sides, in yards and orchards, and growers begin to understand more generally the chances for good profits which are hidden in this industry.

Trimming Raspberry Canes. Mr. Van Dusen speaks against the practice of fall pruning. Has made a series of experiments, and is sure he has ruined whole plantations by trimming in fall. The tops should be pinched off when the canes have grown to be 18 inches high.

What is the best Early Grape? In answer to this question Mr. Hubbard says: "Can't tell." Mr. Queen mentions Moyer, which is a week or ten days earlier than Brighton or Worden, Wyoming Red, Green Mountain, Wimbell, etc., are also mentioned. Wyoming Red is early and salably, but not very good. Mr. Varney pronounces it earlier than Delaware, and quite satisfactory for market. Mr. Goff says Green Mountain, a white Grape, that ripened with Champion this year, is delicious in quality, although small in bunch and berry.

Systems of Cold Storage. Sawdust packing for making buildings comparatively independent of open air temperature seems to have few, if any advocates. Dead air spaces have come in general use and favor. Mr. Green says Parker Earle uses three or four dead air spaces in his buildings, and the whole arrangement is cheaply put up. Mr. Hubbard finds no difficulty in making a building frost-proof with three two-inch spaces and one four-inch space. The cheapest rough (hemlock) lumber may be used. Building paper held on with strips of boards make good and cheap partitions. The house can be above ground entirely. Prof. Cook says sawdust produces dry rot in lumber, hence objectionable. This is found out by the silo-builders. Prof. Cook also describes his bee cellar, which is of under ground construction, supplied with sub-earth ventilation by means of six inch tile. This pipe ought to be longer than usually made, 300 feet being better than less. A uniform temperature of 45° can be kept in such a room with little trouble. Rooms are constructed in Canada above ground, with 20 inches of sawdust and other packing between the double walls and under the roof.

Prof. Cook on Bugs. The crawling, creeping and flying things that injure our fruit and vegetable crops, and which common people include under the term "bugs," will undoubtedly have yet to suffer in consequence of the excellent instructions how to fight them most successfully, given by Prof. A. J. Cook, of the Michigan Agricultural College. Mr. Cook is very emphatic in recommending the use of London purple instead of other arsenites. It is much cheaper than Paris green, dissolves in water, and is not apt to blast the leaves. White arsenic, formerly recommended by him, is cheap and effective, but its white color is against it. The conspicuous color of London purple or Paris green is an additional and effective safeguard against any danger from poisoning.

Annuals that Bloom Long.

But a very few of the annual class of flowering plants which may be regarded as of quiet beauty, are more desirable than Godetias and their attractiveness does not greatly decrease before late autumn. A main point in their culture is to keep them steadily growing, and to keep all the seed vessels picked off, together with having good soil, and in times of drouth free watering at night during summer.

The plants should stand not closer than five inches each way. Seed can be sown early out of doors where they are to bloom.

For sunny corners about the garden the creeping Portulacas are well adapted, and are remarkable for the brilliancy and variety of colors, both single and double, continuing in bloom all summer. Start the seeds under glass, in well drained pots, in a soil composed of equal parts of crushed mortar, sand and soil, three inches of which should also be spread over their summer quarters; and be cautious in watering them, as they easily get too much; harden somewhat in a frame before planting out in the bed, about seven inches apart each way.

Marigolds are excellent and widely used bedding annuals, but do not sow before the middle of April, for they mature quickly. A capital substitute for yellow Calceolarias, or for use in yellow bedding, is furnished by Tagetes pumila, which lasts longer in bloom than any of the general line of summer plants. Their treatment is quite similar to the Marigolds. The best hardy blue annual is Convolvulus minor, which alone makes an effective small bed, or a fine edging to a large one. Sow the seed where it is to bloom, in fairly good soil.—*C. G. Rose.*

The Window Garden in Summer.

For summer window gardening rather more plants are available than for the same purpose during the winter, and if given a suitable situation out of doors, with good treatment, they will do well. Nothing need be done until later by those who have window boxes on hand and depend on the florist for filling them. But when it is desirable to use plants of one's own raising and where necessary to get new boxes, it is time to be making needful preparations.

Common planed inch lumber is used for the boxes, which should be six inches or upwards wide and the same in depth, with a length corresponding to the width of the window sill. The inside is rendered less liable to decay if charred; this is done by simply covering the wood with parafine oil and then burning it off. The outside may be covered with cork, bark, or other similar material, or else be painted some pleasing color. The box rests on the window sill, fastened to the casing with wire and screw eyes, or if the sill is narrow, cheap iron brackets can be used as supports.

This style of gardening is as well adapted to the fifth or sixth story windows as to the ground floor of a building. The best soil is composed of two parts of common soil and one part finely rotted manure, having a little sand added, and after the roots have taken up the plant food in the soil in the boxes, water with liquid manure or use plant fertilizers in a dry state to prolong their beauty.

The plants used in these boxes may be divided into two classes. Those of an upright habit for in the center, and those of a drooping form for over the sides and ends; climbers being included in the latter class. Among the former, Begonias, Geraniums, Coleuses, Fuchsias, Heliotropes, Dracænas, Caladiums, and other of the choicer plants are better purchased, which is also true of the following trailing plants; Ficus repens, Gazania, Ivy Geranium, Isolepsis gracilis, Lonicera aurea reticulata, Mesembryanthemum, Moneyvine, Saxifraga sarmentosa, Torenia Asiatica, Variegated Thyme and either the variegated or green Vinca. The Canary Bird Flower, Dwarf Morning Glory, Cypress Vine, Linum, Lobelia, Mimulus, Nigella, Oxalis, Petunia, Portulaca. Mignonette, Salvia, Sweet Alyssum, and Dwarf Tropæolum may readily be grown from seeds or bulbs, if now started.

As shown by our illustration, it may be desirable to shade the window by means of a trellis, over which could be trained Cobca scandens, Lophospernum scandens, Maurandia, Convolvulus major, some of the climbing Tropæolums, Madeira Vine, Germau and English Ivies, and others, adding thus to the pleasing effect. In the center of the window may be suspended an ornamental flower pot or basket, containing a specimen Ivy Geranium, a number of Othonna or some other attractive plant.

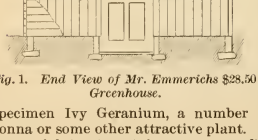


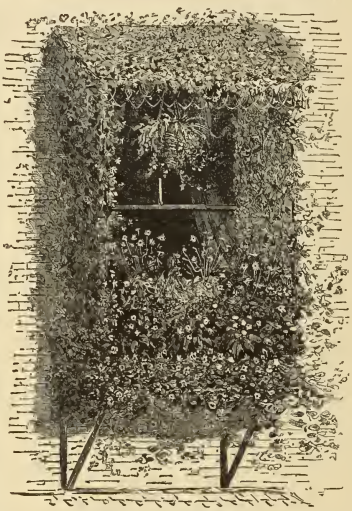
Fig. 1. End View of Mr. Emmerichs $28.50 Greenhouse.

No special treatment is necessary after planting except to be particular in supplying enough water; during the hot season a thorough soaking almost every day will not be too much, but judgment must be used. Any plants that crowd unduly will need pruning, and dead leaves should be removed, otherwise allowing them to grow in a natural manner.

Growing the Callirhoe.

CHAS. E. FARNELL, QUEENS CO., N. Y.

The several species or varieties of Callirhoe form, when taken together, a very interesting and beautiful group of free flowering border plants, belonging to the natural order Malvaceæ, and may be described as being a small genus of American plants, mallow-like in habit and manner of growth, having large purplish, five-petalled flowers, about two inches across which are freely produced for some three to five months. The plants commence to bloom when about five inches in height.



Summer Window Gardening.

When well grown, they are very pretty border plants, doing best when given a deep well enriched soil, and a sunny situation. The seed should be sown in a well drained pot or pan, filled with light loamy soil, about the middle of March. Sow thinly, cover slightly, and place in a warm, moist situation, as close to the glass as possible.

As soon as the plants are well up and strong enough to handle, they should be transplanted an inch and a half apart each way, into other pans or shallow boxes similarly prepared, and kept close and moist for a few days, until they become well rooted, when they should be removed to a cool, airy situation and grown on; when the weather becomes settled they can be removed to the places where it is intended they are to bloom. Keep the plants one foot apart so that they can properly develop themselves.

The following are the most desirable varieties: *C. pedata* grows about two feet in height, and produces flowers of a rich violet purple, with a distinct white edge. *C. pedata nana*, a variety of the above, differing only in its dwarf manner of growth, being one foot in height. *C. involuerata*, a variety of trailing habit; blooming throughout the season. Flowers large, of a rich, purple color; a native of western prairies. *C. digitata*, grows about two feet in height, and produces deep rose-colored flowers. *C macrorhiza alba* is a form with pure white flowers and of a neat habit of growth.

English Notes on Roses of 1888.

With Roses, as with other things, one can hardly rely upon the introducer's description as to the permanent value of a new variety; we present an English Rose grower's notes as given in the Gardeners' Chronicle. With their climate it is easy to understand their estimate of American Beauty, for during the winter it requires sunshine, and even in this country does not do well out of doors.

New Roses. *Sir Rowland Hill* has risen in public estimation. The color, beautiful and novel, is a deep claret, flushed with bright scarlet, in size and substance of petal it is stout and well formed. When dying off it becomes almost black, and like all dark colored Roses requires protection from the sun's rays; plant growth vigorous.

Earl of Dufferin. An Irish Rose of strong constitution and vigorous habit: the flowers are of a brilliant, rich crimson color, with a high pointed centre, the outer petals somewhat recurving, and the brilliant tints of brownish-crimson are seen to great advantage. Some have called it a dark Maurice Bernhardin, and others a better Pierre Notting; but I think it is a perfectly distinct Rose, likely to be a universal favorite.

Lady Helen Stewart, also from Ireland, is a very bright red Rose, of good habit, very free flowering, and I was pleased with it.

Duchess of Leeds. A Rose, which may be described as a pink La France, with a dash of Marie Finger in it, while for exhibition it lacks size, yet as a garden Rose it will be most valuable as it can be cut in sprays.

Mrs. John Laing. One of Mr. Bennett's seedlings. Has a beautiful soft pink color. The flower is large, good in form, very free, and a good autumnal, bloomer; not so liable to spoil as Her Majesty, and has attracted much attention.

Madame Joseph Desbois. This Rose was sent out as a Hybrid Tea—a fashion which the French raisers have adopted, but if they do it thinking that a Rose so described is likely to find more favor with us, I think they are grievously mistaken; such Roses are regarded with suspicion.

Grand Mogul. Has a good form, brilliant crimson shaded with dark maroon-crimson. Those who have grown it say that in growth and bloom it bears a strong resemblance to Jean Soupert.

Miss Ethel Brownlow. A Tea Rose, very distinct in color, salmon-pink shaded with yellow at the base of the petals, the centre high, and outer petals somewhat reflexed. Of vigorous growth, likely to be an acquisition owing to its distinct character.

Lady Castlereagh. A new Tea-scented Rose, which is likely to prove a useful addition. It is well-shaped, vigorous in growth and profuse in its blooming; very pale pink or white, with salmon pink in the centre. Unlike any Rose in this class.

Lucille. The bud is long and pointed—a true Tea; the color is a bright carmine-red, but with some of those extraordinary combinations of colors which distinguish the Tea Roses—fawn, copper color and bronzy-red, are all mixed together, or rather placed together in the bloom without being mixed, blending with one another, and constituting a strikingly beautiful flower.

Lady Alice. A sport from Lady Mary Fitzwilliam, creamy-white with a faint yellowish tint at the base; in cool weather having rather more color.

Some Worthy Older Roses. *Gloire Lyonnaise.* Brought out as a yellow Hybrid Perpetual; but it is white with a faint suspicion of primrose at the base of the flower, and as a gardeu Rose will be appreciated, as it will stand a good deal of rain without

damage. Evidently a Perpetual, containing a dash of Tea blood.

Victor Hugo. A very fine dark Rose, bright crimson-red, shaded with darker color, perhaps ordinarily it may not be so dark as during the past cold season, when even Prince Arthur and General Jacqueminot came out in colors, hardly recognisable.

Marshall P. Wilder. To all intents and purposes this is a reproduction of Alfred Colomb, which, however, is not a bad Rose.

American Beauty. This is generally considered to be but a synonym for Madame Ferdinand Jamain, a Rose sent out more than ten years ago, and of so indifferent a character that it has never been considered worthy of a place in our catalogues.

Lord Bacon. This we have in one of those deep crimson Roses which are so acceptable; shaded with scarlet, and very beautiful.

Madame Sussane Rodoconachi. A Rose with light silvery-white shading; very distinct, likely to be of value as it has been doing well even in this unduly wet season.

Comtesse de Fregneuse. Tea-scented, bright primrose yellow; very free flowering and generally quite good.

Souvenir de Gabriel Drevet. Silver-white with bright rose centre, and oftentimes a mixture of colors hard to describe; of good size and valuable for general culture.

Pride of Reigate. One might as well admire a fair face pitted with small-pox as this spotted thing, which neither on the exhibition table nor in the garden can do anything but spoil its surroundings.

Viscountess Folkestone. A hybrid Tea, of bright and pleasing color; free flowering.

Notwithstanding the great perfection to which the Rose has been brought there are still prizes to be gained by raisers of seedlings, as is shown by the past season's record.

Greenhouses for Amateurs.

That use of glass and other artificial agents which permits of extending the season of plant growth and bloom perpetually, always possesses an interest to the true

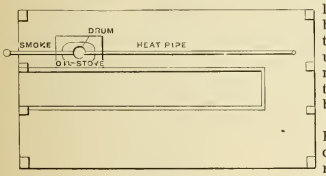


Fig. 2. Ground Plan of Fig. 1.

plant lover. We herewith append plans of two small greenhouses that are designed to be attached to dwellings, both of which are from actual examples, and together representing rather wide extremes as to cost.

The first of these in point of low cost is shown by Figures 1 and 2. This represents a structure erected by our subscriber, H. J. Emmerich, Baltimore Co., Md, who furnished the drawings of the same together with a description in substance as follows:

Size of building 9 x 16 feet, being a lean-to against the dwelling. Cost $28.50 complete, including the heating contrivance which consists of kerosene oil stoves and drum with connecting hot-air pipe about 12 feet in length and three and a half inches in diameter inside measure.

The average cost of heating is but ten cents a night. A pipe leads from over the lamps to the outside of the building to conduct away any smoke or smell from the lamps. This pipe turns upwards outdoors, and is protected with a cap-like cover to keep the rain out.

The plan of putting up the structure was this: First six 4 x 4 inch posts were set in the ground, resting on stones with some smaller ones between, and to these for making the sides, boards one foot wide were nailed lengthwise. Over these horizontal boards a second layer was nailed, but to have them run up and down, and with strips nailed over the joints. Two coats of paint were given to the exterior. The inside surface of the wall was covered with heavy

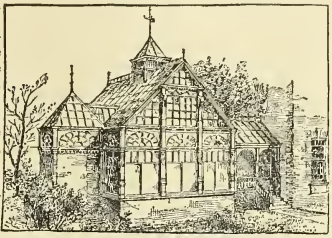


Fig. 3. A Somewhat Costly Amateur's Greenhouse.

building paper, an eighth of an inch thick. Altogether this wall is so warm that during the great blizzard, which last March (1888) visited our correspondent's region, a night heat of 47° was easily maintained.

Concerning the plan of heating with oil stoves, Mr. Emmerich says he got his first idea for this from POPULAR GARDENING, and that in his case it is entirely satisfactory. Two small stoves, made by the Kerosene Oil Stove Co., and having two four inch wicks each, and an oil receptacle containing seven quarts to each. The drum from which the hot air pipe extends, is situated upwards from and between the lamps. While the 3½-inch pipe is effectual in conveying heat to its further end, still Mr. Emmerich is of the opinion that if it were a size larger it might be even more satisfactory.

Regarding oil lamps smoking when put to such a use and of which some complain, no trouble has ever been realized. The lamps are kept perfectly clean and nothing but the best 150° test oil is used. Care is taken, however, to not have them turned up too high at any time, for if they were, naturally, they would smoke. By means of the pipe leading outside all smell of the burning oil is removed.

Concerning the general success of this house, the writer says he wishes our readers could see the beauty and perfection of the many plants grown within its walls. Still it must not be forgotten that the general attention bestowed on plants has at all times quite as much to do with their success as the providing of sufficient heat and light for their wants.

The other plant structure herewith illustrated, is quite a different affair from the last named. It is to be assumed that this is too elaborate to be constructed without the aid of a skilled builder and plumber. It could not be erected complete for less than from $1,200 to $2,400, according to location, size, and other circumstances. As the ground plan shows, it is to be heated with hot water, the boiler being located in the basement of the dwelling house.

The main features of the present plan are indicated by letters as follows, *a* the conservatory (walk), *b*, dwelling, *c*, veranda connecting the two, enclosed by sash in the winter, *d*, approach from the garden, *e*, plant stages, *f*, hot water heating pipes, *g*, entry by stairway to the boiler and work room in the basement, *h*, boiler, *i*, smoke pipe leading to chimney.

The elevation shows an exterior that would add beauty to any home and garden scene. A chief merit of this design is that all the exterior surfaces are straight instead of being in part curved as is often the case in ornamental structures of this kind. But notwithstanding the advantage thus offered, the general architectural effect is both beautiful and picturesque.

Native Trees for Ornamental Use.

A. P. REED, CUMBERLAND CO., ME.

I am glad to see a growing interest in the capacities of our native forest trees for usefulness on ornamental grounds. If they are every way as competent as the foreign product, they have the additional advantage of not having to be acclimated. And then again the native trees are within the reach of all classes of people; the humblest home may be made more attractive by their use, and the finest lawn may be pleasingly embellished by their presence.

Our native Fir trees, as well as the White Pine, are all capable of serving for ornamental purposes—and all being susceptible to fine training. The latter can be made thick and dense by repeated cutting back. No tree in the evergreen family is more beautiful, even its natural state, than the Fir Balsam (*Abies balsamea*). This is also true of the Spruces which are capable of a great variety of shapes in their manner of growth.

Considerable of the poor success had in adorning lawns and public parks with trees may be traced to the use of foreign varieties, procured oftentimes at much expense of time and money. If I ever get so I can afford it, I am going to see how fine a park can be made with native growths alone, even to the grass upon the ground.

I expect to be able to make such a park as this would be long before I can make one which would contain all the requirements and embellishments of other lands.

A specially neglected ornamental native tree is the Striped Maple (*Acer Pennsylvanicum*). This never attains a large size, and is well adapted to lawns, or in fact, to any place in which a small tree is desirable. It has a pretty, dark green bark streaked with white, and a very large leaf, and is known in some quarters as "Moosewood."

Our common Sumac is also quite ornamental when its red cones are developed. There is one thing to avoid in selecting native trees for these purposes, however, and that is anything that has a tendency to spread from suckers, the Locust for example. But I would encourage any who contemplates planting, to put in a good

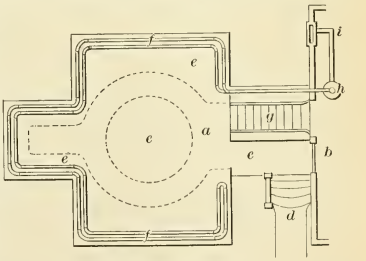


Fig. 4. Ground Plan of Fig. 3.

variety of trees native to his section, and giving them the same treatment, and no less care than he would give foreign varieties; I believe he will be highly gratified.

As with trees of every description it is best to move these when quite small.

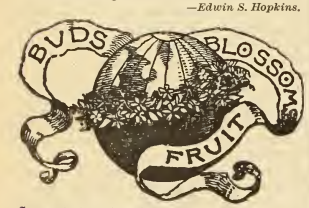
1,049. **Soot for House Plants.** As to soot from Bituminous coal I would not advise its use. Soot from wood I use frequently and with very satisfactory results. Mix two ounces in a gallon of water and keep well stirred while using, not applying oftener than twice a week.—C. E. P.

Trailing Arbutus.

Trailing Arbutus so dainty and sweet,
Blushing when'er the sun's glances you meet,
Hiding with modest coquetry so rare,
Knowing dead leaves make your beauty more fair,
Gaily I pluck you with light, eager fingers,
While close beside me caressingly lingers
Some one, whose glance is to me like the sun,
Yet as Arbutus, his gaze I would shun.
Ah! little Mayflower, you are half human—
The form of a flower, the heart of a woman.
—*Home Companion.*

March, you great blusterer!
March, hustling flusterer!
Bleak oft and bitter the breeze you bring;
But we can stand it all,
Since Nature planned it all
As thine equipment, forerunner of spring.

Deceitful Month! Thy Daffodils
Were born too soon; their golden bells
Are hanging full of icicles,
And hyacinths their perfume spread
O'er tempting Maple blossoms red
Where cling the wild bees frozen dead.
—*Edwin S. Hopkins.*



Sow only tested seeds.

Petunias for a dry season.

A poor hot-bed is a cold affair.

Dress weak lawns with bone dust.

Dwarf Cannas are growing in popularity.

One may feed plants too generously for bloom.

Destroy the basket worm often to be found on Evergreens.

Try some lifted Pansies in the window garden for earlier bloom.

Beets grown on heavy land are sweeter if sand be mixed in the soil.

"**Worthless seed**" is often only another term for careless sowing.

For delicate flavor the old Early York Cabbage is hard to beat.

The Dwarf Ageratum gives us our best lavender blue for bedding purposes.

Are the profits too low in some years? The same is true of all lines of industry.

Why not add materially to your collection of hardy perennials and shrubs this year?

The Fruit Out-look in Western Michigan at this date (Feb. 11th), is good.—*J. N. Stearns.*

No seed should be planted on land that is not as rich as that which produced the seed.—*Old Gardener.*

Primroses form a large family. Herr Pax, of Germany, in his recent work on this genus mentions 16 sections that contain 150 species.

A Hint for the Season. The south side of a board fence is fully a hundred miles south of the north side, speaking as to warmth and earliness.

Sweet Peas, an exchange tells us, are Mrs. Harrison's favorite flowers. Well! that must be safe enough to say, for with whom are they not favorites?

A plant lover must above all else be on guard to arrest the underhand depredations of numerous insects that prey on the foliage and flowers of our pets.—*M. R. W.*

New Bush Lima Bean. Whatever the final verdict concerning the worth of this novelty shall be, it is represented as having an unprecedented sale in small quantities for trial.

The Pests. An English reader recommends a thick dressing of soot in the drills in which Sweet Peas are sown, where birds and mice destroy the seed, and when the plants appear above the surface scatter Tobacco dust over them.

Consider the Profitable Side. It does not require the outlay of many dollars for ornamental trees, vines and plants about the home to add some hundreds of dollars to the real value of the place. Such improvements tell for cash when one comes to sell or rent the grounds.

The Rose, Vick's Caprice. Some specimens of this Rose received at our office show the striped characteristics rather more distinctly than anything we before have met. The body color is pink, with both darker and lighter stripes. The markings, quite pronounced in the buds, are not specially attractive in the open blooms.

A Violet luncheon (the latest floral caprice, according to the New York Sun) was given by Marion Harland to the contributors to her journal. Violets formed the decorations, and the flowers candied were served to the guests as favors, together with corsage bouquets of the same. Every thing even to the ices was of that Violet hue.

Plant Grape vines around your buildings, and train them on the walls by means of galvanized wire staples. They keep the buildings cool and will bear plentifully; the fruit is not so large but of a more delicate flavor than when grown on trellises in the open field. Those grown on south or east walls will be finer flavored than on north and west walls.—*Elder's Wife.*

With the young Cabbage plant comes the Cabbage flea beetle. The surest way to get rid of him is to use either Paris green water prepared as for Potato bugs, using one-half ounce of poison to five gallons of water, or mix it or London purple with plaster, flour or dry leached ashes, at the rate of one part poison to 50 parts of the other material. Apply as soon as the seedlings begin to break through the ground.

Of Weeds Professor Prentiss says it is essential for a plant to be successful as a weed that it be a hardy strong grower, and to multiply itself rapidly either by cuttings, seeds or roots, or all combined. While he is familiar with 130 weeds, yet of those only 20 are natives, and of those common in gardens (a total of 54) but 11 were natives. Of the Mayweed, a single plant in one season will produce 40,000 seed; the Burdock 24,000, the Oxeye Daisy and the Dock each 13,000, the Red Poppy 50,000 and 2,000 come from the Dandelion.

"**A Key to the Families of Insects,**" From the Popular Publishing Co., Chicago, has come to our table, a useful little work bearing the above title. Although there are many keys to particular families, yet, excepting this, there is not to our knowledge a key published in compact form that starts the young entomologist in the way to use these particular keys by indicating under which family this or that unknown insect is to be classed. It is from the pen of Prof. N. M. Eberhart, who is the author of numerous treatises on insects.

A pleasing dwarf form of Ivy Geranium has been received at this office, which is said to be entirely new by its originator, H. Growner, of Illinois, who describes it as follows: It is a sport from Lucie Lemoine, and has the leaf but not the usual trailing habit of its class, as it grows in a very compact form not higher than six or eight inches, and is useful as an edging for beds. The flowers are double and produced freely in clusters, being white with a pink center. After four year's culture it is believed to be valuable and shows no signs of reverting to its parent.

A Noble Ambition. Our correspondent, Jacob Faith, of Missouri, writes: "I wish to leave this world better than I found it, and place on record that I have been here, that it may be said 'he is missed,' for the work of our hands, the bloom and fruit on the trees and vines, and evergreens in winter will tell that we have been here. So we should plant fruit that will give us pleasure and treasure, to shed their blessings on millions when we are no more. So that it cannot be said we ate the fruit of trees and vines planted by our fathers, and in return did not plant for our children."

Salt and Plants. In the years of my inexperience, I was advised by a professional grower that salt was beneficial as a top dressing for plants. I knew of it being used on Asparagus with benefit, so without further instruction I applied a liberal dose of salt to several choice plants; their death was the natural result. But from subsequent experiments I have found that at the rate of a quart sown broadcast to about 20 feet square, at least on some soils it would increase the brilliancy of color and help the growth of the plant. For each case, careful experiment will give the proper quantity to use.

Table Decoration with Plants. Our illustration explains itself so fully that hardly anything additional is needed. The idea is that in case a single plant decoration is wanted the pots should be concealed by means of a box-like receptacle just beneath where the leaves of the extension table part. Or the opening may be made wider, in which case short boards should be fitted in on each side for the table service. The opening is surrounded by pots of Moss-like plants, Lycopodium and Ferns, or with wood moss, cut greens and similar material. It is obvious that two table cloths, and these meeting at the centre, should be employed with this arrangement.

Good Chinese Primroses. Our contributor, J. F. Rupp, of Pennsylvania, sends us a collection of very attractive Primrose flowers, and which illustrate the advances being made in improving this popular flower. Here we noticed magenta colored blooms some thickly striped and speckled with white, and other very fine selfs, a rosy carmine, the petals of which (having deeply fimbriated edges) did not lap, as is usually the case, but curled entirely free from each other; a remarkably distinct white, had a star-like centre of yellow most clearly outlined and another white had a fine red center. There were various shades of crimson, some intensely clear and deep, and pink, purple, etc., running through various tints.


Children and Flowers.

The Plum and Hop Louse. A correspondent, whose name has been mislaid, sends in the following: "Dr. C. V. Riley has shown that there are 13 generations of the sexless or agomic females of the Hop louse. The winged generations of this louse being developed to permit migration in the spring from Plums to Hops, and again in the fall from Hops to Plums, where the last brood of females (wingless) lay their eggs. We have usually supposed that the lice were preyed on so extensively by other insects that they disappeared early from our fruit trees. Have we been wholly or partly wrong? It is possible that other forms or species, beside the Plum aphis leave the fruit trees for some other plant?"

Tuberoses After Blooming. A Tuberose bulb never blooms a second time. This is the rule, there may be exceptions, as a bulb may sometimes contain two embryo blossom stalks and send up both at once or one soon after the other. Such a thing may be possible, though among many thousands of bulbs that I have had bloom, not one has had more than one flower stalk. The bulb after blooming has no value, except if it be planted out in summer there will be found in the fall a good many set around where the old bulb was. At the north it will require two or three years of cultivation to bring these to a blooming size, while here they often grow large enough to bloom in one year.—*W. C. Steele, St. Johns Co., Fla.*

Spiræa Astilboides. This plant is destined to become a great favorite on account of its perfect hardiness, free flowering propensity, ease of culture and compact habit, in which respect it resembles its well-known congener, Spirea or Astilbe Japonica. The comparatively large panicles of blooms produced are white and similar to the form of Spirea aruncus, figured in the August number of POPULAR GARDENING, and the cultural direction there given are equally applicable to the subject under note. It may be readily increased by division of the crowns after the foliage has died down, and these when planted singly may be lifted after a season's growth, potted and placed in a warm place, when they will rapidly come into bloom and give great satisfaction on account of their durability as a pot plant, or for cut flower work.—*E. O. Orpet, Passaic Co., N. J.*

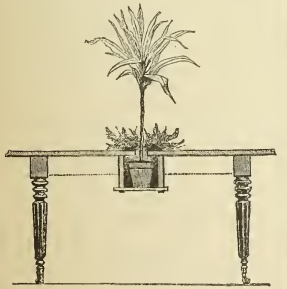
Three Late Autumn Bloomers. Professor Byron D. Halstead, of Iowa, mentions the following trio of wild plants that he thinks should be worthy the best attention of the floriculturist: Eupatorium ageratoides bears flowers of almost coral whiteness in a convex mass several inches across, yet not losing the gracefulness of an easy cluster. After being cut the flowers of all these last perfectly for a week or more. The Fringed Gentian (*Gentiana crinata*) has flowers of a large

size and of the richest blue color imaginable, the tube being bordered by a beautiful fringe which adds to its attractiveness. The last is named Drooping Blossoms (*Prenanthes alba*) as from its habit, for the small heads of white flowers which are enclosed in a purplish cover are pendant like clusters of little balls. These three plants bloom after September for a long time, undisturbed by autumn frosts.

How to Propagate Yuccas. While most of the herbaceous species yield seed, which if sown as soon as ripe in slight heat, will make good plants, yet the variegated forms of Yucca filamentosa and Y. aloifolia must be propagated by cuttings. An English method is to take some fleshy roots from outside plants in the fall, put them in boxes of sandy soil and give them some protection, when they will in the spring start into growth. Where they are in pots the dormant eyes usually come out to the side of the pots, from which they can be readily removed by using a knife, and potting them. When any are transplanted many dormant eyes can be taken off and started as well as some of the roots. When Yucca aloifolia inclines to run up with a naked stem it can be cut into six inch lengths, and treated as directed for roots, when young plants soon appear from various parts of the buried stem, and these when large enough can be removed and potted.

Children and Flowers. Begin with your little children to give them a love for flowers. It may serve them a good turn in after life; perhaps by their becoming successful agriculturists, or by keeping them from insane asylums. A lady, after severe affliction, was brought back to health after suffering untold nervous horrors, by working in her garden. My sister gives her little tots on Easter morning a pretty flower growing in a pot. Little three year old Daisy hugged the quilled Daisy to heart, as if it was a new dolly, and finally went to the open grate, and holding it as close to the fire as she could get, murmured, "Poor 'ittle thing, it's cold!" Of course we explained in simple words the needs of plant life and the children year by year are growing more interested in the garden. There is a great deal said and written about "The Coming Woman." If she turns her attention to growing plants and small fruits, wonderful success may be hers. So may it be!—*Sister Gracious.*

How do You Treat Lily of the Valley? Many persons treat this favorite as if decent care and fertility did not count in its case. This is a mistake. A glance at our illustration shows the character of plant that should more commonly be seen of this sweet flower. Take the usual mat of crowded plants, productive of enfeebled flowers and it may be greatly improved by the following course: The bed should be laid off into blocks about one foot square, then every other block removed to a good depth (one foot at least), cutting down the sides square and the hole he filled with well manured soil, treading it



Device for Hiding Plant Pot in Table Decorating. *See Opposite Page.*

firmly; then the roots and off shoots of the remaining plants will soon occupy the fresh soil and all will yield vastly finer flowers and foliage. In a few years the operation can be repeated by then taking out the oldest squares and replacing with fresh soil. To give the whole surface of the bed a coating of coarse manure each winter, through which the plants will force themselves in the spring, is an excellent course. For new beds, while a somewhat shady place is best, yet it is not essential to success; any garden soil is suitable if top dressing as above is not neglected.

A Good Bouquet Flower. Reference is had to a little known member of the Pink family, called Gypsophila, which means a love of gypsum or lime in the soil in which it is grown. This genus contains both annual and perennial species, not all, however, being specially desirable, the best being named below. The White Panicled (*G. paniculata*) grows about four feet high and when in bloom during June and July, the whole plant is so covered with its myriads of minute flowers, that at a little distance it appears to be wrapped in a transparent cloud. Still, delicate as they seem, the blooms will bear rain and wind without injury. When used fresh in bunches with highly colored flowers, they add a delicacy and grace not attainable with many other and perhaps more appreciated subjects. The above mentioned is the best of the perennial class that is offered in the country. While in the hardy annual class are the Elegant Flowered (*C. elegans*) growing a foot or so in height, and coming in two colors, rose and white, and the Dwarf Gypsophila (*G. muralis*) that is covered with beautiful pink blossoms. Of the latter class seed may be had of leading seedsmen at five cents per packet. While these are not true everlastings, yet if cut when the flowers are just fully expanded they retain much of their pleasing habit when dry, as they retain their color perfectly. They thrive best in a dryish soil, in which is mixed a considerable proportion of lime or plaster and brick rubbish.

Drainage for Plants. All plants, even aquatics, are benefited by good drainage. In the case of young Geraniums, Coleuses, Abutilons and other rapid growing free-rooting plants we seldom use drained pots at this time of year, but in the case of all plants in five inch or larger pots drainage is beneficial. When it comes to plants like Show Pelargoniums, Camellias, Azaleas and others that are grown all along in pots, drainage is positively necessary. And in raising Gloxinias, Begonias, Calceolarias and the like, that are very delicate to begin with but more robust towards maturity, thorough drainage in their early life is of more importance than it is at their flowering time. For draining pots, I use broken pots, broken tiles, brick bats, rotten stone, cinders and charcoal, in all cases broken moderately small and sifted free from all earthy matter and the finest broken parts. And if they are dirty, as broken pots often are, I wash them in a tub of water by stirring them around in it with a stick. In draining the pots, see that there is a good sized hole in the bottom of the pot, lay a largish piece of broken pot over it, then considerable of the loosely broken material, according to the size of the pot, one-half to two inches deep, and over this drainage scatter some swamp moss chopped fine, the rough siftings from the leaf mould, some chaffy manure or turfy loam, in fact, most anything that isn't bulky and which will effectually prevent the soil in the pots from being washed down into the drainage to clog or render it ineffectual.—*William Falconer.*

New York Notes on Flowers.

The most noticeable event of the season, as far as florists' work is concerned, was the marriage of Miss Roosevelt to Baron Von Zedlitz. Siebrecht and Wadley were the decorators, and they were given full liberty to carry out their own views with an extremely fine result. The ceremony took place at St. Thomas's church, where the decoration consisted of a line of Bermuda Lilies in pots, hiding the chancel rails, and a bank of fine Palms on either side, forming a semi-circle. The bride carried a bouquet of Lily of the Valley, mingled with Myrtle, the latter plant being used in deference to the German custom; at one side of the bunch was a cluster of Orange blossoms, Myrtle and Orange blossoms composed the bridal wreath. There were four bridesmaids; two carried bunches of yellow Roses and two pink, these colors being chosen to go with the groom's Uhlan uniform.

At the reception, held at the Hotel Bristol, the decorations were entirely yellow. The bride and groom stood to receive under an arch formed by two grand Palms at the end of the room. On either side was a bank of Palms and Geuista, rounding out a semi-circle at the end of the room. An immense mirror at one side of the room had a double curtain of Smilax, looped back at either side with a band of yellow Acacia, while a big bunch of Acacia hung in the middle.

No cut flowers were used in the decorations, except in the basket on the supper-table, even the mantels being banked with growing plants, very tastefully arranged with Adiantums, small Arecas, and Cocos, Genista, and some of the lighter Dracaenas, none of the red sorts being used. The first row of Adiantums along the edge of the mantels were laid sideways; these were overshadowed by others, and the remainder filled in with the taller plants.

The Genistas used on the mantels were compact round plants, grown in the European fashion and covered with bloom. This plant is in great favor for decorating. Big Palms were used in the hall beneath the large stairway; in

Vigorous Lily of the Valley.

fact, most of the plants used were such handsome specimens that they added greatly to the unusual excellence of the decoration.

The high-class florists say that large decorations of cut flowers are on the wane; their place is taken by showy arrangements of fine plants. We read every now and then in the daily papers of extraordinary arrangements in flowers, such as floral muffs for bridesmaids or for favors, but a fashionable florist declares that he has not made a single favor in any shape except that of a loose bunch this season. He says that the most fashionable favor is three or more large Roses with long stems; sometimes caught together by a fine wire hidden under the leaves, and sometimes tied with ribbon.

At a dinner, the centre-piece is often a flat basket, covered with Moss, the favors being laid upon this. In other cases the Roses are stuck in the Moss, to be distributed afterwards. The prevailing taste is for a low basket on the table, but sometimes several fine small Palms are massed together, Cocos or Kentias, and blooming Cyclamens put all under and around the Palms, hiding their stems.

Of course there is decided difference between a table at which the guests are seated and a table used simply for serving while the guests are seated about the room. The latter was the case at Miss Roosevelt's wedding, where the decoration consisted of a tall square basket standing diagonally. This was filled with Mrs. John Laing Roses and yellow Jonquils, and was tied with pink and yellow ribbon. On a table of this sort at the side of the room a one-sided basket is often used, such as one of the big rush hats on an easel. Very few wired flowers are used in these.

It is encouraging to notice that the most fashionable effects in flowers are the simplest and most natural; where an elaborate design would have been demanded in former years people of taste now ask for a basket or vase loosely arranged with long-stemmed Roses. There is also a very decided increase in the sale of loose flowers, especially for gifts. The steamer trade calls for a good many baskets, for the simple reason that this is the only way flowers can be arranged on shipboard, and baskets are also used largely for receptions.

Large Roses are really the most salable flower with the high-class florists; many of them say that Tea Roses are not salable at all with their customers. Violets are enjoying quite a boom; every one wears them, real or artificial. Fine white Violets are in the market—Swanley White—but one florist said that where he sold one bunch of white he sold ten of purple.

EMILY LOUISE TAPLIN.

Blackberry Growing My hardy varieties yielded from 65 to 100 bushels per acre. I do not think the wild Blackberry could be pruned and cultivated profitably.—*Jacob Faith.*

Spring Pruning of Raspberries. I have to acknowledge my conversion to the theory of the late pruning of the Raspberry. Just before the buds begin to swell is the most suitable time—*T. F. Longnecker.*

Use Pure Water on Plants. Dr. J. W. L. Thudicum, in a communication to the London Society of Arts, says that impure water breeds a sort of fungus at the roots, which soon destroys them.—*Vineyardist.*

Is there Money in Berry Growing? Yes! As much money can be made in small fruit culture as in any other branch of horticulture or farming; but a beginner should begin at the bottom and work into the business by degrees to make it a success—*B. F. Smith, Kansas.*

Black vs. White Grapes. There are too many white Grapes planted. It is proper we should have some, but the man who plants too many here in the West will be left. You can sell a hundred bushels of black or red Grapes to one of green or white. I think those particular kinds of Grapes are being pushed too much.—N. Ohmer.

The Adornment of Roadsides. Nothing gives better indications of the industry and good taste of a community than neat, well kept roadsides and door yards. Of later years the practice is to clear the stones out of the highway instead of their being brought from the field and placed in the road.—*Secretary Gilbert of the Maine Pomological Society.*

Catalpa as a Timber Tree. L. C. Francis at the Illinois meeting advised every farmer to have three or four acres of Catalpas, then the problem of cheap fencing is solved. With three barbed wires, a pole at the top and one or two at the bottom, it will turn hogs and furnish a good lasting fence. As the trees get large enough for building posts its lasting quality will make it valuable.

A Successful Man on Fruit Growing. A big pile of manure is the fruit grower's bank....To raise Strawberries successfully the ground must have rested the year previously as a summer fallow... Currants will bear fruit for twenty-five years and not lose their vigor.... An established home market is worth five foreign ones.... Three or four varieties of Grapes are better than a larger number....Grapes do not pay as well as Strawberries, but they pay 200 per cent better than common farm crops....To succeed a man must know his trade, be vigilant and honest and not expect to get rich all at once.—*A. Anderson before the Wisconsin Horticultural Society.*

Favorable Reports on the Sand Cherry were given before the Dakota Horticultural Society by a number of its members. The bush resembles the Currant, perhaps, a little more tree like, and is indigenous to the Missouri river district; but those of a trailing habit were to be avoided. The fruit varies from oblong to Pear shape and round, about the size of a Concord Grape and varying in color from purple and black to yellow, the latter being round and the best in quality and ripening in July; too stringent to eat out of hand, but in cooking this disappears, some thinking it equal to the Early Richmond for cooking. Propagated like the Currant, while pits germinate readily from spring planting in favorable conditions and reproduce their kind with little variation.

Willow for Tying Up Vines. Mr. G. Schoenfeld: Had rather have Osier Willow than any other material as it holds the vines the best. The manner of tying up vines quickly learned and then a person can tie much faster than with twine and is not liable to injure the vines by chafing. Mr. Blowers: have used the willows for several years; is more durable than twine and cheaper. Would advise all Grapegrowers to plant enough for their own use. Likes the three wires to which to tie. President Keyes: Glad to learn of the Willow, as twine is quite expensive. Mr. Duncan: Willow is decidedly the best and they grow well on dry land.—*Discussion at the Chautauqua Co., (N. Y.) Grapegrowers' Meeting.*

Some Points About Asparagus. About 400 acres of Asparagus are required to supply Boston. One grower had the same bed forty-five years. Sandy soil, with plenty of manure annually, is preferred, and the distance to plant is four feet by two, from root to root. Sprouts will become crooked from bruises or wounds. Salt is not essential, but is useful to kill weeds; Captain Moore, the priztaker, uses none. Mr. Tapley raises Asparagus where the tides run over the beds at times, so salt does not harm it. Mr. Wyman said that as between ground trenched three feet deep and land merely plowed, the latter was the best through twenty years. Setting six to eight inches is best as the stools gradually rise in the soil, and cultivation easier, the sprouts are less numerous and therefore larger; the covering should be sandy.—*Boston Gardeners' Club Discussions.*

The New Grapes Reviewed. George W. Campbell stated before the recent meeting of the Ohio State Horticultural Society that the Jewel is hardy, healthy, of good size, early, and fine quality, ripening about the middle of August, nearly equal to the Delaware. Nectar is black, handsome, with regular and large clusters. Eaton later than Concord and more acid, Woodruff is valuable, Pocklington hardy, but late in ripening. The Witt is a good new variety and worthy of cultivation, as is also the Colerain. Mary's Favorite, a seedling from the Deleware, is of excellent quality. Of new varieties he said he had rejected hundreds, many being valuable in some respects, but not up to his standard. He had one new variety that he hoped would prove worthy of cultivation. What he wanted was a variety of good quality, hardy, vigorous and productive. Mildew and Grape rot can be effectually thwarted by the use of sulphate of copper. Eau Celeste having also proven effectual in numerous experiments, is reliable and inoffensive.

Fruits that Succeed in Dakota. The Horticultural Society names the following sorts which have been successfully grown in the Territory up to this time: APPLES—Wealthy, Duchess, Whitney, Hibernal, Switzer, Zolotereff, Anis, Antonovka, Arabka, Prolific Sweeting and Kremen. CRABS.—Richland, Winter Sweet, Early Strawberry, Hyslop, Virginia, Martha and Briar Sweet. PEARS—Bessemianka and Limbertwig. PLUMS—Forest Garden, De Soto, Rollingstone, Miner and native Plums. CHERRIES—Sand Cherry (native) and Ostheim. GRAPES—Moore's Early, Janesville, Worden, Delaware and Concord. CURRANTS—Red and White Dutch, Long Bunch Holland, Fay, Prince Albert Black Naples and White Grape. GOOSEBERRIES—Houghton, Downing and native varieties. RASPBERRIES—*Red*, Philadelphia, Turner, Cuthbert, Shaffer, *Black*, Souhegan, Gregg, Ohio (late), and native varieties. BLACKBERRIES—Windom, Snyder and Lucretia Dewberry. STRAWBERRIES—Crescent, Wilson, Chas. Downing, Mt. Vernon, Glendale, Downer's Prolific, Jessie, Bubach and Gandy.

How and What to Plant for Ornament. But few people have a correct knowledge of how to plant trees in a lawn in accordance with the improved landscape gardening. By all means if the grounds are not very limited, consult a practical landscape gardener, that he may sketch off and direct the planting, if you expect a beautiful lawn and surroundings. If, however, you take upon yourself the task of the ornamental arrangement of the homestead, permit me to caution against the too common error of formality in the arrangement of trees, shrubs and flowers, in straight rows. The latest authors substitute curved lines, walks and drives, and planting trees and shrubs in clumps and fringes, and massing the flowers and foliage plants in given places so as to preserve unbroken a large portion of the lawn to a smooth surface of bluegrass. The planting of trees presupposes a correct knowledge of the growth and nature, pertaining to habits whether spiral, conic, upright or spreading, and size of mature trees, to avoid crowding beyond what is desirable.—*J. S. Ragan before the Missouri Meeting.*

The Question of Sub-Irrigation. On this subject Mr. Samuel Reynolds spoke as follows at the Kansas State Society meeting: "Water under the ground is incomparably more available for plant growth and fruit production than water on the surface. In New York and other Eastern States, what is known as the New Agriculture is nothing more nor less than sub-irrigation artificially produced. The roots, by capillary attraction, will soon become saturated and the plant food in this manner directly supplied. The advocates of this system claim that crops can be doubled and even quadrupled by this process without any possibility of failure, but it is hardly possible that its use can become general there because of the great expense attending it. Here, however, where the water underlies our valley at a depth of only a few feet, nature has done the work for you on a magnificent scale, and much better than it could be done by artificial means. All you have to do is to go and possess the land and you will find your bread and butter, fruits and vegetables, and all horticultural and agricultural productions suitable to the latitude in the soil awaiting your pleasure."

How to Prune Hybrid Perpetual Roses. Pruning should be done the second or third week in March though I have known the first week in April to be early enough. First take out all the small or sickly looking shoots, then prune the remainder from six to eighteen inches according to their growth. Many shoots show black blotches or rings on the last year's growth and in such cases the shoots should be cut away below such spots, even if you have to prune down to the plant itself. As a general rule moderate growing sorts should be pruned to about six inches, and strong growing ones from twelve to eighteen inches. The whole pith of the subject of pruning and aftergrowth depends on the careful observance of the habits of each individual plant, also the object in view; some prefer to have their plants dwarf and bushy, and to do this they must be kept well pruned in; but such as have small gardens should not prune too closely, rather aiming to make fine, tall bushes, as gardens are generally so surrounded by trees, fences, etc., that it is only when the bushes get to a considerable height that they can obtain the light and air, which no plant requires more than the Rose.—*John Henderson.*

The Business of Market Gardening Discussed by Gardeners.

[*Abstract of Paper by Mr. J. Wellington before the Boston Market Gardeners' Association and a Discussion.*]

Millions were never made by market gardening, but a good living may be. Rather pay $1,000 per acre for first class land than to have the ordinary run of farms at one quarter of that price. Nearness to market and location on a good road of course being points to be considered in buying or renting a farm.

If the market gardener can have both light and heavy soil, the former for early crops and hotbeds, the latter for late crops, Onions and Celery, he is lucky. He should raise a variety in order to have something to sell during the entire year, although, if one has land suitable for raising superior products and can make a specialty of them, he can secure an advanced price after his reputation has once been established. At least a portion of the hired help should live on the place as it is easier to get a good man with a family, than a single man who is more liable to leave at the first opening that suits him better. The best days for hotbeds and greenhouses about Boston, have gone by.

One great advantage is that our goods are usually sold for cash with few losses from poor bills. As for selling through commission men, when supplies are scarce it is pleasant, but in case of an over-supply the commission merchants are more ready to slaughter prices in order to get it out of the way.

In all cases a man should love his business and have for its a devotion that will make it arduous labors seem light, and he must needs have much perseverance to overcome the disappointments to be met, energy to drive his business and not be driven by it.

President Rawson remarked that gardening is a hard life, if you choose to make it so, but there is no need of it; it all depends upon the love of the business. The past year had not been very encouraging, but we must have the bitter with the sweet. We need to keep pace with the times, and when the the margin is small, increase our business so as to have enough to live on and something more. He was well pleased with the outlook. Within the past 25 years he had done everything on the farm from the bottom round to the top, and now it takes his entire time to superintend his operations. It takes a large business in merchantile lines to make much money; it is so with market gardening. Th

business pays if well understood and managed, and some of our expenses are growing less; manure is cheaper. An investment of ten thousand dollars will give a yearly return of four thousand profit.

Mr. Varnum Frost said market gardening was a hard life and that the business had not improved of late years; better crops of Lettuce, Radishes, Celery and Potatoes were grown thirty years ago than now, and that the opportunities for making money then were better than now; it needs more energy and more capital now to raise them, but all business is done on a smaller margin of profit than formerly.

Mr. John Crosby asked how the business of market gardening compared with other business; does it attract young men today? He thought that the market gardeners worked longer hours than any other class, and that very few men who had followed it for twenty years had a sound constitution.

Mr. Wellington said he had spent eight years, as a young man, at mercantile life in the West, and then came back to the farm where the investment of one hundred dollars seemed to be the surest means of returning a profit and has never regretted the investment. He found the first one thousand dollars the hardest to make; after that it was plain sailing. He believed that a gardener who was devoted to his business had a better chance than in any mercantile pursuit he knew of. Of several men for whom he had worked in other business, only one was now successful.

Mr. Pierce Cutter, of Arlington, produced his account book of 30 years ago, to show that prices were 33 per cent higher then than now.

Mr. Henry Allen did not want young men to be discouraged, the present being as auspicious as any past time for a young man to engage in the business and would advise him to go into gardening business rather than go to college, for we are overrun with professional men. If a young man puts into a farm the money and time that he puts in college he will be better off. Ninety-five per cent of the merchants fail. A young man in mercantile or professional life cannot expect to earn more than a living for the first ten years. Ninety-nine farmers in every 100 pay their bills, and some of them get to be well off, the cash system being the great blessing of the business.

Mr. E. P. Kirby said he had once been employed in mercantile life and took to the farm on account of health, on advice of a physician. He liked the business and meant to follow it. He considered that success in market gardening will in the near future be drawn along the lines of a knowledge of nature's advanced laws. Capital will be found to be a great factor of success in gardening as well as in other business. What is and wanted is push, both early and late, wet weather as well as dry.

Mr. Tapley had thought methods had changed during the past twenty years. Crops that paid then will not pay now. But if the man keeps abreast of the times, today is as good a time to engage in the business as thirty years ago. Pluck is necessary to succeed in the business and there is a good chance if one would look closely after the details. The business is better near smaller cities and towns than around Boston.

Mr. S. Hartwell: This business is much as farmers make it. My hobby is fruit; there is less margin now than formerly but we manage to live by doing more business. He would not recommend keeping cows in connection with market gardening, as the whole of one's time is consumed in taking care of his garden. Formerly, we got from $7 to $8 per barrel for early Pears; now $3 to $4. Formerly $4 to $5 per barrel for Baldwin Apples; now $1 to $1.25, but then we went to market in the night; now we send our stuff to a commission house and live more comfortably.

Mr. J. Stone: The profits of the business are not so good as thirty years ago and could not blame the young men for leaving the farm. If we had the old English laws where estates were handed down to future generations it would pay for the young man to stay on the farm. All the money that is made now in market gardening is in the rise and price of land.

Mr. Hall commenced gardening in 1856; thinks that there is as much money in it now as then; for one thing, hired help is better now and there has been a great improvement in the selling of late years. When he commenced it was necessary, after selling his vegetables, to have to carry them all over town, up two or four flights of stairs, etc.; now it is all changed; we drive our teams into the market the night before and are sold out before ten o'clock the next day, and have the cash for our produce.

Mr. Derby said he got along with his help better now than in years gone by as he has a system as to what he expects of his men. They go to work at five in the morning, breakfast at six, and are through at six at night except on rare occasions. He would not board help as it makes too much of a slave of the women. He has found that his friends are no better off today than he is, and they have pursued mercantile pursuits.

The discussion being closed a vote of the association was taken, and it was the unanimous sense of the meeting that market gardening compared favorably in a pecuniary sense with any other business that a man can pursue.

A New System of Refrigeration for Fruit Keeping.

[*E. H. Cushman before the recent Ohio State Horticultural Society Meeting at Troy.*]

It has long been known that by a steady, cold atmosphere fruits and vegetables could be kept far beyond their natural season and sold at advanced prices, especially Apples, Pears, Grapes, Onions and Potatoes. It is also known that necessary for success are dryness of atmosphere and absence of light; of the last two conditions, dampness has been the most difficult to eradicate, especially where ice was used as the cooling factor.

The vast commercial movement of our perishable food products has created a demand for a storage where any temperature down to zero can be steadily maintained together with a dry atmosphere to tide over a glut of perishable products and save producers and holders from the ruinously low prices of such times. To reach this result the inventive genius of our and other countries have been at work for the past 15 years.

The first machines were very expensive, dangerous and complicated and could only be used at a profit in warm climates far from nature's supply of cold. The principal chemicals that have been employed in the various ice machines are ether, one of the napthas and ammonia; of these ammonia has been the most successfully used, and today forms the basis of the most scientific, practical and economical methods now before the public.

The Cleveland Automatic Refrigerating Co. is equipped with an apparatus to produce the new freezing agent anhydras ammonia which they use in reducing the temperature of their storage rooms of 260,000 cubic feet capacity. The machinery to a casual observer appears to be a steam boiler and a complicated system of pipes and stills. These are in a separate room from the storage boxes and are used to convert the commercial ammonia of 26° to anhydras ammonia, and this (which in its natural state is a gas of about 120 pounds pressure) is liquified and in this state is ready for its work of refrigeration.

The extreme degree of cold which this ammonia water can produce was very forcibly impressed upon my mind. Mr. Iddings, the superintendent, drew about a gill of the liquid from a still into a tumbler and passed the glass to me. I took it between my thumb and finger just above the liquid and held it for a few moments only; it gave the same sensation that burning would.

I returned the glass to Mr. Iddings and we passed into the laboratory. The bulb of a Fahrenheit mercurial thermometer scaled to 40° below zero was placed in the ammonia; the mercury immediately dropped to the bulb and was frozen. The mercury was warmed to 60° and again placed in the ammonia. This time the mercury dropped to zero in 3 seconds and in 11 seconds more was again in the bulb. This showed a drop of 100° in 14 seconds by the watch, and by this illustration we can form some idea of what can be accomplished by anhydras ammonia.

The thermometer was withdrawn, and a tin basin with about a half pint of water was procured and the glass containing the ammonia was placed in it. The water began to congeal around the glass the instant it was placed in the basin. During all this time the liquid ammonia was seen passing off in its natural state of vapor or gas. We left the tumbler standing for about a half hour; on our return we found the ammonia had evaporated and left the tumbler empty with about an inch of ice surrounding it.

The liquid ammonia is passed through a system of pipes with which the storage boxes are fitted and in its efforts to regain its gaseous form by evaporation or expansion, it absorbs heat, the moisture condenses in frost on the pipes and a perfect refrigeration is produced. The ammonia gas as it passes from the refrigerator pipes is condensed into the liquid form with no waste and it is then ready to again perform its circle of duty.

The refrigerating boxes are about 45x15x8 feet, the walls are 10½ inches thick, consisting of three air spaces and one constructed of studding, matched stuff and paper; around the sides and ends of these boxes are the 1¼ inch iron pipes. The amount of pipe per box varies from 10 to 15 hundred feet, according to the degree of cold required. These boxes are constructed in ranks, with alleyways between. On the outside, at each door, are two thermometers and a checked card for registering the temperature of the box; one thermometer showing the outside, the other so arranged as to show the inside temperature of each room. The degree of cold can be guaged in the different apartments suitable to preserving the contents of the rooms and the ammonia can be turned on or off the same as steam or gas and otherwise regulated as may be required, without the least perceptible odor.

This system of cold storage is in successful operation in St. Louis, Nashville, Atlanta, Kansas City and Chicago, and the time is not far distant when this system of refrigeration will entirely supersede ice.

At the time of my visit, Dec. 5, the company had in storage eggs, butter, cheese, Apples, Onions, Grapes, Pears, fish, meat and poultry. Seventy dozen eggs put in storage August 13 and taken out Nov. 23, were candled and only two spoiled ones were detected.

For Pears it is not to be excelled. I saw as handsome Flemish Beauties as one could wish to look at that had been in storage three months, and I was informed that other varieties kept equally well. Apples were in store but had not been in a sufficient length of time for a test. Catawba Grapes placed in the box Sept. 10 were in excellent preservation; the berries were plump and fresh and the stems were as green as on the day they were taken from the vine.

This fruit, 15 tons, was placed in the box under very adverse conditions. The baskets were of green timber and at the time the Grapes were gathered the weather was very damp. After the fruit was placed in the box the air resembled a dense fog. Just here comes in one of the strong points of the system and an impossibility with ice. The pipes condensed the moisture in the form of frost, and in three days the atmosphere was dry and clear.

The company received a number of sacks of dried Peaches which were placed in storage during warm weather with the very best results. These Peaches were very damp and wormy when received and when taken out they were like newly evaporated fruit; the wormy tenants finding the climate not congenial to their tender natures, made a rush for the door every time it was open,

If we let the idea take firm hold upon us that this is to be the coming establishment of the future, preserving in time of plenty and low prices for the time of scarcity and high prices, carrying the fruits of one season far into the next, many times saving from waste the bountiful harvest we are so frequently blessed with, then we can readily conceive the vast revolution that will take place in our commerce.

On Rose Forcing: By a Successful Grower.

[*Paper by President W. J. Palmer before the Buffalo Florists' Club.*]

The starting point to successful Rose forcing is propagation. This should take place during February or March, using cuttings from well matured young shoots taken from strong healthy plants.

The cuttings placed in an ordinary sand propagating bed having some bottom heat, ought to root in about four or five weeks, then put them in 2½ inch pots, using good loam five parts, well rotted cow manure, one part, and a little sand. Give them a temperature of about 54° to 56° at night and water carefully, yet at all times giving enough water to keep the leaves from wilting. In four or five weeks repot into three or four inch pots according to size of plants, keeping

them in the same temperature until the end of May or a little later, if the weather is not too warm

The next step is to repot into five inch pots placing them in a frame, keeping them free from green fly by the use of tobacco, and also keeping down all weeds. About the first of July prepare the soil on the benches inside, using about ten parts of good fibrous loam to one part of old rotten manure with a little sharp sand. Set the plants in this soil fifteen by sixteen inches apart, give a good watering and syringe regularly overhead and under the benches three or four times a day. Put on just enough shading to break the extreme sun heat. Air should be left on night and day until October or even later if warm enough. Give a light mulching of old manure with a little bone dust.

From the end of September until cold weather comes is a very trying time for the Rose grower, because, as the temperature sometimes goes quite low, it often does a great deal of damage to healthy plants by producing a fungus on the young wood which takes off every leaf. To prevent this, start just enough fire to create a circulation, leaving the ventilators open to admit a little air and the plants can be kept in perfect health, and if at the same time some sulphur is put on the pipes, it will prevent mildew.

As soon as cold weather sets in and fires are kept steady, the watering and syringing should be done in the morning, on bright days if possible. During October give a second light mulch, as in July. Through the summer and until the 1st of October pinch out every bud as soon as they show and by this time they ought to be good sized bushes, a stake can be given each one, but do not tie the branches too closely. From now to the end of the season keep the house clean, giving moisture as required, a free circulation of air on every favorable opportunity, and a profitable crop should result.

The following twelve varieties I consider the best for winter growing: Mermet, Bride, Perle des Jardins, Bon Silene, Nephetos, Papa Gontier La France, Bennett, American Beauty, Sunset, Safrano, Souvenir de Ami.

Secretary Engle's Notes on the Pennsylvania State Meeting.

The Thirtieth Annual Meeting of the State Horticultural Association of Pennsylvania, was held at Lewiston, January 16 and 17, with au attendance of members surprisingly large; the display of Fruits was extensive and handsome, including a new seedling Apple, the "Gutshale," from Perry County, which attracted much attention for its beauty, its keeping and eating qualities.

Strawberries. Mr. Brinser in his essay, on 'Small Fruits" chiefly devoted to Strawberries, said that *Sharpless* and *Cumberland* are his leading varieties, while among the newer ones, *Jessie* was highly commended for hardiness, size and productiveness. *Bubach* yields more large berries than any other. *Manchester* produced heavy crops of fine berries, but has blighted more the past season than ever before. *May King* is no earlier than Cumberlaud, though very productive of good quality and firm. *Crescent* is too small and acid for a profitable market berry. *Jewell* wonderfully productive, large, and good quality, but foliage is scant and berries subject to scald. *Crimson Cluster*, *Parry*, *Mammoth Seedling* and *Belmont* have been discarded for better varieties. Half of his Strawberry plantation was mulched with common barn yard manure, the other half with clover straw transversely across the rows so that each variety had an application of the two kinds of mulch. The portion mulched with manure produced a crop of fine berries, while that covered with clover straw produced nothing but "buttons" or imperfect berries. Soil, location and treatment being the same; no definite conclusion was reached as to the cause. Mr. Brinser's first pickings are made into two, and his late pickings into three grades; his object being to have berries of uniform size in the same boxes, no "topping out" being allowed.

Raspberries. Mr. Davis of Juniata County, who grows largely for market, recommended *Ohio*, *Souhegan*, and *Gregg*, for black, and *Cuthbert*, *Turner*, and *Marlboro*, for red varieties, *Cuthbert* standing at the head of the list, and among Black Caps the *Ohio* is preferable to *Gregg*. Prof. Meehan stated that in eastern Pennsylvania the Raspberry has three enemies, leaf blight, the stem borer, (similar to the Currant borer,) and the honey bee. Notwithstanding the claim that bees cannot eat fruit or berries, they do destroy great quantities of Raspberries.

Bagging Grapes was strongly recommended by some as a preventive of rot, while others pronounced it a failure. The general verdict however was that it paid with the finest bunches even for ordinary market purposes Prof. Butz of the Experiment Station stated that some of the remedies for Grape rot recommended by Prof. Scribner of Washington, D. C., had been tested there and had proven satisfactory.

Spraying Fruit Trees. This subject was introduced by an interesting paper by Geo. T. Powell of Ghent, N. Y., who has had very satisfactory results with insecticides during the past two years. One, or at furthest two applications are sufficient unless followed immediately by rains. H. M. Engle of Marietta, sprayed his orchard the past season for the first time and the result was the finest crop of Apples he has ever gathered.

Cold Storage was treated by Col. McFarland of Harrisburg, who has made this topic a special study for several years. Cold storage of the future, when conducted on a large scale, will dispense with ice, and be accomplished by ammonia and brine; with the necessary machinery. Experiments in keeping fruits by this system have been very satisfactory.

Live Fences were briefly discussed, the members generally denouncing them as being too much trouble, taking up too much space, and not to be depended upon.

Potato Culture. Mr. Engle's method is to plant for early crop as early as it is safe to plant, and for the late crop, from the middle of June to July 1st is the best time as it gives the crop time to mature, and yet in a degree escape the extreme heat and drouth of midsummer. Early Ohio was considered the best early variety.

The next annual meeting will be held at Mifflintown, in the midst of some of the most extensive and profitable Peach orchards in the State. Following are the officers for 1889.

President, H. C. Snavely, Lebanon, Pa.; Vice-President, Josiah Hoopes, West Chester Pa.; H. M. Engle, Marietta, Pa.; W. M. Pennebak, Lewistown, Pa.; Recording Secretary, E. B. Engle, waynesboro, Pa.; Corresponding Secretary, W. P. Brinton, Christiana, Pa.; Treasurer, J. Hibbard Bartram, Milltown, Pa.; Librarian, Thos. J. Edge, Harrisburg, Pa.

Practical Value of Chemistry in Fruit Growing.

[Paper by Prof. W. R. Lazenby of the Ohio Agricultural College before the State Agricultural Meeting.]

The art of horticulture consists in transforming, by means of cultivation, crude and worthless materials into wholesome food products. These raw materials are furnished by the soil and such substances as may be added thereto, together with certain elements of the air and water.

The Needs of the Soil for Profitable Fruit Production. Plants are composed of certain materials, whereof by far the larger portion comes from the atmosphere, a smaller, though constant and essential part, coming from the soil. The former is yielded freely and abundantly, hence the important question relating to the substances furnished by the soil. Chemistry can help us to an answer, though it is doubtful if analysis of the soils will ever do more than furnish mere hints as to what may or may not be required. We do know, however, that the analysis of plants and fruits furnish oftentimes reliable guides as to what can be profitably added to different soils as fertilizers. The stems, branches and leaves of different fruit trees contain comparatively large quantities of lime and potash, and few orchards have ever been seen, the productive capacity of which could not be improved by the application of one or both of these compounds. Chemistry also tells us that our fruits, especially those producing much seed, contain a considerable amount of phosphoric acid, which is often lacking in the soil.

Average analyses of Grape seeds, give in 100 parts of the ash, 29 parts potash, 34 parts lime, and 24 parts phosphoric acid. The universal partiality for barnyard manure, is because it is, when well made and preserved, an almost complete fertilizer. Next to the barnyard manure, unleached wood ashes is probably the best fertilizer for the garden and orchard. Then comes lime, where the soil is deficient in this element, and phosphates or ground bone wherever the soil has been despoiled of phosphoric acid.

The Advantages of Thinning Fruit. The direct gain from thinning is the increased size and enhanced market value of the fruit. Chemistry, however, informs us of another benefit. By increasing the size of the fruit, we diminish the weigh of the seeds. A given measure of Apples containing one hundred specimens has but little more than one-half as much seed as when a similar measure of the same Apple contained two hundred specimens. As a large per cent. of the mineral ingredients of the Apple is found in the ash of the seed, it is obvious that to make as slight a draft as possible upon the soil, as well as upon the vitality of our fruit plants, we should aim, not to diminish the total weight, but to diminish the amount of seed by increasing the size of the individuals.

In the case of small fruits a selection of varieties with a comparatively small seed product would probably give the same result. An analysis of the Turner and Ohio Raspberries, made at the Ohio Experiment Station gave the following results: The Turner was found to contain 84½ per cent. of water and 15½ per cent. of solid matter. The Ohio contained 80 per cent. of water and 20 per cent of solid matter. Of the solid matter in the Turner a little less than 34 per cent. was seeds. In other words, the Turner had less than one-half the amount of seed found in the Ohio. These figures may not show which is the more profitable for market, but it does show which is the more exhausting to the soil, and the more profitable for the consumer.

Judicious thinning of our small fruits by pruning, or by the removal of fruit as soon as it is set, would likely not only give better results, but would also delay the exhaustion of the soil and prolong the life of the plant.

The Advantages of a Fruit Diet. Most of the substances found in fruit are essential constituents of human food. The two qualities that render fruits especially wholesome and cause us to crave them for their taste is juiciness and flavor. The juice is mainly water, but it comes in a grateful and refreshing form. The flavor is due to the presence of certain organic acids, together with certain volatile oils and ethers. When taken into the body they undergo oxidation, which process tends to lower the temperature of the blood, thus correcting any slight tendency toward a feverish condition which often exists. They also tend to keep the organs of secretion in healthy condition. In our climate, subject as we are to great extremes of temperature, having an arctic winter and a tropical summer, and passing as we often do abruptly from one to the other, the system is naturally debilitated, and in this condition we are predisposed to malarial troubles, for which fruit, on account of the free antiseptic acid it contains, is a great corrective.

Unripe fruit is not wholesome as instead of digesting it ferments and decomposes in the stomach, giving rise to serious gastric disorders. The same is true of over-ripe or partially decayed fruit. The question is often asked whether such or such a fruit is "healthy." This is bad English, unless you have special reference to the condition of the fruit itself; it is safe to say, however, that the teachings of chemistry, as well as our own experience, show that nearly all "healthy" fruits are wholesome.

Will Irrigation Pay.

[Mr. W. W. Rawson, before the Massachusetts Board of Agriculture.]

It is one of the leading subjects relating to horticulture and agriculture at the present time. Of the four articles important in the growth of plants, viz., light, air, heat and moisture, of the latter, there is from 80 to 95 per cent. in the composition of vegetables; from 70 to 85 per cent. in fruits, and from 70 to 80 per cent. in grasses.

The Necessity. The average rainfall of our New England States is about one inch of water per week or 50 inches a year. If that amount of water could be equally distributed each week in the year no irrigation would be necessary in this climate, but as we often have three or four weeks when no rain falls at all, the deficiency can only be supplied with irrigation. The artificial method of supplying moisture to growing plants is of most ancient origin. It has been in use by all foreign countries, while the most ex-

tensive irrigation in this country is carried on in California and Colorado.

Western Methods. I visited a portion of California this summer, and saw one irrigating plant where there was 900 miles of canal 20 feet wide and 10 feet deep that extended 40 miles from the head and the water flowed at the rate of two miles per hour. This canal had various branches running from it and was capable of irrigating 600,000 acres. The land was mostly covered with vineyards and fruit trees. The enormous outlay for constructing this plant was paid for by an assessment upon the land at so much per acre.

Then I also visited the market gardens which are irrigated principally from rivers or driven wells by means of a windmill or steam pump. They pump the water up to an elevation and run it down from the elevated tank on to the land in a broad trough about 10 inches square. The land cultivated for vegetables is arranged for irrigation previous to being planted and then irrigate from about the first of June. Some had from four to six windmills upon their grounds, and others two or three windmills and a steam pump. The wind in that section of California always blows at the rate of 20 miles an hour, at least eight hours in the day, so that a limited quantity of water can very easily be supplied by means of pumps and a windmill, but where a large amount is required a steam pump would be necessary.

In the New England States there are four seasons, so that it is quite difficult for us to tell just when irrigation will be needed. It may be in the early summer or in the early fall, so we should be prepared for it at all times. To irrigate in this section the water is supplied from rivers, ponds, brooks, or driven wells. Where it can be taken from an elevated pond or stream, no steam pump or windmill is necessary, but where it cannot a steam pump or windmill must be supplied. I prefer a driven well myself, with both steam pump and windmill.

Cost per Acre. The expense of arranging for irrigating a farm of 10 or 15 acres would be about $1,000; but I consider it only as an investment, because if the farm was to be sold, with that plant upon it, it would sell for as much more as the cost of the plant. The windmill furnishes the cheapest power for pumping water, but a sufficient quantity cannot always be obtained in that way. I prefer driven wells as a source of supply because in the summer the temperature of the water from the well will be lower than that from rivers or ponds, and it is of some benefit to have the water a little cooler; while in the winter season if we should need it for greenhouses, water taken from the pond would be very cold and would have to be heated. The expense of irrigation by steam pump, after pump, boiler and pipe are furnished, is the expense of fuel and labor. A steam pump which will pump 100 gallons of water per minute will irrigate four acres per day of twenty-four hours, putting 24,000 gallons upon each acre, which is about one inch of water upon a level. The expense of that would be: Coal, $3; for labor, $7; incidentals, $1, or $2.75 per acre.

Eastern Methods. There are three methods of irrigating: first, by applying the water to the surface of the ground; second, by applying it to the foliage, and third, by sending it through tiles. On low or heavy lands I should recommend irrigating by the way of tiles. Close the tiles at the lower end and fill with water from the highest point. On sandy or loose ground I should irrigate on the surface, because less water is required than by irrigating through the tiles and the soil would allow the water to work down rather than compelling it to rise to the surface. In irrigating under glass I would water the foliage, putting it on in fair weather inside, while in the field it may be applied with better advantage on a cloudy or stormy day.

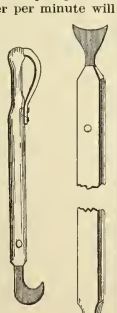
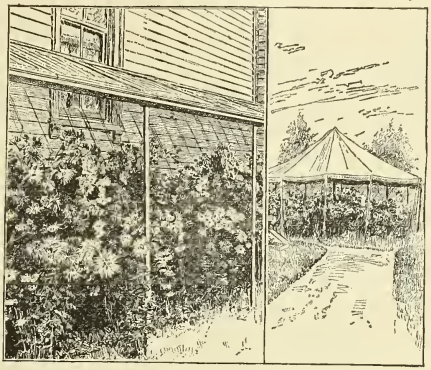


Fig. 1. Fig. 2. Implements for Pruning.

I would as soon think of being without a windmill or a steam pump upon my market garden at the present time as the farmer who cuts hay would be without a mowing machine. I would rather have a farm of ten acres well irrigated than one of fifteen acres without irrigation.

CONDENSED GLEANINGS.

Chrysanthemum Protection. Where desirable to keep these out of doors until the bloom is



Protecting Chrysanthemums for Bloom in the Open Air.

past, our illustration, from Mr. Jno. N. Gerard's garden, shows a simple way of managing. The plants at the side of house are grown in that situation and when frosty weather comes, they are protected by cold frame sashes resting on a temporary frame work, and, if the weather is very severe a canvas curtain is dropped down in front, and in this instance the window of a warm cellar can be opened at the back of the plants. Some 250 plants or more were thoroughly pretected from frost or winds by the tent, shown on the right of the picture, which has a ground area of 20x30 feet, and is made of sailduck and strongly roped. The walls are cleaned up in pleasant weather, the plants having as cool treatment as is safe. Heat is supplied by a base burner boiler, set in the cellar, from which runs a two-inch wrought-iron flow and return pipe around inside the lower base of the walls, and the plants have stood uninjured with an outside temperature of 20° Fahr., and doubtless would stand a much lower one. The colors are not affected, and air enough comes in without any special arrangement being made for it. —Garden and Forest.

A New Hook Pruner. I use a hook pruner like Figure 1. The handle is two feet long, and a strong leather guard securely fastened on, after the manner of a sword. With a buckskin gauntlet on my left hand, and this hook in my right, I can thin out a Rose or any other sort of bush expeditiously and neatly, even where almost any other tool would be useless. For trimming out my Raspberry and Blackberry patches I use an invention (Figure 2) that for this purpose is without an equal. Instead of pulling the carver against your face and breaking off half of those you wish to leave on, you can chip them off as slick as a whistle, leaving them stationary or pushing them away at the same time. The blade of one is one and one-half inches wide, and of another one inch wide, which I use among Currants and Gooseberries, the former among Raspberries and Blackberries, and the handles are five feet long. In using, the person stands up to his work, and he can chisel out canes and suckers more than twice as fast as with any other tool I know of, and no backache, no scratched hands or face, no cutting off or breaking out the wrong canes.—Philadelphia Press.

A Fine Native Azalea. One of the showiest of native shrubs in cultivation is undoubtedly the flame-colored Azalea (*Azalea calendulacea*). Although found wild on the mountain ranges of Pennsylvania and southward, it will succeed admirably in almost any position, though total shade is an injury, while a partial covering from the sun's rays is welcome. Fibrous loam is what the entire family delight in; a portion of leafmould incorporated with old, partially decayed sods meeting all the requirements of the Azaleas. While they love moisture, a surfeit about the roots will soon cause death. This particular species forms a beautiful large bush, eight or ten feet high, and during May is literally covered with its brilliant orange or flame-colored flowers. It is somewhat difficult to remove successfully from the woods, but, by pruning the top severely and never allowing the roots to dry, a fair success may be had, provided the plant is set in a shady location and faithfully watered for the first year or two.—New York Tribune.

The Vegetables Wanted in Market. Most of the Peas in our market are Marrowfats, very prolific but greatly inferior in quality. A few small lots of American Wonder and Champion of England were found, but these, though of the best quality, cannot be grown with profit. McLean's Advancer and Stratagem, enormous bearers needing no bushing, and largely grown at Arlington for the Boston market, are recommended. The chief Sweet Corn in the Buffalo market is the Evergreen, a large late sort, there seeming to be no early sort grown though Crosby's Early and Marblehead are excellent, as is also Potter's Excelsior for medium and late. Buyers should insist upon having these superior kinds and growers would soon find them far more profitable than the inferior varieties. Do not pack green Corn in close barrels as the sweetness is spoiled by heating.—Buffalo Courier.

As the English See Us. We have now before us the report of the fourth annual convention of Society of American Florists, held at New York in August last. The gathering was evidently a successful one, and the record is both amusing and instructive. To our taste there is too much "voicing" in the report, and many things that doubtless were appropriate and effective at the time seem to us not worth reproducing in type. But tastes differ, and while the Americans are mostly good speakers, we "er—er—er" so much, as to have provoked the just sarcasm, that we of all people best illustrate the truth of the statement that to err is human!—Gardener's Chronicle.

Is Salicylic Acid Injurious. To test the matter Kolbe took fifteen grains daily in his drink for nine months without suffering any inconvenience. Dr. Lehman gave to two laborers in Munich during three months about this daily dose, without inducing any apparent derangement of the system. It seems probable from these experiments that the prejudices against salicylic acid as a preservative agent in articles of food and drink is not well founded. We have in benzoic acid an agent equally efficient, against which no such prejudices exists.—Pharmaceutical Era.

Progress in French Gardening. The usual formal arrangement of plants in the Paris flower beds was not observed last year. Instead the beds were surrounded with a formal row of plants of one variety; the remainder, except when the bed was divided by lines of color, being filled with various combinations of flowering or foliage plants, grouped naturally, and some of the combinations made by the Parisian gardeners are far more attractive than the ribbon-border arrangement followed in the United States and England. Revue Horticole.

Appearance, Not Quality, Sells Fruit. Can fruit growers be censured for supplying that which buyers most delight in—showy specimens? Sweet Strawberries are apt to be shy bearers and small, while the sour or insipid variety is likely to be large and productive. Our cultivated varieties are picked as soon as colored (and many kinds color long before ripe), and often before coloring, in order to reach distant markets. Pick the wild Strawberry in that fashion and its reputation for quality will go.—Green's Fruit Grower.

About California Raisins. In 1875 6,000 boxes were made. By 1880 the production had reached 75,000 boxes. It steadily increased to 170,000 in 1884, and the following year jumped to half a million. The increase has been maintained and bids fair to continue as 700,000 boxes were turned out in 1886, 800,000 in 1887, while it is estimated that the output for 1888 will exceed a million of boxes. In a few years we will be able to supply the whole of the United States.—San Francisco Journal of Commerce.

The Nigella in the Garden. "Love in a Mist," or "Lady in Green," or Nigella is one of the lovliest annuals with which I am acquainted, and

they are exceedingly useful in many kiuds of florists works. And in additiou the seed is deliciously fragrant, and as elegant for sachets as Rose petals or Orris root, and the fragrance seems not to waste or lessen as is the case with Rose petals, and for the sake of the sweet seed, the plaut is worthy of a place.—The Mayflower.

An Ancient Watering Pot. This is described in Hone's Year Book as illustrating a text of Shakespeare. This thing was a heavy piece of pottery, holding but a small quantity of water, and to use it must have been a task to draw tears from a man. Such pots are not wanting in collections of ancient pottery, and quite a considerable group of them may be found in the Guildhall Museum, London, Whoever, having had a little experience of watering, sees that group of unwieldy pots, will be bound to bless the tinman or whatever man we are indebted to for modern pots that weigh little and hold much.—London Gardener's Magazine.

Market Gardening in Texas. We are now entering a new era in farming—that is, truck-farming and market gardening, though for the vegetable grower the seasons do not coutinue long enough. Cabbages, Beans, Green Corn, Tomatoes, Potatoes, etc., begin to get scarce when the dry season comes on, prices go up, and unless supplied from the distant fields of Calfornia there is nothing of that sort in the markets.—Texas Journal of Horticulture.

Stocks for Dwarf Pear Trees. On examining a dwarf Pear tree there will be found evidence of the disagreement in an enlargement at the point of union and this disagreement affects the fruit more or less, in the case of the Angers Quince (which is generally used as a stock) always favorably, while with the Mountain Ash and the Thorn (sometimes used for a stock as a matter of curiosity) the fruit is more acid than is agreeable.—National Stockman.

The New Japanese Squash. In cooking qualities I find it surpasses any Squash I have ever tested. The vine is a rank grower of a dark green color and very productive, 15 Squashes coming on a single vine. The Squashes are from 4 to 5 inches thick and about 8 inches in diameter. The flesh is a rich yellow and thick, leaving only a small cavity for seed and keeps in excellent condition till Spring.—Delaware Farm and Home.

American Apples in England. The brilliant appearance of a mountain of Baldwins tells that there is more to be done to meet the home demand for fruit than the organization of leagues and conferences. We want better cultivation, more spirit in speculating, more care in marketing, a bold sweeping out of inferior varieties, and considerable improvement in the sunshine. —English Gardening Magazine.

Is this Experience General. The waterproof fibre cloth, as a substitute for glass in covering hot-beds, cold frames and plants needing protection, is said by many who have tested it, to be very unsatisfactory. I cannot speak from experience. But I have grown suspicious of things for which such extravagant claims are made.—Hartford Times.

Growing Onions in the South. In January we have green Onions from seed sown in November and these lasted until April, then ripe ones to October. In August we planted sets and they gave us green Onions the latter part of October, which will last till the seed grown crop is large enough to use.—Florida Agriculturist.

Red Celery is the choice in English markets, three parts out of four being that color in Covent Garden market, and the same is true of its use in private gardens. It is considered more nutty in flavor, hardier, has less hollow stalks. Here there is very little red Celery grown; white seems to be the choice.—Prairie Farmer.

The Bubach stands among the most approved of newer Strawberries; is a strong grower, good bearer and a large handsome berry, but in some localities it is quite poor in flavor, while in others it is succeeding admirably as a market variety.—Country Gentleman.

A Report on Pears. Bartlett, Anjou, Lawrence, Lucrative and Louise Bonne hore the most fruit. Kieffer failed to make the rapid growth credited to it, and Le Conte was blighted, notwithstanding the claim that it was blight proof. Lawson and Early Harvest are believed to be synonymous, and the latter is entirely worthless.—Bulletin Mass. Experiment Station.

Some Good Roses. A. K. Williams and Marie Baumann seem to be the two best Hyhrid Perpetuals, while among the new Roses the Duchess of Leeds, a seedling from La France, possesses its parents characteristic in habit of growth and type of flower, though smaller; but it is deeper in color and it is likely to make a pretty garden Rose.—London Garden.

Cherries for Roadside Planting. These are about the only fruit trees which can be recommended for shade along roadsides, as the hardy varieties of Cherries are not affected hy the trampling of stock or passing of vehicles, which would prove injurious to most other fruit trees.—Rural Canadian.

Treating Split Trees. If split by frost, spread melted grafting wax over a piece of muslin, and place it over the wound, tying securely in place. The waxed strip should be large enough to entirely cover the wound.—Farmer's Call.

Planting Young Trees. The planter of one-year-old Pear trees will, under ordinary conditions, have a more productive and profitable orchard than by planting older trees.—Michigan Farmer.

Each tree and flower planted should be so well grown as to inspire in every beholder a love for horticulture.—California Florist.

But one Mulherry, the Downing, is worth cultivating for its fruit.—O. C. Farmer.

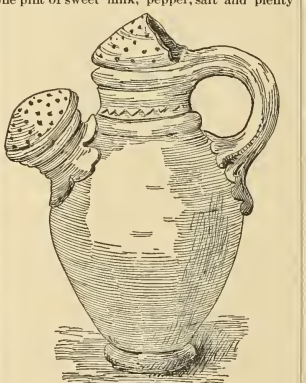
Vegetable Products on the Table.

Parsley Omelette. To some chopped Parsley add six beaten eggrs, pepper and salt to taste, a little flour and a pinch of yeast powder; and when well baked serve hot.

Baked Onions. Cook in two waters, the second being salted. When tender, drain; then bake, seasoning with pepper, butter and salt, pour on soup stock or milk thickened with flour, and serve when brown.—Michigan Farmer.

A Fruit Hash. This consists of Oranges, Bananas, Lemons, Apples, Raisins, and Pineapples cut into little bits and served with nutmeg and and sugar. A hole is cut into the stem end of an Orange, the inside scooped out and the skin is filled with the hash, and frozen.

Tomato Soup. Take a pint of canned Tomatoes, cut up fine, add one quart of boiling water and boil; then add one teaspoonful of soda and one pint of sweet milk, pepper, salt and plenty



An Ancient Watering Pot.

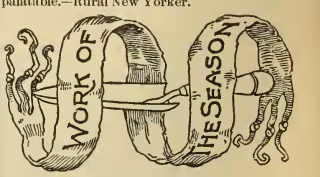
of butter. When this boils add eight crackers rolled fine, and serve.—American Cultivator.

A Custard of Apples. Peel, core, and slice the Apples, put over a slow fire, stew as for Apple sauce: beating with a fork until smooth adding lump sugar to taste, and add two drops of lemon extract when cool. Stir one well beaten egg thoroughly into the mixture; then turn into a glass dish.—Detroit Free Press.

Stuffed Sweet Potatoes. Bake enough to give easily when pressed, cut off the top above the middle and take out the Potato, keeping the skin intact. Mash the inside with butter, a little minced meat, and a well beaten egg, then replace in the skins; fasten on the tops, and leave in the oven for five minutes.—Poultry Monthly.

Using Dry Peas. Wash a half pint of split Peas and soak over night, drain and add two quarts of cold water. Cook an hour and a half then add a small Onion chopped fine, salt and pepper to taste and boil an hour longer, then flavor with Celery cut in bits and cook half an hour more. Toast stale bread and pour the soup over it.—Mirror and Farmer.

Potato Using Without Waste. In paring the Potato if it is cut deeply, as is likely where the eye is deep set, there is much waste of the nutritive part. One of the best ways of preparing Potatoes is to bake in their jackets; the moisture evaporates until the starch beneath the skin cracks when opened. The skin itself, if properly buttered and salted, is liked by many as well as any part of the Potato and thus the whole may be eaten without waste; but baked Potatoes when cold are not so easily made palatable.—Rural New Yorker.



HOUSE PLANTS.

Achimenes. Start at intervals of a couple of weeks, to secure a succession of bloom.

Amaryllis. Occasional applications of weak manure water will help them when in bloom. Considerable sunlight is required for perfect flowers.

Begonias. For plants wanted for next winter's decoration the cuttings should now be struck. The large show-leaved section (*B. Rex*) can be increased by laying the older leaves flat on their underside, weighting them down with a little sand, on soil, in a warm shady place, and they easily form roots; the main ribs should be cut at the joints to assist this somewhat, potting the parts seperately later on. Old plants for summer use can be started and repotted in light, rich soil.

Caladium Esculentum. Remove the little bulblets from the large ones before starting. Place one inch apart in sandy loam, well firmed and with good drainage, when large enough give five or six inch pots.

Callas. For continued bloom top dress the soil with fine manure or apply liquid manure twice weekly, or shift into larger pots, using rich, light soil. To secure large plants keep side shoots down, and give plenty of pot room.

Canary Bird Flower. Start as directed for Ricinus. Grow in light soil. Plant in sheltered situation.

Canna Bulbs. Place in heat for early, and after they have started pot in very rich soil. They are increased by divislon, leaving a strong shoot to each part, or sow the seed after soaking it in water for 24 hours, starting with this when boiling hot.

Cyclamen seed sown now and grown near the glass until warm weather, and with good treatment later on, may be had to flower by January next. Shift in light, rich soil, leaving the bulb or corm half uncovered.

Dust. Keep the foliage of all plants clean by the frequent use of a damp sponge.

Insects. At no time do they increase as rapidly as now if given a chance. Whale-oil soap suds and Tobacco water sprinkled on or applied with a sponge will be effective if faithfully applied.

Oxalis, with plenty of sun will do well; the flowers do not open in the shade.

Primroses. Seed of the hardy class may be now sown; shade the seedlings from the direct rays of the sun, and aim to have them ready for planting out when the ground is warm.

Richardia or Spotted Calla. This month is the proper time for starting these in pots.

Ricinus (Castor Oil Bean) sown this month singly in pots in heat will quickly germinate and make fine plants for the center of summer beds.

Salvias. Grow either from seed or cuttings. They require a light rich soil, with fair pot room. Scant watering and small pots are injurious.

Vallottas. As the growth increases these will need more pot room, yet too much is undesirable.

LAWN AND FLOWER GARDEN.

Annuals like Mignonette, Candytuft, Larkspur, Collinsia, Clarkia, etc., may, for early cutting, be sown outside as soon as the ground works up well.

Border Perennials in the way of Phloxes, Irises, etc., that have been occupying the same place three or four years, should now be divided and reset into new positions, giving rich soil.

Bnlbs such as Tulips, Hyacinths, Crocus, etc., in beds should aloug with uncovering after the middle of the month have the soil about them firmed to prevent injury from the loosening effect of frost.

Cypress Vine (*Ipomœa Quamoclit*). Seed to be started in heat and the young plants to be grown in pots till frosts are over, then set into rich open soil.

Dahlias. If any increase is desired they may be started now, and divided later for planting out. See Cannas, under House Plants.

Evergreens. Specimen trees had better be trimmed before growth commences. When transplanting Evergreens pruning is often treated as of slight importance, but it is no more to be neglected than the same in deciduous trees.

Grass Plats. Roll these as the frost leaves, in order to secure a nice smooth surface. Re-seed wherever any bare spots show. For new lawns sow the seed as soon as possible.

Hydrangea. The Grand Panicle-flowered hardy sort, now largely grown in clumps, should have, to promote to the fullest its blooming powers, a rather severe heading back each spring with a good top dressing of old manure every other season.

Ornamental trees for planting should be ordered without delay, if not already done. Climbers should have their supports renewed or repaired as required, before growth begins.

Roses. The tender section to have part of the cover removed, while the hardy hybrids and mosses may be entirely uncovered if the weather is favorable. The Prairie class should be trimmed and tied where wanted. Well rotted manure can be worked about the roots with advantage.

Shrubs. The condition of such as are somewhat old will be improved if a portion of the old soil is replaced with fresh, or top dressed with fine manure; however, if more foliage than bloom is produced one quart of slaked lime to 100 sq. ft. of surface would be a good dressing. Clear out dead wood and renew any needed supports.

Stakes, Labels, Etc. Repaint as needed, both to secure neatness and durability. Dipping the ground end of new ones into hot gas tar will tend to preserve them.

Sweet Peas do better to have the seed sown early to secure germination before the ground becomes very warm. Some might be started in pots and transplanted if carefully handled.

Walks. Get these in order, raking, rolling, etc., among the first jobs of Spring.

PLANT CULTURE UNDER GLASS.

Achimenes. Follow directions for Gloxiuias.

Airing. The increasing sun heat demands special attention as to ventilation. Too little fresh air, with free growth will cause plants to become weak and much more liable to disease and more easily injured by the attacks of insects. Still beware of rough draughts, as an excess of cold air in this form checks growth and causes mildew. To have stocky, healthy plants depends largely on judicious airing, with ample room for each plant.

Alternantheras. Fill the pots containing the old plants with sand on top of the soil so one inch of their lower parts are covered. Place near to the glass in high heat, and never stint them in watering. Roots form quickly from each of the stems, and these may then be divided, potting separately in light, rich soil and placing them in a warm hot-bed,which should be kept close enough to cause a high heat and moist atmosphere.

Azaleas generally should now be in full bloom and making new growth. Water thoroughly, as actually needed and preferably in the afternoon. Much fire heat is not desirable this month, and to prevent the sun's burning the foliage shade overhead lightly before April 1st; syringe daily. Admit air regularly, but not in strong draughts.

Bedding Plants. Coleus, Alternantheras, Achyranthus,Verbenas, etc., for main stock, will be of the most suitable size for bedding out if propagated now. Many other kinds will also make good second-sized plants if struck in March.

Bulbs like Hyacinths, and Tulips,which were forced, while of no use for forcing again, will better complete their growth and ripening if kept fairly watered and in a growing place; after the usual rest plant out in the fall in a permanent situation.

Camellias after blooming will be invigorated by applications of soot water, which will clear the soil of worms and help next season's growth. The white and brown scale too are now the most likely to prove troublesome, having tender wood to work upon. Warm soap-suds and a brush afford an effective remedy.

Centaureas. If the seedlings of the cut-leaved *gymnocarpa* are put by twos in 2 3-4 inch pots and left until pot bound, and then are separated and placed singly in four inch pots and placed into hot beds, they will easily make fine healthy plants by planting-out time. Do not set the seedlings too deeply in the soil, for then a black rot at the surface may destroy them. The entire-leaved *C. candissima* easily suffers from being kept too wet.

Double Primroses. This is the proper time for propagation from slips.

Gloxinias. For succession start some of these each month until May, and as they show growth of an inch or so, place in the pots in which they are to bloom. Heat, moisture and shade are necessary for best results.

Klenia Repens. Old plants soon get too unshapely for use, and a young stock should be brought along each year. A common soil will do for these.

Liliums in pots about too bloom will be benefitted by an occasional dose of manure or guano water. As green-fly are very partial to these, strew Tobacco about the pots and then,with fumigating also they may easily be kept down.

Palms. Such as come from seed should be sown.

Pelargoniums. Give air freely and also weekly doses of liquid manure.

Roses. Mildew will result from too much airing when the weather is raw and chilly, even though it seems bright; while air must be admitted, yet judgment should be used.

Shading the glass over hard-wooded plants, Double Primroses, Ferns, etc., is quite a necessary course generally about the last of the month. A cheap and simple method is to apply common whitewash; while naptha colored like milk with white lead and throwu on with a syringe is also satisfactory.

Space. This is a time when a close overhauling of stock, throwing out any surplus in the more inferior plants, is required.

Watering at this season of free growth and when moisture becomes so rapidly takeu up, is liable to be inadequate uuless special paius be taken to water often and regularly. Some kinds require more water than others, and such should be attended to at least twice daily, dependent upon by the state of the weather.

FRUIT GARDEN AND ORCHARD.

Blackberries. See under Raspberries.

Cherry Trees. A good disease preventive is said to be the following mixture: One pail of common whitewash, one pint of soft soap, in which is stirred one pound of sulphur and applied to the trunk and main branches of trees. For seedlings sow the Cherry pits as soon as the ground thaws.

Currants. For large clusters and berries thin out to six or seven shoots. Set new plants four feet apart each way.

Cuttings of Grapes, Currants, and similar plants which were made in the fall should be uncovered and cultivated. Now ones should be taken off close to the old wood and set so that one eye on the Grapes show and two eyes on any other kinds.

Gooseberries. Treat as directed for Currants.

Girdled Trees. If not eaten clear to the wood a simple and efficient course of treatment is to paint over the cut with dilute gum shellac, early in spring, filling up the soil to cover it. Where the wound is too high, a paste of cow manure and clay bound on will usually save the tree. Where badly girdled, insert several scions around the wound, with one end below and the other above the cut, and cover to excinde the air; this will likely prolong the usefulness of the tree.

Grafting for most trees should be done when the buds are fairly swollen. With Cherry and Plum, however, the earlier it is now done the greater certainty of success. See page 98, last month.

Limbs Broken off by high winds and leaving a jagged surface should be smoothed with a sharp knife and covered with grafting wax.

Manure about the trees, vines, etc., ought to be dug under without delay.

Old Orchards are benefited by yearly sowiug two bushels of Peas to the acre, having the land well fertilized, and then when nearly grown, after marketing the main part, plow under or turn pigs in on them. Where the orchard is in sod, extra care is necessary in preventing borers, field mice, etc., from doing injury, as the turf affords these lodging.

Peaches. For providing a more uniform temperature to the roots, of alternate thawing and freezing, a mulch of shavings over them will be of benefit during the spring season. More especially, wood ashes are an excellent, if not the very best fertilizer. The Massachusetts Agricultural College recommends a compost of three hundred pounds guano, two hundred and fifty pounds bone black, and two hundred pounds muriate of potash per acre, as a remedy for the yellows as well as a fertilizer.

Pruning. During this month, this should be finished on fruit trees and Grape vines before the busy days of spring.

Raspberries. Set new plantations as early as possible, two feet apart in the rows which are six feet apart. Uncover any tender plants.

Strawberries. Upheaved plants must be firmed by rolling or tramping the soil before the sun's heat does them injury after being uncovered. A portion of the bed might be advanced a week or more in bearing by enclosing the bed with twelve-inch boards and covering with muslin. The earlier the plants for new beds are set out after the ground works up well, the better, and the soil cannot be made too rich or deep.

Trees Frozen in transportation to be so sheltered or covered as to allow of gradual thawing.

Young Orchards. Thorough cultivation for these will be repaid by future increased fruitfulness. In trimming avoid the formation of crotches.

THE VEGETABLE GARDEN.

MANSFIELD MILTON, MAHONING CO., O.

As soon as the ground is in snitable condition prepare for early crops, butdo not plow or work it in a wet condition, especially if of a clayey nature.

Asparagus. Sow seed for new plants; stir the surface of the old beds before growth commences. Now is a good time also for making the plantations of Asparagus; being a rank feeder, see that the ground is supplied with an abundance of rotten manure, and plow or dig deep.

Beets. Sow in some sheltered place.

Cabbage and Cauliflower. Plants sown last month transpiant into other frames or boxes about 1½ inch each way; after they start into growth give all air possible on suitable days.

Celery Seed for Early Plants. Sow in the hot-beds which were used in starting the Cabbage plants. Sow thinly in rows.

Early Peas. Sow the smooth kinds, as they will not be injured should the ground be frozen after sowing; the wrinkled sorts leave until later, as they will rot more easily.

Horse-radish. Whatever roots are in the ground should be dug, and sets for new shonld be planted early in very rich ground.

Hot-beds. Make these for seeds of Peppers, Tomatoes and Egg Plants for main crop. Also start on inverted pieces of sod, seeds of Melons, Cucumbers and Lima Beans; by cuttiug the sod in pieces about three inches square, the seed can be sown in them, and will make good plants for placing in the open ground in May. This will give a month's start of such as are planted in the open ground.

Lettuce may be sown for early using.

Onion Seed and Sets. Get into the ground as soon as possible. Unless Onions are gotten in early enough to make a good start before the hot weather sets in, success with them is seldom attained.

Parsnip, See under Salsify.

Potatoes. Some time may be gained in having the first new ones if the cut tubers are placed where it is warm enough to the start the huds before planting,

Radishes. Some of the small scarlet varieties can go in as soon as the gronnd is fit.

Rhubarb wanted for early should have a barrel placed over each plant and covered up with manure.

Rhubarb. See directions for Asparagus.

Salsify or Vegetable Oyster still in the gronnd dig before they start into growth, also sow seeds of them, selecting a deep sandy soil, which has been manured with thoroughly decomposed mauure. Fresh or green manure is unsuitable for this crop.

Spinach. Remove the covering this month. Sow for succession when the ground is ready.

FRUITS AND VEGETABLES UNDER GLASS.

Asparagus. Old roots that were lifted in the autumn may go into heat, covering them here with four inches of earth, and placing them so thickly that the space of a sash 3 ft. by 6 ft. ought to accomodate near a hundred roots.

Cauliflower. About the 15th, on the stages from which the last crop of early Lettuce was cut, Snowball Cauliflower plants brought along for this purpose may be set a foot apart each way. It will be ready for marketing several weeks before the outdoor crop.

Cucumbers. These now require an even temperature of from 60° to 66° at night with a 10° increase by day. Bring earth up around the vine at intervals. In new hot-beds air carefully. For later planting sow seed in small pots.

Grapery. In hot-house water freely now, giving some air. Do not allow too many bunches to continue growth. Head in the laterals in cold house. While the leaves are expanding syringe daily until they are completely out.

Pines about to fruit need to be well supplied with water, and an increase of bottom heat. Place roots or suckers in an active dung or tan bed, and after roots have formed they can go into pots ranging from 5 in. to 8 in. across. Plunge these close to the glass, but giving ample space, and give no water until they make roots into the new soil. Keep up a heat of 55° to 60° at night, and 10° higher by day, and give a little air.

Radishes. Sow thinly in the hot-bed in rows about three inches apart, and thin out to one inch apart in the rows. The Early Round Dark Red and Small-topped Forcing are among the best.

THE POULTRY YARD.

Abundant vitality and "broiler points" should have the preference over "standard points" with the market poulterer.—California Cackler.

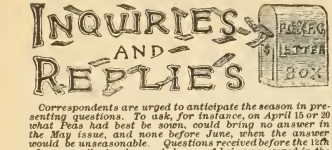
One egg a week will pay all expenses of keep. Every egg over is profit. The greater the number of eggs secured the lower the cost of each egg proportionally.—Fancier's Review.

A Poultry Raiser may be very successful in raising fowls but if he lacks the ability to dispose of them at the best prices and in the best condition he will lose much, if not all of the profits that would accrue from a well managed business.—Indiana Farmer.

A Small Beginning is Best. If you have an ambition to keep poultry on a large scale—say a thousand hens or so—don't begin with that number; get a small flock and increase the number as much each year as you can profitably manage.—American Farmer.

Gathering Eggs. This should be done daily, placing the eggs in a dry, cool room, but not in a cellar. For turning the eggs we use patent egg boxes, holding two dozen eggs. They are made of wood with a lock cover so either side can be turned up or down.—Poultry Bulletin.

Profit in Grading Eggs. Do not have several colors and sizes together. Keep the dark eggs and the light ones apart, and pick out the small ones for selling separately. It will pay, and assist in securing you a reputation. The New York market prefers light and the Boston market dark eggs.—Rural New Yorker.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unreasonable. Questions received before the 15th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of impiements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,131. **Becoming a Landscape Gardener.** A school boy would like hints on preparing himself for this profession.—WEST, *St. Johnsbury, Vt.*

1,132. **Poultry Book.** Which is the best for one who knows nothing of the business?—D. C., *Elmira, N. Y.*

1,133. **Best Banana for Texas.** What one is suitable for the amateur. How cultivated?—MRS. N. C. B., *Sweetwater, Tex.*

1,134. **Tree of Heaven (*Ailanthus*) for Canada.** Is it desirable for this latitude?—W. W. R., *Toronto, Ont.*

1,135. **Making Insecticides.** What proportion of Paris green or London purple should be used; how to make kerosene emulsion?—J. D. W., *Savannah, Ga.*

1,136. **Geranium Leaves Diseased.** They become cup shaped in window culture, temperature 50° at night.

1,137. **Sewer Gas and Plants.** May plants in a bath room having a water closet, have died. Is the gas the cause?—F. C. T., *Brooklyn, N. Y.*

1,138. **Grapes in the Mohawk Valley.** Would they be profitable here? We have occasional frost about blooming time; they do well in gardens. Small fruits are largely grown.—D. R., *Frankfort, N. Y.*

1,139. **Heating Hot-beds with Boiler.** (*a*) Could not a hot-bed two be heated having a flow and return pipe. (*b*) To what length might it be ran?—H. R, S., *Bracondale, Ont.*

1,140. **Lily Planting in Spring.** Would Lilium speciosum elegans, Kramer's and Hanison's if planted this spring, bloom this year?

1,141. **Iris Planting.** What time is best, spring or fall?—W., *Onida Co., N. Y.*

1,142. **Propagating Rhododendrons.** The easiest and cheapest method?—A. S., *Woodstock, Md.*

1,143. **Preparing Mushroom Beds.** How should this be done, using spawn? Will they succeed in cellars in the winter?—G. P. D., *Rockford, Ill.*

1,144. **Arbor Vitæ of Canada.** (*a*) Is this our native Canadian Cedar or the conical Cedar of the Hudson river, N. Y.? (*b*) Can the lacer be raised from seed? I have often failed with it.—J. M. K., *Linsay, Can.*

1, 145. **Bermuda Lily Treatment.** How should this be managed?—MRS. T. S., *Redding, Conn.*

1,146. **Best Early Tomato.** Which variety answers to this?—J. H., *Merino, Ont.*

1,147. **The Patent Old Oak Process of growing nursery stock** is advertised out west. Can any one speak as to its value, etc.—T. H. B., *Louisville, Ky.*

1,148. **Wild Cucumber Seeds Wanted.** Where can they be had, and the cost?—J. E. L., *Colorado Springs.*

1,149 **Almond for Peach Stock.** Has any one tried the Hard Shell, as a preventive of the borer?—W. C. D., *Pratt, Kan.*

1,150. **Keeping Onions from Sprouting.** How can this be done in North Carolina when kept over winter? B. J. F., *Ashboro, N. C.*

1,151. **Wintering Scions, Cuttings, etc.** What is the best way for this?

1,152. **Propagating Hardy Roses.** Which is the best method for amateurs?—J. M., *Delaware, Iowa.*

1,153. **Jackman Clematic Trimming.** Is it the best, to keep these all back to one shoot or allow all to grow?—W. T., *Saugus, Mass.*

1,154. **Renewing a Grape Vine** Will an old Brighton make new wood if cut to the ground?

1,155. **Smoke Tree (*Rhus cotinus*) Blighting.** The blooms on my tree never mature, why is it?

1,156. **A Good Early Pear.** I want one that will ripen just before the Barlett.

1,157. **Late Cherries.** Which is the latest variety? also one that would directly follow Gov. Wood.—E. P. C., *Attleboro, Mass.*

1,158. **Destroying Moles.** How can this best he done?—W. F. K., *Redwing, Minn.*

1,159. **About the Kelsey Plum.** Would it do well in this section; is it generally desirable?—W. E. F., *Feeding Hill, Mass.*

1,160. **Azalea Leaves Dying.** The leaf tips first look as if they were burned, beginning with the oldest, and as Moody's cover the whole plant, which then dies. Can anything be done?

1,161. **Wistaria Sinensis Hardy.** Will it stand hetween 31° and 50° below zero?—R. S. S., *Winnipeg, Manitoba.*

1,162. **White Grape Information.** (*a*) What is the best for market. (*b*) The best quality alone considered. (*c*) Is Moore's Diamond, early, hardy and giving general satisfactio.n?—D. W. Mc., *Menlo, Iowa.*

1,163. **How to Start Early Potatoes.** How is this hest done?—C. J. P., *Port Perry, Ont.*

1,164. **Grape Production.** What is the yearly Vineyard product of the United States?

1,165. **General United States Agricultural Statistics.** What is the best sort of information open to Canadians?—E. D., *Winona, Ont.*

1,166. **Cherries for Market.** Are Cherries profit able? Which are the best varieties?

1,167. **Black Knot on Cherries.** Which sorts are the least affected by this fungus?—S. C. S., *Livermore.*

1,168. **Gladiolus Changing Color.** No matter what color mine are the first year, the next they invarlably come in the old style of red and yellow type. Why do my plants not seed?—L. M. D., *Attleboro Falls, Mass.*

1,169 **Growing Fennel.** What treatment does the Celery-rooted sort require?—D. R., *Sulphur Springs, O.*

REPLIES TO INQUIRIES.

1,046, **Lawn Grass Seed.** White Clover is used with lawn Grass seed in the proportion of a quart to a bushel, I would not, however, advise its use.—C. E. P.

1,049. **Rubber Plant Treatment.** I would not sponge off the leaves so freely; unless they are very dusty once a week will be sufficient. Water should be given thoroughly whenever required. An occasional watering with soot water will be of the greatest benefit—C. E. P.

1,050. **Watering Passion Flowers.** While the plant is growing it can be well supplied with water both overhead and at the roots but when in a state of rest it should be kept rather dry. Liquid manure can be given once a week during the season of growth, with satisfactory results.

977. **Transplanting Celery.** Pull plants all of a size, or as near as possible, set a box on edge and put in some soil, then a row of plants, then more soil, another row of plants and so on until the box is full. The soil should only be the depth of the length of the roots. Now turn the box up which places the plants in an upright position. Water well and set in the shade for about two or three days or until fresh new roots begin to push. Carry the box to the field and set plants in the trench in the afternoon and by morning they will have taken hold. Plants should be puddled in mud previous to setting. Cabbage set this way will do well. By this method transplanting is unnecessary.—W. T. ALAN, *Mercer Co., Pa.*

980. **White Grubs Eating Strawberries.** Sow salt over the land, a good big handful to every step in early spring. A few days after, if ground is in condition, harrow the ground over and cross harrow and you will be surprised with a large crop.—W. T. ALAN.

1,113. **Sowing Sweet Peas.** I have had excellent success with Sweet Peas by planting the seed as early in spring as the ground can be worked. Frost will not hurt the young plants nor is there much danger of the seed rotting in the ground.—E. S. GOFF.

1,114. **Onion Seed is not** really "good" when more than a year old. A portion of the seed will grow the second spring after it is harvested. Later than this it is nearly or quite worthless.

1,128. **Pruning Fruit Trees.** Apple trees may be pruned during mild days in February or March. Remove all dead limbs and where two branches interlock, remove the smaller one. Thin the branches chiefly toward the outside of the tree in order to avoid cutting off larger limbs. If the latter must be cut off, use a fine tooth saw and saw the limb about half off, from the under side first, and a little way from the base of the branch. Then saw the branch off from the upper side close to the base. This precaution will prevent the branch from splitting down. The same directions apply to the Crab. The Plum requires less pruning. Long shoots should be cut back in order to keep the tree in a symmetrical form. Where branches grow too thickly they will be thinned out but it is much better to rub off superfluous shoots as they start, than to permit them to grow and then cut them off, as the latter process induces gumming. The Cherry requires little pruning and should be pruned during summer if at all to avoid the formation of gum.—E. S. GOFF.

1,127. **Onion Sets** may be pulled before they are ripe if this is desirable.

1,122. **Chilian Beet Seed.** The Large ribbed Scarlet Brazilian Beet is very similar to the scarlet Chilian it is not identical with it, and may be had of leading seedsmen.—E. S. GOFF.

1,085. **An Underground Cellar for Celery.** We have kept Celery in that way and this is how we did it. Simply excavate three feet deep, of suitable dimensions, throwing the earth and grading, so as to have the bottom about four feet below ground level. We then put in strong chestnut posts with tops sawed square at surface of ground on which we spiked the plates, we walled up the sides with old railroad sills, and through the centre ran another line of posts, on which the ridge pole was made fast. Boards were made to reach from plate to ridge, laid double, and covered over with old cornstalks. The door was in the front end, a few steps down, window in other end, gables boarded on both sides of 2x4 studding, filled in with sawdust. This makes a cheap job, but look out for rats. A house or cellar 16x32, will hold about 12,000 plants, for which drive some stakes 18 inches apart, and nail on a board the long way of cellar.—M. GARRAHAN.

1,077. **Toadstools on the Lawn.** Probably you refer to the puff balls which were unusually numerous last summer. Hand gathering them is the only remedy. But, wait a minute: Next summer, send a specimen to some cryptogamic botanist and find out precisely what it is; if they are common puff balls, eat them and save your butcher's bill; they are one of the dainty good things of this earth.—WM. FALCONER.

1,090. **Springs for a Fruit Marketing Wagon.** A good temporary spring for such a purpose, used in this section and much liked is made same as a spiral spring bed, only made to just suit the wagon box. It can be easily removed and is not very expensive.—IRA D. HILL, *Boone Co., Ill.*

1,100. **Japan Persimmons in Illinois.** In sheltered situations in the southern part of the State some of the varieties will prove hardy, but they will not succeed at the north, and I question, if anywhere in the State they will ripen good edible fruit. Here on Long Island we have some varieties that, in a well sheltered part, are hardy enough seemingly and bear fruit every year, but the fruit has not been well enough developed and matured to be worth eating. Some other varieties again have succumbed, even with protection. Protecting fruit trees by any other means than shelter belts is more than the game is worth.—WM. FALCONER.

1,069. **Ferns as House Plants.** In addition to Mr. Parnell's list, page 105, let me add Aspidium falcatum, which I think is the best of all house Ferns. You can make a pretty fern basket in this way: take a wire basket, an ox muzzle will go first rate—then take a thick piece of wild Polypody and line the basket with this keeping the growing side out, then in the middle of the basket you can plant any other sort of Fern or plant you wish, the Polypody will leaf out and grow very prettily. In the far west, Polypodium falcatum answers the same purpose.—W. F.

1,087. **Buckwheat Remedy for White Grub.** Buckwheat may be so distasteful to some grubs as to make them seek other quarters, but have not known of an instance and doubt it.—N. E.

1,090. **Springs for a Fruit Marketing Wagon.** Try short spiral springs attached to a duplicate floor for your wagon, a row near each side and one in the middle: their number and strength should be in proportion to the weight they are to bear.—N. E.

1,095. **Pear Growing.** They should do well on low ground with good care provided the drains are not liable to be flooded from the creek.—N.E.

1,096. **Buerre, D'Anjou Blighting.** This Pear seldom blights in this section, and grows the best in a strong loam with a clayey subsoil free from standing water.—NEW ENGLANDER.

1,098. **Quince Trees.** A temperature of 20° below zero for a short time would not harm them much, nor do them any good. To what age they will grow, or live, depends on the situation in which they are planted, and the care they receive. Have seen them giving fair crops for 40 years with prospect for longer service.—N. E.

1,095. **Pear Growing.** I would not advise planting Standard Pears on such low soil.—C. B.

1,096. **Buerre de Anjou Blighting.** This variety is much less liable to blight than many other standard sorts, such as Clapp's Favorite, Bartlett, etc.—CHAS. BLACK.

1,98. **The Quince** is injured at 20° below zero, though it may do in the west if mulched heavily in the fall.—C. B.

1,100. **Japanese Persimmons** will not stand in Illinois with any protection that could be given them.—C. B.

1,101. **Japan Chestnut Grafting.** They cannot be grafted on Hickory or Walnut, but can be on the American Sweet Chestnut.—C. B.

1,125. **More About Kinking Hose.** It can be got of any large seedsman East, and suppose it could be found in the West; it sells here at 15 cents per foot.—CHARLES BLACK.

1,127. **Propagating Grapes by Grafting or Cuttings.** Graft under ground by common cleft without wax, putting the soil up firmly around the graft instead, either very early in spring or after the buds begin to swell. Grafts should be near the condition of the stock as possible. Cut cuttings two to three buds long soon after the leaf falls. Tie in bunches and bury below frost, and put out early in spring.

1,127. **Onions set Growing.** Pull the set up as soon as the bulbs are formed large enough, and let them get about half dry, then remove them into some sheltered place, spreading them out thinly to dry. The bulbs must be formed before they are pulled or they will be no good.

1,117. **Potato Growing.** As Maine is the banner state for Potato growing in "New England," I would suggest sending for Jerrard's Potato Catalogue, advertised in POPULAR GARDENING, in which I think the desired information may be found.—NEW ENGLANDER, *Worcester Co., Mass.*

1,112. **Killing Locust Trees.** Peel the trunks from the ground up five or six feet as early in the season as the bark will come off easy, make a clean job of it to the sap wood, then let them remain until they die root and branch.—N. E.

1,113. **Sowing Sweet Peas.** Sweet Peas should be sown quite as early in the spring as the ground can be worked; if the seed can be planted early in April a good supply of flowers is almost certain. We try here (Boston) to plant before April 15, but it is not always possible. Of course Sweet Peas are planted all through the season but the earlier planted the better.—M. B. FAXON.

1,130. **Pocklington Grape Grafting.** Any good varieties of Grapes can be grafted on your Pocklington. You cannot get damages if you have the true Pocklingtons as it is all that was claimed for it in many places. No one fruit succeeds everywhere.—CHAS. BLACK.

1,126. **Propagating Grapes by Grafting or Cuttings.** Cuttings will afford you the easiest way of increasing your stock. They may be made from prunings at any time during the winter, and kept in a damp cellar, or else buried outside until spring when they can be planted out in a deep well enriched border, in a sunny situation, and placed in rows one foot apart, the cuttings three inches apart in the row, set so that the top eye or bud is above the ground—care must be taken to firm them well in the soil. The cuttings should be made from the young well ripened shoots of the previous year's growth and can be made with two or three buds or eyes. Grafting can only be employed to advantage in working over inferior varieties.—C. E. P.

1,125. **About the Nonkinking Garden Hose.** We think you refer probably to hose wound with spiral wire, as was done by some parties last year; it costs about three cents per foot to wind hose with wire and most of the hose used was of the cheapest grade; to a certain extent it prevents it from kinking but the wire soon gets rusty from the water and not only loses its elasticity but it also, if stepped upon, gets bent and makes dents in the hose that do not easily come out. It is to our notion a humbug, yet any hose can be wrapped if desired in quantities; but a good hose well taken care of will last three times as long as any hose we have ever seen wrapped with wire.—GOODYEAR RUBBER CO.

1,114. **Onion Seed.** Onion seed is generally considered to be good only one season and seedsmen try to always sell new seed. I have known cases where Onion seed three years old germinated perfectly well, but as a rule buy only new seed.—M. B. FAXON.

1,093. **Building a Rockery; Suitable Plants.** Taste is necessary in building a Rockery; after the stones have been piled as desired fill all the crevices with good loam which should be thoroughly mixed with plenty of good manure. Running plants of all kinds can be used; an especially good one is Running Nasturtium *(Tropæolum Lobbianum,)* the flowers are smaller than those of the Tall Nasturtium but the colors are more brilliant. This is a superb plant and everyone should plant some.—M. B. FAXON.

1,116. **The Best Hardy Roses.** A more difficult question it would be impossible to ask as no two Rose growers absolutely agree as to what sorts make up the best twelve; but no mistake will be made if the following varieties are set out, they are all perfectly hardy and adapted to general cultivation:—Alfred Colomb, Anna de Diesbach, Annie Wood, Baroness Rothschilds, Charles Lefebvre, Duke of Edinburgh, Fisher Holmes, General Jacqueminot, John Hopper, Madam Gabriel Luizet, (to my mind the most beautiful rose that exists) Marquise de Castellane and Jules Margottin. It is very hard for me to stop at twelve as I have in my mind twelve more beauties, but, as stated, the above are very choice and, if every reader of POPULAR GARDENING would buy this collection and set them out this spring they may expect some Roses that are Roses in the years to come.—M. B. F.

1,115. **Peas for Market.** We have so many, excellent Peas it is difficult to pick out any particular sorts and say they are the best, the following varieties I know are good and anyone planting them will have delicious Peas. For early, plant Earliest of All, First and Best, Kentish Invicta or Daniel O'Rourke; for medium—McLeans Advancer, Bliss' American Wonder, and Stratagem; and for late crop use—Yorkshire Hero, Champion of England; and if you wish Black Eye Marrowfat. I might have classed Bliss' American Wonder among the early sorts but as this Pea is a green wrinkled variety and cannot be planted as early as the hard white Peas I classed it as medium.—M. B. FAXON.

Grape Training to a Single Stake. A Four Year Delaware Vine occupying same land as required by four hills of Corn.

1,101. **Japan Chestnut Grafting.** No, not to grow; use the native Chestnut for stocks.—N. E.

1,109. **Beefsteak Geranium.** Saxifrage Sarmentosa is sometimes called Beefsteak Geranium, also Strawberry Geranium.—N. E.

1,097. **Kieffer Pear Hardy.** The best Pear growers do not recommend this Pear for general cultivation in Ohio.—M. B. FAXON.

1,127. **Onion Sets Growing.** E. C. C. probably does not plant the proper seed to raise good Onion sets; seed for Onion sets is entirely different from the seed large Onions are raised from.—M. B. FAXON.

1,092. **Dahlias Turning Yellow.** You must have, in some way, mixed the roots referred to. If the collection of tubers was from choice kinds when stored in the fall and the same roots were planted in the spring, the flowers could not possibly have been yellow. There is a mistake somewhere.—M. B. FAXON.

Grape Culture Simplified. The Single Post System of Training.

"While you will find many amateur and professional Grape growers pitching into my single stake system of raising Grapes," Director W. A. Henry, of the Wisconsin Experiment Station, writes to us, "yet I cannot help saying that we raise Grapes abundantly, cheaply, and in a manner practical for farmers and others who may be somewhat horticulturally inclined. I think there is a world of nonsense in Grape growing, as there is in bee raising; each enthusiast claims that his is the only way. The result of an immense amount of talk about training and pruning with the elaborate illustrations and directions for management, tends to discourage many from planting Grape vines, so that the business falls to a few specialists while the multitude go without Grapes.

Our system, if it deserves to be called a system, is not advanced in competition with the work of specialists and amateurs but to get plainer minds at work in a new direction where there seems to be possibilities of fair success."

In a recent report from the Wisconsin Station, Professor Henry makes quite a detailed reference to his simplified method of Grape growing, the substance of which information we give as follows:

Prepare the soil as for Corn, and plant the vines eight feet apart each way. Never allow the roots to become dry by exposure to the air; dig large holes and spread the roots with the hands when filling in over them with earth.

TRAINING AND PRUNING. Set a seven foot post two feet in the ground at planting time. Train the vine to this, cutting back at the end of the season to two buds. For the first couple of years do not expect fruit, but aim to get not less than four canes to start close to the ground. Train these to the post, cutting back each fall. Canes thus pruned after a year or two will bear some fruit, but later, the fruit will come from buds borne on spurs, (side shoots) on these.

Aim to never have less than four canes on each vine, each of which has from three to five spurs which carry about three buds each when pruned. When the canes attain considerable size cut one out each season.

allowing a new shoot from near the ground to take its place. Under this system the fruit will, much of it, be borne near the ground, an essential point with us, as such fruit ripens earlier and is richer in flavor than that borne higher up.

Prune after leaf fall. At first there will only be four straight canes; later there will be spurs which trim back to two or three buds. By fall pruning the vine is so reduced in size that it is easily buried. The tallest of the pruned canes should be no longer than the posts. In the summer when all the canes have been confined to the post, new rapidly growing shoots will spread out in all directions forming a somewhat umbrella shaped top. Cut these new shoots off about four leaves below the last fruit cluster, keeping the vine in a compact mass near the post.

CULTIVATION. Vineyards, as a rule, are not half cultivated. By having the vines eight feet apart each way, cultivators and harrows can be freely used and there is no excuse for weeds. The vines respond to this thorough cultivation in a remarkable manner, and it seems to hasten the maturity of the crop and increase its ability to resist insects and disease. Let the grouud be given up wholly to the vines and no attempt made to double crop it. For the first two or three years when the vines are small, it may do to grow Potatoes or hoed-crops in the vineyard, but not after the vines commence bearing.

BURYING THE VINES. As well let cattle go unhoused in winter as Grape vines unburied. Both may possibly survive, but at entirely too great cost, nor is the labor of properly protecting them great. A trimmed vine is bent over, a man standing with his foot upon it. The foot is then removed and both men continue the covering until the vine is buried out of sight. The object of covering is not to keep the vine from frost but rather to keep it frozen all winter. It is alternate freezing and thawing, not the steady cold, that injures the vine. Bear this in mind and do not cover deep. Before the buds start, but as late as possible, uncover the vines by gently lifting them with a four-tined fork out of the earth that encases them.

FERTILIZING. Of course the land should be kept rich, and well-rotted barnyard manure will accomplish this. In our own

Early Valentine Bean.

case, as the land was rich to start with, we have applied very little manure up to date.

YIELD OF FRUIT. For several reasons it is impossible to give the yield of the entire vineyard. The following is some of the weights of fruits of single vine for fall of 1888:

VARIETY.	Yield per vine lbs.	Rate per acre lbs.
Worden, (poor)	6.7	4,560
Worden, (good)	12.2	8,296
Wilder (average)	12.3	8,304
Delaware (average)	8.5	5,780
Delaware (large)	12.2	8,296
Concord (poor)	8.2	5,576
Concord (good)	12.3	8,304
Salem (best in vineyard)	19.3	13,124

From an average Delaware we obtained fine fruit at the rate of nearly three tons per acre. Corn and Potatoes to give the same rate of product would have to yield about 100 bushels per acre. The best loaded Salem vine yielded at the rate of over six and one half tons to the acre. Putting the yield at 5,000 pounds per acre which would sell at something like four cents per pound, there would be a gross income of $200 per acre, leaving a good profit after all expenses are met.

THE COMPLETE GARDEN.

XXIV.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page* 118.)

(The class letters given in parenthesis refer to the chart on page 95.)

ARTICHOKE, GLOBE (class C). This esculent has not yet found a place in the garden of the average home grower; and even in our markets it is yet rarely seen. It is readily grown from suckers or by division of old plants, also from seeds sown early in spring, resetting the plants the following season. Have rows from three to four feet apart, and plants two feet apart in the rows, or set two or three plants in hills three feet apart each way. Water in a dry season to make the newly set plants take hold. A perennial giving full crops after the first season; needs winter protection of six inches or more of litter at the North; a deep, rich, moist loam is best. Green Globe is about the only variety cultivated. The undeveloped flower-head is the part generally used, either raw or boiled as a salad. Some people blanch the young shoots and use them for salad timber.

What is known as the Jerusalem Artichoke (class C) is really a tuberous-rooted hardy Sunflower, liable to become a noxious weed, when left to run freely, the tubers of which have the true Artichoke flavor and taste and are esteemed in the raw state for pickling or as a salad. It will thrive in almost any soil and location; plant the tubers two or three inches deep, nine to twelve inches apart in three foot rows. Pigs turned into a patch of Artichokes will hunt up every tuber, and thrive on this diet about as well as they would on Potatoes.

ASPARAGUS (class A). No other vegetable gives to the grower so much for so little expense. Plants are easily grown by sowing seeds in rich soil in one foot drills, early in spring. Thin to two or three inches in the row, and give clean cultivation; set into the permanent bed either the next or second spring following. To get a bed quickly in good bearing, use strong, two-year old plants, setting in the garden at one foot by two feet. Market gardeners plant much wider to admit of horse cultivating one or both ways. For the best product plant rather shallow, say four inches deep; but when bleached stuff is wanted, crowns must be placed six or eight inches deep, and the rows ridged in spring. Cut sparingly the first season after the year the plants are set. Cut down and remove the stalks in the autumn before the seeds can fall out to fill the ground with young plants, as these are worse than weeds.

Apply an anuual liberal top-dressing of well rotted compost or other nitrogenous manure iu autumn or in winter. Nitrate of soda and hen manure, however, which are of especial value, should not be applied until spring. Conover's Colossal is the variety now in general cultivation. Barr's Mammoth and Palmetto are being offered as improved sorts. Asparagus beetle and its larva, often so destructive to plantations in some localities, can be fought successfully by the free use of air-slacked lime, perhaps also by kerosene emulsions, or confinement of small chickens in the Asparagus patch.

BALM. (class F). A perennial herb of pleasant, lemon-like fragrance. Seed may be sown early in hot-beds, and plants transplanted to the open ground 12 inches apart in the one foot rows. Propagation by root division is simple, and easy if old roots can be had.

BASIL, SWEET (class F). An annual of highly aromatic odor and flavor, used as a condiment in the preparation of stews, etc. Sow the seed in drills one foot apart, and thin to five or six inches in the rows.

BEANS, BUSH OR SNAP VARIETIES (class D). Plant when danger from late spring frosts is past in drills not less than two feet apart and two inches deep. The plants should stand from three to four inches apart in the drills. Rich soil favors rapid development and early pods, for a succession plant every two or three weeks. To avoid rust, (*anthracnose,*) the great enemy of the crop in many localities, shift the crop to new quarters, and avoid handling plants while wet. Select varieties: Early Valentine, China Red Eye, Early Mohawk, Black Wax, Golden Wax, Perfection Wax, the White Marrowfat, the Kidneys, and the Little Navy or Pea Beans are generally grown for dry Beans.

BEANS, POLE VARIETIES (class C). These need a rich, warm soil and sunny location. The Limas are the best of this class, but very sensitive to cold and wet, and require a long season. Plant them eye downward, and but few (3 or 4) to each hill. Set poles three feet by four, or four by four, the Beans two inches deep around them. The Limas can easily be forced a week ahead of their natural season by planting on inverted sods in a cold frame or spent hot-bed, and transferring to the open ground in due season. Where poles are scarce, a single stout wire may be stretched over and between two eight or nine foot posts, planted four feet deep, the wire running over stakes set at intervals of 25 feet. A light wire is then fastened near the foot of one of the main posts, and run along near the ground to the other post, being twisted once around each stake at same height. By winding cheap cotton yarn around the two wires, a cheap and excelleut trellis is formed to which the vines planted directly under it will take readily, almost without any assistance. The difference in season between the various Lima Bean varieties is not very large. Select varieties: The Large Lima, King of the Garden, Dreer's Lima, Jersey Extra Early Liua, the Red and the Spotted Lima. Of other running Beans the Horticultural or Cranberry Bean, the Dutch Case Knife and White Runner are all quite popular as shell Beans.

(To be Continued.)

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. APRIL, 1889. No. 7.

April.

A little skittish and irresolute—
And yet I like her. I like the mixture
Of her cloud and sunshine; her tricks fantastic,
Boxing the compass of Old Probs to thwart
And muddle him. Her sigh will wake the bud;
Her tears, the Apple bloom will drink and throw
In perfume, out on the delighted air;
The pampered Pansy and the shy Violet
Are thirsty, too, and long have coveted
Her honeyed weeping. So then, sweet April,
Welcome! Thy blue eyes and thy tears
Are the twin artisans of Nature—Earth's
Apt upholsterers, whom she calls to lay
Her carpet for the dainty foot of May.
—*Joseph Whitton, in Table Talk.*

SOME GLADIOLUS should be planted early.

PEAS AND FERTILIZERS. A large yield of Peas is one of the easiest things to produce with commercial fertilizers only. On entirely worn out sandy soil we have grown immense crops by scattering some good complete fertilizer along the rows, at the rate of 1,200 to 1,500 lbs per acre.

ABOUT CROSSES. A good deal of seeming light talk is indulged in by disseminators of new fruits about this or that one being a cross between such and such varieties. It is a delicate matter to claim absolute results in such cases, and we recommend caution against making or accepting such claims on the plane of certainty.

FLOWER CENTENNIALS. Why should not the centennial of a flower that has given pleasure to untold millions be celebrated as well as that of a great battle or other event? Both of those old favorities with all flower lovers the Dahlia and the Chrysanthemum were introduced to the world just one hundred years ago. In England this fact will be appropriately recognized in numerous exhibitions of the year, and Americans should not be behind in similar observances.

THAT INSECT SUPPLEMENT. Reference is made elsewhere to a 12 page Insect Supplement which will be sent out with the May issue of this journal. Here we desire to say that should any regular reader see this supplement advertised in other periodicals previous to May, they will do us the favor of not sending for it as a copy will certainly reach them with the May issue. Undoubtedly a supplement of so much value will be in large demand with cultivators generally.

PRIZES FOR GARDENS. The Mass. Horticultural Society offers the following prizes for 1889: For an estate of not less than three acres laid out with the most taste, planted most judiciously and kept in best order for three consecutive years $160, second prize $80. For best arranged and best kept flower garden, hardy perennial and biennial plants permissible $50, second prize $30. For best Strawberry garden $50, second prize $30. For best vineyard of one acre $50, second prize $30. Applications should be made to the chairman of committee, John J. Parker, Forest Hill Cemetery, Jamaica Plain.

THE NEW SECRETARY OF AGRICULTURE. From the great respect in which his acquaintances of all political shades speak of the new Secretary of Agriculture, the Hon. Jeremiah M. Rusk of Wisconsin, it seems that American rural people have the very best of reason to congratulate themselves about President Harrison's apparently good selection. Mr. Rusk is emphatically a man of the people, who has had considerable experience as a practical farmer, and has always shown himself to be the farmers' friend. In his new position he will have abundant opportunity to prove the sincerity of his affections. The whole tone of the Department of Agriculture, under Mr. Colman, has been greatly and generally improved, and since, consequent upon its enlarged scope and increased resources, still more is expected of a 'secretary,' Mr. Rusk will not be bedded altogether on roses. The progress once begun must go on, and it will take the best and most willing efforts of an able man to satisfy the farming public. At the same time we hope that the change will result in cleaning out for ever some of the old-established, disgraceful, practices, Turnip seed distribution, etc., but on the other hand leave the unpartisan character which Mr. Colman has given the Depariment, as near as possible intact.

Personal: Mr. T. Greiner, formerly of Orchard and Garden, joins our Staff.

Within the past three years, as is well known, this journal has been strengthened by one horticultural periodical after another, seven altogether merging into it by purchase until it possesses a subscription list in extent never before equalled in the history of American Horticultural journalism. Along with the increased circulation there has been also from time to time an enlargement of the paper and an improvement of its matter and engravings, all with greatly increased labor in the editorial and art departments.

At the present time it affords the managment much pleasure to announce a step for POPULAR GARDENING AND FRUIT GROWING distinct from any in the past. It is that of having secured as a regular editorial associate on the paper the services of Mr. T. Greiner, formerly of New Jersey, and so long and favorably know as the editor in chief of *Orchard and Garden*, published in that state. Hereafter Mr. Greiner will reside at La Salle, N. Y., where the experiment grounds and editorial department of this journal are located and be directly associated therewith. In the past our new associate has made for himself an excellent record as a practical and intelligent experimenter in the line of fruits and vegetables, as well as a close observer and vigorous writer. Hereafter all results arising through his enlarged opportunities will be reflected in the columns of this journal.

With such an accession to our editorial staff and with the various opportunities that are broadly opening the present spring for conducting our experiment grounds of 13 acres in the interest of our readers, the future usefulness and value of POPULAR GARDENING AND FRUIT GROWING are assured more clearly than at any one time in the past.

Arbor Day and What to Make of it.

Arbor day is an outgrowth of the popular conviction that the days of wanton forest destruction will soon be past, and that forest planting has become a pressing need. This condition of popular sentiment explains the rapidity with which Arbor day observance from a feeble start has developed into all but a National celebration.

The warnings of the press concerning the evil results of the denudation of hills and hillsides upon our climatic and atmospheric conditions are given additional force by the growing scarcity of timber, and they have begun to bear fruit, so that we may look with entire confidence into the future of American forestry. Arbor day is a sort of celebration of this progress.

But Arbor day means still more. It comes as a timely reminder of the fact that a rural home of the present day can hardly be considered a home without that air of refinement, good taste and home comfort which shrubs, and trees, and well-kept lawns impart to it, a reminder that home ornamentation means home enjoyment and love of home-life.

This is not all. Arbor day means opening a way for acquainting the young with the laws relating to tree growth, their care and value. From this view have sprung the worthy efforts made to engage the pupils of public schools in Arbor day observance, and the practical outcome of which may often be observed in the improved appearance of school grounds. Sometimes Arbor day celebration may have the effect of putting a wholesome moral restriction upon the young lover of mischief who makes too free with his pocket knife, transforming the reckless tree destroyer into a considerate tree protector.

At the present stage of our country's development we cannot afford to disregard the educational advantages of Arbor day; but the impression that can be made upon the young, should work in an intensified degree upon the minds of older people. Tree planting has now become as necessary as tree cutting was a hundred years ago.

American Pomological Society. Florida Meeting.

It was a field day for Florida when the members of this influential society gathered among the beautiful Orange groves, which have brought fame and prosperity to the State during the last 20 years. The sturdy Orange growers fully realized the importance of the occasion and resolved upon making the most of the northerners' visit. They found no difficulty in enlisting the sympa hies of the State railway managers who have a keen scent for northern capital. Free transportation to any point in the state was freely offered, and altogether a grand sub-tropical ovation was accorded the visitors. But the weather was somewhat contrary, the sun, usually so reliable in the South, wouldn't shine, and it rained or threatened to during the whole session of the convention. Later, however, it became delightful, and the members greatly enjoyed their many excursions to leading points of interest throughout the State.

THE MEETING. The opening session of the Society was held in the new and spacious building just erected for the Semi-tropical exposition at Ocala, and there the members assembled amid the most complete and attractive display of sub-tropical fruits and other products of the South ever brought together, on the morning of February 20. About half the States were represented in the convention, and more arrived during the day. President Berckmans was in the chair. D. W. Adams, president of the Florida Horticultural Society welcomed the stalwart association to the domain of the Queen of fruits, the Orange, in a felicitous address. Mayor Garvey of Ocala and President Wilson of the Exposition also joined in the welcome in fitting remarks, to all of which vice-president W. C. Strong of Massachusetts responded for the visiting society in a pleasing manner. The noon recess was

taken up in part by an examination of the Exposition exhibits, especially of the vast variety of citrus fruits, some of which were quite new to many northern visitors. The specimens were unusually fine, and the exhibit as a whole deserves much fuller notice than can be given here.

PRESIDENT'S ADDRESS. The president alluded to the bright position accorded the society by foreign horticultural authorities, and contrasted sharply the respective conditions of the American and European farmers, greatly to the advantage of the former, who owned and was directly interested in the land he tilled and the results. The creation of the new cabinet portfolio was commended; the presence of charter members of the society was happily noted, its perpetuation should be animated by the advancement of an intellectual and refining pursuit. The richest lands or most favored localities do not always yield the highest revenue; education of the husbandman is an important factor. The utilization of surplus fruit is a problem approaching solution. Cheap fruit created an increasing demand. In the necrological record fitting allusion was made to Wm. Parry, of New Jersey, Richard Peters, of Georgia, P. W. Reasoner, of Florida, and A. J. Caywood, of New York, members who have died since the last session of the society.

REPORTS, RESOLUTIONS, ETC. Treasurer Smith's report showed a satisfactory cash balance on hand with no indebtedness, and the legacy of the late President Wilder well and safely invested. All the old officers were then re-elected without opposition. A resolution suggesting especial attention to the raising of new seedling fruits on scientific principles on the part of experiment stations, and urging originators to send new fruits to the stations was adopted.

CROSS FERTILIZATION. A most interesting essay was the opening essay on this subject, read by Dr. J. P. Neal of the Florida Experiment Station. He gave the results of much careful and intelligent experiment in this fascinating and important branch of pomological effort, which elicted long and spirited discussion. The principle point discussed was as to the time visible effects of crossing were first apparent. Many had noted it in the fruit the first year, especially in some species; others did not believe. Pomologist Van Deman had yet to be convinced of such speedy influence. Dr. Neal had met with many negative results, but proposed to keep on working in this promising field. He wanted to obtain a hardy Orange, combining the traits of the Navel and Satsuma, or the Tandriff and Satsuma, a Kelsey-Washington Plum,a Scuppernong-Black Hamburg Grape, a Bartlett-Le Cont Pear. With few exceptions he had seen no influence of crossing the first year. Maize, Sorghum, the Cucurbitaceæ or Colocynth were among these exceptions. The latter planted with Melons produced large bitter Melons the first year, and it saved his Melons from dusky marauders. Grapes, Peaches and Apples were not affected.

PREVENTION OF GRAPE DISEASES. Prof. B. T. Galloway of the Agricultural Department at Washington,talked of the "results of recent experiments in the treatment of Vine diseases." Downey mildew, he said, could easily be controlled by either of the remedies given in the circular issued by the Department in 1887; as to the black rot the results so far are not so decided, but they are sufficiently promising to warrant a continuance of the trials. For anthracnose he recommended a 50 per cent solution of copperas applied in winter before the buds advanced too far. Mr. Newman of Alabama preferred bagging for rot; said it was a complete protection for rot, insects and birds, and prolonged the period of ripening, also improved the quality of the fruit. He got ten cents a pound for those bagged while others sold for four.

JAPAN PERSIMMON. Mr. B. F. Livingston, Florida, then read an interesting paper on the "Kaki" (Japan Persimmon.) No other fruit tree grows so vigorously without manure or cultivation. His 600 one-year old grafts on wild stock were from six to eight feet high. They bear very young. The only problem is marketing. Great care in picking, packing and shipping is necessary. There are now some 40 varieties, of which only four were recommended for general culture.

FRUIT REPORTS. The Report of the Sub-Tropical Committee read by Dr. Manville, and Mr. Hubbard contained detailed reports of sub-committees from the various States. The progress and growth of the various fruits were minutely set forth. The variety enumerated was very large and some of the peculiar names were quite unknown to the northern visitor.

THE MINOR CITRUS FRUITS. This subject was treated by Rev. T. W. Moore, who was in part historical, sentimental and poetical. The Citron was among the oldest, having come to Europe a thousand years before the Orange. We should export it largely instead of importing it as now. In fragrance the flower excels all the Roses. Many other neglected species of the Citrus family were alluded to. Mr. Van Deman wanted to discard the incorrect and unreasonable name "Grape fruit" and adopt "Pomels" which he claimed was the proper name for this fruit.

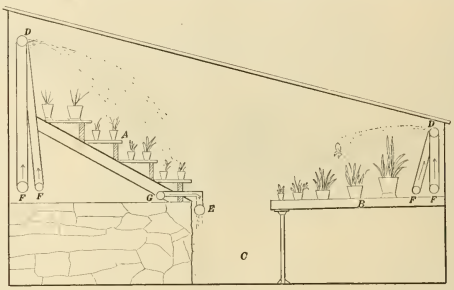
(To be Continued.)

The Points of Good Pruning Summed Up.

T. T. LYON, MICHIGAN.

Among Mr. Augur's many excellent directions on pruning in February number, are a few which, however well adapted to eastern needs, may be, in our estimation, improved for practice under the fervid skies and more arid atmosphere of the west, with higher winds and more extreme and trying meteorological conditions generally.

Here it is needful that the head of a tree be so filled with wood that there can be no injury to the trunk and leading branches from what is commonly known as sun scald. For this reason, our ideal tree should always have a central branch, with not less than three nor more than five side branches, upon which to build a well distributed system of subsidiary arms. Mr. Auger says truly that neither the Apple nor the Pear (he might perhaps have added the Cherry) usually require shortening, and yet we have known certain varieties of the Pear,while young and thrifty, to renew their growth annually, from their terminal buds only, until the shoots were no longer able to sustain their own weight against the force of even a moderate wind—a tendency which can only be remedied by annually cutting back the previous year's growth in spring, with the result of increasing the number of new shoots. Here all varieties of trees should be branched low; both as a means of shading the trunks, and (especially with the more upright grown,) to avoid the undue influence of high winds. We branch many trees within eight to 12 inches of the earth.



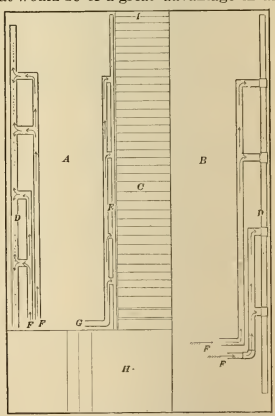
Watering by Means of Perforated Stationary Pipes. Cross Section of House.

Watering Plants by Means of Perforated Pipes.

W. A. MANDA, ESSEX CO., N. J.

Where there is a good force of hydrant water this method can be easily adopted for plants which require to be syringed often, or kept uniformly moist.

As shown in illustration ordinary pipes are laid in the greenhouse, and short pipes lead to the sprinkler or perforated pipe which is fastened to the wall overhead the bench of plants. By turning on the water the whole bench is thus sprinkled uniformly, and sufficiently, if left for ten or fifteen minutes. This system is adopted in the cool Orchid house at the United States Nurseries, and not only to sprinkle plants but also the walks thus keeping a high degree of moisture. In summer the house is from ten to fifteen degrees cooler than the lowest temperature in the shade out of doors. This system may be well recommended where the whole house or bench is filled with plants requiring the same treatment but would be of a great advantage in any greenhouse as a means of keeping the walls moist, a condition so necessary for the welfare of most of the tropical plants.



Ground Plan of House.

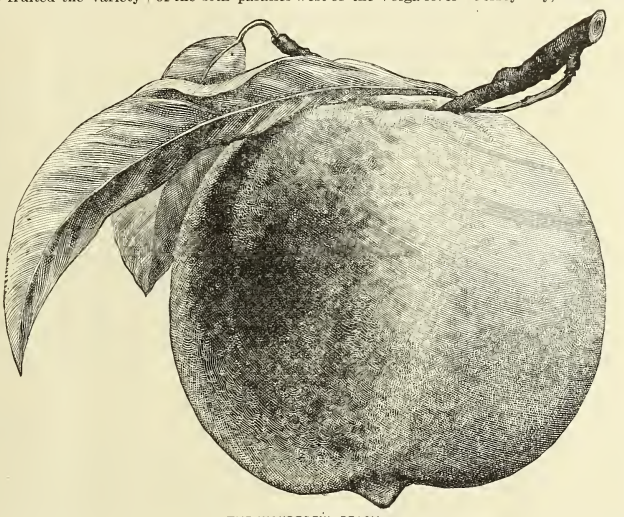
The working of the system may be understood by reference to the parts as follows: *A* (see both engravings), shelving for plants; *B*, side stage; *C*, walk; *D D*, sprinkler pipes over the beds; *E*. sprinkler pipe for walk; *F F F F*, supply pipes for bed sprinklers; *G*, supply pipe for walk sprinkler; *H* (lower engraving), entrance to greenhouse.

The Wonderful Peach.

A few specimens of an apparently new Peach on exhibition at the Mt. Holly (N. J.)

Fair three years ago attracted the attention of prominent growers, among them E. Williams, A. J. Caywood and D. David, on account of lateness, size and showiness. The committee awarded it a first prize and silver medal for most promising new fruit, and as a result the original tree, a chance seedling in a neighboring garden, was purchased by enterprising nurserymen, and last year introduced as "Wonderful."

This Peach Mr. Williams described as a "rosy cheeked, yellow-skinned, yellow-fleshed, free stone Peach of large size and excellent flavor," and was especially pleased with its keeping quality. We do not know of any grower who has fruited the variety since, or who has been in position to give us additional authentic information about the fruit-bearing habits of the tree, and other points of importance. In the nursery row the tree resembles Beer's Smock, and is seemingly a healthy and vigorous grower. Should any of our readers fruit the Wonderful this year, we would much appreciate an early report regarding the outcome.



THE WONDERFUL PEACH.

Climate of Europe and America.

J. L. BUDD, STORY CO., IOWA.

In connection with Dr. Hoskins' notes in your February issue it may be useful to trace the fiftieth parallel of latitude in Europe and the same line in that part of North America, lying to the east of the Rocky Mountain range.

The Doctor says: "As New England lies mostly on the latitude of southern Europe, so Canada lies mostly on the latitudes of Russia and Siberia. Not only the climate, but the length of days should be considered in estimating the value of fruit trees. The winter Apples of Russia are many, but south of 45° they are only early winter or fall sorts."

In our country the fiftieth parallel passes through the British possessions a few miles south of the south point of Hudson Bay, and only touches Canada in the extreme northern part of the Province of Quebec. Its whole line east of the Rockies is through a semi Arctic region where fruit has never been thought of, and probably never will be. On the other hand in Europe, the 50th parallel passes through the orchards and vineyards of North France, the grand orchards of South Belgium and central Bohemia, thence eastward north of the Carpathians on the steppes it passes through fine orchards of the Apple, Pear, Cherry, Plum, Apricot, etc., and 1,000 miles inland it pases through fields of Dent Corn, Maize, Melons and Tomatoes. Where it strikes the Volga, a few miles south of Saratov, may be seen as extensive orchards of the Apple as can be found in Europe or America,

In Belgium on this parallel the word hardy is scarcely known in speaking of Apple, Pear, Cherry, or Plum growing, yet the summers are too cool for Corn, Melons, or Tomatoes in the open air. But 1200 miles inland the word hardy or its equivalent is applied to all trees grown, and the aggregate summer heat seems to be as great as in Central Iowa when taken hourly through the day and night. The much increased summer heat of the far inland steppes, that favors the ripening of Dent Corn, would surely hasten the maturity of the keeping Apples of North France, Belgium and Bohemia, if the cold winters of the steppes would permit the trees to live there. Hence if we believe it possible to secure a winter Apple for the 42d parallel in this country from South Belgium, we can reasonably expect to secure it from South Russia. I am glad to report that so far theory and practice appear to go together.

So far as yet fruited on the 42d parallel in Iowa the Cherries, Plums, Pears and Apples of the 50th parallel west of the Volga river have about the same season in this country.

A single example will illustrate this point. In South Central Russia the Varonesh Rosy Apple is kept past mid-winter by early picking, storing during the mild weather of autumn between layers of straw in a cool shed, and moving into a cool cellar when cold weather approaches. Without this extreme care it has been shown at our winter meetings in Iowa, as grown on the 41st parallel, in quite as good condition as Grime's Golden, and as grown on the 43d parallel it seems to be as firm now as Roman Stem.

In speaking of Russian Apples our people forget that our first importations—which are best known—were from St. Petersburg on the 60th parallel. It included the coast varieties up to that far north point, and a very few sorts from the inland northern Provinces, with now and then one from the 50th parallel in South Central Russia. Among the best known of these are Longfield, Repka Maleuka and Winter Aport. With us the Longfield is quite as firm the first of October as it was at that date on the Volga in the fall of 1882, and the Repke Maleuka and Winter Aport were as firm with us in January of this year as Milton Twig.

To prevent misapprehension I will repeat what I have previously written, viz.: We will secure Apples of good size, fine appearance and good quality, from South Russia that will keep as well as Grime's Golden, Jonathan or Fulton. We will also secure later keeping sorts, but they will not be higher in quality for dessert use than Willow, Scott's Winter and Baldwin, and none of these best winter sorts will prove as hardy in tree as the suckers.

These remarks will apply equally to the Cherries, Plums and Pears of the 50th parallel west of the Volga to North Silesia. They will prove invaluable to great areas of our country where trees are needed as hardy as the Wealthy, but they will be useless where the Wealthy fails to endure the winters. At such points the orchard fruits of interior Russia hardy 150 miles north of the 50th parallel are needed.

The Easter Lily—Lilium Harrisii.

EMILY LOUISE TAPLIN.

On the occasion of a visit to the greenhouse establishment of Peter Henderson in Jersey City, about the first week in January, a house 20 x 100 feet, containing 5,000 pots of the Easter Lily (*Lilium Harrisii*), was then seen in bud and bloom, making a sea of white framed in the deep green of the foliage, a sight worth going some distance to see. Knowing the widespread interest now taken in the forcing of this Lily for the winter months, and especially for the holiday trade, I asked Mr. Henderson's manager, Mr. Davis, to give me the data from his diary of operations which he has most kindly and fully done. The most minute details are given, Mr. Henderson having been most emphatic in saying, from the beginning of his business career, that no details of culture would ever be held as secrets in his establishment.

Under date September 5th, 1888, the diary reads: "Potted up 5,000 Lilium Harrisii, size of bulbs ranging from 5 to 7 inches in circumference; size of pots used 5 and 6 inches. Soil used composed of three parts rotted sod with one-fourth well rotted cow manure, to which was added about one-fortieth part of pure bone meal. The pots were filled loosely with soil; the bulbs pressed down in the center so that their tops were covered to the depth of half an inch.

After potting they were given one good watering, placed in a cold frame, and covered with leaves or hay to a depth of three or four inches, sashes being at hand so that if continued rains occurred they could be covered, it being important that before the bulbs start to root they do not get too much moisture. The bulbs thus potted on September 5th were brought into the greenhouse on October 1st, having then started to root sufficiently so as to stand the increased temperature, which from this date, October 1st, was held at an average of 75° at night, with 15° higher in the day time.

It is found that this high temperature must be kept up if flowers are wanted for the Christmas holidays; at this degree of heat the Lilies began to show flower buds on November 24th, and about 30 days from that date, or December 24th, about one-fourth of the crop was in flower.

In the month ending December 31st, 1888, were cut 1,200 flowers, which at 25 cents amounted to $300; month ending Jan. 31st, 1889, 3,200 flowers at 20 cents, $640; Jan. 31st to Feb. 15th were cut 850 flowers at 18 cents, $153. Gross receipts, $1,093; all expenses, $525; profit, $568. Outlay. Cost of 5,000

bulbs, 5 to 7 inches in circumference at 7½ cents, $375; estimated cost of fuel, labor and interest on greenhouse for four months, $150—$525. The prices quoted are the lowest wholesale rates per 100; the prices received at retail were probably not less than 50 per cent higher, because no florist can afford to deal in these perishable goods at less profit than 50 per cent.

It will be observed that a medium-sized bulb was used, the average being but one flower to each bulb. Many had two and some three, but many went "blind," owing to the high temperature they were grown in. Had they been forced slowly, so that the flowers would have come in during February, March and April, they would have averaged fully five flowers to each bulb, but at these dates,—unless, perhaps, at Easter, —the prices would be much less. It is a mistake to use large bulbs when the flowers of the Easter Lily are to be cut, because fashion now decrees that they must have long stems, and if more than two flowers come on a plant there will not be more than two developed at once, so that all the flowers cannot be cut with the necessary long stem. If the flowers can be used without stems, or if plants in pots are wanted for church or other decorations at Easter, then the largest bulbs should be used, costing according to size from two to three times as much, many of which will give from 9 to 12 flowers.

The culture to have the blooms at Easter is exactly the same as for early forcing, except that the bulbs may be started any time from September 1st to December 1st, and kept at a night temperature of from 55° to 60°, with 15° higher in daytime. If wanted to come on more rapidly the temperature can be increased 15° with safety.

The larger bulbs average from 9 to 12 inches, and these, of course, require correspondingly larger pots than the smaller size, say from 7 to 8 inches in depth and diameter for the large bulbs, but no matter how vigorous the growth is, we find it to be the best plan never to shift or repot the plants. If additional food is needed when they are developing their flowers, use liquid made from cow manure, which will not hurt them, no matter how strong it is—we use it freely twice each week."

Although the data above given from Mr. Henderson's practice is from operations on a large scale, the same rules are equally applicable, no matter whether a dozen or 5,000 bulbs are grown. The great claim made for the profit of the high forcing practice, when done for commercial purposes, is that the crop is sold by the middle of February, and in fact might have been sold by the middle of January if the high temperature had been kept up, but it was found with such a large number as 5,000 that the crop had to be held back by lowering the temperature (which was an average of about 85° from October 1st to January 15th, when the glut came around) to an average 65° from January 10th to February 15th.

The question is often asked whether or no any use is made of the bulbs after forcing? After the bulbs are done flowering, water should be withheld for eight or ten days. They should then be placed in a cold frame or sheltered spot, the bulbs packed close together, with sufficient soil thrown over them to fill up the interstices. Then cover with three or four inches of dry leaves, and if in mid-winter they must be covered with sash; if in spring the covering of leaves alone will be sufficient to protect against frost. The bulbs so treated will flower freely again in August in the open ground, but would not do as well to force for the succeeding winter; if wanted for that purpose, they would require another years growth to be in proper condition; for that reason it is the most economical plan to use the Bermuda bulbs that have been specially grown for winter forcing.

Evaporated Apples.

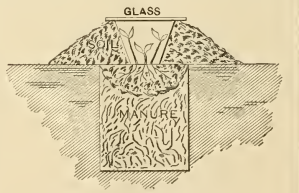
The receipts of evaporated Apples at New York for the year ending September 1st, 1888, according to the American Grocer of that city, were 164,947 boxes of fifty pounds each. The exports from the same port were 87,925 boxes, leaving for consumption and distribution for home trade 77,022 boxes, or 3,631,100 pounds. It would be a very liberal estimate to state that the production of evaporated Apples in all the United States was 300,000 boxes in the current year just past. Should this be so it would show about 212,000 boxes for home consumption, or in round numbers, 10,600,000 pounds, consumed by a population now believed to be 62,000,000 of people, or say one pound for the whole year to every sixth person of the population, or leaving 50,000,000 of our own people for a field in which yet to introduce this most desirable of stable fruits, and in the most attractive and desirable form. The expansion of this branch of business is by this very evident. The first noticeable use of evaporated Apples began in a small way about ten years ago, before which time they were practically unknown.

The question has been asked, Has the production of evaporated Apples reached its limit? The facts now set forth, to say nothing of a demand from all over the world, and yearly increasing, and already showing such exports from our port alone, furnishes the answer and shows that it has not yet anywhere reached its natural limit.

Feeding for Augmenting the Manure Pile.

D. N. LONG, ERIE CO., N. Y.

According to analysis bran, oil-meal, Cotton-seed meal, malt sprouts, Clover hay, and some other feeds have a very high manurial value, so much so, that it is claimed the manure resulting from feeding them is of greater money value than the first cost price, in this country. Frequently Cotton-seed, although probably the most valuable food produced in large quantities, is largely used in the South as a direct manure, without its feeding value being utilized at all. On the other hand Corn, the staple food for



Starting Cucumbers Early.

stock in this country, has a manurial value of less than one-fourth of that of Cotton seed and much less than of Clover-hay.

By fattening proves we have the combined advantages of producing large quantities of excellent food, and by which means all the straw can be utilized with advantage as food, and large quantities of manure can be bought in the shape of concentrated foods, which are more than paid for in the profit of the beef produced. Thus we can make manure for nothing, which we can therefore use liberally, resulting in good crops of vegetables, which leave the soil in excellent condition for Wheat and Clover, and the crops of these products enables us to derive more profit from farming and to keep more stock whereby an increased supply of manure results. By sowing Clover largely, we can always have a Clover sod on which to manure heavily during the winter, and by turning this under in the spring we can probably keep the land in the best possible condition.

In early seasons with plenty of rain we have frequently made a crop of Clover hay from the soil before time for planting late Cabbage and Cauliflower, which are usually followed the next season by early Cabbage, and Potatoes, Onions, Beets, Carrots, etc., then seeding to Wheat the same fall, often before the Carrots and Beets are harvested. By sowing Clover in the Wheat in the spring there is only one year in three devoted to vegetable.

One important item in the system, is to have good barn and stable facilities, with good water conveniences so that one man can care for from 60 to 100 head of stock. We have all the coarse feed, fed directly from the barn floor level of our bank barn, and with an over-head water tank, holding 150 barrels of water we can water all our stock right in the stable in ten or fifteen minutes. This water tank is one of the most satisfactory things we have ever tried, it is supplied by a windmill and pumped from a well, and the tank also catches all the water from the barn roof, this alone frequently furnishing all the water needed for months at a time. In the horse stable we have water before the horses in a separate trough all the time, and which they seem to appreciate.

By getting Cabbage leaves in pretty late they can often be kept for a long time. We now (Dec. 20th) have enough to feed our stock for a month or two longer that we can keep without putting them in the silo.

A simple way of Forcing Cucumbers and Melons.

Where the season is not long enough to ensure the perfect ripening of Melons, or when vine fruits are wanted a week or two in advance of their natural season, the point may be accomplished by the help of a miniature hot-bed beneath each hill of plants. To provide this a hole one foot square and 18 inches deep is made were the hill is to come and this is filled with fresh heating, horse manure, as for a common hot-bed, and on this is put a few inches of fine good mellow soil. Plant a few seeds in center, cover lightly and place a tapering block of wood or a six-inch flower pot upon them, packing the soil firmly around it, and thus forming a sort of pit when the wood or pot is withdrawn. Cover with a glass, which remove when plants are well started.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

FORCING ASPARAGUS. Except as a treat for our own family forcing Asparagus to secure two weeks' earliness will not pay. Besides, isn't Mr. Brown's method figured and described page 104, a very laborious one? It seems to me that the digging out of these three-feet deep trenches, carting aside the soil, and keeping it separate—the top soil by itself and the subsoil by itself—then getting, preparing and filling in the hot manure, and fixing the sashes, etc., require a deal of labor at a time when we are rushed with spring work, and also when excellent Asparagus from more southern States can be had in our markets almost as cheap as seasonable home grown "grass." And then again a few weeks after undergoing all this trouble the whole thing has to be undone,—the scantling and sashes have to be cleared away, the manure pits emptied and the manure carted away, and the soil that was dug out of these three feet deep pits brought back and replaced, and all this to "save" the roots. Yes, three or four years old prime roots that our farmers in Oyster Bay would gladly grow for you for $15 to $20 a thousand. Aspar-

agus roots are very sensitive to heat, and can easily be forced to give us "grass" in November, so any money we in the north are to make by forcing Asparagus has to be made before March, for after that time an abundance comes from the south and at a price we cannot compete with. When the roots are grown shallow as shown in Mr. Brown's sketch digging is an easy matter; an ordinary nursery tree digger will run them out quite easily and do good work too. When needed for forcing they should be dug before winter sets in and housed or pitted so as to be accessible whenever wanted. In forcing they need no light, and we can force them under the benches of a green-house, in a hot-bed, in a cellar, or anywhere where we can maintain a temperature of 60 degrees or over. A brisk heat gives us quick tender "grass", a low temperature, perhaps a little stouter but always tougher product; and no matter how we fix it we only get about a certain amount of "grass" from the roots anyway, and we may as well have this inside of a fortnight as dilly-dally four or five weeks over it. Mr. John G. Gardner of Jobstown, N. J., forces a good deal of Asparagus for market in winter; he uses four-year old roots, lifts them in fall, stores them till needed, and has them forced, and finished with them before March. Asparagus plants that have been forced in their beds are of very little account for next year's use; they will bear a good stand next spring but the quality will be hard, at least this has been my experience, and I have done a good deal at forcing Asparagus.

Hot-beds with Fire Heat. No matter how you heat your beds, with fire-heat, manure, hops or anything else, the same old laborious, wretched system of attention is necessary, namely, that all work must be done from the outside. In order to prepare the beds, sow the seed, set the plants, stir the soil, clean out damp, water the crops, gather the crops, ventilate, and all else, it is out-door work. And then the continuous covering at night and uncovering by day is part of the daily routine. Hot-beds in March and spring may be all right, but how about January and February, when they may be buried under a snow drift for weeks at a time? No, if you can afford to have a hot-bed heated with fire-heat, be it by a smoke-flue or otherwise, depend upon it, it is better and cheaper for you to make it a greenhouse at once. In growing vegetables for market our New York market gardeners used to work a good deal with frames and hot-beds, but of recent years so much and excellent garden truck is raised in winter in the Southern States and shipped north that it has materially lowered the prices here, and the gardeners' profits. The winter frames and hot-beds had therefore to be abandoned and greenhouses built instead, and now, considering how easy and cheap it is to build serviceable greenhouses and how easy they are to heat and work, we are wondering why on earth we didn't do this long ago? And now most every truck farm near New York has its range or ranges of greenhouses for Lettuce, Radishes, Rhubarb, Cauliflower, Parsley and other crops, and the gardeners can hold their own against the south.

Aponogeton Distachyon, page 106, is hardy. A bull-frog taught me this. When I lived near Boston, in the summer of '77, I had a large plant in a pot which I put out into a little pond that was two to three feet deep, setting this pot on another inverted pot. The plant died down in summer, but in August re-appeared in vigorous form and continued in copious blooms all fall. But one day in October a big bull-frog kicked over the pot and the plant was dumped out and lost, as I thought. But next April it re-appeared in leaves and flowers and continued in fine state till the end of May when it died down. It again re-appeared in August as before, but bigger and stronger than ever, and so on every year from August till May. So long as the roots are beyond the reach of ice so long will they live, but of course the water should not be over three feet deep, if as much, for they are not large plants.—*William Falconer.*

Missouri as a Fruit State. In your February issue, page 110, Ben Davis, Willow Twig and Jonathan are named as the Apples recommended by the State Horticultural Society of Missouri. This must be an error, and if, in proper time, you can drop into any county of this grand State and look at her orchards, fruit gardens or fruit-trees anywhere you'll most likely be satisfied that no particular variety or varieties of Apples need be recommended, nor of Pears, Plums, and of any other fruit, large or small. All varieties seem to find in Missouri a soil so rich in all the elements of plant food that nearly all will do well.—*A. A. Blumer, Madison Co., Mo.*

Crown Grafting. Last spring I tried this method of grafting, published and illustrated in the February number, but the only grafts that grew were two that were set up so high that I could not pour in the mud, and therefore covered them with grafting wax. The weather was exceptionally dry; the water soaked away and evaporated, leaving a cracked surface. I made the mud thin enough to pour, and in a wet season it would probably have retained moisture. Shall use wax this spring as I consider it safer.—*L. S, Williamsville, N. Y.*

Improved Peanut for the North.

The Axe for Peach Yellows. A New Jersey Peach grower, in February number, finds fault with Prof. E. F. Smith, because he has not done in a year and a half, what twenty years experience with the disease has failed to accomplish; namely, find a cure. If the writer will heed the one deduction, that the disease is less prevalent where the diseased trees are thoroughly removed, he will, in a few years, thank Prof. Smith for his advice. Had the same fact been understood and heeded a dozen years ago, it would have saved the Peach growers of Southern Michigan thousands of trees and thousands of dollars in money. There where many who did not believe in this radical preventive, but I think not one can be found here now. I do not believe that a case of yellows of the kind we have in Michigan, has ever been cured, and I have a 14 years' practical experience with the disease, and a knowledge of what has been done. If Prof. Smith will impress other Peach districts, with the fact that speedy removal of all affected trees is a pretty certain preventive of the yellows, I, for one, am perfectly willing to grant him the next 15 years to find a cure. The removal of diseased trees has reduced the annual loss of trees by the disease in this section to below one per cent, while about six years ago it reached fully ten per cent. In localities where the removal of diseased trees has been most rigidly enforced, growers are most successful, and suffering practically no losses. No system of planting, cultivating, manuring or doctoring has given us exemption from the dread disease. —*A. G. Gulley, Van Buren Co., Mich.*

Oxalises, Page 606. Glad the Elder's wife grows these, they are an interesting race, but in order to name varieties from descriptions, the descriptions should be full and precise. The purplish pink and white flowered varieties are probably Oxalis rosea and O. r. var alba both capital and continuous summer bloomers and easily raised from seed. Instead of O. tropæoloides say O. corniculata rubra.

Liliums from seed, Page 108. "Tell your readers not to turn out their Lily seed pans to soon." This is sound logic. In December, '87, I sowed a number of large flat boxes with L. auratum and L. superbum seed, and the seedlings aren't up yet, but every one is fresh and burst or bursting, and probably all will come up next April and May. I sow the seeds in boxes filled with light earth, cover ½ inch deep, then place a layer of swamp moss over the soil to keep it from being heaved out of the boxes in winter and dried up in summer. In winter I keep the boxes in a cold frame; in summer in a shady, cool place out of doors and never allow to get dry. Now seeds of Lilium tenuifolium, callosum and pulchellum come up, if sown in a warm green-house, inside of two weeks after sowing.

The Ginkgo Tree, Page 109. You omit one fact regarding it, namely, that it is one of the easiest of all trees to transplant, even after it is 15 or 20 feet high.

"The Blue Spruce requires constant moisture until well established," page 114. Very favorable conditions, no doubt, but not at all necessary. We have Blue Spruce *Picea pungens*, in all sorts of soils, even in very poor dry soil where the subsoil is sand to the antipodes, I presume and all do well, only where the conditions of soil are very poor, at planting time we fill up the hole with good loam and afterwards in fall add a mulching of manure, but we do not add to the natural moisture as that would be too much trouble. No, the Blue Spruce is a very accommodating tree for an evergreen, and the hardiest evergreen we have got.—*Falconer.*

How My Window Garden Was Arranged. A window 5x8 feet was built out from a sitting room with the floor made strong, covered with cement; inclined sufficiently to carry surplus water into a drain, and putting therein sufficient earth to elevate the plant bed. I cover it each fall and spring with a carpet of moss from the woods, leaving in a few wild Violets and Ferns in variety. A fine specimen of Monstera, or Philodendron pertusum occupies a central position, with a large Screw Palm *Cycas revoluta* on the edge of the floor by it and while the space between the moss and the sitting room is strewn with a few large fossil corals, Gypsum specimens and a few bright shells heightens the effect of the moss, the result is a charming window garden. Generally there are nine to ten large Palm like leaves on the Monstera, which about fill the window, but with their long stems and leathery leaves permit some blooming plants to set around near the glass. Overcrowding is most fatal to the beauty of a window garden. With large hanging basket in center, Begonias, foliage plants and Primroses on brackets, and the spaces of white wall at the sides planted to Ivies, Maderia vines, the Jasmine-like Solanum, Yellow Jasmine, which blooms farthest from the glass), Passion Flower, Constance Elliott, and Max vines, festooning small pots on the ground would spoil the effect of the arch above but as the structure is of brick, and the room warmed by natural gas, I spray the entire collection as often as necessary, and thus keep down the red spiders.—*Sara A. Pleas, Hering Co., Ind.*

Tomato Staking and Rot. One season I carefully staked a few hundred plants but hardly got a sound Tomato from them while from the same variety alongside that lay on the ground the fruit was sound.—*A. M. Nichols.*

On Growing Peanuts at the North.

The successful cultivation of the Peanut at the North at least for home use has been made feasible by the recent introduction of the early "Improved" variety shown in illustration. The pods of this sort grow in a cluster around the main stalk, not spreading as the old varieties. Select warm, rich soil, preferably of a somewhat calcareous nature, and plant in rows two and one half to three feet apart, placing a single kernel every 12 inches in the row, and cover one inch deep. Give good cultivation, keeping the ground mellow and slightly drawn up around the plants. Pull up the plants before frost, or at once after the first light frost; hang up in bunches to cure, and afterwards gather and sort the pods. It is highly interesting to watch the growth and development of this semi-tropical fruit or vegetable. There is no danger that Peanut growing will ever reach such proportions at the North, that we will have to ask ourselves, as they do in Virginia, what to do with all this wealth. In the South, growers have been compelled to think of new uses for the crop. In Virginia part of the crop is utilized for the manufacture of flour from which a most excellent and palatable buscuit is made. The roasted kernel often serves as a substitute for coffee, and it is also used in the adulteration of chocolate. The natives of Georgia make pastry of pounded nuts. We are in sympathy with these efforts to make use of the "poor man's fruit," but we protest against its being palmed off as "chocolate."

Packages for Small Fruit. How One Grower Does.

E. H. CUSHMAN, CUYAHOGA CO., O.

For wholesaling berries in Cleveland the two-bushel four-drawered crate is the most popular, where quantity rather than quality of fruit is the object. It has been in use for years, and grower, dealer, and the average buyer seem to unite against any other package. For the first two the crate is the best, for the consumer it is not.

Pickers prefer the four quart basket to the little quarts, and the grower in emptying these basket into the trays can more easily detect poor picking, at the same time he can make his fruit appear to its best advantage by putting a few of the largest, brightest berries on top. The crate is a heavy, awkward package, but there are usually two to handle them. The grocerymen in purchasing exchange empty crates for the ones with berries in. At their place of business they are spread out to view so the person buying can see just what he is buying; big berries he sees first, and first impressions have power. These drawers give the idea to buyers that there is nothing to conceal, while quart baskets in a case have the air of deceit.

Too often berries shoveled out of a drawer are gritty, mashed, bleeding and unfit for consumption. After eating of such fruit is it any wonder that the appetite for berries is dulled, and we hear the expression, Oh! could I have the berries of my childhood, etc. Whether this state of affairs will ever be changed I do not care to speculate upon. That I sell some berries in this way I admit, but I must say it is with a feeling of protest. I have often let berries remain at home that would have been called fair stock on the market.

There are a few fancy growers and grocers who handle their berries in one, two and four quart baskets. The fruit in these packages is usually of the best, commands the highest figure, and is bought by people who will have the best at any price. I retail nearly all my fruit direct to the families. Living ten miles from the center of the city and being a small grower, I can do this in a very satisfactory manner; there are others who do the same. I aim to grow from a quarter to a half acre of each of the small fruits, and try to have these of the very best. Strawberries are in greater demand than any other variety of small fruit. They are well mulched, for cleanliness is my motto from the time the berries are in blossom until they are delivered to the consumer, for which purpose I have always used two and four-quart baskets, but hereafter shall use two's only. These are new at the beginning of the season and I never use a soiled one. The berries are carefully packed into the baskets and placed in a covered wagon in the field; at the close of the picking the wagon is run into a fruit house where it stands over night. The next morning at five I start for the sale of my fruit, usually reaching my first customers at 6.30 o'clock; selling is continued until berries give out or I have served my fifty or sixty patrons. In this way the berries receive very little handling and are always fresh and nice.

It is a pleasure to sell direct to people who know and appreciate good fruit. It generally takes me about four hours to sell from six to eight bushels of berries; if I have any left from my retail trade the commission houses get them at market prices. I have sold my fruit in this way for 12 years, and have on my list now many to whom I sold in the beginning. They have told me repeatedly that it was better economy for them to buy my fruit at highest prices than to purchase cheaper stuff on the market, because there was often no waste but a satisfaction in knowing the fruit was clean.

When I started in this trade I purchased a new wagon with white canvass top. I had my name, business, and place of residence, nicely lettered on this top, the same as any other business man does. This wagon is kept clean, well painted and varnished. The horse and harness are in corresponding condition. I always try to be tidy and never let an opportunity pass to be accommodating. These are some of the points which have brought me success. There are the same opportunities all over this land for my brother fruit grower. "Seek the way and enter therein." The basket is the best for such a local fancy trade, the crate for the million.

Garden and Other Notes by Judge Miller.

To Begin the Season's Work. The time is here to prepare for work. Most gardeners know that such as Peas, Lettuce, Radishes, etc., will come into use much sooner if got into the ground as early as possible. After the frost is all out of the ground the freeze of an inch or so on top at night will keep the soil too wet to work well, but some morning when thus frozen the shell can be laid aside, and the earth beneath will be found in just the right condition, mellow and fine, the surplus of moisture having gone up into the frozen crust.

Seeds that need a depth of only about the thickness of the crust can be put on the surface, after the ground has been dug and mellowed to the proper depth. Cover with the crust and the work is done. Peas, of course, must be put much deeper. These seeds will soon swell and be ready to grow as soon as the ground gets warm. Lettuce, Radish and Beet seeds can lay in the ground all winter and grow as well as if kept in the house, and one often finds volunteers far ahead of what are planted. It is to get even with these that the early planting should be done.

Red Beets and Ashes. Two summers ago I left a packet of Beet seeds on a little pile of ashes, by an oversight, which got torn open and the seeds scattered. Some of the seeds sprouted in the almost pure ashes (of course somewhat leached) and in the fall I took up Beets therefrom, of usual size and smooth as glass, also very highly colored.

As Ye Sow so Shall Ye Reap. This old saying is true now, as it was when first expressed. This is to show us that if we sow good seed and plant good trees and plants we may look for a just return if we do the proper thing in the way of preparing the ground and give good cultivation. If one wishes to purchase good seeds he can hardly go amiss by ordering direct from any of our popular seedsmen. Don't go to some store, where there may be old seed offered cheap, for you will most likely be disappointed. Most seeds will be sent you by mail at less cost than at the retail stores through the country.

As to trees, shrubbery and small fruit plants that you may need, send to some responsible nursery and don't fear the freight, for the tree agent, if you patronize him, will charge such prices as will make your bill much higher than freight and all the other way. Again, if you order from the nursery direct you may expect what you ask for, while from the latter your chances are three to one that you will be disappointed, and no chance for redress. Don't be fooled by the exaggerated pictures they show you, for even if the true kinds, you may never raise such specimens as they represent.

Russian Apricots. Last season my trees bore for the first time, and the fruit was watched closely but some one else got them. They were small but this may be on account of the small trees. They had no name but now I have six varieties that are named which will soon show what they are. They are hardier than our old varieties.

Japan Plums. I once wrote that it would be best to grow these in large pots or boxes so as to put them in a cellar, but this seems not necessary as last winter they stood in the nursery at 14° below zero at Morrisou and bore fruit, but when nearly grown the fruit fell off. This winter I have grafts of both Kelsey and Botan of one summer's growth and they are both sound.

It is possible that two of the most difficult traits in the Kelsey here may be overcome. It seems hardy and our long warm autumns may ripen it. C K. Meyers, of Illinois, tells me that it can be worked on the Dwarf Almond and then easily laid down and covered in winter. This is a new wrinkle to me and shall be tried. I know that the Peach will work on the Almond for I once saw a monster Peach within six inches of the ground on such a tree.

What Variety to Plant. If one is not acquainted with the popular fruits of the day let him go to a fruit grower in his neighborhood and ask his advice. There are many valuable varieties that thrive in some localities while in other places they are a failure. Just here in a variety of soils some of the Bragg Strawberries are of no account. Sharpless, Old Iron Clad and Piper have proved a failure, while Columbia, Captain Jack, Windsor Chief, Crescent, Harte, and Minnesota never fail.

Among the new ones Jessie and Bubach No. 5 are at the head while Gandy and Mammoth promise well. While I would not advise going largely into any of the new varieties offered at high prices I would recommend the procuring of a dozen each, if one can afford it; give them good (but not extra) cultivation, so you can learn their merits. Don't give them such high culture as you never gave your old ones, or it is not a fair test. I will lay a wager that if the same care was bestowed on the Captain Jack that some of the new crops receive, it will match the best of them yet.

But this thing of putting out a new Strawberry at $2 per dozen seems to me to be unreasonable although it may be legitimate. Where a new one promises well the owner should hold on to it until he can well afford to send it out at $1 per dozen, and this any one feeling an interest in it will be willing to pay, but $2 is more than I intend ever to pay for any new Strawberry, and many prominent fruit growers have told me that it was their idea also. The reason why I advise getting the new ones at a decent price is so that if they prove valuable you will have a good start of it, while if not on hand we feel disappointed. I would sooner try six varieties and have five of them fail, if the other one is good, than not to have that one.

The New Grapes. The improvement in this fruit is very encouraging and if the rot can be overcome (which there is hopes of) we will soon have plenty of superior quality. Among the white ones I will name Moore's Diamond, Empire State, Niagara and Pocklington, all hardy, productive, healthy and vigorous in vine and in quality as named above, Diamond best and and Pocklington fourth in quality, though even this is a good Grape. These can be grown to nearly 1 lb. to the bunch, and if such won't bring a paying price after deducting the expenses of sacking, one man has made a miscalculation.

Young Trees in Old Orchards. That this is not advisable as a rule is true, and is usually condemned, yet if properly done may prove successful. Twenty-one years ago, when I came in possession of this place, there was an old orchard of about fifty trees, most of which had seen their best

days, while others bore inferior fruit yet were too old to make grafting practicable. There was no other orchard near so we depended on this one for Apples.

After four years I commenced cutting the worst trees out, and setting young trees in their places. Some were cut down and the stumps left standing until nearly decayed. In either case every particle of old root, whether green or rotten, was removed for at least four feet square, and two feet deep. Most of the soil in this space was thrown out, and fresh good soil filled in before the new trees were planted. The result is that I have now trees from fifteen years old down to but three, all flourishing, some being ten inches in diameter at the base and we have not been without plenty of Apples, although the orchard is in the original ground.

DURABLE STAKES. Whenever Red Cedar can be got for posts or stakes they should be secured. Twenty-one years ago I helped to survey in this vicinity and to lay out the town. The town lots were marked with Cedar stakes 2½ inches square, driven 18 inches into the ground, with the number in Roman characters cut into the stakes, which are yet in place and not decayed. These stakes were taken from trees that were dry and well seasoned.

In a place that I once rented there were stakes not over two inches thick put to Grape vines that had been put there four years before, and the place was in my care for three years, yet not a sign of decay was perceptible on these stakes. They were Osage Orange, and simply poles cut from an abandoned hedge. That it will pay for any one to plant the following where timber is scarce I am sure: Osage Orange, Catalpa, and Alianthus. Cedar grows too slow and is more uncertain in growing after transplanting. In growing trees for timber they should be planted pretty thick at first, and thinned out as they become crowded.

FOREST TREE GROWING. The three above named I would plant four feet apart each way; cultivate well until they are about two years grown (of course I mean to plant small trees in the first place). The third spring cut them off at the ground and let two or three shoots start up, of which when well started, say one foot high, pinch the tops off all but the best, and when they start pinch the tops again. This will give the best shoot the lead, which will be likely to make a shoot six to ten feet high, and perfectly straight. The following spring the main tree is all that should be left. In a few years these trees will make good stakes for the vineyard, and in five years they will be heavy enough to attach barbed wire to for a fence. It will now do to cut out every alternate tree diagonally which will leave them 8 feet apart. In ten years these will be large enough for forests when the thinning can be repeated in like manner leaving them 16 feet apart, which in twenty years from planting will yield railroad tie timber, while the refuse will make posts and firewood. One acre thus grown in good soil will produce 400 ties worth $30 per 100, while the timber taken from the ground previously will fully pay for the land and labor.

The Osage Orange is not suitable for ties, however, but will be valuable for wagon making. There is a possibility of ties bringing double the price named as the Oak timber is rapidly passing away, and some timber will have to be grown for the purpose. This will not apply to men of my age but for the young men of the land it may be of some importance. When a mere lad I helped to plant tree seeds in the black soil among limestone rocks in Pennsylvania, and had to weed them and tend them; on revisiting the old place thirty years after, there were trees fifty feet high and over a foot in diameter; that would have made ten posts each, then and there worth one dollar a piece. These hints may arouse some of our young men, to help drive away the threatening calamity of our forest destruction.

Notes on Garden Work.

A. C. REED, CUMBERLAND CO., ME.

In the garden one is not in any danger of doing too much manuring.

Then while there are many who do not raise as great a variety as they might, others attempt too much with the chance of later waking up to the fact that nothing has been done well. The garden plot is the most important piece of ground on the farm. While we want a good assortment of kinds, we must not have many of any one thing.

Cabbage is perhaps one of the most difficult of vegetables to raise in the average kitchen garden, though some, owing to favored locality, or good understanding of culture have no trouble with it. In many localities the man who can grow plenty of nice heads can sell them at a good profit. The crop should be grown quickly, which means a rich soil, an early start and frequent hoeings. The common danger from insects may be somewhat lessened by shortening the time of heading. I have also used sulphur by thoroughly sprinkling the leaves with it from time to time, for eradicating both lice and worms, with good results. [Bubach is the complete remedy against Cabbage worms.—Ed.]

The vines demand a considerable area, and that of the warmest loam, well manured.

It is often an advantage to change the location of our gardens. Some gardens are too wet, others too much exposed, but the best garden is the one having the sunniest exposure, providing we have a light loam as a whole, though a little variety in soils is sometimes useful.

In shirking the details of our work, we shirk the profits almost invariably. In no business is this truer than gardening. Look closely after the small things and the big ones will nearly take care of themselves.

Black Rot of Grapes.

Continued from page 125.

There are generally two periods in the invasion; the first is usually mild, and coincides with the flowering of Æstivalis, the time when the berries of *Labrusca* and its hybrids are forming. Later in July and especially near the beginning of August Black Rot develops on the berries very rapidly and may destroy the entire crop in a few days. When ripening begins the disease progresses slowly and the berries that are still healthy are not attacked, but in warm and moist regions those containing the parasite continue to decay up to complete maturity, at the same time presenting some special characters.

Diverse systems of culture and pruning adopted with the view of overcoming the disease have been without effect. The powders, sulphur, plaster, ashes, lime and ashes, etc., solutions of lime, phenic acid in small quantities, salts of soda, have all been employed without success. It is true the vines were treated when the disease was already on the leaves and even on the fruit—a fact which may account for some of the failures.

It has been observed that Black Rot does not exist or is not as severe upon vines trained against walls that are surmounted by roofs or partial shelter. It is the same by training the vines against a trellis topped with a board or cloth shelter. In the greenhouses near Boston and in Washington the vines, even the European varieties, are exempt from Black Rot, although the neighboring vineyards in the open air were devastated by the disease. Drops of water are indispensable for the germination of Mildew spores; it is also necessary for the germs of Black Rot, and especially for their dissemination.

It has been several times reported to us that in the vicinity of large manufacturing cities, where great quantities of soft or bituminous coal are consumed, the thick smoke throws down large quantities of soot or coal dust. Thus at St. Louis, Mo., the smoke is regularly driven towards the north by the winds from the Mississippi. Black Rot is rare and its attacks light in the vineyards situated in the suburbs of the city in this direction, while in the vineyards to the south of the city the loss sometimes reaches 90 per cent.

Many practice removing all the berries which show any signs of Black Rot, and in this way they partially overcome the disease. The Grape clusters are by many inclosed in common paper bags to preserve them from Black Rot. The work may be done by children, who, when the cluster is placed in the bag, draw up the mouth of the latter and fasten it around the stem with a pin. The Grapes are inclosed when they are no larger than small Peas. The clusters that are thus protected are perfectly free from Black Rot, although the leaves on the same vine may be perforated by spots and the clusters not covered entirely destroyed by the disease. This method is plainly impracticable for large wine vineyards but may serve to a considerable extent in vineyards where Grapes are produced for table.

During the past season (1888) the value of the salts of copper in treating Black Rot has been fully demonstrated. Of the several preparations employed the Bordeaux mixture* has given by far the best results. All have been about equally efficacious in protecting the vines from Mildew (*Peronospora*) and it is difficult at this time to account for the diversity of action. The results obtained where the Bordeaux mixture has been properly applied, both in this country and in France, are so clear that we have no hesitation in saying that the Black Rot is conquered. It may now be combated successfully and by a method that is economical and perfectly practical in the largest vineyards.

Applications were made by our special agent, Alex. W. Pearson, at Vineland, N. J., during the past season with the Eureka sprayer, May 29, June 5 and 21, July 2 and 11. The variety selected for treatment was the Concord. On the untreated vines Rot appeared on the leaves June 8, on the fruit June 27, and by July 15 more than three fourths of the berries had been destroyed by the disease. There were no signs of Black Rot on the vines treated with the Bordeaux mixture—6 pounds sulphate of copper, 4 pounds lime, 22 gallons of water—previous to July 20. Soon after this date these vines showed slight signs of the disease, particularly on bunches that were hidden under masses of foliage, where the spray from the pump could not easily reach them; the most exposed bunches—those most easily sprayed—remained wholly free

**Copper mixture of Gironde, Bordeaux mixture—Original formula.*—Dissolve 16 pounds of sulphate of copper in 22 gallons of water; in another vessel slake 30 pounds of lime in 6 gallons of water. When the latter mixture has cooled it is slowly poured into the copper solution, care being taken to mix the fluids thoroughly by constant stirring. It is well to have this compound prepared some days before it is required for use. It should be well stirred before applying.

A solution containing the ingredients in the following proportions has been recommended for general use.

Sulphate of copper	pounds	6
Lime	"	6
Water	gallons	22

The copper is dissolved in 16 gallons of water, while the lime is slaked in 6 gallons. When cool the solutions are mixed as described above.

from disease, a striking proof of the efficacy of the treatment.

By July 30 there was considerable Rot on the treated vines, evidently the result of a recent attack, as none of the diseased berries were yet blackened or shriveled. On the untreated vines one could scarcely find a bunch with more than a half dozen sound berries on it. Knowing, as we now do, that the period of incubation or the time from the moment of infection to that when the disease becomes externally manifest, is from six to eight days, we conclude that the attack of the treated vines occurred about the 20th, or about ten days after the last application was made (July 11). Had special care been taken to spray the bunches and another application been made about July 17, we believe, from what was really accomplished, that the protection would have been complete and the loss from Rot practically nothing.

In remarking upon the results of our experiments at Vineland Professor Viala says: "The results of the treatments are not yet perfect, but for the present they afford the assurance that Black Rot can be effectively overcome by the salts of copper, and that the same applications will serve to prevent the development of mildew and of this disease; the treatment of Black Rot will not therefore occasion any additional labors. The experiments made in France and America demonstrate that it it indispensable to begin the applications before the first appearance of the disease upon the leaves; they prove also that four or five treatments are necessary, the last to be made just before the berries begin to ripen."

A Convenient Barn for a Fruit Farm.

L. B. PIERCE, SUMMIT CO., O.

To the fruit grower with 30 or 40 acres of land, a large barn is not a necessity as it is to the farmer, yet more barn room is needed than most fruit farmers allow themselves. Generally such barns are patterned after the small village style, cramped and inconvenient, there being no place for tools, extra wagons, or temporary storage of fruits and vegetables, and the stable and carriage room being all one, 16x20 feet with from one to three unsightly open sheds being made to answer. Such an arrangement does not give the conveniences which a pushing horticulturist needs. These are a separate stable room sufficient for 4 or 5 head of cattle and horses, a separate tool, wagon and carriage house, and a tight barn floor to be used for threshing Beans and seeds and storing vegetables in summer and as a feeding floor in winter. It should be large

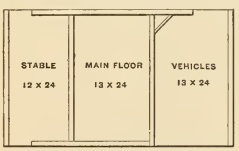


Fig. 2. Arrangement of Barn Sills.

enough to drive in a load of hay or a load of truck over night. There should also be a loft or scaffold room for the storage of several tons of forage and bedding. On a hilly site these conveniences can be secured in a structure 20x26 feet with an eight foot basement, and a superstructure 16 feet at the eaves, and a three-eighth pitch roof. The basement will contain the stable 12x20 feet with tool room and feeding floor 14x20. Above the carriage room is the loft, 8 feet to the eaves, with addition of room under roof, while a scaffold 11 feet above the barn floor gives a large additional storage space for fodder or bedding. At a comparatively small additional expense a root cellar 10 feet square could be put under the approach to the barn floor. I planned to build in this manner and got along several years as best I could until able to build with substantial stone walls and everything in the most thorough manner, but backed out at the last minute because the location would be an exposed one, and an underground barn there would be no warmer than one on top of ground in a sheltered position at the lee of the hill. So I am building on top of land, with a somewhat larger ground plan.

It is 24x38 feet and 12 feet 4 inches from top of sill to top of plate with half pitch roof. The stable and carriage rooms are 8 feet in the clear with ten inch joists supporting the floor to the lofts. These are 3

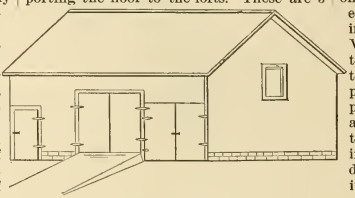


FIG. 1. CONVENIENT BARN FOR FRUIT FARM.

feet 6 inches at the eaves while in the peak they are 12 feet higher, the half pitch roof making extra room. The stable is 12x24 on the south end with two cattle stalls on west side, each 5 feet wide and a 5 foot horse stall in the center while the additional 9 feet is left in one so that a span of horses can be hitched in there if need be. A door 40 inches wide gives egress at either end of the stable. The barn floor is 13 feet wide, as is also the carriage house on the north end. The width of both sills (8 inches deep) are in the carriage house, and it would have been better if this had been 14 feet from outside to outside or even 15 feet, making the building 40 feet long. The floors of both stable and carriage house are of compact gravel with a slight admixture of clay and are 16 inches lower than top of the sills, the sills being left out or cut out at the doors. The barn floor is of two-inch plank above the sills making a filled approach necessary 18 inches higher than entrance to stable or carriage house. The sills rest upon an eight-inch wall of building blocks of vitrified sewer-pipe clay. These resting upon a frost-proof foundation in ditch after the usual style. The grading when completed, will leave the barn upon a slight elevation, falling away in all directions. The floor of carriage room is nearly on a level with carriage drive at the side of the house. Had I built a bank barn there would have been a climb of nine feet, and the barn from its elevated position would have been the most conspicuous building on the place which would not have been harmonized with my ideas of the fitness of things.

The roof is of first class Pine shingles and the siding of clapboards ½ inch thick and five inches wide, the frame being balloon of 2x5 studding with sills of timber 8 inches square. Around the stable, to the height of the ceiling rough sheathing is nailed, then tarred paper and then the siding. Above this the studding is furred out one inch and the siding put on without lining. There are matched floors to the lofts resting on 2x10 joists two feet apart. Three studs on each side of barn floor at each end run to the roof, the longest supporting 2x10 joists for purlein plates and three taking the thrust of the roof, which is not as great as in a roof of less inclination. The rafters are 2x5 feet and 18 feet long. The steep roof makes a large amount of storage room. By reference to the plan of sills in Fig. 1 it will be seen that the carriage house has a short sill on west end, leaving room for one 7 foot door. On east end, which is toward carriage drive, there are two doors opening full width. The barn floor has large double doors on each end.

A Handy Field Marker.

Regularity is one of the chief features that make a garden attractive. It is not enough that the rows of vegetables be straight, but such plants as Lettuce, Cabbage, Cauliflower, etc., should also have a uniform distance in the row, and with the wider planted ones, if possible, also be in line crosswise.

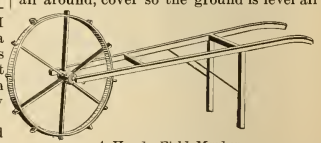
A convenient little device to mark not only the rows but also the exact places for each plant in the row, we find illustrated in "Rawson's Market Gardener's and Vegetable Growers' Manual." Our illustration makes construction much plainer than a wordy description could do. The pins which serve to mark the places for plants in the row are put in with a nut, and may be changed to mark intervals of ten, twelve, twenty and twenty-four inches, if the wheel is made plump 38 inches in diameter. A field can be marked with this implement in a short time, and with little effort. For the purposes of marking the rows for sowing seeds of Radishes, Carrots, table Beets, Lettuce, etc., in the house garden any of the simple home-made garden markers, consisting of a piece of scantling with the necessary number of teeth, and a convenient handle, will answer well enough.

Growing Fine Asparagus.

DANIEL K. HERR, LANCASTER CO., PA.

If two-year-old roots are not readily obtainable, get seed of Conover's Colossal, Palmetto, or other popular sorts; and as early as possible in the spring, sow in rich mellow ground in drills two feet apart, covering the seed one inch deep; should they come up too thickly, thin out to three inches apart. Keep scrupulously clean of weeds, and cultivate well for two seasons. If the Asparagus beetle appears, apply any of the poisons used for Potato bugs. Several applications may be necessary, as the larvæ of this small beetle destroy the foliage very rapidly.

Asparagus does well in almost any soil, for many years; therefore, when two-year-old roots are ready, choose a situation where they may remain, work the soil up 10 or 12 inches deep, incorporating a liberal quantity of well rotted barn-yard manure. Draw wide furrows eight inches deep, and flat in the bottom, so the roots can be spread out all around, cover so the ground is level all



A Handy Field Marker.

over when finished. Place the roots so the crowns are one foot apart in the row, and have the rows three feet apart, for garden culture, and at least four feet for field culture. A light mulching of fine manure as soon as planting is done, will help to keep the soil mellow, and promote a vigorous growth. Cultivation must be continued for two years more the same as for seedlings, and each fall the growth cleared off, and good manure spread over the entire surface at least two inches thick.

With careful culture and liberal fertilizing, the roots will be strong enough to permit cutting shoots freely the third season. Allow the shoots to grow six or eight inches high, and cut at the ground surface, not be-

low. They are then tender their entire length, and better flavored. During very warm weather cut twice a day, or the tops will get a seedy appearance. If blanched shoots are desirable, to have them perfectly tender, the roots must be planted 12 inches deep, and a ridge of litter put over the rows in the spring, six or more inches high, and compact enough to exclude light and air, and as the shoots break through this cut at the bottom of the litter.

As the cutting proceeds, no thin or misshaped shoots must be left stand, whether for use or not. Any seedling plants that spring up must persistently be pulled out to prevent the ground from getting matted with small roots. By not allowing any foliage to grow, the larvæ of the Asparagus beetle have no chance even to exist. This plan has kept my plantation entirely free from larvæ, since the first appearance of the beetle at my place three years ago without the use of any poisons; as by the time the cutting season is over, (July 1st,) the beetles have perished. These beetles are quite small, but their presence can readily be detected by their activity on the shoots, and the many jet black nits attached.

The same diligent cultivation that characterized the preparatory season must continue from year to year. During the cutting season it is difficult to keep the land clear of weeds, on account of danger of young shoots getting cut off with the hoe, but the worst how ever, can be hand-pulled. When we make the last cutting of shoots, everything that is fit to use down to but two inches above ground is gathered, then immediately we go over the plantation with sharp hoes, and cut every vestige of weeds, regardless of how many hundreds of young Asparagus shoots, just coming through, share the same fate. This may seem heroic treatment, but it has given me most favorable results for the past five years in luxuriant even growth, and cleanliness of weeds, aside of the saving of time and difficulty of clearing weeds when the shoots are saved. If the day is clear, the weeds may be left exposed to the hot sun a few hours to dry up, otherwise clean off with a rake, and at once cover the entire ground completely with rather light manure. This mulch will keep the weeds in check, till the Asparagus growth shades the ground so completely, that weeds will have little chance.

The summer manuring will promote an enormous growth, and to have extra large shoots for cutting the following season, the thin stems should be cut out just before the growth gets too heavy to pass through, as this will throw all the strength into the heavy stems to develope strong crowns. When clearing off the growth in the fall, every precaution should be used, that the seed does not get knocked off and scattered over the Asparagus bed, as this will save much labor in pulling up seedlings. The tops are best gathered and burnt on adjoining land. Give a liberal covering of rich manure before winter sets in, and in the spring work this into the soil with a fork or harrow. A week or so before the shoots appear, sow a good fertilizer at the rate of 600 lbs. per acre, and clear out the weeds.

Asparagus is a great feeder, and will amply repay liberal manuring. This, with care to prevent seedlings from getting a foothold and encouraging only strong shoots are the requisites to produce fine delicious Asparagus.

Some Things Not Advertised in the Catalogues.

WM. F. BASSETT, ATLANTIC CO., N. J.

With the present system of plant growing in most, if not all, of the commercial greenhouses, no further attempt is made than to keep down insects sufficiently to allow the plants a fair chance until sold and customers often receive extras in the form of insect enemies before unknown to them, and they perhaps spread over a whole collection before the purchaser is fully aware of their presence or knows how to resist them.

Insects like green fly and red spider are so common everywhere that it would be difficult and perhaps impossible to exterminate them in any extensive greenhouses. But others, which attack only a limited class of plants and are not so universally distributed it is possible to keep out entirely, and, I believe, with less cost than the present plan of keeping them within prescribed limits.

CHRYSANTHEMUM FLY. Some years ago I bought a dozen choice Chrysanthemums and received with them this insect and I did not know how to manage them, but tried soap suds, Tobacco, picking, burning, etc., but enough escaped so that unless constantly watched the plants would soon become filled with them again, so in disgust I allowed them to die. Later I concluded to try again and received another stock of black fly, but this time by persistent watching and hand picking I got almost clear of them, but the next year, having more plants and more aphis, they got the better of me. After the plants were brought into the greenhouse ready to flower I found several plants badly infested and not being able to destroy them without injury to the flowers, I tried a new plan.

When my plants had done flowering I cut down the flower stems, threw them out in the cold and planted the roots in the open ground. A few, however, remained in bloom till winter prevented this course so I carried them out carefully, to prevent dropping any insects in the house, left the old growth in the snow, carried back the plants and covered them completely with Tobacco dust for several days; the result was a complete clearing out of the fly. Another purchase, however, brought a new supply, but profiting by experience I kept the new stock by themselves and carefully watched them every day and all which showed any fly were turned on their sides in a box or pan and covered with Tobacco dust for 24 hours or more which proved effectual. I have not seen a black aphis on my place for a year. One of the points which must be attended to with such insects as black fly is to use great care not to shake or knock off any of the insects in handling this flower as such stragglers are sure to come up somewhere and start a new colony.

THE ROUND SCALE. This is an insect which came with a plant of Ardisia crenulata, but not until it was in flower and the berries pretty well grown did I observe that the stems and under side of the leaves were badly infested with this scale. I tried Tobacco, soap suds, picking off, etc., but it was impossible to remove all of them without knocking off the berries. The florist who sold me the plant said they had no difficulty in keeping down the scale by throwing water forcibly on the plants, but with nothing more than a small force pump I could effect nothing with this remedy, so when the berries ripened I planted them and secured a fine stock of healthy plants. The original plant was left under a tree through the summer without water except the rain, and it seemed to have died, but with cool weather and less sunshine it sprouted again and is now in good condition except that it produced no berries this season; I have seen no scale on it.

ANOTHER QUEER LOOKING INSECT. On a plant of Lantana Californica (a fine dwarf grower with pure yellow flowers), this insect came, differing from anything I have seen or heard of; the head is dark and the body, white like a mealy bug, is extended to a long point on each side of the head, giving it the form of a Beggar Tick (*Bidens frondosa*) seed but only ¼ to ⅓ the size. I tried immersion in Tobacco dust unsuccessfully, and finding that these insects were spreading to some Coleus near by I destroyed them and all of the insects I could see on the Lantana, at the same time removing the larger leaves; I set the plant in the furnace room intending to watch it long enough to get clear of them but it was allowed to dry too much and died, which I consider preferable to introducing a new pest, though I have no doubt I should have saved my plant, minus the insects, with closer attention.

ABOUT MEALY BUG. These are insects not so easily exterminated because they work on the roots as well as on the tops of plants, and may often be found secreted along the edges of the pot beneath the soil, but I believe that persistent hand-picking can be made successful, if accompanied by drenching the roots with some insecticide, like strong Tobacco water, and using carbolic acid or Fir-tree oil freely in the greenhouse when cleared out in the summer, also being careful to throw the balls of earth from any pots which may contain them well away from the plant establishment, and then by a careful quarantine of all plants received from other sources, any place may be cleared of it.

Amateurs and those who are just commencing business can often avoid some trouble by growing plants from seeds or cuttings as far as possible, of course, taking care to examine the latter critically, and by systematically following this course when it is necessary to introduce plants from other houses, all packing being burned or removed to a safe distance, new houses may be kept clear. It is an undeniable fact that this course involves considerable trouble but I think not more than at present results from the opposite course, and it is very certain that a florist who could establish a reputation for sending out plants absolutely free from certain troublesome insect enemies, would reap a reward in a largely extended trade.

1,064. **Ferns Eaten by Snails.** As these pests are nocturnal in habit, feeding at night, they should be hunted for by the aid of a lantern and exterminated. Small pieces of boards placed on the soil of the pots or benches will generally serve them as a hiding place and may then be readily caught. Cotton wool placed around the stems of plants will prevent snails from ascending them.—G. H. M.

1,078. **Raising Onion Seed.** The soil in which to grow Onion seed should be moderately rich, but if over-abundantly manured the blossoms are liable to blight and no seed will be produced. Select the very best Onions and avoid those with thick necks. As soon as the ground can be worked in the spring, plow and harrow thoroughly. Onion roots run down deep and it is therefore essential that the subsoil should be free from stagnant water; low mucky land that will produce good crops of Onions will not always produce Onion seed. In rows three feet apart make furrows three or four inches deep in which set the Onions about four inches apart and cover with soil to the depth of two or three inches—if heavy rains wash the soil away from the bulbs it should be replaced, as this not only aids in supporting the stalk but tends to prevent the Onion rotting, as it would if exposed long to the air. Onions for seed may also be planted in the fall and do equally well provided they are set in time to become established before freezing weather, and are sufficiently protected with earth, manure or straw, and the seed will be produced somewhat earlier than by spring planting. As soon as the seed pods ripen, which is shown by their becoming yellow, they should be cut and spread thinly under shelter to dry, then threshed and cleaned, being sure that it is thoroughly dry before storing away in bulk.—G. H. MAHAN.

1,124. **Orchid Information.** You should procure a copy of William's Orchid Grower's Manual a work invaluable to all who are interested in Orchid culture.—C. E. P.

1,111. **Brown Fly on Chrysanthemum.** I am not acquainted with the insect referred to but think an application of Fir-Tree Oil will destroy them. The oil can be procured in bottles containing pints or quarts. Directions for use accompany it.—C. E. P.

Growing the Tree Pæony.

In the lists of herbaceous perennial plants is usually to be found the Tree Pæony (*Pæonia montans*), which, in spite of its name is a shrub, and one of the most showy of all flowering shrubs, especially during its blooming season in May. P. montans, the parent species from China, is frequently to be seen in old gardens, while the finer-hued newer varieties are increasing in popularity, many attaining a height of six or eight feet when growing a number of years under proper treatment.

Their care simply requires a rich soil and a situation where no water will stand about their roots, especially through the winter. They may be planted among shrubs and along borders, preferably where somewhat protected from the prevailing winds, as the flowers are easily injured. This protection is also useful in early spring when growth begins; in preserving the tender roots from late frosts, the same danger may be averted, and the plants at the same time much benefited (although they are perfectly hardy during the winter), by a slight mulch of straw, evergreen boughs or similar material which tends to retard the growth early in spring.

A FINE TREE PÆONY, RE-ENGRAVED FROM THE LONDON GARDENER'S CHRONICLE.

In planting do not make the mistake of setting them too close, bearing in mind that they differ from the common herbaceous Pæonies in greater size, consequent upon their shrubby character. The flowers are remarkably striking and numerous, often six to nine inches in diameter and gorgeous in coloring, exhibiting many shades not found in the more common class. In England, they are, if anything, more popular than in this country, although requiring more care. Our illustration is from a photograph of a plant called Louis Mouchelet, with flesh-pink double blooms. The large petals are gracefully curved towards the center. The bush was five feet high by seven feet in breadth, and bore over fifty flowers that averaged eight inches across. There are, doubtless, numerous specimens in this country equally good, if not better.

Among the sorts offered by our leading nurserymen are Banksia, large, rosy, blush-purple center and very fragrant; Cornelia, semi-double, brilliant red, petals marked with white, and Arethusa, light rose, shaded with purple. Other fine ones, not fragrant are Alba plena, double white, purple center; Blanche Noisette, superb pure double white; Josephine Imperatrice, dark rose, purple shading; Pride of Hong Kong, semi-double, cherry-red, purple center; Roi des Cerises, very double, pink changing to creamy white, base of petals purple; Reine Elizabeth, rosy-crimson, center shaded to light rose; Rubra plena, single bright rose; Zenobia, double purple.

Butting Instead of Lapping Glass on Greenhouses.

W. R. SHELMIRE, CHESTER CO., PA.

My experience in butting glass has, in the main, proven satisfactory. Two years ago I built two houses, butting the glass instead of lapping it. The glass was 10x12, of second quality, double thick and laid directly on the rafters, end to end, each pane being fastened with four ¾-inch brads (we use these in preference to points) and putty run on top with a putty squirt. The slope of the roof is from 35° to 40°. There is considerable leakage, but what runs through also runs down the inside of the glass to the eaves, and this only happens during very heavy rains, as ordinarily there is no more drip at the eaves inside than occurs even when the glass is lapped, from the moisture, necessarily condensing on the glass in cold weather. The roof is much tighter against the cold, and the houses easier to keep warm than when the glass is lapped.

There are a few points to be observed in butting glass for a greenhouse roof.

1st. The slope must be considerable or the roof will leak badly.

2d. The glass must be cut true and straight on the edges, or the openings between the panes will cause too much leakage. There is much difference in glass in this particular. It will generally be found that the better qualities of glass are cut with greater care than the poorer.

3d. Double glass answers the purpose better than single. Rain will be less liable to be driven through. Still if well cut single thick may be used on steep roofs.

4th. Purlins stop the drip from flowing down to the rafters inside, making the benches muddy underneath them. Consequently, when they are used it is not advisable to butt the glass above them unless the butts are all filled in with the putty squirt, which, however, can readily be done.

If thought best, this can be done on the entire roof, when, if neatly executed, a perfectly tight roof is secured. I believe, however, I would rather lap the glass than go to this trouble.

The advantages of butting are: A tighter roof against cold, which means a saving in the coal bill. Little or no breakage from frost. Somewhat less glass to cover the same roof. Much less work in putting the glass on, and the whole roof is more durable. I can conceive of but the single disadvantage of the excessive leakage during heavy storms; which, however, does not affect the plants in the house a particle, but rather the durability of the posts where the drip falls. In constructing a roof in this way, carefully attend to the details above mentioned, and you will find butting far preferable to the old style.

A Few Desirable Shrubs.

E. P. POWELL, ONEIDA CO., N. Y.

Stuartia pentagynia. This plant belongs to the Camellia family and is a noble affair, but not quite hardy. Give it a northeast exposure protected from winter suns. It is an erect shrub arising from six to ten feet. Its flowers are auxillary and three to four inches across. The color is a soft, delicious, creamy white, and always pleasing. This plant is rare even in the best gardens. As it gets well established it is safely hardy, in this respect it is much like the Altheas and perhaps other shrubs.

Mahonia — An evergreen shrub. To describe all the beauties of this plant would not be possible. Its leaves are glaucous and polished, resembling Holly. It is full of freshness at Christmas, making admirable greens for decorating. It comes out in spring bright and beautiful. In May it is covered with great balls of golden flowers, the finest of yellow. The young growth comes out a pretty pink with touches of carmine, and passes to first a light green then to a dark. It is liable to freeze back if set where winter suns can thaw it out. I grow it to perfection in the northeast angle of my house. It never rises over two feet but spreads over a large space. I have never seen anyone who did not admire it, yet few seem willing to take the pains to grow it well.

Dwarf Horse Chestnut is a very desirable shrub. When well grown it is about three feet high and ten feet in diameter. In July it is crowned all over with upright stalks of miniature Horse Chestnut flowers. These are followed by nuts of a miniature size, but very pretty.

Purple Plum (*Prunus Pissardii*). Its purple is not a mere dullness, or a half green, but a rich fruity shade of dark red. Different trees I find differ greatly in richness. It is possible that inferior seedlings are being sent out, or the stock may affect the graft.

Hydrangea Paniculata. If you have this not by all means get it. I mention it more to say that it should be grown as a small tree if you desire to get its full beauty. Then keep it well mulched and the roots moist. It flowers in August and at its best is magnificent. It is seldom anything remarkable, owing to bad treatment.

The Variegated Althea is the finest-leaved shrub I have ever seen. It has a clear, creamy white border to each leaf and this flakes in richly. It has very double flower buds which I think never open, at least mine never do, nor have I ever heard of their opening for others; but the bush alone is sufficiently fine. Next to this I should rank the Variegated Weigelia. This requires good culture in clean strong soil and no manure. It will blossom well.

Exochorda Grandiflora. This I should place in any dozen that could possibly be selected. It is covered in May and early June with a pure white saucer-shaped flower, parting in the middle of the corolla into four parts. It is not an easy shrub to propagate, and is therefore rare.

THE DOUBLE FLOWERING THORNS. It is hard to explain why these are not more common unless it be that they are only "Thorns." But you will never regret having a fine small tree or bush of the Double Scarlet and another of Double White, and then of the other shades of red. Each blossom is a miniature Rose so give them conspicuous positions.

VARNISH-LEAVED WILLOW. If you have a knoll or other place where you can observe the growth of this you will surely enjoy the exceedingly rich play of light and shade in the polished foliage. It may be grown as a small tree or as a shrub.

THE RED DOGWOOD. For autumn and winter select this and the two following. The Dogwood has bright red bark from November to April. During the summer it is green, but the bush is pretty, with small flowers and white berries. All winter it is quite a warm red. Grow it in a moist spot if possible.

THE BARBERRY. The best is a naturalized English sort, always to be found in our northern woods. It is truly superb, both when in flower and when loaded with scarlet fruit, which hangs on all winter.

THE EUONYMOUS—a native that has seed vessels which open in November and December, showing rich crimson berries. A European sort bears yellow berries. These three, with the Mahonia, give a good cluster of winter shrubs, brightening the lawn, and fitting well with evergreens.

One chief pleasure in growing shrubs is lost by most people because they do not undertake seedlings. All of our best shrubs may be easily propagated in this manner, and some fine novelties secured. I have for this year undertaken a large stock of seedling Altheas and another fine batch of Magnolias (Chinese sorts) and some Lilacs from seed of the Persian, as well as a few Syringas. These will all afford great pleasure. They can be grown in hedges if there is no other space. September and October are good months to plant most of the shrubs, unless planted in the spring.

A Famous Alpine Flower, the Edelweiss.

W. F. LAKE, ERIE CO., N. Y.

This beautiful flower, so much loved by the Swiss mountaineers and considered by them the emblem of purity, also being used

The Edelweiss of the Alps.

as a bridal flower like the Orange blossom of more temperate climes, is much sought after by the tourists of all nations. But it is only he who is a daring climber that can proudly wear it as an emblem of bravery, for it thrives best at an altitude of about 6,000 feet in its native home upon the Alps and Pyrenees, in dangerous rocky places reached only with the greatest difficulty.

It has been so extensively collected and sold by Swiss peasants and mountaineers used to climbing the steep slopes that in recent years it has become very scarce and, as with other choice Alpine flowers, the demand for specimens has been so heavy that the danger of extermination has threatened. The botanic garden at Geneva, Switzerland, is to be commended for exercising much skill in preventing this undesirable outcome; at this place all the rarer Alpine plants are preserved and specimens are supplied to those botanists and collectors who are desirous of them.

Some question has arisen as to which is the real species that has been so much in demand, but I think there can be no doubt of its being Gnaphalium Leontopodium. Europe, alone, however, cannot lay claim to all, as an allied species, G. Supinum, is often met with on the summit of Mt. Washington and other peaks of the White Mountains. The common Cudweed, or Everlasting, is also of the same family.

The Edelweiss can be cultivated in pots or in rockwork, in fact will succeed in most any soil, if not too rich, and fully exposed to the sun's rays. The flowers are of downy texture, pure white and star shaped, but sometimes turn reddish; it has been said this was due to being transferred to a lower level than its native home. The seed can be procured of some of the leading American seedsmen at about twenty-five cents per packet, which if carefully sown, should produce enough plants for any amateur's collection, and would be a desirable acquisition.

A Curious Growth of the Foxglove.

It is not uncommon in flowers which have the corollas formed by the petals being united at their edges, that an abnormal tendency is sometimes exhibited in the return to a more regular form of bloom, as in our illustration of the common Foxglove (*Digitalis purpurea*). The natural flower is shown on the lower part of the stalk, while in the abnormal form the corolla has become greatly enlarged and split up into spreading segments, beautifully spotted and very handsome. Among fifty other flowering Digitalis in the same garden, this was the only one inclining to this formation. For the account and illustration of this singular form, we are indebted to the London Journal of Horticulture.

The plant of which the stalk shown was the central stem, had four more slender off-shoots starting from the ground, each of which terminated in a monstrous flower. Contrary to the natural blooming habit of the plant, these abnormal flowers are the first to open, whilst the other flowers on the same stem, though fewer in number, are without any indication of this curious tendency. The flower shown is surrounded by an involucre of bracts or sepals of about twenty one or more leaves, in three whorls or rather crowded spirals, reminding one of the Compositæ Family (*Asters, etc*). The corolla is over three inches in diameter and is plaited and lobed, the petals being more or less separated at their terminations. Forms of Digitalis have been known in which the tube was enlarged like a Gloxinia.

Cacalias--Their Use in the Summer Garden.

CHAS. E. PARNELL, QUEENS CO., N. Y.

The several varieties of Cacalia, or as they are popularly called, Flora's Paint Brush or Tassel flower, form when taken together, a beautiful and most profuse-flowering genus of summer blooming, or bedding plants belonging to the order Compositæ.

They may be described as being half hardy annuals, growing from one and a half to two feet in height, having ovate spathulate leaves and scarlet or tassel-shaped flowers, which are borne in clusters on single stalks

A Curious Growth of Foxglove.

about a foot or so in length, and they continue to bloom from early summer until late autumn, throwing up their tall branching flower stems and furnishing a useful supply of flowers for cutting purposes. To ensure the most satisfactory results, the plants should be grown in beds or groups containing six or eight plants, the plants standing four or five inches apart. They prefer a deep, well enriched soil and a sunny situation.

It is best to start the plants under glass, and for this purpose the seed should be sown about the last of March in a well drained pot or pan filled with light loamy soil. Sow thinly, cover slightly, and place in a warm, moist situation, as close to the glass as possible. As soon as the young plants are well up and strong enough to handle, they should be transferred to other pans or shallow boxes and placed in rows an inch and a half apart each way, and kept in a cool airy situation until the weather becomes well settled, when they can be planted outside. Or the seed can be sown in a cold frame about the middle of April, or on a nicely prepared border about the first of May, and the young plants removed to their blooming places as soon as they are strong enough to handle. In this case, however, they will not flower so early. Of the two varieties now in cultivation, *C. coccinea* has flowers of an orange scarlet color, and grows from one and a half to two feet in height, while *C. aurea*, is similar in all respects to the foregoing, except in the color of its flowers which are of a golden yellow.

1,130. **Making a Garden.** It is almost impossible to advise correctly how a given piece of land should be prepared for a garden, without seeing it, but if the ground is thoroughly spaded or plowed, and plenty of good manure (use some good chemical fertilizer if other manure is not plenty) is mixed through the soil there is no reason why a good garden cannot be had. It is not enough to plant our garden and then leave it to take care of itself; thorough and continued cultivation is as important as plenty of manure; one without the other will only give partial success.—M. B. FAXON.

An April Violet.

O Violet;
'Tis April yet,
The wind is cold, sweet maid;
For it doth blow
O'er lingering drifts of snow—
The ermine borders of spring's velvet green.
Oh, art thou not afraid
Thus early to be seen?

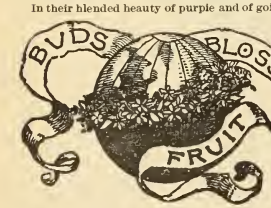
Dost think thou'st won
The fickle sun,
Because he smiles to-day?
Yet he did bring
Like homage to the spring,
Only to flout her tender, trusting grace.
Dream not then, he will stay,
Constant to thy pale face!
—*Margaret Deland, in Independent.*

Plant a Tree.

He who plants a tree,
Plants a joy;
Plants a comfort that will never cloy;
Every day a fresh reality,
Beautiful and strong,
To whose shelter throng
Creatures blithe with song.
If thou couldst hut know, thou happy tree,
Of the bliss that shall inhabit thee!

He who plants a tree,—
He plants youth:
Vigor won for centuries, in sooth;
Life of time that hints eternity:
Boughs their strength uprear,
New shoots, every year
On glad growths appear.
Thou shalt teach the ages, sturdy tree,
Youth of soul is immortality.
—*Lucy Larcom, in Companion.*

'Mid the gentle moonlight with no mortal near,
Pansies are the dresses that the fairies wear!
Soft as silk or satin and lovlier to behoid
In their blended beauty of purple and of gold!



Late freezes are sore visitors.

Poor gardening won't pay in 1889.

Arbor Day work will benefit the ages.

For small space let the rule be few varieties.

Try a few Virginia Creepers over the front fence.

Next month a twelve page supplement with this journal.

In labelling newly set out Trees, put on the date of planting.

For a solid garden walk try one part of cement and two of coal ashes.

Wonderful the beauty that is wrapped up in a five cent packet of flower seeds.

The Golden Rod is suggested as "National flower," Not much! it is too much a weed.

For something unique as an ornamental pot plant try the Celestial Pepper of most catalogues.

As for novelties, a single good one has often paid me for twenty that proved worthless. *O.C.G.*

You must expect no Pansies like the catalogue pictures unless you have the soil very rich and mellow.

Fuchsias are by no means unsuitable for bedding in places where the full noon sun can not strike them.

A Text for Arbor Day. "Be aye stickin' in a tree, Jock; it'll aye be growin' when ye're sleepin'."—*Scott.*

Plant trees and shrubs from the forests if you can get no others. Any kind of tree is a thousand times better than no tree at all.

The Common Potato is a native born American, and that it should be called the "Irish" Potato, is singular enough.

That Note Book. Get it now, and keep a record of this season's experience. The seed sown now will bear fruit manyfold next year.

The claim that foreign Gooseberries when grown in tree form are less subject to mildew than when grown as bushes is wholly a mistake.

A Pink Minulus, is found growing wild in the Napa Valley of California. It is being introduced into England as the Scented Musk plant.

Take the Lead. Is the school yard bare of trees and shrubs? A few neighbors, if asked, would, no doubt, be glad to follow your lead in some public-spirited work here.

Progress in Horticulture. The first mention of Tomatoes and Sweet Corn for table use is stated in the Scientific American to have been made in 1818 and 1815 respectively.

The Root is the Tree. Planting of young trees is to be urged, because they grow more rapidly than old ones, as their roots are comparatively much less injured in taking up and resetting.

Lobelia littoralis, or more properly Pratia angulata. with its white Lobelia-like flowers and purplish-red fruit is a real pretty little perennial from New Zealand, of creeping habit, and useful for baskets and brackets.

Of Little Use. Some one is talking coffee dregs as a fertilizer for pot plants. Its of little worth except for loosening the soil. European gardeners are said to use the material only after it has been composted with manure.

A Novel Awning. A lady in Florida has used the Moonflower vine over a skeleton awning made of a few strips of lath, adjusted over the top of the window frame, and the awning was a complete mass of bloom and an object of admiration.

A group of twelve Panicle-flowered Hydrangas the plants set at three feet apart on a well prepared spot, in the front yard will easily add fifty dollars to appearances after three years. The cost now should be less than five dollars. This shrub is entirely hardy.

A Spring Hint: Why not now suggest POPULAR GARDENING AND FRUIT GROWING to your neighbor. Subscribers received this month will secure the Insect Supplement that goes gratis with the May issue. This alone will be worth the cost of the yearly volume.

A Fine New Spiræa. Among the many handsome shrubs lately introduced from Japan, Spiræa Bumalda is one of the prettiest dwarfs, growing only about one foot high with wide-spreading slender stems. The flowers, borne in broad and flat clusters, are of a delicate pink and render the whole bush one mass of color.

Moles in Hot-beds. A Berlin florist dips strips of coarse sacking in tar and places them into the mole runs outside the frames. This he says has never failed to keep the moles at a respectful distance. Rags saturated with kerosene, pieces of Garlic, or the bark of Sambucus nigra are frequently used in the same way by German gardeners with telling effect.—*Carl Marsch.*

A Perfect Onion. For reliability of bottoming, absence of "thick-necked" specimens, perfection in form, and long keeping qualities, it would be hard to find a peer, much less a superior to Danvers Yellow Onion. For many localities this certainly is the market variety *par excellence.* We were just reminded of this fact by having placed before us a box of really perfect specimens, grown by our friend and contributor, M. B. FAXON, Boston, Mass.

Hard and Soft Water. Several years ago I was much troubled with small white worms, and tiny white mites, in the earth of my plant pots. I tried many remedies but without effect. Until that time I had used soft water exclusively for watering them, but later I used very hard well water, and since then the worms and mites have not troubled me. If it is the lime in the water that kills them, I wonder why waterings of strong lime water were ineffectual?—*Elder's Wife.*

King of the Earlies. Although not very large nor very good, and having a foliage not altogether thrifty or healthy, is just the Tomato which a South Jersey market gardeners says brings him the money. The bulk of the crop ripens so early that he got $2.00 per crate for it, while the bulk of the later sorts, Perfection, Potato Leaf, even Dwarf Champion, although consisting of much larger, smoother and more solid fruit, had to be sold to the canning establishments at $6.00 per ton.

A Wail Against the Express Companies. From far off Manitoba, subscriber R. S. Smith, writes: the express companies make it almost useless to buy plants from any points further south than in Minnesota or Wisconsin; packages from Baltimore have been kept on the road from ten to 14 days, some of the plants arriving dead, the remainder so used up that they took several months to recover their normal condition. I cannot understand why plants should be so long when oysters are only four to five days coming from the same place.

The Dirt Cure. One of our neighbors is a smart lady, very fond of gardening, and spends hours every day among her plants. She was taken ill with pneumonia recently. The doctor declaring her a very sick woman, and she took the medicine prescribed obediently, but sent one of her children out for a flower pot full of earth. She put it on a stand by her bed side, and every now and then took some in her hand and smelt of it. She said it done her more good than the doctor's stuff. Perhaps she is right, at all events, she recovered.—*Sister Gracious.*

Tricks of the Horticultural Trade.—It is stated that the florists of Paris, where white flowers are much sought after, plant the Noel Rose, which has beautiful rose colored flowers, in a cellar or other semi-dark place, and thus change its color to an almost pure white. Camellia buds are imitated by fitting a Hellebore bud into a complete expanded flower of the same plant, after the reproductive organs have been cut away. These are rather innocent tricks of the trade, compared with those lately exposed in London, where the attempt was made to sell evergreen shrubs grafted on Cabbage roots.

Do you Grow Thunbergia. Useful in many ways is this annual of rampant growth and free bloom. Sow the seed in fairly good soil, when danger from late frosts is past. High cultivation is not absolutely necessary. The vines begin to bloom early, and soon cover themselves with beautiful flowers, hiding stumps or other unsightly objects, making a beautiful screen for the piazza, or transforming slender poles into ropes of living green and many colored flowers, according to the place and treatment they are given. Few plants give such a continuity of bloom until frost comes to put an end to all this glory.

That advertisers of horticultural planting stock seek to bring their announcements before our readers to an extent unequalled by the patronage they bestow on any other journal published, is a direct compliment to the intelligence and liberality of the grand POPULAR GARDENING family. And this is an attention which we trust is fully appreciated by our readers as it certainly is by ourselves. With the vast mass of superior catalogue literature placed within easy reach of the reader, by advertisers, every one should order of it freely and study it intelligently, with a view of improving their own planting stock at this season.

About Fruit Growing in Oregon. Mr. J. J. Harden writes that interest in this business has increased to such an extent in the Williametti Valley that nurserymen cannot supply the demand for Prune trees, and many have to defer planting for another year. The growth and increase in wealth of the western and southern States, and especially the mining districts will always keep the demand in advance of the supply of good Pears. Many large tracts of land are being divided into small fruit farms, and the right man can make fruit growing pay $100 per acre, and can well attend to 20 acres, except during harvesting.

A Hardy Tree for Lawn or Street. We are glad to see that the Kentucky Coffee tree is spoken of by Prof. T. J. Burrill as well deserving a place on the lawn or along road sides. This

Garden Edging of Brick.

tree when planted in open ground, assumes a fine shape, and charms us with its massive yet delicately formed and pleasantly tinted foliage, and later with its great fruit pods that hang all winter to the limbs; the bark of the trunk is hard, and the wood firm enough to brave snow and frost and winds. Let the apparent ugliness of the young tree not prevent the reader from planting this superb tree on the lawn, on streets and country roads, or for variety near the house.

A Simple Garden Walk Edging. The walks running through vegetable or flower gardens may play an important part in giving either an air of neatness or otherwise, according to the care bestowed upon them. Perhaps no one thing adds more to the general pleasing effect than to

have the line between the walk and the cultivated beds plainly defined; a variety of material being used, as sea shells or stones, terra cotta, cast iron, ornamented tiling or bricks. We illustrate a simple manner of using the latter; pressed bricks being preferred because of having more regular outline. They are laid sloping one against the other, one corner only being above ground, thus forming a neat rustic-like border, not easily disturbed.

Garret Conservatories. A contributor "Sister Gracious" from Michigan, relates how one man in Detroit has worked out a good plan for using his garret. His house is a small frame building, with an L at the back for a kitchen, and above this he put glass on both sides of the roof, finding it as cheap as shingling, a register in the floor heating it sufficiently from the kitchen stove, while a door and steps lead down into the yard. Two rows of shelves on each side gives him room for 400 pots, besides a row of large plants in tubs in the center. A glass door communicates with the upper main entry of the house. He tells me he works an hour a day in his greenhouse through the winter, and finds it a great relief from business cares, and good for his health.

Successive Crops in the Season. The most successful market gardeners crop their soil without intermission throughout the whole season. Spinach, Radishes or Lettuce, Beets, etc., or Tomato plants and Cucumbers follow each other in quick succession in their cold frames, and a similar rotation is practiced in the open ground. Winter Spinach is harvested in March, and the ground prepared at once for Radishes or Onion sets. These crops will be ready for market the latter part of May or early in June, when later crops, Beets, Melons or Cucumbers, late Cabbage, etc., may be planted, or the ground prepared for Celery. In warm soil and a favorable location, it is by no means an impossible thing to grow four full crops in one year on the same land.

The Catalogues. We wish it were possible for us to spare the space in which to speak adequately of each one of the many fine catalogues of horticultural stock that of late have reached our table. They have came by hundreds, and without an exception, scarcely they are most beautiful and most interesting, standing in this respect, as a whole, far in advance of anything the world before has ever seen. To begin noticeing these catalogues as they deserve, would, ofcourse, require in justice that none be slighted, and this obviously renders the work quite an impossible one in these crowded columns. But we have in a special department with great pleasure acknowledged the receipt of each copy that has came to us, and indicated its character and size in pages. The catalogues are also kept on file at our office, and are open for consultation to all visitors.

About the Colors in Fruit. Prof. Bessey calls the attention of students to the fact that the green state of fruits is in most cases not a primary condition; but they are white as a rule. The greening powers is a development, quite as much as the reddening, or yellowing, at a later period. Many trees blossom and fruit, as do the Elms, in spring, before there are any leaves, and during this period the great mass of green fruit-bearings tissue fills precisely the office of leaves; and the whole assimilation of the tree goes to ripening the seed. The natural time for seed production is the autumn, and whatever of this is done in spring needs the full force of the tree. So if we speak of green berries we should hereafter understand that the green is not a negative state of simple unripeness, but one stage in the process of ripening. The significance of color is one of the most delightful problems in nature, being in no case simply ornamental.—*E.P.Powell.*

A Fine Balsam; Impatiens Sultana. After a 12 months' trial with this plant, I think it deserves a prize for blooming over anything yet grown. Starting with a small cutting, I gave it a compost of mulch, fine loam and well rotted hen manure, taking care not to overpot it; and now the plant is 37 inches in circumference, and 12 inches high, during the whole time has been covered with flowers. It will not allow of pinching back, as a branch so treated, will in a short time, drop off. Cuttings do not readily root unless the sand is kept at a high temperature through the day; it can be layered, however, and is also easily propagated from seed which can be treated as for other Balsams. In a dry hot position the red spiders thrive best as they seem to be its only worst enemy; as it ought to be somewhat cool, although an occasional sponging of the underside of the leaves with tepid water will do away with the spiders.—*Pat, Crawford Co., Pa.*

A Twelve page Insect Supplement Extra next Month. Has the reader noticed a shortage by two pages of the regular reading matter of this journal for several issues past? This was made necessary by the urgent demands of advertisers for space too late in the month to permit of further enlargement of the paper. But what has been our readers loss temporarily shall prove a gain to them next month, for at that time a 12 page illustrated supplement, entirely devoted to the insect foes of fruits, vegetables and flowers,

Snapdragon Plant and Flower.

will be sent to every subscriber along with the regular issue. This course only accords with the constant desire of the publishers to do more and better for our readers than strictly fair dealing would demand. Our readers understand the great importance of the subject, and will know how to appreciate the value to them of a compendium embodying far more practical points than any work on insects now in existence. This supplement will be worth more to every reader than the price of our journal for an entire year.

Antirrhinum or Snapdragon. This plant is such a continuous and pretty bloomer that it should be found in every garden. It thrives in any reasonably dry soil, and is especially adapted as an ornamental in places not abundantly supplied with moisture. It is easily grown from seed, or propagated by cuttings. Sow the seed early under glass, and when large enough set them out where wanted to bloom: or the seed may be sown in the open border in May. If the seeds are removed a continuous bloom; is kept up, and the plant does not seem to become exhausted. For general purposes of ornamentation,seedlings are preferable because most easily grown; but when a good collection of choice named sorts is wanted, it will be necessary to perpetuate them by frequently taking cuttings from young shoots, as they can not be depended upon to come true from seed, and even the old plants are liable to revert to the common form after the first season. There are two races, one growing two to three feet high on good soil, and the other only a few inches high. The tall race is generally used and most useful.

Our Loss a Gain to Other States. One after another the efficient specialists of the New York State Experiment Station have been called to other fields of work, until now but few prominent men remain on the working staff of the place. Our latest loss is that of Prof. E. S. Goff, horticulturist to the station from its establishment, and well known to our readers by his numerous practical contributions to the columns of this journal. This gentleman has recently been elected to the chair of horticulture at the University of Wisconsin, his new duties to begin April 1st. He will also have charge of the horticultural experiment station connected with the University. Mr. Goff is an intelligent and conscientious experimenter and will add much strength to the staff of the Wisconsin University. The recent loss of such men as Professors Goff, Arthur, Plumb and Beckwith to the New York Station, seriously handicaps the work of the directors of this Station, and is owing to the meagre appropriations granted by our legislature. It is time that New York awakes to the situation and takes steps to sustain her special experiment work in a manner becoming the Empire State of the Union.

Flower Notes from New York.

Taken all around, this has been a winter devoid of novelties in the flower trade. The ball given to Miss Hargons by her brother, at which the decorations consisted so largely of Peach and Apple blossoms, had a great deal of originality; other entertainments have been more in the beaten track. The largest proportions, if not all of the fruit blossom mentioned, came from the south, though they are forced here. Peach blossoms travel quite well from Virginia, and doubtless would carry even farther. But the prospect of getting Roses from Georgia or Florida, now discussed by some hopeful capitalists, does not alarm the growers here. They say, quite confidently, that even if the flowers would travel all right they are good for nothing. Compare an out-door southern-grown Rose with a good specimen of the same variety grown here indoors; it is like comparing an ungroomed scrub with a thoroughbred. Nor have these out-door flowers the substance or lasting quality of forced bloom.

One of our city florists tried the experiment of getting Roses from Florida. They were very carefully packed, each flower separately wrapped in oiled paper, kept moist with damp moss. But before they had been unwrapped two hours every petal had fallen. Out-door bulbs from South Carolina have also been tried in our flower market, but they do not travel in first-class condition, nor do they compare in color or perfection with the northern forced flowers. Another disadvantage complained of was that the odor was so very much stronger than that of in-door flowers; buyers complained that they were as strong as Onions, and refused them on this ground. Even if the projected fruit and flower express from Florida shortens the time considerable between that point and New York, there must be a decided improvement in the quality of the flowers, before they will suit New Yorkers. Nor would there be a tremendous profit in bulbs at this season if the growers shipped them from a distant point; Lily of the Valley bringing $1.50 to $3.00 a hundred, and Tulips about the same.

The only horticultural event so far this month is Siebrecht and Wadley's Orchid show, held as previously, at the Eden Musee. It was an exceedingly well-arranged exhibition. Why is it that the deceased Horticultural Society could not get up such a good show as these individual growers? The show plant of the place was Mr. DeForrest's white Cattieya Trianæ, labelled as valued at $1,000. Two or three years ago, before so many rivals were in cultivation, this plant would have been worth twice as much. It was a large mass, bearing 13 flowers; very strong and vigorous. Another C. Trianæ from the same owner bore 39 flowers. Fifty distinct varieties of C. Trianæ were shown by F. Mann. There were plenty of Cyclamens at this show, and some very good ones; this plant is increasing in favor.

A quantity of Primula Obconica gave a good effect; this a pretty thing when good, but if poorly grown, or of a poor variety it is to tell truth, very weedy looking. An interesting lot of Cypripedes at the show came from Pitcher and Manda, but naturally the largest display was from Rose Hill Nurseries.

A very charming wreath lately noted consisted of a loose arrangement of some pearly-white, delicate-looking flowers, relieved by pink Roses. Investigation proved that the dainty white blooms were Allium Neapolitanum, which is now being forced. It is a beautiful thing, and no one would imagine, if it were not bruised, that it had any connection with Garlic.

There is an effort to popularize Russian Violets, but they do not take so well as the double ones. Among Roses large hybrids take the lead; a single large Rose is preferred to a bunch of smaller ones for a favor. The most elegant baskets are large, loose arrangements of these hybrids. The most popular gifts are boxes of loose flowers. Bouquets are still the tremendous loose affairs that have prevailed for the last two or three seasons.

Table arrangements still usually take the form of low plateaus, the most sensible and convenient style, though in some cases small palms are used. Cattleya Trianæ, being the most plentiful orchid in the market, is used a good deal in decorating; a plateau filled with maidenhair Ferns, with a few Cattleyas stuck in here and there. It makes a beautiful table decoration at comparatively small cost. EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

The Central Illinois Society will hold its annual meeting, beginning the first Tuesday in May, at Normal.

The Cohanzick Strawberry. With me it was a shy bearer, fruit hard and acid, and difficult to hull; it seemed a failure.—*Dr. J. B. Ward, New Jersey.*

Moore's Diamond Grape was commended by the Western New York Horticultural Society for vigor of vine, productiveness, good quality and earliness.

A Double White Pansy was shown before the Massachusetts Horticultural Society and awarded a first-class certificate of merit. Flowers with foliage were tastefully arranged in a basket and attracted a great deal of attention. The blossoms are a beautiful, clear white, of medium size and good substance, freely produced with long stems.

Various Ways of Training Grape-vines. Fig. 1 is a vine trained with a view to laying it down, being applicable to such varieties as will not stand exposure during severe winters. Another trellis, No. 2, well thought of, is to run three wires at the top, nine inches apart, the center one for the arms of the vine and the side ones for the branches, which are trained over them. —*E. Williams.*

Flowers and Charity in Detroit. Early in April (2, 3, 4 and 5) there will be given a grand floral exhibit in Detroit, Michigan, for the benefit of the combined charities of the city. More than $900 in cash premiums are offered, the longest list being for pot plants. Competition is open to all. The secretary is W. H. Brearly, Detroit, Mich., of whom a schedule of premiums may be obtained.

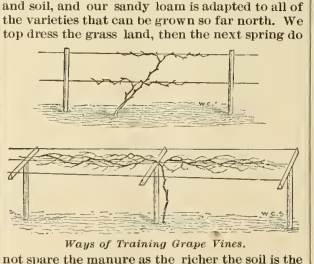
Buffalo Florists' Club. If the coming meeting of the society of American Florists to be held in Buffalo is not a success it will not be owing to lack of energy on part of the local club. This society now numbers 50 members, and all due activity prevails on the part of the special committees of the society who have in charge the arrangement for the August meeting. Meetings are held fortnightly at which able papers are read and discussed by members. The attendance is always creditable and the general interest excellent. At the meeting of March 8th the following officers were elected for the ensuing year; W. J. Palmer, President; William Scott, Vice President; D. B. Long, Secretary; T. Clayton, Treasurer; W. A. Andrews, Recording Secretary; E. J. Mempsted, J. Miller and Fred Katall, Executive Committee.

The Importance of Concentration. Concentrate your power and get all out of the land there is in it. In growing garden crops the fertility of the soil is an absolute necessity, and where lacking must be supplied, and the more perfectly it is supplied, the better will be the result. If I had four acres of land and only manure sufficient for one, I would put it all on to one, even though I had to seed the other three to Clover, and then by close planting and a succession grow my four acres of crops on the one acre. And one other thing that must not be lost sight of, if we want to get profit out of the market garden, and that is the quality of our product, while we are trying to get all that we can make the land produce, and while we are trying to get it early, just a little ahead of our neighbors, let us try to get it a little better than they. The best will always sell, and in putting your product upon the market see that it is just what it purports to be; if it is a prime article see that it is prime all the way through. Honest, upright, square dealing on the market will pay.—*Thomas Crafts, before the Adrian Farmers Institute.*

Gooseberries and Currants. The Industry Gooseberry is generally considered an acquisition of value. E. H. Cushman said that we have not yet discovered the possibilities of the Gooseberry in America; we should work towards a larger and better class of Gooseberries. He was disappointed in the Fay Currant, having seen considerable of it in Cleveland markets, and it was difficult to tell it from the common Currants. Mr. Geo. Davies handled a lot of Currants that exceeded in size anything he had ever seen, which were grown near Cleveland, shipped to Indianapolis and sold for eight cents per pound. L. B. Pierce tried the Victoria once, but it was shy bearer. He thought the Crandall a vigorous grower and a great bearer. Mr. Wilson said he had seen the wild flowering Currant growing in thickets in Canada where the people gathered and used the fruit. Mr. Farnsworth said the Currant requires a very rich soil. The White Dutch is the best family Currant, but does not bring more than half the price of the Red in market. The Red Dutch is as good as any for family purposes. Mr. Munger mixes hellebore with eight parts of fine middlings and applies to the Currant bushes when wet with dew, to kill worms. The middlings cause it to adhere even during a smart shower.—*Discussion before the recent Ohio Meeting.*

Potato Growing Points. Last year, April 28th, I planted ten varieties of early table Potatoes and had them of sufficient size to eat July 4th, although they were not fully matured. My latest planting was July 22d of some of the earliest varieties, and they were ripe by the 15th of October. If I had cold storage so that the sprouts would not start, I would not plant until late in June, for they would then grow with the greatest vigor, mature quicker, and be in the ground less time, thus making them much better. I planted them on fall-plowed sod, in drills three feet apart, placing the pieces from a foot to eighteen inches apart. After they are up I cultivate, taking care, however, not to tear up the sod. For seed I take good sized tubers and cut them to one or two eyes in a piece, putting one piece in a hill. Never having any success with commercial fertilizer I gave them up, and now cover my ground with stable manure before plowing it in the fall, and at planting time I use a mixture of hard wood-ashes, air-slacked lime and plaster, obtaining the best results by putting it in the hill with the seed. For killing the bugs I mix Paris green with hard-wood ashes and plaster, and apply it while the dew is on the vines. My largest yield last year was 425 bushels per acre, while 50 varieties went over 300 bushels per acre each. I keep them in small compartments, putting air-slacked lime in the bottom to prevent rot.—*C. F. Vanderhoff, at a New York Farmers' Institute.*

Strawberries in Minnesota. The success of growing Strawberries depends upon the location and soil, and our sandy loam is adapted to all of the varieties that can be grown so far north. We top dress the grass land, then the next spring do



Ways of Training Grape Vines.

not spare the manure as the richer the soil is the more abundant the crop. Plow deep as soon as the grass is cut. In the spring plow again, harrow well and mark off in rows three and one-half feet apart, and set the plants from 14 to 20 inches in the row, according to variety—14 inches for Wilson, 18 to 20 for Crescent. The latter being pistillate should be alternated with some perfect-flowering variety; Wilson, Crescent, Charles Downing, Glendale and Manchester are all good. Plant carefully, then thoroughly water. Before any weeds are seen the cultivator should be worked as near rows as possible, without throwing any earth toward the plants. Use the cultivator every ten days or so through the season, also hoeing the plants. Do not expect fruit the first summer, therefore take off all fruit buds as soon as they appear, and in the fall a good dressing of ashes is beneficial. I have used 300 bushels to the acre with good results. As soon as the ground is frozen cover the field with straw, cornstalks or leaves. The next spring but little is done except to rake the mulch between the rows, but after the fruit is gathered, if there are any weeds, mow them, and burn the field over; ordinarily there are no bad results, and but little labor is needed to secure another crop.—*Wm. Danforth, before the Minnesota State Society.*

A National Chrysanthemum Society Wanted. The position the Chrysanthemum occupies in America is such as no other flower (not even the Rose) ever had in the short space of ten years. How the position was obtained is told in a few words. The Chrysanthemum is a flower with so great diversity in color, shape and size and it comes at a season when all flowers are more appreciated than at any other season of the year; it requires no expensive apparatus to bring it to perfection. I said when there was not one hundredth part as many grown as there are today: "The Chrysanthemum does not rely upon the vagaries of fashion for its popularity. It is a flower that appeals to the heart rather than to the pocket and is grateful for all kindness bestowed upon it, returning for such five hundred fold." That the time has come for a national Chrysanthemum society there is no doubt and for the best interests of the flower and the public it must be brought about. It will be a great task and will lay heavily on the shoulders of a few, but it will be accomplished and now is the time to strike. Such a society would have the supervision and discrimination as to seedlings before they are distributed; this is *first* because there are so many foisted upon the market now that are worthless, and from its great importance; the consideration and selection to be given to collections for all purposes; the best specimens for all kinds and for all purposes; the supervision as far as possible over those distributing Chrysanthemums so as to insure their being true to name; the formation and establishing of societies in all cities, towns and villages where one does not already exist.—*John Thorpe.*

On the Growing of Squashes.

[*A. H. Botsford, before the Portage Co. (O.) Horticultural Society.*]

The Squash is indigenous to the tropical climates, and to the warmer portions of the temperate zones, so that in our latitude they require very hot seasons to grow them successfully. While taste for Squash, like for Tomato and Banana, seems to be a matter of education, yet dealers who are in position to know, say that the Squash ranks next to the Potato in popularity, more especially in the larger cities.

The ordinary method of digging holes in odd corners and out of the way places and then filling the holes with manure in which to plant Squashes is time poorly spent, for the result is seldom satisfactory; after the vine has made a growth of a few feet, and has set a few Squashes, it is checked in its growth, turns yellow and dies, the roots having in vain endeavored to penetrate the ground surrounding the hole in which they are growing. As to how far the roots of a Squash vine will extend, it is my belief that the roots of the Squash vine will extend as far under ground as the vine extends on the ground above.

The great error in cultivating the Squash is to starve it; another is to give all the food necessary without allowing room for extra growth of the vine under high cultivation. The best results may be obtained by scattering the manure after plowing the ground. It should then be thoroughly incorporated with the soil. Commercial manures are preferable to stable manure for manuring in the hill from the fact that they contain no seed, and will give the young plant a quick start, while the manure which has been worked into the soil about the plant will be held in reserve and be efficient in maturing the crop.

Thorough mixing of fertilizers with the soil is important; a top dressing of well rotted manure or super-phosphate of lime is relished by the vine after the runners begin to show. Hills should be from eight to twelve feet apart according to the variety planted. Squash vines are susceptible to the slightest injury or disturbance, and as a rule it is better to allow weeds which spring up near the end of the season to remain than to disturb the vines in attempting to pull them up and cut them off. No person should be allowed to pass through or even set foot in the Squash patch, after the Squashes have commenced setting.

Squashes mix in their seeds, but the effect does not become apparent until the seeds are planted and Squashes are produced the following season; thus it will be seen that seed taken from Squashes, which may yield a crop where every specimen grown may show marks of impurity. It is important that the laws of admixture may be understood, that the risk incidental to planting seeds that look pure should be more generally known. No matter how many varieties may be planted together, no crossing from the result of that planting will be seen in the external color, shape or appearance the same season.

To have Squash seed pure the Squashes from which they are taken must have been grown in an isolated locality. Where different varieties are grown in the same locality, and it is desired to keep any one variety pure, it may be accomplished by preventing any male flowers of the other varieties from maturing. The fruit from any particular blossom may be kept pure by covering with a screen, removing only to fertilize with pollen from a male flower of its own vine. Many people professs to classify Squashes as to male or female from their appearance of the calyx end of the Squash. This is impossible, as every individual seed in every Squash coutains the two sexes in itself in its capacity to produce male and female flowers.

Hardy Herbaceous Plants of Merit.

[*Paper read by George Elwanger before the Western New York Horticultural Society.*]

Although hardy flowers do not come under the title of ornamental shrubs, they are many of them, after all, ornamental shrubs in miniature, and some of them of larger habit than not a few of the arborescent growths that adorn the garden. Certainly no ground, however limited in extent, can do without some hardy perennials. A place deprived of hardy flowers is a house without pictures, a landscape without sun.

Both ornamental shrubs and hardy flowers are required for the outward adornment of the home; neither can be dispensed with. But hardy flowers, somehow, are often considered as difficult to grow, and are thought to require the constant attendance of a gardener. Where the grounds are of considerable extent, and the collection is large, the latter opinion may hold good. But for places of ordinary extent where hardy plants are grown the care required is comparatively slight. Some care they assuredly require—nothing that is worth having takes care of itself. Numerous species there are which call for special treatment. Many foreign plants and some natives are always difficult to grow. Some are capricious as to soil and shade; some demand an especial climate; some are too tender to successfully withstand our winters. On the other hand a large number of the most desirable hardy flowers are very easily grown; and scarcely need attention after they once become established.

Most good garden soils will grow good garden flowers; and with proper soil to start with, an annual manuring, an occasional stirring up of the surface, and attention to watering during the extreme dry weather, the flowers will seldom fail to perform their part. Some strong-growing subjects there are which will prove exhaustive to the soil, and these may require future transplanting or dividing. Some species require renewal through fresh species or cuttings. A large majority of hardy flowers, however, continue to increase in beauty year by year.

By herbaceous plants is meant such plants as die down in the autumn and renew themselves in the spring. To describe all desirable herbaceous plants, even briefly, would require a large volume. The space accorded me is limited; and I, therefore, in this instance, merely refer briefly to a few species, supplementing these with a list of some among the many others which may be cultivated to advantage. Perhaps the most satisfactory manner of growing hardy flowers is in borders, by themselves, where the roots of trees and shrubs may not interfere.

Some of the more robust species, like the Pæonies, the large Japanese Anemones, etc., may find a place in the foreground of the shrubbery. The lawn should not be broken for plants, unless it be large enough to admit of a bed or two of really desirable flowers, or a group of the large ornamental grasses, like the hardy Japanese Eulalias. In planting it is well to plant thickly, so that bare spaces may not obtrude. So, also, spring and summer-blooming flowers should be alternated, in order that the border may at no season suggest a dearth of bloom in large individual portions. Monotonous planting will be avoided; grouping will be carried out here and there, and contrasts of color carefully studied.

Both the tree and herbaceous Pæonies will find a place in the shrubbery and flower-borders, and Roses, Lilies, Larkspurs, Phloxes, Columbines, Campanulas, Irises, Hemerocallis, Poppies, Funkias, Helianthus and a host of other hardy flowers will extend the floweriug season. Subjects like the Azalea, which require special treatment and are always more or less effected by our rigorous climate, I have not included.

Among the medium and tall growing plants I would specify: Aquilegia Chrysantha, Aquilegia Cœrulea, many of the Campanulas, Clematis erecta, many of the Delphiniums or Larkspurs, Funkia grandiflora, Funkia Sieboldiana, Funkia Japonica, the red and white Dictamnus, Coreopsis lanceolata, Papaver orientale bracteatum, Hemerocalis flava, Monarda didyma, Lathyrus grandiflorus, many of the German and Japanese Iris, Hesperis matronalis fl. albo pl., Platycodon grandiflorum, Helianthus multiflorus fl. pl., Helianthus orgyalis, Helianthus Doronicoides, Helianthus rigidus, Helianthus decapetalus, Spiræa aruncus, Spiræa filipendula, Spiræa venusta, Spiræa ulmaria fl. pl., Statice latifolia, Lilium candidum, Lilium excelsum, Lilium tigriuum, Lilium Chalceodonicum, Lilium umbellatum, Lilium Japonicum longiflorum, many of the Pyrethrums, the two Japanese Anemones, Lychnis Chalcedonica, Echinacea intermedia, Centaurea glastifolia, Silphium perfoliatum, Hyacinthus candicans, Chrysanthemum maximum. Subjects like the Silphium and the taller-growing Sunflowers or Helianthus are more suitable for the shrubbery, or placed in the background.

Among smaller plants, Violets, Cowslips and Primroses are best placed in beds by themselves where they may receive partial shade. The Primrose family is especially adapted for the rock garden where the plants form dense cushions of bloom. Indeed many dwarf plants may be grown to the best advantage in the rock-garden; but not a few may be appropriately placed in the foreground of the flower-border. All of the following are charming small hardy flowers. Adonis vernalis, Silene alpestris, Saxifraga cordifolia, Saxifraga cuneifolia, Saxifraga Schmidtii, Sanguinaria canadensis, Trillium grandiflorum, Ranunculus bulbosus, Phlox emœna, Phlox procumbens, Phlox subulata, Phlox subulata alba, Locus corniculatus, Iberis corifolia, Iberis sempervirens, Iberis Gibraltarica, Iberis jucunda, Hepatica triloba, Cypripedium spectabile, Cypripedium pubescens, Doronicum caucassicum, Convallaria majaeis, Astilbe Japonica, Anthericum liliastrum, Saponaria ocymoides, Gold and Silver-leaved Thyme, Daffodils.

Among the ornamental grasses should be included Eulalia Japonica, Eulalia Japonica Zebrina variegata, Erianthus Ravennæ, Aira fol. var., and the variegated Arundo. The Rose would require a separate paper to do justice to its manifold forms and varieties. I have mentioned but a very few of the very many desirable hardy herbaceous plants; but enough to render any garden beautiful from early spring until late autumn. Little care, indeed, they call for—these nurslings of nature—compared with the beauty they bring. Year by year they renew their youth and draw loveliness from the mould of spring.

The Delaware Fruit Exchange. The Result of a Season's Work.

[*Report to Pomona Grange, by J. W. Taylor.*]

The Exchange is an assured fact, and only needs the application of strict business principles and methods to make it a successful business venture. It has already been demonstrated that it meets the highest hopes that its progenitors ever entertained in regard to its bringing us a local market for our farm produce and especially for our fruits.

We have had, since the opening of the Exchange, the best market for our Peaches and other fruits that we have ever had; dealers have been brought to us, though there are those who declare that this would be the case anyway; but the Exchange was the first supporter of the plan to bring the buyers here, and in the work of organizing the Exchange it was necessary for some one to take some risk and responsibility, and those who conducted the Exchange in its infancy were the persons who have borne the expense of upholding it and of giving us this needed reform in handling fruit, and the many have thereby been benefitted, but in many cases proper credit has not always been even conceded. It should now be made a financial as it has been a general success. How to do this is practically the real question.

It is positively necessary that enough of the growers should be banded together under its organization to control sufficient fruit to make it to the interest of dealers to patronize the Exchange; we have the power in our hands. Wherever the fruit is there the dealers must come. The fruit growers can place the fruit on sale at the Exchange buildings, on the street, or anywhere they choose, and there the market will be.

Another cause for lack of complete success is neglect on the part of the board of directors. Too often the secretary has had to confront the opposition of all adverse interests single-handed, and yet we can't blame the directors for they cannot afford to spend their time at a busy season of the year, in running an institution on the principles of charity. Still some of our directors have already spent much time in this enterprise that has redounded to the benefit of the whole community and indirectly benefitted those, in many cases, who gave it least support. Where a community is benefited by any set of men, let the community bear the just expenses of the organization, and give financial support. Then again the Exchange has worked too cheaply. In the matter of "handling fruits" the Exchange takes all risks in making change and is paid $1.00 per car load of Peaches, besides giving the buyer a book costing 13 cents. This ruinous rate should be doubled. Business institutions should be run on business principles, and one of the safest of those principles is that a business must be made to pay its own expenses.

While we cannot afford to part with the Exchange, it would prove a surer financial success if the control of the same were put into fewer hands. All business committees should be reduced to the lowest possible number that the institution may not be cumbersome in its workings, and only those be entrusted with its management who have financial interests in it. The rates for working should be raised, and some means be adopted to secure a closer and more determined co-operation of our fruit growers.

A cash capital also should be raised to meet immediate demands at all times, and then our Exchange would yet prove to be the growers' best friend. Let us co-operate, and prove once for all that "we know our rights and dare maintain them."

Practical Market Gardening.

[*Paper read by Wm. D. Philbrick, before the Farmers' Meeting in Boston.*]

Distance from Market. Where the more bulky and heavy products are grown, one of the first essentials is nearness to a large market, although of late years the facilities for communication by electricity and transportation by steam are so great, that many of our heavy and cheap vegetables, such as Potatoes, Cabbages, Squashes and Onions, and even Celery are transported considerable distances; the advantage offered by cheaper and better soil and cheap labor at a distance overbalancing the cost of transportation and commissions. There are, however, many of the perishable vegetables for summer use, which will not bear long journeys in warm weather, and must always be grown near where they are used. Such are Lettuce, Greens, Summer Cabbage, Tomatoes, Green Peas, String Beans and the like.

Many of these articles indeed are transported in winter and spring from the south to the northern markets, but the native grown crops when they come are so much superior in quality that they speedily drive out all competition. On market gardens within less than six miles of a market, the vegetables grown are usually Lettuce, Radishes, Spinach, Kale, Cabbage, Greens, Dandelions, Rhubarb, Onions, followed on the same land by Early Cabbage, Cucumbers, Melons, Squashes, Tomatoes, Egg Plant, Peppers, Parsley, Celery, Horse Radish, Salsify or Oyster Plant; and for fruits, Strawberries, and Raspberries and Pears. At a little greater distance from market some of the above named vegetables and fruits are grown, together with Green Peas, Beans, Sweet Corn, Asparagus, Winter Cabbages, and for fruits, Strawberries, Raspberries, Blackberries, Grapes, Apples, Pears and Plums, although many of these are grown at distances of from 40 or 60 miles from market, where there are good facilities for transportation by rail, and favorable conditions as to soil.

The Best Soil. In general a good deep loam is best, if with sandy subsoil it will suit early crops best; if with clay or peat subsoil it will do best for late crops, such as Horse Radish and Celery. Good land near Boston is scarce, and

commands high prices; many of the market gardens in Arlington and Belmont are worth $1,000 to $1,400 per acre for gardening purposes. The facility with which the owners of these farms can supply any temporary scarcity of the market by means of orders by telephone and quick delivery over easy roads gives them immense advantages over their more remote competitors.

The Right Man. Experience. He must be one of untiring energy and tact in managing the labor of other men, must be a shrewd buyer and seller and a keen observer of nature and of methods of working, and above all must have a love for his work and patient perseverance that will make light of its severe toils and disappointments. Another essential is capital; while many men have begun in this business with little more than their own energy as capital, and are now independent, the opportunities now for such advancement are not so good as formerly. Some of the most successful gardeners use a capital of $30,000 to $50,000 or more, invested in glass, horses, manure, watering apparatus, and tools.

But even with abundant capital, good land and a near market, there are many details of working and variations in management which can only be learned by experience; some men acquire the necessary experience in a far shorter time than others, but no one can well do without it. Hence, I always advise young men who wish to engage in market gardening to work for a few years as field hand or marketer for some experienced and successful gardener, and thus acquire the needed experience without risk.

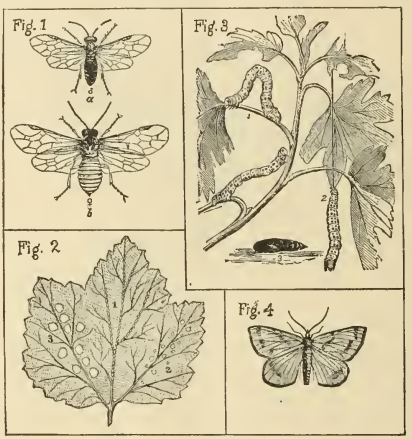
The Manure Question. The great staple is horse manure, and it is in hauling it easily that the gardener near a large market has one of his chief advantages over the more remote farms. It is no uncommon thing for lands near the market to be manured with 20 to 30 cords of manure per acre every year. The cost now is lower than for many years, being one to two dollars per load at stables where there is a good chance to load, and much of it is given away where loading is difficult.

Within six or eight miles of Boston there is not much else used on the market gardens but horse manure and night soil, with some wood ashes. The horse manure and night soil furnish the nitrogen and phosphoric acid, and the wood ashes the potash, all in a state to be quickly absorbed by the plants, which is of great importance where crops have only six or eight weeks in which to make their growth. An important addition to these manures is sulphate of ammonia for the growing of early Spinach or other greens and for early Cabbage. It furnishes soluble nitrogen early in the season when it is most needed. The late crops have more time to develop if well manured without such applications.

Preparing the Soil. Wherever it can be done we plough under a heavy dressing of coarse manure in the fall to make the land work light early in spring, and this often makes a difference of several days in putting in early crops, which is a matter of great consequence; for the profit in gardening usually comes from the earliest stuff in market, and when the early crop can be cleared off promptly, the late crop which follows upon the same land has a far better chance. We must begin work as soon as the frost is out, and the land requires at least two ploughings, followed by the harrow, drag and fork and rake before it will be in suitable condition. I have best success when the land is twice ploughed, applying a good dressing of manure before each ploughing, harrowing thoroughly after each ploughing and finally ploughing again into beds and raking by hand; on such beds can be grown three crops, viz: early Lettuce or Greens or Radish, followed by Beets, and these by Celery.

The Number of Crops on the Land. We always try to get at least two crops from the land in the course of the year, sometimes three or even four, without counting the weeds, which have no business in a well-kept garden; exceptions are Rhubarb, Asparagus and fruits. It is in arranging for a succession of crops, so that they shall not crowd each other or glut the market, that the gardener has room for the exercise of much skill and intelligence, and must use considerable forethought in conducting his work.

The use of glass in market gardening has grown to immense proportions of late years. There is one firm near Providence, R. I., who use about four acres of glass, more than half of which is heated by steam pipes, almost exclusively for Lettuce and Cucumbers. Other gardens use a large area of glass in growing for winter and spring market Radishes, Dandelions, Parsley, Cress, Mint, Rhubarb and Asparagus. Melons are also forced for July and August sales under glass, and all the early Cabbage, Lettuce, Tomato, Egg and Pepper plants are grown under glass. For plant growing the hot-bed is far better than the greenhouse, but the latter has decided advantages for winter work.



INSECT ENEMIES OF THE CURRANT.

The Water Supply. This is a necessary item, particularly in the successful management of greenhouses and hot-beds. A good twelve or fourteen foot windmill with a large storage tank will furnish enough water for most farms in watering the glass structures and other buildings. The tank should be large enough to hold several days' supply of water, and to make sure of an ample supply in case of calm weather, it will be well to have a steam pump. Where irrigation of field crops is practiced, a much larger supply of water is required, and we have to seek a supply in deep wells and a steam pump. Several of the large market gardens near Boston are provided with irrigating machinery which costs several thousand dollars, and perhaps is not needed at all some years, and in others only once or twice in the season for a few days at a time; but the owners of such work agree in believing them good investments on dry, sandy or gravelly land where Early Cabbage, Strawberries, Cucumbers, and Celery are grown, and there are times when it pays to water Tomatoes.

The water is usually distributed by two-inch or 2½-inch pipes, and one-inch or 1½-inch hose leading to the highest point in each row of vegetables, and is allowed to run along the furrows between the rows. A good watering once a week in a dry time will suffice.

Preparing Produce for Market. It must be neatly washed and carefully assorted, and although the buyer always expects to find the handsomest specimens on the top of a box or barrel just as we expect always to see one put on a good hat when he goes to town, still, the buyer has a right to demand that the bottom of the box or barrel shall contain no mean, nor unsalable stuff; and the gardener who attempts to pack his produce in this way will never sell many times to the same person. A good name in this business is worth as much as in any other.

Good Seed. There is a good deal of care needed to grow good seed and it seldom sells for as much as it is really worth; for this reason the best gardeners raise enough for their own use, and perhaps to exchange with some neighbor for some other choice variety, but seldom for sale. The seedsmen do their best to secure a supply of the best seed to be had; it is their manifest interest to do so, but they do not warrant their seeds generally, and the gardener should plant only seed that can be warranted. That is, he should grow it or exchange it with some equally careful neighbor.

The Great Advantage of Market Gardening. Sales are always for cash on the spot, but the market gardener must take the risk of the seasons; he may be deceived in buying his seeds, he may lose his crops by hail or drouth or flood, yet when once in the market he can carry home their price in cash, and ask no favors of the banker. The life of the market gardener is laborious, but healthy and fairly profitable. It has its trials and disappointments and risks, but it also has its charms for those who love an outdoor life, and an honest independence, for though few market gardeners are rich, there are very few who do not honestly pay their bills, and most of them can show as sturdy sons and cheerful daughters as are to be found among any other class in the community.

There is inseparably connected with gardening much hard and dirty work, but to those who have eyes to see there is also an unspeakable charm in country life and in witnessing the truly miraculous growth of plants by means of which the most offensive refuse is transformed before our very eyes into the most delicious and beautiful vegetables, fruits and flowers.

Insect Enemies of the Currant.

Abstract from the Ontario Entomological Report.

The Currant Saw-fly has come to us from Europe, and is now quite common, although not known here before 1858. Fig. 1 *a* represents the male, and *b* the female fly. The body of the former is black with a few dull yellow spots, yellowish on underside, with bright yellow legs. The larger female is especially distinguished by its yellow body. Often these flies may be captured on the bushes and readily killed.

The worms resemble caterpillars, but have feet under the middle segments of the body, and more in number. They have a habit of curling the terminal segments. When first hatched they are very small, of a whitish color, with large head and dark round spot on each side of it. Then they are found feeding in companies on a leaf, consuming all the soft parts and leaving only the groundwork. Afterwards they gradually scatter all over the bush. As they increase in size their color changes to apple green, then green with black dots, and finally to green tinged with yellow at each end. The chrysalis, formed within a tough silken cocoon of brownish color and nearly oval shape, is generally hidden in dry leaves, rubbish or in the earth near the surface. The flies soon emerge ready for further mischief. There are several broods in one season.

White hellebore is a cheap and simple remedy. Take an ounce of the powder and mix with sufficient water to form a paste; then dissolve in a pailful of water and spray the foliage thoroughly and with sufficient force to reach all parts of the bush. Watch for new broods, and repeat the application promptly when needed. The mode of hand-picking is more laborious, but may be resorted to before the young are hatched or shortly after. Examine the leaves and remove all that contain rows of eggs along the ribs on under side, as shown in Fig. 2, or small holes eaten through the leaf by the young worms.

Much hardier, and not easily overcome by hellebore, unless of double or triple strength, is the Currant Span-worm (*Enfitchia ribearia*, Fitch) shown in Fig. 3, and easily distinguished by its paler and more yellow color, and its habit of arching its body into a loop when moving from place to place. When disturbed it often suspends itself by a silken thread. The full-grown worm is about an inch long, of a whitish color, with lengthwise strips of yellow and a number of black dots on each segment. Unlike the sawfly, this is a native insect, and attacks Gooseberries and Currants wherever it finds them, wild or cultivated. Even the Flowering Currant is not despised by the ravenous feeder. Fortunately there is only a single brood of it in the year.

The Moth, Fig. 4, is a pretty pale-yellow creature. Its wings are adorned with several dusky bands or spots, which vary much in different specimens. In June or July it may often be seen

flitting about the affected bushes in the daytime, and may then be caught and destroyed. This hand picking appears to be the only possible method of protecting the bushes from the attack of the insect. When the bushes are shaken the worms will let themselves down by their threads, when they can be easily gathered.

How to Make Horticultural Societies Profitable.

[*Mr. C. W. Idell, before the New Jersey Horticultural Society Meeting.*]

The object of these organizations are of a two-fold character, viz.: to give and receive; and in order to develop this idea, every member should come to the meeting provided with a new experience and increased information; and a member who attends without this has not done his duty to himself or to others, for an entire year has passed away, giving each a new experience, and a good member should not have failed to note the various changes taken place during the year. But when no notes are taken, these events are forgotten. Although not deemed important to you, it may be so to others who have not a live experience. It is not expected that one person should learn every thing, but it is presumable that each person could learn at least one thing; if he does not he fails to do his duty, so far as giving is concerned.

I have heard farmers give this excuse for not attending the meetings: "Oh, I cannot talk." Now, that excuse is all nonsense, for let them gather around the stove in some country store during the winter evenings, you will learn they can talk fast enough, and good enough for anyone to listen to; and many times their talk shows a wide experience that would make them men of note in any society. Bear in mind that our meetings are not held for the purpose of displaying oratorial powers, but for the purpose of a number of plain, practical farmers to interchange ideas and experiences.

It is easy to say, "Oh, I guess I will not attend this session of our society." But suppose each one was not only to say so, but to remain away—and each one no doubt has as good an excuse as you had—there would be no meeting. My experience teaches me that those remaining at home do the least to forward the interests of the meetings, and find the most fault with those who attend. Perhaps the very reasou why the meeting was not a greater success was due to your non-attendance. There is another feature of this staying-at-home-business. They do themselves and those who attend an injustice, and set a bad example for others to imitate. Don't forget that these are mutual aid societies, and their motto is "Give and receive." If one comes only to get information he is not a profitable member, for if all do this there would be nothing to get.

Living Trees as Fence Posts.

There is one point that I wish to call your particular attention to. Some think it the special duty of the executive committee to spread before you each year a feast of good things for your enjoyment. Of course a thing is valued and appreciated according to the tastes or wants of the members. Now, how is this committee to know what you like and what you want, if you do not tell them? If one person says "I prefer turkey," and adds, "I will furnish the gobler," we realize that he is not only sensible but practical; while another says "I prefer Peaches or Grapes," and does not offer either fruit, the chances are that he may not get just what he preferred. Last season I heard a complaint that there were too many Grapes on the table, but suppose that those members who furnished this fruit did just what many others did—nothing. Why, it would have been a dry affair, for nothing was excluded to make room for them.

Think well upon this subject, gentlemen, and when the executive committee sends around their circulars soliciting good things for the feast, be prepared to back up your suggestions with a first rate paper. You have no idea what a relief it would be to the committee in making up their programme for the meetings. Do not expect too much of this body without your aid. John Wesley adopted a remarkably concise and instructive motto of "All at it, and always at it"; if we will not only adopt, but carry out this idea, your committee will have less care and anxiety.

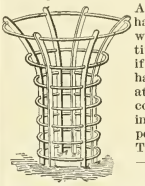
There is another feature that I note with regret—the omission of members to bring specimens of fruits with them to the meetings. I know that our meetings are held at a time of the year when fruit is scarce, but there are some varieties that, with care, could be preserved until then, and a display would be interesting even if some old variety is included; for instance, the old "Sheep Nose" variety of Apples, what a curiosity they would be to some of the younger members. Farmers need associations of this kiud, at the best; and they should improve every opportunity of this kind, in order to cheer and learn. I often notice how much pleasure the meetings of the Grangers afford them, for the wives and even the children participate in them, and feel the better for it; and I have no doubt they owe their success more to the combination of the family than the wisdom of the fathers.

CONDENSED GLEANINGS.

Shading Trees after Planting. After planting a tree protector is at once placed around them for protection, and the shade to the stems of the trees until their own foliage is sufficient to do so. For this last purpose the best and cheapest tree protector yet used is made of wooden strips that come six feet above ground, placed three inches apart and bound with iron hoops; this gives the necessary shade to the stem and at the same time allows free circulation of air. This shading is all important, for when trees are growing in forests or in the nursery they shade one another, and it must be evident, that if set out in the streets of a city, without any protection from the blazing sun, they must suffer. Many thousands of deciduous trees, both fruit and ornamental, perish annually the first year of planting from this cause, as from the closely planted nursery rows the change is too great, unless the season is especially favorable, no matter how carefully the planting may have been done. Trees in orchards and other inclosures can be shaded by wrapping the stems up to the lower branches with straw or anything that will shade the trunk from the sun; the grand success in planting the avenues in Washington is no doubt due largely to the persistent use of this precaution, for it is never omitted, and the results attest its value. And there all trees for two years after planting are cultivated, by the soil being stirred up by a pronged hoe for four or five feet from the stem in all directions.—P. Henderson in Harper's.

Shadow Morello Cherry. We first met with this remarkable variety near Warsaw, Poland, in 1882, under the name of Schatten Amarelle. As "schatten" means shadow—referring to the peculiar mirror-like reflection of the skin of the fruit—we have taken the liberty of translating the name as above. It is said to be an introduction from north central Asia, and it is possibly a seedling of Spate Morello, which it much resembles in tree and fruit. Among its peculiarities may be noted: A more perfect foliage and being hardier in tree and fruit buds, than any old variety. It has not been hurt by our trying winter and summers, and bears full crops of fruit. It is also remarkable for continued strong growth of wood when bearing heavily, on very young and small trees. Trees four feet in height were bending with weight of fruit, often bearing in nursery when only two years old from the bud. In leaf and habit it is a Morello, while in fruit it is a near approach to the Dukes, even to to being bitter until fully ripe, when it becomes nearly sweet. Its size of fruit and season are about the same as the English Morello. But the pit is smaller and the quality for dessert or canning much better.—J. L. Budd, in O. J. Farmer.

Rose Cuttings from Blind Wood. That blind wood of Roses will produce equally floriferous plants as cuttings made from flowering shoots, judging from some extended tests by good growers, seems to be established. This view, though contrary to the tradition of the trade, seems to be quite reasonable. When blind shoots are used, they should be clean and healthy, such as are produced by Catherine Mermet, the Bride, and other varieties during the winter, and this growth makes a desirable addition to the cutting-bench. Some conservative growers still prefer to make cuttings only from flowering shoots, but it is often difficult to procure enough such wood, when it is wanted, therefore it is advisable to put in all the healthy wood at command.



A Tree Guard of Wrought Iron, after an English Pattern.

And when it is desirable to have young Roses early, it will be best to put in cuttings in October, or earlier, if suitable wood is to be had, because plants struck at this time will be in good condition early the following season, this applies especially to Roses of the Tea class, used for forcing. —Garden and Forest.

Marketing the Orange Crop. The general tendency toward speculation that pervades our human nature will cause many to try new schemes, and among these may be mentioned the auction plan in many cities that are now being boomed by a class of agents and brokers who neither occupy stores, nor have proper facilities for handling consignments by the old established methods. They offer great inducements, but if tried the results will be only as it was proven in seasons past. Fruit will be thrown on the market in large bulk by forced sales, and with no one to protect the shipper, a general break in prices is caused, and if the plan be followed up, there will be no opportunity given for the market to react. And the hundreds of outlets in the way of smaller dealers in distant parts of our country sought out by the established commission merchant will not be reached.—Florida Farmer.

What Makes a Good Keeping Grape. For long keeping qualities it seems to us that more depends upon whether there is much or little free juice in the Grape. Of two varieties of Labrusca, the tougher skinued will prove the better keeper, though if we compare the Catawba with the Jefferson, both of Labrusca origin so far as known, we shall find that while the skin of the former is the tougher, yet the latter is the better keeper. The Catawba has considerable pulp and also a good deal of free juice between the pulp and skin, but the Jefferson is meaty throughout. The Malaga and other varieties of Vinifera are fine keepers, though they have very thin skin, and there is no pulp or free juice. The one decided improvement in American Grapes needed, is a hardy, vigorous variety like Victoria, Moore's Early or Cottage, that shall bear berries with meaty flesh.—Rural New Yorker.

Apropos of the Electric Sugar Swindle. Some day a man will look wise and darkly point over his shoulder at a locked room aud tell us he has a plan for gathering Grapes from Thorns; and we will buy his stock. There will also appear a man in Philadelphia with a dark room and some crazy machinery for harvesting Figs from Thistles; and we will support him. Likewise there will come to us a man from interior Michigan who has a plant for extracting sunbeams from Cucumbers; and he will fatten on us till he dies, and then leave the scheme to his heirs, and we will take care of them—we and our hard-headed, practical English friends.—New York Tribune.

Living Trees as Fence Posts. The Prairie Farmer deserves credit for the practical idea given expression in illustration of wire fence supported by living trees. The fence is put up in the common way, with strips of wood fastened to upper wire to give timely warning to approaching cattle and stock. A quick-growing tree, an Ash, Catalpa, Box Elder, or even a nut or fruit tree is planted near each post on line of fence, and by the time the posts begin to rot, can be used in place of the post; fasten the wire to the trees with staples, and the fence will stand firm as long as the wire lasts.

Strawberries and Potatoes. As early in the spring as the ground can be worked, plow the ground and harrow well. Then run furrows three and a half to four feet apart, and plant early Potatoes in hills about two feet apart, covering with the hoe so that the hills can be seen. Plant Strawberries between each two hills in the Potato row. In working the Potatoes the Straw-

berries are but little extra labor, except taking off the runners; the Potatoes should be dug as soon as they are fit for market. Then the Strawberries are allowed to fill up the rows; keep the ground clean, and by fall nice matted rows are had with a good crop of fruit the next spring; after picking, plow the ground and plant late Cabbage or Sweet Corn.– Farm and Garden.

Forest Trees for Ornamental Use. It is an excellent time of the year to dig from the woods and transplant on the grounds specimens of our hardy forest trees; but do not make the mistake of too close planting, especially about the house. Maples are always fine, and to this we may add the Tulip Tree, Basswood, Elm and White Birch. Walnuts, Black and White, and Butternuts may be easily grown from seed, also Chestnuts. A grove may be quickly grown from Locust seed, and these trees, as well as the Basswood and Tulip Tree, are especially valuable as honey producers. –Orange County Farmer.

The Use of Coal Ashes. Everything grows well under a mulch of coal ashes, provided that the plant leaves are not covered, and that the ashes be stirred after rains, during the growing season. Without this they pack so as to exclude the air. In planting the seeds we cover them with soil or leaf mould. We have tried coal ashes, thinking that the young seedlings might push through the easily broken inch of ashes. But very rarely has a plant appeared through such a covering, because of too close exclusion of air, some being indispensable at the moment of germination.—Chicago News.

Dosing Elm Trees with Sulphur. Mr. W. H. Dodd, of New Jersey, says that he has thwarted the attack of the Elm tree beetle by filling holes bored into the tree in early spring with flower of sulphur. His idea is that the sap carried the sulphur into the leaves and imparted a taste to them which prevented the larvæ hatched on the leaf from eating the foliage.—New York Sun.

Hardwood Sawdust for Mulch. This material is good for Strawberries or any other kind of small fruit, as it very soon decays so as to make a substance very much like chip dirt. Rotten wood or rotten logs make an excellent manure or mulch for the berry family. Pine sawdust is not good because it hardly rots at all and will injure the plants, so many growers say.—Gleanings.

Flower Diseases and Science. If only one-tenth as much scientific attention had been given to the diseases of florist's flowers as has been lavished upon Pear blight and Peach yellows, we would not now be so deeply ignorant of what is of vital interest. The florist business of America is surely important enough to warrant scientific recognition.—American Florist.

Japanese Ivy (*Ampelopsis Veitchii*) for use along railroads is of value, as its clinging habit serves to bind together loose stones and shaly surfaces, thus protecting the sides of embankments and cuttings, while in summer delighting the eyes of the traveler.—Garden and Forest.

As to Seedling Peaches. Michigan fruit growers prefer the seedling trees as crop producers. By planting the seed of the Smock, Salway and similar varieties they get trees that produce on an average quite as good fruit as the original, and are themselves of superior vigor, hardiness and longevity.—Delaware Farm and Home.

The Double-flowered Chinese Blackberry was successfully forced last winter, producing wreaths of white blooms resembling Polyantha Roses. But while easily grown, it requires rather more room in a greenhouse than will pay the commercial grower.—Garden and Forest.

A Hundred Forest Trees planted in suitable places and cared for intelligently, will cause somebody at sometime to rise and call you blessed—or, in a dozen years or so, the trees may even bless you.—Husbandman.

An Advantage in using Walnut trees for shade, is that in addition to the nuts, it is freer than the average from insects, and during the summer, when resting under a tree, this is quite an item.—Western Plowman.

Those who buy trees grown by any new process will usually find that the main new thing consists in the way that the agents get their money, and the buyer the new experience.—Ohio Farmer.

Tomatoes in Peach Orchard. As a crop for young Peach orchards, nothing equals Tomatoes, as they do not exhaust the soil, and the vines give all the mulch that the trees require.—Farm and Home.

Early Beets and Radishes are among the most profitable garden crops that the gardener can raise, according to the expense, and no other vegetables have so few enemies.—Indiana Farmer.

Kohlrabi or Turnips. The drought last summer showed that the Kohlrabi was superior to Turnips or indeed to any other root crop for standing dry weather—American Cultivator.

Roses in Florida will grow on the poorest sandy soils in the State; the secret of success being the use of plenty of good fertilizer and budded plants.—Florida Farmer.

The Gano Apple is attracting much attention, and because of its merits we believe that as a market Apple, it has come to stay.—Nebraska Horticulturist.

Manure and Apples. A Baldwin tree standing where it gets the benefit of the house slops yielded 59 bushels last year.—Green's Fruit Grower.

We congratulate the American Pomological Society on its excellent work and "Independent organization."—London Garden.

Gooseberries and Currants make a fine hedge for dividing the lawn and garden.—Farm Journal

The Northern Spy needs high culture and the fruit to be severely thinned —People and Patriot.

Shanghai Plants are good ones to not buy.—Farm and Stockman.

Vegetable Products on the Table.

Baked Parsnips. Put a few thin slices of salt pork in a kettle with two quarts cold water. Wash, scrape and quarter some Parsnips, and when the water boils put them in and boil until tender. Then turn the stew into a dripping-pan and bake until nicely browned.

Fried Parsley for Garnishing. Wash the parsley and divide it into sprigs; then dry by folding it in a clean cloth and squeezing tightly. Then plunge it into boiling fat, letting it remain not more than a minute, or both crispness and color will be spoiled. Drain, and it is ready for use.—Amateur Gardening.

Apple Cake. Beat two eggs, add one cup of sugar, beating well; add one half cup of milk, alternately with two cups of flour in which two teaspoonfuls of baking powder have been sifted; then one tablespoonful of melted butter. Pour into two jelly cake pans, cover each thickly with thinly sliced Apples set up edge-wise, and sprinkled with sugar. Bake until the Apple is done, serve with sauce.—New England Farmer.

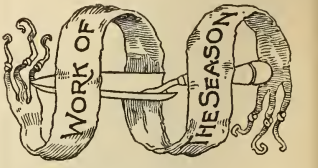
Parsleyed Old Potatoes. Peel, quarter and wash as many Potatoes as required, boil quickly in salted water until tender, strain and let them steam for a few seconds over the fire; add a liberal piece of butter and let it melt, and strew over them some finely chopped Parsley, cover, then taking the handle with one hand and holding the lid down with the other, shake the sauce-pan so that the Potatoes turn over a few times, then serve.—American Agriculturist.

Preparing Evaporated Fruit. Rinse the fruit thoroughly in clean water, then place in an earthen dish, covered with water for ten to fifteen hours before using. Then in this water which contains the flavor and nutrition soaked out of the fruit, simmer slowly, until it is cooked through, adding sugar as required; serve either hot or cold. In this way you secure a wholesome dish, full flavored, greatly resembling the original fresh product.—California Fruit Grower.

How to Cook Spinach. Select rather small leaves, cut off the roots. Wash and cook 15 to 20 minutes in water containing a teaspoonful of salt to gallon of water; drain and when dry, chop fine, season with salt and pepper; melt two tablespoonfuls of butter, stir into it one of flour, and let it cook, turn in the Spinach and let it cook two minutes, then add one-half cupful of milk. It is done when the milk is scalding. Have ready, and when the Spinach is dished, cut a couple of hard-boiled eggs in slices and place over the top.—Prairie Farmer.

Toast with Mushroom. Take a quart of small fresh Mushrooms and rub the tops well with a piece of white flannel dipped in salt. Put them into a stewpan containing three ounces of dissolved butter; season liberally with salt, cayenne, and pounded mace, and stir over a gentle fire to prevent the Mushrooms burning until the butter is dried and slightly browned. Then add half a pint of cream, or milk beaten up with the yolks of two eggs, and the grated rind of a small Lemon. Stew till the Mushrooms are tender, but not allowing them to boil. Serve on small rounds of bread which have either been toasted or fried in hot butter squeezing a few drops of Lemon juice over the top.—English Cook.

Improved Boston Baked Beans. Wash a quart of small white Beans, soak over night in two quarts of water containing a teaspoonful of soda. In the morning put them into fresh water and let them simmer until nearly soft, add salt and pepper, half a cupful of well-flavored brown sugar and a piece of nice butter as large as an egg, stirring all carefully together so as not to mash any over-soft Beans. Pour the Beans into an earthen baking dish, press a silver-skinned Onion into the centre, and bake them steadily for an hour, which will give them a rich brown on top. There should not be water enough in them to make them sloppy but have only such a quantity of water on them as will evaporate by the time they are done. Serve with thin sliced corned beef instead of salt pork.—Farmer's Call.



HOUSE PLANTS.

Airing. All but the more tender plants can be fully exposed for several hours on mild days, and even be occasionally washed by warm rains, with benefit.

Annuals. For early, transplant into boxes at an inch or more apart, but encourage stockiness rather than rapid growth, with giving them more air and light.

Begonia Weltoniensis. If given rich, sandy soil, with fair watering, will thrive in the window, making one of the finest of spring bloomers.

Bougainvillea. Keep in an upright position by means of stakes. No check from drouth must be permitted, weekly applications of strong manure water inducing the required vigor for bloom.

Callas. Strong plants designed for later bloom to receive manure water. Such as have bloomed through the winter, should be planted in a rich bed May 1, where they will shed their old leaves. Lift in August and pot in very rich, well-drained soil.

Carnations. Young plants to be placed in frames and hardened off gradually before planting-out time.

Chrysanthemums. Keep growing freely in a cool, airy place. By properly hardening them off they may be planted out among the earliest of tender plants.

Cinerarias. Specimens of a desirable strain should be isolated from the inferior ones to prevent unfavorable mixing of the seed.

Climbers in Pots. Cobæa Scandens, Maurandia and the like now making their growth will very soon be unshapely masses if not kept closely tied to stakes. The earliest ones may also be cut back with benefit.

Coleus depend for beauty upon the colors of the leaves being well developed; this can be helped by keeping the plants rather dry and pot-bound.

Droopers. For hanging baskets, vases, etc., should be increased by dividing or slipping such kinds as the stock on hand may indicate.

Fuchsias. Some varieties as Storm King do well if not pinched back. With good pot room and careful watering, a good show of bloom may be expected on strong plants, manure water occasionally, using the liquid rather weak.

Geraniums. To gain space inside, the older plants can go into frames or hot-beds plunged into the soil. Keep well aired.

Geraniums intended for summer bloom should now be making strong growth. If at all backward, whether from excessive watering or being pot bound, apply the proper remedies. Cuttings for next winter's pot plants to be put in.

Heaths and hard-wooded plants generally should have free ventilation as they come into bloom.

Heliotrope to be at the best, must have plenty of pot room; manure water is also of great benefit.

Hot-beds will need close attention as to airing and shading to prevent an excessive degree of heat. On the warmest day the sash should be nearly removed.

Lilies. Gradually withold water after the flowers are past until planting-out time, when, if given a rich, well-drained soil, they will shape themselves for future bloom.

Mignonette. Sow the seed where wanted to bloom, as, of nearly all plants, this transplants the worst.

Petunias. Should any of the older plants have become unshapely, a severe cutting back will greatly improve them for later use.

Plunge the pots of plants in refuse Hops to reduce the labor of watering; it is very helpful to plant growth also.

Propagation. For next winter's flowering stock cuttings may be made any time now.

Richardia. Keep these growing freely, the treatment in general being as directed for Callas.

Roses. Red Spider, Thrip, etc., are now likely to be at their worst. Syringe freely or sponge off the leaves.

Transplanting The old tin fruit and vegetable cans can be used instead of pots for bringing along early stock, by setting the plants in them, using good soil.

Verbenas rooted before April 15th make superior plants by bedding time if grown in thumb pots and plunged in a frame.

Window Boxes. For full directiou for these, see page 128, March issue.

LAWN AND FLOWER GARDEN.

Annuals. See under Seed Sowing.

Bulbs. Hyacinths, Tulips, Lilies, Crown Imperials, Phloxes, Irises, etc., do better if allowed to remain in the ground for years undisturbed. Dahlias, Tigridias, Erythrina, and other tender bulbs that were wintered inside can be planted, when danger of frost is over, in warm rich soil.

Cold Frame plants, like Violets, Roses and Caruations should be exposed to the air more and more for gradual hardening off prior to plantiug.

Flower Beds. Such as are designed for summer flower, and in which Hyacinths, Tulips, etc., have been growing, may be cleared by taking the bulbs up after bloomiug, with some soil adhering to the roots and puttiug them into hoxes till ripened, not neglecting moderate watering, and when dry store away. The heds then can he dressed lightly with manure, and gotten in readiness for the tender plants.

Gladiolus. Get a first planting in early in the month and then follow with plantings at intervals of two weeks up to June.

Hardy Plants. What these plants, which remain year after year, require is to have their soil dug up deeply and then later given good applications of well rotted manure.

Lawn. Where manure was applied in the fall, the coarser parts should he removed and the surface well raked for llvening it up, removing the dead grass also, and then roll. As the grass growth requires mow promptly, cutting often but not too closely. New lawns may yet be started, remembering that the best results follow on the best methods of making.

Planting. For all hardy things have the soil fine, fertile and plant with great care. Some leading points to observe; Do not expose the roots needlessly; set in the ground only as deep as they were in the nursery; pack the soil firmly about the fine roots; cut the top well back, otherwise it will require more moisture than the roots can supply.

Prune the hedges during this month.

Seed Sowing. All the hardy annuals like Candytuft, Mignonette, Sweet Pea, Larkspur, Pansy, Eschscholtzia, Sweet Rocket, Lupine, etc.. may be sown. In the North the following varieties can go in the open ground when the soil is dry; Amaranthus, Antirrhinum, Calendula, Calliopsis, Clarkia, Helianthus, Phlox Drummondii, Poppy, Portulaca, Morning Glory, Golden Feather, Godetia, Zinnia, Marigold, and the like.

Tuberoses ought to be started in hot-heds or the window, as the season North of New York is rarely long enough for them to grow entirely out of doors.

PLANT CULTURE UNDER GLASS.

Alternantheras. For bedding stock see last mouth.

Annuals from early sowing must not hecome crowded; thin or transplant and pinch hack the tallest and weaker ones.

Carnations. Increase the later hloom hy a top dressing of fertilizer.

Crowding at this season should he guarded against by using outside frames.

Cuttings. Examine such as are in the bed and pot off at first appearance of roots.

Ferns in pots to now have the soil renewed or he given a shift. It is beneficial to hreak the old outside roots somewhat.

Orchids. Shade from direct sun rays and repot such as require it, as they are growing. Preserve the moisture hy generous sprinkling of the walks etc.

Pot-bound Plants of Petunias, Fuchsias, Hydrangeas, Calceolarias and others can he watered entirely with liquid manure while in bloom, with the hest of effect. This treatment is also suitable for such hard wooded plants as Genistas, Daphnes Azaleas, Neriums, etc., whether in hloom or making their new growth.

Primroses of douhle sections, white or red, ought not to have their propagation deferred later than the middle of April, as the warmer weather is detrimental to best results. While rooting, provide heavy shade, giving air hut not too much water.

Roses. For a late crop, top-dress with old manure. Keep the young stock in a healthy growing condition, free from weeds, well watered, and do not neglect fumigating for green fly. Bear in mind that two year old Bennetts have proven the most valuable; pot the plants when the hed is cleared, and then at the proper time replant into new soil, just as with young plants.

Shade with naptha and white lead over such subjects as are liahle to hlister, as Fancy Coleus, Caladiums, Fuchsias, Camellias, Azaleas, Callas and others.

Shifting. This operation should go ou actively in all departments, using new or well washed old pots.

Tree Planting. For making a good job the soil should he mellow, somewhat dry, with the hole accommodating the roots without crowding; the hair-like roots being firmly packed in fine soil, no manure going against them however, then settling the ground solidly about the newly planted trees.

FRUIT GARDEN AND ORCHARD.

Apricots. Do not allow any water to stand about the roots, as it is very injurious.

Borers. A preparation of cement, soap and skim milk is recommended, coating the tree for several feet up from a little below the ground surface; cuough of a shell is formed to repel the borers.

Grafting. For full directlous see page 98 in the February issue.

Heel-in all trees as soon as received if not ready to plant, keeping each variety separate, by covering the roots with ground firmly packed against them. In this shape they can remain as long as is uecessary.

Orchard. As fruit trees require potash dress with unleached wood ashes, or, as substitute, three parts bone dust and one part muriate of potash.

Quinces ought to have a rich mellow soil. By giving a liberal dressing of old manure on the surface over the roots, old trees will be helped; careful trimming of branches is of henefit.

Raspberries. Any excess of canes heyond four or five may be well removed. Use the suckers from the red ones for planting another patch, setting the plants three feet hy six or seven feet apart.

Seeds of Cherry, Peach and others that were kept over winter should be sown as soon as the soil can he worked. All fruit and ornamental tree seeds to be sown also without loss of time.

Strawberries. Plant new beds as early as possihle after the ground is in shape. Before dry weather ap pears mulch bearing heds that require it for keeping the fruit clean. Uncover the old beds hy removing the mulch from directly over the plants.

THE VEGETABLE GARDEN.

MANSFIELD MILTON, MAHONING CO., O.

Beans. For early sow the green-podded varieties; they are the hardiest.

Beets. Sow for main crop.

Cabbage. For late and medium kinds sow in well prepared ground. When plants of the early sorts have heen thoroughly hardened off, set into open ground. Treat Cauliflower in same way.

Carrots. Sow hoth early and late kinds.

Celery. For main crop sow in open ground. Transplant early kinds started in hot-beds.

Cress. Sow in sheltered place and for succession every two weeks.

Cucumbers. Sow for succession in frames, and the last of the month in a sheltered place in open ground.

Cultivation of the Ground. Commence as soon as the seedlings appear; it facilitates growth and helps to check insects and weeds.

Hot-beds. Give the closest attention in watering and airing.

Onions. Where not already done plant and sow at once. This crop is hardy. The earlier in the ground the better. Seedlings started in hoxes or frames may he plauted out for early use, a good substitute for sets.

Parsley. Sow in well prepared ground.

Peas. Sow for succession. The smooth varieties are hardiest hut wrinkled kluds can now he sown.

Parsnip thrives best where well rotted manure is used. Sow early. Use fresh seed only.

Potatoes. Set out carefully such as were sprouted in hot-bed.

Pot Herbs. Sow all kinds.

Radishes. Sow French Breakfast, or oue of the many first early Red Turnip sorts for early; Golden Globe and Lady Finger for summer.

Spinach. Sow for succession.

Thinning. This is of utmost importance. Don't neglect it. It makes earlier and better vegetables.

Turnips. Sow any quick maturiug kind.

FRUIT AND VEGETABLES UNDER GLASS.

Cucumbers. Generous feeding, with plenty of water will be required to keep the old bearing plants in a productive state. Young plants should be growing freely and stopped as needed. Do not use liquid manure freely until in hearing.

Figs. With much hright weather a night temperature of 60° to 70° may be given, but should the weather be dark a lower degree will be better. Figs, though delighting in heat and moisture, do not get along well without corresponding air or light. Top dressing the soil with fresh horse manure is heneficial, because of the ammonia thus secured. Do not allow the fruit to he too thickly placed. For young stock put cuttings in sandy, well drained soil, with sharp hottom heat. With good treatment fruit may he had in two years.

Lettuce. Cold frame plants if transplanted to hotheds will produce an early crop. For forcing, Tennis Ball and White Forcing Head are good.

Pines that are fruiting are benefited by free airiug, and being watered with warm manure water made rather weak.

Strawberries now in fruit will need plenty of water, and until color hegins to show, some liquid manure. Ventilate freely. Thin the fruit somewhat on the more heavily loaded plants for securing berries of a good size. After fruiting harden the plants gradually, if wanted for new beds, before moving them outside.

Vines in the latest houses should he stopped. Syringe twice daily, and promote a sturdy growth by ventilatiou. Water with liquid manure if growth seems weak. Keep a close lookout for red spider. Give good attention to thinning.

THE POULTRY YARD.

A Moveable House. A good plan for a small number of hens is to make a small house, say eight by ten with roosts and boxes, and let the roost reach through so that you can use them at each end as handles and thus move the house about. This gives the fowls a chance at fresh grass, and clean soil.—E. P. Powell.

Keep the Hen with the Chicks. In cold weather the longer the chicks remain with the hen the better, as they will thrive better than if left to themselves, even if somewhat large. The few eggs a hen may lay after weaning her chicks will be no equivalent for lack of warmth to them, and they may be also in need of her help and guidance.—Mirror and Farmer.

Keeping Eggs for Hatching. They should be kept as near 40 degrees as possible, though as high as 60 degrees will keep them, but they must not be subject to freezing. If turned half over three times a week they will keep for six or eight weeks, and if not higher than 50 degrees they should keep three months and hatch well. The turning of the eggs is the most important point.—Poultry Keeper.

Experience with the Guinea. I once accepted a pair of guinea fowls, and these wretched birds were always in mischief. They killed many chicks, so the coops had to be guarded closely from their most persistent attacks. At last patience was a virtue no longer, and the guincas hung on a limb of a tree, but the birds were uncatable, tough, devoid of flavor; I understood why guineas are not appreciated by poultry-keepers. And of the proudly-arrayed peacock, I have only to say that it is a more monstrous fraud than a guinea.—New York Tribune.

A Good Cross-Breed. Get high-combed White Leghorn cocks, keep two years, then cross with Black Polands one year, and at the end of six years you will have arrived at as near perfection in a healthy egg-producing fowl as can be, and they also make the best of mothers. Thin out undesirable ones regardless of age; never allow more than 60 in one house; have a tight floor two feet above the ground, in each house to avoid dampness, minks, skunks, etc., and have no two houses closer than at least fifteen rods apart.—Orange Judd Farmer.

Marketing Points. If you don't kill and dress your poultry in good shape and send it to market in attractive style the chances are strongly in favor of your getting a second-rate price. On no account scald the fowls before picking. Dress neatly by drawing the intestines, emptying the gizzard and keeping every speck of blood or filth from coming in contact. Cut off the head, sever the wings at the outer joint, have the legs picked clean to the knee joint, singe the hair from the body, being careful not to discolor it, wind each bird about the wings in strips of clean, white cotton cloth, pack in clean boxes, with rye straw between the layers of poultry, the birds upon their backs with legs extended.—Farm and Home

Where one desires to prosecute the poultry busiuess by natural means alone, rely on eggs for the principal income, because it has been abundantly proven that there is a reasonable profit in it; but where the main income is expected from the much larger profit of dressed market poultry, and especially the early sales which bring twice or thrice or four times the prices of the later ones, do not attempt it unless by artificial means, for it cannot be done except in a very limited extend. Brahmas will drive the ordinary man to the almshouse before they begin to lay, and even when they are large enough for early broilers, they are all legs, and those who want broilers will not take them.—Massachusett's Plowman.

Why not Raise More Ducks. The duck is less liable to disease, lays as many (and larger) eggs as the hen, and the ducklings nearly grow twice as fast as chicks. The advautage in favor of the hen, are that she will endure confinement better, and is not as voracious as the duck, and it has been claimed that the ducks could not be kept profitably without the aid of ponds, but such ducks as the Pekins could be kept in yards with no water except for drinking. Under such conditions, as they have little exercise, great care is required in feeding them. When laying, they need more animal food than hens, but at other times a diet of cut grass is the best food that can be given, with a mess of cooked Potatoes and ground Oats at night. Ducklings will be ready for market in eight weeks after hatchiug, if well fed.—Mirror and Farmer.

Advantages of Ducks. They are very hardy, are entirely free from vermin and are liable to few diseases. They take to confiuement much better than fowls and a cheap (very low) fence is sufficient to keep them in the desired place. They stand transportation better than most kinds of fowls. They are great egg producers, and their feathers are worth about 50 cents a pound. If kept growing when young, the Pekin duck will commence laying when five or six months old, although like pullets, somewhat less prolifically than when more mature. They will molt slightly in December and soon after that will resume laying, producing 120 to 140 eggs within a year, if well cared for. We have the impression that not until Feb. 1st are ducks' eggs sufficiently fertile for hatching.—New England Farmer.

Inquiries and Replies

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,170. **Everblooming Roses.** What kinds would do best grafted on wild stock?—W. A. *Williams Bridge, N. Y.*

1,171. **Propagating the Oleander.** What is the best method?

1,172. **Grubs or Cut Worms in Greenhouses.** How can they be destroyed?

1,173. **Protecting Cloth for Hotbeds.** Where can it be obtained?—F. O. S., *Ashland, Wis.*

1,174. **Destroying Green Stumps.** What acids or other chemicals can be used for this purpose?—J. A. M., *Kingsville, Ky.*

1,157. **Directions for Cultivating Various Flowers.** How shall I treat Antigonon Leptosus, Capsidium, Salicifolium, Bryophyllum Calycinum, Libonia Penrhosiensis and Amaryllis? Please give plain directions.

1,176. **Industry Gooseberry.** Does it mildew?—A. L. R., *Buffalo, N. Y.*

1,177. **Bulletin of Stations and Department of Agriculture.** How can they be obtained?—F. H. B. *Scriba, N. Y.*

1,178. **Hardiness of Chinese Peaches.** What can Mr. D. B. Weir tell us about this subject?

1,179. **Idaho Pear and Prunus Simoni.** How are they succeeding with Prof. J. L. Budd, in Iowa?—F. G. M., *Hanover, Neb.*

1,180. **Turnips.** What are the best sorts early and late?—J. B. S., *Mobile, Ala.*

1 181. **Exhibiting Potatoes.** How shall Potatoes be arranged for exhibition? Shall a bushel or a peck of each sort be shown?—A. B., *Mt. Carmel, Ill.*

1,182. **Fertilizers.** How many pounds of fertilizers to an acre for vegetables for profit? I have no manure. —X. Y. Z., *Frederica, Iowa.*

1,183. **Cantelope Melons.** Will some reader state the best varieties and say when they should be planted?—A. M. N., *Philadelphia, Pa.*

1,184. **Apples for New England.** What kinds are best for market purposes in an orchard of one hundred trees?—W. H. P., *Arlington, Mass.*

1,185. **Wild Flowers of Massachusetts.** Is there any publication containing a list of the common wild flowers of this state, and where can it be obtained?—E. P. S., *Springfield, Mass.*

1,186. **House Plants.** I want to have some house plants but do not know how to grow them. Any information would oblige.—Flowers, *Chicago, Ill.*

1,187. **Trees for Street.** What trees are best and what will they cost?—T. A. J., *Ware, Mass.*

1,188. **Betula Papyracea.** I notice in an agricultural journal that this tree is highly spoken of; kindly tell me what it is and where I can get one.—P. W. S., *Columbus, Ohio.*

1,189. **Hardy Perennials.** Will some reader name a dozen or so good hardy perennials; I wish to plant a few this spring?—Reader, *Hartford, Conn.*

1,190. **Wood Ashes.** Are wood ashes of much value as a fertilizer; that is, are they worth $20 per ton, the average price charged by dealers?—C. O. F., *Providence, R. I.*

1,191. **Fringed Gentian.** Where can Gentiana Crinita be obtained.—A. A. N., *Chaffee, N. Y.*

1,192. **Vegetable Crops on Red Clay Soil.** I have four acres of solid red clay grass land underlaid with limestone plowed last fall. How should it be treated this season to grow a good crop of vegetables and what crops would best succeed.—Reader, *Buffalo, N. Y.*

1,193. **Classification of Roses.** I do not understand what is meant by Hybrid, Perpetual, Everblooming, Teas, etc. Will some one kindly enlighten me?—E. R., *Waverly, Iowa.*

1,195. **Spraying Apparatus.** Please tell us where we can get the necessary apparatus for spraying Grape vines with sulphate of copper mixtures—G. B. W., *Warsaw, Ills.*

1,196. **Echeverias for Bedding Out.** How are they grown and how and when propagated?—F. W. J., *Narragansett Pier, R. I.*

1,197. **Single Rose.** Have seen a sort with bluish leaves and delicate pink blossom. What kind is it and where could I get one.—Rose, *Long Island.*

1,198. **Large Flowers in Chrysanthemums.** How should the plants be treated to obtain large flowers? Shall I allow the shoots from the old stock above ground to grow, or must new plants with new roots be used? How many stems should be left to grow from old roots in border when there was but one last year?

1,199. **Varieties of Chrysanthemums.** Name the best twelve.—J. H. W., *Bristol, Pa.*

1,200. **Plums for Massachusetts.** What varieties can be recommended for home use?—E. L. R., *Springfield, Mass.*

1,201. **Cure for Ants.** My flower pots and boxes get full of black and red ants. They also work on my Roses. What can I do for them?

1,202. **Grapevine Leaf Roller.** I would like to know a remedy for the small green worms that curl up in Grape leaves in July and do much damage to my vines every summer.—S. P., *Galveston, Texas.*

1,203. **Shrimp Refuse as a Fertilizer.** I can get shrimp refuse (heads and shells) here at the canneries for little more than the hauling four miles. Will it pay to use it extensively to apply on light sandy soil far from rich, for Strawberries? And how had it best be treated? Shall I compost it with leaf mold, or add a proportion of muriate or sulphate of potash or cotton meal?

1,204. **Address Wanted.** Can you give me the name of any firm in New York who put up evaporated Apple juice in bulk for sale?—W. O., *Biloxie, Miss.*

1,205. **Paper Flower Pots.** Such light pots are used quite extensively for shipping on the Continent of Europe, to save shipping expenses. Can they be obtained here and where?—F. T., *Marietta, O.*

1,206. **Soap Suds.** What is the best way of utilizing the washing suds from the kitchen for the garden?—Amateur, *Virginia.*

1,207. **Apples on French Paradise Stock.** I would like to hear the report of one who has tried them, whether they can be considered satisfactory for ornament or practical use.—N. C. R., *Luxemburg.*

1,208. **Forcing Tomatoes.** I have had trouble in getting the fruit to set. Probably the house was kept too damp. How can we guard against excess of moisture? —Amateur, *Canandaigua.*

1,209. **Mulberries With Imperfect Flowers.** I have quite a number of Russian Mulberry trees. All flower freely, but one only bears fruit. Do the others bear only male flowers?—J. H., *Kent, Ohio.*

1,210. **Purple-Leaved Beech.** Will it succeed in Missouri?—Mrs. J. O. D., *Kirkwood, Mo.*

1,211. **Liquid Putty.** How is it made and how applied. Report by one who has used it is desired.—G. C., *Niagara Co., N. Y.*

1,212. **Planting Blackberry Roots.** Should Blackberry root cuttings, about three inches long, be started in a hotbed or can they be planted directly in open ground?—E. A. M., *Pawnee City, Neb.*

1,213. **How to Obtain Pitch from Pine Trees.** What method is used in South Carolina?—M. C., *DeSoto Co., Fla.*

1,214. **Dwarf Peach.** Is this of any value?—P. B., *Mt. Carmel, Ills.*

1,215. **Grafting Apples, Plums and Cherries.** I would like to have full directions. I have tried and failed and a young nurseryman to whom I gave the job failed also.—D. T., *Monmouth, Ills.*

1,216. **Bottom Heat and Plant Growth.** Does bottom heat really tend to stimulate root growth of forced vegetable crops more than top growth, and heat from above top growth more than root growth? Practical observations only are desired.—R. S., *Monmouth Co., N. J.*

REPLIES TO INQUIRIES.

1,122. **Chilian Beet Seed.** Beets with ornamental foliage are becoming more popular, their foliage does not show any effects from frost for several weeks after Coleus, Cannas, Geraniums, etc., are killed and black. There are several varieties, and the cost is about 10 cents per package. Any seedsman can now supply the seed.—M. B. Faxon.

1,124. **Orchid Information.** J. W. M. cannot do better than buy some good work on the cultivation of Orchids, which will answer the questions asked.—M. B. F.

1,129. **Worden Grape Cuttings.** Although not as popular in Illinois as Concord, Ives and Martha, yet many consider the Worden Grape better than the Concord; it is a trifle earlier and a very valuable variety.—M. B. F.

1,130. **Pocklington Grape Cuttings.** Sorry you were cheated. Grape vines can be purchased so cheaply of parties who make a specialty of growing them that I think you will do as well to throw away your worthless varieties and buy some good sorts. Concord and Ives do well in Illinois. Your chances of getting damages on a dozen vines are very small, and it would cost more money and trouble than all the vines you need are worth.—M. B. F.

1,104. **Good Grapes for Virginia.** The following five sorts are the best five sorts for your state: Concord, Delaware, Ives, Norton's Virginia and Worden. The following kinds are all good and will do well in any part of Virginia: Brighton, Clinton, Goethe, (Roger's No. 1), Hartford, Iona, Lindley, (Roger's No. 9), Martha, Salem, (Roger's No. 52), and Scuppernong. The following are of recent introduction, but promise to be valuable additions to the Grapes of your state: Lady, Moore's Early, Telegraph and Walter.—M. B. Faxon.

1,114. **Onion Seed.** I would not sow any that is over one year old.—C. E. P.

1,113. **Sowing Sweet Peas.** Sow just as early as the ground can be prepared in a deep, moderately enriched soil.—C. E. P.

1,100. **Japan Persimmons in Illinois.** They will not be likely to prove hardy with you.—C. E. P

1,091. **Worm Eating Currants.** Try powdered hellebore on your Currant bushes; it keeps off all insects with me.—M. B. F.

1,147. **The Patent Old Oak Process** of growing nursery stock is a new wrinkle to me, having only recently heard of it. I suspect from hints that it is the growing of Apple grafts on a whole seedling or stock, instead of cutting the roots into pieces as is the usual practice with nurserymen. I have long advocated this mode, but at the low prices of Apple trees, it don't pay unless a better price be paid for the trees. Many years ago I grafted a lot of two-year seedlings, using a whole root for each one and they made trees the first season as large and stocky as the ordinary grafts are in two years. If not mistaken, Mr. Barry, of Rochester, some years ago wrote that what he considered root grafts were but one whole root to a graft. At the time I endorsed the idea and have not changed my mind on the subject. If wrong in my surmise, and some one knows what this Old Oak process really means, let him speak out.—S. Miller.

1,067. **Are Angleworms in any Way Hurtful?** They may or may not be of use in the open ground, but I prefer not to have them in soil used under cover, my experience having been that nine times out of ten a sickly, feeble plant will be found to be in soil that contains angle worms, to say nothing of the nuisance of their castings on the surface.—G. H. M.

1,070. **Strawberry Fertilizers.** I find bone-dust, wood ashes and Tobacco stems the best. If one can get enough the latter are splendid

1,047. **Remedy for Tomato Rot.** One year I planted out about two acres, a part being about two weeks earlier than the other, so as not to have them all come on together. The first I planted did not rot near so badly as the later ones, for what reason I do not know. They were of the same lot of plants and conditions were alike, but the last seemed to be affected as soon as they got as large as Walnuts.—M. T. Thompson.

1,049. **Rubber Plant Treatment.** The Ficus Elastica will stand considerable abuse. The proper time to water it is when the soil appears dry on the surface. Sponging the leaves daily will not hurt it, but no plant should be left in a place where dust accumulates so as to necessitate daily sponging.—Geo. Basting

1,069. **Ferns as House Plants.** The Maiden Hair, or varieties of Adiantums are splendid for the window. A Farleyense and Gracillimum are pretty and I would add Pteris serrulata, tremula and argyræa. Do not expose them to hot sunshine nor let them get dry.—G. B. D.

1,060. **About Artemisias.** Artemisia Absinthimum grows easily from seed and is hardy. The first and second year after that it is apt to die out, so one must keep on raising from seed or dividing roots in spring. A. Dracunculus or Tarragon requires about the same treatment. Formerly the Chrysanthemums were included with the Artemisias but these cannot be called hardy perennials, though they live out sometimes. The Artemisias got their classical name from the Greeks, by whom it was dedicated to Artemis.—Geo. Basting Diemer.

816. **Water in Heating Pipes in Summer.** By all means keep your pipes full to the brim of the expansion tanks. Did you ever put a piece of iron in water and leave it submerged for some time? You will have found it did not change much while covered with water, but as soon as you took it out and exposed it to the atmosphere it began to corrode quite rapidly, therefore keep the air from rusting the inside of your pipes.

1,067. **Are Angleworms in any Way Hurtful?** I have never seen them do any good. Whenever I knock a plant out of a pot I can feel by the way the earth sticks to the sides whether there is one or more worms in it. Such infested balls are generally in a poor plight. The earth is baked into lumps and the roots are always in a more or less poor condition and as the roots so are the plants. I wonder in whose brain the idea originated that angleworms are useful to keep the ground porous?

1,016. **Chip Manure Insects.** I have never been troubled from insects in this way. What little chip manure I have used has always been of benefit so far as I have been able to determine. To destroy the insects I would suggest the following plan. Moisten the chips, then dust them over with superphosphate (there are few if any insects I believe that can withstand this) letting the manure remain on a pile for a week or two before using.—W. C. Jennison, *Middlesex Co., Mass.*

10,01. **Sawdust Mulch.** The resin contained in Pine sawdust is too strong for some plants. Why not compost it with "gas lime" or something that while having the quality to change its composition, would add to its fertilizing power?—J.

1,052. **Floor for Greenhouse.** I should dig down into the hard pan and then lay timbers and put a good floor on these, or a still better though more expensive floor could be made by using water lime and sand on top of the graded and rolled hard pan.—W. N. Hoyt.

1,136. **Geranium Leaves Diseased.** You had better throw all such diseased plants away and start a fresh. I think that your plants are growing in imperfectly drained pots. You are also giving them too high a night temperature, 45 degrees would be more suitable.—C. E. P.

1,147. **The Patent Old Oak Process** is undoubtedly a great improvement on grafting, but it is not a patent on grafting, the Stark Nurseries took out a trade mark on the whole-root system for self protection. I am planting their trees, I am satisfied that one tree grown on whole root is worth two grafted on pieces. W. M. J.

1,145. **Bermuda Lily.** Mine are grown in a pot. They bloom in the Spring. The pot is set out-doors when the weather is warm enough, but not in the full sun. During winter they are kept in the cellar until they sprout.—MRS. REYNOLDS, *McGregor, Iowa.*

1,154. **Renewing a Grape Vine.** Dig a trench about eighteen inches deep, and long enough to accomodate the old part of a vine. Gently undermining the root, bend the vine over into the trench and cover, tying up the last year's growth for a new vine or vines as desired. The old vine then will serve as so much more root.—MRS. REYNOLDS, *McGregor, Iowa.*

1,118. **Library Window Plants.** Geraniums would head the list, Heliotropes, Azaleas, Daphne Odorata, Calla Lilies, some Cacti if you like those, Abutilon, and the various kinds of Begonias would place in the least sunny corners. Some people are very successful with the dark leaved colors, which make such a pretty contrast with the Geraniums. It is a nice way to have a painted wooden shelf put up at the window seats on iron brackets for the sots, and flower pot brackets put up on each side of the window, perhaps three on each side and hanging baskets suspended in the middle.—M. W. C.

1,070. **Strawberry Fertilizers.** My experience is that when the plants are set in good well manured soil the best thing you can do is to cover the ground with sawdust (this keeps down weeds and the fruit clean) and then put some good phosphate around each stool or hill.

1,073. **Manures for Vegetables.** I have found nothing better for sandy soil than hen manure and phosphate. I always sprinkle my hen house with sand so as to have the sweepings about one fifth of that article, and then I house it in a large bin, and when spring comes I find my bin contents are moist and fine, and I then mix about ten pounds of some good phosphate to each bushel and this compound I have found to be ahead of any manure. The phosphate quickens the manure and does not injure it.—WM. N. HOYT, *Hampshire Co., Mass.*

1,087. **Buckwheat Remedy for White Grub.** White grubs and wire worms apparently do not eat the roots of buckwheat and if so thick a stand of the crop can be obtained that there will be no grass or weeds present on the roots of which the grubs can feed, the desired effect will probably follow.—C. M. WEED.

1,123. **Russian Apricots for Illinois.** It is claimed that these will endure a temperature of 40° below zero and can be grown where the Peach will fail. You will have to keep the curculio in subjection if a crop is desired—C.E.P.

1,122. **Chilian Beet Seed.** This can be obtained from J. M. Thorborn & Co., 15 John St., N.Y., or V. H. Hallock, Queens, L. I.—C. E. P.

1,121. **Manure for Celery.** Nothing better than well-decayed stable manure well mixed with the soil. I know of no hoe made specially for banking up Celery.—C. E. P.

1,130. **Pocklington Grape Grafting.** You can graft good sorts on them. I don't think that you could get damages from the seller.—C. E. P.

1,127. **Onion Sets Growing.** Your ground is too rich; you should choose a poorer piece of ground.—C. E. P.

1,116. **The Best Hardy Roses.** The following list I am certain will prove satisfactory to any one planting them: Anna de Diesbach, Paul Neyron, Countess of Oxford, Capt. Christy, Gen. Jacqueminot, La France, Magna Charta, Beauty of Waltham, Mrs. Laxton, Perle des Blanches, Prince C. de Rohan, Xavier Olibo.—C. E. P.

1,117. **Potato Growing.** Early Rose or Beauty of Hebron are both excellent varieties for the New England States.—C. E. P.

1,102. **Chrysanthemum Mildewing.** This can be easily avoided by procuring a bottle of Henderson's Mildew Mixture, and applying according to the directions accompanying it.—C. E. P.

1,101. **Japan Chestnut Grafting.** You cannot graft the Japan Chestnut on Black Walnut or Hickory.—C. E. P.

1,091. **Worm Eating Currants.** Try an application of Henderson's Insect Death Powder, Slug Shot or powdered white hellebore as soon as the insects make their appearance.—C. E. P.

1,112. **Killing Locust Trees.** Cut off the sprouts with a sharp hoe the instant they appear above the ground.—C. E. P.

1,086. **Red Mites in Greenhouses.** Remove them from the windows by washing. They can be banished from the plants by spraying with Cole's Insect Destroyer, or Fir-Tree Oil.

1,109. **Name of the Beefsteak Geranium.** Saxifraga sarmentosa.

1,108. **Salsify Losing Flavor.** Salsify often is wanting in flavor when left in the ground over winter. It can easily be avoided by taking up the roots before freezing weather sets in.

1,119. **Watering Plants.** Whenever the earth in pots, feels dry, water with warm water, using enough to reach the lowest roots.

1,134. **Tree of Heaven for Canada.** There are several very serious objections to the Ailanthus. It is almost impossible to eradicate it when it once gets a foothold, and it throws up an immense number of suckers. The flowers also have a sickly odor. Nine chances in ten your correspondent will regret it if he plants Ailanthus.

1,155. **Smoke Tree Blighting.** Rhus Cotinus is dioecious and only a portion of the trees produce full clusters of fringe.

1,156. **A good Early Pear.** The best early Pear ripening before the Bartlett is Beurre Gifford. It is of good size and of much better quality then Bartlett, but it grows very slowly and for this reason is not much planted. Clapp's Favorite is a very handsome large Pear of good quality ripening just before Bartlett but the tree is quite liable to blight and the fruit rots at the core and must be used as soon as ripe.

Doyenne de Ete is a very early and very productive Pear of fair quality but small. Osbands Summer is nearly as early, a little larger and a very sweet and pleasant Pear.

1,159. **About the Kelsey Plum.** The Kelsey Plum will not succeed in Massachusetts. It is only valuable at the South, The Botan would probably succeed in New England, and is a valuable variety.

1,167. **Black Knot on Cherries.** The Morello and Pie Cherries are most liable to black knot and the Dukes next, the Heart Cherries being least affected, but with a systematic and prompt cutting out and burning all the diseased wood any variety can be grown.

1,134. **Tree of Heaven** (*Ailanthus*) **for Canada.** At one time the Ailanthus was very extensively planted as a street tree, and would not now be so generally discarded if its flowers did not emit such an unpleasant odor, as they will thrive in almost barren soil.—M. B. FAXON.

1,135. **Making Insecticides.** One pound of pure Paris Green or London Purple mixed thoroughly with 100 pounds fine land paster makes a most excellent bug poison for Potato bugs. If you use Paris Green or London Purple in water use one pound to 200 gallons. M. B. F.

1,132. **Poultry Book.** "Wright's Practical Poultry Keeper" is a good work and can be procured of POPULAR GARDENING. Price $2—C.E.P.

1,137. **Sewer Gas and Plants.** What little sewer gas there might be would hardly injure the plants; perhaps they have either not enough or else too much water and no sun. It is impossible to advise without particulars. M. B. FAXON.

1,140. **Lily Planting in Spring.** Almost all Lilies will bloom a little the first year but as a rule one must wait until the bulbs are thoroughly established before a good quantity of bloom can be expected. It takes two or three years to establish a good blooming bed of Candidum or Auratum.—M. B. FAXON.

1,148. **Wild Cucumber Seeds Wanted.** The seeds can be obtained of any seedsmen at a cost of not over ten cents per package.—M. B. FAXON.

1,163. **How to start Early Potatoes.** About as good a way as any is to take an old sod, cut it thick and place in a shallow box grass side down; then cut your seed and place the cut pieces three inches apart on the earth side of the sod. Over all sift about two inches of good loam and place in the greenhouse or a sunny window until well started and you are ready to set the young plants in the open ground. Take a sharp knife and cut between the plants right through earth and sod and set out in rows as usual; the matted grass will hold the earth firmly together about the plant and success is almost sure. After a little practice it is easily done and with most excellent results. Some gardeners use pots but it is twice the work.—M. B. FAXON.

1,152. **Propagating Hardy Roses.** Hardy Hybrid Perpetual Roses can be propagated by any of the means employed for any Roses. Cuttings of this years' wood will root readily in sand any time after the wood becomes firm. Layering is usually the most satisfactory way for amateurs, as it is certain and requires less care and trouble.—M. B. F.

1,153. **Jackman Clematis Trimming.** If you refer to the shoots which spring from the base of the vine I would allow four or five of them to grow, that is if you have the space to train them.—C.E.P.

1,143. **Preparing Mushroom Beds.** Take fresh horse manure, and use nothing but the fine portion of it, shaking out the straw. Mix this with fresh loam, one part loam and two parts manure, and turn every day to keep it from burning, until the fiery heat is nearly all out of it. Prepare the bed about four feet wide, and as long as required; put in the preparation about eight inches deep making it very solid as it is put in. Let it remain in this condition until temperature has become reduced to 90°, make holes two or three inches deep into which put the spawn, in pieces about as large as an egg, and at a distance of twelve inches apart each way; cover the spawn and let it remain for eight or ten days, then cover the whole bed with fine loam to the depth of two inches, making it firm with the back of a shovel or spade. The bed must be in a covered situation, and the prepared soil kept free from the beginning and in a dark place with the temperature about 50°. If everything is favorable the mushrooms will appear in from six to eight weeks. As regards watering, every grower must use his own judgment —M. B. FAXON.

1,143. **Preparing Mushroom Beds.** This is not a good time to make Mushroom beds. I have had excellent success with beds made any time from September 1st to January 1st. My plan is to get a sufficient quantity of fresh horse manure, discarding all the long straw and as much of the short straw as possible, throw into a pile in an open shed till it commences to heat, then mix about one-third its bulk of sod from an old pasture, previously chopping the sod to pieces with a spade; as soon as it gets thoroughly heated through, turn it and mix it again. I find it best to let some of the rank heat pass off in this way before making up the beds, which is done in the following manner: Spread a thin layer of the mixture where you have decided on having your bed, then thoroughly beat it with a wooden mallet or brick till it is perfectly solid, then spread another layer and beat in the same way and so on till the bed is ten inches thick and as solid as it is possible to make it; now insert a thermometer in the center of the bed, the heat will perhaps rise to 120°, and then gradually subside; when it gets down to 85° it is ready to insert the spawn. Break the bricks of spawn into pieces the size of a pigeon egg, and insert one or two pieces into holes made about ten inches apart and two inches deep all over the bed, fill the holes with the mixture and get the bed as level as possible, then, let it remain two weeks, then cover with two inches of good fresh soil. If in a dark cellar with a uniform heat of 55 or 60°, you may look for Mushrooms in about from four to six weeks, if the cellar is not dark cover over the bed with six inches of straw or hay, if the cellar is not too dry no water will be required till the Mushrooms appear, but if the surface of the bed should get dry, sprinkle with water heated to a temperature of 85°. The greatest difficulty will be in keeping your cellar at the right temperature, if too cold the Mushrooms will probably not make their appearance till spring, and then the air will be too dry to get a fair crop. I grow them in a house built on purpose and heated with hot-water pipes, which makes a very simple affair—H. TONG

1,046. **Lawn Grass Seed.** If an honest seedsman is asked the direct question what is the best lawn grass, I think the reply will almost invariably be either "Kentucky Blue Grass and White Clover, or the Blue Grass alone," and that the "lawn mixtures" are gotten up to satisfy a demand from those who want to pay fancy prices, or to have an excuse for big profits.

1,114. **Onion Seed.** Probably it is not generally best to risk planting old Onion seed, but soaking in warm water will improve the vegetating power of such seed.

1,093. **Suitable Plants for a Rockery.** One of the greatest errors made in building rockeries consists in making a stiff and formal pile of stones. The principal beauty of a rockery comes from the rough and rugged appearance, yet it is possible to overdo it even in this respect, and it should be the aim to imitate the very best specimens of wild natural scenery. I think it is better to make up a mound of rich earth with some coarse material to prevent it from being too compact, and place the stones afterwards, filling earth among them. This allows more root room than beginning at the bottom with stones.—WM. F. BASSETT, *Hanmonton, N. J.*

1,146. **Best Early Tomato.** During the last three years the Mikado has been our best early Tomato, coming in last year 10 days before Dwarf Champion and 14 days before Optimus, planted side by side. We grow 8 or 10 kinds annually. I I find a great deal depends on the soil and situation; some early kinds rotting so badly as to be worthless here.—H. TONG.

1,158. **Destroying Moles.** Nothing better than a good trap. Procure one or two, and faithfully follow the directions which accompany them.—C. E. PARNELL.

1,168. **Gladiolus Changing Color.** There is a mistake somewhere. Your choice varieties must have become mixed with the red and yellow types and in planting you have selected the largest bulbs which almost invariably produce the red and yellow flowers. Another season store more carefully, and plant all the smaller bulbs. Your plants may bloom so late that the season is too short to enable them to properly mature the seed.—C. E. PARNELL.

1,154. **Renewing a Grape Vine.** The vine will make new wood if you do not cut it too close to the ground.—C. E. P.

Melon Forcing in England.

The cool, moist climate of Old England offers serious obstacles to Melon culture, but our British brethren, who like good Melons as well as do people favored with more suitable climatic conditions, know how to overcome their difficulties with good success, as our illustration of Melon house taken from Garden will show. It may be worth while to observe their methods somewhat, as showing what can be done by ingenuity and perseverance in overcoming natural obstacles, even if of so serious a character as England's eternal fogs and moisture. The variety is called Hero of Lockinge, considered the best for forcing in England.

The house is light, well heated and ventilated. Seeds were sown at the end of March in pure loam, and planted out at the end of April in the same kind of soil made very solid on a bed of hot manure and leaves, the main vines being tied to a stake leading to the trellis. All laterals were rubbed off as fast as they appeared. With plenty of heat and moisture these plants quickly filled their required space, when the ends of the main vines were pinched off to induce lateral growth. These laterals were allowed to hang down until they had set a sufficient number of Melons, and these were as large as cricket balls. As it is desired to have them all of even size, the small fruits were tied up first, leaving the larger ones hanging down until six even sized fruits were obtained on each lateral, all the rest being pinched off.

MELON FORCING: THE MELONS SUSPENDED FROM THE GLASS ROOF.

Abundance of warm water is required at this time, and occasional doses of warm liquid manure from the barn-yard may be given. When the Melons show signs of netting, less water and more ventilation is given until the fruits begin to ripen, and now the ventilators are left open more or less both day and night.

The fruit is supported with old strips of fish-net cut into 9-inch squares, a piece of string being fixed at each end and tied to the trellis thus forming cheap and safe supports for the fruit. This house contained twenty-six plants, carrying 160 good handsome fruits worth 3s. each in the market. They were ripe in fourteen weeks from the sowing of the seeds.

Labels for Trees and Plants.

Labels for Trees in Pleasure Grounds

While a ground label may be the proper thing for a young and choice tree in parks, etc., because another kind could not be affixed to it in a satisfactory way, a much better device for large specimens, simple and cheap, is made of a piece of tin about four inches long by three inches wide. Bend down about half an inch of the upper edge at a right angle, which will form a little coping for the label; then make two little holes just beneath this and pass a strong copper wire through them, firmly nailing it to the tree. This should be about 5 or 6 feet from the ground, and in a position where it can be easily read. Such labels last a long time and are safer from displacement or loss and hence more satisfactory than labels inserted in the grass at the foot of trees.

For garden plants, young trees, etc., strong but neat cast iron labels will be found serviceable. If you wish to get a stock of them for your choicer plants, make a model of wood, about 10 or 11 inches high, one inch wide at the shank, the head 4 to 5 inches across and 2 inches wide, as shown in engraving, and send it to the foundry. In writing these labels first write in the outlines of the letters, and then fill in rather thickly with finely strained paint. For ground color white is preferable to black. Write the common name first, then the generic name, then the species, and a little to the right below the genus. It is always desirable to put down the native country of tree or shrub, and date of planting. The writings on these labels should be occasionally renewed in winter.

Received at this Office.

CATALOGUES, ETC—FIGURES INDICATE PAGES.

J. C. Smith, Erfurt, Germany, Florist's supplies, 104.

T. S. Hubbard Co., Fredonia, N. Y., Grape Vines and Small Fruits, 20.

A. G. Hull, St. Catherines, Ont., Nursery, 20.

J. T. Lovett Co., Little Silver, N. J., Nursery, 80.

J. W. Hall, Marion Station, Md., Seed Potatoes, Seeds and Small Fruit, 12.

Haage & Schmidt, Erfurt, Prussia, Seeds, 186

Geo. Pinney, Evergreen, Door Co., Wis., Evergreens, 16.

M. J. Graham, Adel, Iowa, Nursery, 12.

Wiley & Co , Cayuga, N. Y., Nursery, 32.

John N. May, Summit, N. J., Roses, Wholesale, 8.

Thompson Bros., Lakewood, Cuyahoga Co., O., Nursery, 48.

Luther Burbank, Santa Rosa, Sonoma Co., Cal., Olives, Nut Trees, etc., 8.

D. Landreth & Sons, Philadelphia, Pa., Seeds, 48.

V. H. Hallock & Sons, Queens, N. Y., Seeds, Plants, Bulbs, 64.

Paul Butz & Son, New Castle, Penna., Plants, Flower seeds, 32.

Henry A. Aldrich, Neoga, Ills., Plants, Seeds, 64.

Harvey Bros., 227 Washington street, Buffalo. N. Y., Seeds, 82.

L. Templin & Sons, Calla, Ohio, Plants, Bulbs, Seeds, 88

W. H. Smith, 1018 Market Street, Philadelphia. Pa., Seeds, 104.

Floral Supply Co., Binghampton, N. Y., and Minneapolis, Minn., Flower seeds, 12.

M. S. Benedict, Crete, Neb., Seeds and Plants, 16.

A. B. Cleveland & Co., Cortlandt street, New York, Seed Specialties, 16.

Ellwanger & Barry, Rochester, N. Y., Roses, 28.

E. W. Reed, Bridgeport, Ohio. Small Fruits, Grapes, 32.

Lewish Roesch, Fredonia, N. Y., Grapes, Small Fruit Plants, 16.

Joseph Harris Seed Co., Rochester, N. Y., Seeds 72.

Price & Reed, Albany, N. Y., Seeds, 48.

M. B. Faxon, 21 South Market Street, Boston, Mass., Seeds, Plants. 40.

Michel Plant & Seed Co., 718, Olive street, St. Louis, Mo., Seeds, Plants, 44.

A. W. Livingston's, Sons, Columbus, Ohio, Seeds, 88.

Heemdeen Manufacturing Co., Geneva, N. Y., Magazine Burners, 8.

H. Cannell & Sons, Eynsford and Swanley, Kent, Eng., seeds, 160, Flowers, 300.

G. H. & J. H. Hale, South Glastonbury, Conn., Nursery, 32.

John S. Collins, Moorestown, Burlington Co., N. J., Nursery, 16.

H. W. Hales, Ridgewood, N. J., Chrysanthemum Novelty, 55.

James J. H. Gregory, Marblehead, Mass., Seeds, 52.

MISCELLANEOUS.

Minnesota Experiment Station, Bulletin No. 6. on Wheat Experiments, E. D. Porter, Director, St. Anthony Park, 58.

Michigan Crop Report, Nos. 82 and 89, Twenty-fifth Monthly Report of the Michigan Weather Service, Gilbert R. Osmun, Secretary of State, 28.

Department of Agriculture, Report, on the Numbers and Values of Farm Animals, etc., 48.

New York Experiment Station. The Utility of Experiment Stations, Address by Hon. W. W. Wright, 16.

Consular Reports for September and October, 1888, 400.

Illinois Horticultural Society, Report for 1888, Vol. 22, A. C. Hammond, Secretary, Warsaw, 340.

New York Market Quotations, Showing Tendencies.

	Week ending March 20.	Week ending March 6.
Apples—Spitzenberg per bbl.	$1 50@2 00	$1 50@2 25
N. Spy, per bbl.	1 50@2 25	1 50@2 25
Baldwin, per bbl.	1 25@2 00	1 25@1 75
Greening, per bbl.	1 25@2 00	1 25@2 00
Cranberries—Jersey, poor to choice, crate	75@1 75	75@2 00
Grapes—Catawba, per lb.	2½@ 4	2½@3½
Strawberries—Florida, per quart	40@ 80	30@ 75
Apples, evap't'd, '88, fancy per lb	6½	5½@5½
Evap'r'd,'88, prime to choice	5 @5½	5½@5½
Evaporated 1888, common	4 @4½	4 @ 5
Ohio and Michigan, qrs, bbls	3½@4	3½@4½
Chopped, per lb.	1½@1¾	1½@1¾
Cores and skins	1	
Peaches—Del., evap'r'd, peel'd,	6@ 16	15@ 16
Del., evap'r'd, unpeeled	5 @ 6	5 @ 6
North Carolina, peeled fancy	9 @9½	9½@10
Southern, unpeeled	3@3½	3@ 3½
Raspberries—evap'r'd '88,	17½@18	18@19
Sun-dried 1888, per lb.	16@17	16@17
Cherries—new, per lb	13@ 15	13@ 15
Huckleberries	10	10
Plums—State	6@7	8@ 9
South Damson, per lb,	6	7
Blackberries—1888, per lb.	4@ 4½	4½@4½
Potatoes—Long Island, 170 lb bik	2 00	2,00
Peerless, per 180 lb.	1 00	1 00
State Rose, per 180 lb.	1 25@1 50	1 25@1 50
State Burbank, 180 lb.	1 00	1 00@1 12
Sweet Jersey, fancy per bbl.,	3 00@4 00	3 00@4 50
" " " fair to good	2 25@2 50	2 25@2 50
Cabbage, Long Island, per 100,	3 50@5 00	4 00@5 50
Florida, per bbl.	1 00@2 00	2 00@2 50
Onions—Connecticut red, per bbl	75@1 00	80@1 00
Orange County red, per bbl.	50@ 75	50@ 75
State yellow, per bbl.	75@1 00	75@1 00
Eastern, white per bbl.,	2 00@3 00	2 50@3 50
Bermuda, per crate	1 40@1 75	2 00
Celery, L. I., per doz. bunches.	1 50@2 00	1 50@2 00
Turnips, Russia, per bbl.	40@ 50	50@ 60
Squash—marrow, per bbl.	1 75@2 25	1 75@2 00
Hubbard, per bbl.	2 75@3 00	2 75@3 25
Kale, Norfolk, per bbl.	75@1 00	40@ 50
Spinach, Norfolk, per bbl.	2 00@2 75	1 50@2 25
Bean, Florida, per crate	3 00@5 50	3 00@4 50
Beets—Bermuda, per crate	1 50@1 75	1 75
Florida, per crate	1 50@1 75	1 75
Tomatoes Key West, per box	60@ 90	60@ 90

The Eastern Flower Market.

Prices per 100 except where noted.

	March 20.	March 5.
Roses—Bon Silene	$ 1 00@ 2 00	$ 2 00@ 3 00
Perles	3 00 " 4 00	4 00@ 6 00
Gontier, Niphetos	3 00 " 4 00	4 00 " 6 00
Brides, Mermets	5 00 " 8 00	8 00 " 10 00
American Beauty	15 00 " 38 00	33 00 " 50 00
LaFrance	5 00 " 8 00	10 00 " 12 00
Jacqueminot	8 00 " 10 00	15 00 " 20 00
Lily of Valley	3 00	4 00
Lilium Longidorum	8 00 " 10 00	
Violets	36" 75	50 " 1 00
Pansies	50 " 1 00	
Marguerites (Daisies)	50 " 75	
Andiantums	1 00	
Smilax	15 00 " 20 00	

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. MAY, 1889. No. 8.

I saw the bud-crowned Spring go forth.
Stepping daily onward north
To greet staid ancient cavaliers
Filing single in stately train.
And who, and who are the travellers?
They were night and day, and day and night,
Pilgrims wight with step fortright.
I saw the days deformed and low,
Short and bent by cold and snow;
The merry Spring threw wreaths on them,
Flower-wreaths gay with bud and bell;
Many a flower and many a gem,
They were refreshed by the smell,
They shook the snow from hats and shoon.
—*Emerson*.

A PIECE of musquito netting placed over the hole in the bottom, and under the drainage material, will keep worms out of flower pots.

ASSOCIATION OF AMERICAN NURSERYMEN. The fourteenth annual meeting of this society will be held at Chicago, Ills., beginning Wednesday, June 5th. The Grand Pacific hotel will be headquarters; and hotel, hall and exhibition will all be under one roof. Secretary Chas. A. Green, Rochester, N. Y., may be addressed for particulars as to hotel and railroad rates. The society deserves the active support of every one who can lay just claim to the title "nurseryman."

THE ADIRONDACK FORESTS. Recognizing the senseless destruction of timber now going on in the north woods, and fearing the most deplorable consequences upon the meteorological conditions of the State, Garden and Forest favors and urges the purchase of the whole Adirondack region by the State, as the only plan by which the elimination of its attractiveness can be averted, and means provided for the permanent conservation of these invaluable forest. We second the motion.

A CORRECTION. In an issue of our last volume a statement appeared which did injustice to the new insecticide Peroxide of Silicates. We stand ready always to make amends for errors that may creep into our columns. In the case of this article which now comes well recommended by many cultivators, we are glad therefore to print the following letter from a well-known seedsman of Chicago. "Yours of 15th at hand Our experience with Peroxide Silicates has been very satisfactory indeed. Whenever tried by customers it did the work every time. Men who bought only small quantities at first, came back for more and in many cases their friends came in and asked for it. We tested it on our trial grounds with good results, and we believe it to be the best bug destroyer in the market. Yours truly, S. F. Leonard."

STAPLES ON DECK AGAIN. For regularity of appearance, the Blueberry man from Michigan may be likened unto "the flowers that bloom in the spring," etc. This time he comes up smilingly with a big two-column ad. in Garden and Forest, and the latter, to make the matter complete, might have given an editorial on the "Wonderful Blueberry and Its Cultivation," in the style of the Prairie Farmer, which endorsed Mr. Staple's new departure (advertising Lucretia Dewberry plants) with an editorial notice and an overdrawn illustration (probably furnished by Staples) of the wonderful Lucretia (we wonder if he digs his Lucretia plants in the wild woods as he did his "Blueberry," or rather common Huckleberry plants). For the undeniable fact that frauds of this class, in spite of all exposures, readily find new victims, the explanation is often ventured that the defrauded belong to the unprogressive of their calling, and have failed to acquaint themselves with the agricultural literature of the day; but what shall we say when a man like Staples finds it so easy to rope in publishers of "leading" journals, who are supposed to read up their exchanges, as for instance, Garden and Forest, and Prairie Farmer.

Angle Worms not our Friends.

PETER HENDERSON.

I noticed one of your correspondents, some time ago, said that angle worms were in no way hurtful to plants. It may have been that opinion that has induced several of your readers to again bring up the subject. There can be no question that they are hurtful, both in the open ground and in the greenhouse, not that they in any way feed on the roots, but they seriously disturb them, and besides, so honeycomb the soil in their movements that the roots must of necessity meet empty space, hence injury to growth; that together with the glutinous packing of the soil, is where the mischief is done. Did you ever see a professional gardener, even with five years' experience, who, finding a worm when knocking a plant out of a pot, or when digging in the ground, did not make short work of the "vermin?" Some one has said, may be with more poetry, than truth, that

"The meanest worm we tread upon,
In corporeal suffering feels a pang
As great as when a giant dies."

But the gardener is rarely influenced by any sentimental sympathy, and the older his experience the harder he is likely to tread upon the worm that has invaded his flower pot or his garden plot.

THE REMEDY. To destroy angle worms (for they should ever be destroyed if the best culture is desired) is, if to be used in the greenhouse, to mix about five pounds of lump lime with 20 gallons of water, stir it until thoroughly mixed, then let it settle, using only the clear water in which sufficient of the caustic quality of the lime will remain to kill the angle worms. Use enough of it to reach the bottom of the pot or the bench. Two applications will usually be sufficient.

When they are troublesome in the open ground, dust lime over a raked or harrowed surface sufficient to nearly whiten it, (about as thick as sand or sawdust is usually strewn on a floor), and as the worms come to the surface they are killed by coming in contact with the lime. It is a common thing for thousands of Cabbage and Lettuce plants that have been "pricked off"—planted closely together—in outside frames, to be destroyed in one night by angle worms; for though they do not apparently use them as food, yet they delight to draw up the newly set plants and drag them down into the soil, where from carelessness or ignorance the surface had not been sprinkled with lime dust. We have in our time planted many millions of such plants, but the angle worm has not often got a chance to devastate our work, for we rarely transplant small seedling plants of any kind in cold frames, without dusting the planted surface with lime dust.

Spring Notes on Grapes.

E. P. POWELL, ONEIDA CO., N. Y.

I have kept Herbert Grapes in good condition until March, and without special care except to lay them away in baskets in close drawers. This Grape I reckon to our very best late keeping black Grapes, while the Worden is distinctively the best early black. The latter ripening from September 1st to 10th, has a brittle skin and is not a late keeper, while the Herbert ripens about the 15th to 20th of September and keeps easily all winter. With equal distinctiveness I would class Gærtner and Brighton as the two best red Grapes for general planting. Although the latter colors before Gærtner, it does not mature its crop until October. Gærtner is fully ripe before 10th of Sept.

I should not find it as easy to confine myself to any two of the white Grapes; but would select Moore's Diamond for early and Niagara for late, yet would wish to add Duchess and Hayes. With this list of eight Grapes, I should feel that I had an adequate vinery for home use.

The only possible method of properly testing a Grape is by comparison. No doubt many persons who have only grown the Concord and some of the inferior older sorts, may be pleased with the Jessica, Ulster Prolific, Woodruff Red, and Prentiss. By comparative judgment I set down Prentiss as so very inferior in hardiness and quality that it should no longer be offered for sale. Jessica is a small white Grape with a small bunch, and at least one-half seeds. No honest judgment on the part of those who have grown largely the best varieties, can recommend this Grape for planting.

In my opinion, Woodruff Red has nothing more in its favor than that it is in large

Feeding the Orchard for Fruit. *See page 169.*

stock in the hands of our Grape propagators, and must be boomed to be got rid of. I do not deny that it is of good size and just decent quality. I have ripened it with sixty other sorts and discarded it wholly and emphatically. Who ever plants it for a choice Grape will be disappointed. Early Victor is also a very tolerable Grape with some good qualities, but quite unable to hold rank with Moore's Early or with Worden, and should be planted very sparsely. The bunch is small—an improved native.

Eaton is only a good-sized Concord, ripening a little later, and not as good in quality. Does not deserve planting. Empire State is a great deal later than it has been reported to be; and is not of the highest quality. I never found a purchaser who asked for it by preference, and "the boys never touch it." It withers soon after picking and loosens from the stem. Lady is first in quality but will not give good crops. Lady Washington does not ripen until October 10th to 15th—quite too late, and it is not then of first quality. Poughkeepsie Red and Ulster Prolific are only fairly good Grapes, and when tested beside a large number of others present no valid claims.

Of the newer Grapes probably Jewel will prove so very early as to receive a place. Moyer has nothing to show why it should be planted. The Nectar is another black Grape not as large as Concord, and like Concord, not by any means ripe when it first colors. It is in fact only one more late black Grape of moderate quality. Of the Witt Grape and the Green Mountain I have much better hopes. They are probably additions to our list of Grapes of sufficient merit to make them permanent in vineyards.

I do not raise a vine for sale under any considerations, and make my report from careful testing of sixty sorts side by side. It is provoking to find inferior sorts crowded on the market now that we have a list sufficiently long of really noble sorts. I might easily from my seedlings send out Grapes that would get thousands of commendations, but in my judgment not one of them is comparatively a gain on the best standard sorts. A new Grape should have positive qualities rendering it by comparison better than the larger majority of good Grapes. We do not need a new Delaware or a new Concord. Worden came in as ten days earlier than Concord, ripe and sweet as soon as colored, and enormously prolific. It was assigned a special place, and it has filled it well.

It is desirable that millions of vines be planted about American homes this spring, as educators of popular taste, and as promotors of health. It is better to plant vines than to run up doctor's hills.

Manure the Corner Stone of Success.

WM. H. YEOMANS, TOLLAND CO,, CONN.

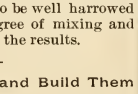
If there is one point that requires attention in the preparation of the Vegetable Garden, more than any other it is its fertilization. However important tillage may he, no amount of it can compensate for a lack of fertility. The desirable qualities of crispness, tenderness and superior size in vegetables can he attained only hy means of inducing rapid and vigorous growth, but this is not possible on a poor soil.

Market gardeners understand this thing fully and one might sooner expect to catch a weasel asleep than a market gardener planting vegetable seeds in a soil that is not sufficiently fertilized.

Thoroughly decomposed and composted manure has always heen looked upon as the best that could be employed and scarcely any limit was fixed to the amount. We have always found well composted night soil and hen manure, when applied liherally, are excellent fertilizers. Commercial fertilizers applied with manure give a vigorous start to vegetables. While plenty of manure is desirable, it is also necessary that the same should he thoroughly mixed with the soil, and it is well to plow in a portion, plowing quite deeply, and to spread the balance upon the surface to be well harrowed in. The greater the degree of mixing and pulverization the better the results.

Befriend the Birds and Build Them Houses.

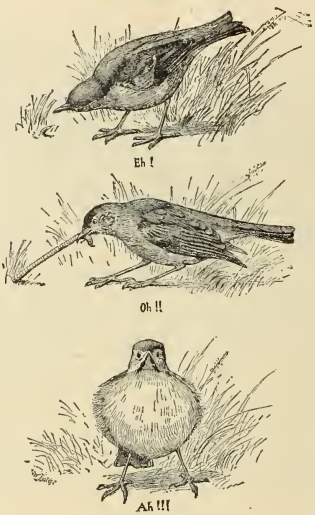
We are apt to magnify others' faults, and think lightly of their virtues. Under this only too common disposition of the human animal, the songsters of our woods and fields and their reputation has had to suffer quite seriously in recent years and the grave charges frequently preferred against them at our horticultural meetings often make the case look pretty dark for them.



A Cheap Bird House.

Birds do eat fruit. Why should we deny it? They deserve them, too, not only for that feature of gay life that adds variation, interest and endless attraction to our lawns and orchards, not only for their sweet notes that delight our ears, but also for the practical fact that hy the destruction of insects they save us more fruit than they themselves consume.

At times, it is true, they become troublesome hy excessive numhers and then fruit-



Merry Spring Time.

growers may be compelled to resort to violence. But the poison and shot gun policy should be reserved for cases of extreme necessity. Under ordinary circumstances the fruit grower hardly ever misses the few herries they take, although it is true Cherries often suffer.

Sometimes a rough imitation of hawk, owl or other bird of prey hung into the tree, a little windmill with rattle or bell attachment, some pieces of looking glass, etc., fastened or swinging about here and there may keep the marauders off. We also see it stated that birds eat Strawberries only when tormented hy thirst in a hot glaring sun, and that a pan of fresh water placed in or near the patch and occasionally renewed, will furnish the birds with what they desire and save the berries. We have some faith in this device from the fact that our family fruit patches, when we had them near a brook of fresh, sparkling mountain water, were never visited to their serious injury hy birds, although the latter abounded in the vicinity.

Certain growers claim that their sole reliance is in poisonous sprays and that we can dispense with the services of birds as insect eaters. What of that! We do not want the earth and what would our orchards fields, woods and lawns be worth without bird life? A live quail in the fields is worth more to the farmer than a dozen dead in the huntsman's pouch. A live robin on the lawn pulling up the earth worms and hunting for gruhs and cutworms is worth more than all the stuffed birds on the bonnets of heautiful womankind. A hoggish disposition only can begrudge a few herries in compensation for all the good services that the birds render us.

Let us build them houses and invite them to make their homes in our orchards and around our buildings where they will enlist our children's interest and solicit their watchful care.

Mrs. Reynolds, one of our subscribers, sends us the following description of a cheap bird house: "Get a cigar hox about four inches high. On the top of front side cut a hole about two inches in diameter. Tack a small piece of tin under this opening and hend it out for a step. Nail a piece of thin board on the hack of the box, allowing it to project ahout two inches ahove its top, then nail on the cover and paint like the cornice of your house and fasten hy the projecting end of board."

Notes from the Popular Gardening Grounds at La Salle-on-the-Niagara.

For the benefit of many new subscribers we will here repeat some information pertaining to the POPULAR GARDENING experiment or test grounds, known as "Woodbanks," and located at La Salle-on-the-Niagara.

These grounds are situated in the heart of the fruit region of Niagara County, N. Y., 17 miles from Buffalo and six miles from Niagara Falls, Thirteen acres of land are comprised in the place. It is the design that every rod of the area shall be managed solely in the interests of the readers of POPULAR GARDENING AND FRUIT GROWING. The home of the editor is on the grounds, as also is the editorial office of the journal. Whatever, therefore, may be said in just reproach of those rural journals which are edited and managed in cities by "sidewalk farmers," will not apply to the present journal,in the midst of a famous fruit and marketing region for not only is it edited on a rural home, but every member of its staff is a practical horticulturist, who divides his time between the field and the editorial office.

The Nature of the Work. The nature of the work to be carried out here is in the direction largely of testing all new fruits, vegetables and ornamental growths as they appear, with a view to comparing them with the older standard sorts, and to give in the columns of this journal reliable unbiased reports on the same. Much attention will also be bestowed on trying and reporting on new implements, appliances and methods of horticulture, and of fertilizers, remedies for plant diseases, insects, etc. Stress is laid on the fact that all operations will be conducted on the plane of ordinary horticultural practice, employing the means usually at the command of cultivators, but striving for profitable improved practices. Those who visit the grounds, therefore, with the idea of meeting an extreme system of culture impracticable to the average grower, may expect certainly to be disappointed.

We desire to state explicitly that the grounds, aside from affording material for this journal, are always open to the public on week days, and our readers especially are invited to come and see and study as they have opportunity. A consideration in deciding on the present location was its superior accessibility to the travelling public. Here we are almost midway between Buffalo, one of the great railroad centers of America (more than 22 railroad lines center at Buffalo), and of Niagara Falls, the mecca of travelers from the world over, with twenty trains stopping daily at La Salle-on-the-Niagara from both points. As our work progresses therefore we hope to have the pleasure of greeting multitudes of our friends directly on the grounds. But for all readers we expect to conduct a monthly chat about our work in these columns which shall as far as possible keep them informed of what is actually occurring on the grounds.

Present State of Work. What could visitors hope to see on the POPULAR GARDENING grounds in this year of 1889? Not much of finished work perhaps, but a most earnest and promising beginning that cannot fail to prove interesting to all horticulturists. It must be borne in mind that it is less than one year since this farm was purchased by the present owner. To give an idea of the stock that is being planted the present season will perhaps best convey information of the work now in hand.

In the fruit department the following stock is at this writing mostly on hand from nurseries widely apart and the planting well under way:

Strawberries, 107 varieties, 8 plants each.
Raspberries, 44 varieties, 5 plants each.
Blackberries, 23 varieties, 5 plants each.
Currants, 10 varieties, 5 plants each.
Gooseberries, 24 varieties, 5 plants each.
Grapes, 103 varieties, from 1 to 5 plants each.

Apples, 75 varieties, 1 and more trees each.
Pears, 51 varieties, 1 and more trees each.
Plums, 46 varieties, 1 tree each.
Cherries, 26 varieties, 1 tree each.
Peaches, 40 varieties, 1 tree each.
Apricots, 9 varieties, 1 tree each.

In addition to the foregoing, Mulberries, Almonds, and other nut-bearing trees in variety are being planted, and a select list of Russian fruits from Prof. J. L. Budd the specialist in these, residing at Ames, Iowa. As far as possible every novelty in fruits that has been advertised in the rural journals this year, has been ordered for testing, and many others not yet so advertised. All this is but a beginning.

In the culinary vegetable department we ordered freely of both novelties and standard varieties from the catalogues of the leading seedsmen,and these will be carefully grown and reported on.

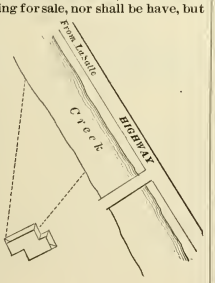
The ornamental department of these grounds is to occupy nearly one-sixth of entire area. Special pains are being taken to make it instructive to the masses for encouraging the more general adornment of rural and suburban homes with trees, shrubs, lawns, etc. For the extent of ground to be devoted to this branch the largest possible assortment of stock that can be accommodated is being set out. Without going into details it may be said that this spring's nursery orders called for stock for this department as follows:

Deciduous trees, 153 in almost as many varieties.
Deciduous shrubs, 441 (1 to 20 per each variety),
Evergreen trees, 207 in large variety.
Climbers in large assortment.
Hardy Herbaceous Perennials 182, mostly one of a kind.
Lilies, 24 species and varieties.

Besides a varied assortment of aquatic and bog plants, bulbous plants, annuals, Ferns, Hardy Orchids, wild garden flowers, etc. Fortunately the woody banks of the Cayuga Creek, which skirts one side of the farm, and from which it receives its name "Woodbanks," is rich in a large variety of native trees, numbering up into the hundreds. Numerous grasses, both separately and in mixture, are being tested in lawns.

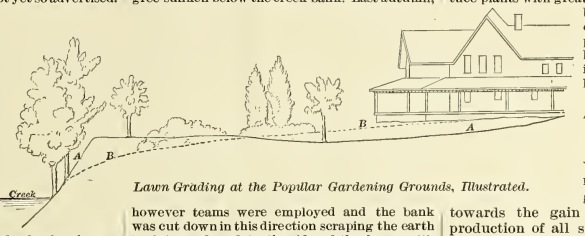
Nothing for Sale. Let no reader get the idea that a commercial nursery is being established on these grounds, after the manner of certain nursery and seed houses from which periodicals are published as advertising adjuncts. Nothing could be farther from the truth in our case. We are growing stock purely for tests and experiments, and in no instance can our reports on such be biased by trade considerations, for we have absolutely nothing for sale, nor shall be have, but this journal.

An Illustration in Lawn grading. One feature of the work now almost completed at "Woodbanks" we desire here to describe and illustrate, as strongly confirming the position more than once taken by us, that some attention to grading and otherwise improving the home surroundings is profitable as a matter of dollars and cents. No doubt in the case of the mjority of country homes, the difference between spending some money in fitting up the grounds about the house by judicious grading and tasteful ornamental planting or not doing so, would make a differance amounting to many times the cost of such improvements were the place ever to be sold. It is a point not enough appreciated by land owners. Let us show its force as applied to "Woodbanks."



In the upper engraving is shown in cross sections the location of the editor's home on these grounds fronting on the Cayuga creek, and in the lower left-hand cut its position relatively to the highway, the bridge etc. While a former owner had so graded a narrow strip between the house and the bridge as to afford a slight fall from the former, yet in the direction of the highway towards La Salle, (indicated by dotted lines in the lower cut) no thought was had to this although here should be the most commanding view of the house from the highway.

As has before been intimated the land here slopes back slightly from the brow of the creek's bank, This is shown by the line *A A* in the upper engraving. Previously therefore this house as seen from the highway towards the La Salle appeared to poor advantage being in a degree sunken below the creek bank. Last autumn,



Lawn Grading at the Popular Gardening Grounds, Illustrated.

however teams were employed and the bank was cut down in this direction scraping the earth back towards and to the side of the house with the desired effect of completely *reversing the slope* in this part of the grounds, exactly as shown by the line *BB*. At the highest point the soil to fully three feet in depth was cut down. A number of trees also were sacrificed, a loss that was as nothing compared with the general gain for appearances, which was so striking as to be commented upon by all passers. The front slope (dotted line *BB*) now devoted to a lawn, is easy and graceful in outline from the house to the waters edge, and raises the house into prominence where before its foundations were hid from the highway. The effect from the residence is equally improved. The young trees and shrubs located on the curving slope show to superior advantage, and the improvement simple as it was undoubtedly has added hundreds of dollars to the value of the place.

But this is not all. On the opposite side of the creek and highway is a considerable tract of land sloping towards the creek which the owner contemplates cutting up into building lots, and selling. So marked has been the improvement referred to on the general appearance of the locating, that this neighbor has been reputed to have said that the work is worth a thousand dollars for the sale of his own land. What did the work to which we allude cost? Independent of the planting but three weeks labor by man and team at $18 per week, total $54. We believe that nine persons in ten would estimate that all in all the gain has been more than twenty-fold.

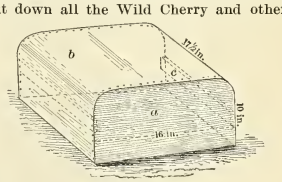
Tools of Tillage. Perfect tools give perfect cultivation. Our grounds now present an illustration of this fact. On soil like ours, a strong loam underlaid with clay, sub soiling is next to indispensible for best results, and so the Wiard subsoil plow has been made to do its work, following in the furrow freshly thrown up by the common plow, on perhaps two thirds of the 13 acres. The Disk harrow (Corbin's flexible) now run repeatedly over the plowed land, cut up four inches or more in depth, breaking lumps, mixing, levelling and grading, and giving the whole surface a presentable shape. Then came the Meeker harrow (four sections of small disks a total of 54;) and for a tool to give the finishing touch, nothing better need be looked for. In the preparation of the soil for sowing it enables us to dispense with the steel rake altogether, making as nice and smooth a seed bed as we could wish. To sum up, the proper use of the tools named has given us a soil stirred to the depth of full 16 inches, with the upper half thoroughly fined and pulverized, and a surface smooth enough for lawn, and mellow enough for the proper reception of the finest seed.

Cabbages in Drills. Following a custom adopted years ago, we again sow Cabbage seed thinly in rows, with the intention of gradually thinning them to the proper distance apart in the the row, and letting them head right there. A row of Radishes planted between each two rows of Cabbages will come off in time to give the latter the sole occupancy of the space when needed. This method requires considerable seed, but insures comparative immunity from bug and maggot attacks, as all the weakly and affected plants come under the thinnings, and the thriftiest and unaffected ones are left to grow. At the same time we shall set plants grown in frame and transplanted and hope to be able to tell our readers how great, if any, is the gain secured by the latter plan. We have but one aim, namely, to learn the best method.

Lettuce in Drills. The same method of planting in drills, and giving proper space for head, by gradual thinning, we also follow in case of Lettuce. The thinnings may be utilized for the table, as leaf salad, just as the Cabbage thinnings may be used for greens, or be thrown into the poultry yard, (fowls eat young Cabbage and Lettuce plants with great avidity, and considerable benefit). The market gardener can not practice this plan, nor afford to spend his time in gradual thining. He is after early marketable crops.

A Simple Plant Protector.

The natural and universal desire of both market and home gardeners, is directed towards the gain of a little time in the production of all sorts of vegetables, and many devices are used to obtain that end. We start Lima Beans, Cucumbers, Melons, Squashes, etc., on pieces of inverted sod in a hot-bed; we push Tomato and Pepper plants far ahead, before setting in the open ground, and even than our labor often comes to naught, when a late cold snap, or stormy chilly wind touches the tender plants, or worms and bugs find and destroy them. To give early tender plants full protection against all foes, Mr. Joseph Harris in his catalogue, recommends the simple device which we have illustrated. It consists of two pieces of ¾ inch board, (*a* and *b*) as end pieces, with slightly rounded corners. A strip of cheap muslin is tacked over them, and kept taut by narrow pieces of board (*c*) braced in between the end pieces. Dimensions are given in the illustration. A protector of this kind set over a Tomato plant, a hill of Cucumbers, Melons, etc., will prove more than a protector in name, when the hungry cut worm and the hordes of striped beetles are looking for prey, or when a late frost threatens destruction. In storing and shipping the braces are removed, allowing the end pieces to come together, thus making a package requiring very little room.



A Simple Plant Protector.

Wild Fruit Trees and Caterpillars.

In response to the direction frequently given that roadmasters and others should cut down all the Wild Cherry and other native fruit trees they can, a writer to the Journal of Agriculture says:

Look before striking a blow at a native tree. Our fruit and fruit trees are all injured more or less and sometimes destroyed, because the forests are fallen and the wilds all plowed up. The destruction of their natural homes does not destroy these insects, but only compels them to seek new homes amid our orchards and gardens. But the great destruction of all our forests is also breaking up the homes of our friends and helpers—the birds, who being stronger of wing and of a higher organization, leave us—thus breaking up the equilibrium of nature, and seek homes in the recesses of the

rivers and mountains, spots where the hand of man cannot destroy. Therefore, insect life multiplies to the almost complete destruction of this necessity of the health and happiness of the human animal.

The "tent caterpillar" uses the Black Walnut tree as its choicest harbor. Cut them down and these pests make the Apple tree their next choice.

The Black Locust is the choice tree upon which the "horer" operates. Cut them, and the borers attack also the Apple tree.

These three of our most valuable trees—Walnut, Locust, and Cherry, are among the greatest harbors of our enemies, and at the same time protectors of our orchards. There are also many plants and flowers in nature called by naturalists "carniverous" which are appointed by nature to keep these insects in check and which cultivation necessarily exterminates. Who of you early settlers that does not remember with a sigh of regret the beautiful fruits in perfection that we first enjoyed while yet half the wilderness remained? The air was filled with the music of birds—where are they? Few remain.

Where are the beautiful flowers that adorned the prairies and made the heart of man happy and joyous? All gone, except a few poor specimens starving for society in some neglected corner. What have we in return? Dry, hot summers, half crops, withered vegetation, a few stunted fruit trees constantly decreasing when they should be flourishing in youth, and beauty. Sickly desolation instead of the former freshness and loveliness. To bring back the former state of luxuriance, instead of cutting down and cultivating every available spot that can be spared; protect what few birds we have and try every means to induce others to come and help us to recover the equilibrium of nature.

Another New Gooseberry.

The variety introduced this Spring by John Charlton of Rochester, under the name of Golden Prolific, is an American Seedling, but undoubtedly of the English type. Its foliage is a dark dull bluish-green, and its wood when young unusually spiny. The fruit is large, of a deep golden yellow and good quality. The plant seems to be a prolific bearer, and less liable to mildew than most English sorts. The introducer, who gives us this discription, although having great faith in the merits of this fruit, writes that he does not wish to speak extravagantly in praise of any novelty until it has been subjected to more tests than the Golden Prolific has as yet been given. It is being tried at the Popular Gardening Experiment Grounds.

Peach Yellows: The Point of View.

The criticism of Professor Smith's paper on Peach yellows in the February number should be considered solely from the standpoint of eastern people, and in relation to the version of the question given on New Jersey soil where Peach trees affected with a disease having every known symptom of the true yellows have so often been permanently cured by the potash applications. Any man will believe his own eyes quicker than he will the report of other people, especially at a considerable distance.

The disease raging in Michigan (we have no reason to doubt the testimony given by Michigan Peach growers) must be of a much more virulent and malignant character than the New Jersey yellows, and if it, for some reason, cannot be stamped out by the remedies often used in the east with telling effect, nor with any others, why, the axe must have its sway.

But don't let us compel New Jersey people to cut down their diseased trees, when the latter, in the great majority of cases, might be cured by such simple means and made to bear fruit for many years to come. Fooling with trees nearly dead, will pay no more in New Jersey than in Michigan.

Spraying Fruits Warmly Recommended.

J. N. STEARNS, KALAMAZOO CO., MICH.

After having experimented with spraying Grape vines, Apple, Pear, Plum, Cherry and Quince trees, I am fully convinced that a little time can not be employed to greater profit to the fruit grower than that spent in spraying all kinds of fruit trees with arsenical poisons. I like London Purple as it stays in solution best, and I will here say, there is more danger in getting the solution too strong than not strong enough.

One pound of good London Purple is sufficient for 200 gallons water, for Apples; for Plums 50 gallons more of water should be added. The experience of others seems to correspond with my own, and proves that spraying not only heads off the Codling moth, hut appears to destroy the fungus, which produces the scab, or black spots on the surface of Apples and Pears. It is also sure destruction to the slug, which is so often destructive to the leaf of the Pear, Plum, Cherry and Quince.

For the Apple, Pear and Quince the spraying should he done very soon after the blossom drops, and if thoroughly done, and no heavy rain immediately follows it will he found effectual, although it will pay to repeat the application about ten days later. Plums and Cherries should be sprayed once before the hlossom hegins to fall, and followed up once a week for six weeks.

Of a large crop of Pears we raised the last season, and sprayed as above, we had none wormy or scahhy, and no worms in our Cherries.

The fruit will also bring a better price, hesides the pleasure in handling such fruit. I am now using the Nixon Nozzle, which I much prefer to any I have seen, as it cuts the spray up to such a perfect mist there is no danger in injuring the foliage.

Notes on Fruits.

SAMUEL MILLER, MONTGOMERY CO., MO.

Within the last ten years we have had several winters that played havoc with the Apple orchards, even as far south as Northern Illinois. It was thought that the new Russian varieties would fill a great need; but some disappointment has heen experienced with them. Some are subject to blight; few seem to be long keepers, while, as a rule, they are sadly deficient in quality.

I notice that some have adopted the mode of growing hardy Russians for stock, and top-grafting them with our best varieties. This will be a great help, no douht.

Some forty years ago I saw in an old pasture field in Lehanon Co., Penn., three Apple trees, at least thirty inches in diameter, each one having quite a bunch ahout two feet from the ground. From the owner I learned that these three trees were grafted above ground, while the rest of the orchard were common root-grafted trees from the nursery, and the latter have all died and were removed years before, while the three remaining looked as though they might last ten or twenty years longer. Whether they had heen grafted on natural stocks, or on the same as the others, he could not say; nor does this make any difference.

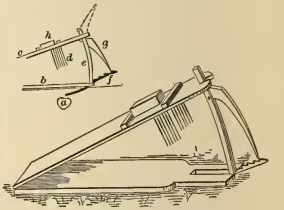
Some varieties are much hardier than others; and if the hardy kinds are used for stocks, and the choice ones top-grafted on them, they will also be much hardier than on their own foundation. I have seen a top of a tender variety fresh and sound, and leaving out in spring where the stem was so damaged by the cold that the tree died. Observation also teaches that top-grafted trees come into bearing earlier than those grown from the root. Top-grafting seems to have the same effect as girdling. It somewhat retards the return flow of the sap and forms blossom buds.

Some of the hardy Russians that are suhject to blight might he used if they remain healthy long enough to take a graft. I once imported a lot of Dwarf Pear trees from France, thirty-two varieties, some with names as long as my arm. Some did well while others were utterly worthless, soon attacked by leaf blight and bearing scahhy and cracked fruit. Upon some of the most affected I grafted Autumn Melting; the grafts grew well. Some of the limbs had perfect foliage and splendid fruit, while on the same tree and almost touching were the miserahle, scabby, cracked Pears and deseased foliage. This shows that an unhealthy stock can he improved hy putting a healthy top on it.

From present indications we will have a fair chance for another crop of fruit. The crop of Apples last year seems to have overstocked the market here and ahroad. The great trouble is to get the fruit among the people, for there are thousands who seldom get an apple, simply because the railroad freights, commission, and retailer's profit make the price too high for the poor class to huy, even if the producer don't get even a paying price for his fruit.

I would advise any one going into the fruit business to look well to the outlet for his production, as it is the chief matter of importance to sell at a paying price.

It is a mistake to think that the large city is the place to sell best. The reverse is the case. I live hut one hundred miles from St. Louis, and have heen growing fruit here for nearly twenty years, yet in all that time I only sent five consignments of fruit there, and each time received less for it than in the smaller towns in the interior of the state. Neither was my fruit of inferior quality, for I don't send that kind. Plant



Home-Made Mole Trap.

good varieties, cultivate well, don't let them overhear; then sell as near home as possihle, avoiding express charges, commission, etc. As a rule, these two items take half of the receipts, while the grower has to raise, gather, and pack for the other half. The man who can devise a plan, whereby the grower can obtain what he earns in growing fruit, will deserve a monument.

The home market gives the profit; last summer Wild Goose Plums rotted hy the bushel under my trees, because they only brought $1.00 in the city, just what the hoxes, express charges, and commission amounted to. I sold a few at home, hut gave many more to the neighhors. If I could get a dollar a hushel for Wild Goose Plums, would undertake to make a fortune in ten years out of them.

How to Catch the Ground Mole.

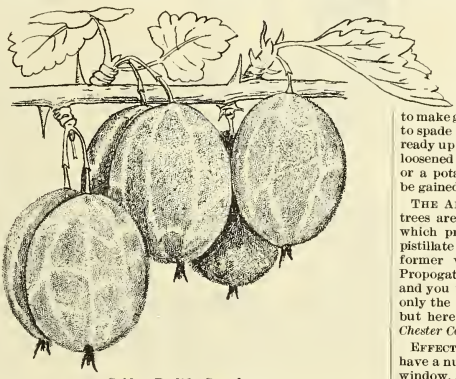
Living almost exclusively on a diet of grubs and worms, the ground mole as an eater is really a friend of the gardener, but in its efforts to procure its food, and as a burrower, it often hecomes very troublesome,

especially on sandy or mucky soil, and on well-kept lawns, so troublesome indeed, that we must find means to get rid of the little nuisance.

All the traps now being made work pretty much on the same principle; and good, effective and reasonably cheap ones can be had at almost every hardware store. One of our former neighbors, on New Jersey's sandy soil, used the home-made contrivance here illustrated, with very good success. Two pieces of inch board, of the shape showu, seven inches wide and thirty inches long, are hinged together on one end. The iron trigger is ten inches long, its lower end somewhat like a flattened spoon or paddle and the upper end notched as shown. The upright post is curved to correspond with the sweep of the top board. On each side of the top are six teeth, either fastened directly on the board, or riveted on a plate an inch wide and screwed on the board. The top board is weighted with a brick, a flat stone, or a chunk of wood.

Before setting the trap put the foot firmly upon the part of the mole track upon which the trap is to rest, for the purpose of obstructing the run. Also press the teeth down into the soil, so there will be no obstruction when the trap is sprung. Then set the trap as shown in cut. The paddle part of the trigger should touch the surface of the ground exactly over the line of the track. The mole finding his accustomed path filled up, at once begins to re-open it, and heaving up the surface, springs the trigger, and is pierced by the teeth on one side or the other.

Moles are especially active in making new runs right after a rain; and where they are abundant, many may be caught by watching for them at that time, with spade in hand. When that heaving up of the soil is noticed, trust the spade into the ground behind the mole, throw out and kill it.



Golden Prolific Gooseberry.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

No Curculio Proof Plum. The Wild Goose and Botan are practically curculio-proof, and the latter has, in some places at least, borne enormous crops of large handsome Plums of good quality, commencing to bear when quite small. Spraying the trees with arsenical poison may prove an effectual remedy for curculio, although it is yet a little premature to depend upon it, but I have no faith in jarring the insects on sheets as a universal remedy. In large orchards of Plums where it can be done on a large scale and to the best advantage, it may and probably does pay.

Tartarian Honeysuckle for Hedges. If this shrub is to be used for this purpose (and it has some very good points, among which its full foliage, which comes out very early in the season, is not the least) some rapid and cheap plan of propagation is needed, and sowing seed just meets this acquirement. Sow the seed as soon as ripe in boxes of earth and place in the shade, giving the proper attention to watering, etc.; and the plant will grow a few inches the first season, and in three years a good sized hedge can be made.

Rogers' Hybrid Grape Goethe. This Grape has not been so generally disseminated as some other members, but it has more of the meaty character of the foreign varieties than any other hybrid I have ever tasted except Jefferson. It is very large and quite good even before it is fully colored, and the vine is a strong grower.

Apple Tree Borers. Having a valuable Apple tree which seemed likely to be destroyed by borers, and not being able to reach them with a flexible wire, I concluded to try suffocation, and banked the tree with coal ashes high enough to exclude the air and leave no room for discharging the chips, and I have seen no borers since.

Transplanting at Night. I have no doubt there are advantages to be gained in planting at night, but I do not think the absence of light has any important effect. The damp atmosphere and immunity from the direct rays of the sun are the chief factors, and these points can be gained in cloudy weather, and to a great extent during the early morning and late in the afternoon. It is undeniably a logical inference that what is best for the amateur in planting trees is best for the nurseryman, but it may not be possible for the nurseryman with his extensive planting, to complete it all in proper season if he only takes the short time which may happen to be exactly suited to the work. I am a nurseryman myself, but when I have any extra choice or valuable stock to plant, I do not do it while the sun is shining with a full blaze, or the wind blowing hard.

Arbor Day Planting. One serious difficulty with Arbor Day here has been that it comes too late, and when trees are too far advanced. It would be better for each county to fix upon the day best adapted to that particular locality.

Japan Persimmons. What is to be inferred by S. Miller's remark "If we can get a hardy one with the size of the foreign and the quality of our own?" Our native Persimmons are edible in their best varieties in their best condition, but that is about all that can be said of them in their present state of development, and in view of the claims which have been made for the Japan sorts this looks to me like a pretty hard hit upon it.

Horticultural Literature. The allusion to the ignorance of Grape growers upon subjects fully treated and explained in all our prominent horticultural journals touches the key note to a very large portion of the unprofitable farming and gardening of this country. It is a very poorly conducted agricultural paper that does not give plain, direct and explicit information enough in the course of a year to pay the subscriber for its subscription price, but it is not in this alone or chiefly that their readers derive benefit. Failure in all branches of business is mainly the result of mistakes, and it is pre-eminently so with tillers of the soil; and in these days of sharp competition and close margins, those who commit serious blunders are sure to "get left," and the comparison of views and habits of thought induced by reading sharpen up the intellect to see the best and cheapest methods. There is another point in this connection that is worth considering. The man who carefully reads several horticultural journals will be much better qualified to place the proper estimate upon the descriptions of novelties which are brought out in such numbers, and will often save much more in this way than the cost of half a dozen journals. Among the large number of catalogues I receive every year I can tell at once which are intended for customers who read horticultural journals, and which for circulation among those who read a country paper or a sensation daily.

The Ohio Raspberry. It seems to me that the difference in the weight of seeds in the Ohio and other varieties ought to condemn that variety, and those who buy the evaporated fruit should learn to distinguish it, and force the price down. I planted a few of the Ohio here several years ago, and it was so plainly seedy that I threw it out after one year's fruiting.

Grape Training. All our extensive growers here have trained their vines to single stakes for years but generally they only plant about six feet apart. Our Italians almost invariably practice the renewal system, allowing two canes to grow up from near the ground each year. These are cut off in spring at about four feet, and after fruiting are removed entirely and new canes take their place for fruiting the following season. There is another advantage in this single stake plan—it admits of cultivating in both directions. —*Wm. F. Bassett, Hammonton, N. J.*

Lettuce on Frozen Ground. Take an old tin pan, grub up enough frozen ground to fill it and set under the stove to dry; when it is dry, reduce it to powder. On some sunny morning when the ground is slightly thawed, select a warm spot in the garden and with a pointed stick scratch some drills nine inches apart, and scatter curled Silesian Lettuce seed therein. Cover it with the dry powdered earth, and leave until time to make garden. By the time the ground is ready to spade or plow, the Lettuce will be found already up and growing. The ground can then be loosened between the drills with a narrow hoe or a potato hook. From one to two weeks can be gained in this way.

The Ailanthus for Rapid Growth. These trees are of two kinds, the staminate or male which produces flowers but no seed, and the pistillate or female which bears seed. It is the former which produces the poisonous odor. Propogate from cuttings of the pistillate plant, and you will have no bad odor. In some parts only the staminate plant has been introduced, but here both kinds are common.—*H. A. G., Chester Co., S. C.*

Effect of Electric Light on Plants. I have a number of tulips placed on a shelf, in a window, and fully exposed to the rays of a four-light Brush electric light tower only 200 feet distant and burning all night. The tulips close at night as usual, and in no way show any effect of the bright light. I have also a pear tree so situated as to receive the full force of the light but fail to see that it effects it in any way.—*L. B. Gilmore, Wayne Co., Mich.*

Sports among Gladiolus Seedlings. The cases mentioned lately in Popular Gardening of the appearance of double flowers in Gladiolus are such as come under the observation of all who raise numerous seedlings. The first instance I remember to have seen was in the variety named Ulfius, a very striking and beautiful kind, whose flowers were pink abundantly striped with brilliant scarlet. After a few years it began to come with eight or ten petals, and finally nearly every flower was as fully double as could be imagined, especially the upper ones, which, in some cases, had forty or more narrow petals, all closely packed together. As the doubling proceeded the scarlet stripes faded out and this originally excellent kind became utterly worthless. Since then I have had many partially double Gladioli, but have kept none of them, for this flower is not improved by doubling. Some other curious seedlings have appeared from time to time; one has its petals folded in the bud like those of a Poppy; another has a flower crimpled all over, like crape; a third produces two flowers from every spathe, and a fourth has the spathes confluent from the base of the spike to the tip. Of these the third mentioned is really valuable, for the double allowance of flowers makes the spike a solid mass of bloom. As for the "blue" gladiolus which M. Lemoine is said to have raised, I propose to be somewhat skeptical until I have seen it. Kelway describes several of his varieties as having blue centres or blotches, but I have found his *blue* to be nothing more than a gray-purple.—*W. E. Endicott, Norfolk Co., Miss.*

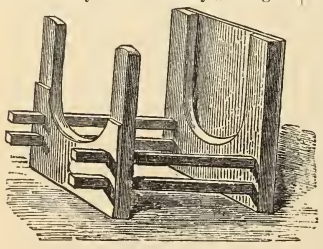
Japan Quince for Kitchen Use. Last autumn we left the fruit, it being especially fine and nearly as large as medium-sized Roman stem Apples, on the bushes until hard frost. When fully matured, sometime after picking, they had a little of the true quince fragrance, but proved too sour for preserves. So I put some in Apple marmelade imparting to it a sprightly and delicate quince flavor. The cores were as large as the fruit pictured in January number, and as full of large plump seed as an egg is of meat.—*Sarah A. Pleas, Henry Co., Ind.*

Get Ready for the Codling Moth and Curculio

Our insect foes are now ready to put in their destructive work, and the orchardist, if he desires to save his fruit in that condition of perfection which alone can insure him profitable returns, must prepare to meet them with poisonous solutions and spraying apparatus. The utter necessity of spraying orchard trees is now quite generally recognized by leading growers, but the experience of A. C. Hammond, Secretary of the Illinois State Horticultural Society, may be of especial interest to our readers. He relates his proceeding as follows:

"I took the heads out of two 50 gallon barrels, bored a large hole in each head in which I kept a stick for stirring the mixture, and put the heads back in the barrels as floats. I then placed the barrels in a wagon and filled them nearly full of water —about 40 gallons in each. A pound of London Purple was then thoroughly mixed in a pail of water, divided between the two barrels, and stirred until the poison was well mixed with the water. One man was needed to drive, and keep the pail or tub in which the pump worked filled, and another to work the Lewis combination force pump. We drove very slowly along one side of a row of trees, and back on another, and used great caution to see that every part of the trees was reached, and so thoroughly wet that the water would drop from the leaves. The spraying was done June 1st, when the Apples were about as large as a half-grown Cherry, but should have been done a week earlier. The second application was made 10 days later. The orchard yielded fruit, 60 to 75 per cent of which was perfect, and 85 per cent was marketable, while adjoining orchards not sprayed, did not produce a peck of perfect fruit. In fact, not another orchard in the county produced so much perfect fruit. My mixture was too strong and burned the leaves somewhat, and hereafter I shall use a pound of London Purple to three barrels of water (about 120 gallons) and even a weaker mixture may be just as good. [One pound of London Purple to 200 gallons of water is sufficiently strong—Ed.] With the cheap pump that I used, two men can go over a 10 acre orchard in a day, so that a high priced spraying apparatus is not absolutely necessary."

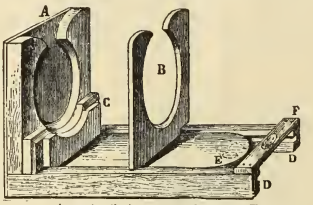
The matter of pumps and spraying machines is as yet puzzling the minds of many, and inquiries about them are frequently received by us. With so many serviceable pumps in the market, and freely advertised, our friends can hardly go amiss. These implements may be had of every working capacity and almost any price, from a single cheap hand spraying pump, such as used by Mr. Hammond, (Lewis' Combination, P. C. Lewis, Catskill, N. Y.) to the more or less elaborate geared machines of various firms, such as Rumsey & Co., of Seneca Falls, N.Y.; Nixon Nozzle and Machine Co., of Dayton, O., the Field Force Pump Co., of Lockport, N. Y., etc.



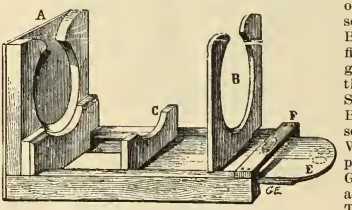
Asparagus Buncher, Fig. 1.

Home Made Asparagus Bunchers.

The modern devices for bunching Asparagus are numerous, often too expensive, considering cost of production, and, after all, perhaps not much more serviceable or convenient than the simple contrivances shown in our illustrations, and copied from "Parks and Gardens of Paris, (Robinson). Fig. 1 represents the buncher most commonly used in France, and needs no other explanation except that the front piece slides backward or forward to correspond with length of "grass." Fig. 2, represented with a finished



Argenteuil Asparagus Buncher Fig. 3.



Argenteuil Asparagus Buncher, Fig. 4.

bunch, has no movable parts. The tip end of grass is dropped through the wedge-shaped opening, and kept close together by the circular enclosure. The Argenteuil buncher is shown closed in Fig. 3. and open in Fig. 4. The board E, with the standard B and C, slides in the grooves D D, and when drawn out (an operation facilitated by inserting two fingers underneath into the cavities indicated by the circular marks near E) gives an opportunity for the removal of the bunch when finished.

Plum Knots and other Nots. Obstacles to Overcome.

E. P. POWELL, ONEIDA CO, N. Y.

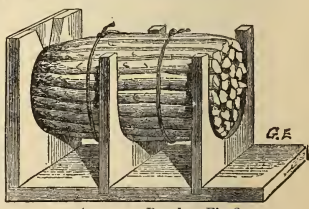
Most of the Plum trees in Central New York are destroyed, and most of those that remain should be, as black knot has made them valueless to the owner and a danger to unaffected trees in the neighborhood. Yet the black knot is one of the easiest managed of all horticultural pests, and I wish I could get on as well with the curculio. My right-hand man, after a lesson or two, fully comprehends the proper method of extracting the knots: and I have only to say to him twice or three times a year "You may go over the Plum trees to-day." The proper method is to carefully cut off and out the warts and every scrap of the festered wood. Then cut above and below so far as you find a black line lying along the heart of the limb. This makes some ugly sores, but if done thoroughly, they will easily heal over. When the knots appear on small limbs, cut these off altogether. Collect every exscinded part and burn it. When trees have been long neglected cut them down and burn; then take care of the young ones and keep them from getting diseased. A really worse evil is a grub that tunnels under the bark. These must be followed with the knife and destroyed.

The time to cut black knot is in summer after the new growth. I also go over the trees very carefully before the leaves start in spring. I insist that Plum trees can with comparative ease be kept clean after being once well cleaned.

"Apple trees are playing out in our climate. We cannot hereafter expect to raise as good Apples as formally and the crop is very uncertain." This common saying is owing to three or four causes which do not wholly cover the case. (1) There has been a great deal of planting of new sorts of Apples without considering their hardiness or adaptability otherwise. The result is a loss of tender sorts. (2) The removal of forests exposes our orchards far more than formerly, and we have but one remedy,—to select sheltered slopes, and plant windbreaks. (3) The trees obtained of nurseries are often grafted on inferior stock. (4) We have fallen into the habit of supposing Apple trees can take care of themselves. A portion of the orchards in this State are half grown to suckers.

Orchard culture is not a thing of the past, yet it is time that the same ground should not be replanted to the same sort of trees any more than sown to the same sort of cereals. Nature rotates her forests. Birch follows Beech; Butternut, Maple. I find very little trouble in successfully growing quite a long list of Apples. Among those quite hardy are of the sweets, Ladies' Sweeting, Sweet Bough, Talman Sweet, Belle Boum, and Pound Sweet; of sour sorts, Northern Spy, Kirkland, Ben Davis, Wealthy, Fameuse, Jonathan, White Pippin, Astrachan and other Russian sorts. Greening, Spitzenberg, Belmont, Baldwin are less hardy except grafted on old trees. The true rule is to replace a diseased tree promptly and not wait till there are large gaps in our orchards. The expense is small.

There are constantly arising new conditions for all sorts of vegetation. These must be met by us and made favorable. Fruits most easily grown at present will likely meet with obstacles ere long. The Cuthbert raspberry for instance is almost an ideal success in large sections of the Raspberry States. But pretty soon there will be a wail of despair owing to a rust, or blight, or insect. The Niagara Grape is an ideal for a late white heavy cropper. How long before there will be an enemy that we must conquer for the Niagara? A few years ago the Ash tree borer came near ruining for me a row of white Ash that for timber alone was worth a thousand dollars. But by putting coal ashes in large quantities about the trees I rescued them. The Pear tree blight was terribly discouraging for several years. It ruined so many that the end of Pear culture was at hand. But we have weathered the trouble, and now know how to grow Pears in spite of the blight. We have had to give up a few susceptible sorts and the rest must be headed low, and well drained and not overstimulated, and kept well mulched, and the ground slightly dug over, rather than plowed, and the result is plenty of Pears.



Asparagus Buncher, Fig. 2.

The very first thing for a young man who purposes to be a horticulturist to resolve upon is to get rid of Plum knots and "can-

nots." He must make up his mind to conquer; and then fruit growing is a success in any part of the land. Plant fruits that on general principles are adapted to your section; and then take care to make them grow and to keep their enemies away.

Natural Gas and Insects.

SNEAD THOMAS, GRANT CO., IND.

In the January issue our friend of the Indiana Farmer refers to the decrease of insects in natural gas districts. Whatever effect gas may directly have in this way, I know that night insects are attracted by the torches, and millions are burned to death, whether friends or foes I am not entomologist enough to always tell. The number of insects that will accumulate during the night on the ground beneath the torch south of my house is almost incredible. June bugs were unusually numerous the past season, and I have picked up as many as two hundred and fifty scorched bugs in one morning. The bugs almost defoliated some young fruit trees planted the spring before by the north side of the house, and that in the full glare of the torch not a hundred feet away. A sowing of Beets near by was also and almost entirely ruined.

A neighbor of mine piped gas to his Plum trees, and kept it burning at night, letting the gas escape during the day, but his success was no better than mine. The only curculio preventive which I found efficient was the old and tried one of letting chickens run under the trees and feeding them there.

The large green Tomato worm, usually very destructive, has been very scarce the past summer. I attribute the almost entire annihilation of this pest to the numerous natural gas torches that are burning every night, as I have found numbers of moths with singed wings beneath the torch.

A Test of the Newer Potatoes.

GRANVILLE COWING, DELAWARE CO., IND.

A writer familiar with the Chicago market says there are some twenty varieties sold in that city to-day for Early Rose, which are not of that variety. In fact Early Rose are rarely seen there. The same is true of Peerless and Burbank. Mammoth Pearl and a dozen other varieties of that type are sold for Peerless, while the White Star, White Rose, Jordan's Prolific and other long white kinds sell for Burbank.

The selection of pure seed of the best varieties would probably double the Potato crop of the country without enlarging the area planted.

Of new varieties of the Early Rose type, I have found Lee's Favorite, Early Pearl and Early Maine very productive and in every way desirable. They mature with Early Ohio, are of the best quality, and their tubers are generally smooth and shapely. New Queen and Sunlit Star, early varieties of more recent introduction, promise to be the most productive varieties of the Early Rose type yet offered to the public.

Sunlit Star is an extra early variety with tubers uniformly large and smooth, and of the best quality. New Queen is ten days later, and is also remarkably productive, with tubers generally large, smooth and of good quality, and resembling Early Rose in appearance. I planted one pound of seed of this variety last spring which, in unfavorable weather and without petting, produced ninety pounds of fair tubers. Charles Downing is an early white Potato, decidedly productive, with smooth tubers, generally of marketable size, and of the best quality. On account of its appearance, fine flavor and greater productiveness, it promises to take the place of Snowflake in the Boston market where that variety has long been a favorite.

Of late varieties I have found none as good in all respects as State of Maine, Green Mountain and Empire State—all in shape and color somewhat like Burbank, but all much more productive, of better flavor and with tubers uniformly large.

Green Mountain and State of Maine mature in August. On my soil neither of them have quite equaled Empire State in productiveness. They are all of good quality and keep late in spring without sprouting. Empire State here matures in September, and is remarkable for its ability to withstand drought and beetles. Last season only about 4 per cent of its tubers were too small for market.

Experiments in the Treatment of Black-Rot in France.

Abstract of a Letter from M. Lasserre Printed in "Progres Agricole et Viticole."

TRANSLATED BY B. T. GALLOWAY.

In 1888 I found one case of Black-rot and have no doubt it would have proved a center of infection. My neighbor, Dr. Descoture, who had a single diseased vine of Herbemont, which was not treated in 1888, infected the vineyard for 20 meters around it.

The first step in treatment with copper sulphate is to make sure that it will prevent the germination of the spores by keeping the vines immersed, so to speak, in a copper bath by means of repeated sprayings every eight or twelve days from leafing until the Grapes are ripe.

On April 12, 1888, I applied eau celeste (sulphate of copper 1 k, ammonia 1½ litres) and repeated the applications every eight days up to June 30th. The result was that not a single spot of Black-rot appeared, and on Sept. 4, the grapes were ripe.

Against a stable wall there is a large Chasselas, having two arms each about three meters long. One of these arms was treated with eau celeste from the beginning of May, receiving three thorough sprayings. Result: upon the treated side no disease, and fine and numerous clusters of Grapes; upon the untreated side the berries were peppered with Black-rot.

A third experiment was made in the open field on a row of Muscat vines trained on two long arms. This row, excepting one arm on the last vine, also received three treatments. There was no disease excepting on the untended arm, which suffered a disastrous attack, the fruit drying up completely.

A vineyard situated upon a plateau, formerly produced a hundred and upwards casks of wine, but a Black-rot invasion reduced the product to five or six casks. One hectare was placed at my disposal. The first applications were made June 9, repeating every eight days on one portion and every fifteen on another. The ends of the rows were not treated. The remainder of the hectare received only two treatments toward the 20th of the same month.

On July 30, the foliage was spotted with Black-rot, some leaves having twelve spots on them, on that part of the vineyard which had received the two late applications. As to the other treated vines, their foliage was badly burned by eau celeste (which would have been avoided if I had used Bordeaux mixture) but the grapes were saved. The treatments having an interval of 15 days were as efficacious as those at eight days. The two late treatments were, it is true, only a pallative, but absolutely nothing remained upon the untreated vines.

It is my opinion that the spores are lodged upon the foliage or berries very early, probably by May 1st, and that it has a long period of incubation. When July comes, it appears everywhere and by Aug. 15, it is suddenly and spontaneously arrested; from that time the diseased berries are powerless to infect the healthy ones, though in direct contact with them. I am of the opinion there is in their cycle of development something analogous to the winter spores of mildew, and these rest until spring.

The result of my observations seems to be that only the May treatments were efficacious; it is necessary that the germinating spore find the foliage well protected; if it has penetrated the tissues, the copper compounds are powerless against it as they are against the mildew.

In my experiments, early and continued applications give perfect success; at Fabrie and Aiguillon, (treatments by M. Prillieux) the results were excellent and convincing, but not perfectfuly successful, the first treatment not having been made until late in May or early June. During the month elapsing between the treatments the new leaves not covered by copper were attacked, and some were attacked before May 12.

All varieties of vines are capable of supporting the Black-rot fungus, but some are more resistant than others. I have seen a hectare of three year old vines of Riparia and Solonis planted together without regularity, whose branches trailed on the ground and were everywhere interlaced; and while the leaves of Solonis were badly spotted, those of Riparia were healthy.

The Herbemont seems to be more resistant than other vines. I own two rows, but the last seventy vines in each row are Othellos. In spite of three rather late treatments the Othellos lost a little by the Black-rot, but although the Herbemonts had not been treated at all, the disease absolutely stopped were they began.

Feeding the Orchard for Fruit.

Farmers in general, who have a barnyard full of manure and lots of it wasting by firefang, leeching, etc., hardly ever feel very liberally disposed towards orchard trees, although the few they have often give them bigger returns than large fields of grain bountifully manured. A barrel of Apples contains but a fraction of the original plant food that is found in a bushel of Wheat. In fact, a ton of fairly good compost supplies all the food used for the production of one hundred bushels of Apples.

It is but fair to return to the soil its just due and if the grower adopts the practice of drawing a good load of manure to the orchard for every 30 barrels of Apples he takes away from it, the trees will be enabled to do their full duty year after year. Where so little is required stinginess seems to be altogether out of place.

A queer method of feeding the orchard, quite commonly practiced by farmers (not by professional fruit growers, we hope) is shown in our illustrations. A few forkfuls of strawy manure are placed directly against the body of each tree, like a poultice outside the stomach. The plant food in the manure, in order to get inside the tree body, and to become available for transformation into fruit and foliage, should be placed in convenient reach of the many mouths at the extremities of the roots. These, as the picture shows, are all over the ground, but especially numerous and active at the points furthest from the tree. The dotted lines indicate how the manure should be distributed, namely, evenly over the whole surface, except, perhaps, in immediate contact with the tree, where little is needed.

POLLEN PRODUCERS FOR THE CRESCENT STRAWBERRY. I believe of all varieties that I have tried for fertilizing the Crescent the Old Ironclad stands at the head. It is a wonderful grower, has a large bloom, and the blossom stems stand up high. Then, the Ironclad begins blooming just a little earlier than the Crescent, thereby catching all first blossoms, and is in flower as long as the Crescent. For second best as a fertilizer I prefer Miner's Prolific.

The Aster--Its Culture for the Greatest Beauty.

For brilliancy and gorgeousness of color and display, few easily cultivated flowers equal, and none exceed the modern Aster. In the production of new and improved varities during the last 15 or 20 years, specialists really have done wonders, and the general public should learn to realize the fact.

A bed of choice Asters, arranged with taste, and with a judicious blending of colors, is in its season, an object of never ceasing admiration, the only drawback being its naturally somewhat late and short season of bloom. This can in a measure be remedied by starting the plants under glass, if very early (in March) with heat; if not until April, in cold frame. If but few plants are needed, a pan of good rich loam in a sunny kitchen window will do for starting them.

The plants when a few weeks old may be transplated in small pots, or in other boxes, given them more space, the aim being to make them grow stocky, and to harden them enough for outdoor life.

When danger from freezing is past, the plants should be set in the open ground. A deep and very rich loam and plenty of moisture alone can support them well enough to bring out the desired profusion of bloom during the season; and since the roots run rather near the surface, a mulch of forest leaves (best after having been used as absorbents in the stable) or other litter, is of great benefit, and in a dry season next to indispensable. Applications of liquid manure will be of considerable help, and weak solutions of nitrate of soda, as bloom producing applications, deserve a trial.

Of the numerous varieties the Dwarf Aster, especially the pure white, is above all of interest to the commercial florist as a prolific source of handsome and delicate cut flowers, which he can produce at any time at will, by sowing seed at the corresponding time. To this class belong the Dwarf Bouquet, Pompon, Dwarf Chrysanthemum-Flowered, Pyramidal Bouquet, etc., type shown at the right of our illustration.

Another class shown at the left, is represented by Pæony-Flowered, Perfection, Victoria, Giant Emperor, and other fine Asters, some with petals incurving to the center, others recurving to the edge, and all in every imaginable tint of color. In center of illustration we see the elegant and stately Crown Aster, its white center surrounded by a broad margin of color.

The general public, when speaking of "Asters," have in mind the rather inferior flower of 25 years ago, and have no inkling of the beauty of the Asters of to-day. They deserve a fair trial, and the person who consents to give it, will not regret it.

We are also glad to note that the time when foreign florists had a sort of monopoly on the Aster and its improvements, is now past, some of our own specialists having taken hold of the matter with great energy. We believe in home production, and shall not fail to give every encouragement to people, who, like Faxon with Asters and Pansies, or March with Cauliflowers, attempt to free us from the necessity of depending on foreign seeds. that might be grown here as good, and as cheap as abroad.

A Word for our Native Hemlock. (Abies Canadensis.)

L. F. ABBOTT, ANDROSCOGGIN CO, ME.

I fully agree with Mr. Reed as to the beauty of our native evergreens when transplanted to the lawn and properly trimmed. One of the most satisfactory trees for a compact-growing hedge or for individual specimens singly or in clumps, occupying a corner or center of an area, is our native Hemlock *Abies Canadensis.* Closely set and properly trimmed it forms a handsome hedge, an object of beauty winter and summer. The Hemlock is what may be termed a slow grower, yet by proper attention to shortening the side growth, and allowing the terminal shoots to grow their own way, three or four young trees grouped upon a space two or three feet in diameter, will make a beautiful broad-based column of dark-green foliage, 10 to 15 feet in height, in a few years, in congenial soil.

SPECIMENS OF WELL GROWN ASTERS.

Trimmed in conical form, giving the lower branches access to light and air, thus encouraging twig-growth, the graceful habit of slightly drooping foliage will be retained without the fault of bare lower trunks. Young trees set in clumps should have the branches pointing to the center of the circle cut back close enough at time of setting so as not to crowd each other, but leaving the outer branches nearly intact. By a little care in selecting trees for this form of planting, the necessity of cutting may be obviated by setting the side with greater amount of branches outward.

Any form of trimming our native evergreen trees (Norway spruce, *Abies excelsa* also) which departs from the conical, favoring a broad base with a graceful oval shape to its top, will be at the expense of beauty and the desirable feature of hedge-solidity, and close branching to the ground which are so very desirable.

In our nothern latitudes, spring is the only time to set evergreens with a surety of success. Nursery-grown trees are far surer to live than those from the forests or pastures, although, with care in digging and re-setting, 85 per cent. of the latter will live, providing trees are selected not larger than from one foot to two feet and a half in height. If possible, choose a cloudy or damp day to remove evergreens, never a clear or windy one, unless properly prepared.

As a rule little earth will adhere to the roots of evergreens when taken up in the pastures, hence greater necessity of affording all the protection to the roots possible, as the roots of the Hemlock and Spruce are long and fine, and quickly effected by a drying atmosphere. As fast as the little trees are dug, let them be carried to the cart and covered with damp straw or cloth saturated for the purpose.

The most satisfactory results will be attained by making the ground mellow and fine for several feet in width where your line of trees are to be set, then open a shallow trench 18 or 20 inches wide; and if a liberal amouut of rotten leaves and surface soil from the woods can be covered in immediately upon the roots of the evergreens, it will be found congenial to their wants in starting. This kind of soil thoroughly saturated with water will hold its moisture for a long time, and covered in by the soil from the trench will afford excellent conditions for the trees to start and their continuance afterwards.

But little cutting will be necessary the first two years other than to clip old struggling growth, and if any individual trees push upward faster than their companions, the top should be shortened to keep the whole fairly on a level. A mulching of leaves, Pine needles and soil taken from the woods will be an advantage to the young trees if applied each fall for a year or two.

A Valuable Bedding Plant.--Acalypha musaica.

JAMES CURRIE, MILWAUKEE CO., WIS.

Of the hosts of different plants cultivated for ornament but a very limited number are thoroughly adapted for outdoor decoration in our climate. Every year we see an increase in the number of flower beds around private houses and in our public parks and cemeteries. Still it is always desirable to add to the varieties of plants so used.

For two or three beds only we have no better plants than the many excellent Geraniums, Verbenas, Petunias, Coleus, Alternautheras etc.; but when more extensive bedding is done still others are needed to prevent monotony.

A few years ago my attention was directed to Acalypha musaica as a bedding plant. I obtained some plants and gave them the exposure and treatment bedding plants are ordinarily subjected to. The result was most

satisfactory, revealing a plant of greater beauty and adaptability for the purpose than we were led to expect. In its foliage lies its beauty, the flowers being insignificant. The habit is drawf and hushy. Occasionally it inclines to grow tall without branching, a defect easily remedied, however, by pinching, to which treatment it is very submissive.

The foliage is firm in texture, not unlike that of Hihiscus; heart-shaped, and serrated, and, ordinarily, about four inches long, and closely ranged upon the branches.

No description of the varigation of the leaves would convey an approximately correct idea of the heauty of the plant. The various tints are those usually assumed by the Maples in autumn.

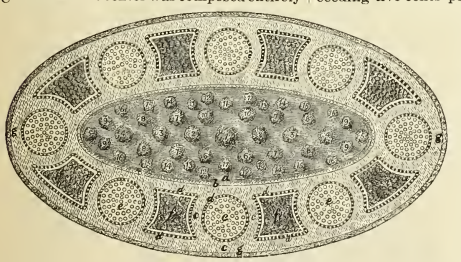
When grown in the greenhouse, the colors are less pronounced, particularly the reddish hues. Bronzy-green is the predominating color. When fully exposed to the sun, the tints darken, so that the plant at some distance, somewhat resembles Coleus Verschaffeltii, heing a little hrighter. Closer hy the variegation hecomes preceptihle, and the glossy leaves heighten the effect.

As an edger for flowering and foliage heds it is especially valuahle. But it is also found very effective for massing in large beds in combination with other plants, and also in smaller beds alone. Being a hard-wooded plant, it is a rather slow grower, although not much more so than many Geraniums.

Two systems of propagation are practiced by the writer. Cuttings of the young shoots root readily in a gentle hottom heat. They may he made at any time, hut to secure strong, bushy plants for planting out the next summer, they should be made in fall or early winter. I also propagate by division of the plant. If originally dwarf and hushy, and planted deep in the garden, the several branches will emit roots during the summer, so that each when separated in the fall, will hecome a distinct plant. To maintain the dwarf form of the plant it should he closely pruned in fall, which quickly induces the latent huds on the lower stem to start into growth.

A Fine Bed of Showy-leaved Plants.

Many examples of fine effect in the use of hedding plants are not uncommon in this day, hut for hoth simplicity and georgeousness, few can surpass the one of which the ground plan is shown in the illustration which appeared originally in the Gardener's Chronicle. The center was composed entirely



Plan of Bed of Showy-leaved Plants.

of foliage plants, while the horder included some flowering plants as well.

The hed in question was several years ago laid out in the Royal gardens of Wilhelmshohe, near Cassel, which is one of the many interesting and splendid spots in Germany. The Royal garden and parks, under the management of the Hofgartner Franz Vetter, heing open to the public daily, thousands of visitors from all parts of the world visit the place every year.

The hed measured 34 feet in length, and 22 feet in the hroadest part. The centre of the hed was filled with different foliage plants, including Ricinus, Nicotiana, Solanums in variety, Senecio, Canna, and edged with a couple of lines, one of Achyranthes Gilsonii *a*, the other of Veronica Andersoni *b*. About five feet space was given for the broad edging *c*, laid out with the white Alyssum variegata, whilst the circles were planted with the hrilliant Lohelia fulgens var. Queen Victoria *e*, and the more or less square spaces alternating with the circles were filled with the heautiful white flowering Anemone japonica Honorine Jobert *f*—both the Lobelia and Anemone patches heing edged with a single line of the useful Festuca glauca *d*. An outside edging to the whole consisted of two lines of the dark red Alternanthera atropurpurea *g*. The effect was striking, and I doubt if any better way for displaying foliage plants could he employed. The edgings of Alyssum, Lobelia, and Anemone were good ideas, contrasting well with the heavy foliage plants.

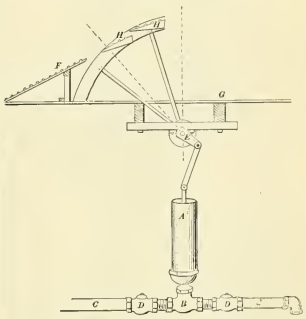
Home made Hydrant for Lawn and Garden.

L. L. ESENHOWER, BERKS CO., PA.

A "lawn" or "garden sprinkler," unfortunately, is of no use where there is no water pressure, and usually those to whom it would he most useful, are situated far from any city or town where such can he had. I propose to show how that pressure can be ohtained where a cistern is available. Filtering is not necessary. Take a large harrel, place it on the left of some out-building at least 21 feet ahove the point of application, as each 2 1-10 feet of elevation gives us one pound, and we want to get a pressure of not less than 10 lhs. per square inch.

To fill the barrel we want a force pump. This consists of a simple hrass cylinder, (iron would rust, and get rough inside) with a plunger. The lower end is reduced, and with a ¾ inch nipple screwed to a ¾ inch T having a valve at each side, hoth facing the same way. From the entrance side of the valve, carry a line of pipe to the cistern, letting the lower end reach within one inch of the hottom; run the other end into the line of pipe, leading from the bottom of your barrel to your garden. *A* is the cylinder made of brass, to be had at any hrass foundry, or machine shop, together with the reducer at the bottom; *B* is the ¾ inch T, and *C* the pipe, which can he had at any machinist's supply shop at a price not exceeding five cents per lineal foot; *D D* are the check valves, can be had for ahout 25 cents each, *E* is the crank which alternately raises, and depresses the piston of the pump. To get the motive power, we harness up "Old Dog Tray," get him up over the hridge *F*, and it won't take long hefore he will learn to work it the same as a tread power from the steps *H H*. These must he made low and near enough to require only small steps. So few have been able to construct such a machine, not from the lack of mechanical skill, hut from the improper application of the force at hand, with the resistance to he overcome, that a little explanation here of the philosophy of power and resistance may not be amiss. If the cistern is situated 11 feet helow *A*, a weight of five pounds has to be lifted per square inch, and as the cylinder has an area of 4.9 square inches, 24.5 lbs. have to he lifted at every stroke, (it has, however, greater resistance to overcome, and if the barrel is to be 21 feet high, there is a resistance of 49 lhs. against 24.5 lifting, not counting the friction). If the leverage from the fulcrum or center, of the wheel, (a wheel heing only a continuous lever) is seven times greater, than the distance from the center to the end of the crank, our pound power is ahle to overcome seven pounds resistance, consequently the animal should weigh one seventh of 49 pounds, or seven pounds, but considering all outside influences, friction, etc., etc., he ought to weigh 12 or 14 pounds.

Miner points of difficulty in the construction of this machine, may he overcome hy



Providing Hydrant Pressure.

perseverance, and a little ingenuity. If well huilt, it will last a lifetime; as *G* is the floor of the building, the working parts are situated in the basement, and thus protected from freezing. The power should he applied between the two dotted lines, and as near the lower one as possihle without getting beyond it. In some localities a wind wheel or wind engine, may be preferahle.

New Uses for an Old and Tried Tool.

C. W. POTTENGER, KANKAKEE CO., ILL.

To those readers who propose getting one of the excellent Planet Jr. Horse hoes this spring, I would suggest the importance of investing in certain of the attachments which have given perfect satisfaction.

In cultivating Strawherries I have found the "sweeps" invaluable, using three, with or without two small shovels in front. These will cut from 14 to 30 inches wide, deep or shallow, as desired, and leaving the ground level. To run them shallow forms a mulch, and destroys all small weeds.

After the runners appear adjust the marking attachment and work it so that it will turn the runners around in the row, and at the same time act as guide, enahling the operator to tell just how close to the rooted plants the sweep points are running.

These sweeps are also valuahle to use in the Potato patch, after the Potatoes have been laid hy, or when other cultivators would he a detriment to the crop. When run shallow they will clear out the weeds, and save much trouhle in digging time, enahling you to dig them with the same implement.

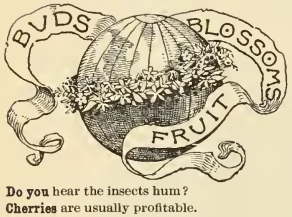
This can he done to your satisfaction hy putting the large furrowing steel on hack standard. Set standard so as to point as far forward as possihle; then put the two "side steels" with concave next to the row. These are to help you hold the furrowing steel directly under the row. Then allow the two front standards without any shovels to remain in front, to prevent vines or ruhhish from getting hack under the cultivator. Next get the long clevis with ring from your harrow, so you can use douhle trees and two horses, and you have a Potato digger that will surprise you when you look at them rolling out on either side, or falling into the furrow.

In an Apple Cellar.

Red, and russet, and yellow,
Lying here in a heap—
Pippins, rounded and mellow;
Greenings, for winter keep;
Seek-no-furthers whose blushing
The soul of a saint would try,
Till his face showed the crimson, flushing
The cheek of a Northern Spy.
Apples scarlet and golden,
Apples juicy and tart,
Bringing again the olden
Joy to the weary heart.

—*Thos. S. Collins.*

Break the soil to make the bloom,
Bruise the flower to get perfume,
Lose the gem to set a crown
Of lovelliness.



Do you hear the insects hum?

Cherries are usually profitable.

Mulch where moisture is needed.

Annuals pay well for decent care.

Consider morals when hiring help.

Asparagus culture is far from overdone.

Of trees Evergreens may be moved the latest.

Tree Blossoms—the promise of usefulness in the garb of beauty.

Flowers and fruits above most things make life worth living.

For mildew and rot spray Grape vines with Bordeax mixture now.

For grower's reputation buyers gladly pay $1 per barrel of Apples or crate of berries.

More fine seeds are killed from covering too thickly than from not covering enough.

The Moore's Arctic Plum Dr. Hoskins pronounces as the only hardy one for Vermont.

A recording map of the orchard and fruit garden is a necessity to the intelligent cultivator.

An Evergreen Shrub. In this line we know nothing finer and hardier than the Mugbe Pine.

Plants and Pianos. A thrifty plant kept in the room with Piano will provide moisture just right for the instrument.

The Popular Gardening experiment grounds are to be carried on absolutely in the interest of the readers of this journal.

For the Water. Aponogeton Distachyon blooms quite well in summer when growing in cool spring water in partial shade.—*Geo.*

A Climbing Rose planted in 1079 in Southern Germany is said to be the oldest now in existence, and its main branch larger than a man's body.

Another Native Plum, the Hawkeye, is being introduced by H. A. Torrey, of Crescent City, Iowa, as being as large as Bradshaw, and emphatically an Iowa variety.

Coat the Pruning Scars. Many persons who would doctor a tree where accidentally barked, overlook analogeous cases of pruning scars. Coat with any kind of linseed oil paint.

This is Recommended. For Pear blight try a mixture of four parts muriate of potash and one of sulphate of iron (copperas). Apply several pounds of it around the tree, and repeat in obstinate cases.

For mildew on Roses salt is recommended. A solution of six pounds in 100 quarts of water is the formula used by Jean Sislly, the famous French Rose grower, to destroy mildew and other fungi on Roses.

Matrimonial. Our correspondent, Emily Louise Taplin, who provides New York floral news so acceptably to our columns, was married to Mr. Edwin Royle, March 27th of this year, at Hackensack, N. J.

A bureau of information for every reader is what POPULAR GARDENING with its experiment grounds purports to be. From the many hundreds of varieties of trees, shrubs and plants in all departments now set out, we shall very soon be able to speak with authority concerning the respective merits of these.

The Berry Harvester. The verdict of Raspberry growers who have used the harvester, seems to be quite generally in favor of this new and rapid method of gathering the crop for evaporating purposes; and it can hardly be doubted now that with the further improvements sure to be made in the device, it is bound to come into general use. Berries intended for the table, however, will probably still have to be gathered by hand for some time to come.

Popular Horticulture. What POPULAR GARDENING AND FRUIT GROWING wants to see is more homes each with a good small fruit area, vineyard, vegetable garden and with plenty of hardy plants, shrubs, climbers, etc., about. It is assumed that the orchard of choice tree fruits has been provided, but if not, a start must also be made here. From the central farm of all our readers, namely, the Experiment grounds at La Salle-on-the-Niagara, we expect to give innumerable suggestions and ideas to aid the work.

Staking Trees Firmly. That it is an advantage to have newly set trees staked firmly until new roots have issued is not a matter of question. For doing this completely we know of no better method than that shown in the engraving annexed. Three stakes are driven obliquely as shown and to meet at one point. This is easily done by binding the tree to one side a trifle. At the top of the stakes a band of canvass or leather is wound around the trunk and is slit down at these places. The flaps thus formed are tacked over the tops of the stakes.

The German Horticultural Exhibition. This, an important exhibition, designed in part to bring out the close relations which exist between architecture and horticulture, will be held in Berlin, and will be open to all nations. 235 classes of warm house-plants, 377 classes of green-house and hardy plants, besides fruits, vegetables, nursery stock, tools and machines used in horticulture are included in the prize schedule, and a section of classes for showing the morphology, anatomy and growth of plants; physiology, useful and poisonous fungi; officinal and economic plants, plant geography, etc. Among the chief attractions of Berlin are some of the finest examples of landscape gardening of which Europe can boast.

Pyrethrum Roseum. The Pyrethrums or Feverfews are hardy perennials of easy culture and quite pretty border plants. P. Roseum, here illustrated, is the often mentioned "Persian Insect Powder Plant." In an experiment made with it at the New York Experiment Station, the plants grew well the first season and bloomed profusely the next; and the pulverized flowers compared favorably with Buhach (the California grown powder of P. cinerariaefolium ground rather fine) in death-dealing effect. The flowers are showy and of various colors lasting through several weeks, and their beauty well repays for growing the plants. What effect the living flowers have on insect life we do not know. It seems that every gardener might grow enough "insect powder" for his own use.

To Transplant Plants in Bloom. The list of plants that flower freely the first season, and that may be easily transplanted while in flower is not large, but happily some of the very best are among the number. Such as the Zinnia, Petunia, Pansy, Portulacca, Phlox Drummondi, Chinese and Japanese Pinks, can be used by those who wish to raise a variety of flowers, in beds or rows of a color, but cannot well afford to purchase each color separately. Sow mixed seed in boxes in the house or in a frame in March or April, or where this is not practicable sow in the open ground; the only difference is that the flowering season will be somewhat shorter. When the plants show four or five leaves transplant to two or three inches apart, and in two or three weeks transplant again. As they begin to bloom select the colors desired and plant where they are to remain, handling them carefully in the operation.—*W. C. Jennison, Middlesex Co., Mass.*

The Johnson's Amaryllis. What a splendid pot plant is Amaryllis Johnsonii when in bloom. It requires a rich soil. A plant that we have was potted in the early part of the season last year and made a good growth; then in the early fall it was turned down and allowed to rest by drying until there was danger of frost, when it was taken into the house and shortly showed an immense amount of vigor in sending forth rich green lanceolate leaves two feet in length and two and one-fourth inches in width, in thick clusters. The last of January it sent out its first flower stalk, which is an inch in diameter and 28 inches high; from this sprang four blossoms opposite each other of rich dark crimson striped with white, the petals spreading to a diameter of six inches. Another flower stalk is pushing itself upwards, and what is to follow remains to be seen. It is seldom that so ornate a plant can be had that requires so little attention, for during the summer this plant was planted under some trees and was hardly noticed, but during this period of rest it was gathering strength with which to unfold the great beauty concealed within.—*Wm. H. Yeomans.*

Flower of Pyrethrum Roseum.

"Hollyhock Crimson Jackmanii" has a very large, full double, crimson flower, and is a very showy back ground border plant. I have had blooms as early as June 20th, and as late as November 10th. The seed may be planted in May, and again new seed planted in August as soon as ripe. The latter makes the best plants. Old plants may be lifted in the spring and divided to single eyes and planted at once. The ground for them should be dug deep, fifteen inches or more, and enriched all the way down. Dig deep when setting out, and straighten down all the roots. Keep the ground stirred, and allow only one stem to grow, which keep tied to a stout stake. They do not need much watering. Hill them up about six inches in cultivating so that the water and the rains will enter the ground around the plant instead of close about the stem. In July mulch the ground all over with old manure. About June 25th some of the plants will commence blooming near the bottom of the stalk, opening in succession over the stalk from bottom to top. All this first blooming must be picked off, just as the blooms wilt, not allowing the seed to mature and exhaust the plant. About the time the first has passed midway of the stalk, a second blooming will commence at the bottom and pass along up over the stalk as did the first, and before arriving at the top a third blooming will start at the bottom on branches six to fifteen inches long, having from five to nine single blooms, branching at intervals along up the stalk, keeping up a succession of bloom until cut down by frost.

Staking a Tree Firmly.

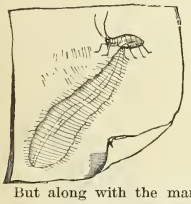
The first blooming will give the largest and best flowers, the second and third blooming will be smaller, less double and produce more seed. I lift all my plants in April, young and old, and in planting cut away all the eyes save one to each root or part of divided roots, and plant about two feet apart in rows.—*John Lane, Illinois.*

An Insect Supplement

TO

POPULAR GARDENING AND FRUIT GROWING.

Containing Descriptions of Insects and the Means for Destroying Them.



ACCORDING to the census of 1880 it is computed that the aggregate losses from injurious insects in the United States equals *two hundred millions of dollars a year*, while able economic entomologists are not wanting who place the loss at least one-half higher. It is estimated that the Apple Worm or Codling Moth alone has in recent years destroyed nearly one-half of the Apple crop of the country, representing to our fruit growers a loss that runs high into millions of dollars yearly.

But along with the marked increase of injurious insects in late years, there has happily been increased activity also on the part of cultivators and of the National and State Governments, in devising means and remedies for successfully destroying the former. And with excellent results too, for it is most gratifying to note that at the present time hardly a single formidable insect enemy to the horticulturist exists but that there is also some simple remedy known for its destruction, or at least for greatly lessening the force of its damaging attacks.

It is for the purpose of bringing before the cultivators of the country at this time a summing up of the most approved methods for dealing with our more prominent insect enemies that the present treatise has been published.

In its preparation we have been fortunate in receiving valued help from Prof. A. J. Cook, of the Michigan Agricultural College, (Agricultural College P. O., Michigan), a gentleman, whose close study and many experiments in the field of our insect foes, as well as in that of the Honey Bee, has made his name widely famous; and also from D. B. Wier, of Lacon, Ill. Mention is also gratefully made of the works of such eminent entomologists as Prof. J. A. Lintner, of Albany, N.Y., Prof. C.V. Riley, Washington, D. C., and of those of Dr. Harris ; besides of the assistance of other practical cultivators and observers. Together, it is believed that the collection of remedies brought within the following pages, possess such value as will enable every cultivator of trees, plants, and flowers to very successfully cope with the multiple foe.

In conclusion, however, let the fact be impressed that no insect remedy can prove successful unless it be applied promptly at the proper time, hence it is urged that whatever is done in the war against this enemy be done early, vigorously, and with all due persistence.

Alum Water. See Remedy 5.

Ants. (*Formica*). These very common insects are sometimes troublesome not only from their manner of throwing up hills, but also through being destructive to vegetation.

Remedy **1.** *Trapping with Sunken Bottle in Hills.* The advantage of this course is that no injury can possibly result to the roots of adjacent plants, as is the case when scalding remedies are applied. The mouth of the bottle should be even with the surface of the hill, and it should be partly filled with sweetened water.

Rem. **2.** *Trapping with Sponge.* Obtain pieces of coarse sponge. Dip them in sweetened water and place on old dishes where the Ants abound. When they are black with Ants throw them into boiling water, afterwards washing them out and renewing the process till the colony is destroyed.

Rem. **3.** *Fresh Bones.* By laying these where Ants are troublesome they will quickly gather on them. When these are black dip in scalding water, repeating the operation.

Rem. **4.** *Molasses and Poison.* Place a dish containing some molasses in which a small quantity of arsenical poison or cyanide of potassium has been mixed; or the same may be spread on trees, fences, leaves, and other frequented places.

Rem. **5.** *Destroying in Nest.* Apply boiling water, hot alum water (prepared by dissolving one pound of common alum in three gallons of rain water, and heating) or soluble phenyle water, (prepared by dissolving three spoonfuls of fluid to four gallons of water) freely to the nest.

Aphis or Plant Lice. It is probable that every kind of tree, shrub, flowering plant and herb has some species of louse of the family of Aphididæ infesting it. The common Green, Black and Blue Lice which trouble our house, greenhouse and garden plants, those of similar colors infesting the Apple, Cherry and other fruit trees, besides numerous ornamental trees and shrubs, afford familiar examples. The past year or two has found the kinds which trouble fruit trees, and especially the Apple, unusually prevalent in many sections, causing on the whole immense damage.

Fig. 2. Aphis or Plant Louse Greatly enlarged; an Ant "milking" the same.

Rem. **6.** *Kerosene Emulsion.* It is fully proven that the kerosene soap and mixture when rightly applied will surely kill plant lice. I (Professor Cook) use one quart of soft soap, one pint of kerosene oil, and two quarts of water. These are mixed and stirred until a permanent union is formed. One quarter pound of whale oil soap may replace the soft soap. A good way to mix them is to use a good force pump, and force the liquid back into the vessel containing it. This stirs the mixture so violently that a permanent mixture is soon formed. This liquid is then diluted with four gallons of water. To use this it should be applied by the use of a good spray nozzle, and powerful force pump, which I have found the best for all purposes. This throws a fine spray with great force, and thus is very sure to touch all lice, and yet is so dilute that the plants are not injured, and the fine spray insures economy as well as safety. Of course it goes without saying that the leaves, especially when they roll up, as they often do in such plants as the Snowball, if attacked by the lice, are a serious obstacle in the way of making this application. The liquid must touch every louse. This is more likely when applied with great force as suggested above. Yet even then, though every pains be taken, the lice will not all be reached. The past spring we found that the young lice on the buds, and even the eggs, just before hatching, were alike susceptible to this treatment. At this time there was no foliage to interfere, and so it was not difficult to make very thorough work. I recommend, especially to nurserymen, that they learn to detect the little dark eggs which are usually spread thickly in and about the buds, where they were placed by the mother louse the previous fall, and if they are found very common, that he apply the kerosene mixture early, just as the buds are swelling preparatory to bursting.

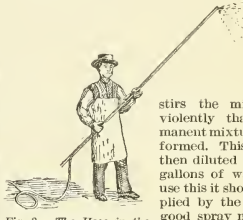


Fig. 3. The Hose in the tree top. Applying the kerosene emulsion or other poisons.

Rem. **7.** *Coal Tar Fumes.* Mr. Crane, a successful fruit grower of Lockport, N.Y., states that he has found the burning of a wad of rags attached to a pole and coated with coal tar, a safe and complete remedy for the Aphis. Plum trees that were black with this pest were, by a few applications, perfectly cleaned. The wad should be burned underneath and not too near the foliage.

Rem. **8.** *Tobacco Water, Dust, etc.* For use on a small scale as about Roses, Geraniums, Salvias, Verbenas, Chrysanthemums, flowering shrubs, etc., the old remedy of whale oil soap and tobacco water, or the more recent and more convenient one of sprinkling the affected parts with tobacco dust, are effective.

Rem. **9.** *Fumigation with Tobacco.* For dealing with this pest in the greenhouse fumigation with tobacco is almost universally practiced. This consists in burning dampened tobacco stems from the cigar maker's two or three times a week in all grenhouses during the season, to serve both as a remedy and a preventive. One pound for each five hundred feet of glass will usually suffice. A simple way of using the tobacco is to place the above quantity on a handful of lighted shavings, either on the floor or in a fumigator made for the purpose, which will cause a dense smoke. On a cement floor the fire needs no attention, as it quickly dies out, but with a wooden one or with wood near by, care will be required to protect it with sheets of metal or otherwise.

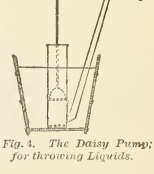


Fig. 4. The Daisy Pump; for throwing Liquids.

Rem. **10.** *Nicotyl.* In the greenhouse and window garden, as well as under low bushes outdoors, Nicotyl vapor, produced by steeping tobacco, stems in water and causing the latter to evapor-

ate, or by simply scattering moistened tobacco stems between the plants, is one of the most simple and complete remedies known for these insects. The vaporizer shown in Fig. 21 is a capital thing where special regard to neatness is required in the use of the tobacco liquid, but it is no better than a lamp set under a shallow pan.

Rem. **11.** *Paraffine Oil.* When young Larches, Pines, or other plants are infested, by watering them at intervals of three or four days for about three weeks with diluted paraffine in the proportion of a wineglassful to a watering can of water, they may be saved and restored to health.

Rem. **12.** *Hot Water.* To submerge affected plants or branches in water of a temperature of about 125° or 130° will kill Aphis.

Rem. **13.** *Colonizing the Lady-bug.* The common Lady-bug (see Fig. 18) (Coccinellidæ) is an insectivorous beetle that destroys the Aphis with avidity. By encouraging the presence of this insect on house and other plants, the lice may be completely kept down.

Rem. **14.** *Promoting Growth.* It should perhaps be stated that plant lice, as well as all other insects, are always more troublesome on plants or trees in an enfeebled condition than on others. Any course that tends to promote vigor will be helpful in withstanding their attacks.

Apple Worm or Codling Moth. (*Carpocapsa pomonella Linn*). For this most injurious insect a very complete remedy is now in use, one easy of application, and which, if

Fig. 5. The Codling Moth, (perfect insect of Apple Worm).

Fig. 6. The young Apple Worm working in towards the core.

rightly used, will result in saving *at least seventy per cent* of the Apples commonly lost by its ravages. The remedy is the arsenical poison found in both of those well known insecticides, Paris Green and London Purple. Referring to the use in detail of these remedies, Professor A. J. Cook gives the following:

Rem. **15.** *Liquid Arsenical Poisons—London Purple or Paris Green.* The best remedy for the Codling Moth is to use either London Purple or

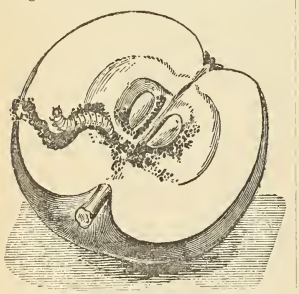


Fig. 7. Worm of Codling Moth in the matured Apple.

Paris Green. The remedy is not only efficient, but is also easy of application, and not expensive. I have now tried this thoroughly for six years, and in each and every case have been more than pleased with its excellence. I know of no one who has tried it in vain. The past season has shown that in using Paris Green or London Purple—the last seems preferable, as it is cheaper, more readily mixed, and very effective —one pound to two hundred (200) gallons of water is quite strong enough. It is best to wet the powder thoroughly and make a paste before putting it into the vessel of water, that it may all mix, and not form lumps. It is best to apply the mixture as soon as the blossoms fall, and again in three weeks, in case of any heavy rain. Usually I have found one thorough application, made early, so effective that I have wondered whether it was best or necessary to make more than one. I do think, however, that it must be early. In May and June *the calyx of the Apple is up*, (see Fig. 6) and so the poison is retained sufficiently long to kill most all of the insects. For a few trees we may use a pail, and a hand force pump, always keeping the liquid well stirred. One common pail of liquid will suffice for the largest tree. A teaspoonful of the poison is enough in a pailful of water. For a large orchard common barrels should be used, and drawn in a wagon. I prefer to have the barrels stand on end, with a close movable float, with two holes through it, one for the pipe or hose from the pump, and the other for a stirrer. If very large orchards are to be treated a good force pump should be fastened to the barrel. In western New York the handle of the pump is connected with the wagon wheel so that no hand power is required other than to drive the team and manage the pipe which carries the spray. The spray may be caused by a fine perforated nozzle or a cyclone nozzle. The finer it is the less liquid will be required. In treating an orchard the great point is to be thorough. If a still day can be had I would drive on a very fast walk and drive through the orchard twice in each space, first north and south, then east and west, so as to go on all sides of each tree. This makes very thorough work. A stop-cock so arranged as to permit the instant change of water from the hose so that it will flow into the barrel or tank in case of vacancy of trees in the row is often convenient. Hardly any one thing on the farm will pay better than this spraying Apple trees with the arsenites. As to the danger of using, this amounts to nothing provided the spraying is done before the Apples have began to hang downward.

Apple Maggot. This maggot, which mostly infests fall Apples, but occasionally attacks winter fruit, is much to be dreaded. It is now a fruit enemy from New England to Wisconsin. From the fact that it tunnels Apples through and through and thus utterly ruins the fruit which it attacks, makes it more damaging in some respects than even the Codling Moth. Should it become as common as the Codling Moth, and should it attack winter fruit generally, it would indeed be a serious pest. Like the Codling Moth, it causes the fruit to fall to the earth. In September and October the insect leaves the Apple and passes into the earth to pupate.

Rem. **16.** *Feeding the Fruit.* Feed all the affected Apples in early September. An enter-

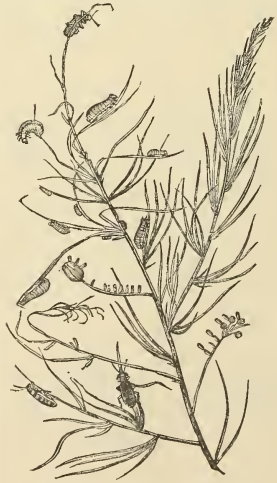


Fig. 8. Asparagus infested with the Asparagus Beetle in its different stages. See Remedies 17 to 19.

prising Michigan farmer, at my (Professor Cook) suggestion, made full use of this remedy, after suffering seriously for two years. He has apparently exterminated the pest.

Arsenical Poisons. See Rem's. 15, 43, 84, 108.

Asparagus Beetle. This is becoming very troublesome in some parts of the country in its grub or larva state, not only eating through the stems of the plants, but also destroying the leaves and seeds. See Fig. 8.

Rem. **17.** *Dusting with air-slacked lime* on a quiet morning while the dew is on the plants.

Rem. **18.** *Cutting the Stalks.* Those infested should be carefully cut out and carried away and burned.

Rem. **19.** *Fowls.* Employing a flock to feed on the beetles.

Aster Root Louse. See Aphis or Lice.

Bag or Basket Worm. This species, which proves not only a serious depredator to shade and fruit trees, but especially to the Arbor Vitæ in some places, appears to be on

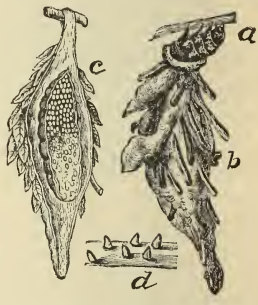


Fig. 9. Bag Worm. A, full grown larva with bag. b, c, follicle and puparium cut open to show eggs. d, young larva with their conical upright coverings.

the increase, and should be carefully looked after. During winter their dependent sacks or bags (See Figure 9) may be seen hanging on the twigs of the trees. As early as May of the next season the eggs on the bags hatch into small active larva, which crawling on a leaf, at once begins to gnaw it, and construct a portable case or bag in which to live.

Rem. **20.** *Hand Picking the Bags.* The best method of arresting the depredations of this insect is to collect the cases when they have attained a size to permit of their easy discovery, and crush or burn them. This is a very effectual method, for as the female has not the power of flight, being without wings, and never leaves its case even for the deposit of its eggs, a tree which has once been cleared of the bags can only become re-infested from contact of its branches with another infested tree, or from such a proximity to it that the intermediate space of ground could be traversed by caterpillars driven to migration for their food.

Rem. **21.** *Arsenical Poisons.* Undoubtedly either of the arsenical insecticides (which see) applied to their food-plants would destroy the young larvæ.

Bagging Grapes. See Remedy 78.

Baits of Potatoes, etc. See Remedy 153.

Bands on Trees. See Remedies 39, 45.

Bark Lice or Coccus (Coccidæ). A common class of insects, varying very much in form and which are injurious to many trees, shrubs, and plants, hardy and tender. A familiar form of the genus is represented in the numerous scale insects that infest the bark of Apple, Peach, Elm and many other trees, as well as that of greenhouse and indoor plants. Of these insects in this scaly stage some of them are oval with slightly convex scales, others are decidedly convex, and either formed like a boat turned bottom side upwards, or are globular or kidney-shaped. Another form is found in the white scale on Ivy, Oleander, Orange and similar leaves. Still others, while in a younger stage of growth are mealy, hairy or woolly, of which the well-known Mealy Bug of our greenhouses and window gardens forms a good illustration. The insects live by inserting their beaks into the bark or leaves and draw from the cellular substance the

sap that nourishes them. Concerning the Bark Lice or Coccus on Apple trees, the young shoots of which in many cases are completely covered with them, Professor Cook says he has known whole orchards to languish because of this pest. The young lice appear about two or three weeks after the Apple blossoms fall, insert their little beaks—really suction pumps—and soon suck the sap and vigor from the trees. By August the full formed scale is seen, under which are stored 80 or more small white eggs which will hatch the following June.

Rem. **22.** *Carbolic Acid and Soft Soap.* A strong solution of soft soap is the old and reliable remedy. Professor Cook has improved on this by the addition of crude carbolic acid, making the mixture as follows: One quart of soft soap to two gallons of water heated to the boiling point, when one pint of crude carbolic acid is added, stirring the solution well at the same time. This should be applied early in June, and again some months later, with a cloth or scrubbing brush, to all affected parts.

Rem. **23.** *Whiskey for Meaty Bugs and Others.* Applied to the insects with a brush, this is an effective remedy. Alcohol diluted with a little water answers the same end.

Rem. **24.** *Fir-tree Oil.* This is one of the most recent and highly praised remedies for all species of Coccus. The oil is mixed with water at the rate of one fourth pint of the former to two and a half gallons of water and syringed over the plants about once a week. For strong-growing Dracenas, Crotons, etc., a somewhat larger proportion of the oil might be used.

Rem. **25.** *Pyrethrum Tea or Decoction.* Prof. E. W. Hilgard found that a tea simply prepared from the unground flowers of Pyrethrum, when sprayed from a fine rose, to be efficient even against the armored scale-bug of the Orange and Lemon, which fell off in two or three days after the application, while the young brood are almost instantly killed. The tea should be made with briskly boiling water covered over closely to prevent evaporation, but not boiled, as that would seriously impair its strength.

Rem. **26.** *Fish brine.* This article has proved effective, the oil with which it is charged doubtless penetrating the scale and killing the eggs beneath.

Bean Weevil (*Bruchus obsoletus*). This insect is becoming quite troublesome in some sections. As the beetles do not all emerge from the beans until spring, they are liable to be planted in the seed and the evil thereby be continued and increased.

Rem. **27.** *Keeping over the Seed.* If the beans intended for seed be tightly tied up in stout paper bags and be kept until the second year, there will then be no living beetles within them, and they will be equally valuable for seed. If, however, they have been badly perforated they should not be used for planting, as many of them would not germinate. For other remedies see Pea Weevil.

Bisulphide of Carbon. See Remedies 102, 115, 120.

Birds that Destroy Insects. (**28**) Besides the kinds named under remedies 41, 46, 47, 96, as destructive to certain pests, the following are to be classed among the most helpful kinds in the general warfare against insects: Robins (cut, and other earth worms) Swallows, Night Hawks, Purple Martins, (moth-Catcher) Pewees, (striped Cucumber bugs) Wood Thrush and Wrens, (cut worms) Cat Birds, (tent caterpillar) Meadow Larks, Woodpeckers, Crows, (wireworms) Blue-throated Buntings, (canker worms) Black, red-winged birds, Jays, Doves and Pigeons, Chippys, (strawberry pests) Quails, (chinch bugs, locusts) Whip-Poor-Wills, (moths) Hawks, except Cooper's, all night birds, Owls, etc., Tanagers and black-winged summer Red birds, (curculios) Nut Crackers, Fly Catchers, Chimney Swifts, Indigo Bird, Chipping and Song Sparrows, Black Birds, Mocking Birds, Titmouses, Vireas, Orchard Orioles.

Blister Beetles. Of these there are a number of species, known as the Ash-gray, the Margined, the Striped, etc.

Rem. **29.** *Beating Down.* This should be done into a pan of water, soap suds or oil.

Borers. (*See Peach Borers, Currant Borers, and Sugar Maple Borers.*) There are three species of beetles that do serious injury to all parts of our country by boring into the Apple and other trees. The big or flat-headed borer, which cuts out a wide space just under the bark on the southwest side of the tree, and in case of small trees entirely girdling the trunk, and two species of beautiful longicorn or long horned beetles, Saperda candida and Saperda cretata, which bore through and through, and keep feeding for three years. The first of these three work only one year, and seem most destructive to trees that are not quite up to the standard in vigor. Thus newly set trees are specially susceptible to the attack of this beetle. All three of these insects lay their eggs in June and July, and all may be best treated in the same way and at the same time.

Fig. 10. *Butterfly of the Cabbage Worm. Remedies* 35 and 38.

Rem. **30.** *Preventing Egg-laying.* My experience has met with excellent success by use of soft soap. I rub the trunk and main branches with this, early in June, and again three or four weeks later. If I can make but one application, I use the crude carbolic acid and soft soap remedy No. 22. With this, and ungloved hands, and uncovered arms, I, by use of a cloth, rub the whole trunk and large limbs of the tree, using care not to sprinkle the foliage. In case the acid is very strong it might kill the foliage. This is applied to the trees two weeks after the blossoms fall.—PROFESSOR COOK.

Rem. **31.** *Probing for the Borers.* See 103.

Rem. **32.** *Coal Tar Paper*—Bands of paper thoroughly saturated with coal tar, and eighteen inches wide, tacked around the base of trees troubled by the Root Borer have proved successful.

Rem. **34.** *Coal Tar Direct*—Mr. Chas. E. Thesher, of Shawnee Co., Kansas, recently wrote to the Prairie Farmer as follows: "I have lost one orchard by the Round-headed Borers. In another orchard I am having better luck, keeping them out with coal tar. I apply with a brush to the tree up 18 inches, after first looking for any borers then in the tree. It has no bad effect. As the tree grew, open spaces of new bark appeared up and down the trunk. Next year I filled these up. That year the bark under the tar loosened more or less, exposing healthy new bark. Next year I scraped off the rough loose scales and put on a new coat. That, or *something else*, has kept out borers. Any way it don't kill the trees."

Buhach. See Pyrethrum.

Cabbage Maggots or Club Root. See Maggots.

Cabbage Worm. (*Pieris raphæ*). This worm, produced from the eggs of the white Rape Butterfly, represented by Figure 10, is a most injurious pest to Cabbage in most places, and especially in small gardens. They come in two broods, the first Butterflies being seen in May, the second in August, and the progeny of the latter causes the most trouble. Either the same or else a very similar worm also devours the Mignonette and some other plants.

Rem. **35.** *Pyrethrum or Buhach—Liquid Form.* A tablespoonful of the pure powder to two gallons of water, applying it by sprinkling with a watering pot, or better yet, by force with a pump Here, as in all cases where we use liquids to destroy insects, especially if as in this case it kills by contact, we must apply with great force, so that the liquid will spatter everywhere and so touch every insect.

Rem. **36.** *Pyrethrum—Dry Form.* One part of the dry powder mixed with forty parts of finely sifted wood ashes, dusting this over the Cabbages. If the mixture is prepared a day or two before using, keeping it in a perfectly tight vessel in the meantime, it will have even a better effect than when used freshly mixed.

Rem. **37.** *Hot Water.* Sprinkle the plants with hot water with the aid of a watering can and hose.

Rem. **38.** *Quassia Water.* An infusion of one pound of Quassia to one third barrel of water is recommended for killing the Caterpillars and preventing subsequent attacks. The same remedy has been used with success for plant lice and other insects.

Canker Worm of the Apple, Elm, and Some Other Trees. (*Anisopteryx vernata Peck.*)—While this insect is not of frequent occurence outside of the New England States, it is of the utmost importance to fruit growers and others that it be not permitted to increase and extend until it shall become established. Its sluggish wingless female moths rise from the ground and creep slowly up the trunks of Apple, Elm, and less abundantly many other trees, chiefly in March, but also later, and somewhat in the fall, laying their eggs in clusters on the bark, these being secured by a grayish varnish. The eggs usually hatch about the time the Red Currant is in blossom, and the Apple leaves begin to grow. The little worms attack the tender leaves near by, first piercing them with small holes, which later become larger and more irregular, and at last nearly all parts but the midrib and veins will be consumed. When young they are generally of a blackish or dusty brown color, with a yellowish stripe on each side. When fully grown, at which time they measure one inch or less in length, they usually assume an ash color on the back, and black on the sides, below which the pale yellowish line remains. They vary in color somewhat, however, being at times found of a dull greenish yellow, or of a clay color, and even green.

Rem. **39.** *Banding.* Banding the trees with strips of heavy paper or cloth, coated with tar or printer's ink, early in the spring, to prevent the ascent of the wingless females, is an old and effective remedy. It has been found that the residuum of kerosene oil is one of the best remedies that can be used on bands, it being both cheaper and lasts longer (about six days) than ink or tar. The latter articles must be frequently renewed. Traps made of tin and muslin to prevent the ascent of the worms are also in use.

Rem. **40.** *Arsenical Poisons.* The spraying recommended in Remedy 15 for the Codling Moth on Apple trees answers at the same time to destroy the young Canker Worms. On Elm and other trees this same remedy may be applied for its destruction.

Rem. **41.** *Birds.* The Cedar bird devours large numbers of Canker worms; a hundred caterpillars have been found in the stomach of one of these. Next in usefulness according to Dr. Lintner, come the Indigo bird, the Chickadee, the black billed Cuckoo, Yellow Bird, the Summer Warbler, the rose-breasted Grosbeak, the Blue Bird, the King Bird and the Robin, in the order named.

Rem. **42.** *Swine.* By allowing swine to run in the orchards in the spring many will be destroyed.

Carbolic Acid. See Remedies 22, 159.

Caterpillars. The remarks which here follow will apply to most kinds of Caterpillars that infest fruit and shade trees, shrubs,

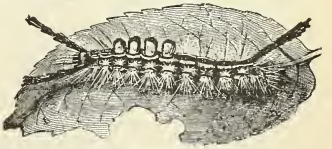


Fig. 11. *Caterpillar of White Tussock Moth, Rem.* 43, 47.

etc. But to the well-known Caterpillar of the white-marked Tussock Moth (*Orgyia leucostigma*), and which is shown feeding on a leaf in figure 11, special attention is here called. It is more commonly familiar

in the cities than elsewhere, owing to its depredations, often severe on street and other shade trees, and calling for the common but questionable remedy of cotton bands about the trunks. In color it presents the rich and varying diversity of cream yellow, (sometimes changing to white), velvety black and brownish spots, stripes and brush-like hairs, with a coral red head. There are also two long plumes of black hair rising from the head and a similar one from the last dorsal joint.

Rem. **43.** *Arsenical Poisons.* Same as 15. "London purple, as already shown," says Professor Riley, in a recent report, "is perhaps preferable to white arsenic or Paris green, in that it is not so liable to burn the leaves, while its color enables one to readily distinguish poisoned from non-poisoned trees. Moreover it is very cheap. From one-quarter to three-quarters of a pound of this substance and three quarts of cheap or damaged flour, to render the mixture adhesive and to lessen the tendency of the poison to burn the leaves, should be used to a barrel of water. The greater quantity of the poison may prove too strong for delicate young trees, and it will be best for general application to make the amount from three-eighths to one-half pound to the barrel. An apparatus for applying can be readily constructed, such as has been used on the grounds of the Department. It should consist of a water tank mounted on a cart and furnished with a strong force pump, operated by one man and furnished with two sets of rubber tubing, each supported by a bamboo extension pole (Figure 3), with a cyclone nozzle at tip. With such an apparatus as this three men could drive along the streets and thoroughly spray two trees simultaneously; while if it were found advisable, four independent tubes and four men to work them could be employed, with a sufficiently powerful pump, and thus expedite the work.

Rem. **44.** *Destruction of the Orgyia Eggs.* This, Prof. Lintner suggests, may be accomplished to a great extent with moderate labor. During June and later, and especially late in fall and during winter, the egg-masses may be seen as glistening, slightly woven white objects, becoming weather-worn after long exposure, and often occurring in patches of a dozen or more. They may be met on the trunks or larger branches of trees—a favorite location being where limbs are cut—in the corners of angles about fences, under window sills, etc. Children prove ready collectors for a small reward. Those out of arm's reach can be removed with a scraper prepared for the purpose. To show how effective may be this means of preventing the Caterpillar's appearance, it may be said that over 700 eggs of these have been counted in a single egg-mass.

Rem. **45.** *Cotton Bands.* The indiscriminate use of these, says our able State Entomologist, Prof. J. A. Lintner, in his last report, must be condemned for the Orgyia. They may be of service, and they may be decidedly objectionable, from the fact that the attack, in almost every instance, proceeds from the *eggs deposited the preceding year upon the tree.* If, therefore, Remedy 43 could be applied with the certainty that no egg clusters are upon the tree, then a band applied would prevent any wandering Caterpillars from ascending its trunk. But with the eggs or the young larvæ being already upon the tree, the band will prove a positive evil, in preventing migration to other feeding ground. The barriers, too, prevent the mature Caterpillars from descending to the rougher bark of the lower part of the trunk, in the crevices of which they prefer to build their cocoons, and would confine them to the tree, where it would be difficult to discover the egg-clusters, and destroy them.

Rem. **46.** *War Upon the English Sparrows.* Our troublesome English sparrows not only decline to eat this Caterpillar, but by force of numbers and their pugnacious dispositions they drive away the few birds that would feed upon them. Of such, according to Prof. Lintner, there are but the four named under Remedy 47.

Rem. **47.** *Birds.* Of these but four species that destroy this Caterpillar are known, namely: the Robin, the Baltimore Oriole, the black-billed Cuckoo, and the yellow-billed Cuckoo.

Celery Fly. For preventing the ravages of this pest the following remedies may be of use:

Rem. **48.** *Soluble Phenyle.* By syringing the plants with a very dilute mixture of this drug, and water, the insect may be checked.

Rem. **49.** *Gas Lime.* This applied freshly in the autumn to the ground to be planted the next year, incorporating it a few inches deep, will kill the pupæ of the fly.

Celery Worm. Treat as directed for Cabbage Worm or for Sphinges, which see.

Cherry and Pear Tree Slug. The Cherry and Pear tree slug is two brooded. The black flies come in May, lay eggs on the

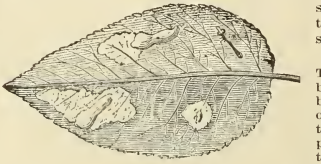


Fig. 12. *Cherry and Pear Tree Slugs at Work, Remedies* 45, 47.

leaves of the trees, and the larvæ or slugs, which are brown and slimy, feed upon the cuticle of the leaves. A second brood comes in September.

Rem. **50.** *Road Dust, Ashes, or Air-Slaked Lime.*—I know (Professor Cook) by actual trial that road dust thrown on to these slugs will sometimes drive them all from the trees. I also know that at other times it will apparently do little or no good. Whether this arises from the varying character of the earth or a different condition of the insect, I do not know.

Rem. **51.** *Pyrethrum or Bubach*—Same as Remedy 36. We have used, always with perfect satisfaction, using a Woodason dust bellows.

Rem. **52.** *Liquid Hellebore.* One pound of Hellebore powder to twenty-five or thirty gallons of water, finely sprayed over the affected trees or bushes, is one of the best and most easily applied remedies. The Hellebore kills not only by contact but also by being eaten. Hence Professor Lintner finds that the addition of a small quantity of flour to the water gives it greater adhesiveness and worth, over a longer period.

Rem. **53.** *Kerosene Emulsion.* Same as 6.

Cherry Worm. See Curculio.

Chrysanthemum Lice. See Aphis, or Plant Lice.

Coccus. See Bark Lice, or Coccus.

Coal Tar. See Remedies 7, 32, 137.

Codling Moth. See Apple Worm.

Corn or Boll Worm. (*Heliothis armigera*). This pest, so destructive to the Cotton and Corn-fields of the Southern States, has in recent years made its appearance as an injurious insect in the North. Figure 14 represents the worm at about its ordinary size. It not only attacks growing Corn, devouring the soft kernels in patches, but also bores into the fruit and stems of the Tomato; it eats into the pods of Peas and Beans, and burrows into Squashes, Peppers, Pumpkins, as well as into the stem of Gladiolus, etc.

Rem. **54.** *Hand-picking.* Experience in the South has shown that if the first brood of the Caterpillars are collected and destroyed their ravages may be controlled. Their presence can be discovered either when at work on the surface, or else, as in the case of Corn, by the holes eaten into the husks.

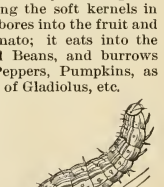


Fig. 14. *The Corn or Boll Worm.*

Rem. **55.** *Attracting by Odors and Drowning.* Where the insect occurs abundantly it is very successfully dealt with by attracting the moth to a mixture of molasses and vinegar. The odor, it is said, will draw them quite a distance, and in their attempts to feed they readily become caught and drowned.

Copperas or Blue Vitriol Water. (**56**). A solution of Blue Vitriol (Sulphate of Copper) in the proportion of one ounce to a pail of water, will serve to kill many kinds of grubs, maggots, etc., in the soil, and of small caterpillars on plants.

Cucumber Beetle. (*Diabrotica vittata.*) This is a well-known small striped beetle that troubles Cucumbers, Squashes, and Melons, making its appearance as soon as the leaves begin to expand, and a number of broods are produced during the course of the season. It is to the young plants that the insect is most injurious, and the great secret in dealing with it is to begin the treatment positively in advance of the insect's appearance.

Rem. **57.** *Plaster or Ashes, etc., and Kerosene.* To two quarts of plaster, wood ashes, or flour of bone, add one tablespoonful of kerosene, rubbing the mixture between the hands until the oil is well distributed. Sift or hand sprinkle this over the plants as soon as the first leaves appear, repeating it a few times until all are through the ground, and also later if this be required.

Rem. **58.** *Arsenical Poisons* (which see.) Applying a little when the vines are dry.

Curculio, or Weevil, of the Plum, Apricot, Cherry, etc. (*Conotrachelus*). This is the greatest enemy of the Plum and some other stone fruits, while also affecting the Apple and other kinds. Within a few years especially serious damage has been done to Apples. Its attacks are followed by great deformity in the fruit. The Apples are often stung many times and become so gnarled, distorted, and scarred as to be wholly worthless. From observations made the past season, I believe the Apples will suffer attack very rarely if Plum trees are scattered liberally among the Apple trees. In this case the Weevils will attack their favorite, the Plum, and so the Apples will go free. If this prove invariably true, as it has in several cases which have come under my observation the past season, then it will pay doubly well to plant the Plum trees. The Plums will protect the Apples, and by jarring, the Plums may be saved and the fruit grower will secure good crops of both fruits. Dr. Harris says that the Cherry Worm, which is very common in this fruit, is identical with the Plum Curculio, but unlike the effects of the insect on the Plum, it does not cause the Cherry to drop prematurely to the ground.

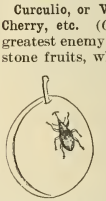


Fig. 14. *Curculio Beetle stinging a Plum previous to laying its eggs.*

Rem. **59.** *Jarring Process.* This is a simple and adequate remedy within the means of every-

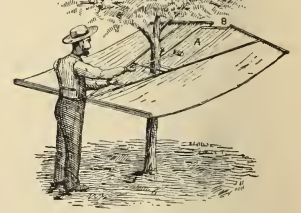


Fig. 15. *Popular Gardening's Non-Patented Curculio Catcher.*

one's employing. It consists of spreading cloth sheets, or frames of some form covered with cloth, under the tree, jarring the tree sharply by striking on an inserted spike or on the stump of a lower limb removed for the purpose. An excellent device of our own for this purpose is illustrated in Fig. 15. The cloth at the near end of the frame is attached to a single light strip of board, while at the center of the entire area it is divided into two parts, the further end of each being attached to a short cross piece, which in turn is supported by one arm of a light frame, as shown in the figure. The two further cross pieces are one foot apart at B to admit of bringing

the frame under the tree, with its center and main cross arm resting against the trunk during the jarring. A flap of cloth, A, extends from one of the projecting parts to the other, to be raised and again let down in adjusting the frame. Concerning the jarring operation, this should be begun as soou as the insect commences its work, which is soon after the fruit is set. Tho work of the insect may easily be detected by the small cresent-shaped mark that is left on the fruit. The jarring process need not necessarily be performed early in the morning while the dew is on, or late in the afternoon. The iusect will not so readily let go its hold, as when it is actually at work, and this is not until the dew has dried off and the atmosphere has become warm. The number of times that an orchard should be gone over depends upon the varieties. Those that become hard and downy soon, like Richmond, Lombard, Reine Claude, etc., require much less jarring than large, smooth kinds like Pond Seedling, Yellow Egg, Coe's Golden Drop, etc. It should be repeated daily for one week, and then at intervals of a day or so between, so long as the insect remains at work.

Rem. **60.** *Poisoning by* using the arsenical poison of number 15, spraying the trees, Weir says: First, just before the blossom buds open; second, two weeks after the petals fall. If a weak, soapy kerosene emulsion is used at this spraying to mix the poisons in, it will also destroy the leaf lice, aphides, bugs and all other insects injurious to the fruit and foliage; and then a third spraying about June 10th, and your fruit is safe.

Rem. **61.** *Planting Wild Plums.* These Plums planted en masse in sufficient quantity on a place will gather unto themselves all the Plum Curculios on the place and so protect all other fruits from its ravages. And being on them the female naturally lays her eggs in the fruit, few of which ever hatch, and so few reach maturity in this fruit. The extensive planting of the same on a place will alone well nigh exterminate the pest.—WIER.

Currant Borer. This little Caterpillar, for it is really the larva of a beautiful little blue moth, is becoming more and more common. The moth lays the eggs on the canes of the Currant in June, and the larva as soon as the egg hatches enters the stalk, and not only hollows it out, but kills it outright. I (Professor Cook) know a certain region in Michigan where these little pests have ruined every Currant plantation except a few that have been carefully looked after.

Rem. **62.** *Removing Affected Parts.* Cut all such off late in the fall or early in the spring and burn them. As the borers are now in the stems they are also burned. The diseased canes can easily be told by their dead or dying tips. Such treatment is the price of the Currant bushes wherever they are attacked by these insects.

Currant and Gooseberry Slug or Worm. (*Nematus ventricosus.*) This voracious insect differs from the Cherry slug. The flies are yellow, not black. The slugs are green, or green dotted with black, and not brown. They feed on the Gooseberry or Currant, and eat the leaf entire, instead of merely removing the cuticle. It is so readily dealt with by the timely application of remedies that there can be no possible excuse for the shocking damage often seen done to these useful fruits about town and country homes.

Rem. **63.** *Powdered Hellebore.* Hellebore the best of known remedies and a perfectly effectual one. Properly applied no harm can possibly result from it. It should, according to Prof. Lintner, be used in the following manner. Early in the spring, as soon as the leaves of the Currant have fully put forth, watch for the first indications of the hatching and commencement of the young larvæ. You have only to look for these on the *lowest leaves of the bushes near the ground.* The indications will be numerous *small holes eaten into the leaves.* Sprinkle powdered Hellebore over these leaves, renewing it if washed away by rain, and the desired end is accomplished. If the Hellebore remains upon the leaves during the time that larvæ are hatching all will be killed, and none will remain for subsequent spreading over the leaves and for the need of future attention. If the first brood of worms is thus destroyed there will be few if any to form a second brood in June.

Rem. **64.** *Hand Pinching.* Some find it convenient to watch for the first eaten leaves, and to pinch them off by hand and destroy them. The eggs are always to be found conspicuously arranged in rows upon the veins of the under side of the leaves.

Rem. **65.** *Nicotyl.* Laying some refuse tobacco stems from the cigarmaker's in the center of each bush about May 1st, or mulching the bushes with tobacco stems, or these mixed with strawy manure, afford a complete remedy.

Rem. **66.** *Dusting with Soot.* This has recently been recommended as being equally as destructive to this worm as is Hellebore.

Cut-Worms. (*Agrotis, etc.*) Of these destructive worms, which have the habit of leaving their places of concealment in the soil at night, coming to the surface and cutting off almost every kind of newly set vegetable and flowering plants, there are now known to be many species. Those of the genus *Agrotis*, being mostly thick, greasy-looking Caterpillars of some shade of gray, brown or green, variously marked, are the best known and well to be looked upon with dread.

Fig. 16. Cut Worms turned away. Remedy 68.

Rem. **67.** *Poisoning.* Put a teaspoonful of Paris green or London purple in two gallons of water, and sprinkle handfuls of grass, or green sods, which can then be scattered throughout the patch, walking crossways of the harrow marks. By doing this towards evening after the last harrowing, during the night the cut worms that are deprived of their food will be out looking for fresh pastures and will appropriate of the prepared bait, the smallest particle of the poison of which will kill. If the worms are very troublesome, the remedy can be repeated, it being easily applied.

Rem. **68.** *Shielding the Stem.* By encircling each plant that is set with a bit of tar paper, or even other paper, as shown in Figure 16, the ravages of the worm may be prevented. The paper should extend upwards several inches from a point just beneath the surface of the soil.

Rem. **69.** *Fall Plowing and Digging.*

Rem. **70.** *Hunting and Killing.* By closely examining the surface of the soil in the morning, in the vicinity of their spoils, their place of retreat may usually be discovered, and the worms be killed.

Earth or Angle Worm. This common red worm, found in all soils, is harmless so far as eating the plants is concerned, but does damage by feeding on the nutriment of the soil and otherwise doing it injury.

Rem. **71.** *Lime Water* easily kills this worm, the caustic of the lime acting fatally on its cuticle. One peck of lime to a barrel of water will make the needed solution, allowing this to settle and watering the plants once thoroughly with the clear water.

Elm-leaf Beetle. The worm and larvæ of this pest has now become widely extended, doing great injury to the Elm trees of our cities. It is shown at work in the accompanying engraving, and its presence is soon apparent by the blighted appearance of the trees.

Rem. **72.** *Arsenical Poisons.* Same as 43, which should be applied for the first early in June, and again a few weeks later, if it seems necessary.

Fir Tree Oil. See Remedy 24, 149.

Fish Brine. See Remedy 26.

Flea Beetles. (*Haltica.*) As soon as the Cabbage, Radish, Turnip, Ten Week Stocks, and some other plants show their first leaves in the spring they are liable to be visited by the Black or Striped Flea Beetle. These minute beetles soon do great injury to the young plants if not checked. They are so shy in their habits that it is quite difficult to get a view of them, but their presence may always be known by the spotted appearance of the leaves. The Grape-vine Flea Beetle is a near relative, varying in color from steel blue to metallic green and purple.

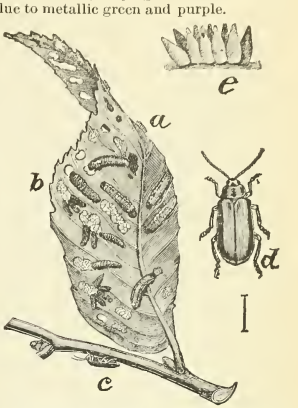


Fig. 17. Imported Elm Beetle. A, eggs; b, larvæ feeding; c, adult; d, beetle enlarged; e, eggs enlarged.

Rem. **73.** *Poisoning.* The surest way to destroy them is by using Paris green or London purple mixed with land plaster, flour, dry leached ashes, etc., one part of the poison to fifty of the plaster. If the plants can be dusted in the morning so much the better, but I generally do it when I first see the insects at work, which is in the heat of the day. One application usually suffices.—*R. J. Coryell.*

Rem. **74.** *Dusting with Lime, Ashes, etc.* This common, simple remedy, if not so positive as the last, yet proves very effective if persistently applied.

Rem. 69. *Domesticating Toads.* The large common toad is a most successful nocturnal collector of beetles and other forms of insects, and its presence in the garden and greenhouse should be constantly encouraged. The stomach of one examined was found to be nearly full of flea-beetles of a species abounding on Cabbages and Turnips in a garden. The toad is not partial to any one kind of iusect, however, but devours all kinds with avidity and in immense numbers.

Fir Saw-fly. See Saw-flies.

Flour. See use of in Remedies 43, 73, 108.

Fowls. (76.) Under Remedies 19, 79, etc., some reference is made to these, to which may be added that Turkeys, Ducks and Geese are devours of great quantities of insects. We have known of a garden being kept entirely clean of these by permitting a small flock of Ducks to make it their home. They do not scratch like chickens. Muscovy Ducks are objectionable, for they consume buds also. Young Turkeys are voracious consumers of insects.

Gall Flies and their Grubs. Excrescences of various kinds known as Galls and produced by the deposit of eggs of insects in the bark or leaves of plants may often be seen. What is commonly known as the Oak Apple is caused by a Gall Fly. When cut longitudinally the Gall is seen to inclose a great number of granules, each containing a minute larva. The Rose Gall, frequently seen as rather a handsome globular excrescence on the branches of Wild Rose bushes, is the work of another Gall Fly. The Elm, Beech, and other trees, besides many other forms of growth, frequently show Galls of some kinds, either on the twigs, leaves, or roots.

Rem. **77.** *Removal and Burning.* The only remedy is to cut off the excrescences as soon as they are observed, and putting them into the fire.

Gas Lime. See Remedy 49.

Gooseberry Slug. See Currant Slug.

Grape Berry Moth Larva. This worm attacks the young berries about July 1, showing its presence by a discoloration at the

point of entrance. It generally eats out the interior of the berry, and if the fruit is disturbed the worm wriggles out and lets itself to the ground by means of its silken thread.

Rem. **78.** *Bagging the Clusters.* The course is a most simple one. Common light manilla bags, the size known as two pound bags, are usually employed. These are slipped on over each cluster of the fruit and secured somewhat loosely by pins or a loop of wire or thread. If the stem of the cluster is brought against one end of the opening a single pin to a bag will answer, if in the middle, to have the paper bear evenly on all sides, then several pins or stitches are needed. A small slit should also be made in the bottom of each bag, to allow escape for any water that may enter into it along the stem. From 500 to 1000 bags can be put on in a day by one person, and costing from ½ to 1 cent per pound of fruit. Bagging also serves as a prevention of mildew and rot, and protection from birds, fowls, etc. The time to bag the fruit is as soon as it is well set.

Grape Leaf Hopper. (*Erythroneura vitis.*) This active little insect, often erroneously called Thrips, is one of the most troublesome known to the Grape grower. It is hardly above an eighth of an inch long; it jumps with great vigor, and dodges around quickly with a sidewise motion when approached. It congregates in great numbers on the underside of the leaves, where it sucks up the sap, causing numerous brown spots and often killing the leaves. Of this insect there are several species, differing only in color.

Rem. **79.** *Torch Remedy.* Pass between the rows with a strong torch at night, one person to carry the torch and one on each side to slightly shake the trellise for starting them towards the flame. They fly readily to the light and being small are at once destroyed.

Rem. **80.** *Kerosene Emulsion.* Same as 6.

Rem. **81.** *Cleanliness.* As they pass the winter under leaves, loose bark of the stakes, etc. Cleanliness in removing and burning the leaves in the fall, as well as cleaning away all lodging places, is of the first importance.

Grape-vine Flea-beetles. See Flea-beetles.

Grape Curculio (*Craliocles inæqualis.*) The larva of this curculio infests the Grape in June and July, causing a little black hole in the skin and a discoloration of the berry immediately around it. This Curculio is small and inconspicuous, being of a black color, with a grayish tint. It is very bad some years and in others scarcely noticeable.

Rem. 82. *Jarring and Removing Berries.* All infested berries should, from time to time, as they are noticed, be collected and destroyed, and the beetle may be jarred down on sheets, as with the Plum Curculio.

Rem. **83.** *Bagging the Clusters.* Same as Remedy 78.

Grasshoppers. A remedy that gives promise of being a most excellent one for this well-known pest comes from the Pacific Coast, having first been published in the Pacific Rural Press as follows:

Rem. **84.** *Mash of Bran and other Ingredients.* The mash consists of four parts of bran, one part of sugar and one and one-half parts of arsenic, to which is added a sufficient quantity of water to make a wet mash. Mix the arsenic thoroughly with the bran; put the sugar in the water and stir until the sugar is dissolved. Then pour this sugar-water into the bran and arsenic and stir thoroughly. A common washtubful of this mash is sufficient for about five acres of Grape-vines. Throw about a teaspoonful of the mixture beneath each vine infested, and in a short time the Grasshoppers will leave the vine and commence feeding on the bran, and in a few hours will be found to be dead. The mixture costs from thirty-five to forty cents per acre of vineyard. Middlings or shorts have been used in the place of bran, but are not so desirable.

Grape-vine Fidia. (*Fidia viticida.*) This beetle, often confused with the Rose bug (See Fig. 25), which it somewhat resembles, being rather shorter and broader, is in many places very injurious. It comes around during June and July, inflicting damage by riddling the leaves, sometimes if very numerous so that they are but mere shreds.

Rem. **85.** *Jarring.* Same as No. 59. The least jar is sufficient to cause the insects to fall.

Rem. **86.** *Fowls.* By starting a flock of fowls in the vineyard, having one boy go ahead to shake the infested vines, and another behind the fowls, vineyards have been completely cleaned of the pest.

Grape-vine Worms. See Sphinges.

Green Fly or Lice. See Aphis.

Grubs, White. See May-bugs.

Hellebore. See Remedies 52, 63, 127.

Honeysuckle Sawfly. See Sawflies.

Hot Water Remedy. See Remedies 5, 12, 37, 154.

Household Insects. See Pyrethrum; also Remedies 2 to 4. It may be added that as a remedy to be applied on living creatures a mixture of crude petroleum and lard will kill all insects.

Insect Powder. See Pyrethrum.

Jarring. See Remedy 59, 75.

Kerosene. See Remedies 6, 57.

Lady Bug. See Remedy 13 and Fig. 18.

Leaf Crumplers. (*Phycis indigenella.*) A conspicuous pest of various fruit trees and widely distributed. Its presence is at once known by its work of bringing a considerable mass of leaves together, (which soon turn brown), and attaching them to each other and to the twigs by means of silken threads. The brown, wrinkled worm is within. The next season young worms appear from the mass and feed on the new crop of leaves.

Rem. **87.** *Gathering the masses* and burning them.

Leaf Skeletonizers. Under this head might be brought a number of insects, including Slugs, that feed on the parenchyma of the upper surface of the leaves. They may be destroyed by remedies 6 and 43, according to their habits.

Leaf Rollers. There are many Caterpillars that curl or fold up the edges of the leaves of plants, securing both habitations and food to the insects. In the case of the Grape-vine Leaf Roller, Verbena Leaf Roller and others, the worm is of a grass-green color,

Fig. 18. *Lady Bug and Larva.*

very active, wriggling, jumping and jerking either way at every touch.

Rem. **88.** *Crushing.* The most simple method to destroy the worms is by crushing them suddenly within the leaf with the hand.

Rem. **89.** *Fall Burning of Dead Leaves.* As the last brood hybernates in the chrysalis state within fallen leaves, much may be done, especially in the case of the Grape and other fruits towards checking the ravages of this worm by raking up and burning the leaves in the fall.

Lime, Ashes, Lime Water, etc. See Remedies 17, 50, 71, 74, 131.

London Purple. (**90.**) This insecticide, which has assumed so much importance to plant cultivators, is a refuse material obtained in the manufacture of analine dyes, heretofore worthless. It appears to be mainly an arsenite of lime. Its efficacy in the destruction of insects seems to be about equal to that of Paris green, although it does not act upon insect life quite so rapidly. Its cost is also less. See Remedy 108; also, 15, 43, 67.

Lye Solution. See Remedy 116.

Maple Borer. See Sugar Maple Borer.

Maple-tree Scale. See Bark Lice.

Maggots of the Cabbage, Onion and Radish Flies. (*Anthomyia.*) These terrible and widespread destroyers are very hard to combat, and so are among our worst insect pests. The little flies, which look like small house flies, lay their white eggs at the base of the plants. The little conical maggots groove and deface the Radishes and utterly destroy the Onions and Cabbages by tunneling to underground stems, causing club-root. While the kerosene and soap mixture and bisulphide of carbon will surely kill if they reach the insects, they are not satisfactory in real practice. Owing to difference in soil, and the speed with which the Maggot enters the plants, such remedies are not practical. I have found as yet no satisfactory insecticide to destroy these insects.—Professor Cook.

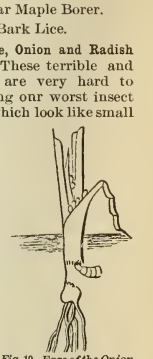


Fig. 19. *Eggs of the Onion Fly; Onion Maggot at work.*

Rem. **91.** *Covering the Beds.* For the Radish Maggot I know of no sure way except to keep the beds of early Radishes entirely covered with thin cloth.—Professor Cook.

Rem. **92.** *Change of Location.* For Onions and Cabbage a frequent change in the location of the beds serves the best. We have found now for two years that a removal of our beds one-half mile with an intervening orchard has saved our Cabbages. If the same insect attacks both Onion and Cabbage, as I believe is true, then we must move the location of both vegetables at the same time.—Professor Cook.

Rem. **93.** *Destroying Affected Onions.* In case of an attack all affected plants should at once be taken up by means of a broad-bladed knife to lift the larvæ, and then promptly burning and otherwise purifying the soil and other matter lifted.

Rem. **94.** *Preventing Club-root.* Experiments of the Eastern growers show that a liberal dressing of lime and gas-lime to the soil, and harrowed in, acts as a preventive to Club-root and also kills the Maggot.—Coryell.

May-bugs or May-beetles and their Larva. (*Lachnosterna.*) Of this well-known pest, both the beetles in their winged state and its larva, the White Grub, are often to a very injurious degree destructive to vegetation; the former injuring the leaves and growth above ground, the latter the root, indeed, in some seasons May-bugs have been so numerous as to devour the leaves of fruit and forest trees and shrubs with an avidity not much less than the Locust. They are partial to the leaves of the Cherry.

Fig. 21. *White Grub of the May Beetle.*

Rem. **95.** *Jarring for May-bugs.* Same as 54.

Rem. **96.** *Crows.* These destroy many of the perfect insects, as well as the Grubs.

Rem. **97.** *Artificial Breeding Places.* Some such made by covering piles of fresh cow-dung with fine earth about the month of May will attract the Beetles, as depositing places for their eggs. As these hatch before winter, by then turning over the heaps and spreading them out so the material will lay loosely and not more than

six inches deep, doing this as the earth is about to freeze up, all will be killed by freezing.

Rem. **98.** *Deep plowing* of infested lands in the fall.

Rem. **99.** *Swine* will root up and destroy the grubs if turned upon infested land.

Melon Vine Borer. See Squash Vine Borer.

Mignonette Worm. See Cabbage Worm.

Molasses and Poison. See Remedy 4.

Mustard Water. See Remedy 160.

Nicotyl. See Remedies 10, 65 and Fig. 21

Onion Fly and Maggot. See Maggots.

Paraffine Oil. See Remedies 11, 155.

Paris Green. See Remedies 15, 43, 67.

Petroleum Crude. See Household Insects.

Pine Tree Sawfly. See Sawflies.

Pea Bug or Weevil. This is the well-known bug found in Peas, and which, by the time it is of full growth has consumed a large portion of the grain, to the great impairment of its value both for food and seed.

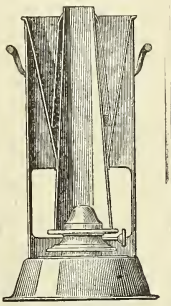


Fig. 21. *A Nicotyl Vaporizer.*

Rem. **100.** *Soluble Phenyle.* Miss Omerod, the accomplished English entomologist, reports that by sowing the Peas along with coal ashes (sand should do as well) saturated with a tablespoonful of phenyle to a gallon of water, the ashes left covered several days before use to become thoroughly charged with the smell, the attack of weevil was prevented on the new crop.

Rem. **101.** *Turpentine.* Peas that have been stung may be rendered bugless by placing them as soon as gathered in jars or other tight vessels adding as much as a teaspoonful of turpentine to each jar. This will kill the immature bugs very soon.

Rem. **102.** *Bisulphide of Carbon.* For treating Peas on a large scale it is usual to submit them to the heavy fumes of bisulphide of carbon, an abominable smelling but destructive drug.

Peach Tree Borer. This is a most destructive insect when allowed to increase for a few years without molestation, and their multiplication should be prevented by all possible means. The eggs are deposited in summer on the base of the trunk, near the collar, where the bark is soft. There they are hatched and bore their way under the bark of the tree, either in the stem or roots, or both, producing an effusion of gum.

Rem. **103.** *Probing the Borer.—Ashes and Lime.* Bank up the soil around the stem firmly eight to twelve inches directly after blooming, taking it away in the middle of the following August, and trace the grub through its holes in the tree and kill it; then place a shovelful or two of wood ashes around the base. Wood ashes or slaked lime may be applied every spring and at the end of summer may be scattered about the tree, both of these articles forming an excellent dressing for the Peach. See 31, 143.

Pear Slug. See Cherry and Pear Slugs.

Phenyle, Soluble. See Remedies 5, 100.

Pine Bark Chermes. The appearance of this insect on Pine trees of several kinds is known by little patches of a white wool-like substance adhering to the bark. The insect is found beneath this substance which serves as a covering.

Rem. **104.** *Crushing with a Brush and Cloth.* By using a stiff brush on the branches and a strip of cloth to draw repeatedly backward and forward through the axils of the branches, the insects can easily be killed.

Rem. **105.** *Whale Oil Soap.* A solution formed with a quarter of a pound of soap to a gallon of water and applied with a force pump would destroy the insect.

Plant Lice. See Aphis.

Plaster and Plaster of Paris. See Remedies 50, 73, 108.

Potato Beetle. This insect is now too well known to require any description.

Rem. **106.** *Early Poisoning.* To poison the adults when first they appear and before the Potatoes are up is an effectual way of preventing a large share of later trouble. By simply slicing Potatoes thinly and dipping the pieces into Paris green water, and then scattering these about the field, the task is done.

Rem. **107.** *Arsenical Poison No.* 15, 43. Applying for a few plants with a whisk, or for more with a fine watering pot or force pump, taking care not to deluge the plants, but only to cover with a light spray.

Rem. **108.** *Arsenical Poison, Dry Forms.* This may be prepared either from Paris green or London purple, both of which appear to be of about equal efficiency. The latter is the cheapest and it has the advantage of being more readily seen on the plants, but it does not accomplish its work so rapidly, for often its effects are not apparent until the second or third day after its application. Used in a dry form the best results have been obtained when cheap flour has been used to dilute it, although road dust, land plaster, plaster of Paris, etc., are employed for this purpose also. The advantage in using flour is that the compound seems to adhere better to the leaves of plants and to be more readily eaten than are the mineral and other substances. Potato leaves will safely bear the poison as slightly diluted as ten or twelve pounds of flour to one pound of Paris green or London purple. Some other vegetation will show injury to the leaves, unless twenty pounds of flour be used with one pound of Paris green, while of this poison even thirty pounds of flour to one of the pure drug will destroy a large proportion of insect pests. In actual use London purple seems less liable to injure the leaves of many plants than Paris green. When the purple is prepared of the strength of one pound of poison to ten of flour it will injure only delicate vegetation. The latter reduced with even seventy pounds of flour will be found to kill nearly all leaf-eating larvæ. For general use the preparation of London purple recommended and which has given the best practical results, is one pound of the purple to forty of flour. In using land plaster and plaster of Paris, instead of flour about 150 pounds of the former should be used to each pound of poison. Dry road dust at the rate of one and one-half bushels to one pound of poison, and of ashes two bushels to the pound, have been found to be in about the right proportion for effectually destroying the Potato bug and its larva. In all cases the materials must be thoroughly mixed and should be applied in early morning while the leaves are wet with dew, that it may adhere the better. A simple mode is to tie a muslin bag containing the powder to the end of a stick and shaking it over the plants. A rather better method is that of a tin dusting box having a cover and a finely perforated bottom, or one consisting of light wire gauze or thin muslin turned up over the end and bound on, and the box attached to a handle about three feet long. By then walking along with the box turned over the plants and supported with one hand, tapping it with a small stick in the other hand, the powder can be uniformly distributed. In case the growth of vines nearly cover the ground the plaster or ashes mixture can be sown broadcast over five or so rows at once with economy of labor. Care should in all cases be taken to keep to the wind ward of the plants to be dusted, in order that the poison may not be breathed.

Rem. **109.** *Prepared remedies,* such as Slug Shot.

Potato Worm. See Sphinges and their larva.

Probing. See Remedies 31, 134, 143.

Promoting Growth as a Remedy. See Rem. 14.

Pumpkin Vine Borer. See Squash Vine Borer.

Pyrethrum or Dalmation Insect Powder, "Buhach." (**110.**) This remarkable vegetable insecticide consisting of the finely pulverized flowers of *Pyrethrum cinerariæfolium,* (Another form is known as Persian Insect Powder, from *Pyrethrum roseum* and *P. carneum*), has the peculiar property of not being injurious to human beings, but stangely enough kills most kinds of insects or spore-breathing creatures. On such the powder appears to have the effect of producing a paralysis, from which they rarely recover, although life may linger for several days. The powder is now produced on a large scale in California. Pains should be taken to use the article fresh and pure, and to keep it in air-tight bottles or boxes, for its active principle is volatile and it loses its strength unless care is taken to keep it in air-tight receptacles. This powder is the insect powder of the stores, but in that form it is apt to be weak from adulteration, or age and exposure. This has become almost the universal, as it is a most safe and effective remedy against all household insect pests as flies, mosquitos, roaches, bed-bugs, etc., all of which it kills, if applied to them in a closed room, by means of a small bellows box or otherwise. See Remedies 25, 36, 51.

Fig. 22. *The Red Spider greatly magnified.*

Quadruped Foes to Insects. 111. Remedies 42 and 91 refer to the usefulness of Swine as devourers of insects. To the Swine may be added the Skunk and the Raccoon, neither of which, however, is to be recommended without a qualifying clause. The Skunk, while feeding almost wholly on insects, is disposed to attack the chicken roosts and nests,—shut him out from these and he is a harmless and most helpful agent in the insect war. Raccoons devour great numbers of grubs and other worms in the spring, but they have a great fondness for the Green Corn crop also later in the season.

Quassia Water. See Remedy 38.

Quince Curculio. See Curculio of the Plum, etc.

Radish Fly and Maggot. See Maggots.

Raspberry Saw-fly. See Saw-flies.

Raspberry Slugs and Worms. See Slugs.

Red Spider. (*Acarus tellarius.*) This well known minute insect pest is one that is peculiar to dry and warm conditions of the atmosphere. It is not only troublesome on window and greenhouse plants, but often in dry weather greatly so to garden plants and trees. The insects, generally in large numbers, attack plants when they are in a weakened state, from want of sufficient water or other causes, spinning webs over the under side of the leaves, and sucking out the sap. They are not spiders at all, as may be seen by the greatly magnified representation of one in Figure 22, but belong to the family of mites.

Rem. **112.** *Water and Moisture.* These pro-

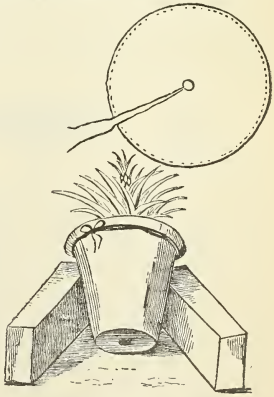


Fig. 23. *Plant inclined for Syringing the underside of the leaves.*

TREATING POT PLANTS FOR RED SPIDER. REMEDY 110.

vided with persistence are complete specifics. As the insects exist on the underside of the leaves, the best way to destroy them is by repeated forcible syringing. In the case of pot plants there is some danger of getting too much water to the soil and roots, hence the methods of preventing this suggested by Figures 23 and 24 are useful. With garden plants there is little danger of excessive moisture at the root from syringing.

Rem. **113.** *Sulphur.* Where plants are confined, as in a greenhouse, the fumes of sulphur are also employed as a remedy. This, however, must be applied with caution, as excessive fumes will also kill the plants. A safe course is to put flowers of sulphur on tin or iron plates and set in the sun near or under the plants. Applying a wash of sulphur mixed with guano or lime and water to the hot-water pipes is another common mode of applying sulphur.

Road Dust. See Remedies 50, 108, 57, 131.

Root Aphis or Lice. These are species of Aphides which, instead of feeding on the leaves and shoots of plants, attack the roots, hence are not to be directly treated by the remedies for Aphis or Plant Lice, which see. Undoubtedly the most important insect of this class is the Phylloxera or Grape-root Louse, which has in recent years spread with such wonderful rapidity throughout the vineyards of Europe. In France a prize of $60,000 has been offered in vain by the government for an effectual means for destroying it. It was first detected in this country about 1855, but happily is not seriously injurious to native American Grapes. The varieties of Root Lice we are more interested in are those which attack the Apple, Peach, and many other plants, including those of the flower garden and greenhouse, feeding underground on their roots.

Rem. **114.** *Salt Water, Soap Suds.* Dr. Harris has found that in the case of hardy plants watering with salt water was useful in destroying root lice, but tender herbaceous plants would suffer from the same treatment; these, however, he has assisted against the injuries of the pests by free and frequent watering with soap suds.

Rem. **115.** *Bisulphide of Carbon.* This material was first brought into use in France. It was applied by puncturing the soil two or three feet deep under a tree or vine, or, if these were large, making holes four feet apart each way, into each of which an ounce and a half or two ounces of the bisulphide was poured. Very good results attended its use in this manner. This drug, however, as Prof. Saunders suggests, has its drawbacks, namely, it has an abominable smell, it is explosive if brought near a light, its fumes are heavy and poisonous and it is too expensive to be employed on a large scale.

Rem. **116.** *Wood Ash Lye.* Mr. Deming, of the Missouri Horticultural Society, says he eradicates the pest by sprinkling with wood-ash lye.

Rose Beetle, Chafer or Bug. (*Macrodactylus subspinosus.*) This insect, shown in Fig. 25, is one of the greatest pests known to the gardener. It devours buds, blossoms, young fruit, and leaves. Not only does the Rose

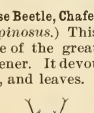


Fig. 25. Rose Beetle, Chafer or Bug. Remedies 117, 130.

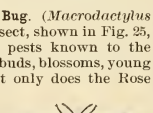


Fig. 26. Rose Saw-fly (perfect insect of Rose-slug) enlarged. Remedies 126 to 131.

suffer badly from its depredations, but entire crops of Peaches, Grapes, Apples, Cherries, vegetables, etc., have been blasted by the same insect. They seem to have a special fondness for the Ox-eye or Field Daisy; it is a pity they do not confine their attentions to that weed. They are of a grayish or ashen yellow color. Their time of attack continues for a month or more from the blossoming of garden Roses.

Rem. **117.** *Jarring and Burning.* Same as 59.

Rem. **118.** *Hand Picking and Burning.* This is the most common remedy for small bushes and not so serious as it might seem. Gather them early in the morning by picking or brushing into a vessel of water. Afterwards they should be burned or destroyed with kerosene.

Rem. **119.** *Planting Clinton Grape-vines.* It has been found that this insect shows a decided preference for the Clinton and its close allies, over all other varieties of the vine. It is therefore suggested that in vineyards, as the beetles must be gathered by jarring or hand picking, this variety be planted for bringing the work of gathering them within a smaller compass.

Rem. **120.** *Bisulphide of Carbon.* It is stated from a reliable source that small vials containing a few drops each of this liquid tied among the bushes or vines affected, at intervals of a foot or two, the liquid being renewed occasionally, protected them entirely, while those beyond were badly eaten by the beetles.

Rose Gall. See Gall Flies and their Grubs.

Rose-leaf Hopper. (*Tettigonia rosæ.*) This little white hopper, often mistaken for Thrips, lives, it is believed, exclusively on the leaves of Roses, and is very injurious to them. Swarms of the perfect insect may be found in various stages of growth in the leaves throughout the summer, and even on indoor plants.

Rem. **121.** *Whale Oil Soap.* Same as Rem. 128.

Rem. **122.** *Nicotyl Vapor.* Same as Remedies 10, 65.

Rem. **123.** *Infusion of Tobacco.* Pour boiling water over cheap Tobacco or Tobacco stems so as to cover completely and leave it standing over night. Dilute for using with four or five times the quantity of water and apply with a syringe or force pump, taking care to distribute it also over the underside of the leaves. The application, like most other liquid applications to leaves for the prevention of insect injuries, should be made in the evening or early in the morning. It should be first applied early in the season before the injuries are very apparent and as soon as the young larvæ, looking like little white specks, can be discovered upon the underside of the leaves. As often as may be needed, in order to check the attack, the showering with the infusion should be repeated.

Rose Midges and their Maggots. One of the most destructive pests that growers have to deal with, especially in forcing the Rose, is this minute Fly, which attacks the flower buds and from which the Maggots, found usually in large numbers under the outer petals of the buds, come. These are not more than 1-16 in. long, and seem to have a strong desire to eat to the center of the bud as quickly as possible.

Rem. **124.** *Fumigation with Tobacco.* For Roses under glass the best remedy is to fumigate for 6 or 8 evenings very strongly with tobacco in the usual way, so as to effectually kill the fly, and cut off all the buds and burn them. Continue this treatment for 3 or 4 weeks. If the Roses should be outside it is more difficult to get rid of this pest.

Rem. **125.** *Slug Shot for Outdoor Roses.* Repeated applications of Slug Shot is a great help, but the crop of flowers that are affected must be cut off and burned, whether outdoor or in. A good plan is to go carefully over every plant and take off every flower and burn them, then apply Slug Shot. In every case it is a most troublesome pest to get rid off, but by persistent effort it can be done.

Rose Slug and Rose Saw-fly. (*Sclandria rosæ.*) These pernicious vermin are known to all Rose growers. The Rose Saw-fly, shown greatly enlarged in Fig. 26, is a shiny black insect which appears in the latter part of May and up to about June 15th, and also again in August, the female laying its eggs in incisions made with its saw obliquely into the skin of the leaf. The young, which appear in from ten to fifteen days, are the greenish almost transparent Slugs that are frequently met in such great numbers feeding on Rose bushes until the whole foliage looks as if scorched by fire.

Rem. **126.** *Tobacco.* Same as 65.

Rem. **127.** *Hellebore, Dry.* Promptly dust the powdered drug lightly over the affected bushes by the use of a tin can with a piece of muslin tied over the end; the foliage should be moist at the time. Professor Lintner suggests that before using Hellebore its strength should be tested by applying a small pinch to the nostrils. If it fails to produce a tingling sensation it should be rejected as comparatively worthless.

Rem. **128.** *Whale Oil or Other Soap Suds.* Whale oil soap dissolved in water in the proportion of two pounds of the former to fifteen gallons of water, adding also a double handful of salt, and with this wetting the foliage affected. Ordinary soap used instead of the other makes nearly as good a remedy.

Rem. **129.** *Paris Green Solution.* Same as 15.

Rem. **130.** *Kerosene Emulsion.* Same as 6.

Rem. **131.** *Dust.* Dry air-slaked lime, plaster of Paris, wood ashes, or even road dust, if regularly and repeatedly applied, will destroy the slugs.

Salt Water. See Remedy 114.

Saw-flies and their Larva. There are numerous species of Saw Flies, and which, both in their perfect state as flies and in the larva state as slugs, live almost entirely on vegetable food. (See Rose Slug and Rose Saw-fly, Cherry and Pear Slug.) The name of the class is derived from an ingeniously contrived saw or saws with which the female is provided and with which she saws slits in the stems and leaves of plants, wherein the eggs are dropped and hatched.

Rem. **132.** *Hellebore, Dry and Liquid.* Same as Remedies 52, 63, 127.

Skunks. See Quadruped Foes.

Slug Shot. See Remedies 109, 125.

Snails. These are often bothersome both to the indoor and outdoor gardener, while sometimes they prove to be terribly destructive. What makes the matter of their attacks worse is that they do their work under the cover of night, hence much mischief is often done before the real cause is understood.

Rem. **133.** *A Search at Night.* A night search with the light of a lantern after a shower of rain, or in the greenhouse any night, will afford the best opportunity for catching large numbers of snails and slugs. They can then be put into a strong salt bath, where they will speedily die, or, the fowls in a confined run will be very grateful if they are thrown to them in their prison.

Rem. **134.** *Trapping.* The only sure method of dealing effectually with these pests is to lay traps. Pieces of Orange peel, if laid on the ground, may be examined in the morning with a fair chance of rewarding the searcher, for the slug is so fond of Orange peel that instead of returning to its home at daybreak it clings to the peel, and may be found underneath gorged with much over-feeding. Pieces of board placed firmly in the ground are good traps, as these keep the soil moist and slugs and snails love moisture and take refuge under them.

Rem. **135.** *Paraffin Oil Solution.* Apply a weak solution of Paraffin oil and water,—about one wine-glassful of oil to four gallons of water,—and the solution applied through a syringe to the plants; at the same time the surrounding surface of the soil must be moistened. The time to apply the solution is in the evening.

Soap Suds. See Remedies 6, 22, 114, 128.

Soluble Phenyle. See Remedy 100.

Soot Dusting. See Remedy 66.

Sphinges and their Larva. In the winged state the true Sphinges are known by the name of Humming-bird Moths, or Hawk Moths, being large Moths that are familiar by their flying during the twilight with swiftness from flower to flower, and hovering in the air like a Humming Bird. The worm of one of the species is the large green Caterpillar which infests the plants of the Potato and Tomato. This insect is often of a most repulsive size, being as thick as the fore-finger, and three inches or more in length. It is capable of doing great injury to the plant. Other species of these worms, varying somewhat in size and form, trouble Grape-vines and various other plants and trees.

Rem. **136.** *Picking with Tweezers.* This appears to be the only remedy. A pair of tweezers easily made by anyone out of a piece of band iron is shown in the accompanying engraving. The worms may be fed to swine or be killed with kerosene.

Squash Vine Borers. (*Melitia cucurbitæ* Harris.) This worm, which seems to be on the increase and in some seasons is very bad,

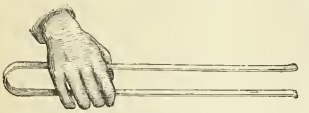


Fig. 27. Hand Tweezers for gathering repulsive insects. Made of ordinary band iron. Remedies 136, 142.

works in the vine mostly near the root, often causing the plant, after it is nearly grown and set with fruit, to suddenly wither and die. Upwards of a hundred Borers have been taken from a single vine.

Rem. **137.** *Coal Tar.* Placing Corn cobs dipped in coal tar among the plants about the first of July is known to greatly lessen the attacks by borers.

Rem. **138.** *Cutting Out.* This, on a small scale, is a successful remedy. In practice one may soon become quite expert in discovering the location of the borers and digging them out with a knife point.

Rem. **139.** *Layering.* A Mr. Milton, in the Ohio Farmer, says that the best remedy he has found for this pest is to go through the patch with a hoe when the vines have attained a length of two or three feet and throw a large hoeful of earth on the first or second joint from the hill. The vine will form new roots from this joint, which will euable it to perfect its fruit should the borer kill the old root.

Squash Bug, Black. (*Anasa tristis de Geer.*) About the last of June throughout the North these troublesome bugs appear on Squash-vines and lay their patches of eggs, which soon develop into troublesome broods. A most striking characteristic of the insect is its offensive odor when handled or crushed. As the eggs are not all laid at one time, the young appear in successive broods.

Rem. **140.** *Plaster and Kerosene.* Same as 57.

Rem. **141.** *Trapping.* By laying shingles about the hills the bugs, after feeding in the night, may be found collected on the underside of such. Proceeding to the patch early in the morning with a pail containing some kerosene, the shingles should be gently raised and the insects jarred or brushed into the kerosene, returning the shingles again for successive catches later.

Rem. **142.** *Picking with Tweezers.* Same as Remedy 136.

Strawberry Worm. Apply Remedy 52.

Strawberry-Crown Borer. This is an insect first described by Prof. Riley in 1871, and which is not much known outside of the Mississippi Valley. It bores down through the crown of the Strawberry plant into the pith. We have heard of no effective remedy. The plants that are injured should certainly be removed and burned.

Sugar Maple Borer. Of late years this insect has become comparatively abundant as a destroyer of highly valued Maples. Its attack is usually made on perfectly healthy trees. In its simplest form it reveals itself by the bark parting longitudinally and breaking away, disclosing a narrow strip of the wood some five or six inches in length. On the surface of the wood can be seen the furrow of the grub, increasing in its dimensions as it descends and at the lower end entering into the trunk of the tree, or more often winds horizontally about half way around the trunk before entering. With numerous borers at work the circulation of the tree is cut off and it dies.

Rem. **143.** *Killing Young Larva.—Probing.* Professor Lintner is of the opinion that the best method of dealing with this pernicious borer would be to watch for the commencement of the operations and kill the young larvæ. The eggs are laid in July and August. It is said that the place where the egg has been deposited upon the bark of the trunk may be detected "by a rusty discoloration of the bark about the size of a cent; and especially by the frass or castings which, to the length of an inch or more, are attached like a broken corkscrew to the bark." The larvæ upon hatching burrow upward, remaining in the bark until the following spring, when they burrow into the solid wood. At this season of the year [October] the larvæ may be found beneath or not far from these discolored spots of egg deposits. If by cutting into these the burrow is found to have extended too far to follow it with the knife without injury to the tree, a flexible wire may be used as a probe for reaching and destroying it, as is done for the notorious Apple-tree borer, *Saperda candida Fabr.*

Sulphur. See Remedy 113.

Sulphuric Acid Water. (**144.**) This made in the proportion of one part of the acid to fifty parts of water is an effective and safe insecticide to be used on hardy plants.

Swine. See Quadruped Foes to Insects.

Thousand-Legged Worms. These are often confused with the Wire Worms, (which see) and from which they differ considerably. They live on Potatoes, Radishes, Carrots, and decaying vegetables, and have also been accused of destroying the plants of Cucumbers, Strawberries, etc.

Rem. **145.** *Gas Lime.* Same as Remedy 49.

Rem. **146.** *Trapping and Scalding.* By laying boards about the garden in the evening they will accumulate under these in numbers, and in the morning can be collected and scalded.

Thrips. Minute insects varying in size from that hardly perceptible to the naked eye to the size of a Plant Louse, and varying in color from whitish yellow to dark brown. It is an active, jumping insect, and when once it gets a foothold is very destructive. As it luxuriates in close, shady places it is generally found where plants are unduly crowded and neglected as to ventilation and syringing. (See Grape Leaf Hopper.)

Rem. **147.** *Nicotyl.* Same as No. 10, 65.

Rem. **148.** *Fumigation with Tobacco.* Same as Remedy 9.

Rem. **149.** *Fir Tree Oil.* Same as Remedy 24.

Tent-Caterpillar on Apple. Rem. (**150.**) *Hand Picking the Eggs.* The eggs of these Caterpillars appear in the shape of rings on the small twigs,

Fig. 28. Thrip very much enlarged.

and are coated with a varnish-like substance. A sharp eye run over the branches in the winter or early spring when bare of foliage will show them, and then they should be removed and burned.

Rem. **151.** *Gathering the Webs.* With a forked stick the webs may readily be gathered in the spring, when they are small, by twisting them on the stick.

Rem. **152.** *Torch Remedy.* Same as Remedies 7, 79, 158.

Tobacco Insecticide. See Remedies 8, 9, 10, 123, 124, and Nicotyl.

Tobacco Worm. See Sphinges.

Tomato Worm. See Sphinges.

Torch Remedy. See Remedies 7, 79, 155.

Trapping Insects. See Remedies 134, 146.

Turpentine. See Remedy 101.

Weevil. See Curculio.

Web Worm, Fall. (*Hyphantria cunea.*) This insect is attracting increasing attention by its great injury in defoliating both fruit and shade trees, shrubs, etc., in many instances not a vestige of foliage remaining. Its name indicates the season when its webs are most numerous. Not only do they leave signs of their presence in the denuded trees, but such are also disfigured by old and new webs made by the Caterpillars, in which bits of leaves and leaf stems, as well as the dried frass has collected, producing a very disagreeable sight.

Rem. **153.** *Arsenical Poisons.* Same as Rem. 43.

Rem. **154.** *Pruning and Burning.* On the first appearance of the webs they should be looked

Fig. 30. Fall Web Worm, the dark form, there being also a light one. Remedies 153, 155.

for with care and should be cut off or burned off, and if cut off should be burned at once.

Rem. **155.** *Torch Remedy.* A little thorough work with some simple torch at the right time will in nearly every case obviate the necessity of any other treatment later. A campaign torch mounted on a long pole is one of the best implements for the purpose. The best substitute for this is perhaps a piece of porous brick prepared as suggested by Mayor Key, of Washington. Take a piece of soft brick, commonly termed salmon brick, trim it to an egg shape; then take two soft wires, cross them over this brick, wrapping them together around the opposite side so as to firmly secure it; now tie this end to a long stick, such as the boys get at the planing mills, by wrapping around it; then soak the brick in coal-oil, light it with a match, and you are armed with the cheapest weapon known to science. Holding this brick torch under the nests will precipitate all the worms on one or two trees at least from one soaking of the brick, and it can be repeated as often as necessary.

Whale Oil Soap. See Remedies 6, 105, 114.

Whiskey. See Remedy 23.

Wire Worms. These are the hard, flattish, smooth-skinned, mostly light-colored, larva of the Elaters or Snapping Beetle, but the name Wire Worm is often wrongfully applied to the dark-colored, cylindrical Thousand-legged Worm, (which see). They feed on roots of herbaceous plants, and on Potatoes, Carrots, etc., and are often very injurious. In the Beetle state they devour flowers and the tender leaves of plants.

Rem. **156.** *Baiting.* This method consists in burying sliced Pototoes or other vegetables beneath the ground in gardens, upon the end of a stick for convenience of examination. The slices should be examined every morning and the insects collected and destroyed.

Woolly Aphis. These are not true Aphis or plant lice, but are known as *Schizoneura lanigera.* There are two forms of the insect, one being usually found on the limbs and trunk of young trees in masses of a white, woolly substance, the other attacking the

Fig. 29. The Woolly Aphis. A, root affected by the Aphis; b, the Aphis greatly enlarged; c, the Fly greatly enlarged. Remedies 157, 158.

roots, giving them a knotty appearance, as at *a* in the annexed engraving. At *b* in the same engraving is shown a greatly enlarged representation of the young insect, with the natural size indicated, and *c* is the same of the insect in its fly state. The eggs are laid in autumn on the bark and remain in this condition through the winter. Young nursery trees are often infested with this insect.

Rem. **157.** *Hot Water for the Root Form.* Mr. Saunders, in his work on Insects Injurious to Fruits, observes that the most successful means yet devised for destroying these root-lice, is the use of scalding hot water, freely poured around the roots of the tree. If the trees are remaining in the soil, the roots may be laid bare, and the water used nearly boiling, without injury; but where they have been taken up for the purpose of transplanting, and are to be dipped in the hot water, the temperature should not exceed 150° Fahr.,—under these circumstances, from 120° to 150° would suffice for the purpose. A mulch placed around the trees for some time previous to treatment has been found useful in bringing the lice to the surface, where they can be more readily reached by the hot water.

Rem. **158.** *Kerosene Emulsion.* Same as Remedies 6, 57. Prof. Forbes has recommended that the roots of infested nursery trees be "puddled" with the kerosene emulsion before sending out, and that if the lice are seen upon the trunks, these be also treated with the emulsion, applying with a brush, sponge or cloth.

Worms in Pots. Sometimes a little white worm, entirely distiuct from the Earth or Angle Worm elsewhere referred to, proves troublesome in plant pots. The following remedies may be counted upon as being effective in their destruction.

Rem. **159.** *Carbolic Acid Solution.* Add one teaspoonful of carbolic acid to one quart of water and with this water the plants.

Rem. **160.** *Mustard Water.* Stir a tablespoonful of sharp Mustard in a gallon of water, repeating the stirring at intervals for a day, then soak the soil with the water.

SOME INTERESTING NOTES ON INSECTS AND INSECT COLLECTING.

THE word insect, which was derived from the Latin, means cut or notched, referring to the characteristic of this group of creatures found in the cross-lines or incisions that mark the body. Between these cross-lines are the segments or rings, consisting of numerous jointed pieces, more or less movable on each other.

ORGANISM. Insects, according to Dr. Harris in his standard treatise on this subject, have a very small brain, and, instead of a spinal marrow, a kind of knotted cord, extending from the brain to the hinder extremity; and numerous small whitish threads, which are the nerves, spread from the brain and knots in various directions. Two long air-pipes, within their bodies, together with an immense number of smaller pipes, supply the want of lungs, and carry the air to every part.

Insects do not breathe through their mouths, but through little holes, called spiracles, generally nine in number, along each side of the body. Some, however, have the breathing-holes placed in the hinder extremity, and a few young water-insects breathe by means of gills.

The heart is a long tube, divided into several chambers, lying under the skin of the back, having little holes on each side for the admission of the juices of the body, which are prevented from escaping again by valves or clappers, formed to close the holes within. The blood, which is a colorless or yellow fluid, does not circulate in proper arteries and veins; but is driven from the fore part of the heart into the head, and thence escapes into the body, where it is mingled with the nutritive juices that filter through the sides of the intestines, and the mingled fluid penetrates the crevices among the flesh and other internal parts, flowing along the sides of the air-pipes, whereby it receives from the air that influence which renders it more fitted to nourish the frame and better maintain life.

In winged or adult insects, two of the transverse incisions with which they are marked are deeper than the rest, so that the body seems to consist of three principal portions, the first whereof is the *head*, the second or middle portion the *thorax*, or chest, and the third or hindmost the *abdomen*, or hind-body.

The eyes of adult insects, though apparently two in number, are compound, each consisting of a great number of single eyes closely united together, and incapable of being rolled in their sockets. Such also are the eyes of the larvæ, and of the active pupæ of those insects that undergo an imperfect transformation. Moreover, many winged insects have one, two or three little single eyes, placed near each other on the crown of the head, and called *ocelli*, or eyelets. The eyes of grubs, caterpillars, and of other completely transforming larvæ, are not compound, but consist of five or six eyelets clustered together, without touching, on each side of the head; some, however, such as maggots, are totally blind.

Near to the eyes are two jointed members, named *antennæ*, corresponding, for the most part, in situation, with the ears of other animals, and supposed to be connected with the sense of hearing, of touch, or of both united. The antennæ are very short in larvæ, and of various sizes and forms in other insects.

The mouth of some insects is made for biting or chewing, that of others for taking the food only by suctiou.

REPRODUCTION. Insects, contrary to the supposition of some, are never spontaneously generated from putrid animals or vegetable matter, but are produced from eggs. A few, such as some plant-lice, do not lay their eggs, but retain them within their bodies till the young are ready to escape. Others invariably lay their eggs where their young, as soon as they are hatched, will find a plentiful supply of food immediately within their reach.

CHANGE OR TRANSFORMATION. There are three periods in the life of an insect, more or less distinctly marked by corresponding changes in the form, powers and habit.

First or Infant Period. In the first, or period of infancy, an insect is technically called a *larva*, a word signifying a mask, because therein its future form is more or less masked or concealed. This name is not only applied to grubs, caterpillars, and maggots, and to other insects that undergo a complete transformation, but also to young and wingless grasshoppers and bugs, and indeed to all young insects before the wings begin to appear. In this first period, which is generally much the longest, insects are always wingless, pass most of their time in eating, grow rapidly, and usually cast off their skins repeatedly.

The second period—wherein those insects that undergo a partial transformation retain their activity and their appetite for food, continue to grow, and acquire the rudiments of wings, while others, at this age, entirely lose their larva form, take no food, and remain at rest in a deathlike sleep—is called the *pupa* state. The pupæ from caterpillars, however, are more commonly called chrysalids, because some of them, as the name implies, are gilt or adorned with golden spots; and grubs, after their first transformation, are often named nymphs, for what reason does not appear.

Adult Period. At the end of the second period, insects again shed their skins and come forth fully grown, and (with few exceptious) provided with wings. Thus they enter upon their last, or adult state, wherein they no longer increase in size, and during which they provide for a continuation of their kind. This period usually lasts only a short time, for most insects die immediately after their eggs are laid, bees, wasps and ants affording some familiar exceptions.

CLASSIFICATION. To facilitate the study of the myriads of insects in existence, some kind of a classification was found necessary, and that referred to below and relating to the four great divisions or orders is the one very generally adopted by naturalists. The basis of this classification is founded upon the structure of the mouth in the adult state, the number and nature of the wings, and the transformations.

1. COLEOPTERA (embracing the *Beetles*). ADULTS with *jaws*, two thick *wing-covers* meeting in a straight line on the top of the back, and two filmy *wings*, which are folded transversely. *Transformation* complete. LARVÆ, called grubs, generally provided with six *true legs*, and sometimes also with a terminal *prop-leg*; more rarely without legs. PUPA with the wings and the legs distinct and unconfined.

2. ORTHOPTERA (*Cockroaches, Crickets, Grasshoppers, &c.*) ADULTS with *jaws*, two rather thick and opaque *upper wings*, overlapping a little on the back, and two larger, *thin wings*, which are folded in plaits like a fan. *Transformation* partial. LARVÆ and PUPÆ active, but wanting wings.

3. HEMIPTERA (*Bugs, Locusts, Plant-lice, &c.*) ADULTS with a horny *beak for suction*, four *wings*, whereof the uppermost are generally thick at the base, with thinner extremities, which lie flat, and cross each other on the top of the back, or are of uniform thickness throughout, and slope at the sides like a roof. *Transformation* partial. LARVÆ and PUPÆ nearly like the adult insect, but wanting wings.

4. NEUROPTERA (*Dragon-flies, Lace-winged flies, May-flies, Ant-lion, Day-fly, White Ants, &c.*). ADULTS with *jaws*, four netted *wings*, of which the hinder ones are the largest, and no sting or piercer. *Transformation* complete, or partial. LARVA and PUPA various.

5. LEPIDOPTERA (*Butterflies and Moths*). ADULTS with spiral *sucking-tube; wings* four, covered with branny scales. *Transformation* complete. The LARVÆ are caterpillars, and have six true *legs*, and from four to ten fleshy *prop-legs*. PUPA with the cases of the *wings* and of the *legs* indistinct, and soldered to the breast.

6. HYMENOPTERA (*Saw-flies, Ants, Wasps, Bees, &c.*) ADULTS with *jaws*, four veined *wings*, in most species the hinder pair being the smallest, and a *piercer or sting* at the extremity of the abdomen. *Transformation* complete. LARVÆ mostly maggot-like, or slug-like; of some, caterpillar-like. PUPÆ with the legs and wings unconfined.

7. DIPTERA (*Mosquitoes, Gnats, Flies, &c.*) ADULTS with a horny or fleshy *proboscis*, two *wings* only, and two knobbed threads, called balancers or poisers, behind the wings. *Transformation* complete. The LARVÆ are maggots, without feet, and with the breathing-holes generally in the hinder extremity of the body. PUPÆ mostly encased in the dried skin of the larvæ, sometimes, however, naked, in which case the *wings* and the *legs* are visible, and are found to be more or less free and unconfined.

INSECT COLLECTING. Few occupations are more pleasant and instructive, especially to the cultivators of plants and trees, than the making of a collection of insects. The first thing needed for the business is a net

made of mosquito netting in the form of a short bag, and which must be attached at its edges to a ring (say of wire, or a Willow twig) to be about twelve inches in diameter, and this to a short handle. A butterfly or moth caught and you give the net a twist so that the insect cannot fly away.

To catch moths, which fly mainly at night, set a little lantern out-of-doors near a cup of cheap, strong-smelling molasses, and with net in hand capture them as they appear drawn to the sweets. Collect also by putting caterpillars and the leaves on which you find them into a box, with netting top, and letting them spin cocoons, or grow hard and dry. Cocoons or chrysalids found on bushes, fences etc., may similarly be boxed.

To Kill the Insects. Provide three bottles of different sizes, into each of which place some cyanide of potassium for poisoning the insects by placiug them in the bottles. Attach a small lump of the cyanide to each bottle bottom by pouring over it a mixture of plaster of Paris and water to harden and hold it fast. The bottles should be large mouthed and have ground glass stoppers; any druggist can furnish such. Another excellent way of killing is to have a small vial of chloroform or ether, if of which a small drop is applied to the head of an insect it will succumb at once.

Collecting Box. Such a one should be provided in which to pin the insects after they have been caught and killed. If possible a thin sheet of cork, or even sliced bottle corks, should be glued to the bottom to hold the pins. So-called entomologist's pins are to be preferred to ordinary pins.

Labeling. As the insects are put into the case they should be numbered by writing on a round piece of paper that is placed on the pin which is thrust through the insect. Then catalogue the numbers of the insects with the name of each, location and date of collecting and any other remarks.

Most insects should at all stages be pinned through the middle of thorax (the part back of the head); hard-shelled beetles through the middle of the right wing.

Preparation. To properly get butterflies in shape a pressing board is necessary. This is made of two pieces of common siding about a foot long, placing the thin edges toward each other, leaving a space between them wide enough to admit the body of the insect, and nailing the pieces carefully to a cross-piece at each end. Then with the insects in this opening, spread the wings and stick a needle in the board to hold each in place until a small strip of card-board can be placed over the wings on each side and fastened down with pins. Care must be taken not to rub the scales off the wings. If the legs are cramped under the body, draw them out and extend them as they appear when the insect is walking. By a little practice you will be able to get them prepared in good condition. The insects should be left on the pressing board for one or two weeks.

The Cabinet. For temporary use a good insect case may be made from a confectionary or other light wooden box. Cover the inside with strips of white paper and paste strips of cork over the bottom, over which a bottom of thin white pasteboard should be placed. Pin the larger insects directly to the bottom. Very small ones should be glued to small, triangular pieces of cardboard, through one end of which the pins are passed. Try and get the insects as near the same height on the pins as possible.

For a permanent case it will be necessary to employ a cabinet maker to make this, as it must be nearly air-tight, in order to keep live insects from destroying the specimens. The best size is 14 by 10 inches, and 3½ inches deep. If of this size, insects can be put in at both the top and bottom, thus saving room.

MISCELLANEOUS.

Fungi Which Kill Insects.

ABSTRACT OF OTTO LUGGER'S REPORT IN BULLETIN OF MINNESOTA EXPERIMENT STATION.

It is now a well-known fact that quite a large number of diseases attacking plants, insects, animals and man are produced by very lowly organized plants. All such vegetable parasites are produced from seeds or spores, and their growth produces a diseased condition of its host, and eventually its death. As familiar instances of fungi producing disease in plants I mention: blights, rusts, mildews, smuts, etc.

The same assertion can be made in regard to insects killed by contagious diseases. In turning over an old piece of decaying board quite frequently numerous dead ants can be seen fastened to it, and all plainly show the cause of their death by being surrounded with mycelium threads, or by having a horn-like process growing through the soft integument between their heads and thorax. Certain plant-lice, frequently found upon clover, could be seen in vast numbers upon the leaves of that plant, dead, and surrounded and imbedded by spores. Various caterpillars, chiefly those of our gaudy diurnal butterflies, die from the effects of a disease produced by a fungus. Chinch Bugs suffer greatly by one of these diseases, as will be meutioned later. Even the common Two-striped Locust (*Caloptenus bivittatus*), usually a rather tough insect and proof against the usual ailments of insects, was killed in numbers by a vegetable disease.

The "*Faulbrood*" of our honey-bee is also produced by a microscopic plant, the *Bacillus melitophthorus* or *alvei*. This disease is well known in many regions, and frequently threatens to put for the time a stop to any further attempts in raising bees.

The larvæ of our May-beetles, well known by the popular name of White Grubs are quite often attacked by a fungus, *Cordyceps militaris* Fries, and when found always attract the attention of the curious. The inflorescence generally presents the appearance of a pair of elongate horns, one issuing from each side of the head. These two horns—sometimes there are four—are usually of different lengths, and grow to the length of three to five inches. Other larvæ are also affected in a similar manner, for instance, those of our Stag beetles, of the Seventeen-years Cicada, and others.

The most thoroughly studied species of insect-killing fungi in Europe is *Entomophthora radicans* Bref., which produces quite frequently an epidemic disease upon the larvæ of the Cabbage butterfly. It occurs in this country as well. The usually lively caterpillars of this noxious butterfly soon show the effects of an infection: they become quiet, slow in all their motions, die suddenly, and are soon entirely enshrouded by a greenish-white fungus, the inflorescence of which lasts but a few hours, leaving nothing of the caterpillar but a brown shrunken skin surrounded by large masses of white spores.

One of the most frequently observed diseases produced by fungi is the "*Fly Cholera*," produced by *Empusa muscæ*, Cohn. This disease can here be observed every year, from the middle of September to the beginning of winter, but in more southern regions it is found throughout the year. The first stages of it are indicated by the restlessness of the attacked flies; they soon, however, become weak and slow in their motions. Having securely fastened themselves with their broad tongues to the object upon which they happen to be when attacked by the last stages of the disease, a succession of spasmodic tremors pass through their wings and legs, and the tormentor and destroyer of our slumber is no more. The abdomen of the victim of this disease, previously already swollen, becomes more and more distended, and a fatty, whitish substance pushes through the softer membranes between the rings or segments. Soon after a whitish halo of spores is formed around the dead body, readily seen if the fly happens to have fastened to the glass of window or mirror. These spores gradually cover the whole insect with a white dust, and they appear in ever increasing numbers as the body of the victim dries up, until at last its whole interior is empty and only a shell remains.

The Chinch-bug and its Disease.

During the last three years Chinch-bugs have occasioned immense damage to the various crops in the west. They have been steadily on the increase, and were rapidly spreading in a northerly and westerly direction. This increase was entirely due to the very favorable atmospheric conditions prevailing throughout the summers of 1885, 1886 and 1887, which were very dry and warm, and just suitable to these bugs, which are essentially dry and warm summer insects. Owing to a wet, cold, and very backward spring in 1888 they were not in a very healthy condition when warm weather commenced, and large numbers were killed in their wintering quarters. After this no bugs could be found, and all danger was thought to be over. Real warm weather now became the rule, and the slumbering vegetation, as by magic, became a blooming reality; so became the Chinch-bugs! The gentle southern wind was loaded with them, and they landed in immense numbers, everywhere, to begin their destructive work in our fields. To prevent their iuroads, all the infested fields and experimental plots were surrounded by a low board fence, six inches high, and snugly fitting to the ground so as to prevent the insects from crossing under this fence. The upper edge of the boards were painted from time to time with tar, which prevented the bugs from crossing. The insects were at this time of all sizes and ages; adults of the first brood, eggs, young hatched bugs, and pupæ of the second brood were all mixed together, and all were decidedly hungry, as their intense activity and the swarming armies of famishing bugs plainly indicated. To gather in this crop of bugs, round holes, about six inches in diameter, were drilled in the ground close to the fence, and as one hole became filled with insects, it was closed and another one was opened close by for the reception of more victims. So matters worked to our satisfaction, when an unexpected assistant came to help us, making the structure of more fences unnecessary. The above-mentioned holes were quite deep, and consequently were always wet, and the starving Chinch-bugs soon became unhealthy and weak, thus presenting the best conditions for any disease to claim them as its victims. And such a disease, produced by a fungus, was not slow in making its appearance, as could be seen by the numerous dead bugs. The margins of all the holes, but chiefly those more densely crowded with captives, soon became whitened with dead bugs enshrouded in white mycelial threads and dust-like spores; in fact, in a few days the upper rims of these holes looked as if recently white-washed. Nor did the disease stop there! On the contrary it spread very rapidly to adjoining fields. The victims of the disease could be seen everywhere by the thousands. All showed the characteristic white mycelium threads and spores of the disease. Although almost exclusively attacking Chinch-bugs, the disease was not slow in also slaughtering such small flies as found the society of such companions to their taste.

Most, if not all, the Chinch-bugs would have been killed at the Experiment Station, if the suitable conditions for this disease had lasted a few days longer. But the wet spell soon passed, and was followed by warm and very dry days, which soon stopped any further increase and spread of the disease. But by artificially producing such conditions the disease was kept at work for some time, but only on a very limited scale. Nor could it be spread, because in nature such artificial conditions could neither be produced nor maintained on any extensive scale.

As many parts of the southern portion of this State were overrun with Chinch-bugs,

I thought that an inviting field to purposely spread the disease. All that was necessary was to gather a number of the diseased bugs, put them into tight-fitting tin boxes, and mail them to regions infested by Chinch-bugs. Arrived at their destination, the contents of the boxes could simply be thrown in any field known to be infested with such bugs. This was done, and eighteen different places in southern Minnesota were made centers of distribution for this disease. And as it seems, with remarkable good results, as the disease has killed off the bugs to such an extent that careful search in a majority of places failed to produce a single living specimen, whilst the traces of the disease were found everywhere. The disease spread so rapidly that even Corn growing near Wheat fields crowded with Chinch-bugs were entirely protected, and no bugs had entered them in all the places visited by myself. It is possible that the disease was there already, unknown to any one, and that I simply re-introduced its germs. Be this as it may, one thing is certain, viz.: the disease has been there, and consequently the spores of the fungus producing it are there also, and remain there, to act whenever the conditions are favorable, and I firmly believe that our farmers need not entertain any fears of Chinch-bugs for the near future.

The Turf Web-worm.

Mr. Herbert Osborne, in his "Report upon the Insects of the Season in Iowa" to the U. S. Dept. of Agriculture, gives an excellent account of the ravages of this worm (Crambus exsiccatus, Zell.) which is the larva of a light-ash-colored moth about one-half inch long, and having wings that expand about one-and-a-quarter inches. It attacks both grass and corn, doing vastly more damage to grass than to corn, though its work is much more noticeable in the latter, since it will completely destroy fields planted in sod, infected by young worms.

In grass-land the larvæ form a web-lined burrow about half an inch below the surface, extending it as the larvæ grow to a length of four or five inches, nearly straight and opening at the surface of the sod. The grass in the immediate vicinity of these burrows is cut off at the surface of the ground, but generally the roots and crown are injured. The injury to corn results from planting in sod.

There are two broods in the year, the adult moth of the spring-brood appearing in June. These deposit eggs which hatch in eight days. The larvæ require from five to seven weeks to become full-grown. The pupa-stage lasts from twelve to fifteen days, the fall brood appearing in August.

To prevent attacks in corn to be planted in land previously in grass, plow the grass under at such time, as this will prevent the egg being deposited in it. In the fall, this should be done before the first of September; in spring, before the first of June.

Mr. Osborne does not give a remedy for their attacks in lawns, except that the striped ground-squirrel might be utilized to keep them in check. Perhaps the application of kerosene emulsions, followed by heavy sprinklings, which would drain the emulsion into the ground, would destroy them, as their burrows are so near the surface.

[A lawn in Western New York has been reported to us as being effected in a manner which would suggest the presence of the above worms. Said lawn proved a great attraction to fowls; they scratched it over from end to end. Whether the plot will again be attacked is not yet known.—Editors.]

An Enemy to the Parsnip.

Prof. Riley has recently discussed an enemy to Parsnips, in *Insect Life*, to which the name Parsnip Web-worm has been given. The larva webs the flower heads together, devouring and destroying the immature blossoms. When about full grown they bore into the hollow stems, where they pupate, and in due time emerge as moths. As to remedies, Bethune suggests that whenever the young caterpillars appear on the flowers, the umbels may be dusted over with powdered white hellebore, repeating the operation occasionally. Should the flowers be destroyed before they are noticed, cut off and burn all affected stalks before the moths emergo from the pupæ. The larvæ are easily disturbed, and may be dislodged from the flowers and collected in pans and burned. It is called by entomologists *Depressoria heraclianа*.

Insect Lore of New England.

PARTIAL REPORT ON PAPER, AND DISCUSSION BEFORE MASSACHUSETTS HORTICULTURAL SOCIETY.

Prof. C. H. Fernald, a prominent fruit grower in Maine, told me that he was accustomed to employ a boy to climb his Apple trees and destroy the tent caterpillars as soon as they appeared, but he was obliged to send the boy several times, as new tents were formed after the destruction of the old ones. Later on his father took the hint from these observations, to send the boy to destroy the caterpillars only early in the morning or late in the afternoon, and then the work was effectual for the caterpillars were all in the tents when the boy crushed them.

[To Destroy the Codling Moth.]

If we estimate the cost of showering an Apple tree to be ten cents, which I have no doubt is twice as much as the actual cost would be, I believe it would then prove to be the cheapest and most effectual way of destroying all leaf-eating species, and the most effectual method thus far suggested for the destruction of the codling moth. The experiments of Prof. Forbes, conducted with great care through two seasons, resulted in the saving of seventy-five per cent. of the Apples which would otherwise have been injured by the codling moth; and when we take into account the fact that by the same application numerous other insects were destroyed, we must admit that spraying the trees, even at ten cents apiece, is an exceedingly profitable investment.

The common Squash bug has proved very troublesome in various parts of the State. This insect does not consume the surface of the leaf, but forces its tubular mouth-parts down through the epidermis and draws its food from the inside of the leaf, and is not effected by poisons on the surface. It is necessary, therefore, to use some substance that will effect it otherwise than through the digestive system, and for this purpose pyrethrum has been found to work admirably. This substance may be used as a powder, and dusted on by means of bellows prepared for that purpose, or it may be used in solution in water, which is believed to be the most economical and efficient method. The bulk of the powder is dissolved in the water, to which it at once imparts its insecticide principle. No stirring is necessary, but it should be applied in a very fine spray; the finer the more economical is its use and the greater the chance of its reaching all the insects. This solution should be used when first made, for it gradually loses its power when it is allowed to stand.

O. B. Hadwen said that he had used pyrethrum in solution to destroy insects. He mixes it with warm water and stirs it up with a whisk broom and showers the plants, and thinks this is, perhaps, better than a pump. It will destroy Currant worms. Insects can be kept in check by constant attention. He was once much troubled with borers in his Apple trees, but conquered them, and now they do not trouble him. He picks off Rose bugs and throws them into a dish of soapsuds. Prof. Fernald suggested, instead of the soapsuds, water with a little kerosene on top. The oil would fill the breathing holes of the insects and destroy them.

Daniel T. Curtis said that canker worms were very abundant on his trees, and he put a tablespoonful of Paris green into a tub holding five or six pailfuls of water, and sprayed his trees on the windward side and underneath in the evening, and hardly a leaf had the parenchyma eaten through. For the codling moth he used it when the petals of the flowers had just dropped and the Apples just begun to form, and got ten barrels of fine, perfect specimens from two trees. Since then he had used it on almost everything, but always at night, and had had no trouble from any insects. He used a Vose pump. He had used pyrethrum on Roses, but never saw a Rose bug where Paris green had been used. He puts half a teacupful of the latter into a pail of hot water and stirs thoroughly and dilutes it afterwards. A smaller quantity will answer for slugs. He thinks sifted coal ashes excellent on Squashes.

William C. Strong thought picking off Rose bugs too tedious. They had forced him to give up growing grapes. He has a good deal of grass ground, which favors their increase. Picking must be done morning, noon and night, and Sundays.

He did not believe in picking, but if one is going to do it, *Spiræa sorbifolia* is the best trap; it will be covered with them. He has bushels instead of quarts.

Alfred Paul thought that the sudden disappearance of insects might be caused by parasites. He had noticed such a disappearance of the Cabbage worm. Rose bugs were very numerous with him, but three years ago they suddenly disappeared. Some years ago, the larvæ of the May beetle were so abundant that the turf where they had cut off the roots could be raked off. This continued for two or three years and then they entirely disappeared. He had noticed the same thing with regard to the tent caterpillar.

Prof. Fernald said that in Maine a few years ago a species of moth in prodigious numbers was destroying the Evergreen forests in three or four of the western counties, so that the owners cut down their trees by the acre to save their lumber. It was of the same family as the codling moth, and had been so rare that only three specimens were known in all the collections of the world. Prof. Fernald published an account of its history in the "American Naturalist" and collected specimens from which all sorts of parasites emerged. The next year there were no more; the parasites had destroyed them. This great abundance gave the parasites a chance to multiply, and it will be several years before the cycle comes round again. On his father's farm, at Mount Desert, the Cabbage worm was so abundant as almost to force him to give up the cultivation of Cabbages. But Prof. Fernald found some pupæ under clapboards, from one of which he bred forty-two parasites. These he sent to his father, and in a few years there were no Cabbage butterflies to be seen.

The Marguerite Fly.

This little European insect, only recently found in this country, and resembling somewhat the little flies so abundant about fermenting horse-manure, attacks plants of the order of Compositæ, apparently giving the preference to Double White Feverfew, and Daisies (Marguerites), but not despising Helianthus multiflorus, Cinerarias, etc. The fly lays its eggs singly under the skin of the leaf, and wart-like specks form over the eggs. In a few days' time little white grubs are hatched, and at once commence devouring the leaf. The perfect insect is developed in about two weeks. It is thought that there are at least three successive broods during the autumnal and winter months.

Remedy.—None is known except examining the plants at brief intervals after the first recognition of the attack, and picking off and burning every infected leaf.

Remedy for Onion Maggot.

Prof. Cook says that the Onion and Radish Maggot are one and the same, and advises planting a few radishes, cabbages or turnips near the onion plot. The maggots, prefering the latter to onions, will there congregate, and the infested plants may then be pulled up and destroyed.

Remedy for Radish Maggot.

To raise a crop of radishes free from maggots, Prof. Cook also advises to grow them in a frame covered with muslin. A heavy application of ashes from a burned rubbish heap put on the surface and raked in, and seed sown immediately afterwards, has always seemed to keep the patch entirely clear of the pest.

Good cultivation is the best and surest insecticide. —*Prof. Weed.*

Turner for early and Cuthbert for late, are the most reliable of the Red Raspberries. — *Ohio State Horticultural Society.*

Yellow Transparent Apple will kill itself fruiting in five years if left alone. Tetofsky is profitable.—*Ohio State Horticultural Society.*

The Dwarf Champion Tomato appears to me the really valuable novelty of the season.—*E. S. Goff, before W. N. Y. Horticultural Society.*

Market and Home Growing. No one can be a successful commercial fruit grower and a farmer at the same time. We do not need as many varieties for market as for home use.—*T. R. Palmer.*

Strawberries. No other berry introduced within the last ten years has stood the test as well as the Bubach. Jessie will probably rank as the best fertilizer. If your culture is good enough, don't give up the Cumberland.—*Ohio State Horticultural Society.*

Mulching for Berries. Very large yields of Blackberries have been gathered where the ground received an accidental mulch of forest leaves. Ohio Raspberry is not as large as the Gregg, but is prolific and hardy. Seventy bushels per acre is regarded a good yield.—*T. R. Palmer.*

Stachys Tuberifera, a so-called new vegetable from Northern Africa cannot be pronounced a very great acquisition. It belongs to the Mint family, and produces small, fleshy tubers, which in our trial only attained the size of acorns.—*E. S. Goff, before W. N. Y. Horticultural Society.*

Japan Persimmon. I believe it is admitted that the Japan Persimmon is a failure north, perhaps, of the southern line of Tennessee. I have eaten the fruit raised south, and it is right good. It has the Persimmon flavor, and one advantage over our Persimmon– it has no seeds.—*Mr. Cook, before Kentucky Horticultural Society.*

Currants Profitable. J. A. Hale, of Connecticut, stated at a recent meeting that Currants are one of the most profitable of small fruits. From 1,500 to 2,000 quarts can be raised on an acre, and a field can be kept fruiting an indefinite number of years. The only insect remedy of particular danger is the Currant worm, easily kept in check by the use of Hellebore.

Fruit Grower's Prospects. In my opinion prospects were never better. The consumption of fruits is increasing wonderfully all over the world, but as is natural, as we advance, more regard is paid to the quality of fruits and the manner in which they are placed in the market. The slovenly fruit grower must go!—*President Barry, before the New York Society.*

About the Morven Apple. A seedling of the Lady Apple, from New Castle, Del., of medium size, somewhat flat, skin smooth, red cheek, shading off to lemon, many specimens mottled with dark brown spots. Flesh white, crisp, aromatic, subacid, delightful, a long keeper. Tree an upright, strong grower, bears heavy crops in alternate years.—*Shown at the Delaware Peninsula Horticultural Society Meeting.*

Fertilizers for Market Gardens. The ordinary stable manure is yet used almost exclusively by the market gardeners of Hudson Co., N. J., and that, too, at the rate of seventy-five tons to the acre. Very little phosphates or other concentrated manures are used on our lands, which are continually under tillage; these are always more telling on land broken up from sod, where the fibrous roots of the sod stand in lieu of stable manures.—*Peter Henderson, before the Farmers' Institute at Jamaica, N. Y.*

Evergreens for the Prairie. C. Ferris said at the Iowa State Horticultural Meeting that when beauty and protection alone are sought, Evergreens should have first choice. They are a windbreak in winter and summer, and are beautiful even though they are economical. They cost more per hundred, yet it takes less trees and space to gain the results. The variety best adapted for Iowa, he said, was the Scotch Pine. J. A. Williams said Pines could only be planted safely when buds begin to swell. B. F. Ferris favored early planting. President Patten said that the Austrian is not worth as much as Scotch Pine for windbreaks, and that the latter is better than Norway Spruce and White Pine.

Nova Scotia as an Apple Country. Secretary Lincoln, of the Worcester Co. (Mass.,) Horticultural Society, states that in the Annapolis and Gaspereau valleys nearly 40,000 acres are planted with Apple trees. Nearly half a million barrels of Gravnestein, Baldwin, Tompkins Co. King and Russets are exported, and as over three-quarters of trees are yet young, it is expected that the future product will be greatly increased, and that to five million bushels within a decade. The climate of Nova Scotia appears to be especially favorable to the growth of the Apple, but to obtain and hold the market for so large a crop, it will be necessary to secure the shipment of only the best selected specimens, excluding all imposition.

Ohio Growers Talk About Oriental Pears. N. H. Albaugh: The Kieffer Pear tree does not blight in the nursery, and the fruit is growing in favor. Mr. Farnsworth: I have no trouble in growing the Kieffer. If its quality proves popular it will be a success. I have the LeConte about as hardy as a Peach tree. Prof. Ragan: There will probably always be a market for showy fruit, regardless of its quality. Some Indiana man has said that the crop of fools always exceeds the crop of Ben Davis Apples. Mr. Trowbridge: Le Conte is hardy and of better quality than Kieffer. Mr. Cushman: It is hardy around Cleveland, and highly ornamental. Leo Weltz: The Mikado is very hardy and beautiful, whether in fruit or foliage. W. J. Green: The fruit of the Mikado partakes of the Quince and the Turnip, having the taste of the former, and the texture of the latter.

The Vineyards of California. You will see nothing but stumps about one to two feet high, planted in straight rows whichever way you look, as when pruned, there seems to be nothing left but the stumps. Upon close examination, several butts are noticeable of canes of last year's growth, about two to three inches long, with a bud or two on each, six to ten buds all told, and from these they get from 30 to 60 pounds of Grapes to the stump. The vines are allowed to run over the ground like Dewberries, having no support but the stump, and many of the large bunches of Grapes lay partly on the ground, but as there is no rain during the summer, the Grapes are not injured. In the early summer when cultivating, the vines are drawn to one side so they can be worked without injury, then placed back where they were before. The ground is so covered with vines that weeds cannot grow; this is the entire process of Grape growing in California.—*N. Ohmer, to the Ohio Horticultural Society.*

What Some Chrysanthemums Were Worth. Chrysanthemums went for rather low prices at the auction sale of the New York Horticultural Society's specimens which were exhibited at their show. In the larger plants a florist of Brooklyn bought ten plants consisting of large white, yellow, old bronze, pink and maroon Japanese Chrysanthemums for $15. Of the single plants, which were sold one at a time, the one which brought the highest price was a large plant with abundant clusters of bright golden yellow, reflex Japanese variety, called Mrs. J. M. Thomas, and sold to John Thorpe for $10; Mrs. Pratt, a large cluster of standard form, white Japanese, went for $8. A large whorl-type variety, standard form, rosy pink clusters, sold for $6. Robert Crawford, incurve pink Japanese clusters, standard form, and The Duchess, bronze and old gold Japanese clusters, standard form, were bought for $6.50 each. The Prince of Orange, pompon, went for $3; Eleanor Oakley, white Chinese clusters, $3; Blanche Neige, white Chinese clusters, $2.50; the Snow-storm, white Japanese $2; Orange Beauty, pompon variety, $2. Altogether some 1,000 plants in all were sold, $700 being the amount realized.

Decorative Floral Work in England. The main point in arranging groups of flowers and plants for effect was to have a feathery groundwork of Maidenhair Ferns, prominent plants like Palms and Crotons being invaluable for house decoration. People who had a profusion of plants and flowers were almost certain to overdo their decorative work; this should be particularly remembered in the decoration of halls and rooms. Here the gardener was not called upon to add to already existing grandeur, but to relieve, enliven, or tone down with suitable foliage and flowers. It was the taste, culture, and the skilful blending of colors that gave pleasure, and not the prodigal use (or abuse) of what ought to be beautiful. The present arrangement of the dinner table gives more scope for the work. The tables themselves were much narrower than formerly, and the decorations were much lower, the principal point being to avoid any suspicion of excess. Plants for this purpose should be light-leaved, feathery, and graceful, such as could be seen through, for if densely foliaged, they formed a most objectionable barricade down the center of the table. Plants, however, were almost gone out of fashion for this branch of decorative art, flowers at the present being better appreciated *S. Elkin, before the Manchester (Eng.) Horticultural Society.*

Market Gardening as a Business.

[*Extract from Paper read by Peter Henderson at Farmers-Institute, Jamaica, N. Y.*]

Soil is of first importance. Choose land, when it can be done, that is level and well drained by having a gravelly or sandy subsoil, and not less than ten inches in depth of good soil. Again, get as near to your market as possible, and see that the roads leading thereto are good. This is particularly important if your market is a large city like New York, Boston or Philadelphia but less important for a local market.

The business of market gardening, though healthful and fairly profitable, is exceedingly laborious, from which any one not accustomed to manual labor would quickly shrink. The labor is not what might be called heavy, but the hours are long—not less than an average of ten hours a day for both summer and winter. No one should engage in it after passing middle life, nor men of feeble constitution, for it is emphatically a business in which one has to rough it; and if it is to be prosecuted successfully the owner must put his own shoulder to the wheel at least as strongly as his roughest employee.

The capital required for beginning market gardening in the vicinity of any large city should not be less than $300 per acre for anything less than ten acres. The first year rarely pays more than currant expenses and the capital of $300 per acre is all absorbed in horses, wagons implements, sashes, manure, seeds, etc. If the capital be incufficient to procure these properly the chances of success are correspondingly diminished. Above all, be careful not to attempt the cultivation of more land than your capital and experience can properly manage. More men are stranded, both on the farm and garden, in attempting to cultivate too much, perhaps, than from any other cause.

It has been the practice in the past to use hotbed ashes almost exclusively for the purpose of forcing vegetables, or forwarding plants for use in the open ground. But of late years greenhouses are being largely used, both for the purpose of *forcing* Lettuce, Radishes, Beets and Cucumbers, as also for *growing* plants of early Cabbage, Cauliflower, Lettuce, Celery and Tomatoes, and in either case, we believe that in well constructed greenhouses not only is work better done, but that the saving in labor in three years will more than offset the greater cost of the greenhouses.

Lands, in some gardening localities, have become actually surfeited with manure, and for this reason vegetables, such as Cabbage, Lettuce, and Celery, do not now average as good as those grown where land is cheap enough to allow one-third to be put down annually with some grass and Clover crop. I believe that, in a garden of fifteen acres, if one-third is laid down to grass each year, and the balance kept under the plough, the gross receipts will be greater, and the profits more than if the whole fifteen acres were under tillage; for less labor will be required, and manure tells better on sod land than on land under tillage.

I can tell you nothing new on the subject of manure, except that the use of the dried Peat Moss, now being used in the cities for bedding, is likely to be of great value to the market gardener, if it can only be had in sufficient quantities. We have had it in use in our own stables for about a year and find it not only more economical than straw for bedding, but its absorbing qualities make it of great value for fertilizing purposes. We can buy ordinary straw manure in our vicinity for $1.00 per team load; but we are buying all we can get from stables where the moss is used at $2 per ton, but is yet quite scarce.

The Onion: Its Origin, Value as Food, and Cultivation.

[Abstract of paper by J. J. H. Gregory, before the Massachusetts Horticultural Society.]

Botanically the Onion belongs to the Lily family. All the leaves begin at the bulb, and it makes its greatest growth while the leaves are dying down, which seems to confirm the popular saying among farmers that "top has gone into the bottom." The native home of the Onion is Asia. The Israelites after leaving Egypt remembered with longing the Onions and other vegetables which they ate there.

As an article of diet the Onion is generally looked upon here merely as a relish, whereas it is really a nourishing food. In the West the speaker had seen miners making their dinner of half bread and half Onions. Their unpleasant effects on the eyes while peeling may be avoided by holding them under water. The peculiar flavor of the Onion is due to a volatile oil, and consequently to be in perfection it should be eaten as soon as it is taken out of the ground. Their fine flavor is even more volatile than that of Green Peas or Sweet Corn.

Kinds. There are two distinct classes of Onions—those which do, and those which do not produce flowers. In the latter class are the Potato or "multiplying" Onion and the Shallot, which, as we all know, are propagated by what are commonly called "sets," botanically offsets, though occasionally the Shallot will make a show of seed. The Shallot is the longest keeper of all the Onion family; sometimes it will keep for two years, and therefore it fills a place of its own. They are sometimes sold in the market as Potato-Onion sets. There are several varieties of Shallot.

Top Onions, Potato Onions, Rareripes, Egyptian Onion, Onion sets and annual Onions, or, as the last are termed in the South, "black seed" Onions, to distinguish them from those raised from sets, include all that market farmers and gardeners handle, with the exception of Chives, a species which makes but a suggestion of a bulb, the green tops cut for salad being the marketable portion. These Chives appear to be natives of this country.

Culture. Onions will grow on any soil from muck meadows to clay loam. Muck soil will not make a first-class Onion without silica added in the form of gravel or sand. Two hundred loads of gravelly, gritty soil should be carted on to an acre; otherwise the Onions will be coarse, thick-necked, of bad color, soft and spongy and poor keepers. In other respects the muck may be treated like upland soils. Apply bone and ashes rather than barnyard manure; this applies not only for Onions but for any crop in such soil. A gravelly, sandy loam gives Onions the strawy color so much desired. Very heavy manuring gives earlier, harder and thicker bulbs and causes them to ripen all at once. To put in more manure than is really needed makes the crop much earlier and often pays well.

A weedy soil should be avoided. Twitch grass, Purslane and Chickweed are especially injurious in an Onion bed. If a bed is badly infested it is better to try new land. Sod should be well rotted by other crops before planting Onion; they can be raised the second year from pasture sod and in three years from mowing sod. In pasture land there are few weeds. As much as 700 bushels of Onions per acre have been raised on black muck soil without manure. They seem to do better in the West on such soils than here.

Onions will follow Carrots, Potatoes or Corn kindly, and Cabbages and Mangel Wurzel, which have drawn heavily on the soil for potash, provided an extra dressing of this element is given. It is often said that Onions could be raised successfully for many years on the same ground, and in one instance they had been raised about ninety years continuously, but now we can get only a few crops off the same piece of ground. A deep, strong soil is best; it should have sufficient moisture and be level or nearly so, so the wash of the land will not cover the young plants.

Varieties, Cultivation, etc. The Danvers is mostly cultivated in New England. The Cracker is earlier and of fine quality, and will grow farthest north of any. The Southport White Globe is very handsome, but requires great care in curing. After being pulled they should be piled in heaps of two or three bushels each and covered up or placed in airy buildings six inches deep. The White Pearl and Early Queen are very nice for early bunching; about as early as those raised from sets. In Connecticut the red, white and yellow Southport are favorite varieties. The Top Onion is sometimes planted in August for May marketing. The Egyptian belongs to a distinct class; it is of irregular form, and is planted in September, and starts early in spring—earlier than the weeds. They have to be planted but once. Onion seed raised here is much better than foreign.

With the Monarch pulverizer and Meeker harrow three and a half acres were prepared in four hours. The Meeker harrow consist of four series of wheels, and will do the work of eighteen men; it makes the ground as fine as raking, but does not press down the stones.

Manure. Apply at least ten cords of barnyard manure per acre, or its equivalent. Farmers in the vicinity of Boston use 20 cords of stable manure. But he thought it better to use half the quantity of manure, and the other half in commercial fertilizers, or cheaper yet, to use all fertilizer. The latter can be applied at any period of growth, but there is danger from using a phosphate continuously. The application of three or four hundred pounds of nitrate of soda per acre can be recommended, or if the crop looks feeble, a complete fertilizer may be used. Use less manure and more nitrate of soda.

Four pounds of seed is about the usual quantity, but four and a half or five pounds may be used on new soil, and from five to six pounds on very rich soil. It is important to plant early. The rows should be from 12 to 18 inches apart. Blank spaces should not be filled in with Tomatoes, Cabbages or other large growing plants.

Weed just as soon as a row can be seen. It is a good plan to sow Radish seed with the Onions, that the rows may be distinguished more plainly. Two or three rainy days mean an extra weeding. The finger-weeder gives the operator very complete control over his work. With a sliding weeder there is danger of cutting or bruising the bulbs. It is an excellent plan to double slide them as we go along, first close to one row and then close to the other. They should be weeded from five to seven times during the season.

For the Onion maggot hens and chickens were found an effectual remedy. A hen and brood of chickens will take care of from an acre to an acre and a half. Gas lime has been used with effect, but abounding in chlorine must be used with care.

In harvesting, green ones should not be mixed with dry ones. When most of the tops are down there is danger of their re-rooting. On highly manured land they will be ready to harvest earlier than on land not much enriched. I freeze a part of my crop, piling them fifteen inches deep and from fifteen inches to two feet from the wall of the building, the space between the wall and the Onions being filled with hay; they are then covered two feet deep with hay. They must not be touched or handled while frozen. For marketing they should be evenly assorted; many small ones cause extra loss in price.

The Retail Florist.--Essentials of Success.

Paper read before the Buffalo Florists' Club, February 7, 1889, by Daniel B. Long.

What would to many retail Florists seem business obstacles, the wide-awake man, with a natural taste in this direction accepts as spice quite attractive to him. The chances he takes every day in handling his perishable products, have their charms, if not profits, invariably. And yet the customer who thinks the man behind the counter is having only pleasure besides making a good deal of money, would, on trying it, find out his delusion very soon.

The florist who shuns nature's simple guidance in his work must find sooner or later that he has turned away from his best preceptor. I maintain that there is less in "fashions in flowers" than we were wont to be taught a few years ago, so-called fashions being very local and very temporary. The stately Camellia was cast aside after such a prominent use years ago, not because fashion demanded it, but that the taste for variety absolutely called for a change here, and such an assortment of Roses came in as would have fairly turned the head of the florist of thirty years ago.

The artificially tinted Lily of the Valley, and the made up "Emerald Pink," had to take a back place almost as soon as they appeared in the stores.

I well remember that when Bishop Coxe of this city some years ago condemned the luxury of flowers at funerals, I feared that from his influence this might materially reduce the demand, but this it did only in a temporary sense. Even to-day when it is fashionable to publish that flowers are not desired, the matter in fact does not affect the trade unfavorably.

To arrange after simple natural principles is often made difficult by the tastes of our customers; but the florist, when master of his own actions, has little excuse for flagrant transgressions. In decorating within doors, the difference between heavy and light materials must be recognized. A nice specimen Palm of sturdy growth is most attractive when set on or near the floor, but for a blank wall space over a towering piece of furniture use something light, airy and graceful. Flowers like Tulips, Hyacinths and most bulbs appear more natural and are far more effective if we look down on them, tipped forward to the view when in a high position, hence it is not easy to err.

Liberality is a necessary condition of general success. Not the people with miserly minds are those that buy flowers and sustain your business. No indeed, the buyers are people whose acquaintance is an honor to you, and who themselves are possessed of liberal spirit. If you don't make as much this year as you would like to, and can't see the way clear to do a great deal better next, don't become discouraged. Sooner or later, if you've been schooling yourself properly, and got ready for the rush, you will reap the benefit, and be surprised at how easy success came.

No good reason exists for belittling your profession. The calling is a noble, useful and worthy one; but it will bear more ennobling before we pass away.

A liberal feeling toward one another sufficient to keep selling prices of flowers at a paying standard at all times should exist among florists of one locality. If one happens to have an overstock of one thing I consider it a gross indignity to the trade, and an injury to his own business, to offer and sell it regularly at prices way below real value. Far better adhere to fair prices and give away the surplus to worthy institutions of charity, or else make displays for display's sake only of such surplus and so benefit others. I do not believe that the man who attempts to do a rushing trade by offering ruinously low prices at times, will accomplish any permanent advantage.

In competing for patronage we should aim to impress people with the idea that a degree of confidence in the florist, in his ability to please, and in honest intentions, is of far more consequence in placing their orders, than the advantage of a few cent's saving by securing competition prices.

The enterprising florist visits his neighbors at home and elsewhere, thus broadening his mental vision. He also takes an interest in his local Florists' Club, the National Society and kindred associations.

In this business, experience gained in years of steady every-day practice, is of more consequence I think, than capital. Beginners should learn the trade thoroughly before venturing boldly on uncertain issues; and be the gainers in the end.

Western New York Horticultural Society.

(Report of January Meeting Continued from Page 127.)

LONDON PURPLE SOLUTION. One pound of the poison in 200 gallons of water is the proportion recommended by Prof. Cook as certain and safe. Can be used to destroy codling moth, curculio, leaf rollers, tent caterpillars and canker worms. For codlin apply just after the blossoms have fallen, and again two weeks later. For curculio apply as soon as the calyx falls, and again twice at intervals of ten days. The force pump with geared attachment is Mr. Cook's favorite implement for applying liquid insecticides. This with being a power machine, there is considerable satisfaction in the use of it. You can let the horses walk quite fast, and go all around each tree. The liquid goes on with a tremendous dash. In fact all liquid poisons should be thus applied, in order to reach through the protecting foliage, and do the work thoroughly.

CURCULIO REMEDY. Spraying with London purple solutions is a safe and sure remedy for the curculio. Another sure cure is a mixture of one pint of crude carbolic acid and 50 pounds of plaster thrown over the tree in curculio time. Plaster is better than air-slacked lime, although the latter can be used with perfect success.

KEROSENE EMULSION. Prof. Cook's kerosone and soap mixture is a perfect remedy for aphides or plant lice, bark lice and many bugs. Take soft soap one quart, or hard soap—preferably whale oil soap—one-fourth pound; two quarts hot water and one pint kerosene. Stir till all are permanently mixed. Then add water until the kerosene forms one-fifteenth of the whole compound. Apply with force pump when insects are at work.

CALIFORNIA PYRETHRUM. Use Bubach, which is the California-grown Pyrethrum, and let us cease to ask for or speak of "Persian or "Dalmazian" insect powder. The essential ingredient in these powders is an oil, and extremely volatile. The home-grown product naturally is more apt to be fresh than the stuff imported from foreign lands; use one ounce to three gallons of water. This is a specific for Cabbage caterpillars, Cherry and Pear slugs, etc. Dash it upon the affected plants with spray bellows or force pump.

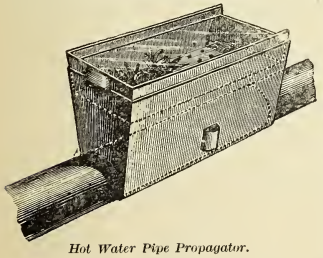
WHITE HELLEBORE. This is a sure cure for the Currant worm. Dissolve one ounce in three gallons of water; apply with force in spray. This method is much better than applying it in powder form.

CARBOLIC ACID AND SOAP. In this Prof. Cook gives us a sure preventive for the borer and remedy for bark lice. Take one pint of crude carbolic acid, one quart soft soap and two gallons of hot water. Mix thoroughly and apply with a cloth to trunk and large branches, two weeks after the blossoms fall, and again two weeks later (say first week in June, and again last week in June). The trees seem to be thankful for the application, and to be invigorated by it, while the insects go or stay away.

PEACH TREE BORER. For borers that have once made their way into Peach trees, there is no remedy except cutting them out or killing with a bent wire. Examine the trees in September and again in May, and kill all the worms.

CABBAGE AND ONION MAGGOT. The maggots that infest the roots of Cabbages, Turnips, Radishes and Onions, are all one and the same insect. To protect Onions successfully, plant Cabbages close by. The insects prefer the latter, and will all congregate on them. By moving Cabbage patches a considerable distance every year away from where Cabbages were grown the previous season, we can in a measure baffle the maggots. Radishes free from maggots may be grown in cloth covered cold frames.

PROF. PRENTIS ON FUNGI. Prof. Prentis of the Cornell University, calls attention to the fact that fungi are of more serious consequence to the tiller of the soil than eveu insects, and that the subject needs more thought and investigation. For Apple fruit scab and leaf spot (which are practically the same), a solution of soda hyposulphite has been tried by Prof. Goff of the New York Experiment Station, and the results are encouraging. The Bordeaux mixture (sulphate of copper and lime) seems to be effective for black rot, downy mildew; and flour of sulphur, or the liberal use of salt are cures for powdery mildew of the Grape, and a potassic sulphite solution applied in spray, a cure or preventive of Gooseberry mildew. We have no positive knowledge as to cause of or remedy for the Peach yellows. The disease is contagious, and the entire eradication of diseased trees is recommended. Pits and buds should be used from healthy trees only. For Pear blight and black knot in Plums and Cherries no remedy is known except the knife and fire; for Plum rot none except the destruction of the diseased fruits, and for red rust in Raspberries, removal and burning of diseased plants.



Hot Water Pipe Propagator.

EXCESSIVE MANURING AND GRAPE ROT. Mr. Van Dusen tells of injury done to a neighbors' Grape vines by rot in consequence of the application of 40 wagon loads of stable manure to one acre. The excess of ammonia was the probable cause of injury. Mr. Hubbard also asserts that heavy applications of manure bring disease into the vineyard. Light applications should be made except on very poor soil.

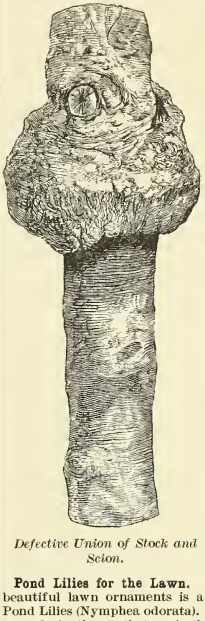
THE CANNING INDUSTRY. Mr. Curtice (member of the large Rochester canning house) crowded most excellent advice into his remarks on the canning industry. Growers and canners must work hand in hand, as their interests are identical. Only white Cherries are generally wanted for canning,especially Bigarreau, Spanish and Napoleon, or any good-sized fair meated sort, of the red acid sorts. Montmorency is good, having paid 14 cents per pound for them. He knows of a single Cherry tree having yielded $80 for fruit in one year. Plums pay the grower well. He has paid from $5,000 to $8,000 a year into the little town of Webster for Plums; and yet there is nothing that might be called a Plum orchard. Imperial Gage, Monroe Egg, Reine Claude and a variety he only knows under the name of "Mottled Egg," are the ones used for canning. Prunes are too high for canning purposes. German Prunes average $3 a bushel. Prefers the Bartlett to all other Pears for canning. The supply of fine quality in fruits does not keep up with the demand, and the canners have hard work to get such fruits as they want. The persistent grower of superior fruits will be successful financially, and need not be discouraged by the cry of low prices and overproduction. Canners want an acid, firm Strawberry, and the Wilson is now the only one used. Of Red Raspberries Cuthbert is as good as any. The demand for Quinces is rather limited, but for that good Western New York Peaches there is no limit. Growers should not confine themselves to Early Crawford, as it lasts only a short time. Any large, yellow-meated Peach is good, Wager, Allen, Foster, etc. By planting these varieties besides the Crawford, the season can be greatly extended. The Crawford, however, is best in flavor. Of Currants the Dutch is highest flavored and best for canning. He pays 4½ to 5 cents a pound in the average.

CONDENSED GLEANINGS.

Effects of Using Unsuitable Stock. In our orchards we frequently meet with a tree having an unsightly enlargement, where the top was budded or grafted upon the stock, and apparently just at the point of union, but in reality above it. The cause of this bulging is obviously the use of stock which grow slower than the variety worked upon. An instance of this kind is illustrated in Gardener's Chronicle (see cut) and represents a Peach tree budded upon Damson Plum stock. The soft-wooded peach grows faster than the harder Damson, aud soon swells to a large bulging and unsightly growth. Often such trees die off when comparatively young, and the weakened growth and early decay might be attributed by the inexperienced observer, to some mismanagement on the part of the gardener, while the fault rests with the propagator who selected an unsuitable variety of wildings as stock. The swelling does not take place until the budded sorts attain the size of the stock in diameter, therefore generally after the tree has left the hands of the nurseryman. There is not much danger in this respect in budding peaches or peach stock, but in a general way it is well to bear in mind, that stock and top should be suited to each other in rate of growth.

Shelter Tress for Minnesota. We first planted Cottonwood, which is utterly worthless; then White Willow, Soft Maple, Box Cedar and White Ash, in the order named. The White Ash is not large and has been broken down often by the snow. If we were to set another grove, we would start with Soft Cedar and Box Elder, which make about equal growth, growiug very fast, too, if well tended. They are both very beautiful trees, and useful, when large enough, for building fences and fuel. Two years after planting the Soft Maples and Box Elders we would plant rows of White Willows north and west of them, not over 12 inches apart in the row. Ash, Walnut and Evergreens we would plant by themselves entirely out of reach of snowdrifts made by the fast growing trees. The White Ash and Black Walnut are very beautiful trees. We have two Black Walnuts which have been planted about thirteen years; they had nuts on them last year for the first time.—Farm, Stock and Home.

Hydrangeas with Blue Flowers. Hydrangeas produce blue flowers, not on account of the mere presence of iron in the soil in which they are growing, but on account of the increased vigor of growth which it engenders. In Japan, their native country, the flowers of the Common Hydrangea (*H. hortensis*) are generally blue, and when we in this country apply salts of iron to the soil, the plants inconsequence return to the conditions which prevail in their native habitats. Even better results are obtained by watering the soil with a weak solution of ammoniacal alum, which causes a greatly increased vigor of growth and more ample foliage. On the sea-coast of Glamorgan, where the Hydrangea is planted in the open ground, it grows with great vigor, and flowers of various shades are produced according to their age, from pink to a deep blue, owing, doubtless, to the iron present in the soil. —L'Illustration Horticole.



Defective Union of Stock and Scion.

Pond Lilies for the Lawn. One of the most beautiful lawn ornaments is a tank of White Pond Lilies (Nymphea odorata). An excavation is made iu the earth to suit the fancy, and the bottom and sides are walled and cemented, leaving a clear depth of three feet. Into this is placed a foot and a half of dark sediment from the bottom of some pond or sluggish stream. The Lily roots are laid on this and another six inches of the same sediment on top. Boards are then covered over all and weighted down, and the tank filled with rain water. At the end of two weeks the weights and boards are removed. Add water as it evaporates, keeping the tank full all the time. This should be done about May 1 in the latitude of New York. When in bloom it is a beauty, pure white blossoms sending their delicious fragrance all about—New York Tribune.

The Spanish Jasmine (Jasminum grandiflorum). This, like many other Jasmines, has flowers of delicious fragrance. It is of a loose habit of growth, though it can scarcely be called a climber. The blossoms are much larger than those of the common Jasmine, and frequently suffused on the exterior with a reddish tinge, while the foliage is of a very deep green. Where large plants of this Jasmine exist they are very valuable for cutting from. Small bushy specimens may be obtained if the young plants are stopped freely during their earlier stages. The plants must not be over-potted, as the roots are by no means vigorous. It is readily propagated from cuttings put in during the early spring months. This Jasmine is a native of the Himalayas, but is largely cultivated throughout the tropics.—Garden.

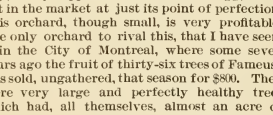
An English Propagating Device. Many little contrivances for rooting cuttings in a small way have been recently brought out by enterprising firms, and the device put on the market by an English firm, and here illustrated, can hardly be called a novelty. Still it appears to be a useful article for amateur purposes. It consists of a tank made to fit any hot water or steam pipe, about 15 inches long, 6 inches wide and 7 inches deep, with one inch of water in the bottom, and a perforated dish 5 inches deep, above. The cuttings are placed in the latter. The whole is made of zinc, with a small feeder on one side, and less liable to get broken, than similar propagators made of clay.

About the Japan Maples. The Many-Formed Maple (*Acer polymorphum*), and its colored-leaved varieties, bear our winters without injury, and more are planted from year to year. The specific name indicates its striking peculiarity, that of producing its leaves in a variety of forms. The plant is a shrub rather than a tree, and its growth is very slow, and probably it will not, at the very best, exceed 10 feet in height. For trees of eight and 10 years planting are now only some six feet high. The leaves are small five-lobed, dark green, changing in autumn to a dark crimson. Varieties of most other species besides the above have not proved sufficiently hardy. The variety dissectum atropurpureum is of a dwarf and weeping form. The leaves are of a beautiful rose-color when young, and change to a deep purple as they become older. They are deeply and finely cut, giving them an elegant fern-like appearance, and unlike that of any other tree. The young shoots are slender and drooping, and colored like the leaves. These plants can be set on the lawn singly or in groups, and by preference, should be placed, if possible, where they will have a background of green and taller trees. They are frequently kept in pots and form beautiful greenhouse decorations.—Vick's Magazine.

An Ohio Grape Hoe. Mr. E. H. Cushman described a Grape house in use in Euclid. It consists of a light tapering pole with an iron extending in front of the horse's breast in a curve, with a slot in the end which was strapped to the collar. Back of the horse a piece is framed at right angles to which the whiffle tree is attached, and also the lower ends of the handles, the middle being supported by a post farther back. The pole is on the right side of the horse and on the under side of the pole near the back end is framed a standard sticking out in a slanting direction to the right at an angle of about 40°. The lower end of this standard carries a steel hoe four inches deep and ten inches wide, and this hoe cleans the ground almost up to the Grape vine stems. Its cost is about $5, and it is as well adapted to Raspberries as to Grape vines. It is shown in the cut.—Ohio Farmer.

Care and Food Makes the Orchard Pay. I have never yet seen an orchard too rich for profit, or one upon which the last load of manure did not pay the most profit. An orchard of the Williams' Favorite Apple in the vicinity of Boston is kept "as rich as a barnyard." The fruit is double what might be called the normal size of the variety; every Apple is handled like an egg, and is got in the market at just its point of perfection. This orchard, though small, is very profitable. The only orchard to rival this, that I have seen, is in the City of Montreal, where some seven years ago the fruit of thirty-six trees of Fameuse was sold, ungathered, that season for $800. They were very large and perfectly healthy trees which had, all themselves, almost an acre of rich land.—T. H. Hoskins in Vick's Magazine.

Trimming Evergreens. Evergreens do not need much trimming. As a rule they should not



An Ohio Grape Hoe.

be pruned when young unless it is for the purpose of giving them some particular shape. When several leaders are produced, take out all but one; or if any side branches grow beyond or out of proportion to others, cut them back. This pruning may be delayed until the tree has become well established and five to ten feet in height. For timber, long erect stems will be required; for screens, preserve as many lower branches as possible to give density. When trees are grown singly for ornament, they will usually take a natural form, which is always more beautiful than any distortion given by the pruner. Study the habits of the tree.—Western Rural.

The Grape Crop of Portland, N. Y. The total of baskets shipped from this town was 1,476,333 at the average selling price of 16 cents per basket, which amounted to $236,053.28. The bearing acreage of the vineyards already planted is about one-fourth, so that in one and two and three years the output of Grapes from this town and Grape county will be doubled, tripled and quadrupled. The Concord remains the favorite Grape in the market. 855 car loads of Grapes were shipped over the Nickel Plate between Dunkirk and Cleveland during the Grape season; over 400 car loads being from Euclid, O.—Chautauqua Farm and Vineyard.

Where Lime is Beneficial. If you have such a soil as ours in which there is plenty of potash to let loose, you cannot put on too much lime. If your soil is full of vegetable matter and vegetable acid, or is of a red, sandy, ferrous-sulphate character, use lime, but in more moderate amount. If your land abounds in decomposing feldspathic rock, use lime heavily to aid the decomposition. But if you have a poor, old, sandy piece of land, destitute of either vegetable matter or potash, don't buy lime, but buy car tickets and get to a better place as soon as possible.—W. F. Massey in American Farmer.

Happy Grape Growers. The Grape growers of Piedmont are in a jubilant mood. The experience of the past season has satisfied them that at last they have a preventative of the black rot in Grapes. Neglected vineyards, which the owners had almost abandoned in despair, are being cleared up, fertilized and pruned, and bright visions of old-time profits fill the dreams of the vine growers. From all lands comes the testimony that the copper mixtures recommended by the Agricultural Department have furnished them the means for destroying the enemy.—W. F. Massey, in Phila. Press.

A New Use for Peach Stones. From experiments tried in California, where Peach stones accumulate in great quantities during the canning season, it appears that they make as good a fire for household purposes as the very best kind of coal. For this purpose the fruit growers now dispose of the stones at $6 a ton. It will last as long as the same number of pounds of coal and will give much more intense heat. Apricot stones will not burn as readily as those of the Peach.—Mass. Plowman.

Preserving the Colors of Flowers. A process of preserving the colors of flowers in dried specimens, as used in Berlin, consist in steeping the plants in a solution of sulphurous acid containing one-fourth of its volume of metylated spirit. Delicate flowers require an immersion of but five or ten minutes, and thick leaves as much as twenty-four hours. They are then removed, the fluid is allowed to evaporate, and the plants are dried between paper in the usual way.—Scientific American.

White Plume for Early. For early Celery I still adhere to the White Plume. It is slightly strong in flavor and a little hard unless it is banked up; but the ease with which it is grown and its attractive appearance compensate for these defects. For use after Christmas I like the Golden Heart. It keeps well, is excellent in quality, and its delicate creamy tint very pleasing.—E. S. Goff, in Rural New Yorker.

Vegetable Products on the Table.

Spinach. Boil in salt and water, drain, chop and then return to the saucepan with some butter; set on the fire until the butter is melted.

Parsnip Cakes. Boil six Parsnips tender, peel and mash them, mix with them one or two eggs well beaten, and two teaspoonfuls of wheat flour, with salt to taste. Make them up in small cakes and fry them in hot lard.

Potatoes in Spring. When the Potatoes lose their mealy quality, pare them and put to soak in cold water an hour before boiling. Rice is a good substitute for Potatoes when they have grown soggy.—Farm Journal.

Stewed Tomatoes. Open a can of Tomatoes, put in a saucepan and set on the back of the stove; cook one hour, add a teacup of bread crumbs, two ounces of butter, with salt and pepper; cook half an hour.—Farm, Home and Garden.

Vegetable Oyster Cakes. Select good, large-sized Oyster plant roots, grate them, and add to each gill of grated Oyster plant two eggs, one pint of milk and flour enough to make a batter, and salt. Drop it by tablespoonfuls into hot lard. Fry till brown.—Home Companion.

Various Vegetables. Sweet Corn (dried) is improved by adding twice as much sugar as salt used in cooking it. Turnips cooked in the same way are better than when boiled with meat. Parsnips boiled in water slightly salted, which is thickened with a gravy made of rich milk, with a little flour stirred in, are excellent.

How to Keep Lemons. Lemons, always so grateful in illness and better than medicine for a disordered stomach, may be kept plump and fresh for months in a tight jar or cask and covered with clear, cold water. The water should be changed every two or three days, and the jar kept in a cool place.—American Farmer.

Stewed Asparagus. Break the Asparagus in pieces about two inches in length, casting aside the portions that will not snap, and cook fifteen minutes in very little water Add a spoonful of butter, also a spoonful of flour stirred into a cup of cream, a little pepper, and salt if needed, boil three minutes and serve.—Medical Classics.

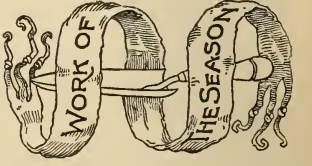
Asparagus Omelet. Steam a half a pint of fresh, brittle Asparagus until tender; chop fine, and add to the eggs, using half as many whites as yelks, and beating them separately; to the whites of three and yelks of six eggs add three spoonfuls of cream. Heat a frying pan, put in a spoonful of fresh butter, and when it has melted pour in the omelet.—Medical Classics.

Cherry Pudding. Two eggs, one cup sweet milk, a tablespoonful of baking powder in the flour, making the batter about as thick as for pancakes. Stir in as many Cherries as it will hold, say well on to a quart (canned ones will do); put it all in a pan and cover, then put the pan in a steamer and steam three hours. For the sauce, use Cherry juice, sugar, butter and a little Cornstarch.—Germantown Telegraph.

Spinach with Gravy. Wash and boil in the usual manner; then drain, squeeze, and chop it very small. Melt a slice of butter in a stew pan, mix with a tablespoonful of flour, and beat the mixture with a wooden spoon till every knot is bruised out; then add the chopped Spinach, a good seasoning of salt, and as much rich stock as will sufficiently moisten the whole. Stir over the fire until quite hot, then serve in a hot dish.—Country Gentlemau.

To Can Asparagus. Wash and prepare it as for cooking; put in glass jars tips upwards, set the jars in a pan of hot water and then fill each jar with boiling salted water. Put on the covers of the jars without the rubbers and set each one upon a wooden frame in a boiler of boiling water. It is best to place kitchen towels between them. Let the water reach up to the neck of the jars. Cook the Asparagus twenty minutes in this way, then remove the jars from the boiler, unscrew the covers, put on the rubbers, fill up with boiling water well salted if it has boiled down in the jar while cooking, replace the covers, screw them down as tight as you can, when they are cold tighten them again and set away.—Farm Journal.

How to Cook Seakale. After being cut, keep in a dark, cool place until cooked. Use the young spring shoots and stalks of the unfolded leaves, blanched by being earthed up and covered, whilst growing. Sometimes the ribs of the large leaves are peeled and dressed as Asparagus, after the plants have ceased to send up young shoots. The shoots should be cut off close to the crown of the plant, carefully washed and tied in small bundles. These bundles should be thrown into boiling water slightly salted, and kept boiling forty to fifty minutes. The Kale should then be drained, the bundles untied and served on buttered toast, laying all the heads in one direction, with plain melted butter or white sauce. Or soak the toast in the water in which the Seakale is boiled instead of having it buttered. If a change is desired, for variety, the Seakale may, after being boiled in salt and water for a quarter of an hour, be drained and put into a stew-pan and covered with brown gravy stew until tender, then lay on a hot dish; add a little Lemon-juice to the gravy and pour over it.—English Farm and Home.



HOUSE PLANTS.

Abutilons can now go outside. Put them in good soil and attend to proper syringing and pruning. Later give a top dressing of manure.

Begonias like rich soil, an abundance of water and plenty of light, but no direct sun rays. Keep in a sunny window lightly shaded.

Boxes are better than pots for young plants. Have handles and castors on them for convenience in moving. Shift plants every third year. A top dressing of

good manure will answer in place of shifting for two ears. Shift at least every third year.

Cactus. Water sparingly while dormaut, and freely when in bloom.

Chrysanthemums. Take cuttings from old stocks, and when rooted pot singly in small pots filled with sandy loam. Water freely. Shift when needed.

Clerodendrons need ample pot room for the best flowers. Use rich, light soil in repotting and set in a shady situation, giving free airing. Propagate while plants are in bloom or afterwards.

Ficus elastica or India Rubber Tree may remaiu in the window the year round. Water occasionally with liquid manure and sponge the leaves frequently to keep off red spider.

Fuchsias should have a partial rest after blooming. Water less freely.

Nitrate of Soda is worthy of trial as a stimulant for house plants. A small handful of it dissolved in a common garden sprinkler full of water makes the most convenient and effective liquid manure.

Oleanders should be set out doors. Water well, preferably with manure water. They do best lu rich loam and in a warm place.

Palms require shifting at least once in two years This should be done when plants are moved out doors.

Shifting, especiality of larger plants, had best be done at this time, and just as the new growth begins.

Tubs. Fine plants show off to best advautage when set in an attractive tuh or hox. Empty hutter tuhs, nicely painted, may he used with good effect.

Window plants when in full bloom should not be removed to open air too soon. If they can he cared for it will often be hetter to leave them in the window all summer, shading and watering as required.

LAWN AND FLOWER GARDEN.

Annuals can he sown in open border. Scatter the seeds lu shallow drills, then sift some dry mold or pulverized moss over them, and pat down lightly.

Cannas require rich soil and free supply of water.

Edgings if kept neat and well defined, highten the effect of beds.

Evergreens may he transplanted even after it would be unsafe for deciduous trees, provided the roots are kept moist while out of the ground, and proper care is taken to pack the soil around them in planting.

Ferns like a shady or half shady spot, and light, well drained soil. Plant out at once. Water freely in a dry time.

Gladioli succeed hest on somewhat light soil, hut dislike stiff clay. Plant the hulbs at least three inches deep, and arrange colors with taste.

Morning Glories are easily grown, and used with good effect to form attractive screens, or to hide unsightly objects.

Mulching the heds is very heneficial to most annual flowering plants, especially Asters.

Phloxes. The improved annual sorts are used with good effect in masses, and are among the best border plants.

Plans for the flower hed must he ready hefore plantiug day comes.

Planting Out. Verhenas, Caruations, Stocks, and other more hardy plants should he hedded out at ouce, while the tenderer kinds, like Geraniums, and especially Coleus, Alternantheras, Tuberose, etc., must he kept inside until settled warm weather. These tender plants when set too early, often receive a shock from which they require considerahle time to recover.

Seedlings of Gloxinias, Tuherous Begonias and similar summer flowering hulhous plants, already started, if planted out in the spent hed beds used for early seedlings (digging up fresh and deep so as to mix the manure thoroughly with the soil) and well shaded will produce much stronger plants than by growing them in pots. Many will bloom satisfactory the present season, and all will be strong plants for next year.

Water Lilies. A tank, however small, of any of the white Pond Lilies makes quite a lawn ornament. Get the roots now from the nearcst pond.

Weeds. Kill them on sight.

Yuccas require a light rich soil.

PLANT CULTURE UNDER GLASS.

Camellias can go outside after danger from frost is over. Put in a somewhat shady and sheltered spot, and keep well watered and syringed.

Cinerarias. Guard against drought and the green fly. To propagate any variety, fill the pot nearly full of sandy compost, and when well rooted, divide the plant, potting each rooted part separately in good soil.

Cyclamens may he kept during summer in a shaded frame, giving occasionally a little water, or go into the open horder until fall.

Gloxinias do hest in partial shade and a moist atmosphere. They need porous and well-enriched soil.

Orchids, especially those of the Indian section, need a moist atmosphere.

Pelargoniums, (Lady Washingtons) should now bloom freely. They thrive in a somewhat shady aud cool position, with plenty of air.

Propagation. Strike cuttings of Geraniums, Hellotropes, Euphorbias, Begonias and all other plants needed for next winter.

Shading is now necessary. Common whitewash, or a mixture of naptha and whiting as thick as milk must he applied to the glass, which is easiest done hy means of a syringe. Or screens may be made of lath, nailed one inch apart to light frames of just such size as desired. Draccenas, Ferns, Fuchsias, Camellias, Orchids, Palms, etc., are more in need of shade than Roses, Geraniums, etc., and shading should be applied accordingly.

Tradescantia, Lycopodium, Othonna, Linaria, etc., may be grown ou narrow shelves placed halfway between the walk and the stages, as they thrive without much direct light.

Water must he given frequently and abundantly. Wet the whole house, walks and walls included, daily and thoroughly.

FRUIT GARDEN AND ORCHARD.

Borer. Prevent its attacks by placing coal ashes around the body of trees, or wash occasionally with hot soap suds or with the carholic acid emulsion.

Buds on budded stock, except those inserted, should be rubbed off as fast as they grow.

Crates and herry haskets must be on hand before they are wanted for use. Fine herries in new boxes hring the hest price. Mark all packages neatly with your full name.

Cultivation. If any crop is to he grown in a young orchard plant hoed crops between the trees, especially Potatoes, Cabhages and Beans. Then cultivate thoroughly. Never plant Oats, Wheat or other cereals in an orchard.

Currants pay when well manured and cultivated. Spraying the bushes with a solution of hellehore, one tablespoonful to a bucketful of water, will clear them of worms. Repeat the dose when needed.

Grafting can yet be donc when dormant scions are on hand.

Insects. Our supplement gives complete information how to fight them.

Planting can yet be done at the north.

Sap suckers, so-called, can he removed from the trees at any time with advantage to the latter.

Spraying with London purple solution is now a recognized necessity for all trees except Peaches.

Stakes. Tie the crooked tree to a stake, and gradually draw straight. Plant a small stake with each Grape vine.

Strawberries. Remove the mulch, cultivate and mulch lightly before fruiting. Apply ashes and bone dust next to the rows. Liquid manure also helps the crop.

THE VEGETABLE GARDEN.

MANSFIELD MILTON, MAHONING CO., O.

Beans. Plaut the wax kinds, also Limas and other Pole Beans.

Beets. Thin from four to eight inches apart, according to variety.

Cabbages. Set out in the open ground. Cultivate often and deep such as were set out last month. Keep stirring the soil hetween the rows in the seed hed; it induces growth and disturbs insects.

Carrots. Thin and weed as soon as large enough to handle. Use wheel-hoe freely.

Celery. For first early set out in trenches. Cultivate hetween the rows in seed hed as soon as plants appear above ground.

Corn. Plant for succession lu well enriched soil. No use trying to produce good sweet Corn on poor soil.

Cucumbers. Sow main crop for large fruit, also make first sowing for small Pickles.

Egg Plant. Set out towards the end of the month. Highly enriched soil and thoroughly decomposed manure is necessary for success.

Endive. Sow for first crop.

Hardening off all plants grown under glass before setting in open ground should not be slighted. It is one of the chief essentials of success.

Kohl Rabi. Sow in heds and transplant when about five inches high.

Leek. Sow in rows and thin to six inches.

Lettuce. Keep up a succession of heat-resisting kinds, such as Deacon, Salamander, etc.

Martynia. Sow in rows, and transplant to two feet apart each way.

Melon. Plant both Water and Musk varieties after the middle of the mouth.

Okra. Sow in drills three feet apart.

Onions. Hoe and weed.

Peas. Keep up successive sowings. Bush the tall-growing kiuds.

Parsnips. Thin and hoe.

Peppers. Set out two feet each way.

Radishes. Sow for succession.

Squash. Plant the bush kinds four feet each way, the running kinds 8 to 12 feet.

Thinning early is as necessary as weeding. Iu order to come to marketable size early plants need their full allowance of space, and the whole food which that space contains.

Tomatoes. Plant out after middle of May. Look out for cut worms.

Weeds. Take care that all are destroyed hefore they appear above ground, by stirring the surface with a steel rake.

Wheel Hoes. No gardener can afford to do without the help of a good wheel hoe. Use it early and often.

FRUIT AND VEGETABLES UNDER GLASS.

Cucumbers now need free ventilation, but protection at night.

Figs. Syringe to drive off red spider as soon as fruit is gathered. Give a fresh supply of good compost. Ventilate freely.

Grapes. Thin without handling the berries. A day temperature of 70° and 65° at night, with a somewhat dry atmosphere is just right for pushing the crop toward maturity.

Pines. Covering is necessary at night. Have temgerature about 95° during the day, and 70 to 75° during the night. Keep the atmosphere moist by wetting walks and walls. Water the plants with guano water.

Strawberries. Remove the plants out doors when done fruiting.

Succession. When Lettuce, Spinach, Radishes or other early crops are cleared off, replant at ouce to Cucumbers or Melons.

Tomatoes. Treat as recommended for Cucumber

THE POULTRY YARD.

Sprinkle snuff in nests of sitting hens and the vermin and mites will disappear.

Ducks Lay Early. Keep them in their pen until they have deposited their eggs. If permitted to have their liberty they will drop one-half of them along the streams and in the meadows where they roam.—Farm Journal.

Nests for Setting Hens. There are many ways in making nests, and many positions in which they may be placed. When possible, it is best to have the sitting hen away from the other stock in some shed or outhouse, so that she may not be disturbed.—The Girls Own Paper.

Lice on Chicks. These are now the great pest of the poultry keeper, and the cause of much loss. Buhach or some other fresh insect powder gives us almost absolute control over lice. Dust the powder two or three times thoroughly through the feathers of the sitting hen shortly before the eggs hatch; then keep the brood away from other fowls, and you are safe.

Watering Young Chicks. Many young chicks die because they get wet when drinking, which chills them and causes them to droop and lose appetite. Always have fountains for chicks that permit them to insert their beaks only into the water. Placing the water before them in saucers, into which they tread and get wet underneath, is dangerous.—Mirror and Farmer.

Hen Spiders. Now comes the time when the roosts of most hen houses are alive with the terrible little mite. In kerosene we have a cheap and never failing remedy. Soak the roosts with it from time to time, or still better, spray it all over the inside of the building, reaching every crack and crevice. It kills wherever it touches, and the treatment will save much suffering to the poor fowls, and money for the owner.

How Many Eggs Does a Hen Lay? Usually a hen will lay one egg every other day through the season. The most prolific varieties, as the Spanish and Leghorns, will lay an egg daily for a few days, gradually laying later until a day is missed. Then the hens stop for the moulting season, for about two or three months and during cold weather, making the period from 100 to 140 eggs for the year.—Farmers' Home Journal.

Empty barrels placed in convenient spots in the orchard or on sod ground with some shade near, make excellent places for nests and broods of newly hatched chicks. Lay the barrels on their side, the open front slightly sunk in the ground. Put some fresh soil in the barrel, with a little straw or hay on top for a nest. Provide proper drainage, and close the opening by sticks driven into the ground in front, just close enough apart to confine the mother hen.

Care of Turkey Chicks. Grown turkeys show more intelligence than almost any other fowl, yet their young spend the first month of their existence in trying to commit suicide in every conceivable manner. The amount of enterprise and ingenuity which they exhibit in that direction is wonderful, and the one who is most successful in raising them, is the one who is most untiring in watchfulness during the first six weeks of their existence.—Farmers' Home Journal.

Scaly leg is very contagious, and a single fowl affected with it, if left without attention, will soon effect every fowl in the yard. Treatment should promptly follow discovery of the first signs of the disease, especially since it is so easily cured. Anoint the affected part of the fowls legs with a mixture of kerosene and lard, or simply dip the feet in pure kerosene, and repeat this treatment two or three times at intervals of a few days. The cure will be complete.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 10th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,217. **Mushroom Culture.** Please tell me how to raise Mushrooms?—J. S., *Brady's Bend Pa.*

1,218. **Apple Trees From Seed.** Will Apple trees from seed of a shy and late bearer retain said undesirable qualities?—E. W. M., *Houlton, Me.*

1,219. **Green Sand Marl of Virginia.** What is its effect on well worn land? What could I afford to pay for it?—G. R., *Baltimore, Md.*

1,220. **Preserving Seed Potatoes.** Has any one tried cold storage, with or without ice, for keeping them from sprouting? Tubers here sprout in winter so that we have to import Northern grown seed at a considerable cost.—*Piedmont, Va.*

1,221. How is suitable of copper used to prevent Grape rot?—M. E., *New Lisbon, O.*

1,222. **Spent Hops.** Are fresh spent Hops suitable to put over the drainage in repotting plants? What is the best way of rotting it to mix with soil? Some kept in a tub for over a year looks as fresh as when first got.

1,223. **Cactus for Day Blooming.** Will some one acquainted with the best varieties name some, and tell me the best methods of treatment?

1,224. **Geraniums for Winter and Summer.** Are Geraniums weakened for winter flowering by having been used for summer bloomers?—D. H. C., *Ontario.*

1,225. **Nicotiana** What treatment does it require after blooming? How is it propagated?—W. C. S., *Muskatine, Iowa.*

1,226. **Pot-Grown Strawberry Plants.** How and when are they grown, and in what size of pots?—E. E. S., *Lincoln, Neb.*

1,227. **Christmas Rose.** What treatment is needed? One I had four years has never bloomed.—MRS. M. W., *Lyndonville, N. Y.*

1,228. **Treatment of Narcissus.** What is the best time for dividing the clumps for bloom next year?—M. D. A., *Ellicott City, Md.*

1,229. **Canning Sugar Corn.** With us it always ferments and spoils. How can this be prevented?—H. S., *Cincinnati, O.*

1,230. **Are Manure Hot-beds Dangerous?** Are they injurious to public health as claimed? In 18 years use of them I have discovered no ill effects.—B. R. W., *Buffalo, N. Y.*

1,231. **Pear Bark Louse.** Some of my trees are nearly covered with small white spots, more like a scale than new or mould. What can I do for them? —N. A. H., *Catawba Island, O.*

1232. **Grafting Wax.** Please give receipt to make, also for French grafting liquid.—A. M., *Hamilton, Ont.*

1,233. **Plan of Hen-House.** Is it safe to build one four feet in and four feet out of ground, with glass on south side from ground up?—J. S., *Kinross, Iowa.*

1,234. **Water Lilies and Their Culture.** Can plants be raised from seed? If so, where can I get it; if from plants, when is the proper time to get at the roots?

1,235. **How to Make a Rockery.** How must I proceed?—T. M., *Hamilton, Ont.*

1,236. **Grafting the Grape.** How and when is it done?—MRS. J. L., *Collierville, Tenn.*

1,237. **Bleeding After Pruning.** Can the flow of sap be stopped when the vine is pruned too early?—W. A. D., *Anniston, Ala.*

1,238. **Plum Golden Beauty.** Where can I get trees?—J. S., *Elida, Ohio.*

1,239 **What is the "Mango."** At New Orleans I saw the so-called Mango, looking as if made of bleached wax, is oval and ridged, growing upon a cantaloupe-like vine, over a frame, it is propagated from the seed. I should like some of the fruit. What is its botanical name?

1,240. **Gas in Greenhouse.** My small flue greenhouse (wood-fire) has no partition between greenhouse and furnace room. Hence a little smoke escapes. I never let temperature rise above 70° in the day, and 40 to 50 at night. My plants (Cabbage and Tomatoes) look had, as if sun-burnt. Is the smoke the cause, or what can I do?

1,241. **Treatment of Cuttings.** What method is best to callous Grape and other cuttings? Would my small greenhouse answer, and how must I proceed?—J. G. K., *Buckners, Ky.*

1,242 **The Orris Root of Commerce.** Which of the Iris is the true Orris root? How is it prepared?—L.M.D.

1,243. **Vitality of Pansy Seed.** For how many years is it good? Is there any work giving the vitality of the seeds of the different flowers, and where to be had?—V. S. S., *Reading, Pa.*

1,244. **Oriental Pears in the South.** Can any one give practical experience with these in Southern Tennessee?—M. H. D.

1,245. **What ails the Gregg Raspberry.** After last seasons tips were taken off, the canes stopped growing, and this spring many are dead, but not from cold. The canes left untrimmed, by over-sight, seem healthy. Who can explain this?—A. M. N.

1,246. **A Late Raspberry.** What variety could replace Gregg in lateness, size and productiveness, and yet be hardy and healthy?—A. M. N.

1,247. **Naphtaline as a Germicide.** Has any one tried Naphtaline for blight, rot, mildew, etc., or to keep off insects; if so with what results?—R. G., *Pa.*

1,248. **Subsoil Irrigation.** Is it preferable to surface irrigation; how should it be arranged?—G. T., *Steuben Co., N. Y.*

1,249. **Granadilla Vine.** What is its botanical name?—R. S., *Fla.*

1,250. **Thymo Cresol.** This has recently been mentioned as a cure for all sorts of insects. Has any one tested it in greenhouse and open ground, and if so with what effects?—T. O., *Ills.*

1,251. **Smut in Sweet Corn.** How can it be prevented or cured?—E. S., *Cincinnati, O.*

1,252. **Rose Slug.** What is the remedy for the green worm that destroyed leaves and buds of my Rose hush last season?—L. F. C., *Seneca Falls, N. Y.*

1,253. **Propagation of Roses.** Can Roses he grafted on the wild stock? What stocks are used by nurserymen, and what is the best method of propagation, by budding, grafting or from slips?—W. D. H., *Odin, Ill.*

1,254. **Chinch Bug.** Is there any mixture that can be applied to growing crops to destroy the chinch bug without injury to the crops themselves?

1,255. **Lime and Sulphur.** Would a peck of lime and four pounds of sulphur, slacked together and dissolved in a barrel of water, be a good and safe application for fruit trees, and will it destroy the codling moth?—WM. M. T., *Witmot, Ohio.*

1,256. **Hellebore for Curculio.** I do not like to use Paris green. Can I use any thing as good or better for the curculio?—V. B., *St. Louis, Mo.*

REPLIES TO INQUIRIES.

1,240. **Gas in Greenhouse.** Regarding the "little smoke" in greenhouse, if it be but little I think this should do the plants no harm. We know from much experience that even heavy smoke of burning Tobacco does plants no harm when applied to greenhouses even as often as three or four times a week. I rather fear it is gas from the flue that works the injury you speak of. Gas is thus troublesome when the draft is defective, or the flues somewhat leaky from cracks, and occasionally in dull lowery weather even when at other times there is no trouble. The only thing then to be done is to admit air as freely as the weather will admit.—A. H. E.

1,241. **Treatment of Cuttings.** The essentials generally recognized in propagating are to set the cuttings (the leaves of which have been trimmed off) into a bed of sand of some four or more inches in depth, and then to have provisions for bottom heat by which the sand may be kept about ten degrees warmer than the atmosphere above. If the house has flues under the stages, by simply boarding up in front of the flue for the distance to be occupied by the cuttings, the proper bottom heat will be secured. Cuttings should be aired rather freely at the top as a prevention of damping. Their wants as to watering should be attentively met, by going over the bed with the can at least three times a day. To sprinkle the bed lightly as often as once an hour seems to provide a congenial atmosphere. Cloth or lath shades (the lath a inch apart) must be provided over the propagating bed for all sunshiny weather. It will also help matters to suspend a tight factory curtain in front, and across the ends of the beds, assuming that this is in one of the side benches of an ordinary plant house. In such cases or in any event it is well to have several lights of glass directly over the bed so that they can be moved for admitting air directly to the cuttings in the bed. When the cuttings have made roots, be they no more than a fourth of an inch long they should be potted.—L.

1,163. **To Start Early Potatoes.** A number of private gardeners in this State practice cutting the tubers in pieces and planting in 3½ or in 4-inch pots some time in March and placed in a cool greenhouse or in a light cellar, watering them when required. About the latter part of April or 1st of May they are planted out in a sheltered position deep enough so as to expose only the tip of the growth. A little hay or straw is scattered over the rows for a week or two to protect against late frosts. The Potatoes will be fit to eat four weeks ahead of the general planting. If C. J. P. wants to plant on a larger scale he can cut his Potatoes three or four weeks before planting time and spread them out closely in flat boxes or trays filled with moss; set them in a cellar or greenhouse, keeping them moist, and afterwards plant them out carefully in proper time. In this way many of the roots get damaged and disturbed, and at best the gain will be about two weeks. The pot plan is surely the best, and four or five hundred hills planted in that way will keep a very large family supplied until Potatoes planted in the regular way mature.—J. B. K.

1,231. **Pear Tree Bark Louse** (*Lecanum pyri*). Wash the trunk and large limbs early in June with a solution of half a pound of washing soda to two gallons water. Use a scrub brush.—W.

1,160. **Azalea Leaves Dying.** Your plants are either kept too wet or have unsuitable soil. Shake and wash out the balls of earth now and repot into smaller sized pots in a mixture of two parts decayed sod with loam and one part good peat or eaf mould with liberal allowance of sharp sand; give the pots plenty of drainage and place in a warm corner of the greenhouse. If your plants have any sound roots remaining they will recover. By supplying fresh sweet soil new roots will form freely to invigorate the whole system of the plant.—J. B. K.

1,163. **How to Start Early Potatoes.** About April 1st I lay Early Ohios as close as possible, and with the eyes up in a cold frame on an inch of clear sand, and cover with two inches of the same. When they begin to sprout air is given freely to produce stocky plants; and when just coming through the sand they may be carefully lifted, placed in small baskets and planted in rich garden soil, covering immediately to prevent drying.—T. W. BLACKMAN, *Iowa.*

1,125. **Non-Kinking Hose.** I have the non-kinking hose in use, and find it a great improvement over ordinary hose, although heavy. It will last a life-time with care, and at 35 cents per foot, I think it worth difference in price. Can be obtained of any reliable dealer.—G. L. L.

1,150. **Keeping Onions from Sprouting.** Little more can be done than to keep them in a dry, cool, well ventilated room. Spread them out thinly.—C. E. P.

1,142. **Propagating Rhododendrons.** To increase these beautiful shrubs requires a great deal of skill and experience, and I advise you not to make the attempt, but to procure your supply by purchase from some firm that makes a speciality of their culture.—CHAS. E. PARNELL.

1,156. **A Good Early Pear.** Manning's Elizabeth is the variety for your purpose.—C. E. P.

1,140. **Lily Planting in Spring.** If the bulbs are in good condition, and you succeed in planting them early, it is possible that they may flower this year. It is better, however, to postpone planting or disturbing them until October.

1,141. **Iris Planting.** I would plant in spring just as soon as the ground can be properly prepared.—C. E. P.

1,115. **Peas for Market.** Rural New Yorker, Alaska and Alpha for early, Champion of England and Yorkshire Hero for medium, and Blackeyed Marrowfat for late. Sow as early as the ground can be worked and every ten days thereafter until the first of June, to ensure a succession.—C. E. P.

1,092. **Dahlias Turning Yellow.** As it is an impossibility for Dahlias from tubers to change their colors there must in some way be a mistake, or else varieties were removed or misplaced, and those with yellow flowers left in their place.

1,066. **Beurre d'Anjou Blighting.** This is less liable to blight than many other varieties.—C.E.P.

1,121. **Manure for Celery. Hoes.** (*a*) Thoroughly rotted cow manure is best; next to this is horse manure, but whichever is used it should be thoroughly incorporated with the soil. (*b*) There is a long-handled broad hoe used by Celery growers in hauling up, but where only a small quantity is grown the common hoe is all that is necessary.—M. MILTON.

1,016. **Chip Manure Insects.** I think chip manure equal to cow manure; the majority of insects die soon where the manure is put broadcast. The worst thing in either of the above manures is the grub, and lime will kill them and most other manure insects.

1,067. **Are Angleworms in any Way Hurtful?** I think angle worms are no injury if not too numerous, but I have known rich ground to contain so many that they would nearly destroy a Potato crop, producing scab equal to the grub. One remedy is good for both, *i. e.* lime sown broadcast.—W. N. HOYT.

1,090. **Quince Trees.** 20° below zero does not seem to injure Quince Trees in this section; the Quince will bear a great many years if taken care of, but as a rule young trees well established are preferable to old ones.—M. B. FAXON.

951. **Grafting Scuppernong Grape.** In the last volume (October, March and May numbers) will be found complete directions for grafting, which will likely be of value to you for this species. The fruit committees of the American Pomological Society recommends the following northern sorts for culture in Tennessee which would do for grafting on your vine: Catawba, Concord, Delaware, Hartford, Isabella, Ives.

2,252. **Rose Slug.** See remedy 126 (65) and 127 in Insect Supplement.

1,253. **Propagation of Roses.** They are mostly grown from cuttings; but can be budded on common Wild Rose stock.

1,254. **Chinch Bug.** The only thing that promises relief to infested localities is the introduction of the fungus disease so destructive to the bug. See our Insect Supplement.

934. **Lilium Auratum.** I suspect that your correspondent has had trouble with the cutting. I once lost a fine bed of Lilium speciosum, and learned a lesson. These Lilies will not endure manuring. I have found many old flower growers failing with Lilies from this cause. The Auratum needs good garden soil with some sand, and you can topdress with a compost, but do not let the bulbs touch manure. I do not know of any Lilies that are an exception, although Tigridium likes rich soil and does not easily rot. I topdress my Lily bed in November and use it as a winter covering.—E. P. P.

954. **Preserving Cider.** The best method that I ever tried is to put into a barrel a quarter of a pound of mustard seed and break in a half dozen eggs. The plan is a good one and keeps cider admirably all winter. The only object of the eggs is to help in clarifying.—E. P. P.

1,151. **Wintering Scions and Cuttings.** The best way I have found is to get a box of convenient size, set it in the ground in a well drained situation to within one inch of the top, fill in the ground all around up to top of box so that the water will run off in all directions, put three inches of moist sand in bottom, tie scions in bundles and set with buts about one inch deep in saud. Fit a water-tight lid to box and cover with six or eight inches of straw. Scions will keep dormant in this until trees are in full leaf.

1,100. **Japan Persimmons in Illinois.** I find no difficulty in protecting Figs so they will winter in the open ground, and Japan Persimmons are certainly as hardy. As to their ripening I think our season is at least four weeks longer than in New York state. The method described on page 140 of protecting Grapes will answer for Figs and Japanese Persimmons, only the ground should be mulched to prevent alternate freezing and thawing. Use clean earth, as leaves or other organic matter in contact with the branches will cause decay.—C. K. MEYER, *Illinois.*

1,255. **Lime and Sulphur.** The solution will hardly prove effective against the codling moth, nor can we see in what way it could possibly be of especial benefit to Peach trees.

1,256. **Hellebore for Curculio.** We recommend spraying Plum trees for curculio with London purple solution, one pound 200 or 250 gallons of water. Helebore will not do. but if your objections to the use of arsenic cannot be overcome, get a pail of crude carbolic acid and mix thoroughly with a peck of common land plaster. Keep the trees well dusted with this and the curculio will be apt to stay away.

1,092. **Dahlias Changing Color.** A friend had 12 roots of as many varieties, carefully labeled and placed in the cellar without dividing the roots. The next spring she placed the same 12 clusters (without divided) in the ground, and much to her surprise they all bloomed white. An old Betsy told her there would surely be a death in her family because the Dahlias bloomed white. It so happened her child died, and she firmly believes that was the cause. I have had a similar experience but I made up my mind it was because they had been planted in the same place for four years and had exhausted something in the soil that they needed. So I placed them in another place the next year and they returned to their former color. I have a yellow Dahlia, quilled, and with end of leaves bright red. It is lovely on my ground, but I have let three different parties have a piece of it, and on their soil it was the dirtiest shade of color imaginable, and not even quilled. I think if 1,092 would change locality the plants would change to their original color.—LIZZIE M. DARLING.

1,093. **Building a Rockery; Suitable Plants.** Use a natural hillside for its site. Arrange smaller stones so that they, partly hidden by straggling plants, will appear like large rocks. Beneath and behind the stones should be plats of fertile soil to support the plants, which are to run over the surface of the rocks, and cover the artificial seams. Of hardy plants for this purpose I know of none better than the Ivy, Creeping Myrtle (Vinca), Sedums, etc. The most irregular, secluded portion of the grounds is the proper place for it.—F.

1,110. **Mulberry Leaves for Silk Worms.** The Russian varieties furnish good food for silk worms; so also does the Osage Orange when Mulberry trees are not at hand.—T.

1,123. **Russian Apricots for Illinois.** They are perfectly hardy in Illinois, but since the different varieties vary in size, quality and every other essential feature, fully as much as Cherries, Apples or any other kind of fruit, and the better sorts have not been fruited in this country long enough to give us a full estimate of their value planting of Russian Apricots should only be attempted in an experimental way. The curculio is especially fond of Apricots, Russian, as well as others; and where you cannot raise Plums on account of the insect it will be useless to plant Russian Apricots in the hope of getting fruit.—F.

1,176. **Industry Gooseberry.** Does not mildew in this neighborhood, and under good cultivation never fails to produce a crop.—H. TONG, *Erie, Pa.*

1,120. **Making a Garden.** With plenty of good manure there will be little trouble in preparing a little piece of worn out land for vegetables and flowers. Put the coarser portion of it on thick and plow it in; top dress with the finer part and harrow it in. In the absence of compost the application of bone dust, wood ashes, hen manure, complete commercial fertilizers, nitrate of soda and other fertilizing materials, will render the land available for garden purposes. If too clayey, add sand, if too early, add clay, and peat or muck in either case. Make the soil rich in some way, give crops the best of cultivation and plenty to eat, and you will have no trouble to make your "poor" soil now, a wilderness, gay with bloom and fruit.—T.

1,159. **About the Kelsey Plum.** A magnificent Plum for the South, it is of no value whatever—too tender and too late—for Massachusetts. In quality and size it far surpasses the other varieties recently introduced from Japan, but like them seems particularly subject to rot, at least in New Jersey where we have watched its behavior with great interest for some time. Even there it is no proof against winter kill.—T.

1,198. **Large Flowers in Chrysanthemums.** To obtain them for exhibition start with strong young plants in very rich soil, and give plenty of moisture. Water with liquid manure three times a week, and allow but one blossom to each stem. —H. TONG.

1,182. **Fertilizers.** For most vegetable 2,000 pounds of bone dust, sown broadcast on the ploughed ground and harrowed in would not be any too much if you use no other kind of manure.—H. TONG.

1,199. **Varieties of Chrysanthemums.** For best twelve I select Mrs Jessie Barr, Comte de Germany, Gloriosum, Christmas Eve, Thorpe Junior, Lord Byron, Mr. Frank Thompson, S. F. Morseman, M. A. Vilmorin and Robert Botolnley. Novelties of 1888 are not included in this list.—H. TONG.

1,188. **Betula papyracea.** This mature Birch, popularly called the Paper Birch, forms a large tree with beautiful white bark. Can probably be obtained of Ellwanger & Barry, Rochester, N. Y.—H. TONG.

1,208. **Forcing Tomatoes.** The trouble is more likely caused by a low temperature than an excess of moisture. I have never had any trouble in getting the fruit to set in a temperature of 60° to 65°.—H. TONG, *Erie, Pa.*

1,131. **Becoming a Landscape Gardener.** Get and study all the best works on the subject, including Robinson's Parks and Gardens of Paris. Study natural scenery; get acquainted with trees and shrubs, their height, shape, color of foliage and general characteristics, then work under a thorough professional landscape gardener for a while. There is room for good ones while poor ones are plenty.—H. TONG, *Erie, Pa.*

1,221. **Sulphate of Copper.** The copper mixture of Gironde (Bordeaux mixture) is found to be the safest to apply, although other and simpler solutions are sometimes used with good effect. Dissolve six pounds of sulphate copper in 16 gallons of water, and in another vessel slake six pounds of lime in six gallons of water. When cool mix the fluids thoroughly by constant stirring, and have this remedy ready a few days before using. Apply thoroughly to the vines with force pump and spray nozzle, making first application at once, and subsequent ones at intervals of 12 to 15 days.

American Pomological Society. Florida Meeting.

(*Continued from page* 142.)

HISTORY OF ORANGE INDUSTRY OF FLORIDA. Senator C. F. A. Beilby, of Deland, Fla., gave a complete history of the Orange industry in the State, with practical details of the best methods of culture and general management. From nothing to 3,000,000 boxes annually in less than twenty years, is the story of the Orange industry. The comparative value of soils was discussed. Raw bone, though slow in effect, is the best fertilizer, too much ammonia inducing "die-back" impairment of vigor in tree and coarseness in fruit. "Foot-rot," another disease is due to low, sour soil. Trees must be planted with roots near the surface. Speaking of Florida he said, "All nations have paid toll of their best to her, and she has distilled into the fruit of every clime the sunny fragrance and sweetness of her cloudless skies and inimitable soil."

VARIETIES OF THE ORANGE. E. H. Hart contributed a paper on this subject. As in ladies' bonnets, he said there was fashion in Oranges. He referred at length to the different strains of the sweet Orange and their gustatory, æsthetic and commercial qualities. 150 varieties had been listed by the late P. W. Reasoner. The best variety to grow is yet a grave question. Many of the excellent sweet seedlings are hard to get to market. The common prejudice against budded trees is largely erroneous. Of very late sorts Hart's Tardriff takes the lead for quality and long keeping, growing sweeter from March to August. The Navel strain is still in high favor. Of the Washington Navel, he said, "it is a superb berry, fine-grained, solid, sweet and succulent as a strawberry pine, ample as the full moon's disk; no wonder enthusiasm should run mad over it."

THE STANDARD OF CITRUS FRUITS. Mr. Van Deman read a paper on "Judging Citrus Fruits," offering a standard of points for the various sorts for adoption. This evoked long discussion as to thickness of peel, quality of flavor, character of "rag," number of seeds, size of core, color and texture of skin, etc.

THE GROWTH OF PALMS. T. L. Mead of Florida, said that out of 80 sorts growing in the open ground only 12 were found of value for general decorative use. The habits and characteristics of the different varieties were described. A paper on "Vitis Vinifera in Florida," by Baron von Lutchin, was next read, also one by Henry Foster, of Lake Charm on "American Fruits in Foreign Markets."

FIG CULTURE. Ex-Governor Reed then followed with an essay on this subject. Figs are easily grown and most productive at the South, he said. He grows and markets 40 bushels annually on a farm near Jacksonville, began in 1872, produces fruit in sixteen months from the cutting. Lively discussion was elicited, and Mr. Reed was the target for a volley of queries.

"PEACH GROWING IN FLORIDA." This was treated by G. L. Tabor. He has shipped 400 bushels of the Peen-to in a single season, and spoke very highly of this type of Peach in Florida. The Honey and its seedlings are also valuable there. A Peen-to that will bloom two or three weeks later, to escape frosts is desired in Florida.

IMPROVEMENT OF OUR NATIVE GRAPES. An essay read by Geo. W. Campbell, the veteran Ohio grape grower, awakened much profitable discussion. The quality and value of the much abused Ives Grape came up incidentally. Mr. E. Williams and others agreed that when left to ripen on the vine thoroughly it was better than Concord and would bring good prices.

PACKING FRUITS FOR MARKET. Mr. Williams read a practical and sensible paper on "Honesty in Packing Fruit." He contended that in this matter "honesty was the best policy," careful grading, truthful representations always paid best. He cited his own experience in evidence.

OTHER PAPERS. G. R. Fairbanks followed with an essay on the "Orange Industry of the United States" and Rev. Dr. White on "Pineapple Culture in Florida" which gave all the details in the successful growth of this favorite tropical fruit.

AWARDS. NEXT MEETING, ETC. All the awards very naturally went to Florida and the South, there being no fruit from the north on exhibition. The Idaho Pear was most favorably reported as to appearance and flavor. The catalogue of fruits was then taken up, changes advised in starring, several new sorts discussed, much of this was hastily gone over in the brief time allotted. Chicago was favored as the next place of meeting. After adjournment the Society was taken to Citra on Orange Lake to see the vast Orange groves there, among them the famous Harris' grove 200 acres in extent. C. K. S.

THE COMPLETE GARDEN.*

XXV.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page 140*)

BORECOLE OR KALE (class C). A foreign dish, the production and consumption of which is constantly on the increase in this country. Borecole is a species of Cabbage, and needs very rich soil. Sow in April or May, in beds like Cabbage, and transplant to the open ground in three foot rows two feet apart in the rows. Cultivate same as Cabbage. Dwarf Green Curled Scotch is the leading sort and quite hardy. A variety of

Snowball Cauliflower.

Kale, known under the names: "Siberian Kale," "German Greens" or "Sprouts," is much cultivated and used as greens in early spring. Sow in early fall in rows one foot apart, and treat as for Spinach.

BROCCOLI (class D). This vegetable closely resembles Cauliflower, and requires the same treatment. Excessive richness of the soil is the first requisite. Plants are grown in beds, from seed sown early in May, like Cabbage or Cauliflower plants, and set out in open ground late in June or early in July, two feet apart in three foot rows. They are ready for use in late autumn. White Cape and Purple Cape are the varieties generally grown.

BRUSSELS SPROUTS (Class D). Cultivated for the miniature Cabbage heads which form all along the main stalk, often entirely enveloping it. Although a delicious vegetable, it is rarely seen in American gardens, owing to its being somewhat tender. Grow plants in beds, sowing seed in April or May, then set them out two feet apart each way, early in July, and cultivated same as Cabbage or Cauliflower.

CABBAGE, EARLY (Class D). Highly manured, deeply plowed, and well-prepared soil is required to bring this crop to the greatest perfection. For the early crop, sow seed in hot bed in February or March, and transplant into cold frames three or four weeks later; here by gradual exposure, to harden them preparatory to planting. Or plants may be bought from the nearest market gardener, or the seed may be sown in the rows right where the Cabbages are to be grown, and gradually thinned to the proper distance. The entire destruction of a patch by the ravages of the Cabbage maggot can often be prevented by the latter plan, as there are almost always enough unaffected plants left in a crowded row to give a full stand. Avoid growing Cabbage in succession on the same land, or planting it after other members of the Brassica family. Dip the roots of plants in water, when setting; cultivate often.

CABBAGE, LATE (Class C), is generally grown to follow early Peas, Radishes, Lettuces, etc. Sow the seed in a bed late in March or in April, and transplant in June, two by three feet apart. If the heads are inclined to crack open, push them over with the foot. Select varieties: French Oxheart, Early York, Early Jersey Wakefield, for early; Henderson's Early Summer, Vandergaw, and Winningstadt for second early. Flat Dutch, American Drumhead, Fottler's Brunswick, and Drumhead Savoy are among the best late sorts. Buhach or California Pyrethrum, if fresh and dusted on the Cabbages when needed, or applied in solution by means of a force pump, is an infallible, cheap and convenient means of clearing the plants of the dreadful green worm now so common.

CAULIFLOWER (Class C). As a rule, Cauliflower is a doubtful crop for the market gardener, though ordinarily in home garden it will yield enough for the table. In growing plants in cold frames for wintering over, as is done about New York and south, the seed is sown the fore part of September, and in about five weeks the plants will be ready to prick into the frames 500 or 600 to a sash. During the severe weather the sash are kept closed, airing freely on suitable days as spring approaches. These plants should be planted in the open ground as early as possible in April, so as to have the heads well formed before the hot weather, otherwise only "buttons" are liable to be produced. An early crop may also be grown from seed sown in March in a hot-bed and transplanted several times before the final field planting. For the late fall crop the seed is sown at the same time as late Cabbage, planted, cultivated, and otherwise treated like it, except that the ground should be somewhat richer and the cultivation cleaner, though not to be worked late as its roots are shallow; irrigation can sometimes be given it with advantage. In the final stages of growth about one-half of the leaves should be tied together above the forming head as soon as this shows, for if this is not done it will become discolored from the sun, dew and rain, and in very hot drying weather it might be even necessary to employ paper or other artificial covering, as the leaves are likely to wilt and let the light in between them. Select Early Varieties: Early Snowball, Early Erfurt and Early Paris; late, Algiers, Le Normand, Walcheren and Autumn Giant.

CARDOON (Clase C). In some ways resembles the Artichoke. Sow seed in early spring in rows three feet apart, and thin to about 18 inches. Tie the leaves together in early fall, bank, blanch and preserve somewhat like celery.

CARROT (Class E). As an early crop for forcing in cold frames, seed is sown in March, in rows, six inches apart, and the plants thinned to two or three inches. When the roots have attained an inch in diameter at the thickest part, they are pulled, bunched and marketed. For garden culture sow in early spring, and perhaps a few weeks later for succession, in rows 14 to 16 inches apart, and thin to three or four inches apart in the row. It is advisable to mix and sow a few Radish seeds with the seed, to indicate the rows for early cultivation, which is only second in importance to the earliest practicable removal of weeds from among the young plants. Deep warm soil, and good cultivation are of greater consequence with this crop than excessive manuring. For field culture, for stock feeding and as a money crop these Carrots are not appreciated as they deserve. Three hundred barrels per acre on common good soil is by no means an unusual crop. Plowing a furrow away from the row in digging makes this work quite easy. Top and store in fall like beets.

Early French forcing is the earliest growing under glass, but Half-Long Red and Half-Long Scarlet, and Danvers are used by many gardeners. Long Orange and Danvers are grown for main crop, also largely for stock. White Belgian and Yellow Belgian are by far the heaviest croppers, but considered inferior and less nutritious than the Red sorts.

CARAWAY (Class F). The aromatic seeds of this are used for flavoring. Plant thinly in rows, and give clean culture.

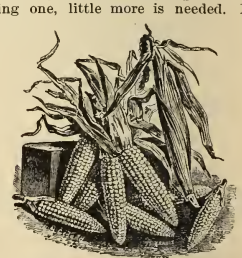
CATNIP (Class F). Useful for medical purposes. Entirely hardy, and easily grown, it is generally considered more of a weed than a plant for the garden.

CHERVIL (Class E). Is cultivated the same as Carrots or Parsnip and has a peculiar Sweet Potato flavor, which is still improved by freezing. Sow the seed very early, as during warm and dry weather it requires a long time to germinate.

CELERIAC (Class E). A distinct variety of Celery, cultivated for its bulbous roots, which are used for flavoring soups, or boiled and sliced and served with oil and vinegar as a salad. Start the plants very early under glass and set out in spring in rows 1½ feet apart, five or six inches in the row. hill up slightly. The newer Apple-rooted variety is an improvement on the common Celeriac.

CELERY.—(Class B and C). For first early the plants may be grown in frames, although this method is not practiced much except in a few favored localities on a rich, cold, moist, peaty soil. The home grower can get a good supply of excellent plants by sowing seed just as early as the condition of soil permits in shallow drills, one foot apart (Class F), merely firming the soil with the feet or otherwise, applying small doses of nitrate soda or more liberal ones of liquid manure, giving good cultivation, and keeping scrupulously clean from weeds. Thin by narrowing the rows of plants, and cutting out, leaving not more than forty or fifty to the running foot.

With good plants to begin with Celery is easily grown. In the latter part of June or in July (and further south even in August) set the plants in rows, 3½ feet apart for the dwarf, and four feet for the later sorts, six inches apart in the rows. Celery is generally used to follow earlier crops, such as Peas, Beets, Early Cabbage, Lettuce, Onions, Spinach, etc., and if the land was heavily manured in spring for the preceding one, little more is needed. Most



Evergreen Sweet Corn.

growers, however, open a furrow for each row, throw in some well rotted compost and fill in with soil; then set the plants. This practice gives good results. Radishes or other quick maturing crops may be grown between the Celery rows, and will be out of the way by the time the Celery needs all the ground. Clean cultivation is essential. Mellow soil will retard the evaporation of the moisture which this crop needs above most others.

"Handle" in September, by packing soil up against the plants to make them grow erect, and later bank up clear to the top leaves in order to bleach the stalks. Celery intended to be wintered over should be

banked to not more than half its height. On a well drained spot, dig a trench of width of spade and of depth answering height of plants. Pull the crop when entirely dry and unfrozen, shake off soil from roots, and place them closely together in trench in an upright position. Cover with a board or several of them, and protect from frost with litter and soil until this covering is gradually made one foot deep. White Plume is a good self-blanching sort, needing little "banking up," and perhaps best for early use; Golden Heart is the most popular variety for main crop. These are dwarfs. The tall sorts, such as Giant White Solid are now but little grown. The red sorts, owing to their crispness and fine flavor, are especially valuable for the home garden.

CHIVES (Class F). The tops are used for flavoring soups and to eat raw. Of easiest culture, and generally propagated by division of the roots, which are little bulbs (the smallest of the Onions) growing in clumps.

COLLARD (Class F). This is merely a synonym for the tops of common Cabbage plants, grown in rows one foot apart and cut for "greens" when large enough. A distinct curly-leaf variety of Cabbage is grown under this name and for the same purpose at the south.

ANISE (class F). A pleasant, spicy, aromatic herb, the seeds of which are a favorite condiment with many, to flavor sauce, pies, etc., also used in medicine. Sow after ground has become warm, thin to several inches apart giving clean cultivation later.

BEETS (class F). For early use sow Eclipse or Egyptian Beet in rich warm soil, as early as it can be got in good working order, in drills one foot apart, covering seed one inch. Plants in part of the patch may be left standing quite thick if thinnings are wanted for greens. Otherwise they should be thinned to five or six inches apart while still small. Keep well cultivated. Repeated light applications of nitrate of soda, either dry just before or during a rain, or in solution, generally give good results. For winter the same varieties may be planted as late as first of July, the Dewing's Blood Turnip Beet, Long Smooth Blood being favorite sorts. The Swiss Chard is cultivated only for its leaves which are used in same way as Spinach. The Mangel Wurtzels and Sugar Beets are grown chiefly for stock in field rather than garden culture. They should be planted in rows not less than two feet apart, and from 12 to 15 inches apart in the drills. Select the Globe varieties for sandy soil; the long sorts for deep loam. The ground should be made very rich, and large crops can then be grown.

CORN (Sweet Corn, Class C). The early and dwarf varieties can be planted quite thickly in drills three feet apart, leaving one stalk every three or four inches, and even closer. The later sorts need more room, and the large varieties will do best in rows four feet apart with a space of eight to twelve inches between the plants. Plant on rich warm soil when danger from late freezes is past, and for a succession every few weeks until July. The Cory is as early as any sort, and gives ears of quite respectable size. Early Minnesota is a good early sort, perhaps sweeter than Cory, but having much smaller ears. Black Mexican can hardly be surpassed in sweetness and richness, and Stewell's Evergreen and Egyptian are the leading late sorts.

The Gladiolus for America.

LENNIE GREENLEE, McDOWELL CO., N. C.

The florist's catalogues at last seem disposed to give to the Gladiolus the prominence which is due it by right of beauty, ease of culture, and with us Southern cultivators, hardihood. In North America, Hyacinths deteriorate; Lilies, Amaryllis, and Tuberoses, all want more or less petting; but the Gladiolus has only one stipulation—full sunlight; and for scores of years the bulk increases and the flowers bloom, gaining in beauty and vigor, for America is the chosen home of the Gladiolus. It is high time our florists were taking the monopoly of high-priced seedlings altogether out of Frenchmen's hands.

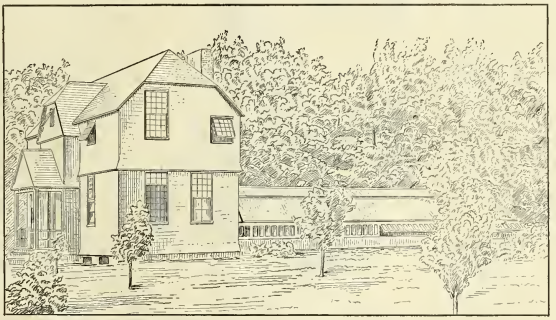
I do not know of a single instance where Gladiolus, not planted in the shade, failed to give complete satisfaction, and the richer the soil, the finer and better colored is the spike of bloom. They increase very rapidly, and in the South one strong bulb often gathers about in one season's growth a dozen tiny ones, which will bloom in another year, or if they are fewer about the parent bulb, and have grown larger, the next season. I have measured clumps of the bulbs which were not thinned for four or five years, that would often be half a yard in diameter.

The culture is very simple; plant in any good soil, four or five inches apart and six inches deep; tie the tall heavy spikes to stakes in blooming season, and if you live north of the line of Baltimore take up your bulbs after frost; if south of it, cover them with a mulch of leaves or fertilizer. In keeping them over winter in the house, be careful to put them in a dry warm place.

There is one Gladiolus which forces well in winter, Colvillii, "The Bride;" it is also the only pure white Gladiolus, of whose absolute purity I am *sure*. I have tried several advertised as "pure white," but have always been disappointed by streaks or stains. Colvillii is somewhat smaller than the Lemoine varieties, but is lovely and distinct from all other varieties. I have seen articles recommending shade from noon day sun for the Gladiolus, but in that case I should never be sure of bloom. They will bear it very well if given an occasional showering, and water morning and night, once or twice a week.

Planted at intervals of a week or ten days from the 1st of April until June, they will give flowers from July until October, and if cut when the first lower flowers of the spike have opened, and placed in water, the other buds will remain perfect a long while.

The new improved seedlings are expensive, and not prettier than some of the older and cheaper varieties, but in buying Gladioli I would always take a pencil and catalogue, and select the named sorts, with shades and markings which pleased me best, for though the dozen and hundred collections are much cheaper, you are apt to find half a dozen reds or whites or yellows, which are almost exactly alike, at blooming time.



THE INSECTARY AT THE CORNELL UNIVERSITY.

Breeding Insects at Cornell University.

The problem, how to save his crops from insect depredations, gradually becomes more serious to the gardener and fruit grower since the lack of adequate means of protection causes the country an annual loss of millions of dollars. The first step towards the discovery of more effective methods in dealing with our insect foes, is a thorough knowledge of their habits and peculiarities at every stage of development. In the way of apparatus, next to the microscope, students of the life history of insects have heretofore had to content themselves with a few breeding cages, but such are now found insufficient for the increasing demands for accurate knowledge.

John Henry Comstock, the University Station Entomologist, says in a Bulletin describing the Insectary:

The entomological subjects that an experiment station should investigate, embrace studies of the life histories of insects and experiments in the destruction of noxious insects or of preventing their ravages. Work in neither of these lines can be well done in an ordinary entomological laboratory. In order to make accurate investigations of this kind it is necessary that there should be a place where living plants can be kept with insects upon them, and that all of the conditions of growth of both plants and insects should be under control. A laboratory has been erected specially for experimental entomology and a view of the exterior of the building is given in illustration. As this, so far as we know, is the first building of its kind, we have proposed the name Insectary for buildings arranged for keeping or raising living insects.

The Cornell Insectary consists of a two story cottage with conservatory attached. Upon the ground floor there is a laboratory for the Experimenter and his Artist, a work shop and a dark room for photographic purposes. In the second story are quarters for a janitor, and a store room for apparatus. In the basement there is a boiler for heating the building and the conservatory, conveniences for potting plants, a coal cellar, and a cold room for the storage of hibernating insects. The conservatory is divided by a transverse partition into two rooms, each 30 feet in length. One of these is used as a hot house, the other as a cold house. Slate tables along the sides of the conservatory are covered with gravel; here are kept the plants growing in pots, and those breeding cages from which water is allowed to drain, while upon tables in the center of the room are kept the breeding cages from which there is no drainage. Our outfit includes, besides other apparatus, a Zeiss microscope with the new apochromatic objectives, and a photo-micro camera.

The cold-room for the storage of hibernating insects was primarily intended for certain experiments in the wintering of bees but the principal use to which it will be put is doubtless the storage through the winter of pupæ and other hibernating insects. The room is a dark one built in one corner of the basement, separated from the rest of the basement by a double wall of matched lum-

ber and building paper, enclosing an air space. This is rendered necessary by the presence in it of the heating apparatus. There is an inlet for cold air formed by an 8 inch tile pipe extending under the foundations of the building and opening outside. There is also an outlet for warm air made by leaving an opening into two of the spaces between the studding of the outside wall, these spaces being furnished with another opening through the side of the building just beneath the eaves. The outlet beneath the eaves of this flue is furnished with a hinged door opened or shut by means of a cord; the size of the inlet for cold air in the floor of the cold room can also be varied. In these ways it is hoped that the temperature of the room can be kept under control. The room on the ground floor immediately above the cold room is the laboratory, and near the experimenter's table there is an opening covered by a pane of glass into the outlet-flue of the cold room; in this flue, opposite this pane of glass, there hangs a thermometer, by means of which the temperature of the air that is escaping from the cold room can be easily ascertained.

How the Fruit from Forty Acres Was Disposed of.

J. N. STEARNS, KALAMAZOO CO., MICH.

The time has come when it is easier to raise a large crop of fruit, than to dispose of it, with profit to the grower. At least we may so infer from the frequent discussions of Horticultural societies, about work of disposing of their fruit, and from the organization of Fruit Exchanges.

A review of last year's production and sales gives approximately the following list: 1000 bushels Pears, 50 bushels Cherries, 5000 peck baskets Peaches, 500 baskets Plums, 200 cases Blackberries, 100 cases Strawberries, 100 cases Gooseberries. Pears brought from $1.50 to $2.75 per bushel, Peaches from $1.25 to $3.00, Cherries from $2.50 to $3.50. Plums from $2.50 to $4.00 per bushel, Blackberries $1.50 to $2.00 per case of 16 quarts, Strawberries and Gooseberries the same.

All these fruits with the exception of a portion of the Pears and Gooseberries, were sold on orders on which I myself, not the purchaser, made the price.

Out of the 5000 baskets of Peaches, not a bushel of first class fruits was shipped to the near and large market, Chicago, since we were unable to fill many orders. From many years' experience in the business I believe that all fruit growers, who deserve the name "fruit growers," can do likewise, but to people without the proper knowledge of how to handle, sort and pack their fruit, so as to give satisfaction to the customers, this is the one important point in creating a large order trade. It includes close attention so that no packer puts into the particular grade he is packing, a single iuferior specimen. A few culls will spoil the appearance of a bushel of fine fruit. Always keep strictly to the grade.

We have orders from Maine to Minnesota, and many times it requires close study to determine what grade of fruit will please the customer. We can usually tell from the tone of the letter, whether the order should be filled with Peaches worth $1.50 $2.00 or $3.00 per bushel. Some of our customers want a fancy article, regardless of price. After turning a quantity of Peaches on the sorting table the first selection is made for this class of customers; the next for the customer who wants a good straight Peach to can for the family's use; the next grade for the retail groceryman, who is expected to sell as cheap as his competitor in trade. What is left now, we call culls, and the best of these are shipped to the Chicago market, for what they will bring.

I might have some scruples to send only the culls to the commission man, but past experience has taught me they will not discriminate between first-class fruit and culls so far as their returns to the shipper are concerned.

Chicago is one of the best markets for a fine article of fruit in limited supply. I received $3 a keg for my Pears the past season, a keg holding a trifle over one bushel. For the past two or three years,

Long Green Cucumber.

however, this market has been so flooded with almost worthless fruit that growers are beginning to be discouraged and so we have the query: "What shall we do with our fruit?"

As one of the means of securing this trade I sent small consignments of fruit to reliable dealers in small towns with my card guaranteeing the fruit select, placed in each package. I find plenty of consumers who prefer to purchase of the producer at an advanced price, expecting of course to get what they pay for. It should be remembered that fair treatment will hold a customer.

I have been engaged in fruit growing as a business for many years and never with more satisfaction to myself thau at the present time. I find the demand fully keeps pace with the increased production.

Double Flowers From Seed.

FROM DR. NOBBE'S REPORT TO THE GERMAN EXPERIMENT STATION.

Seeds of herbaceous plants improved by cultivation show a tendency to produce double flowers. To ascertain the relation between the nature and condition of the seed, and of the flowers which result from their development, twelve distinct varieties of the common Stock which complete its development in the course of one season, were selected from the establishment of M. E. Benary, of Erfurt. One hundred seeds of each as nearly alike as possible, were placed in Dr. Nobbe's germinating apparatus, and submitted to a continuous uniform temperature of 68° Fahr. After four days some of the seedlings (which must have germinated at once) were removed from the apparatus, and placed in the open ground. The other seedlings, which came up after four days and between four and nine days after the commencement of the experiment, were thrown away, so that the seedlings reserved consisted of two classes—one in which the germination had been accomplished within four days, and the other those in which germination was not appreciably commenced till after the ninth day.

The seedlings were eventually transferred to large pots, and placed side by side, half of the pot being occupied by those of [illegible]w growth, the second half by the quickly developed seedlings. Moreover, some of the two sets of seedlings were placed in large, others in small pots; some in sterile sandy soil, care being always taken to make the experiments rigidly comparable. In all nearly 600 seedlings were thus under observation. In each case the time of the first appearance of the flower bud was duly noted and the period when the first flower opened. In some cases a difference of five or six days was noticed between the seedlings of the two categories. The vigor of the plant was uniformly superior in those cases where the germination had been rapid.

But the most remarkable results are those relating to the production of double flowers. In all the varieties the proportion of double flowers was greater in the case of those that germinated quickly than in the case of the laggards. Ten plants of one variety with violet-brown flowers grown rapidly produced all double flowers, while eight plants of the same variety which had germinated slowly produced all single flowers. Of 100 plants belonging to nine different varieties the proportion of double flowers, according to the period of germination, was as follows:

	Doubles.	Singles.
After rapid germination....	82.56	17.44
After slow germination....	27.03	72.97

The tendencies must exist in the seeds themselves, for the two categories of seedlings were exposed to identically the same conditions. Moreover, although those seedlings which were grown in sterile sand were much less vigorous than those grown in good soil, they, nevertheless, showed corresponding inequality as regards their flowers.

Hybridization shows that the seeds contain in themselves, unaffected by other conditions, the essence of what will be manifested in the plant later on. There is in each variety a special tendency to produce double or single flowers as the case may be. Some, no matter how treated, never yield any but single flowers, while others produce, almost exclusively, double flowers.

Notes on Sowing and Transplanting.

L. B. PIERCE, SUMMIT CO., O.

For starting plants use large sized flats or boxes measnring 4 feet long by 14 inches wide outside measure, the ends being ⅞th stuff, and the sides ⅝th, and 3 iuches wide; the bottoms are of a single board ½ inch thick with several small holes bored for drainage. They are made of Chestnut lumber sawed to order from logs of my own furnishing. One of my houses is 9 feet inside and the others 10 feet. In the narrow house, 3 boxes are set side by side, and in wider ones they are placed end to the alley, in either case leaving a walk 2 foot wide.

The boxes are placed empty in the plant house and filled with dirt from boxes more convenient for a single person to handle. After the plants are transplanted, these flats are stored bottom side up and kept another season. They have been in use seven years and seem good for half a dozen more. Their large size and unadaptability for other uses insures my keeping them, and I am thus sure each spring of having something to use that fits the house. The plants are transplanted into smaller flats holding from 130 to 150 plants each. These suit grocerymen better, as one person can handle them, and they do not expose too many plants to the wear and tear of keeping in view, which comes from wind, dust, dogs, and neglect.

In sowing seeds I fill the flats about two-thirds full of suitable soil and level it. Little dents or drills are now made two inches apart and one-fourth of an inch deep, by pressing the sharp edge of a board into the soil. The seed is then scattered (Cabbage or Tomato) so that it averages about 5 seeds

to an inch, the sowing being as uniform as possible, as it breaks ground more easily when a number of seeds are in a straight line. The soil is damp and dark colored, and I cover the seed with perfectly dry sifted earth, which being light colored, enables me to fill the drill just full and no more insuring a uniform depth. This is a good way for ladies in sowing flower seeds.

First get the surface of the bed fine and mellow, then make little drills with a lath which has been planed to a sharp edge. It can be pressed down to accommodate any sized seed, and by covering with soil of another color, the seed will be evenly covered. In sowing seeds either in flats or beds, it is a good plan to mark the position of each drill on the edge of the flat or by small stakes, then if the seed is slow, it will not be necessary to disturb such ground in looking for the trouble. However, ground in which seed is sown should not be disturbed until after the necessary time has been given it to germinate, which of course varies with the variety.

In regard to transplanting I find it is not best to transplant too young. Most writers advise when the first pair of rough leaves have developed, but my experience goes to show that it is better to wait for two pair, and if not too crowded, in the case of Tomatoes still longer, before first transplanting. A strong plant well furnished with roots, not only handles nicer but grows better than a puny infant just out of the seed leaf stage.

Plants should be graded into at least three sizes in transplanting into flats or into the garden, and then certain rows or boxes will be uniform in appearance and the larger will not overshadow the smaller. The grading should take into account the amount of root left on the plant as well as size of foliage.

The Possibilities of a Town Lot.

MRS. LORA S. LA MANCE, MCDONALD CO., MO.

Eight years ago we determined to utilize some vacant lots back of our store for a garden and orchard. The prospect was not encouraging; no experience, little time to spare, soil poor, clayey, low and undrained, those were the conditions. On one side of the garden lot we planted Plum trees, with Raspberries and Blackberrries between; in the other lot Peach trees in two rows with Grapes between and also on outside row next to the store. The leaves on the Peaches had already started to grow. My husband dug wide, deep holes, placed in the bottom of each a few shovelsfuls of rich black soil, filled up over the roots with the same good dirt, dashed a half bucket of water on each tree and banked the earth around the tree, finishing with a load of chip manure. Not a tree or vine died, and the leaves on the Peach trees did not wither.

The next year the berries bore and the Grapes, now trellised and under good care, bore a few bunches of very fine fruit. The year following, in addition to Grapes, the Peach and Plum trees had a few specimens of fruit on them. Every year since the Peaches, Plums and Grapes have borne full crops, with the exception of one year when late frosts killed the Peaches. The amount of fruit borne has been marvelous, we having all the Peaches and Plums needed and Grapes enough for table use and a few to can besides. Beyond regular pruning and a thinning out of the too thickly set fruit, the trees and vines have received little care.

Fruit Growing in Kansas.

"JAYHAWKER."

I never enjoyed anything like a complete succession of fruits until I cultivated them myself. The Strawberry does well here with reasonable attention; Blackcap Raspberry does not ripen its wood properly and often; Gooseberries do well; Currants are almost unknown; Blackberries do tolerably well; the Kittatinny often winter-kills and the Snyder sun-scalds at fruiting time. Plums succeed here; Peaches have failed for three years, but now promise well; Grapes, as a rule, do well, this year much of the new wood is killed.

My greatest delight, however, is my Apple orchard of about 200 trees just coming into bearing. The Apple does not bear as early here as in some places. There is a great contrast between here and the northeast as to varieties. For instance, the much rejected Ben Davis is a favorite here, hardy, a good bearer and good keeper. The Winesap, also, is an excellent Apple and a good bearer. The Tallawater, Yellow Bellflower, Rhode Island Greening, Northern Spy, Baldwin and some others doing well at the northeast are rather shy bearers here.

I often read of the wonderful fruit in York state, but some sharpers are thrusting a blow at its good reputation; for instance, some time ago I bought some "York State Apple and Peach Butter" here at a grocery as a relish for a sick person, but which turned out to be little else than a miserable Pumpkin mush. Since then I have begun to raise my own fruit which we have now in abundance the season through.

Some Apples for Wisconsin.

H. M. KIERSTEAD, DANE CO., WIS.

The Fameuse is one of the most satisfactory Apples for this section of Wisconsin. To have them in perfection, the trees need sun, and should not stand too close together; let the soil be rich; application of lime is very beneficial, and the ground should be well cultivated during spring.

These Apples should not be picked until fully ripe, about first of October, and then handled very carefully. The barrels should be stored in a cool place, and kept in winter, where it is only just above the freezing point. Thus you can have Snow Apples juicy and crisp the first of March. They are excellent baked, for sauce, and pies.

To make them look particularly nice, rub them with a soft dry cloth till they shine.

The Talman Sweet is another good Apple for this section and with the same care that we give the Fameuse will keep in good condition until March, but the barrels should be headed up to keep Apples from shriveling.

The Application of Fertilizers.

Bonedust flour and most other commercial fertilizers when fresh are, and should be, quite dry, so that people find it often inconvenient and rather wasteful to apply them broadcast in the usual method of sowing by hand. The fertilizer attachment which now goes with any good grain drill, distributes such fertilizer in a perfect way, and without waste, and there are also separate fertilizer drills in the market. This machine method has its advantages over hand application It not only distributes the fertilizer evenly, but also stirs it into the soil; and as for the application of larger quantities, the ground can be gone over repeatedly, and if each time crosswise or diagonally of the previous application, the mixture of soil and fertilizer will be made thorough.

The extensive planter, as in all similar cases, has an advantage over the gardener, whose limited operations hardly allow him the use of machinery. But even, if compelled to resort to hand application of fertilizers, the gardener has a way out of the dilemma. All that is needed, is to moisten the fertilizer suffi ciently, just before applying it, so that the wind will not carry it off in dust form.

Put a layer of the stuff into a tight box, or on a tight barn floor, and sprinkle it with water, then put another dry layer upon it, and sprinkle again. Now shovel the whole mass over repeatedly until thoroughly mixed, and uniformly damp enough for convenient handling. The whole matter is so very simple, that there is no need of people sowing dusty fertilizer in a dust-laden atmosphere, filling their lungs and clothes with the disagreeable stuff.

For application to the drills or rows also, there is no reason why the same plan should not be followed. The greater convenience in handling damp fertilizer, freedom from dust, and avoidance of waste—these are advantages well worthy of consideration by every gardener, whether he operates on a large or small scale.

The harrow should always soon follow after broadcast application of fertilizer by hand. It is important that the latter be thoroughly mixed with the surface soil.

General Notes and Items.

QUEER ATTACK ON BOTANICAL NAMES. D. W. Adams at the last meeting of the American Pomological Society fired a senseless shell at "Botanical Names" which created much amusement, and aroused considerable opposition. It was a so called attack on the "Linnæan Volapuk" of scientific botany. He opposed the use of dead languages for describing fruits and plants because not five in a thousand could understand it. Every plant, he said, had five distinct jaw-breaking names, and this jargon is an obstacle to every fruit grower. No fruit or flower with a big botanical name can ever become popular. The Anjou Pear had been handicapped in this way, but the Bartlett had lost its foreign title in crossing the ocean. Is the science of botany ever to be monopolized by a select circle or clique or shall a society of this nature apply the remedy? "I ask for a botany in English. I stand here to demand the whole thing spread in our mother tongue. Let us have an English botany for an English speaking people." But the innovation found many opposers. Mr. F. Temple, of Massachusetts, was unwilling to have the paper go out unprotested. "You can't handle the plants of the world unless you use what is called scientific botany. In a local community it might do but how shall we nurserymen order stock from France and other countries where English is not spoken by this plan? Cut down names but have anything that may distinguish the variety. Instead of five names for each plant only two are used as a matter of fact. We must have a name that can be used the world over." Rev. Mr. White said, "the same objections lie against every science you can name." Dr. Moore believed in clear cut scientific terms; names should be anglicised and simplified. Dr. Neal thought the proposed reform could not succeed until Volapuk became the universal language. The convention was apparently opposed to the change and President Berckmans finally shut off the debate.

APPLES RUNNING OUT. Mr. Miller writes: It will take years to convince me of the above which some contend is the case. I have in my cellar Bellflower, Winesap, Newton Pippin, and Rhode Island Greening, as fine in size and quality as they were 60 years ago in Pequa Valley, Lancaster Co., Pa., where they were then grown in perfection. Rambo, Romanite and Vandevere are also very superior here. Whenever people talk about their having served their time, and that they have deteriorated, it means that there is something wrong in the soil or the health of the trees.

When I came to this place there were old trees with dead limbs, some having big holes

in them, yet life enough remained to bear large crops of fruit which nearly always rotted. This discouraged me, but it would not do to give up growing Apples; now young trees of the same kinds are perfect.

GRAPE CULTURE. Any good Corn land will do, selected just as for an early garden, choosing that location which will give a sunny exposure with deep soil. There are, of course, choice localities and in these commercial vineyards should be set which should give good profits; however, no one should hold back because he has not the best of locations.

The following list is presented with the preference in the order given: Moore's Early, Worden, Concord, Wilder, Brighton, Delaware, Niagara, Lindley, Salem, Agawam, Janesville. Doubtless we shall change our opinion of the relative merits somewhat as time goes on but the list as it stands is the best for Wisconsin that can be presented.

LOW PRICE OF APPLES. As we all know, the Apple market was greatly demoralized and even now is discouraging. Is there not something wrong in the way of handling them? To my own personal knowledge, Apples were shipped from near here that only netted the shipper 25 cents per barrel, while not a mile from there another realized $2.00 by the barrel. Whence the difference? Simply because the one sent a good article while the others were only fit to feed to stock. I might have bought car loads of Apples in the orchard for 20 cents per bushel, while I sold mine on the ground for 40 cents.

TREATMENT OF SMALL ROSES. After I receive little Rose plants in the spring, as soon as they have developed wood fit for the purpose, I take buds from them and set in strong stocks, from which there are always finer flowers produced than from the young plants the first year. Few, however, will go to this trouble since Roses can be bought so cheaply. To a refined and cultivated taste, I consider choice fruits and flowers one-half of the pleasure in life. At my home I am almost isolated from society, but when looking around my place feel quite content.

BUYING AND PLANTING. Buy of reliable nurserymen in your own State or those advertising in reliable papers, not of traveling peddlers; such persons are obliged, in order to make wages, to charge exorbitant prices. Leave novelties out of the general vineyard.

PROPAGATING BLACKBERRIES. By cutting around the bushes with a sharp spade in early spring it will increase the plants, but lessen the crop. They are also increased from root cuttings, as has been described in replies to inquiries.

NEW EVIDENCE ON PEACH YELLOWS FORTHCOMING. We learn from Prof. Maynard of the Massachusetts Experiment Station that their work upon the yellows leads them to altogether different results from those obtained by the department specialist. From our own experience we feel perfectly competent to cope with the disease on our grounds, with the same weapons as named by Mr. Hale, namely, cultivation, pruning and potash; hence we would not thank any one to come on our grounds with the peremptory order to destroy trees suspected of having the yellows. At the east we feel reasonably sure of our ground. As to the west, it is not impossible that differing soil and atmospheric conditions call for a modification of treatment; but at the present state of affairs it is decidedly premature to stubbornly stick to the assertion that the disease is incurable. The last word has not been spoken. One of the next bulletins of the Massachusetts Experiment Station promises to throw considerable new light upon the disputed points. The outcome of the "Peach yellows trial" (Lockport, N. Y., March, 1889,), which ended with a disagreement of the jury, shows that the law aiming at the destruction of diseased trees, is not upheld by general public sentiment, and hence is not among the things easily enforced.

ADULTERATION OF VINEGAR AND JELLY DISCUSSED. Mr. Baker: Mr. Kohn in Louisville told me that not one barrel in a thousand of Apple vinegar had a particle of cider in it. He is a large manufacturer himself. The President: Who is to blame for this adulteration of fruits, jellies, etc.? The manufacturers or the people? The people buy them with their eyes open. I have seen people go to a grocery to buy vinegar, and when asked if they wanted the pure Apple vinegar, they would prefer the cheaper kinds. One thing we want is to enlighten the people in regard to these matters.—*Kentucky Horticultural Society.*

THE BUREAU OF CORRESPONDENCE of the Department of Agriculture, under the charge of Prof. W. O. Atwater, Conn., is in successful operation as a means of communication between the various Experiment Stations both in this and foreign countries. Able specialists are to present articles through the bulletins of the Bureau on various important subjects upon which general information is deemed desirable. It also supplies Congress with all information necessary to intelligent legislation upon agricultural matters.

THE VEGETABLE ORANGE Mango Melon, or under whatever name sent out, is undoubtedly a hybrid between Cucumber and Melon—neither flesh nor fish—and in our estimate next to worthless.

PRIMULA OBCONICA, so Mr. Joseph Meehan writes to Garden and Forest, appears to be poisonous to some persons, somewhat like Poison Ivy.

New York Market Quotations, Showing Tendencies.

	Week ending April 22.	Week ending April 8.
Apples—N. Spy, per bbl	2 00@3 00	1 50@2 25
Baldwin, per bbl	1 25@1 75	1 25@1 50
Russett, per bbl	1 50@2 00	1 50@1 75
Inferior		95@1 00
Grapes—Catawba, 5 lb. basket	10@ 18	10@ 18
Catawba, per case	1 00@2 75	1 00@2 50
Oranges—Florida, per box	2 00@5 50	1 50@4 00
Strawberries—Florida, per quart	20@ 35	15@ 30
Charleston, per quart	18@ 30	
Apples, evaporated, '88, fancy	5½@6	5½@ 6
Evap't'd.'88, prime to choice.	4½@5	4¾@ 5¼
Evap't'd,'88, common to fair.	3¾@4¼	4 @ 4½
Ohio and Michigan, qrs, bbls.	2¾@3½	3 @ 3½
Chopped, per lb.	1¼@1½	1½@ 1½
Cores and skins	1	1
Peaches—Del., evap't'd, peeled	12 @ 15	11 @ 15
Del., evap't'd, unpeeled	5 @ 6	5 @ 6
North Carolina, peeled fancy	8½@ 9	8½@ 9
Southern, unpeeled		3@ 3
Raspberries—evap't'd '88	16@ 17	16½@17½
Sun-dried 1888	15	16 @16½
Cherries—new, per lb	13@ 15	13@ 15
Huckleberries	10	10
Plums—State	6 @6½	6@ 6½
South Damson, per lb	5½@ 6	6
Blackberries—1888	4½ @4½	4@ 4¼
Potatoes—Long Island, 170 lb blk		2 00
State Rose, per 180 lb.	1 25@1 50	1 25@1 50
State Burbank, 180 lb.	90@1 00	75@1 00
Sweet Jersey, fancy per bbl.	3 50@4 50	3 00@4 50
" " fair to good	2 25@3 00	2 25@2 75
Cabbage, Long Island, per 100		1 00@4 00
Florida, per bbl	1 50@2 50	2 50@3 00
Chn., new, per bbl	1 50@2 00	2 00@2 50
Onions—Connecticut red, per bbl	75@1 00	60@ 75
Orange County red, per bbl.	40@ 65	40@ 65
State Yellow, per bbl.	50@1 00	25@ 75
Eastern, White per bbl.	1 00@1 50	1 00@1 50
Turnips, Russia, per bbl	30@ 40	40@ 50
Kale, Norfolk, per bbl.	10@ 25	90@1 00
Spinach, Norfolk, per bbl	25@1 00	1 50@2 00
String Bean, Florida, per crate.	1 50@3 00	2 00@3 00
Green Peas—Sav'nah, per crate.	1 25@1 75	1 00@3 00
Charleston, per crate	1 50@2 00	1 50
Beets—Bermuda, per crate	1 50@2 00	1 00 3 00
Florida, per crate	75@1 25	60@ 90
Tomatoes Key West, per box	2 00@4 50	2 00@4 50

Received at this Office.

CATALOGUES, ETC—FIGURES INDICATE PAGES.

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Vaughn's Seed store, Chicago, 92.
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C. E. Allen, Brattleboro, Vt., seeds, etc., 100.
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Everett Lake, Catonsville, Md., forcing boxes, 2.
Robert Scott & Son., Philadelphia, Pa., Roses, etc., 60.
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J. Butterton, Hammonton, N. J., Nursery, 8.
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Geo. S. Josselyn, Fredonia, N. Y., Grapes. 2[illegible].
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M. Barnes & Co., Groesbeck, O., Small Fruit Nursery, 38.
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MISCELLANEOUS.

Bulletin No. 81 of the California Experiment Station relating to the Distribution of Seeds and Plants, E. W. Hilgard, Director, Berkelep, 4.

"Our Journal," No. 11, the organ of the Muskingum Co. (O.) Horticultural Society, containing the transactions of the November meeting, 8.

"Sugar Producing Plants," being Bulletin No. 18, of the Division of Chemistry, of the Department of Agriculture, 132.

Report on Bird Migration in the Mississippi Valley for 1885–86, by W. W. Cook, being Bulletin No. 2 of the Div. of Economic Ornithology of the Department of Agriculture, 313.

Fourth Report on the Injurious and other Insects of the State of New York, by J. A. Lintner, State Entomologist, containing many illustrations and throughout shows the usual painstaking labor of Prof. Lintner, 240.

Proceedings of the 2d Annual Convention of the Association of American Cemetery Superintendents held at Brooklyn, N. Y. A. H. Sargent, Secretary, Akron, O. Illustrated, 65.

Transactions of the Mississippi Horticultural Society Meeting, at Crystal Springs. Joseph A. Terry, Secretary, Crystal Springs, 80.

"Farms and Farm Products." Ninth Report of the Secretary of State of Michigan for 1886–7, with map, 144.

Consular Reports Nos. 95 and 96, on various subjects, 384.

Bulletin No. 5 of the Minnesota Experiment Station at St. Anthony Park, with reports on Horticulture, Botany and Agriculture. Edward A. Porter, Director, 67.

Bulletin No. 3 of the Iowa Experiment Station at Ames, with reports on Tender and Hardy Fruit Trees, New Pears, Injurious and Fungi, etc. R. P. Speer. Director.

Vermont Experiment Station, Bulletin No. 13, showing results of cutting and planting Potatoes. W. W. Cooke, Director, Burlington, 12.

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POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. JUNE, 1889. No. 9.

O June, the month of merry song,
Of shadow brief, of sunshine long;
All things on earth love you the best—
The bird who carols near his nest;
The wind that wakes, and singing, blows
The spicy perfume of the Rose;
And bee, who sounds his muffled horn
To celebrate the dewy morn;
And even all the stars above
At night are happier for love,
As if the mellow notes of mirth
Were wafted to them from the earth
O June! such music haunts your name;
With yon the summer's chorus came!
—F. D. Sherman in St. Nicholas

CHOICE ROSES cannot do well in sod.

SPROUTS. A motto for June is to rub off the stock sprouts of all budded trees or shrubs.

THE KAKI or Japanese Persimmons, can undoubtedly grow with success in many parts of the United States, but how to utilize the fruit, is another question.

AMERICAN SEED TRADE ASSOCIATION. The Annual Meeting will take place in Washington, D. C., beginning June 11th. Headquarters at the "Arlington." For further information adress the Secretary, A. McCullough, Cincinnati, O.

ASSOCIATION OF AMERICAN NURSERYMEN. Mr. Chas. A. Green, Rochester, N. Y., who is Secretary of this Society, writes that round fare tickets to the Chicago meeting which begins June 5th, can be secured by any person, nurseryman or not, at the rate of 1½ single fare from any part of the United States and Canada. Reduced rates are also secured at the Grand Pacific Hotel, Chicago, the headquarters of the Society. All are invited. For further information, programmes, etc., address the Secretary.

FRUIT OUTLOOK IN THIS VICINITY. A large crop of almost all kinds of fruits seems to be now assured. With a largely increased acreage of small fruits, every plant seems to be determined to do its best. Apple trees, with the exception of Baldwins, have set fruit bountifully; Pears, although they have not bloomed very full, promise to bring out a fine crop, while Cherries, Plums and Quinces have plenty of fruit on them. Peaches are the least promising of all, and the crop will not be large.

THE COMING BUFFALO MEETING. The local committees are actively at work preparing for the reception of the American Association of Florists in this city in August next. A special request comes from the committee on exhibits that intending exhibitors inform them as early as possible of the extent of space that will be required in each case. Mr. E. J. Mepsted of Buffalo is chairman of this committee. At this date all things augur well for one of the most successful meetings in Buffalo yet held by this most successful Society.

A STEP FOR PURE FRUIT PRODUCTS. Any law calculated to put a stop to the adulteration of articles used for food or in its preparation, provided it be enacted and worded so that it can be readily enforced, is decidedly good law. Connecticut legislators have just passed one of the good laws. It provides for a fine and imprisonment for any person who produces for sale or sells as cider-vinegar any vinegar not produced from the juice of Apples, forbids the putting in of any drug or foreign substance to make any other kind of vinegar taste, or what seems to be more like cider vinegar, fixes the limit below which the acetic acid shall not go, etc. This is good as far as it goes, but it is merely a good beginning. Let the honorable gentlemen next turn their attention to the compounds sold in any grocery under the name "fruit jelly," "fruit extract," etc., and which stand in nearer relationship to gelatine, alum and coal tar than to natural fruits. With the ease that good fruits can be produced in this country, we have no need of these adulterations. Let us proceed in the direction of the step taken by Connecticut law makers.

THE PLUM KNOT QUESTION. To move slowly with all untried innovations, and accept facts as such only after they are well established, is commendable, but it is not wise to go to the extreme, as is so often done. Mr. Woodward and other people of experience have for many years been telling that they have found the Plum-knot curable by cutting the scrofulous growth away and painting the limb with turpentine; but they are not successful in making the body of fruit growers accept this as a fact, much less to move them to action. Careful investigation of this matter by the Massachusetts College Experiment Station now devolopes the fact that not only turpentine, but kerosene and linseed oil when painted on the affected parts in sufficient quantity to penetrate the spongy growth, will certainly kill the spores of the disease; but while the first named two may possibly do considerable injury to the healthy part of the wood also, linseed oil is perfectly harmless. Let us express the hope that growers will give up preconceived, and often persistenly maintained ideas of the incurable character of certain plant diseases, and try the simple remedies suggested by experts.

The Brazillian Tree Tomato.

Gardening World gives a description of *Cyphomandra betacea*, which, although not a true Tomato, belongs to the same family, and in some respects resembles our common garden vegetable. The foliage also possesses a peculiar odor, which though distinct from that peculiar to Tomato leaves, is not less disagreeable. The plant, being of a shrubby nature, must attain some size before it can flower. Ultimately it will attain 12 feet in height, but flowers very freely in pots when only four feet or five feet high.

It is a native of Brazil, and largely cultivated in the West Indies, and now forms a regular article of food in many of those countries where it may be planted out of doors, requiring no protection. The fruit is orange-red, egg-shaped, about two and one-half or three inches long, and produced in drooping clusters from the branches.

It is not effected, or only to a slight extent, by the odor of the leaf, and is more palatable to the taste of many than is the Tomato until they have acquired a taste for it. In flavor it resembles the Tomato and appears very tempting to the eye. The plant grows easily from seed, but will probably not fruit the first season.

Girdling the Grape Vine for Commercial Gains. Shall it be Done?

Views of leading horticulturists on girdling the Grape. The purpose, time, and manner of girdling, its effect on fruit and vine and the ethic aspect, application to other fruits, etc.

WHAT DR. HOSKINS, OF VERMONT, SAYS.

I have occasionally tried girdling, but until I saw the easy way of doing it with a twisted wire suggested by Prof. Maynard, I thought it too slow work to amount to anything as an extensive operation. I mean to give it a thorough trial the coming season.

As to the ethics of the matter, while it is not fair to compete at exhibitions with fruit as ordinarilly grown, yet as regards the general public, I see not the slightest moral objection to offering it Grapes grown by any method whatever. The public neither knows nor cares anything about cultural methods. The only thing it is concerned with is results. The whole thing, therefore, will have to stand or fall upon that. If we can please our trade with the produce of girdled vines, they will certainly be girdled, providing it pays enough better to recoup us for the extra cost.

COL. ALEX W. PEARSON, OF NEW JERSEY, REPLIES:

"For what purpose can the girdling of Grape vines be condemned?" I am asked. To enlarge the size and hasten the ripening of the fruit.

"When and how should it be done?" Shortly before the vine blossoms. On one

Knife for Girdling the Vine—Prof. Maynard.

year old canes, below the young fruit-bearing shoots, a ring of bark one-quarter inch wide is removed, without injuring the wood. A tool is made for this purpose similar to shears, having two parallel concave cutting edges on each blade. These clasp the cane to be "ringed" and the circle of bark is removed by a turn of the wrist.

"How does it effect the fruit; its earliness, size, flavor, etc.?" Grapes upon girdled canes ripen (or at least color) two weeks earlier than do those upon canes of the same vine which have not been girdled, and they are rather larger. Such fruit does not differ in quality from fruit ripened on canes not girdled. Some claim that girdled Grapes are inferior. They are not so, if allowed to hang on the vine until ripe.

"What is the after-effect on the vine?" I cannot see that girdling has any effect on the constitution of the vine. The canes operated upon are usually destroyed or damaged, for future fruiting, but where the renewal system of pruning is practiced, these girdled canes may be cut out and new canes substituted. Sometimes bark will form over the ringed space and the girdled cane, if left on the vine, will fruit next year, its fruit continuing to show the influence of an obstructed circulation in the cane.

The results of this obstruction are analagous to a dropsy artificially produced by litigation of a member of the animal body, and may be caused in the Grape by the constriction of a wire tightly twisted around the cane. I girdle and wire a few canes yearly to hasten the ripening of some Grapes for home use.

"Should fruit thus grown be placed on exhibit?" There is no objection to such exhibition, if Grapes thus abnormally developed be shown and described as artificial monstrosities. Of course they should not compete with the ordinary vine product.

"What about ringing as applied to other fruits?" Informed that girdling trees would

induce fruiting, I made in 1875 an experiment in an Apple orchard the trees of which were backward in bearing. Early in May I girdled alternate trees in the rows. The next year these girdled trees seemed rather more fruitful than were those not girdled. In 1876 I treated similarly those trees which had been skipped the year previous. The effect here was not so manifest. Some of the trees fruited the following year, and some did not. One variety—Northern Spy—has refused to respond to this treatment, even when twice girdled.

Girdling with Wire.

I have no further experience in this line, and do not know whether the girdling of fruit trees may have always the same effect as desired. I think it does not injure the tree. However, I am content, in this department of horticulture, to let nature manage her own business.

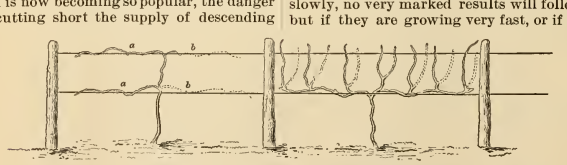
WM. C. STRONG, OF MASSACHUSETTS, TELLS HIS EXPERIENCE.

The process of ringing Grape vines is practiced extensively for the purpose of increasing the size of the fruit, and also for hastening its maturity. There can be no question that both these objects are secured to a marked degree. The berries are usually increased in size at least 25 per cent, and the time of ripening is hastened from ten days to a fortnight, or more depending upon the season. With some varieties this point of time determines very certainly the success or failure of crop.

The time for doing this work of ringing is soon after the setting of the fruit, when the berries are about of the size of Peas. It consists in the entire removal of about three-quarters of an inch of the bark of a branch at a point about three to six inches below the clusters of fruit. The object of this girdling is to allow the ascending sap to pass upward through the pores of the wood, while descending sap is arrested and its nutritive matter retained above for the fruit. The effect is very noticeable in the enlargement of growth above the cut, and a corresponding diminuation below.

The effect of this process upon the size and earliness of the fruit has been stated. The flavor has been unfavorably influenced. But this change has not been to an extent sufficient to be noticed in the markets.

The effect upon the vine is unquestionably injurious. Any disturbance of free circula- of sap tends to weaken. But there are all degrees. My opinion is that a moderate and judicious practice of this art might be followed for years with very slight injury to the vine, and with advantages for some late varieties. As the annual renewal cane system is now becoming so popular, the danger of cutting short the supply of descending



Prof. Maynard's Plan of Training the Vine for Girdling.

nutriment for the root is much diminished.

Girdled fruit should not be allowed to compete with natural fruit at exhibitions. It should be judged by itself.

The principles in girdling will douhtless apply to other fruits, with limitations, depending upon the character of the wood and the fruit. In this direction I have not experimented. It does not seem probable, however, that any material advantages could be secured, as in the case of the Grape. Neither could the injury resulting from the disturbed circulation be so well guarded against as in the case of the Grape, by the renewal system.

PROF. S. T. MAYNARD, OF MASSACHUSETTS, GIVES HIS EXPERIENCE.

I have practiced girdling more or less for many years to test its value in a scientific and economical way. The numerous experiments made in the college vineyard lead to the following results:

1. No injury to the vines girdled has ever been detected, even where the girdle was made on the main trunk near the ground.

2. The time of ripening is generally has tened by one or two weeks.

3. Careful sugar tests show no injury to the quality of the fruit.

4. The fruit was larger, more beautiful and sold for from three to five cents per basket more than that from ungirdled vines.

5. The best time to perform the work has been found to be early in July.

6. For reasons of economy of the forces of the vine, only a part of the cane of each vine should be girdled and only those that are to be cut away.

7. Annual arms should be grown for the purpose of girdling to hear the fruit, and a few unbearing ones fruit for spurs to produce the canes for next year's girdling.

8. The best results were obtained when the ring of bark taken out was from one-eighth to one-quarter of an inch wide, according to the size of the cane girdled.

9. Good results were obtained when wires were twisted about the canes, hut only when twisted very hard with pincers. For this purpose about No.20 annealed was used and the work done late in June.

10. From our experience we helieve that girdling will result in profit to the vine-yardist, and in much pleasure to those who are growing choice late Grape varieties.

In our practice we have worked out a method of girdling that may be applied to any system, but is most satisfactory where one cane is allowed to grow ungirdled on one side of the vine, but not permitted to grow fruit, while the cane of the previous year has heen girdled and is producing fruit.

In our illustration *a* represents the cane that is to bear the fruit, while *b* is the spur made by cutting the girdled cane off. The girdle should he made three or four (2 or 3) huds from the main cane or arm so as to insure enough good buds for a good cane. After fruiting the girdled cane is cut back to a spur, and the opposite cane is allowed to bear. By this system there can be no possible fear of injury to the vine.

The wire must be twisted so as to almost cut into the wood, and if the vine is growing slowly, no very marked results will follow, but if they are growing very fast, or if the wire is given about all the twist it will hear without hreaking, it will be found almost as effectual as the knife.

We had a knife made from one solid piece of steel, but it was not properly made, and did not do as good work as one made in the same form of thin steel might. I think if two pieces of thin knife steel were riveted to the cleaner point *a* in illustration, it would do very satisfactory work. The two blades should be set ahout 3-16 of an inch apart.

Some one has suggested a knife and cleaner made like pruning shears, with blades side by side, and cleaner to follow the cut. Here is a chance for some inventive genius.

MR. E. WILLIAMS OF N. J., NOT IN FAVOR OF GIRDLING.

You ask me for what purpose, if any, can ringing or girdling of Grape vines be recommended? Answer: for the gratifying of one's curiosity and vanity, and perpetrating a fraud. When and how should

THE BRAZIL TREE TOMATO. *See Preceeding Page.*

it be done? Answer: After the fruit has arrived at the standstill during the formation of seed. It is done by removing a section of bark from the bearing or fruiting cane, for one half to one inch in length below the clusters to be affected, i. e. between them and the trunk of the vine. If the section removed is less than ⅛ an inch, new bark will sometimes bridge over the chasm, and thus defeat the object in view. A wire or stout cord wound tightly around the cane will sometimes have the same effect. I have seen canes bent over a wire till the weight of the cane and fruit heyond had gradually broken the tissues of the wood and compressed them so tightly as to entirely obstruct the flow of sap which answers the same purpose as girdling. The effect is obvious. The sap ascends as usual hut its return flow is stopped at the girdled point. Here it accumulates, backs up, and finds its way to clusters in the immediate vicinity. As a consequence they get and have to provide for a larger share than they otherwise would.

Owing to this excess of sap the fruit becomes greatly enlarged; it is forced to color and ripen earlier, but its quality is much impaired. The flavor is deficient and the juice thin and watery. While in New York two years ago a commission merchant called my attention to some remarkably fine Delaware Grapes. They were certainly fine in appearance, but the merchant added: "They are good for nothing; they have no flavor." As it was early in the season for Delawares to ripen normally in the region from whence they came, I suggested that probably the vines had been girdled in order to get them in early. This was afterward verified. I explained to him the effects of the process and the ohject sought, which he denounced more emphatically than politely, and which the grower, could he have heard them, would have been at no loss to understand. I wish he could have witnessed the chagrin and mortification of the merchant when a customer, after tasting a sample of the superb looking fruit, spit it out, turned on his heel and walked away in disgust. No reputable merchant desires to handle such fruit, or to deceive his customers with it, and no honest fruit grower will practice such fraud. I am sorry to admit, however, that this dishonest practice prevails to a large

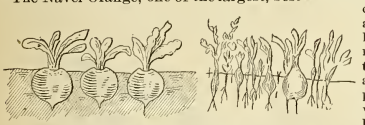
extent among Grape growers, and quantities of their products find their way to the New York markets to compete for the early market, with the unripe fruit from other sections, disappointing the purchasers, depressing the prices, and destroying public confidence, and demand for the fully matured and well ripened product of more honest growers. A few inquiries by the city boards of health of such consignments would have a salutary and beneficial effect and teach the shippers a lesson they would remember.

The after effect on the vine is not detrimental, as those who practice the fraud generally know enough to remove the wood operated upon, and retain enough in its natural condition for future fruitfulness.

Should fruit thus grown be placed on exhibit in competition with other Grapes. Most emphatically no! It is sometimes attempted, but judges who know their business pass it over with contempt. Some horticultural societies forbid such exhibits in their rules and regulations and all should. Such fruit is superior in size and beauty and very attractive to the eye, and if appearance only were the deciding point it would win, but such deceptive frauds should not be allowed to compete with honestly and naturally grown fruit. Putting a premium on dishonesty tends to impede and discourage honest and fair competition.

I am not aware that ringing is being practiced to any great extent with other fruits, though its tendency would doubtless be in the same direction if done for the same purpose. Sometimes a label attached to a tree or a limb with a wire is neglected, the growth increases till the wire cuts completely through the bark and wood, which grows over it, the obstruction, however, being of sufficient duration to cause the girdled branch to form fruit buds sooner than other portions of the tree. The tendrils of Grape vines sometimes grasp a vine or limb of a tree so tightly as to produce similar results, but such instances arising from neglect or accident, differ materially from girdling for a purpose.

The Navel Orange, one of the largest, best and most distinct of this class of Citrus fruits, has the reputation in Florida of being a very shy bearer, and from this cause proves so unprofitable that many trees have been cut down and worked over to more productive varieties. During my recent sojourn in the state I interviewed several growers regarding this Orange, and all without exception agree as to its excellence and unprofitableness. In their efforts to find a remedy for the difficulty I learned that girdling had been resorted to in hopes of making the trees hold their fruit. One gentleman told me he drew a stout wire around the trunk of a ten year old tree just after it had bloomed. That year no effects were observed, as he could not draw the wire tight enough; but the next season the growth of the tree was sufficient to girdle it and he had a larger crop of fruit to mature on the tree than he had ever had, but not sufficiently large to justify keeping the tree so he dug it out. Another and younger tree experimented with was girdled by removing a section of bark from the trunk. The owner's object was to check the vigorous growth of the tree in hope that a slower growth would promote productiveness. He thinks he checked the vigor of the tree, but is not yet satisfied as to its effect on the crop as the tree was just coming into bearing. It had nearly covered the wound with a growth of new bark and he was awaiting further developments.



Thinned Versus Un-thinned Crops.

Another gentleman had girdled branches and sawed the trunks partially off or broken the trees over to the ground, but he could not see that the trees thus treated were at all affected in fruitfulness. They are profuse bloomers and poor fruiters always. It will be seen that the object sought in girdling them was entirely different from Grape girdling. Increased fruitfulness and reduced size is needed. The most unpopular Oranges in the Florida district are the larger ones.

Notes from the Popular Gardening Grounds at La Salle-on-the-Niagara.

The Planting at Woodbanks. The month ending with May 10th was a busy one on these grounds. Within that period the thousands of trees, shrubs and plants of which mention was made in these notes last month were planted throughout the place. The outlook for the seasons planting, hurried as it was, is at this writing most promising. We believe that of all kinds, fruit and ornamental, deciduous and evergreen, that were set less than two per cent will fail to grow. Indeed we venture to say that had it not been for the injury some trees received between the time of leaving the nursery rows and of arriving on our grounds, not one-half of one per cent of the many planted would fail us.

Our success in planting we attribute to the careful methods pursued in handling the stock. These were in the strongest contrast with much similar work done in this neighborhood, in which as in one example, trees that had been shipped in bulk in box cars were thrown off on piles in the sun and wind and there allowed to lay in some instances for 24 hours before being given protection to the roots.

In our own case all trees and plants (they came from a dozen nurseries some 500 or more miles distant) were received in boxes or bales and were in every instance carefully heeled-in within an hour after their arrival on the grounds. Particular attention was paid to firming the soil well against the roots in this operation. In planting, the holes were dug just in advance of bringing the trees from the heeling-in rows, in order to have the soil as fresh as possible for applying next to the roots. A special precaution taken against root drying, on which much stress was laid, was the having of a tub of water at the heeling-in place into which all roots were submerged as the trees were received, so that they went to the planting holes dripping. On dry, windy days another tub was kept at the place of planting to give the trees a second dose. Unavoidably many trees were advanced to leaving out before their turn in planting came, but even in these cases the transfer was made without a perceptible check. When the leaves thus were particularly far advanced and the day dry, a gallon of water was poured onto the tree after the soil over the roots had been well firmed and about two-thirds filled in.

Another point constantly impressed on the planter was to make the soil very firm by the use of the feet and heels after the roots had been carefully surrounded with earth throughout and had been fully covered. Due regard was also paid to pruning the tops as the work progressed. By our careful methods even the nut trees and such ornamental kinds as Beeches, Birches, Larches, Hemlock, etc., which have the reputation of requiring very early planting to be successful, have done remarkably well.

Strawberries. Whatever may be said about the disadvantages connected with soil, the composition of which, as at Woodbanks, requires for best results underdrainage and subsoiling, we doubt that it would be easy to find soil better suited to the culture of the Strawberry, and perhaps to small fruits generally. Even weakly plants seem to take hold of the ground with a will, and produce a size of stool, stalk and foliage, a proud, erect carriage and tendency to early and full fruit setting, to all of which we were not accustomed elsewhere. To produce the very finest fruit here, to all appearances, is only a question of fair treatment.

We would, for instance, like to have our readers take a look at our Wilson's—the old, run-out Wilson, superseded by this or that better variety, as the introducers of novelties are so often pleased to assert. Healthy and thrifty as almost all of the more than one hundred varieties now growing here in the same plot, in long, straight rows, one to a kind, and planted in alphabetical order, appear at this time, have we, after all, to count this same old Wilson among the very thriftiest and healthiest in the lot, ranking in these respects with many of the most renowned of the newer introductions, and surpassed only, as now indicated, by Itasca and Bubach? We anticipate that the apparent adaptability of the Wilson for this soil will afford a somewhat severe, critical test for the highly lauded new sorts. We mention this especially to show that the days of Wilson Strawberry are by no means past, and that this old variety has as yet a safe place among varieties that present themselves to the growers consideration when making his selection for planting. Yet we are making progress, and the newer sorts of promise should be tried even where the Wilson does as well as here.

Fig. 1. Improving the Lawn Grade on the Popular Gardening Grounds.

Early Thinning. That weeds should be removed as soon as they make their appearance is recognized by all, not so generally, however, that superfluous plants in reality are nothing more nor less than weeds, and that early thinning, therefore, is fully as important as early weeding Compare the Radishes grown under the let-alone plan with those properly thinned, as shown in illustration on this page and note the difference.

Some Lawn Improvements. On two sides of the dwelling at Woodbanks a former owner had constructed drives less than 20 feet from the house, giving the lawn in these parts a bobbed effect not desirable. A remedy was easily devised on one side by doing away with the drive, devoting the space and beyond to lawn, in the other by moving the drive out to 40 feet from the house. This last improvement is shown by the annexed Fig. 1, the former drive and grade indicated by a dotted line.

Aside from commenting on the desirability of making changes of this kind for improving appearances, an object in alluding to this matter is to explain the best methods of uniting a new lawn to an old one in such improvements It was the case in fig. 1 that a fine grass sward extended from the house, as indicated by the dotted line, to the former drive similarly indicated. Should this sward be covered by the soil filled in to make the new surface, and then seeding the latter back to near the house where it meets the old line of grass? The great objection to such a course is that the new soil tapers toward the house like a wedge (see engraving) and it is impossible to have the grass seed take hold and thrive on soil as thin as this would be, disturbed as it also is by the covered grass. No good job can thus be done. Besides the grassy turf had better be at the top of the new surface than buried out of sight.

Fig. 2. Cutting and Rolling up Sod.

Our course was a simple one. It consisted in having two men cut into strips and roll up the sod, from the drive back to near the house, as shown in Fig. 2. The strips were about one foot wide, and one length after another was rolled back until the old slope to within a few feet of

the house was uncovered. This is further shown in Fig. 3. With the sod thus rolled back the plat was ready for grading by filling in, and this was done as indicated by the line marked "new slope" in the last figure and by the surface line of Fig. 1. The next step after firming the soil of the new slope to prevent later settling was to let out the sod rolls now on the new soil, rolling or ramming it evenly. A portion of the improved slope was therefore grass covered, the remainder was at once seeded with good lawn seed, there being now no difficulty in seeding close up to the grass sward. A plan similar to this should always be adopted in uniting a new to an old lawn.

Quick Results in Lawn Seeding. The north lawn on the grounds, consisting of nearly half an acre, was sown April 19th with a variety of grasses. Exactly one month later finds it a complete lawn, so far as vigor of the young grass,

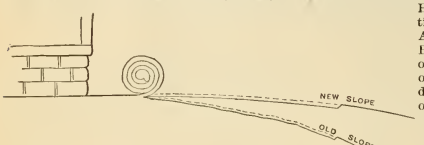


Fig. 3. Uniting a New with an Old Lawn.

evenness of the growth and general beauty are concerned. This is indeed a charm in the appearance of the young tender grass not to be found in the best old lawn in the world. What a waste of time and labor goes on annually in the sodding of hundreds of acres of green plats about our large cities and towns. And seeded lawns are easily the least weedy of the two.

Prospective Apple Crop. Most of the trees this season bloomed abundantly and give promise of a rich harvest. The Baldwins, however, as might be expected after last year's large crop, have only a few scattering blossoms, and probably will not bear heavily. The small size and general inferiority of most specimens of the last crop indicates that the trees were allowed to overbear, and a comparative rest may be urgently needed by them. Our experience is that the few specimens which set the season following a full crop generally remain small, and grow gnarled and inferior, probably on account of the concentrated attack of insects, now hungry after a season of revelry. If the orchard was sprayed for insects last year, and again this season, there ought to be little trouble from that cause, and the few Apples now set, like those which remain after undergoing the process of thorough thinning by human interference, certainly must have all the chance to grow large and come to perfection. It is not always the tree that blooms most abundantly which bears the best crop. In fact, if the season is favorable for fruit setting, but few blossoms comparatively are required for a good yield of fine fruit. We have seen Peaches and Pear trees which were quite unpromising at bloom ing time, give a most excellent crop of superior fruit. The grower need not despair, if his trees in spring are not a complete mass of flowers, but he should use all the means at his command to protect the comparatively small number of fruit once set from any possible harm, and allow them to come to that perfection, which each specimen under the advantage of this natural thinning, is given a chance to obtain.

Modern Weed Slayers. Now the weeds are trying to run a race with our implements of slaughter. But from the very outset they seem to be given but very little show. We lie in ambush, with finger weeder and Planet Jr. wheel hoe cocked, primed and pointed at them. Woe to all that dare to start in the unequal race.

Bone Flour for Vegetables. Gardeners of national repute often express their preference for bone flour as a manure for garden vegetables From their standpoint they may be right. Their land is filled with the decaying organic matter left by annual heavy applications of stable manure, only needing a slight addition, especially of phosphoric acid and nitrogen, to keep it up to the same standard. We and all other people whose soil is not in this happy condition, and who must supply plant food to it for immediate use of plants, cannot rely on bone flour, with its slow action, and entire lack of potash. In order to get the immediate results we are after, we must make use of complete and more soluble fertilizers, and only for some crops, like Tomatoes, leguminous plants; and fruits, we can use bone in combination with some form of potash to good advantage.

Acknowledgement. We are especially pleased with the apparent general friendliness with which leading horticulturists and fruit growers have looked upon the establishment of our experiment work, and we gratefully acknowledge an especial obligation for many gratuitous contributions of new, rare and choice subjects to our grounds. It is a matter of regret on our part that individual credit, in this one instance at least, for every thing thus sent cannot be given. Hereafter we shall try to do all that can be expected of us in this respect. Mention may, however, be made of the collection of rare trees and shrubs, consisting of nearly 100 distinct species, from the Arnold Arboretum near Boston, Jackson Dawson, Superintendent, also of a valuable collection of hardy Evergreens from D. Hill, Dundee, Ill.; seed collections from Peter Henderson, W. A. Burpee, Johnson & Stokes, M. B. Faxon, Wm. Beckert and others; plants from Wm. Scott, of Buffalo, and from John Burdette and Hiram Munson of our own County.

About the Pear Blight.

SAMUEL MILLER.

This destructive disease seems to be almost as much a mystery today as it was forty years ago. Some say, keep them in sod, and this with me has worked well for a few years, but the present season they have been struck even when the trees are in sod.

To use ashes freely on the ground, wash the trees and larger limbs with white wash well charged with sulphur, or paint them with linseed oil will prevent it. But how many of us carry out these doctrines? I for one did not do it this spring, nor do I attribute the disease in the present case to the omission. There are times when the atmospheric conditions will cause it in spite of all precaution. That electricity is the main cause I am pretty well convinced. Another thing is pretty certain that when Pear blight is doing its work you may be sure of Grape rot. About a month ago I noticed the end of the present year's shoots on some Le Conte Pear buds three years old on a bearing tree of Cocklin's Hybrid, a first cousin to LeConte. They were cut off promptly as fast as they appeared.

It then occurred to me that the three year old trees of this variety in the orchard on the hill might be affected in like manner but they were clear of it, and still so a month later, nor has there any appeared since on the buds.

Near the blighted LeConte tree is a natural tree about four inches in diameter which I grafted with the Lawson in the spring. The grafts are growing nicely, while all the natural branches left, as also the young shoots let start, became blighted in a few days, as if fire had swept over the tree. Of course they were speedily cut off. The Lawson being perfectly free seems to indicate that in this we have a blight-proof variety.

A Japanese Winter Squash.

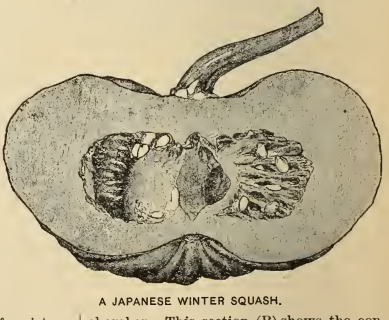
For the past two or three years we have tried quite a number of vegetables from Japan, but none of them proved of sufficient value for further trials with them, except the subject of our illustration, which at its home bears the euphonious name Kikusatonasu, while with us it had to be content with the simple appellation "Japanese Squash." The most valuable characteristics of the plant are hardiness, remarkable thrift, early and full bearing, while the fruit is perhaps the equal of Hubbard Squash in flavor and keeping quality.

It does not seem to resent neglect, or easily succumb to bug attacks, and no diseased plant was ever found in our quite large patches for two seasons. It is fully as hardy and bug resisting as Crookneck Summer Squash, perhaps more so, and we do not think that it will be difficult for even the unskilled gardener to produce all he may want. Its shape and general appearance is shown in illustration (reduced from Rural New Yorker). The average size of the fruit is about ten inches in largest diameter, and four or five inches from stem to blossom end. When nearly ripe, it is of a dark bluish green, turning to greenish yellow, with firm, dry, yellow meat. We have a few hills of it growing on our experiment grounds.

Important Modifications of the Cyclone Nozzle.

A spraying nozzle for use in orchard and vineyard, to be perfect, must combine many features, among them adjustable size, fineness and direction of spray, force of delivery, prevention of clogging, or chance for cleaning out obstructions. The best of our existing nozzles, chief among them the Cyclone or Eddy-chamber, and the Climax, answer some of these requirements, but fail in others. In the desire for a perfect nozzle. many efforts have been made to strengthen the weak points of the Cyclone, and this has given us quite a number of modifications of the original form. The terms "Cyclone" or "Eddy-chamber" apply to the whole class of nozzles, in which the spray is produced in consequence of a rapid rotary motion given to the water in a chamber just before its ejection. No patent on it.

The Riley nozzle, shown in Fig. 1. of illustration is the original form of the Cyclone. At A is shown the typical small stem nozzle with the screw cap c above the chamber *a* as it appears when removed from the chamber. The circular body of this cap is chambered out inside, with a small opening (1-64 to 1-16 inch in diameter) in the center of top, for the discharge of spray, and screws down to the bottom of chamber *a*, the orifice *d* coming opposite the orifice *c*, shown in the section at B, in the wall of this



A JAPANESE WINTER SQUASH.

chamber. This section (B) shows the construction of the stem and chamber.

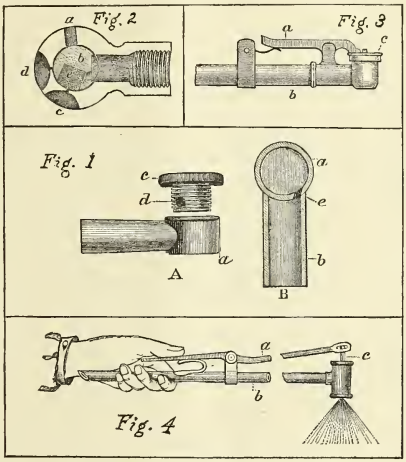
The "Universal Spray Tip," invented by a Californian fruit grower, is shown in Fig. 2. In general form it resembles a water cock. The spherical body of the nozzle has on its outer surface two counter-sunk depressions, c and *d*, and at the bottom of each is a small circular opening communicating with the orifice in which the plug is inserted. The larger straight orifice *a* communicates with the center orifice. Two cavities are drilled into the plug *b* and connected by a small orifice which passes from the shallower cavity tangentially into the base of the deeper one. The illustration represents the water entering the shallow cavity, passing

through the cavity *c*, and issuing at *c*. By turning the plug to the right, as indicated by the dotted line, the discharge can be delivered at *d*. Thus it discharges sidewise, or straight ahead, at the operator's will. By turning the plug to the left from the position shown in cut, the discharge will be reversed and delivered through the larger straight orifice *a*, thus permitting the washing out of any sediment or obstruction. The nozzle is closed, when turned half-way around to the right from position shown.

The often mentioned "Vermorel" nozzle is another, and perhaps the most important modification of the Riley nozzle. It adds the feature of a "disgorger," which is an attachment for removing obstructions from the discharge orifice, consisting of a rod which can be pressed forward until small end passes through the orifice and forces out the obstruction. This feature is still improved upon in the following modifications.

The Albrand modification (fig. 3) not content with the Vermorel principle of cleaning the nozzle from obstructions, gives the operator still better control over this operation, as the cap is attached to a thumb-lever held in place by a spring. When the discharge orifice, which is situated in the movable cap *c*, becomes obstructed, a pressure on the thumb lever *a* raises the cap and permits the liquid to rush out carrying away any obstructions. The eddy chamber is situated at the end of stem *b*.

The Jafy modification (fig 4.) employes a disgorger somewhat on the principle of Vermorel's, but which works in the opposite way. In normal position the thumb-lever *a* is sufficiently raised by a spring placed between it and the tube *b* to throw the needle down into the discharge orifice, thus closing it and preventing the passage of the liquid. When the operator wishes to begin work, he presses upon the lever, as shown in illustration, and immediately the spray issues from the eddy-chamber. If the discharge becomes clogged, he releases the lever, and the needle, springing forward into the opening, clears it.



IMPROVEMENTS IN THE CYCLONE NOZZLE.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

A SPECIALIST. In notes on the work of the experimental grounds at La Salle, I find notice of "a select list of Russian fruits from the specialist at Ames, Iowa." Although we have given much time and thought to the fruits, forest trees and shrubs of East Europe and North Central Asia, the thought occurs that we have tried as faithfully every native and foreign tree and shrub promising to prove valuable in the northwest and the cold north which Dr. Hoskins talks of. The improvement by selection and crossing of our native Plums has been a specialty. The attempt to improve our native Crabs and other fruits by hybridizing has been equally a hobby. At this time we have probably more seedlings of the orchard fruits on trial coming from systematic crosses than are to be found at any other point on this continent. I only mention this to impress the idea that good things for our trying climate may, in our opinion, come from other sources than the steppes of Russia.

BLACK WILD CHERRY. I am glad to see the defense of the Black Wild Cherry. It is true that the caterpillar infests it to some extent, but it is not true that an orchard near a wild Cherry grove is more infected than one ten miles distant. On my farm in Benton county are many trees of *Prunus serotina* near the orchard, but I have failed to discover that the Apple trees were more infested with the caterpillar than those on the prairies, miles from the Cherry. In Cherry groves at the west we only notice the webs on trees on the outer borders of the grove. In connection I will state that select varieties of Wild Cherry at the west are fairly good for dessert use. A few years ago we top-worked an excellent variety on small Wild Cherry stocks and sent them out for trial. In all cases the parties receiving them have been specially pleased.

BLIGHTING RUSSIAN APPLES. Mr. Samuel Miller expresses the opinion that Russian varieties subject to blight might be profitably used for stocks. I would not recommend their trial. It is quite as well to make use of the equally hardy sorts that do not blight. Contrary to the belief often expressed, the interior varieties of Central Russia are not more subject to blight than the Duchess. But the coast varieties are as subject to it as the Siberian Crabs and I should be afraid to plant them even for stocks.

BUSH HONEYSUCKLE FOR HEDGE. To the note recommending the Tartarian Honeysuckle for ornamental hedges I wish to add that the merits of *Lonicera splendens* for this use, are, so far, overlooked in this country. It is listed often as *Loniccra Tatarica splendens*, but it is a very distinct type or strain from Central Asia and reproduces its characteristic foliage, habit, and fruit, with slight variations, from seed. In foliage and habit it is much superior to the old form of bush Honeysuckle, and its immense crops of red or yellow berries are very showy during late summer and early fall. In Poland, Bohemia, North Silesia and South Russia, it is much used for screens and ornamental hedges. It readily grows from seeds, and with great certainty from cuttings put out in the fall. It is hardy everywhere at the west.

ROGER'S GRAPES. The note on the Goethe Grape suggests an item in our experience which may not apply in all parts of our domain. About eight years ago we set Goethe and other varieties of the Rogers Grapes in a little plantation by themselves, and a few as replants in a Concord vineyard. The result has been that those planted apart have borne very little fruit, and that little imperfect in cluster, and the vines are now dead. On the other hand the same varieties—set at the same time—among the Concords have borne regular crops of perfect fruit, and some of them are yet in good condition as to health of canes. Upon examination we found the pollen of all the Roger hybrids we have defective. This accounts for the bearing of those surrounded by the Concords. The total destruction of the vines themselves we can only account for on the principle that the fruitless vines made more rampant growth and went into our recent hard winters with wood less perfectly ripened than that of the heavy bearing vines. Is the pollen of the Roger's Grapes generally abortive, or is it rendered so by our hot dry air of the prairies?

UNSUITABLE STOCKS. Under the head of "Condensed Gleanings" it is assumed that the abnormal knot is caused wholly by the use of a stock slower in growth than the scion. Under favorable circumstances the Miner Plum enlarges about as rapidly as the Peach, yet if left to itself the "unsightly enlargement" is found. In like manner we find this enlargement when the Cherry is worked on the Miner Plum, though naturally the Plum is the most rapid grower. With the stone fruits the trouble comes mainly from the character of the epidermis of the stock. If conditions be favorable the outer bark (epidermis) hardens to such an extent that the growing cell structure of the cambium layer cannot expand it. Where a graft or bud is put in above the ground the whole resources of the stem and root are given to an extension of growth of the new top. The sap goes up in the alburnum, and the almost entire cessation of growth and circulation under the bark favors the hardening of the "corset strings" of the epidermis of the stock. The remedy is to slit the outer bark from the graft downward to the earth at two or three points, and in extreme cases to peel off with the fingers the rings of hardened outer bark.—*Prof. J. L. Budd, Agricultural College Experiment Station, Iowa.*

WEEDS ON LAWNS. I have had the care of two acres of lawn that was full of Dandelions and Plantains and now I can show you a lawn as handsome and free from weeds as any in the states. I constructed a tool for pulling out the whole root without disturbing the lawn much. The job is always done in the fall after the weeds have made their growth so if there is a small piece of root left the frost is pretty sure to kill it. The lawn is rolled in the spring when the ground is soft. This closes all the holes, covers the bare places and thus prevents other weeds from starting.—*J. M. R., New Bedford, Mass.*

DIGGING DITCHES. Your directions for laying out and levelling ditches are worth more to me than the price of the paper, but I can improve on your method of digging ditches. I use a Cassaday sulky plow, which makes a wider and deeper furrow than a hand plow. Next I hitch the team to a ditching plow or simply "ditcher," as we call it here, using a long double tree so the horses need not walk too close to the edge of ditch, and run the ditcher two or three times, or if the ground is very hard or stony, even four times, through the bottom of the furrow. The loose dirt is then thrown out, and the process repeated, until the ditch is nearly deep enough, and must then be finished by hand. The ditcher I use is known here as the Bartlett ditcher.—*C.J. Baldridge, Sencca Co., N. Y.*

BIRDS AND GRAPES. A correspondent of the Florida Dispatch proposes to feed the birds with something they like better than Grapes and thus save the latter. Incidentally, also, he gives a strong testimony of the benefits derived from the little feathered thieves. "If you have the leaf rollers as bad as we have them here," he says, "it will be poor policy to kill the birds. Before the Grapes ripen birds can be seen going over the vines daily devouring this little destructive worm, and but for their help the vines would be stripped of their leaves and the fruit cooked by the sun. An infallible preventive remedy for damage done by fruit eating birds is to plant plenty of Fig trees around, and a row or two through the vineyard. The Grape is evidently an unsatisfactory dish anyway, as is proved by the fact that the bird hardly ever sticks his bill twice into the same berry. They are all the time hunting for something more substantial than Grape juice, and the tender pulp of the Fig exactly fills the bill. I have a row of Grape vines within one hundred yards of half a dozen Fig trees of the little Yellow Celeste that stand on a neighbor's ground. Before the Figs or Grapes ripen my vines are full of Mocking birds and little Mexican canaries, the most destructive of all, hunting the worms, but as soon as the Figs begin to ripen, which is just before the Grapes, they bid me good by and leave me to enjoy my Grapes in peace. I saw the same thing in the city of Houston, beautiful bunches of ripe Concords and other kinds, with not a berry touched, while the Fig trees within a few yards were alive with the birds." The same plan might perhaps be adopted with equally good results at the north. Birds are especially fond of Mulberries, and it is more than likely that the planting of Mulberries, perhaps Russian varieties in hedge form or otherwise, will prove effective as a protection to Grapes and perhaps other fruits.—*T. R.*

Some Insect Enemies.

L. F. ABBOTT, ANDROSCOGGIN CO., ME.

Now the Apple tree borers can be successfully hunted. They commence eating the wood soon after the leaves begin to put out in earnest. The little bunches of red sawdust-like castings at the base of the tree indicate the presence of the worm which will always be at a point lower down than their exudations, unless he has passed the most destructive period of his existence,and turned in towards the heart of the tree. At this stage the borer can best be reached by a flexible wire, otherwise a sharp-pointed knife aud a keen-edged gouge are the best tools to follow with while near the surface of the wood. If trees are examined carefully about the 10th of June, and again the middle or last of August, and all the worms cut out and destroyed, the orchard can be rid of this pest.

The flat-headed borer is a sly rascal, and loves a sunny exposure. He is on the alert as soon as vegetation awakes from its inertness, and when the Apple trees get warmed up in late spring, our flat-headed trunk borer wags his powerful jaws, and without making much visible signs, works mischief upon the trunk and large limbs of the Apple, Maple and other trees.

The insect remedy against the ravages of this insect is to set and prune the trees so the tops will shade the trunks. This may be done by slightly inclining the tree to the south when set, and pruning to shade that side of the trunk. From the circumstance that the beetles of this family of insects fly only when the sun shines bright and warm, and that they always choose a sun-exposed surface on which to deposit their eggs, indicates the proper course to pursue to prevent their lodging in our Apple trees.

The flea beetles are a numerous tribe of insignificant little fellows, but their lack in size they make up in numbers, and their ubiquitous presence. They always happen to be around just when the Cabbages, Turnips and Tomatoes are out of the ground. They are so made as to be scarcely noticeable unless special pains is taken to make their acquaintance; and then their retiring habits, and their nimbleness often will leave you looking at a place just vacated, instead of giving you a chance to view the little black body. White hellebore or Paris green—one part of greeu to 100 parts of plaster (gypsum)—sifted upon the affected plants, are good for these diminutive fellows. Clear plaster also when sprinkled upon the foliage, will give him too much grit in his fodder and repel him.

CULTURE OF THE GRAPE—FIRST PAPER.

GROWING WOOD FIRST; THEN FRUIT.

DR. J. STAYMAN, LEAVENWORTH CO., KAS.

The conditions most favorable to rapid vine growth are generally well understood, but that they are antagonistic to the production of fruit has been almost entirely overlooked. There are distinct stages of growth absolutely necessary to the proper production of wood and fruit. The one is the germinating, unfolding, developing and expanding period, the other the elaborating, contracting, solidifying and maturing period. The first produces a rapid and succulent, the latter a slower and firmer growth; and conditions beneficial to the one are often detrimental to the other.

The first stage of development is aided by very high, stimulating culture, the latter by the opposite treatment. The one produces the stock, the other the fruit. In case of excessive stimulation the plant becomes too succulent and tender, unable to withstand the vicissitudes of the climate; in case of the opposite extreme the plant dies from neglect, debility or overbearing.

Upon these principles we base the true system of pruning, training and culture, for these different stages of growth must be kept properly balanced. The first requires deep and thorough cultivation with considerable moisture and a mean temperature of from 55 to 65 degrees, while the latter needs somewhat shallow tillage with diminished moisture and a mean temperature of from 70 to 80 degrees. To mature the Grape requires 15 degrees higher temperature than it does to grow the vine. This higher temperature is not only necessary to elaborate the sap, but also to solidify and mature the seeds, harden the wood, and to oxidize and diminish the acid thus increasing and concentrating the sugar. All these processes take place in proportion to the high temperature and diminished rain fall of the maturing season.

Everything should be done to give perfect surface drainage and a free circulation of air as nothing tends so much to diminish the temperature of the soil as excessive moisture and shade. Every inch of rain absorbed by the soil requires 40° of additional heat to restore the lost equilibrium, and this is equal to the loss of half a day in the ripening of the Grape.

The Concord Grape, in a favorable season with an average rainfall, requires about 9,000 degrees of heat from foliation to the maturity of its fruit, but it needs more or less of it, according to the amount of rain. For instance, in 1870 the fruit ripened the 5th of August and required only 8,756° of heat with a rainfall of 13.28 inches; while in 1869 the fruit ripened the 15th of August, requiring 9,355° of heat with a rainfall of 31.62 inches, a difference of ten days in ripening, in consequence of 18.34 inches more rainfall. 599° of heat were used to restore the lost equilibrium, being equal to a difference of latitude of 75 miles.

This retarding of the maturing season, by either excessive moisture, low temperature, cloudiness, unfavorable location or latitude has the effect of reducing the amount of sugar in the Grape, and the saccharometer has shown this to reach 65° to 85° in the above cases, equal to one half of a pound of sugar to twelve pounds of Grapes, or at the rate of six hundred pounds of sugar to the acre. Thus the excess of acid reduces the value and quality of the fruit.

The following table of observed facts gives siguificant figures:

CONCORDS ON LOW LAND.

Year.	Rainfall, Inches.	Mean Temperature.	Time of Ripening.	Number of days of Development.	Aggregate Heat.
1865	21.00	67.9°	Aug. 15	133	9072°
1866	28.33	67.2°	" 20	138	9319°
1867	20.34	67.1°	" 17	134	9044
1868	18.41	68.0°	" 15	133	9072
1869	31.62	67 5°	" 25	144	9734
1870	13.28	69.7°	" 10	130	9061
Average	22.16	67.9°	Aug. 11	135	9285

CONCORDS ON THE BLUFF.

Year.	Rainfall, Inches.	Mean Temperature.	Time of Ripening.	Number of days of Development.	Aggregate Heat.
1868	15.91	71.5°	Aug. 8	127	9070
1869	31.62	70.5°	" 15	132	9355
1870	13.28	72.0°	" 5	123	8756
Average	20.17	71.1°	Aug. 9	127	9029

On the bluff—an elevation of about two hundred feet above the low land less than two miles apart, no observations were made previous to 1868. The difference in the mean temperature, 3.2°, with very near the same rainfall, made nine days' difference in the time of ripening. The result of such difference we have frequently tested with a saccharometer or must scale to be 20°, equal to 25 per cent. difference in the amount of sugar contained in the Grape. This difference is sufficient to make the one location a success and the other a failure.

Judge Miller's Fruit and Garden Notes.

JAPAN PLUMS. Botan was in bloom April 6th, and the leaves more advanced than any other Plum on my place except Kelsey. This had no blossom buds, the only twig with any on, I cut off unobserved for a friend for grafts. You may imagine my vexation at this. I now believe we may grow the Kelsey fruit some seasons. I have added five new Japanese Plums to my list this spring.

BLACKBERRY AND RASPBERRY TREES. Some thirty years or so ago when the Lawton fruit came out, a man near Philadelphia purchased 50 strong plants, set them in good soil, and the following spring allowed but one cane to grow, which was pinched off at the proper time. The season following he gathered just twelve bunches of berries from those twelve plants (trees I would call them), nearly a peck to the tree. He sold the fruit at 25 cents per quart. Any one can calculate what amount of fruit an acre would produce. Will some of our readers try this plan? I have some ready for this and shall treat a number more for next year's fruiting. This report I got from a reliable source, and from what I have seen on my own grounds am satisfied it can be done.

A customer of mine in Lebanon, Tenn., once showed me a yellow cap Raspberry cane, the only one in the hill, that had as much fruit on it as I ever saw on one hill. Major P. R. Frease, our late veteran, once showed me a surprise Raspberry plant, single bush, that had such a load of superior fruit on it that I did not recognize it; and on asking him what it was, got for answer the Surprise, and I got it from Sam Miller.

The question arises whether this treatment might not prove generally profitable. Who will try it? I would plant them five feet each way and cultivates both ways, thus getting rid of suckers easily. That we let most fruits overbear we all know, and until proper thinning is done we will see markets overstocked with trash that prevents the careful grower from realizing a paying price. Some will no doubt laugh at me for predicting that the time will come when little girls will be employed to clip off part of the Strawberry blossoms. This has been practiced just enough by myself to show what surprising results are achieved.

THE NEWER MELONS. Some of these are really fine. I like the Orange Watermelon best for home use, Of Canteloupes, Bay View, Hackensack and Emerald Gem suit me best. Colb's Gem, Gold and Green, and Landreth's Extra Early are among the coming Watermelons.

Any one who has plenty of manure can have Melons plenty if properly planted and taken care of. A wheelbarrow full of manure well worked into the soil on a square rod of ground to the depth of eighteen inches, and three vines left to grow, will produce an amount of Melons that will surprise one that never tried it before.

Don't make too much of a hill; three inches higher than the level ground is enough. A high mound as some make, will heave out in a dry season.

If the land has no sand it will pay to put a bushel or two to each hill. Bone manure and old decayed wood of logs or stumps or chip earth from the wood pile makes a good compost for Melons.

STRAWBERRY TESTS. Give everything a fair chance. Last fall I received from different parties new varieties of Strawberry plants, set them out carefully, and at the same time took up some of my own and planted them along side of the strangers. From present indications it would be very unreasonable to expect a like result. From my own I will get some fine fruit, while those from abroad look as if they will have a hard task to pull through. But I make due allowance for the different conditions the plants were in when set. While one man sends out good strong plants well put up in moss and oiled paper, another sends poor plants poorly put up.

Upon a numher of new Strawherries now fruiting I will report as the season advances. Of all these Bubach No. 5 and Jessic showed best last season. Now Sucker State, Gandy, Monmouth and Belmont will show what they are made of. Each one is to be superior to any heretofore produced, yet in five years hence most of the new ones will be among the things that were, like a host of others gone before; yet we keep trying them as far as we can afford, but $2 per dozen is more than I will ever pay again for plants.

TREATMENT OF TOOLS. If every new hoe, spade, fork, etc., was well oiled where the wood and iron meets, they would last much longer than they usually do. A new spade may be filled with linseed oil where the handle enters. No one will gain hy buying cheap tools for the garden and nursery, for they are the most expensive in the end, not as good to work with, and sometimes when most needed they give out.

Tools should never he put away wet or muddy, for a rusty tool is a nuisance. If it be too much trouhle to wipe them off when done using, have a tub or harrel of air slaked lime or dry ashes, and plunge them in and there will be no rust.

Of all the tools tor killing small weeds, I know of none that equals the Diamond scuffle hoe. It cuts hoth ways and can he used without stooping. One can go over twice the space of ground with one of them than with a common hoe,and do work hetter.

HURRYING UP NEW ROSES. The small plants that are sold so cheap are not likely to give much satisfaction the first season, unless much nursing is given them. Ten days ago a lot of plants were received here, and all that had a few inches of wood ripe enough had some of their buds inserted into strong young shoots of last years growth, and now they have taken. In a week or two they will be headed back,and all the strength of the stock forced into the hud. In this way we will have flowers nearly as soon as the stock would have bloomed if not cut hack, and the flowers will he far superior to those of the small plants. Another advantage is you will have lots of young wood to propagate with; and if a tender variety, they can be so conveniently laid down and covered if the huds are inserted pretty high up.

I have just now two hranches of Marechal Niel, strong huds on strong stems, that we budded last summer, and had made a foot of growth each, so that I expect to see finer Roses of this nohle variety than it has been my lot to see for years. It is doubtful to me whether the Marechal Niel can he grown to perfection on its own roots out doors here.

FRUITING SEEDLINGS. When a seedling is intended to be grown for the purpose of fruiting without heing grafted, some years can be gained hy taking grafts from it when one year old, and setting them on a bearing tree of the same species. If the grafts are pinched hack ahout midsummer the forming of hlossom buds may be assisted. Some say such grafts will not fruit until the seedling itself begins to bear; hut this is all nonsense, for it has been proven repeatedly. Fruit seldom fails the third year, while seedlings of Apples and Pears usually need six to eight years growth before they fruit.

The great difference in the quality of certain Apples when grafted on other trees, I have never yet discovered or noticed, all seem to bear out their true characters. Our season here is a little ealier than usual.

Caution in the Use of Poisons.

BY E.P. POWELL, ONEIDA CO., N. Y.

At the latest meeting of the Social Science Association, reports proved that not one New England homestead out of twenty is conducted on correct sanitary principles. The cellar, as yet built and used, is still almost invariahly a pestilential adjunct to homes. Probahly the only means of avoiding the danger arising from these dug-outs, will he to dispense with them altogether. In their place we should build underground storehouses separate from the houses.

Certainly it has become a criminal affair to reside and rear children above damp rooms in which are stored large quantities of vegetahles and fruits undergoing a slow process of decomposition. The most careful attention to ventilation and removal of waste will not keep such apartments safe when located under our living and sleeping rooms. Recent scientific investigation has shown it to he heyond question that the typhoid fevers and diptherias with a thousand minor forms of disease are traceable to precisely these causes. The skillful physician finding the disease, immediately searches for a neglected cellar or sewer. or poison-infested well.

But I desire to call attention to some other sources of danger.

At this moment I am suffering from a unique and yet not uncommon sort of poisoning. Having placed a lawn chair, covered with a coat of cheap green paint, in my study, the arsenic contained in the paint was volatized by the heat of the radiator until my whole system was penetrated with the mineral. It will he months hefore I shall recover my health. The use of arsenicated paints is growing more and more common, hut should never he tolerated on furniture or wall inside the house. Green shades of wall paper are to be avoided as prohably containing arsenic. Whole families have been poisoned hy such apparently harmless decorations. The extensive use now made of Paris green and other arsenical poisons should be a warning to us. Some of our ablest physicians insist that there are forms of disease traceable directly to the presence of arsenic in the Potato. This I doubt, and yet it seems certain that the use of arsenic, on vegetation more or less checking the perfectly healthy development of leaves, produces a chemical change in the tubers detrimental to health. It is getting to be almost impossible to purchase Potatoes entirely free from a tinge of hitterness, while a very large part of the Potatoes that find their way to market are quite unfit for use. Many farmers use five or ten times as much Paris green on a Potato field as is necessary for the purpose of destroying the Colorado heetle. The practice of sprinkling Paris green into Cabbage heads is criminal and inexcusable. I have recently seen the account of five persons having been killed by the use of such Cabbages.

Probably there is no direct danger from the recently derived method of spraying Apple and Plum trees to the fruit eater, but there is serious danger to those who handle the poisons. Paris green should be used and stored with every precaution. We are getting quite too familiar with the drug and are losing our fear of it.

Still another source of extreme danger to farmers' families is the use of lead pipe and lead solder on iron pipes. This red precipitate solder is daubed on carelessly by ignorant plumbers on pipes that are thrust into our wells. One autumn I had removed all lead pipes from my well, replacing them with iron pipes; but more mischief followed from the solder during the next three months than would have followed the use of lead pipes in five years. Every member of the family was poisoned, and one nearly lost his life. Others have heen poisoned with the lead faucets in vinegar and cider harrels. A vast amount of ill health and suffering might he traced to such causes.

A Woman's Experience in Raising Small Fruits at the South.

MRS. S. B. MABREY, TROUP CO., GA.

"We have never seen anything to equal this!" was the general verdict of people (and newspaper men among them) who came to see the small fruit patches on my farm situated in western Georgia. The land was just rolling enough to prevent the water from standing upon it, and terraced wherever necessary, and no grass or weeds disfigured the long rows ot Strawberry vines.

My first attempt, owing to limited experience, was after the well-known old style. Plants were dug from a neighbor's old bed, which I was told did not bear because the vines were too thick. Small, poor plants they were, too, and no wonder this experiment was a total failure. So I concluded to send off for some plants. At the same time I subscribed for a small fruit journal and by carefully studying it had all my preconceived ideas about raising small fruit changed. I received from the nursery a lot of fine plants, carefully selected and neatly packed and labelled, chiefly "Crescent Seedling," the "lazy man's berry," to be fertilized with Sharpless and Glendale. This was in Novemher, 1884.

My farm help set the plants, or rather stuck them in the ground, and it is saying a great deal for the vitality of the Strawberry plant that almost all of them lived. I had the rows laid off 2 feet apart and set the plants pretty closely in the row. I planted one row of Glendale or Sharpless and three of Crescent. In the spring following I had plenty of Strawberries for family use and some to give away. In Novemher, 1885, I set out ¼ of an acre on better and richer land, and better prepared, in rows three feet apart and one foot apart in the row. This is bed No. 2; No. 1 by this time was a matted concern, neither hoe nor plow having been in it, but in Spring 1886 it gave us a full supply for use and a cash income of $25. Then I had it plowed into three feet rows, heavily manured, and new plants of Crescents set or left one foot apart in the row. I forgot to plant a pollen-bearing kind with it, however, and consequently had magnificent vines without fruit in '87.

Bed No. 2 was not allowed to hear in 1886, and runners were also kept pinched off till August. The new plants which started afterwards, were firm and strong and hore finely the next spring. In the fall of '86 another ¼ of an acre was prepared for Strawherries on very rich soil, being heavily manured for Barley and allowed to grow up in weeds after the Barley was off. The weed crop was fine, waist high, and in July, before going to seed was turned under with a turning plow. This patch was well prepared and planted in November. At last I had learned to make the bed rich enough. In 1887 bed No. 2 gave me an income of $145.60 and the new patch No. 3 of $20. I concluded to enlarge my Strawberry farm to 2 acres.

Now the ground was covered with compost so you could not see the soil and this plowed in thoroughly; then replowed afterwards two ways, and otherwise thoroughly prepared and cleared of rubbish. A fertilizer consisting of acid phosphate, kainit and cot-

ton seed meal was sprinkled quite freely in rows and directly upon this I set my plants one foot apart. We worked on that one and a half acre job from November till March, working all the sunshiny days, and using the splendid plants of my own raising freshly dug, and when it was finished, well, I wish you could have seen it! After planting I had the ground between the rows and around the plants well mulched so it was really not surprising that every one of these plants lived. I did not lose one. In spring 1888, the plants averaged twenty-five large berries each.

From April 20th I supplied the LaGrange market with all they used, about 100 quarts daily, and shipped to Atlanta every morning and to Montgomery, Ala., every afternoon. I sold thousands of quarts and gave away quantities. My pickers were instructed to assort the berries in picking. The small ones I gave away or fed to the pigs, only selling the finest.

Two acres of ground is not a large place, but the labor and care I bestowed upon it were such that my children said I was killing myself working, and persuaded me to sell out. I had never been offered more than $1,500 for my little farm before, but having made such a success of fruit growing I soon began to receive better offers for it, and when a purchaser was ready to pay $2,500 cash I sold and am sorry I did.

I am 62 years old. If I were 25 years younger I would show what can be done here in small fruits. No business, I am convinced, is more remunerative than small fruit culture in the south.

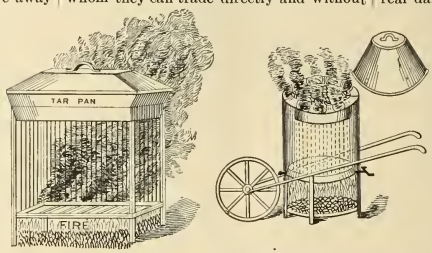
The Commission Merchants Standpoint.

C. W. IDELL, NEW YORK.

The reporting of the names of the purchasers of fruits and produce by the commission merchants is a new fad gotten up by farmers who live in fear of being cheated. So they have hit upon this plan for the detection of dishonest dealers. Let us see how the plant will work.

Suppose that at the close of the week a farmer gets his bill with purchasers' names on it (and there may be from ten to fifty in number), does he propose to write to each or some of them? If only to a few of them he will not get all the facts, and if all, see what a task this correspondence involves, besides the expense, for the farmer would have to enclose a two-cent stamp for an answer. Aud of what interest would it be to answer hundreds of enquiries and to devote the time and labor required without remuneration? It would be a great annoyance to the purchaser, and probably he would say to the dealer: "If I am to be annoyed in this way by your shippers I will not deal with you." Now just try to realize what a task you are imposing upon all merchants just to gratify this new notion. Are not the men who served you honestly deserving of a better treatment at your hands? It is true that not all merchants are honest, and that all are liable to make blunders, and I know by experience that not all farmers are saints.

Twice, if not oftener in my experience, have farmers taken letters from the post-office addressed to another person with similar name, taken out and endorsed the check and drawn the money, when they had sent me nothing; and had they not been threatened with prosecution would have kept the money. Yet these men were not fair samples of farmers, and a dealer would not think of branding all farmers as rascals. It is also very common for farmers to borrow money from dealers until fruit can be shipped, but often they do not send their fruit products to pay the loan. I mention these cases simply to show that there are unprincipled farmers as well as bad dealers. There is no difficulty for a farmer to procure an honest commissiou merchant if he wants one, but some do not wish that kind for they never send a package containing honest measure. What they do want is a dealer who will cheat the purchaser of these packages, charging him the same price as they get for honest packages, and then give the shippers the whole benefit of the transaction. After all, perhaps those who urge the enactment of this bill, do not care so much about getting the names of purchasers for the purpose of contradicting the dealer's action, as to find customers with whom they can trade directly and without paying commission. This is scarcely honorable.



SAVING CROPS FROM FROST.

Saving Crops from Frost.

Smoke produced from burning rubbish-heaps has been employed by French and German vineyardists for many years as a means of preventing injury from both early frosts in autumn and late frosts in spring. A Florida Orange grower uses the device shown in our illustration for the same purpose. The pan on top is kept supplied with coal tar which is allowed to drip down through numerous holes into the fire below. The machines (Fig. 1.) are stationed a few rods apart on windward side of the patch, while No. 2 may be wheeled back and forth over the area to be protected. Mr. Benedict the patentee of this device also uses bi-sulphide of carbon mixed with the tar, to kill or drive off injurious insects.

Healthfulness of a Fruit Diet.

A. P. REED, CUMBERLAND CO., ME.

Those whose diet consists of meat and bread would find it greatly to their advantage to consume more fruit. These persons, in consequence of drinking large quantities of water, are particularly liable to kidney and bladder troubles. Calcareous deposits in the system come mostly by means of the water we drink and he who drinks water to excess is the most liable to such deposits. Human life begins in a gelatinous state and ends in a bony condition. With age the bones grow harder by earthy deposits of phosphates and lime. Imperfect circulation sometimes exists as a result of this hardening process, which extends in later life even to the arteries.

Fruit, through its juices and acids, is a protection from this condition and despite the fear of some people is not half so liable to engender diarrhœa and bowel troubles as meats. Fruit that is ripe will harm no one. The accumulation of mineral matters in the system to excess can in no way be better prevented than by a liberal use of ripe fruits. These statements are founded on physiological research and appear reasonable on the surface regardless of their backings. Let us use more fruit rather than less. Give it a large place in the garden.

A Michigan Grower on Combating two Destructive Insects.

THE CODLING MOTH. After much tribulation and many failures to capture this most destructive of all insect enemies to our Apples and Pears we are now coming down to work on practical and effective principles. The moth is a night insect and on this account eludes our grasp, thus all we do is to look after her progeny.

As soon as the Apple has passed out of bloom the moth deposits an egg in the blossom end of the plant. How many eggs each insect deposits in different specimens no one knows. In a few days these eggs hatch into a larva and the work of destruction begins and goes to the heart of the fruit. For the purpose of destroying the larva before any real damage is done the spraying system has been adopted by progressive growers with satisfactory results.

With a force pump and a fine spraying nozzle one pound of London purple or Paris green (I prefer the former) to 100 gallons of water is amply strong, in fact sometimes too strong in the hands of inexperienced workmen, in which case the foliage is liable to be partly destroyed. I shall use this year one pound to 125 gallons of water. To mix the material use one to two quarts of soft soap to the pound of poison. This, well mixed in the form of paste and then added to the water, will aid in the mixture. One or two kerosene barrels, the pump fastened upon one, will make a good outfit for a limited amount of work. The fluid in the barrel must be stirred while the spraying is being done.

The first spraying should be done as soon as the tree is out of bloom and the fruit sets, the second three or four weeks later, when the second crop of larvæ make their appearance. In case of rain showers soon after spraying the poison is abortive, so far as the fruit is concerned, but not so with the foliage. With good weather, free from rain for four or five days after applying the poison, one good spraying when the fruit is about as large as pigeons' eggs, will be sufficient for early summer Apples; late fruit, to be clean and sound, must have the second application.

THE CURCULIO. I will now describe a cheap, easily made and readily handled trap for this pest. The curculio is well known by the crescent mark it makes on the Plum, Peach, Cherry, and other stone fruits, and is familiarly known as the "little turk." How the "little turk" can be caught with the least amount of labor I will state.

As soon as the weather becomes warm and the trees begin to bud out they prepare for their work, and before the foliage comes out and shades the branches and ground is the time to set our traps. After the trees are in full leaf the insects will remain mostly among the branches where they are well shaded; before this time they will seek any hiding place among the clods, grass, weeds, or any refuse material about the trees.

First clear away all refuse from the base or around the crown of the tree for the space of two or three feet in diameter. Smooth and compact the soil, then place two, three or more small chips or clean white Corn cobs, cut from one to two inches in length, around the base of the hill. During the warm part of the day the insects we are after will take shelter under these traps and can be collected at leisure.

Now offer the children so much a hundred or a thousand for collecting them once a day and see the result. They can be put into glass jars or bottles for safe keeping if desired. After the trees are in full leaf the trap becomes useless and the jarring process

can be used to finish up. A white sheet under the tree and a sudden jar any time in the cool of the day (a calm day) will bring them down. If this is done during the heat of the day they are apt to fly away before you can get them.

What Fruits to Plant.

E. MORDEN, NIAGARA FALLS, SOUTH ONTARIO.

In naming varieties I shall confine myself to the best for market purposes. Market varieties will, however, give satisfaction to the greater portion of those who grow for home use. Hardiness, uniform productiveness, good appearance and freedom from disease are useful peculiarities in any case.

Of all the wonderful new Strawberries of late years with me only the Crescent holds a firm place. The old Wilson is still used largely here. The Sharpless is not always productive but is planted largely. A Strawberry that multiplies plants as well as the Crescent and has the uniform productiveness of the Wilson with large size, good appearance, and good shipping qualities is much needed. In Red Raspberries the Cuthbert is very much ahead. Of many others tried I can recommend none.

In black caps Tyler, Souhegan, Mammoth Cluster and Gregg are a success with me. Greggs, owing to late ripening, great size, firmness and productivenss, take a decided lead. In more unfavorable localities the other varieties are safer. The Taylor is a favorite Blackberry. I am trying many other kinds but do not like any of those that are well known here.

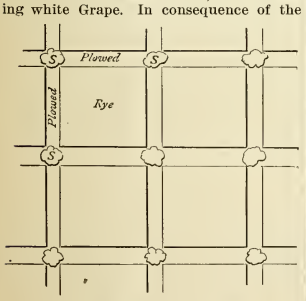
The Hawthorn Gooseberry is, I think, the best Gooseberry, but in the market cannot well compete with the larger Downing.

In Red Currants I have for a dozen years grown Raby Castle by the thousand. One of my neighbors has planted them largely and will plant several thousand more.

Black Currants are in demand in Canada and are now called for in New York state. The coming Black Currant is slow in getting here.

In Black Grapes the Worden is coming rapidly to the front. It is larger, earlier and better than the Concord. It grows nearly as well but is not quite so firm in the skin. Delaware, Brighton, Salem and Lindley are red Grapes of considerable merit.

Owing to the vigor and productiveness of the Niagara Grapes and the vigor of its advertisers and disseminators, it is the leading white Grape. In consequence of the



Planting Melons, etc., in Rye.

above circumstances the price of white Grapes will doubtless be very low hereafter. The hitherto high price of red and white Grapes has been the result of a short supply. With a large supply they are likely to be cheaper than black Grapes.

In conclusion I advise new beginners to plant the old cheap, well tested varieties. If you have some money to throw away for the good of the cause, buy the new and wonderful kinds.

Raspberries in Garden and Field.

"ELDER'S WIFE."

Many persons having "only a garden spot," refrain from planting berry bushes because they "sprawl all over," when otherwise they might grow their own berries, thereby saving the expense of buying, besides having more and better berries. The following plan is well suited to gardens and we follow it in field growing and believe it pays. The plants are set in rows six feet apart and three feet apart in the row. Stakes are driven at intervals of 20 feet or more along the rows, the end ones more slanting outward to brace them, and No. 12 wire is stapled to them at three feet from the ground for the first year and raised to four feet the following year.

While the ground is still frozen in the spring, the old canes are cut out; the new canes are then tied to the wire by passing pieces of wire (about the size of No. 8 thread) five or six inches long, around both wire and cane, being careful not to twist one end around the other, else the motion of the cane will soon outdo your work. Cut off the ends of the bearing canes back to strong thrifty size; if too long to hold themselves stoutly above the wire bring the end down and tie to the wire further along. You can now cultivate, hoe, and later pick your berries without the annoyance of having some briar continually catching at your clothing or flesh, and refusing to let go, and in your struggles to escape shaking the luscious fruit from the bush to waste upon the ground. Pickers after once picking in a patch treated as above, do not like to pick in those grown in bush form, and the expense after the first outlay for wire and stakes is light and is more than equalled by the saving in fruit and young canes which would be wasted and broken down by the other method.

If one wishes to be extremely economical, they can use Willow twigs, Rye straw or Corn husks for tying as some do, but if their time is of any value, wire is far cheaper, for aside from its greater ease of application, it is also more easily removed.

Melon and Other Vines in Rye Field.

Covering Melon, Cucumber and Squash plants with a frame, mosquito netting or similar device and thus hiding them from sight, or surrounding them with bad smelling substances, thus disguising their scent, are generally considered the surest means of protecting the young plants from destruction or serious damage by insects. Planting on a larger scale where said fussy devices are not in favor, is a rather risky undertaking just on account of the dangers threatening from such formidable foes as the yellow striped Cucumber beetle, the black Squash bug, Squash borers, etc., and often from the Melon fungus.

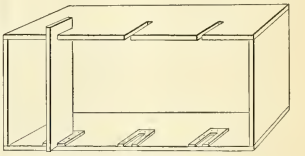
We have generally favored the plan of "wide rotation," in other words, planting on a piece of land at the greatest possible distance from where vines were grown the year before. This greatly lessens the risk. Mr. W. F. Bassett of New Jersey, some time ago told us of a method successfully practiced by growers somewhere in his neighborhood. The piece to be planted is put to Rye in the fall. At planting time in the spring double furrows are plowed out both ways as shown in illustration so that the intersections are just far enough apart each way for the hills, that is for Cucumbers and Musk Melons five or six feet, for Water Melons eight or ten, and for Squashes ten or twelve feet from center to center each way.

Now the crop is planted in the usual way, allowing the hills to grow on unmolested. By the time the plants are up and the dangerous period of their lives begins, the Rye, now several feet high, serves as a most effective protection. Insects are neither apt to see nor scent the young plants. When the vines begin to run and danger is nearly past, the ground between the hills—with Rye left on or taken off, at the grower's option—must be plowed over, and thorough cultivation given. The plan is worth a trial. It is also of greatest importance that all running vines in the garden are stimulated by very high feeding, to assist them in outgrowing the period of danger as soon as possible.

A Subscriber's Plan for Berry Crate Making.

J. H. BOOMER, ALLAMAKEE CO., IOWA.

Last season I devised a thing to help me in nailing Berry cases and am well pleased with the way it works. It is a strong box



Making Berry Crates.

about three feet long, 14 inches high, and one foot deep made of inch Pine. I use the 24 quart crate for Hallock Berry box, bought in the flat. My nailing device is made to fit this crate, but such a box might be adjusted for any other crate that is bought in the flat and would only need other dimensions.

I cut three slots just the width of the thickness of the ends and middle pieces of a Berry crate as far apart as they should be when the crate is finished. In my case these slots are cut out the side of the box about four inches deep, and consequently the ends and middle pieces, when put into the slots, will extend about two inches out at the side and one inch above the top of the box. On the side opposite the slots I nailed on little strips so that the crate ends rest in grooves. When ready for use the box is placed on its side, top toward you. When your case is ready adjust the crate ends and the middle piece (the illustration shows one of the ends in its proper place), then lay a side piece across the ends, and nail it fast. Next turn the box on its back and nail on the bottom of crate, then draw out the half finished crate from the slots, turn it around, keeping the bottom of the crate toward you, place it back into the slots and nail on the other side. The crate is then ready for the small Berry boxes.

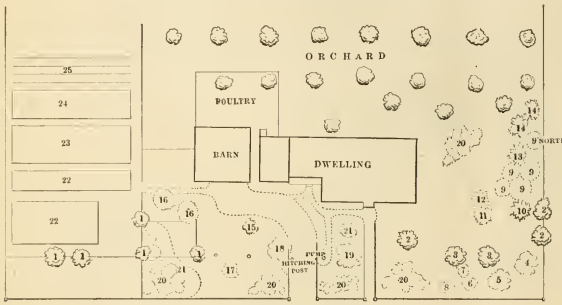
If the device was made true and square and solid, your crates will all come out square and uniform, one exactly like another, and the small Berry boxes will have just room enough without crowding or without having space for play. I think I can easily nail three crates by the help of this device to one nailed entirely by hand, and I am sure I can make them truer.

1,225. **Nicotiana.** Nicotiana affinis is a continued bloomer. After blooming during summer cut down to about one inch of the ground, and pot for winter. Propagated from seed—which needs about thirteen days to germinate—and from cuttings.—MRS. Z. MAY WAITE.

1,291. **Lice on Cabbages.** These and all other aphids may be destroyed by spraying or washing with what is known as the "Resin" compound, which is made by boiling one pound of concentrated lye in two quarts of water, then adding four pounds of resin and boiling until dissolved. Dilute each quart of this soap with one gallon of soft water, and spray or sprinkle the infested plants with it. The mixture should be used when quite warm, say 120°, and when applied in a fine spray may even be used well nigh boiling hot.—D. B. WIER.

On Improving Home Grounds.

A subscriber, Mrs. E. A. Vining, Barnardston, Mass., has sent to this office a sketch of her home grounds with the request that some information on planting it tastefully be given in these columns. Such suggestions as occur to the editor are cheerfully given the same being set forth in the annexed plan. In this illustration the existing features on the grounds and as shown are the buildings, poultry yard, orchard, the fruit trees in the front yard, marked by the figure 1 (Plums, Peaches, Apricot and Mulberry), Apple trees by figure 2 and Maple trees by figure 3, the vegetable and small



ON IMPROVING HOME GROUNDS.

fruit plat indicated by the beds and rows shown at 22 to 25 inclusive, the pump, hitching post, etc. The highway is at the bottom of the engraving. A square bed of hardy perennial flowers is defined by the marks extending approximately between the points 1, 1, 1, and 16.

The most striking improvement we would suggest is the planting of an assortment of hardy trees, shrubs and flowers in those portions of the grounds to the front and side of the buildings, employing a free style of arranging them and above all else allowing of nothing to be set in straight lines or squares. Let us remember that nature abhors straight lines a point always to be regarded in arranging ornamental grounds. Such a course is also the consistent one apart from the mere idea of patterning after nature's methods. In any home grounds straight lines abound freely in the outlines of buildings, the boundaries of the area, orchard rows, and the effect from these it is desirable to break up as far as possible by the ornamental planting. Can this be done by setting trees in straight lines or cutting square flowers beds in the lawn, etc? The very reverse of this is obviously right.

It will be seen therefore in the accompanying plan that the various trees and shrubs introduced are arranged with a view to pleasing irregularity. Instead of the bed of hardy perennials for example as it now stands, and which has been referred to as being a square bed, the better course is suggested of having this employed as a margin (21) to an irregular clump of flowering shrubs, 20. By this means a pleasing grass plot with graceful outlines and open center is also secured in this part of the grounds. Curves are brought into the outlines of the driveway and walks as far as possible. The various shrub clumps introduced through the grounds are indicated by the figure 20; it will be observed that all are of irregular outline. The shrubs are brought mainly to the front of the house because of their attractive flowering qualities, and because their height is not such as to interfere with the view of the street from the house and vice versa.

On the other hand the trees are placed mostly in a northerly direction from the dwelling, a chief object in this being to break the winds which the owner writes prevail from the north-west. A list of trees which should prove satisfactory for planting on this place might be the following, the place of each as numbered being designated by a corresponding number on the plan. As has been stated 1 and 2 are fruit trees and 3 are Maple trees now standing on the grounds; Cut-leaved Birch, 4; Weeping Poplar or Elm, 5; Double Flowering Thorn, 6; Magnolia, 7; Blood-leaved Plum, 8; five White Pines, 9; Blue or other choice Spruce, 10; Norway Spruce, 11, 12; European Larch, 13; two Austrian Pines, 14; String-growing Shrub, 15; two Elms, 16; Weeping Willow or Elm, 17; Linden, 18; Cut-leaved Birch, 19; Shrubs in assortment, 20; Flower beds, 21.

Chrysanthemums for Spring Bloom.

C. E. HUNN, NEW YORK EXPERIMENT STATION.

Some of the varieties of Chrysanthmums well repay the trouble of forcing into bloom the second time, and any one having room and inclination may have them in bloom until Easter.

I have been very successful in the past, and have been able to cut flowers any time from October to April. My system is to let them bloom very little at their usual period of flowering, then cut them well back and let them rest in pots for a month or six weeks, with water enough too keep them from drying up. When starting into new growth, give weak liquid manure, increasing the strength at each application, and they will respond quickly and should be kept near the glass to keep from growing spindling. I have my doubt in regard to forcing them for profit, but in a private house, or in a commercial house not in winter use, they will pay for the trouble and furnish enough bloom through dark weather. They may also be treated the same way in a spare room in dwelling house by keeping them close to a window. Mine are grown with a mixed collection of greenhouse stuff, and I expect still better results with a cool house.

The varieties I find the best for the purpose are Antonella, Barbara, Mme. Andegnier, Bonnie Rose, Tokio, Fair Maid, Mrs. Rundle, Diana, Queen of Lilac, Lacinatus. The last one I consider the best of the list, as it will come in for Easter when anything white is in demand

The Melon Disease.

The fungus disease, about the true character of which so little is yet known, and which attacks Cucumbers, Melons, and Squashes, has become so common and destructive all over the whole extent of the country, that the cultivation of vine fruits in many places is almost entirely abandoned. The attack appears to come suddenly and unexpectedly. The thrifty growing plant all at once begins to wilt, straightens up again at night or during cloudy weather, but within a few days dies down and burns up. This generally happens on hot days, showing that the fungus in its needs and mode of propagation resembles the black-rot fungus of the Grape—a resemblance giving us the clue to the means of fighting it.

The disease has often been confounded with the work of the Squash borer or other insects. The most superficial examination of the root could hardly fail to reveal the cause when the borer is destroying the plant, and the evil consequences in that case may often be averted by covering the first joints of the running vines with soil in order to induce them to strike root there, and make the plant independent of the original root. The fungus attacks the leaves first, and kills the part above ground, while leaving the root intact.

Someone now comes with an infallible remedy: covering the vines with Elderberry leaves or twigs. The Elderberry as such would not harm a flea. And yet it is not at all unlikely that the discoverer of this new preventive measure has been entirely successful in saving his plants, not especially by anything characteristic to the Elderberry, but by the mechanical protection of providing a cover. It will be remembered that Grapevines growing under a coping are exempt from rot attacks, and that even the slightest covering or protection above greatly prevents all danger, or at least lessens the amount of injury. We are quite sure that the Melon disease presents an analogous case, for we have never learned of a single case of vines under glass having been attacked by the fungus. Any covering, no doubt, will prove a preventive, Elderberry leaves as well as other leaves, or boards, cloth, etc.

Our own experience with remedies and preventives has given us results upon which definite and final conclusions might be based. It has seemed to us, however, that the free application of copperas or saltpetre water to the soil around the plants have lessened the attacks, without giving us entire exemption. We have found, also, that sulphate of copper in any form is not a remedy, but if effectual, must be used as a preventive, in same way as it is used for mildew and rot of Grapes. The specialist of the Department of Agriculture, who during the past season has visited the localities along the Atlantic coast, where the disease seems to be most epidemic, we believe, has come to similar conclusions. We hope that our readers living where the disease is a common annual occurrence, will give the copper remedies, especially the Bordeaux mixture, a thorough trial, and report results. But this is a preventive only, and should be applied before the vines are attacked.

The Rock or Sugar Maple as a Shade and Lawn Tree.

A. P. REED, CUMBERLAND CO., MAINE.

For lawns if taken young, the Rock Maple is easily trained and may be developed into a shapely tree, the graceful contour of which against the sky, as it looms up above the smaller objects around it, renders it a distinguishing landmark that makes a lasting impression upon the passer-by. While perhaps not so long-lived, it is yet a worthy rival of the stately Elm for beauty and hardiness, and more than a rival for shade. As to hardiness I have had a good opportunity of comparing it with other trees, notably the Elm, Ash and Basswood, and it seemed to be about the only one that will stand up comparatively unharmed through one of our ice storms such as we have had frequently the past season.

I am aware that the Rock Maple is used quite largely and with good effect already,

especially for shade on the highway; but I do not think it is yet as fully appreciated as it deserves, except as a sugar tree. In many regions the tree is quite common in the forests, but this should not hinder us from using it more freely for shade and ornament.

Destroying White Grubs and Rose Slugs.

HYACINTH, SCOTT CO., IOWA.

Last spring while having ground spaded for the planting of Gladioli, I found many grubs, in fact every turn of the spade brought them up by the half dozen. Every one thus exposed was of course put to death. I covered that bed with unleached ashes, thoroughly working them in the soil to the depth of several inches and planted the bulbs. They came up, grew finely and when dug in the fall the bulbs were quite smooth and free from grub marks.

I attribute the absence of the grub to the free use of ashes. The whole earth in this part of Iowa last year seemed filled with these pests, Potato ground which had been heavily manured in previous years, suffering by far the most.

Rose slugs do not scare me any more, having effectually exterminated them the past two years by sprinkling the bushes with white Hellebore in solution, a teaspoontul to a quart of water. If one application is not sufficient, try again. If they have succeeded in getting a foothold, perhaps three applications will be required. Make an application before the insects appear, and their ravages will in a manner be prevented. If there is any way to exterminate Rose bugs, besides hand picking I should be pleased to be told of it.

The Handsomest of the Poppies.

The Oriental Poppy (*Papaver Orientale*) was always considered one of the finest of this class of hardy plants. The variety Bracteatum, superior in size and attractiveness, forms huge masses of handsome foliage. The flowers are carried on stiff stalks with leafy bracts, and one well developed bract under each of its brilliant scarlet flowers, which are often nine inches across. The original Oriental has large pure scarlet flowers. A new variety of this, the Bush Queen, mentioned and described in Gardening World, has enormous flowers, and appears a valuable acquisition. All these varities are highly ornamental herbaceous perennials for borders or for isolated masses on lawns, and will flourish in any kind of well drained soil. Our illustration represents the older variety.

Among hardy garden plants no other ones can be named that are so useful for the most gorgeous effects as these Orientals. Their blooms in early summer are from six to eight inches in diameter, of a brilliant scarlet color, and the large black blotch at the base of each petal and the center mass of anthers liberally supplied with pollen, that looks like deep purple soot, make the scarlet petals appear still brighter when the flower is looked at closely; while a group of established plants, each plant well furnished with its flaming flowers, forms the most gorgeous spectacle in a garden, whether seen from afar or near. There are varieties differing in size, habit, and color of flower. Some may be called a deep orange, while in others the scarlet is softened in the direction of salmon color, the buds when first showing color, being in this case of a very delicate salmon-pink.

A group of five or more strong clumps of these Poppies makes a magnificent effect in a flower border. It is well to cut away a good number of the weakest flower stems, as the plants always bear more than are needed. Unfortunately they require staking; the great heads of flower are so heavy that the stalk, unless supported, is in danger of breaking down from the very root, but it is best to stake at only half their height—not only that less stake may be seen, but also that the upper half of the stalk may bend about at its own will, for though some stems grow well upright, as in the engraving, a good number, and often those with the largest flowers, twist about somewhat in the way that the singular looking Parrot Tulips do.

CLUMP OF THE ORIENTAL POPPY *Papaver Orientale.*

Has this noble plans defects? The only one we call to mind is that after flowering it becomes ragged and unsightly, and for appearance sake must be cut away, thus leaving large empty gaps in the flower border. To cover this defect it is a good plan to intergroup them with Tritomas, whose foliage is growing strongly by the time the Poppies are over, then by flowering time they will have covered the whole space. Plantain Lilies would answer the same purpose.

A group of these fine Poppies would have a very striking effect among dark foliaged dwarf shrubs in a shrubbery border, particularly if there were no other flowers near. They enjoy a deep, well enriched, rather light soil in full sun, and are very easy to cultivate and increase; indeed, in warm soils every little piece of broken root grows. Interesting varieties may be raised from seeds, which should be sown at any time from Spring to midsummer the bloom appearing the second year from sowing.

The Cultivation of Pyretrum Roseum.

There is an apparent demand for additional information, and for the benefit of readers who may wish to try the practical usefulness of the "Insect Powder Plant," we call attention to what A. S. Fuller writes in a recent issue of N. Y. Tribune.

Whether the culture of this plant for making insect powder from its flowers in the Eastern States can be profitable has not been determined, says Mr. Fuller, but I learn that a number of persons are preparing to test the matter by actual experience. The plant appears to thrive best in a rather light and moderately dry soil, for when planted on heavy clay, or on low, moist land, the roots are likely to be thrown out by frost in winter, but when growing in a dry soil they withstand a low temperature without being injured. If the seed is sown in early spring in open ground, or in frames, and given water sufficient to keep the soil moist, but not saturated, the plant will be large enough to transplant in about two months. Some cultivators recommend transplanting twice—that is, as soon as the plants are large enough to lift with the point of a knife, setting those young plants about six inches apart; then when a little larger, transplant again, setting in rows, and about fifteen inches apart in the row. The distance between the rows must be varied to correspond with the kind of implements with which the plants are to be cultivated; they should not be less than two feet apart for convenience in cultivation and gathering the flowers. If given good care the plants will bloom freely the second year, beginning in this climate about the 1st of June, and continuing till September. Flowers should be gathered just as they open or have become fully expanded, and then spread on shelves or floor in the shade to dry. Artificial heat should not be applied in drying the flowers, and when dry they should be immediately pulverized and the powder kept in tight cans or jars. When a large quantity of the flowers are raised, and for commercial purposes, a mill will be needed for pulverizing, but a small quantity can be reduced to powder in an ordinary mortar.

1,128. **Treatment of Narcissus.** I would take them up and divide as soon as their foliage has thoroughly matured and store until wanted for the next planting season.—C. E. P.

1,231. **Pear Bark Louse.** To destroy this pest dissolve two pounds of potash in two gallons of water and apply with a paint brush to all the stems and branches. One or at the most two applications will be sufficient.—C. E. P.

1,232. **Grafting Wax.** This can be made by melting together three parts of beeswax, three parts of rosin and two parts of tallow, and while warm it may be worked with the aid of a little water by the hand. The French grafting liquid is made of half of pound of pitch, half a pound of beeswax, and a pound of cow dung boiled together. It is laid on with a brush in a fluid state.—C. E. P.

1,234. **Water Lilies and their Culture.** Water Lilies can be raised from seed. Seed of several species can be procured of Peter Henderson & Co., 35 Cortlanat St. N. Y. I would advise you however to procure plants and you can get them of E. D. Sturtevant, Bordentown, N. J. Mr. Sturtevant's Catalogue contains a great amount of valuable information on the culture of these interesting plants and it should be carefully studied by all interested in Water Lilies.—C.E.P.

1,225. **Nicotianca.** Affinis when grown as a pot plant, should when it has become exhausted by excessive blooming be thrown away and replaced by another coming into bloom. In order to ensure a succession of bloom, young plants should be started at intervals and grown on specially for the purpose. It is readily and easily increased by seed.—C. E. P.

My Summer Rose.

What flower can rival my full-blown Rose,
That sits, June's queen, upon its slender stem?
Upon its damask leaf the sunlight glows,
It wears morn's dewdrops as a diadem.

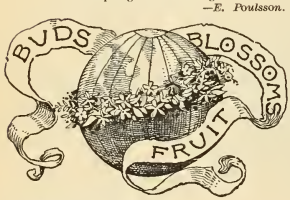
No limner's art has ever caught its hue
Of sunlight mingled with the crimson tide,
The rich red tint that stains it through and through,
The soft glow radiant as a flush of pride.

No trick of man has caught the sweet perfume,
Trembling upon the south wind's passing sigh;
The breath from out the chalice in its bloom,
That wafts like incense to the summer sky.

Oh, Rose! June Rose! that I have prized so much,
Fair as thou art, too well I know thy doom;
Up through the valley comes the storms chill touch,
And with harsh tumult scatters leaf and bloom.

Grasses creeping,
Flower-sprangled;
Rocks a-sleeping,
Vine entangled;
Brooklets purling,
Ferns uncurling,
Tree-tops sighing,
Breezes dying;
Cloudlets shifting,
Insects humming,
Petals drifting,
Fragrance coming;
Dews a-glitter
Birds a-twitter—
Shine and azure
Without measure.
World, so gray and olden,
Thou art new and golden!
Of all bloom and bliss
For thine adorning,
Nothing dost thou miss
This spring-time morning!

—*E. Poulsson.*



No insect fight; no crops.

Aim for simple designs in bedding.

The Ten-week-stock blooms are in.

What flowering tree excels the Apple?

For Rose insects consult last month's supplement.

The fruit grower's Spring tonic—ripe Strawberries.

No trees can thrive on exhausted soil without manure.

Fancy gourds are a cheap delight for the children.

The fertilizing value of one bushel of Apples is less than one cent.

Prune and rub off sprouts with an eye to the future shape of trees.

The more flowers are plucked the more new buds will break forth.

Try it. For best effect no vase or bouquet flowers should be crowded.

Visitors at Woodbanks express surprise at the advancement of the operations.

Would you add to the gaudiness of your summer flowers, then give liquid manure.

Of horticultural implements select those that will do the best work in the least time, and with least effort.

One of the handsomest gardens the writer of this ever saw, was an Englishman's home vegetable garden.

The Lucretia Dewberry seems to have the nine lives of a cat, and the enduring qualities of the Canadian Thistle.

To preserve fresh flowers for a long time a writer recommends to put a pinch of nitrate of soda in the water.

Will you help? Last June was a heavy subscription month for this journal. This June should go far ahead.

Dont wait until your plants are badly injured by plant lice before applying the kerosene emulsion or tobacco water.

To preserve raw fruit in perfect condition, wrap it in tissue paper soaked in a solution of salicilic acid and dried.

The Lawn Mower. By all means rather let it wear out than rust out. This course is better for the mower, and best for the lawn.

Smut in Corn can only be prevented by gathering and destroying every affected part of the plants, and by planting on new land.

Tea Roses for Outdoor Culture. Bon Silene, Souverir d' un Ami and Marie Van Houtte have given me entire satisfaction.—*M. L. S.*

Winter bouquets are interesting. Helichrysum—the "strawflower" of the Germans—is one of the most satisfactory flowers for the purpose.

Slugs and snails sometimes are a terror in the greenhouse. Bait them with slices of Potatoes placed along the edge of the bench. Then gather and destroy daily.

Okra can never have the value for the cold North that it has South, the pods in the former section tending to become hard and woody even before half grown.

This is a good time to wash the trunks and larger branches of trees with a mixture of soft soap and water to which has been added a little crude carbolic acid.

The Lawson Pear. Has this not been introduced long enough that growers could come to definite conclusion regarding its value? Handsome, early, and poor—is that the verdict?

A sharp steel rake is the favorite weeding implement used on the borders at Woodbanks. This implies of course that no weeds are ever tolerated beyond a first showing above ground.

The lawns and flower beds at our Railroad stations (educators of public taste in themselves) mark the rapid progress we are making in national refinement and appreciation of the beautiful in nature.

The Dorgeat Quince is another new variety of fruit which has yet to be tried in the balance. It comes from Hampden County, Mass., and is claimed to be early and free from many of the defects of older kinds.

The Madeira vine may be used as a living ornament for pictures and frames. Plant the bulb in boxes and fasten to the wall behind the pictures. Dainty runners will soon wreathe the cords and frames in living green.

A Pleasing Wedding Present. A bride recently received as a present a four and a six leaved Clover growing in a silver dish. It will be the coming plant for brides, being the sign of good luck.—*Anna.*

Black knot, somebody reports, affect Plum trees in preference to Cherry trees, in some parts of Ohio, and Cherry trees in preference to Plum trees in others. This is undoubtedly owing to the respective varieties of these fruits.

The Strawberry Blite. *Blitum capitatum*—a hardy persistent little weed, with brilliant crimson colored fruit, may be used in the flower garden with good effect. Dr. Hoskins finds it also a good substitute for Spinach, and hardier.

The Potato as Novelty. In the rage for novelties may not some one try to introduce the Potato plant with its flowers of a fine blue color, as a new bulb, with a name in which half the letters of the alphabet are used.—*Sister Gracious.*

As a remedy for poisoning by Paris green and other arsenical compounds, give a teaspoonful of Mustard flour in warm water, a teaspoonful of dialyzed iron mixed with the same quantity of calcined magnesia every five minutes for an hour, and afterwards plenty of oil, milk, or linseed tea.

The struggles of an aged Southern lady for success in small fruit growing as told elsewhere, are merely one instance of the similar chances, having come under our personal observation, that present themselves to enterprising people in hundreds and thousands of Southern localities.

Salicilic acid is largely used by the Germans for preserving fruits and fruit juices, seemingly without fear of ill consequences, while such use of the drug is forbidden by law in France. About two teaspoonfuls of the crystalized acid are used to every three pounds of fruit or fruit juice, with or without sugar.

A Bed of Tea Roses. With abundant food and water, and the frequent removal of seed vessels, it is almost as easy to have a bed of Tea Roses as one of Geraniums, and to maintain as free bloom. A well-decayed and thoroughly enriched sod is just the soil, and its occasional saturation with liquid manure just the treatment for Roses.

The Wayland Plum is a new introduction from the South. It originated with Prof. H. B. Wayland of Kentucky, many years ago. Great vigor, productiveness, beauty and excellent quality as a late Plum, and exemption from curculio and rot, are among the good points which Prof. Munson of Texas claims for it.

Saltpetre is recommended by Dr. T. H. Hoskins as a quick acting manure for Strawberry or flower beds that seem to be languishing, and especially show small and pale leafage. A pound should be applied to the square rod, and this dressing will astonish you by its effect in stimulating growth and enriching the color. Scatter as evenly as possible on the soil, not on the plants, and water liberally afterwards unless rain is expected to come soon.

The Red Cedar for Hedges. This fine native tree (*Juniperus Virginiana*) is recommended as a hedge plant for Wisconsin, but Dr. Beadle advises to go slow in planting it for hedges in other States, and in Canada. It starts off all right, but after a few years' growth the foliage of the lower branches and inner portion of the crowded hedge row begin to turn brown, and gradually to drop off, and in a few more years the lower part of the hedge becomes bare and unsightly, and indeed a positive eye sore.

Didiscus Cœruleus is an exceeding pretty sky-blue flower growing from one and one half to two feet high, and is well worthy of a place amongst our choice half-hardy annuals. Treated like Schizanthus it forms a floriferous pot plant for the conservatory. A part from its beauty it is singularly interesting as being the only known blue flower in the extensive order of Umbelliferæ, (*Celery and Carrot family*) the genera of which contain over 1500 species. It is a native of Australia, is known also by the names of Trachymene and Hugelia.—*J. Murison.*

Clematis Jackmanii. My decided success in growing this Clematis I think is all due to pruning; and I merely cut all to the ground every fall. The new wood grows to a height of nine to eleven feet early in the summer and is covered with a mass of bloom from two feet of the ground to the top, almost hiding vines and foliage. I have one plant that every spring throws up a score or more of shoots which I trim to a dozen, and no Clematis with old wood can be as handsome as this is every year.—*P. Robinson, Sidney, O.*

An American Dicentra. The best known and by all odds the most valuable of the Dicentras cultivated for ornament is the Bleeding

The Squirrel Corn in Bloom.

Heart *Dicentia spectabilis*, a grand plant that is native to Siberia and perhaps to Japan. Of the same genus there are several American species known respectively as the Dutchman's Breeches *D. cuccullaria*, Red-flowered Dicentra, *D. eximeà*, and the Squirrel Corn, *D. Canadensis.* It is the last named that is shown in our engraving on this page. In habit this is a small plant with elegant finely-divided leaves, and bearing pretty greenish-white flowers tinged with rose and pleasantly fragrant in May and June. It is to be found in rich woods from Maine to Wisconsin, with a scattering southward as far as Kentucky. The leaves have a slightly bluish or sea-green

hue, and form a dense tuft from which arise the partially drooping racemes of pendulous flowers. The plant is a perennial and succeeds readily in the border or rockery. The root has tubers as large as Peas, hence the popular name.

A Word of Caution About Annuals. In transplanting seedling plants such as Petunias, Stocks Pansies, etc., there is a natural inclination to set out the strongest and best specimens from the seed bed in case all cannot be used, leaving the feeble, unpromising looking ones back. As a rule the reverse of this is the course that should be followed, for the reason, that usually it is the weaker plants that bear the best flowers. These plants, set apart so as not to be crowded by the stronger growers, will generally develop into good specimens that will bear superior flowers. Just this kind of discrimination or the lack of it is sufficient to account for the widely different results that so often follow in the cultivation by different growers of plants from the same seed.

Melon Novelties. Miller's Cream is long, hardly of medium size, moderately productive, with very thin rind and of excellent flavor. Osage is round in shape, larger, more productive but not of as good flavor. The Princess proved to be in every way superior to either Miller's Cream or Osage. For market or home use it is the best variety I have yet seen Champion did not prove equal to many of the older varieties in flavor. Among the Water Melons I have found none better than the Honey Melon heretofore. Icing is no better if as good as Honey and in vigor and productiveness inferior to it. The flesh of Honey is of a yellow color, rather firm yet, remarkably sweet and delicious, with seed but little larger than those of the Apple. It appears to be better able to take care of itself and produce a crop of fruit than any Melon I have yet tested.—*G. C. Muncie, Ind.*

Cosmus for Cut-flowers. American florists know a good thing when they see it, and the American Hybrid Cosmus. an improvement on the old Mexican Cosmus, belonging to the order of Composites, well deserves the popularity it has gained for itself as a subject for cut-flowers. Indeed it is admirably adopted for the purpose, and withal so easily grown. The blossom stems are long, the foliage graceful and feathery, the Dahlia-like flowers often several inches in diameter and produced in great profusion, and in various shades from pure white to purplish crimson. It is a fall bloomer, and classed among half hardy annuals. Plants grown from seed planted in April and May, and transplanted to the open ground, will be covered with bloom in September and October. It may also be used as a pot-plant, like Chryanthemum. Its only serious fault, namely, that it takes up considerable room, is offset by so many points of real merit that we are glad the plant is taken in hand by florists, with a view to further improvements.

Growing Marigold and other Things. In out of way places in the old fashioned gardens Marigolds were tolerated, but looked upon as too common and glaring to be admired by genteel people. But one day a fashionable lady wanted a deep-toned yellow to set off a particular style of dress, and wore these flowers as a corsage bouquet, and lo! the Marigolds suddenly boomed into popularity. There are excellent points about them, being easy of culture, and remaining in bloom long after the Geraniums and other hardy things have succumbed to king frost. They make good window plants, giving a touch of yellow, that sets off the whole collection of plants, while for bedding out purposes they are a change from scarlet Geraniums, and Coleus. They are susceptible to green bugs, but applying Tobacco dust now and then keeps them down. We can have no surer proof of the ordnance in floriculture, than the improvements in these old-fashioned flowers. The Artemesia, is now the Chrysanthemum and we are wild over its beauty, while the Daisy is the Marguerite of the conservatory.—*Anna Lyman.*

Growing Bulbs. A new departure here in the south is the attempt to grow bulbs for the florists' trade, Freesias being one of them. Seed is sown early in the spring in a seed bed carefully prepared. The young plants when strong enough, are pricked out and planted in rows eight inches apart and one inch apart in the row When frost threatens they are lifted and stored in the house to replant the next spring. When two years old they should be ready for market, and range from ¾ to 1¼ inches in length and have ¾ inch circumference, and bring from $5.50 to $10.00 per 1,000. In the dwarf French Canna we have a tuber on which money might be realized. These are not like the older and familiar varieties, but a new strain introduced from France of dwarf growth with large Gladiolus shaped bloom, splashed and blotched like rare Orchids. The seeds germinate readily and bloom the first year. One planting seed stands a good chance of obtaining new varieties and rare ones. The old varieties are quite hardy here

FLOWER OF COSMUS HYBRIDUS.

and require no protection. If we find the dwarf French Cannas also hardy, it will be a grand thing.—*Mrs. J. S. R. Thompson.*

A Rose-jar. A writer in one of our English contemporaries describes the best method for stocking the jar, and, in doing it, suggests that the preparation of the Rose-stock should be detailed to the care-taking member of the family, who never forgets anything. Gather the Rose-petals in the morning; let them stand in a cool place; toss them up lightly for one hour to dry, then put them in layers, with salt sprinkled over each layer, in a large covered dish,—a glass butter dish is a convenient receptacle. You can add to this for several mornings, till you have enough stock,—from one pint to a quart, according to the size of the jar: stir every morning, and let the whole stand for ten days. Then transfer it to a glass fruit-jar in the bottom of which you have placed two ounces of Allspice coarsely ground, and as much stick Cinnamon broken coarsely. This may now stand for six weeks, closely covered, when it is ready for the permanent jar, which may be as pretty as your ingenuity can devise or your means purchase. Those with double covers are the best; and very pretty ones in the blue-and-white Japanese ware, holding over a quart, can be bought for a few shillings. Have ready one ounce each of Cloves, Allspice, Cinnamon, and Mace, all ground (not fine); one ounce of Orris-root, bruised and shredded; two ounces of Lavender-flowers; and a small quantity of any other sweet-scented dried flowers or herbs. Mix together, and put into the jar in alternate layers with the Rose-stock and a few drops of oil of Rose, Geranium, or Violet, and pour over the whole one-quarter pint of good cologne. This will last for years, though from time to time you may add a little Lavender or Orange-flower water or any nice perfume, and some seasons a few fresh Rose-petals. You will derive a satisfaction from the labor only to be estimated by the happy owners of similar jars.

New York Flower Notes.

Easter this year has caused some rejoicing among the florists, for although prices were not large, the quantity of stuff called for was very great. The lateness of the season caused an enormous output, but very little of it was lost. The demand for Easter flowers continues to increase year by year; in fact, the sales for the entire season were much in advance of previous years, though the aggregate prices probably averaged about one third less. According to the present outlook the day is past for extravagant prices, but the sales will continue to increase; flowers will be a necessity rather than a luxury.

The call for loose flowers, in preference to baskets, was very marked at Easter; a box of flowers was usually called for as a floral gift instead of anything else. A great many pot plants were sold too. Most of the Sunday schools, which formerly presented their scholars with nosegays on Easter day, this year made the gift take the form of a plant.

Church decorations were very elaborate; as a rule they consisted almost entirely of plants—Hydrangeas, Azaleas and Genistas, backed with Palms. More churches were decorated than ever; the custom seems extending through all denominations.

It is noticeable that Tulips are going very much out of favor, mainly, no doubt, because they have become so common. But a few seasons since they were used in the finest decorations, now they merely fill the place of cheap flowers. The pretty Freesia is another bulb less in favor, but Roman Hyacinths, Narcissus and Lilies of the Valley never seem to lose favor.

As a rule the Fern used in table plateaus or baskets is Adiantum cuneatum, but a very charming arrangement recently seen was of A. Farleyense and Beauty Roses. A little Asparagus plumosus filled up loose spaces; this variety can be used with Ferns or fine flowers when A. tennuissimus cannot. A similar arrangement of Adiantum Farleyense with Cattleya blooms is very attractive.

A beautiful display was made by one of the florists in the trades procession of the Washington Centennial. It was an immense truck representing Flora's car. High in front sat the goddess Flora, her arm resting on a huge cornucopia filled with Roses. The truck was filled with plants and flowers—in the middle a grand Thrinax, with a big Tree Fern on either side. Two picturesque young women banked in flowering plants carried huge bouquets and baskets of loose flowers which they threw out into the crowd. There was a formally laid out bed of Cacti, while in the rear was a Japanese grafting a Camellia and an Indian holding an Orchid. Orchids were hung about the trees, and the entire vehicle was overflowing with flowers. It was drawn by four white horses, led by ropes of Roses and wearing florally adorned harnesses, and was escorted by outriders and walking spearmen. Altogether it was one of the handsomest turnouts in the procession.

But that centennial was a bad thing for the flower trade. Centennial week the commission men would not quote any price for stuff because they said there was no asking price; if they received an offer they had to take it. A great deal of stuff was lost and there was absolutely nothing doing; the entire city seemed demoralized, and the visitors were not flower-buying people.

There is literally nothing just now for the florists to do in the way of social entertainments. Some very tasteful funeral arrangements were noted. In one case the rooms in which the remains were placed was beautifully adorned with Palms, Hydrangeas and Deutzia gracilis. A bay window behind the coffin was filled with Palms (Seaforthia) and Hydrangea, while Hydrangea and Deutzia were banked on either side of the coffin. On the coffin was a large flat bouquet of Bermuda Lilies and Mermet Roses, tied with white ribbon. A portrait of the deceased was draped with Smilax and had loose, trailing bunches of Roses and Pansies placed diagonally at opposite upper and lower corners.

A pretty Easter arrangement was a plain stone font having a cross rising at the back. It was filled with a mass of Lilies and Azaleas while over the arms of the cross hung a solid wreath of purple Pansies. A silver Marie Antoinette basket, loosely filled with Violets and Lilacs and relieved by Maidenhair made a graceful arrangement; another pretty thing was a similar basket in gold wicker filled with Jonquils and tied with yellow ribbon.

Some of the florists are making more use of the little Primula obconica, a pretty thing when well grown, but terribly weedy at times. However it is useful, there can be no question, and it seems a decided fad at present.

EMILY LOUISE TAPLIN.

LIGHT FROM THE SOCIETIES

BEING MATTER THAT DESERVES TO BE WIDELY KNOWN.

Ornamental Plums harbor knot, and should be planted with caution.—*R. Manning.*

Earhart Everbearing Raspberry is a curiosity, but not profitable. Johnson's Sweet is not superior to Hilborn.—*Prof. Green.*

Lawn Arrangement. One great mistake frequently made is that of planting too many trees, and too few shrubs.—*Wm. Webster.*

Squash seeds can be planted among early Potatoes. The Squash vines do not interfere with the Potato vines until the latter are ready for harvesting.—*Mr. Philbrick.*

Club Foot in Cabbage, says J. J. H. Gregory, can be prevented by putting on ashes or other alkali. It appears to be produced by horse manure; but if hogs are kept in the stable cellar the manure has not that effect.—*Mass. Hort. Society.*

Peach Yellows. I have been trying for thirty years to make the Yellows grow on my grounds, have introduced it time and again, but by using plenty of potash, it has never spread to other trees. Mr. Downing sent me, at my request, buds from trees having the yellows, but the trees I grew from these buds were all healthy.—*A. S. Fuller before the American Pomological Society.*

Report on Grapes. Jewell is hardy, healthy, early, and of fine quality. Eaton not as good as Concord. Mills, I fear, will not prove valuable; it mildews. Downing mildews. Moyer very early; foliage seems able to resist mildew; clusters small. Woodruff Red, I regard as the most valuable red Grape for the public. Witt White, hardy as Concord; season same as Concord, flavor excellent.—*George W. Campbell to Ohio State Hort. Society.*

To prepare a seed bed, the Marblehead people use a simple drag of spruce plank, three feet by eight feet, built somewhat like a stone drag with the team attached to one side so as to leave a track eight feet wide. The bottom has a strip one inch by three inches nailed on near the middle the whole length; this levels off the tracks of the horse's feet. The driver stands on the drag. It is drawn by two horses, and by lapping half way over the last track does good smooth work. —*Mass. Hort. Society.*

Raspberries in Ohio. Souhegan and Tyler are almost identical. They are both profitable, early Raspberries. The only rival in earliness and productiveness to them is Palmer's Early. When this becomes lower in price it will supplaut the other two varieties. Hilborn excels in quality. Season medium. The Ada is large, very productive, hardy and late. On account of its upright growth, few thorns, and the easc with which it is produced, it will becoue the berry for the main crop.—*Ohio State Hort. Society.*

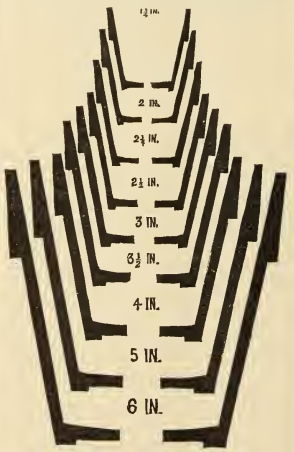
Nelumbium Speciosum, the sacred Lotus of Egypt and India, though coming from a tropical country, is perfectly hardy—enduring any degree of cold short of actual freezing. It has been grown for many years in water on which ice formed eight inches thick. The leaves of the plant are from a foot to thirty inches in diameter. Some of them float on the water; others are borne on stems reaching from a foot to five feet above the surface. The plant will blossom the first year it is set out, and is constantly in blossom from July until frost.—*Chas. Little before the W. N. Y. Hort. Society.*

Effects of Overbearing. Some varieties of Grapes have the ability to withstand the abuse of overbearing for a time, but all will succumb if it is persisted in. The variety most liable to overbear is the Delaware. Vines apparently in perfect health (which had overborne the previous year) suddenly gave out, the leaves fell, and the fruit never ripened. It takes them two or three years to recover. Concord will not show overtaxing so soon. The best paying, the earliest and the poorest is the Champion. Last year my vines yielded 30½ lbs., netting $1.35 per vine.—*W. D. Barnes before the N. Y. Farmers' Institute.*

Native and Exotic Plants. Plants and animals all adapt themselves to the location in which they exist or originate, and cannot be transported to localities differing considerably in climate without suffering to a greater or less extent. American plants or trees are either more rampant or more straggling growers than their near European relatives. This fact in many cases determined a different course of treatment in cultivation and uses. The European Grape is a case in point. It submits kindly to a severe system of pruning that keeps it within four feet of the ground, rewarding the viticulturist abundantly, while similar treatment of the rank growing AmericanGrapes would prove generally disastrous.—*Prof. W. Ragan.*

Improvement of Farm Homes. No positive rules can be laid down for the planting of a lawn. It is merely a matter of personal taste, and if the farmer who wishes to improve the grounds around his house distrusts his own ability, let him take his wife and children into consultation. Let them all become interested in the improvements. Then banish the old pots and pans, the ash barrels, the broken implements, and many other things that too often lie strewn about and disfigure the premises. Let the barnyard be enclosed with a board fence so that the unsightly things may be kept out of sight there. Then screen the fence. Many farmers have but a vague idea of the results that can be accomplished by the plantiug of a few trees, especially evergreens, in the way of concealing unsightly objects. Ornamental trees, shrubs, and flowers are to the landscape what furniture is to the rooms, and what pictures are to the bare walls — *Wm. Webster before the Western New York Horticultural Society.*

Cultivating Potatoes. As soon as you can see the rows start the culivator, and go over the field once in five to seven days, ou the average,



Style and Sizes of Pots adopted by the Committee of the Society of American Florists.

as long as you can get a horse through. At first use very narrow teeth, so as not to throw any earth over the little plants. You can get 1¼-inch teeth with the Planet Jr. cultivator, and they are just the thing. A sulky cultivator can hardly be used on such narrow rows as are usually best, unless the land is very level. I prefer the one-horse cultivator anyway. The proper time to cultivate is as soon as the ground is dry enough after a shower. Thus you prevent a crust forming to keep the air out and make a mulch on the surface to check evaporation. If it doesn't rain within a week, cultivate again. If it rains the next day, start right over again as soon as it is dry enough. Plenty of tillage at just the right time works wonders sometimes. The first cultivation should be quite deep. As the plants grow larger, cultivate more shallow, so as not to disturb the roots.—*T. B. Terry before a Wisconsin Farmers' Institute.*

Orchard Pruning. The general tendency should be to keep the trees low; high pruning should only be practiced for direct cause, as the extra time required to gather fruit from high-pruned trees in a large orchard is very considerable, and when fruit falls it is sure to be injured. In low-pruned trees, gathering fruit is very much facilitated and cheaper; the trees are less exposed to winds and ice, and as a rule are more shapely. The time to prune Apple trees has never been definitely settled. While small branches may be cut when the saw is sharp, large branches should be cut when the sap is most active, and the healing process most rapid. When large branches are cut at other times, gum shellac should be used to prevent decay. Pruning to be properly done requires the best foresight and skill of the orchardist. In all phases of pruning, its immediate and future effects upon the trees should be well considered, that no permanent injury may be done. It is a good practice with a view to thinning the fruit, to prune when the tree is in flower, with a well-trained and practiced eye and hand. I do not advocate autumn pruning before the return of the sap and the fall of the leaf.—*Mass. Hort. Society.*

Honesty in Fruit Packing.

[*Abstract of paper by E. Williams, of Montclair, N. J., read before the American Pomological Society.*]

The desire to trade and get gain is commendable, and has Divine sanction, but when inordinately developed, the possessor is very apt to step beyond the bounds of honesty. An honest fruit grower will not fill his Apple barrels with good fruit at the end, and the middles with a poor and inferior article; neither will he put all his fine Strawberries or Grapes on top of his baskets and the inferior oues at the bottom.

Those who practice these methods are ever ready to find fault with the prices, and charge the commission merchant with dishonesty, when they alone are the guilty ones. The purchaser also condemns the merchants for topping-up the goods, a practice they are often compelled to adopt from the inferior quality of the article received, in order to attract the eye of a customer and effect a sale. It is this absurd and erroneous idea of fruit-growers that anything will sell for something, and that this something is clear gain, that does more to depress prices and demoralize the tone of the markets than anything else. It is with these producers and their products that the careful and conscientious fruit-grower has to coutend. The man who desires to build up a reputation for his products will be careful about grading his fruit, and see that every package is of uniform quality throughout, that every package of No. 1 fruit is what it purports to be; and his name on it is his guaranty to that effect.

The commission merchants are glad to have brands of this character. They can dispose of them at better prices and with more satisfaction to themselves and customers. There are among commission merchants those whose honesty and methods are not above suspicion, but my experience leads me to believe that among them are to be found as honest and honorable men as in any other profession; certainly as large per cent. as among the fruit-growers. If growers could follow their shipments to their destination they might learn some lessons of real practical value. One of these would be that purchasers know a good thing when they see it, and can detect the attempt to deceive in a dishonest package.

Besides the prevalent practice of dishonesty in make-up of packages, there is probably no other one avenue in which down-right fraud is so easily and extensively practiced as in placing Grapes on the market in an unripe condition. With other fruits the eye is the expert detective. Not so with Grapes. Sampling is the only true test.

The intense eagerness to be first in market, while prices are high, brings in a supply of this fruit weeks in advance of its maturity. In fact this fraud has been practiced so long and effectually that many people have come to believe that the Grapes of the present day are not equal to those formerly grown.

In my vicinity are two Grape-growers competing in the same market. One strives for quantity and puts his products on the market as soon as they are called for, even if not ripe. The whole product goes as cut from the vines, with very little attention to trimming or attactiveness of appearance, further than to see that nice clusters are on top of the package. He says it is the money he is after and they can have the Grapes green, if they want them.

The other, whom I will call Mr. Jones, refuses to gather his fruit till it is ripe and allows nothing but perfect clusters to go in the package of No. 1 fruit. He tells his commission merchant that he can warrant each package and his name on it is his guaranty. His No. 2 fruit is unbranded and sold on its merits alone. The results are

that his unbranded fruit has often sold for as much as his competitor's branded fruit, and his No. 1 for much more.

The commission merchant, being the same in both cases, explained by saying: "Jones' fruit would sell at any time, no matter what the condition of the market." Mr. Jones is well satisfied with his course so far and has a clear conscience. The purchasers seem to be satisfied, as they cheerfully pay the extra price asked, and come back for more fruit.

I find the eagerness to be early in the market exists here in Florida too; for our New York market was more than supplied early in the winter with unripe Florida Oranges, which, the merchants told me, were not wanted.

A year or so ago one of your Orange growers visited his commission merchant in New York, and wanted him to explain, if he could, how it was that his Oranges did not sell for as much as his neighbor, Brown's. "Well," said the merchant, "Mr. Brown has always been very particular in grading his fruit and putting it up. His No. 1 fruit is what it purports to be in size, quality and appearance. He has succeeded in establishing for it a reputation which dealers have learned to apprcciate. I once had an order for twenty boxes Brown's brand to send out of town. Having none on hand I filled the order with another brand which I thought equally good and so advised my customer, but the whole lot was returned to me.

"Again, you ship me, say, forty boxes. My customer examines three or four boxes and finds two or three Oranges in each box of second quality. He estimates the whole lot, makes his offer accordingly. Sometimes in order to get what I really think they are worth, I have to sort and repack the whole lot. In doing so I will probably get five or more boxes of second grade. These, of course, I have to sell for less money, which reduces the average. Thus, you see, I must be able to convince my customers that your fruit is in all respects as good as Mr. Brown's before I can sell it to them at the same figures. When you put it up and grade it so I can do so, I can and will return you as good prices as I do Mr. Brown."

The cost of the box, labor of packing and transportation, is the same in both cases. Every box of No. 2 fruit reduces the general average of the whole; and appearauce, quality and uniform size are all important passports to profit.

How to Grow Tomatoes.

[*Extract of paper read by E. P. Kirby, before the Boston Market Gardeners' Association.*]

The seed is sown the first week in March on strong heat; three weeks later the plants are pricked out,about two hundred per sash, on good heat; before they get to crowding they are again pricked out, about fifty per sash. A mild heat is advisable, for the plant must be kept growing; they should be set in the open field about the 25th of May.

The extreme point of earliness in ripening was reached years ago, and now further improvements must be in size, smoothness and solidity. The Tomato requires a certain degree of high temperature, and the whole questiou of earliness hinges on the treatment of the plant in the hot house, and the character of the soil.

This is one of the few plants that will pay better on a moderately poor soil. Keep away much fertilizer that makes leaves and late fruit, but use instead some form of alkali—potash, for instance—which acting upon the vegetable matter in the soil, will generate ammonia enough to form as much foliage as is necessary. Sulphate of potash is most advantageous. The presence of potash in a sulphate form facilitates its ripening by favoring the transformation of the starch to grape sugar. Depriving the plants of a part of their roots or foliage causes them to concentrate their vitality into ripening their fruit and make it earlier.

For experiment I trained two shoots to a pole, pinching all laterals at the first leaf. This induces blossoms and fruit at the joints of the laterals and main stem. They covered the pole to a distance of six feet, and the quality of the fruit was very superior. From the twenty plants thus treated I picked, July 10, three pecks of fine, ripe, good-sized fruit.

In another experiment I girdled the main stem by making a V-shaped cut. The fruit ripened within a few days and my pickings were largely increased. This is in accordance with the principal by which flowering plants in pots completely filled with roots give more profuse bloom.

Picking Tomatoes when partially ripe secures more perfect fruit ripened all over and escaping the difficulty of cracking. Of the many excellent varieties, each of which have their advocates, the Emory, for me, fills the bill for an all-season's variety. It is smooth and of good color, ripening even without cracking and not liable to blight.

I have for several years had a limited call late in the season for the Yellow Plum Tomato, for preserves. The vines are of vigorous growth, but higher prices are obtained for the fruit in September than earlier. The seed should not be sown earlier than the first week in April.

Western New York Horticultural Society.

(*Continued from page* 142.)

The Evaporating Industry. This subject was treated by Mr. Doyle of Rochester. The Apple is a specific American production, and no country in the world can compete with us in the production of cheap evaporated Apples. Each 100 pounds of Apples yield about 9 pounds of evaporated product. Western New York Peaches are superior to Peaches grown elsewhere, and the evaporated product readily brings from three to five cents per pound more. It was born in Western New York. At present there are from 1,500 to 2,000 evaporators of various sizes and makes in successful operation within a radius of 40 miles from Rochester.

Improvement of Rural Homes Utility before beauty is good enough for a new country, but not for us, says Mr. Wm. Webster. Our present farm implements compared with the old clumsy tools of our fathers, are beautiful, and moreover more effective. A nice lawn is the thing to improve the aspect of a modern home. How to make it? Cover the whole surface of ground with a heavy coat of manure and harrow it in; then apply another coat of good compost and again harrow in. Next plant what trees and shrubs you want. Choose the best, as the cost is nothing compared with the satisfaction and pleasure. Then sow the seed—Kentucky Blue Grass and White Clover, at the rate of four bushels of the former to one bushel of the latter per acre. Sow each kind by itself. The Clover seed need not be covered. Clean up the old rubbish and keep the premises in trim. Unsightly objects should be hidden by a high board fence and Evergreens. Do not plant too many trees and too few shrubs. Carpet bedding is not to be recommended for the farmer, as it is expensive, and hardly ever satisfactory without constant care. Use good hardy perennials and keep the lawn mower going.

W. C. Barry says a few dollars spent annually in benefiting the premises will pay a big interest. An inconsiderable expense for flowering shrubs, a little care every year, what a grand result it will present in the course of 10 or 15 years.

Chemistry and Agriculture. Prof. Caldwell of the Cornell University explains that the soil holds potash and phosphoric acid, but is apt to let nitrogen when in the form of nitrates, escape (leach out) unless immediately utilized for plant growth. Potash and phosphoric acid do not seem to be very soluble when held by the soil, as it takes 100 gallons of water to wash out what was first dissolved in one gallon. Yet the plants can take it up, as they appear to have the power, to some extent, to make their own solutions. Water distributes the plant food all through the soil, no matter whether the manure was ploughed in or left on the surface. The nitrate form of nitrogen is best suited for absorption by the plants; but as all soils experimented with as yet let almost all of their nitrates go clear through to the drains, it follows that such nitrates should be put upon the soil only when a crop is there to take hold of and put them to immediate good use. Nitrates are undoubtedly the cheapest form in which we can apply nitrogen, but they should be used by themselves. Nitrates are not used much by fertilizer manufacturers, but a dollar expended for them goes farther than when expended in any other form of nitrogen. Use nitrates carefully in repeated but light applications. It is not volatile, and rapidly growing crops take it up very fast. Stable manure owes its value more to nitrogen compounds than to any other element of plant food. Nitrogen in stable manure is tending to be transformed into nitrates by natural agencies in the soil; sulphate of ammonia also gives nitrates by natural conversion and these nitrates are liable to escape through the soil. This shows that the farmer can put all the potash and phosphoric acid upon his soil that he desires. It will stay there until used by plants. It is different with nitrogen in whatever form used. The more the soil is tilled and air admitted, the more rapid is the conversion of nitrogen into nitrates, and the more rapidly the crops will grow, or if the ground is bare the faster the nitrates will make their escape. Keep the ground covered with useful crops, even in late fall, to catch the nitrates. The continued cropping of the market gardener is a most excellent method of preventing useless waste of nitrogen. During the cold season there is very little formation of nitrate in the soil. Hence barnyard manure may be put on the land in winter without fear of loss.

Sulphate of Ammonia. In the application of sulphate of ammonia there is less danger of loss than with nitrates, as it undergoes nitrification very gradually. Nitrate of soda, however, is undoubtedly the cheapest source of nitrogen, but must be applied in small and repeated rations, not faster than the crop can utilize it.

Manures for the Orchard or Garden. Mr. Joseph Harris also speaks very emphatically in favor of more liberal use of nitrates, especially of nitrate of soda. It gives big results on Sugar Beets, Mangel Wurtzels, etc. An application of $15 worth gave an increase of over 500 bushels (at a cost of three cents per bushel). It also gave a large increase of sugar in Beets, and it may be inferred that such manuring will make the production of Sugar Beets for sugar profitable. Mr. Harris says that our orchards also need more nitrate. All other plant foods can be got easily and cheaply. The practice of double cropping the orchard is not profitable. If you want Apples do not put the land in field crops, grass or weeds. Give the tree all the nitrogen there is in the soil. Has fed his orchards with 200 pounds of nitrate of soda per acre with best results, indeed he has seldom been better paid for any application, and wants no grass in orchard.

A Compost Heap. There need be no loss in a well-made compost heap, even if left out doors, says Mr. Harris. Once he had 75 sheep killed or badly wounded by dogs. A compost heap was made right in the open field, with alternating layers of manure and cut up carcasses, and some soil on top. This was left a year. All flesh had then disappeared, and only a few soft bones were left. This compost was spread very thinly on wheat, and gave excellent results. But a few hundred pounds of nitrate of soda would probably have given just as good results, at much less cost. Early crops need nitrate before the natural nitrification in the soil sets in, therefore all market gardeners should use it.

Roses for Winter Forcing. Start young plants about August 1st in clean loam, give plenty of air. Keep off all flower buds until October, then mulch with manure. Mildew can be fought with flowers of sulphur, the green aphis by fumigating with Tobacco.

Cultivating Orchards. Expert orchardists seem to be in favor of plowing orchards every year, and giving shallow cultivation rather than allowing them to be in grass. Many varieties of Apples might be made annual bearers by plowing and cultivation.

New Fruits. Prunus Simoni is better for canning than for table. Much could not be said in favor of Russian Apricots and Russian Mulberries. Stanton Plum and Smith's Prune were generally pronounced fine fruits. Moore's Ruby Currant, prolific and one of the best for table. Fay's Currant is a general favorite, being a strong grower and giving fine clusters. Prince Albert Currant, sour and dry. Moyer Grape recommended for testing. Eaton Grape ripens with Concord; not yet much fruited. Moore's Diamond worthy of trial. Vergennes a long keeper.

Newer Strawberries. Bubach is a good fruit, perhaps better than any other new variety. Fruit large and showy, one of the best for home market. Jessie has done well. Belmont is quite good. Wilson yet unsurpassed as a shipper and for uniform size.

Small Fruit Culture by a high Authority.

[*Abstract of paper read by Mr. J. H. Hale of South Glastonbury, Conn., before the Winter meeting of the N. Y. State Agricultural Society.*]

The requisites of success are:

1. A love of fruits for their own sake, and pleasure in their culture.
2. A soil fairly adapted.
3. Markets within easy reach.

4. A supply of extra laborers near enough to be promptly available in emergencies.

5. Plant no more than can be thoroughly cultivated and profitably marketed.

STRAWBERRIES.—Any good Corn or Wheat land will do, but must be very rich, though it should not have too much nitrogen, for fear of undue foliage growth. Sandy or loamy soil is best, enriched with phosphoric acid. It should have been in cultivation a year or two. Then plow deep, early in spring and harrow repeatedly. Check off rows three feet apart with Corn marker, and set plants 12 to 20 inches in row.

If pistillate varieties are used, plant every third row with a strong perfect-flowering sort that blooms at same time. Cut off blossoms or fruit stalks as they appear, and as soon as growth is well started begin summer culture, repeating every two or three weeks till frost.

The narrow-row system is most profitable. Each spring-set plant roots a few of the first runners near the row, all other runners being cut off as they appear. This permits proportionally more horse-power in cultivation, as in hill culture, and yet always young plants enough to form one continuous row; plenty of room for sunlight and air to reach berries, much to their benefit. Also it costs little to clean out a bed of this kind after fruiting and renew for another year; in matted row culture it seldom pays to continue a bed in fruiting more than one year. When ground freezes, cover field lightly with old hay, straw, Cornstalks, or the like. This need not be removed; partly uncover crowns of plants when growing time approaches, the mulch will benefit by keeing ground moist (very important), and berries clean. Irrigation is of the greatest benefit, if practicable; $1,000 to $2,000 invested for this purpose will pay, if product of five or more acres can be regularly sold. Very thorough preparation of soil and frequent cultivation answers partly the same purpose.

One picker should bring in 30 or 40 quarts daily; one superintendent to 15 or 20 pickers should assign rows, inspect work and see that vines are not trampled. Pick clean and grade the fruit. Give each picker a stand or rack, holding 4, 6, or 8-quart baskets marked with his number. He must return all baskets (full or empty) to packing shed, and receive daily account ticket. This is of tough paper, 1¾ by 3½ inches having name and number of picker, date and 5 columns of eight figures representing 1, 2, 3, 4 or 8 quarts, 144 quarts in all. Punch out numbers showing quarts delivered, giving picker at the same time a fresh lot of baskets At night the ticket is taken up, and number of quarts punched out of a weekly ticket, 2¾ by 5½ inches, bearing name and number of picker, amount paid per quart, date on which week ends, six columns for record of berries picked each day, and column for sum total and cash paid Saturday night. The weekly tickets are taken up when paid, and filed, giving complete record.

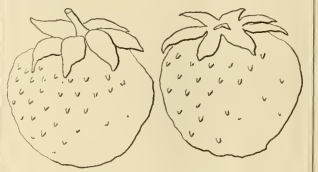
Picking, except for local market, should not begin before dew is off, and should not continue through heat of day; 4 P. M. till dark is best time. The packing shed should be cool, airy, and convenient to field. Baskets and boxes should be new, clean, and of the whitest wood possible. Fill rounding full, exactly the same quality all through. Pack in clean, bright crates or boxes, *Do not ventilate very much*, unless berries are picked in the heat of day, or wet, and packed at once. Picked under favorable circumstances, or cooled immediately after picking, they are far better if packed tight.

RASPBERRIES.—Require much the same soil as Strawberries, except that they stand far more nitrogen. Plant in fall, except cap varieties. Prepare ground as thoroughly as for Strawberries. Plant in check rows, 5 or 6 feet apart, admitting more light and air and more horse cultivation than with hedge-rows.

Cultivation begins early in season and continues through summer, stimulating growth and permitting wood to mature in fall. New growth is pinched back when 15 to 18 inches high, causing strong growth of laterals, which are allowed to grow at will, leaving further trimming till early next spring.

Some very good varieties (Cuthbert, Marlboro, Caroline, Golden Queen, Carman, Springfield, Souhegan), when well grown, will stand most winters with little injury; but it is wise, north of 42° to protect them. Plenty of snow will do, or earth. Two men may apply it, one with heavy gloves bringing the canes close together and carefully bending them down lengthwise of the row, the other throwing a shovelful of earth at the base, on the side the canes are bent to prevent their breaking; a few shovelfuls on the tips will hold them in place. After the field is thus gone over, both men complete the covering with shovels. The whole cost will be from $5 to $8 per acre. If rows are far enough apart, the final work may be done with plow and reduce cost. In spring when frost is out and ground dry enough, uncover, straighten up plants, thin out, and shorten laterals 8 to 15 inches, Thorough cultivation may be given up to blooming time; soil should not then be stirred till after fruiting. Gather and market same as with Strawberries, except that half-pint and pint boxes or baskets should be used instead of quarts.

BLACKBERRIES—Incline to much wood growth so select land of moderate fertility. Plant high-bush sorts in spring or fall—latter is best—setting



BERRY PINCHED OFF AND "SNAPPED OFF."

same as strong-growing Raspberries; trailing kinds and the Dewberries in spring, in rows ten feet apart, three to four feet in row, forming matted row. Close pruning and protection are essential to success.

CURRANTS.—The supply is still far less than the demand, while for Gooseberries there is only a limited sale. Plant in strong, rich, fairly moist soil, after leaves drop in fall, or very early in spring; check rows four and a half to five feet apart. Growth is made in first two months of summer, therefore cultivation must be early and thorough to insure best wood growth. First two years prune only to form broad, open head; in after years pinching back all new growth when two or three inches long, will promote formation of fruit spurs and buds. This is not the general practice, but is a point worth noting, even by those who have only a few bushes.

To make money in small fruit, there must be thorough culture, best possible shipping package, and honest packing of fruit, with fine appearance.

VARIETIES.—Study your market, visit growers in your neighborhood, county and state; learn the well-tested and approved varieties, and plant largely of these. On my own 80 acres, the old Crescent, Wilson and Downing Strawberries, Cuthbert and Souhegan Raspberries, Snyder Blackberry and Victoria Currant have always been profitable. Among the newer sorts, Jessie, Bubach, Pineapple and Miami Strawberries, Carman and Scarlet Green Raspberries, Lucretia Dewberry and Fay Currant are wonderfully fine, and likely to surpass many older ones, and others are coming to the front. Test these in a small way; some will in time be found to suit your soil, and give you an advantage in the market, while meantime you make the best with old varieties.

PRODUCTION.—With the culture recommended, Strawberries should yield 4,000 quarts per acre, and sell in your market at about 8 cents per quart- netting $150 per acre. Raspberries about 3,000 quarts, at 10c., netting about same profit. Blackberries should give more quarts than Raspberries, but selling at less price with less profit. Currants 1500 to 2000 quarts, at 6 to 8c., but as a field can be kept fruiting an indefinite number of years, they are one of the most profitable of the small fruits, at less cost of culture—Strawberries being renewed every two or three years, and Blackberries and Raspberries every five years, for best results, though fields 8 to 10 years old give good returns.

THE HOME GARDEN.—Every farmer should devote half an acre or more to small fruit. He will find a home market taking every day quarts upon quarts at high prices. Every dollar expended will save two in meat and medicine bills. At home and at school, fruit is better than cake and pie, and the table the year round should be supplied with fruit, either fresh or canned. In the latter form, Raspberries retain their flavor best of all Farmers say they can buy better than to raise, but they never buy enough. In my own family—not large—we use from six to ten quarts of small fruits daily from June to August. A friend with a half-acre city lot had it plowed and fertilized, and planted $26 worth of plants, kept account of expenses for five years, with credit at market rates for fruit consumed; the profit was $100 annually. Every farm and home should have such a half acre, and then will be found health and happiness, as well as money, in small fruit.

Management of Strawberry Pickers by Michigan Growers.

[*Paper by A. J. Kinsley, before the Michigan Horticultural Society, Discussion.*]

One of the perplexing problems of the fruit farm is the management of berry-pickers. A good thing to avoid is the quite common practice of permitting pickers to take empty cases into the patch and return them, filled, to the shed where the nailing and stencilling is done.

Do not allow pickers to "snap off" berries, leaving the stem and calyx adhering to the plant take more to fill a box, "bleed" readily, and are apt to arrive in market in a moist, mussy condition. Do not employ pickers who are not quite ready to attend to their work as a business. The usual price paid for picking Strawberries in Berrien county has been a cent and a half a quart.

Do not expect or undertake to regulate the price of picking or transportation by resolution. There is no sound reason why the price of cultivating, picking or transporting Strawberries should be contingent upon the state of the market on South Water street, Chicago.

The only sensible business rule to be followed in the case is to pay fair prices for all services rendered—from plowing clear down to transportation—and then, if on that basis, the venture proves unprofitable, quit.

It will pay the grower who is extensively engaged in the business of raising Strawberries to have one trusty man to every twenty pickers, whose business it is to see that the berries are picked clean—all the ripe ones and no green ones—and that over-ripe ones are kept out of the boxes. Also that the plants are not trodden down. Teach new pickers a lesson that they generally are in need of—to let go their berries before the hand is so full that the juice runs out between their fingers.

Have the packing shed convenient to the patch. Furnish each picker with two carriers holding four boxes each. The packing shed, or sheds, should be under the charge of one (or more if the business requires it) competent and trusty person, whose business it is to issue to the pickers tickets for their berries as they are brought in, and to place the boxes into crates and see that they have not been filled wrong side up.

Many large growers in Berrien county have found it satisfactory to erect quarters for their pickers, where they "camp out" and do their own cooking during the berry season. Many of the pickers thus employed come from the localities where berry raising is not a leading industry. Have your individual trade mark, and endeavor to build up a reputation for straight packing. Your berries cannot all be fancy or No. 1.

Although it requires some moral courage to hide away an extra fine specimen in the bottom of a package, endeavor to have the contents of the boxes uniform and true to appearance.

A. G. Gulley: I spend my whole time keeping the pickers in place and seeing that they do their work properly. In wide matted rows, especially with slow pickers or small boys, I often put two on a row. I don't repack the fruit in the shed; the man there only sees that the boxes are full and puts them in the cases. I pay the pickers once a week.

P. W. Johnston: We do not muzzle our pickers in Michigan. They are each provided with a tray that will hold six quart boxes. They are made light and shallow, have a hoop handle, like a market basket. The pickers are assigned to a row each, or if the rows are wide, two to a row. The names of the pickers for each day are entered on the page of a blank book kept for that purpose. As the full trays come in, the number of quarts is entered on the line with each name, being careful to place a point after each entry. The pickers place the full quarts on the counter and refill the trays from a large basket that is kept full of empty boxes by the packers, who repair any that may have been pulled apart. At the close of the day's work the number of quarts picked by each is carried out on the book, and checks are given to the regular pickers, and transients paid off, each account being checked or marked paid as the

case may be. This record shows an accurate account of each day's work, under its proper date, for the season. I find it necessary to withhold a portion of the pay till the close of the season, or offer extra inducements to those who stand by through "thick and thin." We who live five miles from town have to pay more, and be less particular about our help than those who live where it is plenty. Of late years I have paid one cent per quart for the large kinds, and increased the price to one and a half and two cents to close up with the gleanings, which has proved satisfactory.

E. H. Scott: I have my pickers pinch off every berry, and not pull them off. They arrive in market in better condition, and keep fully a day longer.

The European Grape in Florida.

[Extract of paper prepared for the American Pomological Society, by Baron Von Luttichau, Fla.]

Like almost all other fruit which can be successfully raised in Florida, we find only those remunerative which we can bring to market early. June is the best season for Grapes, as they are then regarded as an article of luxury.

Our aim should be to offer Grapes which have large, compact bunches, brilliantly colored, and of the best quality. A vineyard, producing such fruit at that time, will no doubt prove one of the best investments in the State. From the planting of my first vines, my aim has been to find such fruit. I have planted nearly every native Grape of repute, yet I have not discovered such perfection among American kinds and their hybrids. The Grape I wanted, if at all, had to come from Vitis vinifera, the foreign Grape, and with some varieties from Europe I have certainly been very successful. I have no proof to substantiate the claim that they will do as well in all parts of the State, but believe those doing well with me, will do even better farther south, and will prove unsatisfactory in northern portions of the State, where American kinds succeed better than here.

Reports of previous attempts to grow Vitis vinifera in Florida were all discouraging, but there was little evidence that native kinds had done better. Black Hamburg seemed the most known and most extensively tested representative of the foreign Grape, and I will say right here, that although I have grown excellent fruit of that kind, I would certainly not plant Black Hamburg to any extent for profit, even if grafted on native stock. The time of ripening is not early enough to escape serious damage to fruit from an early rainy season. But if there is little rain while they are maturing, with the help of paper bags and thinning out of berries, the Black Hamburg will prove of value to an amateur. This applies as well to other varieties of Vitis vinifera; their time of ripening is late. The Grape most grown in France and Germany for market is the Chasselas. The Chasselas varieties are among the healthiest and hardiest, well adapted to field culture, and with few exceptions very early, and offer better resistance to any disease that attacks, or may attack our vines.

In 1887 Anthracnose made its appearance, but acting by advise of Professor Dubois, I succeded in checking this disease, and I had hardly any of it last season. My Chasselas kept free; Malaga, Malooise and Tame Tokay suffered most. Grafted vines kept their vigor; those on their own roots showed a marked decline or even died.

Varieties of Vitis vinifera which have proved a perfect success with me are: Chasselas, Royal Red, Violet, Bulhery, Blana, Fontainebleau, Jalabert, Rose, a Chasselas seedling, the earliest of all, also Early Malinger.

Those doing well under favorable conditions are: Black Hamburg, White Frontignan, Tokay (from Hungary). I have some twenty more varieties of Chasellas, as well as other kinds, promising well, and I hope I will be able after this coming season to add a black Grape to my first list; as yet I have none to offer. I need hardly say that I have failed with many, but will mention Malaga or Muscat of Alexandria variety so universally known. Possessing beauty, form and bunch, they comprise all colors in great brilliancy, blue, red, rose, golden and white.

I procured a large collection of Chasselas, some in this country, but mainly from Europe, and here I have Grapes that come up to my standard; and I wish to note, that I can count with more certainty on these vines to bring me splendid fruit in June, than on any of American origin with no exceptions. If to-day I wanted to set out a vineyard, no matter how extensive, I should plant no others, but principally certain kinds of Chasselas grafted on Vitis Aestivalis or on Taylor. All my vines are now grafted on different varieties of Aestivalis, or on Taylor, and my experience leads me to believe grafted vines are much to be preferred to those grown on their own roots. I do not mean to say such vines would prove a failure; in fact I know Col. Norton, of Eustis, Fla., who is perhaps more successful in growing foreign Grapes than myself, grows all his vines on their own roots. But with grafted vines we prepare for Phylloxera, secure stronger growth, durability, and that means long life.

CONDENSED GLEANINGS.

Hardy Plants for Evergreen Hedges. Judging by the preference of Western writers, their list of suitable Evergreens differs widely from ours on the Atlantic coast. Chinese Arbor-vitæ and Red Cedar are not adapted for hedging or as ornamental trees with us. The Chinese Arbor-vitæ, when planted thickly soon loses its lower branches, and is often quite tender, dying out in spots and irreparably injuring the appearance of the hedge. The Red Cedar rarely forms a sightly row of even plants. The common Juniper is even worse than the foregoing. Among available Evergreens for hedging with us, the Norway Spruce is the most reliable species for all places, and as easily kept within bounds as any other—resembling a wall of living green when properly pruned, almost impenetrable by birds, thoroughly hardy, and remarkably dense structure. For general purposes, perhaps the American Arbor-vitæ should rank next, yet hardy as it is, close planting has a weakening effect on the individual plants, and a severe dry winter will occasionally make gaps in the hedge. The variety known as Siberian Arbor-vitæ is of a richer, deeper green than the adove, and does not grow quite so tall as the species. Could the Hemlock Spruce be depended upon during very cold, windy winters, it would certainly be the hedge-plant "par excellence," but unfortunately it is liable to be injured, especially when close planted. Among Pines, the native Pinus strobus is the most satisfactory species for tall screens or windbreaks, bearing the shears and the extremes of cold, and may be classed among the ornamental features of a well-kept place. For very low hedges, or rather borders, the different varieties of tree box are admirably suited. They are easily preserved within proper bounds, and their naturally dense structure and deep green, glossy color, are strong incentives to use them more frequently. No plant disregards shaded spots so perfectly as the family of Buxus, or Box. The dwarf forms of Arbor-vitæ make pretty little hedges, but they are not very enduring. Retinispora obtusa and R. pisifera are well adapted for ornamental screens, the price alone being in the way of their general use.—Josiah Hoopes, in N. Y. Tribune.

The A B C of Pruning. Paint all large wounds, to retard decay. Pruning shears are more convenient than the knife or saw for pruning small trees, shrubs, Grapevines, etc. Where two branches rub together, cut off one, usually the smaller. Never cut off a branch large or small, without a definite reason for doing so. Cut off all sprouts from the trunk and main branches, unless more large branches are desired. Cut off all dead branches. They rob the three of moisture, giving no return. They invite decay into live wood, and the looks of the tree will be greatly improved by their removal. If the extremities of the branches have grown too dense, so that the sunlight is largely prevented from entering the center of the tree, thin out by cutting off many small twigs from the outer ends of the branches rather than by cutting off large limbs at the top of the trunk. Cut of branches close to the larger limb to which they are attached. If the branch to be cut off is so large that its weight is liable to cause it to split down, saw in a short distance from the lower side first. This is shown in illustration on next page. Pole shears are very useful for cutting off branches smaller than the little finger. On small trees, they permit a large part of the pruning to be done from the ground. In large trees, they are excellent for thinning out the ends of branches. The double-edged pruning saw has several advantages over that having but a single cutting edge. It seldom troubles by pinching, as it cuts its way out. It has a coarse and a fine edge, for different kinds of work, and the two edges remain sharp longer than one would.—E. S. Goff in American Agriculurist.

Late Grafting of the Cherry. All writings upon the subject favor very early grafting of the Cherry in the open air, and the use of strictly dormant buds for grafting under cover. These instructions are well founded, but they hinge on the principle that the cell structure of the wood of the stock and scion must be in the same condition. If root and scion be started about equally they will unite quite as well. Last spring, late in April, it became necessary to take up several valuable Cherry trees loaded with fruit buds. We cut off all the seions down to the two year old wood, and set them on Mazzard seedling roots in the graft room. The grafts were put in the nursery a few days later, and over ninety per cent of them have made a strong growth. In the last case the buds were started on one variety, so as to exhibit the points of the embryo leaves, yet the roots taken from the cellar had started fully as much. If the seedlings had been kept dormant in the ice-house I do not think a single scion would have united with them. This principle applies to all top working in the open air of Apple, Pear, Cherry, Plum, etc. If the work is deferred until the buds on the stocks are well started, the scions should be about equally advanced. In late spring grafting we have failed almost completely with dormant scions, but have had perfect success with those cut as needed in open air.—Prof. J. L. Budd, in Farmers Review.

Killing Trees Liable to Sprout. The best way to get rid of Willows or other trees liable to sprout from the stump, is to girdle them and let them stand until they cease to produce leaves. By this plan all trouble with sprouts will be avoided. The Silver Maple frequently sends up sprouts which occupy the ground to the exclusion of everything else in the vicinity of the tree. If the tree is girdled, and all the sprouts are cut close to the ground in August, there will be no trouble with them afterward. Some kinds of timber trees having a very thin sap wood can be killed very quickly by girdling. The Black Walnut is one of this kind. Many years ago, when I played hired man for an Ohio farmer, my employer directed me to girdle a large number of Black Walnut trees standing in a Corn field, and in a few day I destroyed valuable timber that ten years later could have been sold for more than the land from which it had been removed. The work was done late in June when the trees were in full leaf, and in a few days they were as dead as hay. But I wish it understood that I don't advise the destruction of Walnut timber in this way. There has been too much of such work done on valuable timber in Ohio and elsewhere. Luman Woodward, in Ohio Farmer.

Review of Blackberries. Of Blackberries tested on the Rural grounds Snyder and Taylor are the hardiest, though the berries are small. Early Harvest is earliest, but it is killed to the ground about every other season. It is a feeble grower. The berries are perfect in shape and of fair quality. Wilson Jr. is the same as Wilson's Early, except that it is a little hardier. The Lucretia Dewberry is worthless where standards will thrive. Crystal White is tender. Kittatinny is the best variety for the climate of New York. Minnewaski promises to be hardier. In other respects it is not superior to the Kittatinny. The Cut-leaved, largely advertised two years ago, is worthless. The Dorchester is hardier than the Kittatinny, but less productive. The Erie resembles the Lawton, and is said by some to be the same. It appears to be hardier and a trifle earlier at the Rural Grounds.—Rural New Yorker.

The Russian Apples. There is a disposition on the part of some nuscrymen—acting possibly from interested motives—to decry and disparage the Russian apples introduced by Prof. Budd, and now being tested in various portions of the northwest. That some varieties should prove failures is nothing strange. No intelligent person would for a moment expect that all would prove adapted to conditions here. But spite of all that has been urged against them, there is good grounds for confidence that from the large number of varieties being tested we shall secure a select list will prove adapted to the trying climatic conditions of the northwest. Prof. Budd is an intelligent and conscientious student and experimenter, and it is yet too early to pass judgement upon his work without the liability of doing him great injustice.

Nut Culture Profitable. There is no valid reason why the various kinds of Nuts should not prove as profitable as any of our fruit trees. There is a steadily increasing demand for them in our markets, and their culture as a rule, requires less attention than the majority of our

orchard trees. Perhaps the Chestnut leads the list for profit, followed closely by the Shellbark, and even the common Black Walnut is quite in demand. In the Northern States the Pecan and English Walnut are unreliable, only succeeding in sheltered locations, and of course are beyond the question of profit. The main point to be considered in cultivating Nuts, is the selection of proper varieties. Large, showy fruit requires no more care, and occupies no more ground than the smaller size, yet the price obtained for the former may be double or more of that of the latter.—Farm Journal.

Blasting Holes to Plant Trees. Few people elsewhere in the world may ever have heard of blasting holes to plant shade or fruit trees, said a cultivator the other day, yet the practice is common here and shows good results. In most places there is found sufficient top soil for any purpose, but as land has become valuable, people have cast about for means to utilize lauds where the coarse sand rock comes too near the surface for sucessful tree planting. A blast, well put in, creates a pocket for broken rock mixed with top soil, which furnishes a basin to hold moisture as well as a deeper and cooler hold for the roots. It is yet too early to say what will be the ultimate results of such planting, but in a climate like ours, where a superfluity of rainfall is not likely to occur, it may be successful.—San Diego Union.

Distribution of Starch in Potato. A test reported by Mr. E. S. Goff in Agricultural Science, showed that the part richest in starch lies within the cambium layer, and adjacent to it, and that the portion lying nearest the so-called seed eud is richer in starch than the opposite end. Cuttings from the seed-end yielded more than cuttings from the stem-end, but the greater vigor of the eyes at the seed end as compared with those at the opposite end can hardly be accounted for by the slightly greater amount of starch in that part of the tuber. The only conclusion as to the method of cutting for seed seems to be that it is probably better to cut the tuber longitudinally, since transverse cutting would unequally divide the nutriment of the plant.—Garden and Forest.

Orchard Pruning. This question was discussed at length at the meeting of the Iowa State Horticultural Society two years ago' and a resolution

The A B C of Pruning. See preceding page.

was passed by unanimous vote favoring the idea that the best time to prune fruit trees was when leaves were about two-thirds growu in spring. Members seemed to unite in the opinion that the wounds made at this time would heal rapidly and perfectly, and that the vitality of the tree was lowered less than at any other time. But the pruning in orchard and nursery cannot all be done in one day, so in a general way we can say, prune lightly at any one time from the time that the leaves have attained nearly full size to the completion of the first extension of growth in early June.—J. L. Budd, in Farmers' Review.

Manure Does Not Bring Blight. I know of an orchard of many hundred Duchess Pear trees where cultivation was omitted for a term of years, and the trees last season were loaded with the choicest of large fruit. But this orchard had been treated annually to a heavy mulch sufficient to nearly subdue all grass, weeds, etc., furnish the required fertility and retain moisture in the soil during the summer drouths. The once oft-repeated theory that Pear blight was induced by free application of manure is another fallacy. One of our most successful growers informed me that his orchard of 1,500 trees had been manured regularly each year, with one exception since planted.—Irving D. Cook, in Tribune.

The demand for Sycamore lumber, as the wood of *Plantanus occidentalis* is called, is increasing very rapidly wherever Tobacco is packed. This wood, which does not split readily, is now almost exclusively used in the United States for Tobacco boxes, and immense quantities are shipped to Richmond, St. Louis and other Tobacco packing ceutres. One mill on the Embarras river, in southern Illiuois, has within a few months received orders for eleven million feet of lumber; and mills through that part of the country are busy sawing up the great Sycamores, which once were the crowning feature of the country of the Illinois.—Garden and Forest.

Crop in a Young Orchard. Corn is an excellent crop to grow in a young orchard: but do not plant so close to the trees but that you have plenty of room for cultivating without there being dauger of injuring the trees. The reason why Corn is such a good crop for this purpose is because it receives all its cultivation early in the season, and the soil is not worked late, which would stimulate an autumn growth, and thus hinder ripening of the wood. Of course other cultivatable crops may be safely grown in an orchard, if they do not necessitate a late working of the soil.—Farm and Fireside.

Peas Among Strawberries. This year I conceived the idea of planting Peas (the field Pea) between my rows of berries for the purpose of shading and protecting them from the hot rays of the sun. I kept the Pea-vines from smothering the plants by trimming the vines. It proved a perfect success, and my plants are now green and vigorous and full of blossoms.—C. B. F., in Southern Cultivator.

Nitrate of Soda for Greenhouse. I have used it for several months, and use no other liquid manure. It is so convenient to dash a large spoonful, or about a handful, into a two gallon watering pot, where it dissolves at once, for there is nothing more soluble, and you at once have the means for pushing the growth of a specimen or reviveing a pot bound plant.—W. F. Massey, in American Garden.

Hardwood sawdust makes a good mulch for Strawberries and other small fruits, as it very soon decays so as to make a substance very much like chip dirt. Rotton wood or rotten logs make an excellent manure or mulch for the berry family. Pine sawdust is not good, because it hardly rots at all and will injure the plants, so many growers say.—Gleauings.

Fruit Industry in California. The ease with which fruit growers, packers and shippers are made wealthy on paper is astonishing. The fruit business, if properly conducted, is, one year with another, a good paying business, but growers and packers do not become immensely wealthy from the sale of their fruits in one or two years.—California Fruit Grower.

Easily Tried. Pans of water placed in fruit and berry patches will keep birds from eating the fruit. It is claimed that the reason birds eat Cherries and Strawberries is because they get dreadful thirsty, and if they can easily get at water they soon leave of taking the fruit.—American Cultivator.

True of Garden Management Also. A little business common sense might be applied with profit to our Apple orchard management.—H. E. Van Deman, in Americau Farmer.

Vegetable Products on the Table.

Flour for Bread and Pastry. Make a note of it: For the best and most nutricious bread, use Spring Wheat flour; for the finest pastry, use Winter Wheat flour.—Table Talk.

Keeping Mushrooms. Being partial to Mushrooms, I have tried many ways, but succeeded in only one. They were made into a soup, well cooked, highly seasoned, and canned, and this answers the purpose.—New York Tribune.

Potato Salad. To half a dozen medium-sized Potatoes chopped, add two or three Onions chopped fine, salt, pepper, mix well and put on a dish; pour over it just enough vinegar to moisten it, or what is better, a salad dressing.

Green Peas and Pods. We find the flavor and quality of most Peas much euhanced by stewing the pods in a little water, and when quite tender pressing till the pulp exudes. This sweet marrowy puree is the very best part of the Pea yield, and should not be thrown to the pigs, although their great enjoyment of fresh Peapods is a pleasant thing to see.—New York Tribune.

Fruit Pudding. A nice, healthful pudding for dessert may be made by putting a layer of stale bread into a saucepan, then a layer of fruit, sugar, more bread, fruit, etc., until the pan is full. Then add enough water to moisten all well, sprinkle sugar over top, which should be bread, and bake until done—the bread should be browned nicely. Serve with cream or rich milk.

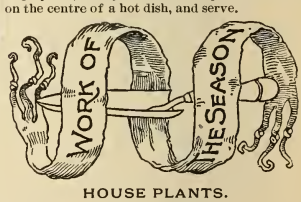
Choosing Asparagus. When perfectly fresh, the Asparagus should be delicately white and firm to the touch. If the cut ends are brownish and dry, the heads drooping, and the Asparagus altogether limp, the vegetable is stale. When first cut, it may be kept a day, or even two, if the ends of the stalks are placed in cold water, but it is always best when fresh.—Amateur Gardening.

Salad Dressing. The yolk of a hard-boiled egg worked smooth in a cup with one-half a teaspoonful of mustard, one-half teaspoonful salt, one teaspoonful sugar; add to this a teaspoonful melted butter, drop at a time, and stir constantly; then add heated vinegar, drop at a time, until the cup is about half full, or enough to moisten the salad. Omit the sugar if for Potato salad, and do not use so much salt.—Florida Dispatch.

Evaporated Fruit. Rinse the fruit thoroughly in clean water, then place in an earthen dish, covered with water, for ten to fifteen hours before using. This water contains the flavor and nutrition soaked out of the fruit. Simmer slowly, until it is cooked through, adding sugar as required; serve either hot or cold. In this way you secure a wholesome dish, full flavored, greatly resembling the original fresh product.—California Fruit Grower.

Asparagus Toast. This is a most delicious, quickly-prepared breakfast dish. When any Asparagus has been left over from the previous day, chop all the green and tender parts up small, put them into a stewpan with an ounce of butter, two tablespeonfuls of milk or cream, a little salt and pepper. and two or three well-beaten eggs. Stir quickly over the fire for a minute until the eggs are somewhat set, then have ready some small neat rounds of well-buttered toast. Pour over and serve.—Amateur Gardening.

Spinach With Cream. Pick the leaves from the stalks, and wash the Spinach in several waters till quite free from sand and grit. Put it into a large saucepan with barely enough water to keep it from burning; add a sufficient quantity of salt, and turn the vegetable frequently while cooking. When done enough, drain the Spinach in a colander, squeeze it dry, and chop it fine. Put it into a clean saucepan with a few tablespoonfuls of boiling cream, a sprinkling of fine sugar, and a grating of nutmeg. Make the Spinach thoroughly hot, then pile it in the shape of a mound on the centre of a hot dish, and serve.



HOUSE PLANTS.

Balsams. For decorative purposes grow them as pot plants in light, rich soil.

Cactus after blooming may be planted out in the border and kept there during summer.

Calceolarias. If desired for earliest winter-bloom, sow seeds this month. The young seedlings require considerable water and some shading. Pot them off when large enough and plunge into a frame, providing shade and water.

Cinerarias to be treated like Calceolarias.

Fuchsias. Suitable supports for these and other rapid growing plants serve a good purpose.

Hanging Baskets. To keep them from drying out is the chief point of importance. Plunge the whole basket into a tub of water occasionally, letting it get thoroughly soaked through. The water may also be applied directly to the center of the basket in a small stream flowing through a tapering spout from a cup or can, or in some similar way. In some cases a dish of water might be fastened above the basket, and a small continuous stream allowed to trickle down upon it. The water supply, of course, needs frequent renewal.

Hibiscus. Cuttings may he struck for next season's stock, the old plants to he summered out doors.

Oxalis. Gradually dry off plants now past blooming and intended for flowering next winter.

Plants in Vases and Veranda Boxes. These often suffer from superficial watering. Be sure that the whole mass of earth in them is thoroughly saturated once a day in clear weather.

Pomegranates. When commencing to bloom, stimulate by applications of weak manure water. Try nitrate of soda or ammonia.

Pot Plants. Those standing on the benches in a greenhouse are liable to strike root through the drainage hole, and get a firm hold in the soil under the pots. Turning them occasionally will prevent this.

Primulas. Pot off the seedlings, plunge them into frames, giving shade and water. Repot when needed.

Sowing Small Seeds. Gloxiuia, Calceolaria, and other fine seeds should be sown on a smooth surface of moist soil, a small quantity of dried peat moss sifted over it, and a pane (or panes) of glass placed on top until germination takes place. Or a little damp moss may be placed directly upon the seeds until the time of germination. When large enough the seedlings are potted off. A good method, also, is to invert a small pot in the bottom of a large one, and filling up with rich sandy soil to within one inch of the top. Press the soil firm and smooth and set the pot in a dish with water in the bottom to soak up the soil without disturbing the surface. Now scatter the seed and cover it lightly with finely sifted soil. A cover of strong white paper is then tied over the top of the pot, and water poured upon it so to form a depression, and this should now be constantly kept filled with water until the seeds are well up.

Window Sills and Balconies. A balcony not too exposed to sweeping winds may be readily utilized by those who live in the crowded part of the cities. Plants should be protected from the noon sun, otherwise they can stand full exposure to the sun, but it should not strike directly on them for too long a time. A stand so arranged as to have soil in boxes, or the pots plunged in moss or other cool material, is just the thing.

Young Plants. Geraniums, Heliotropes, Fuchsias, and other young plants kept during summer with just enough water to keep alive and in pots small enough to prevent large growth, make good window plants in the winter. If young plants are not at hand, obtain them by rooting cuttings now.

LAWN AND FLOWER GARDEN.

Annuals. Thin to the proper distance. Keep surface of ground stirred or mulched. Stimulate with manure water or a weak solution of nitrate of soda. Pick off seed pods before seeds form.

Bedding out of Coleus, Achyranthes, Alternantheras, Heliotropes, Ricinus, Begonias, Caladiums, etc. should now be finished.

Bulbs. Tulips, etc., now being past their ornamental stage, should be cleared off the heds, and the latter replanted with summer flowers. The bulbs taken up may be stored in a cool dry place, and when thoroughly dry put in paper hags until planting time in October.

Lawn mowing should be attended to as regularly as any chore on the place, say twice a week without fail.

Perennials. Remove dead leaves, cultivate beds freely or apply mulch, also give support by stakes, etc., where needed. If open spaces occur fill them with annuals or bienuials, such as Dianthus, Asters, Stocks, Dahlias, Zinnias, Sunflower, Ricinus, Hollyhocks, etc.

Phloxes and plants of similar habit of growth should be pegged down to make them cover the ground early. Wire pins are best, hut wooden pegs will answer.

Pinks. Support by neat stakes to preserve their bloom in perfection and unsoiled.

Roses. Look out for Rose slugs and bugs. Hand picking will do in most cases, but when hugs are very numerous, the Bubach spray may he found necessary. Dissolve the powder in alcohol and dilute with water. Apply with syringe. Cut off all parts affected by rust. Sulphur is the remedy for mildew.

Shrubbery. Plants that flower on the old wood should he pruned immediately when done blooming. Cut away all branches that seem to be crowding or unnecessary, and shorten those left on. This treatment will cause a free growth of wood, and insure next season's bloom.

Trimming, etc. Blossoms appearing shortly after planting should he picked off from nearly all plants. Give shape to straggling specimens. To secure strong stocky plants for winter, pinch in Chrysanthemums, Carnations, Stevias, and similar fall and winter bloomers. Remove the sprouts and shoots coming up from the roots of Lilacs, budded Roses, Willows, as also of most fancy-leaved trees and shruhs.

PLANT CULTURE UNDER GLASS.

Achimenes. Give liquid manure to improve both bloom and foliage.

Amaryllis. Reasonably small pots are best for these when done blooming. When repotting is thought necessary, use a mixture of good loam with a little sand, pack solid into the pots, water and syringe well and set in nearly full sunlight.

Azaleas to harden after having finished their growth should he given a sheltered, shady position out doors. Keep worms out of the pots, either by having a piece of mosquito netting over the hole in the bottom, inside, or by placing the pots on hricks or stones.

Crotons can go outside after warm weather is well established. In the house they need an airy soil, moderate light and considerable heat. They do well in comparatively small pots.

Hardwooded plants need a constant supply of moisture during active growth and while in bloom. Whenever water is applied it should be given copiously, so hat the earth becomes thoroughly soaked.

Ixias when done flowering should he dried off gradually until September or October, which is the proper time to start them again. The hulhs may he stored in paper hags like Tulips.

Lemons, Oranges, etc., thrive in a mixture of rich loam with a little rotten manure. When allowed to fruit they do not flower as freely as otherwise. Their flowering proponsity can be stimulated with manure water effectively. Guard against scale or mealy bug.

Poinsettias. Cuttings of the young wood (from plants started for propagation) with a heel of old wood attached to them, if kept close, moist and warm, will root readily.

Stephanotis. Sponge with soapsuds to prevent mealy hug. Guard against excess of moisture in room.

FRUIT GARDEN AND ORCHARD.

Blackberries. Early and severe trimming of the young growth favors stocky canes able to endure cold and winds, besides giving better fruit. Nip off the ends of the young canes at not over three feet high, and again afterwards the ends of the laterals.

Borers. The carholic acid and soap emulsion (see page 187) applied now to the trunks of Peach and other trees at the usual places of attack will keep the borers off. A small square box placed around the trunk of each Peach tree is also said to he sure protection.

Cherries. To protect from birds try an imitation hird of prey suspended in the tree. Use the shot gun only when milder means fail. Cultivate the young trees or keep them mulched.

Cultivation of recently planted orchards is needed as much as that of Corn or Potatoes, hut try to keep the implement of tillage, or any of its parts, from coming in contact with the roots or hark or the trees.

Currants. Remove dead wood and weak growth. Keep free from grass and weeds. Mulch if convenient. Use hellehore for Currant worms.

Gooseberries to be handled like Currants. Layering the branches in June is the surest way of propagation. The green wood takes root readily when buried in loose soil if the tips are left exposed. These rooted layers are taken up in late fall, planted out in rows, and kept mulched during the winter.

Grafts set this spring need occasional examination. Remove the shoots that are not wanted, also overhanging limhs of the tree when crowding and depriving the grafts of room for full development.

Grapes. Thin by removing every alternate hunch where they are thickly set. Try bagging as a protection from disease and birds. Look out for Rose bugs. Spray with copper mixtures for mildew and rot where these prevail. No vine, should be allowed to overhear.

Plums. Spray or jar for the curculio. Paint the black knots with turpentine or linseed oil as fast as they appear. Cultivate the orchard and thin the fruit.

Pruning at this season is coming into general favor with the orchardists. Rub off sprouts not wanted.

Raspberries should be pinched back same as Blackherries. The under-sized fruit always grows on the extremeties of unpruned canes. Cultivate freely.

Strawberries. A clean mulch around the plants keeps herries free from grit and dirt. Only good fruit is wanted in the baskets, hut sorting should only he done while picking, as Strawberries are not improved by much handling over. Cultivate the new heds, and if desired, clip off the runners. The earliest runners make the only pot plants worth having, if fruit out more than one spring is the object.

Thinning. This practice is gaining more friends every year amoag orchardists. Give it a trial, even if on a small scale at first. It pays with Peaches, Pears Plums, and most other tree fruits.

VEGETABLE GARDEN.

Asparagus should be allowed to grow up after this month, needing little attention.

Beans. Plant the Limas in hills four feet apart, in very rich, warm soil, setting a pole, which need not be more than six feet high, to each hill. A wire stretched over posts four or five feet high also makes a good trellis. Plant bush sorts for succession.

Cabbage Plant for winter use. Spindling plants will answer hetter if set into the ground clear to the crown. Guard against cutworms. Cultivate freely.

Carrots. Use wheel hoe and weeders freely. Thin where needed.

Celery. Keep the seedbed well cultivated, and the plants stocky, by thorough thinning. Applications of nitrate of soda make large, thrifty plants. After middle of the mouth set out the self-bleaching kinds for earliest crop.

Corn should be planted for succession all through this month.

Cucumbers. Plant for pickles in well enriched soil in hills four to six feet apart each way, or in drills six feet apart, having plants one foot apart in the drill.

Egg Plants. Plant in warm and very rich soil. Keep well dusted with Paris green mixture to save from Potato bugs.

Melons. Plant at once in warm soil and well manured hills, five to six feet apart, for the Musk varieties, and eight to ten feet apart for the Water Melons. Use plenty of seed, and when plants are comparatively out of danger from hug depredations, etc., thin to three plants to the hill. Washing suds applied to the hills occasionly are of great benefit. Free use of cultivator and hoe will aid growth materially.

Parsnips. Cultivate and thin.

Peppers. Plant in rows two feet apart, and fifteen inches apart in the row. Treat like Egg Plant.

Squashes. Plant and manage like Melons, having hills ten feet apart each way for the running varieties, while four feet is enough for the hush sorts. As a protection against borers, cover the first joints of the running vines with earth. Dusting the plants with plaster in a measure protects them from the yellow striped beetle. Watch for the Squash bug.

Weeds should be killed by the free use of the wheel hoe and hand weeders. Let none escape.

FRUIT AND VEGETABLES UNDER GLASS.

Figs delight in heat, moisture and plenty of air and light. Top dress the soil with fresh horse manure. Thin the fruit. For young stock put in cuttings in sandy soil with considerable hottom heat.

Grapes. Ripening crops need high heat. Thinning may he done when the berries are of the size of Peas, allowing one bunch of fruit only to the cane. Point the latter three leaves beyond the fruit. When fruit is taken off the vines, the latter should have a period of rest by gradually withholding water. Air them freely, and expose fully to the sun.

Melons. Top dress with compost, and water with warm guano or manure water. Apply pollen to the fruit blossoms as soon as they open.

Pines, when done blooming, should be syringed every day. Water when needed. To keep the house molst, sprinkle walls and walks daily, and keep evaporating pans filled. Temperature should range from 70° to 85° during the day. Withold water from ripe fruit.

THE POULTRY YARD.

Preventing Waste. Don't throw soft feed on the ground, where half of it will be wasted, and then complain because "it costs so much for feed for those hens."—Rural Canadian.

Trees and Shrubs Best. Poultry yards should have some kind of shade provided for the hens. Ducks suffer greatly if exposed to the heat of the sun the whole day.—Florida Dispatch.

Males Not Needed. When egg production alone is your object you need no males. The hens will lay as well without them (and sometimes better), and the eggs will keep much longer.

Fatten the Faulty Chick. Don't forget that the choicest stock all through nature produce many poor specimens, and that poultry is no exception. Weed out the flock, by fattening all faulty specimens, for the table.

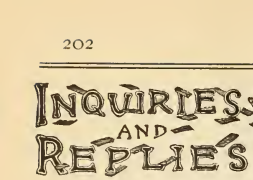
Shipping Fowls. Make neat, light coops, and provide feed and water for the journey, says the Poultry Review; and we will add that a light frame, set upon a solid bottom, and covered with cheap muslin, with openings on top to give the fowls a chance to stick their heads out, makes a very serviceable coop for shipping a pair or two.

Secret Worth Knowing. The Chinese, according to the New York Ledger, have a way of keeping eggs for forty years or more in sound condition. The oldest eggs the more valuable they are, and it is a trick of the Chinese grocer to ring in fresh eggs on his customers whenever he has a chance to cheat them in that way. Our Government should at once instruct our consular agents in China to discover what this valuable method of keeping eggs is, for the benefit of American poultry raisers.

To Distinguish Fresh Eggs. The following is a simple French test for telling whether eggs are fresh or not: Dissolve two ounces of salt in a pint of water. A fresh-laid egg placed in this solution will descend to the bottom of the vessel, while one which has been laid the day previously will not quite reach the bottom. An egg three days old will float in the liquid; and if more than three days old it will float on the surface, projecting above the latter more and more as it happens to be lighter with age.--Farmers'Review.

Roosters for Pic-Nics. Fannie Field says somewhere: "Generally speaking, after the hatching season is over, there is no sense or profit in keeping the roosters. They will eat as much, or more, than the same number of hens, and will worry and torment the hens through moulting time. Eat them, or send them to market soon, and thus save the food and "botheration". Pressed chicken is a dish always appreciated at the summer picnics. The old roosters, if properly prepared, answer very well for this purpose, and might thus be "pressed into service" with profit and satisfaction.

Breaking Up Sitting Hens. Let her stay on the nest a week, giving her no food the first three days, and only one meal the next two days, and one the next two, which completes the week, but let her have all the water she desires. She should then be taken from the nest, and placed in a lath box, with open sides and open bottom, with no nest or anywhere for her to sit, giving only one meal a day of stale bread soaked in milk, and a little chopped clover. Keep her in the box two or three days, and then let her be placed with the other fowls. She will then be in good laying condition, not too fat, and will not attempt to set for quite a time.—Mirror and Farmer.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. No more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering, such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,257. **Trimming Currants.** If all suckers are removed at four or six inches high will it cause lack of thrift? Such trimming gives a better chance at the Currant worm.—H. & S., *Galena, Ills.*

1,258. **Book on the Amaryllis.** What one can you recommend? J. L. Childs does not answer.—D. A. H., *Butler, Pa.*

1,259. **Aphis on Roses and Fuchsias.** What is the best remedy?—W. W. R., *Toronto, Can.*

1,260. **Peroxide Silicate.** Can it be recommended as an insecticide? Is it safe to use on Cabbages, Radishes, Lettuce, etc?

1,261. **Pine Sawdust as Manure.** Will Pine sawdust from the stable (two years old) and well mixed with manure, benefit the land?

1,262. **Grapes and Strawberries in Colorado.** Will they succeed in rich valley soil in an altitude of 8,000 feet? What varieties are best for us, and what slope of land?—C. B. C., *Slaghts, Col.*

1,263. **Cucumbers for Pickles.** I want information on the best variety to plant, cultivation, packing, marketing, etc.—J. W. S., *Atlanta, Ga.*

1,264. **Muriate of Potash.** My druggist don't know it. Where can I get it?—G. E. P., *Independence, Kan.*

1,265. **Sprouting Magnolia Seed.** How is it done?

1,266. **Arbor Vitæ from Seed.** How is it grown?—F. G. McG., *Ark.*

1,267. **Barren Vines in Grapery.** My Black Hamburghs and another variety grow well, are carefully pruned and laid down every fall. Why do the old canes die in winter and new non-bearing shoots take their places?—W. H. W.

1,268. **Fruit Dryer.** Which is the best one for farmer's uses? How is the Topping?—J. E. W., *Kent, Kan.*

1,269. **Strawberry Seedlings.** Please tell me the best way of raising them.—J. A. S., *Lincoln, Kan.*

1,270. **Roses Not Blooming.** My two Etoile de Lyon Rose bushes rarely flower, the buds appearing all shriveled and out of shape. What is the matter?

1,271. **Unsatisfactory Grape Vines.** Vines planted for Ives and Concord seem to be identical. They bear full, turn black, but do not ripen, even if left until after frost. Is there a remedy?—E. M. N., *Wilson, N.C.*

1,272. **Grapes on Walls.** Will they do best directly on the wall, or on a frame six or more inches away?

1,273. **Clearing Ponds from Weeds.** What tools should be used? The water being 10 feet deep.—F. K. P., *Delavan, Wis.*

1,274. **Tree Pæony.** Where can I get the plants?—A. A., *New York City.*

1,275. **Strawberry for Amateur.** Which would you recommend?—J. W. W.

1,276. **Well Rotted Sawdust.** Is it good manure for berries?—W. W., *Southport, N. Y.*

1,277. **Alebia.** My strong plant blooms yearly but bears no fruit. Why not?—J. S., *Cincinnati, O.*

1,278. **London's Encyclopedia.** Is there a later work like it, or if not where can I get the latest edition? I have the 1828 edition.—C. H. L., *San Saba, Texas.*

1,279. **Ants on Strawberry Plants.** How can I rid my beds covered with their hills?

1,280. **Forcing Strawberries.** Will plants that bear now do for forcing next winter? What is the best method for extra early berries, and what the best varieties?—R. Winstead, *Ala,*

1,281. **Moore's Arctic Plum.** Two thrifty trees four years old in my plum orchard that is doing well, budded well last season, but the buds fell before blooming. This year bloom again brought no fruit. Can you explain this?—E. M. T., *Grayville, Ills.*

1,282. **Early Radish.** What variety is the earliest and best for forcing?—T. R.

1,283. **Corncob Ashes.** I can get about eight tons near here every year. Are they good for trees and small fruits?—D. L. K., *Bright, Ind.*

1,284. **Hellebore for Aphis on Roses.** Is it better used dry or in solution?—H. W. P., *Philadelphia, Pa.*

1285 **Helianthus Multiflorus Fl. Pl.** How and at what time should it be propagated?—G. B. D., *Va.*

1286. **Tulips from seed.** How are they grown? Seed planted 5 or 6 weeks ago has not yet sprouted.—G. H. W., *Lowell, Mass.*

1287. **Herbert and Gærtner Grapes.** Where can I buy plants?—L. G. P., *Dayton, Iowa.*

1288. **Stove for Heating Greenhouse.** Could a house 15 by 20 he well heated with a coal or wood stove located under the floor, with an opening over it and moisture provided by syringing, and keeping water on the stove?—Elder's Wife.

1289. **Steam Heating for Hot-bed.** Can any one give a practical plan?—M. R. S., *Cincinati, O.*

1290. **Kainite or Plaster.** Which is the most service able to scatter over the manure heap to prevent the esc. pe of ammonia?—T. R.

1291. **Windmills for Pumping Water.** Are they liable to get out of order soon? Are iron fans preferable to wooden ones?—T. R.

1292. **Lice on Cabbage.** What can be done? Their depredations here are fearful, and we are helpless.—E. A. C., *Beaver Creek, Colorado.*

1293. **Melon Vine Borer.** How can we keep worms out of our Melons?—B. M. T., *Dalton, Ga.*

1294. **Apple Tree Blight.** The end of my Apple twigs are killed a foot down. What can I do?—S.E.S. *Decatur, Ga.*

1295. **Pear Leaves Wilting.** What causes the leaves on my young Lawson Pear to wilt, and remain so now for a week, without changing color?—A. L. D., *N.Y.*

1296. **Propagation of Roses.** Can cuttings be struck at any time of the year?—Mrs. W., *San Diego, Cal.*

1297. **Pansy Culture.** Practical instructions are desired. Is there a good work on the subject and what is the price?—*Vermont.*

REPLIES TO INQUIRIES.

1,257. **Trimming Currants.** The plants are probably not doing well on account of age of canes. The old wood may need cutting out, and the young wood be allowed to fruit.

1,261. **Pine Sawdust as Manure.** In itself, Pine sawdust is of no value as manure, but when mixed with manure or used as absorbent in the stable, and thoroughly rotted, makes a splendid fertilizer for small fruits or the garden, and will permanently improve the soil.

1,263. **Cucumbers for Pickles.** The demand for these is mostly in the fall, hence they are planted late, generally latter part of June, so the bulk of crop will come just when the market calls for them. Long Green, White Spine, Green Prolific or Green Cluster, Boston Pickling, etc., are popular varieties. Plant them in rich soil five or six feet apart each way. We shall be pleased to hear from our readers in regard the best methods of packing and "doing up."

1,264. **Muriate of Potash.** This is one of the pot. ash salts imported from Germany, and may be had from importers and wholesale dealers in agricultural chemicals or fertilizers. Druggists do not keep it.

1,276. **Well-rotted sawdust** makes an excellent mulch for Strawberries, but has little direct fertilizing properties.

1,175. **The Industry Gooseberry** mildews badly in some sections. At Geneva, the past season, the crop was a failure from this cause. In certain other localities it does not appear to mildew. —E. S. G.

1,177. **The Bulletins of the Experiment Stations** may generally be obtained by addressing a letter or postal card to the particular station of which the bulletin is desired. It is not necessary that the name of the director should be known. Those of the Department of Agriculture may be obtained by addressing the Department.—E. S. G.

1,181. **Exhibiting Potatoes.** It seems to me unnecessary to exhibit so much as a peck of each variety of Potatoes. A large plate of each variety would generally be preferred.—E. S. G.

1,183 **Cantaloupe Melons.** Try the Emerald Gem, Surprise and Hackensack. Plant the seeds at Corn planting time or, if desired very early, two weeks earlier on inverted sods in the cold frame. In the latter case cover the soil in the cold frame with sods neatly cut about twelve inches square the grass side down. Then cut these sods into small pieces about four inches square and on each of these small pieces place three or four seeds. Then cover the whole with half an inch of fine earth. Keep well watered and cover with sash except on warm bright days. When the young plants begin to show the rough leaf, transplant on a wet day by picking the pieces of sod out carefully one by one and replanting each in the garden.—E. S. G.

1,195. **Spraying Apparatus.** Excellent apparatus for spraying are made by the Nixon Nozzle and Machine Co., of Dayton, Ohio, the Field Force Pump Co., of Lockport, N. Y., and Rumsey & Co., of Seneca Falls, N. Y My experience with sulphate of copper mixtures is that they corrode metal pumps rapidly, and if used at all in a pump the latter should be thoroughly washed with clean water when the work is completed.—E. S.G.

1,230. **Are Manure Hot-beds Dangerous?** Why should they? Certainly not as much as the manure heaps around barns and stables, and very much less so than the average water closet.

1,284. **Hellebore for Aphis.** This will be of little use. Sprinkle the affected plants with strong Tobacco tea, or fumigate with Tobacco stems, or still better, dust the plants with Tobacco dust. Hellebore, when applied for Currant worms and the like, is best applied in solution. Make a paste of a tablespoonful of powder and a little hot water, then dilute to a gallon and sprinkle or spray on the effected plants.

1,207. **Apples on Paradise Stock.** These are very satisfactory for testing varieties in an amateur way. The trees bear when very small, often not more than three feet tall and are extremely attractive when laden with fine fruit. Whether or not they could be made profitable I do not know.—E. S. Goff.

1,249. **Granadilla Vine.** Baron Von Mueller in his "Extra Tropical Plants" enumerates fourteen species of Passiflora, and says that they all furnish Granadilla fruits. The species inquired about by R. S. is probably Passiflora edulis, as that is quite commonly cultivated in South Florida and known as Granadilla.—W. C. Steele.

1,238. **Golden Beauty Plum.** This is a Texas variety said to be of great promise, a vigorous grower, profuse bearer, and the fruit of excellent quality. Trees are offered by T. V. Munson, Denison, Texas; G. Onderdonk, Mission Valley, Texas, and W. C. Steele, Switzerland, Fla.

1,171. **Propagation of the Oleander.** Propagation is readily effected by cuttings of the well ripened wood.—P.

1,173. **Protecting Cloth for Hot-beds.** This can be obtained from Peter Henderson & Co., 35 Cortlandt Street, New York, or J. C. Vaughan, Chicago, Ill.—C. E.

1,180. **Turnips.** I recommend White Strap Leaf Flat and Extra Early Milan for early; Red Top Strap Leaf and White Egg for late. Of the yellow varieties I prefer Yellow Globe for early, and the Yellow Stone for late winter use.—C.E.P.

1,181. **Exhibiting Potatoes.** You will have to be governed by the rules of the exhibition as to the manner of arranging. If the premium calls for a bushel or a peck the required quantity must be shown. Extensive collections are often exhibited in plates, some three or four specimens being placed on a plate.—Chas. E. P.

1,182. **Fertilizers.** No definite rule can be given as to the quantity of concentrated or commercial fertilizers to be applied to the acre as the amount varies according to the condition of the soil and the crops previously grown thereon. As a general rule, however, one-half a ton will be required on soils not impoverished.

1,176. **Industry Gooseberry** does not mildew here.—C. E. P.

1,190. **Wood Ashes.** Unleached pure hard wood ashes are unequalled as a fertilizer for grass lands or lawns and are worth about $20 per ton. When used on garden crops their result appears to be so variable that it is well to experiment on a small scale before purchasing heavily. —Chas. E. Parrell.

1,206. **Soap-suds.** An excellent way to utilize soap-suds is to use it for watering flowers or pour it upon the compost heap.

1,207. **Apples on French Paradise Stock.** They will not be satisfactory for any use.—P.

1,210. **Purple-leaved Beech.** I know of no reason why it should not succeed in Missouri.—C. E. P.

1,028. **Propagating Hydrangea Paniculata Grandiflora.** I was at Hoopes Bros. & Thomas, Westchester, Pa., some time ago and there saw some 20,000 plants of this shrub that had been struck last summer. They were raised from short cuttings of the young wood taken early in summer, and dibbled thickly but firmly into shallow flat boxes filled with bar (fine sea) sand. The boxes were then placed in sashless greenhouse that were shaded with close lath shadings, and kept moist. These cuttings are now all rooted and shall remain as they are in a cool greenhouse or shed over winter, and in spring be shaken out of their boxes and transplanted into the open nursery.—F.

1,246. **Hilborn Raspberry.** I find it superior to most others, and perfectly hardy here and further north.—T. P. H., *Talmadge, O.*

1,229. **Canning Sweet Corn.** Cut the Corn from the cob raw, pack in air-tight fruit jars until the juice runs over the top, screw on the top as tight as possible, but in a boiler of cold water and boil for two hours. Raise and tighten again and boil two hours more, then allow to cool in the same water. We have used this receipt for three years and never made a miss. Peas, Beans and Tomatoes may be canned in the same way, but in the case of Peas and Beans water must be added to fill the cans before boiling. The cans must be of the best, with good tops and new rubber bands. —J, J., Jr., *West Sand, N. Y.*

1,233. **Plan of Hen House.** I built a hen house two stories high; the basement has windows on the north and south sides and west end, the end coming out on top the ground. The walls have a good drain under them to carry off water, and a floor is laid a little from the ground. This makes a fine place for laying hens in the winter. Yet I prefer a hen house all above ground for all purposes.—Wm. B. Hoyt.

1,227. **Christmas Rose.** If you will place your plants in nicely prepared, deep, moderately enriched border in a sheltered spot and in partial shade you will have no difficulty in blooming it.

1,218. **Apple Trees from Seed.** Seedlings of all our improved cultivated fruits are liable to great variations. Apple seedlings may or may not retain the desirable qualities of their parents. In this case we do not even deal with probabilities, for all is uncertainty.

1,222. **Spent Hops.** Yes, they can be used for putting over the drainage in repotting plants. In preparing compost for potting mix with turfy loam from an old pasture, using one-third hops to two-thirds loam. The compost should be repeatedly turned, and used when about a year old.

1,232. **Grafting Wax.** The following recipe for making a grafting fluid is given by Farm and Fireside: Melt one pound of resin over a gentle fire, add to it one ounce of beef tallow, and stir it well. Take it from the fire, let it cool down a little, and then mix with it a teaspoonful of spirits of turpentine, and after that, about seven ounces of very strong alcohol (95 per cent). The alcohol cools it down so rapidly that it will be necessary to put it once more on the fire, stirring it constantly. Care must be taken to prevent the alcohol from being inflamed. To avoid it the best way is to remove the vessel from the fire when the lumps that may have been formed commence melting again. The melting must be continued until the whole is a homogenous mass, similar to honey. This liquid grafting wax is very cheap, easily prepared, and can be kept corked up in a wide-mouthed bottle, for at least six months unaltered. It is applied in as thin a coat as possible, by means of a flat piece of wood. Within a few days it will be as hard as a stone. It is not in the least affected by the severe cold of our winters, and it never softens or cracks when exposed to atmospheric changes.

1,217. **Mushroom Culture.** Excellent practical directions are to be found in "Practical Garden Points," recently published by James Vick, Rochester; price 25 cents. Peter Henderson's Gardening for Profit, price $1.50, also devotes a chapter to Mushroom growing, and the instructions given are plain and practical.

1,221. **Grape Rot.** I find that I can effectually stop it by means of carbolic acid. Try an ounce of it dissolved in five gallons of water, and sprayed over the fruit as soon as the rot appears. —C. E. P. [We would rather rely on preventive applications of the Bordeaux mixture sprayed on the vines before any discase appears.—Ed.]

1,230. **Preserving Seed Potatoes.** I have not removed sprouts from Potatoes for several years. Potatoes should be kept where it is perfectly dark, and the temperature down to between 38° and 45°. I have a deep cold cellar without light, and my Potatoes Aug. 1st do not have sprouts one inch long. The only thing to fear from the use of ice is excessive dampness.—Wm. B. Rhoby.

1,224. **Geraniums for Winter and Summer.** Geraniums that have been used for summer bloomers will not flower again until the late spring months. Geraniums for winter blooming should be grown specially for that purpose by keeping the flower buds nipped until August.

1224. **Geraniums for Winter and Summer.** It is expecting entirely too much of Geraniums or any plants to have them flower well the year round. For winter use therefore, grow the plants carefully through the previous summer, shifting as required, but pinch out all bloom as it appears in sight.

1236. **Grafting the Grape.** While almost any of the different methods in grafting might be employed the cion is most usually inserted in the root stock of the plant below the surface of the ground, tying with bass, and then covered with soil to exclude air and prevent drying. The work may be done in early fall or winter, but the cion must in some way be protected from frost. This is sometimes done by covering the cion with an inverted flower pot, and a sufficient layer of straw on top or merely with coarse manure. Fall or winter grafting is more generally practiced, and perhaps more suitable in the south, and spring grafting in the northern states. It is important that the operation should be performed very early, using cions that are perfectly dormant, but if neglected until there is danger of bleeding, it had better be delayed until the full development of the leaf and danger from such bleeding is past.—R. T.

1,237. **Bleeding After Pruning.** Our best Grape growers prefer fall pruning, but do not hesitate to prune in early spring when neglected until then and do not fear bleeding, as that is not regarded as especially injurious, and there seems to be no reason to greatly worry about it.—M. N. O.

1,226. **Pot-Grown Strawberry Plants.** Small thumb pots are generally used for potting plants. When the runners have started, select a convenient spot near the parent plant, plunge the pot into the ground up to the brim, and place the end of the runner where the young plant is forming upon the soil in center of pot, weighting it down by means of a little stone, clod, or a piece of wood, etc. When the plant has well rooted, take up the pot and you have the "pot grown" plant ready to transfer to the bed. Sufficient fruit, for all this trouble, as a rule is only obtained from early grown plants and with careful handling throughout.—T. R.

1,215. **Grafting Apples, Plums and Cherries.** You should procure a copy of Barry's Fruit Garden or Downing's Fruits of America. In either of these works you will find the information you desire.—C. E. P.

1,241. **Treatment of Cuttings.** Cuttings of the Grape, Currant and Gooseberry are generally taken off in the fall or winter, prepared for planting and two-thirds of their lower end buried in the ground until spring when they can be planted in rows on the shady side of a wall or fence in a deep, rich, loamy soil. You can place them in shallow boxes of clean sand early in March and place in a warm, moist situation in your greenhouse, where if given a gentle bottom heat they will root readily, and as soon as the weather becomes settled, can be planted out in nursery rows.—C. E. P.

1,242. **The Orris Root of Commerce.** Iris florentina is the Orris root of commerce.—C. E. P.

1,243. **Vitality of Pansies.** The seed retains vitality for about two years but will not germinate as rapidly as fresh. I know of no work on this subject.—C. E. P.

1,249. **Granadilla Vine.** Passiflora quadrangularis is its botanical name.—C. E. P.

1,252. **Rose Slug.** Dissolve one pound of whale oil soap in eight gallons of water and syringe the affected plants thoroughly every evening until the pests are destroyed.—C. E. P.

1,263. **Cucumbers for Pickles.** Plant late in June. The Pickles cut fresh from the vines are carefully and snugly packed in crates and shipped to the Pickle factories. Always handle them gently. To preserve them, pack in clean forty gallon casks, with one-half bushel of salt. The brine formed must entirely cover the Cucumbers, and it is always necessary to press them down with a stone placed upon a head fitting the cover. All Cucumbers allowed to float will soon rot. Another good way is to fill the casks with Cucumbers, shaking them in gently, and to pour a brine of one-half bushel of salt and fifteen gallons of water over them, holding them under the brine by a weighted cover.

1,247. **Napthaline as a Germicide.** The strongest vapors of this drug in hot-bed did not seem to be of much inconvenience to flea beetle and Potato beetle and for these toughs of the insect tribe at least naphthaline cannot be regarded as a preventive or remedy. As a germicide, however, it is highly spoken of by chemists, that it is worth a trial for Melon vine fungus, mildew, or Lettuce in forcing houses, perhaps even for Grape disease. Let us test it by all means.

1,250. **Thymo Cresol.** This English remedy, commonly named "cold water dip," and sent out by a Baltimore firm, has the appearance of tar, only somewhat more liquid, aud a smell resembling carbolic acid. I have used it in weak solution for Cabbage worms with the very best of success. A single application seems to free the plants entirely from worms and eggs, and to prevent in a measure even future attacks. It has no apparent effect upon flea beetles, Potato beetles, Squash beetles and such like members of the insect tribe.—T. R.

1,212 **Planting Blackberry Roots.** The root cuttings, when made in the fall, should be packed in boxes in sand, providing for drainage, and the boxes buried in the ground in a well drained spot. In spring take them up and scatter in furrows made same as for Potatoes, covering a few inches deep. This will make excellent root cutting plants by another season. Nurserymen often start their choice new varieties under glass, but this would hardly be profitable for the commoner sorts. I have also planted three inch cuttings of the roots for a permanent patch, in rows at the usual distance, placing two pieces of cutting in a hill, but the plantation will require one year more to come to full bearing than when rooted plants are used.

1,202. **Grape Vine Leaf Roller.** Go over the vines in August when the folded leaves are noticed and crush them with their occupants. A little care should be exercised else the active worm will slip out of the case, letting itself fall to the ground, and thus make good its escape. The second brood passes the winter in the chrysalis state, within the folded leaves, and may be destroyed by going over the vineyard, late in the season, gathering the folded leaves and burning them.—R.

1,230. **Repotting Chrysanthemums.** I learn with many others that where the last shift has been from the cutting into a 5½ inch pot, say, or a 4½ inch in the case of delicate growers, especially where the plants arrived without soil through the mail, it would be quite premature to move them into 7 or 8-inch pots in May. This applies especially to the newer introductions, which so many growers have been anxious to obtain. Here we have had a great downpour of rain, several inches, within the past week. I left my plants with a few exceptions in the greenhouse. Neighboring growers removed theirs under sheds or into frames. Where the drainage is good it is a doubtful question whether in the first week of May soft rain can or would do vigorous healthy plants any harm. I think a dwarfish, vigorous growth, and firm, well ripened wood, with leathery foliage, is best secured by a maximum of open air growth.—C. C. L.

1,211. **Liquid Putty.** For glazing sashes, Mr. Peter Henderson in "Gardening for Profit" recommends white lead in oil, just thin enough so the application can be made from an oil can in a thin line. Dry white sand is strewn over this, thus making a cement that soon hardens and stops all leakage.

1,190. **Seeds that Failed.** It is a common error with amateurs to sow seeds too deep, and to put plants and trees lower than a proper level in the ground. Nature sows seeds in a very different way to the jobbing gardener, who generally makes a drill deep enough for the footing of a wall, and plants a tree a foot or so deeper than it was before. Sow a few more seeds at once, in a shallow drill.

1,176. **Keeping Asparagus.** The best way to keep it for a day or two is to stand it upright in a jar or bowl with a few inches of water in full light This treatment keeps it fresh and straight. If laid on its side it is likely to turn up a little towards the light, and although this does not interfere with the cooking it often causes the breaking of the points, which is not pleasant.—Chas. L. Merrill.

1,218. **Summer-pinching of Trees, etc.** Where the branches are thinly disposed the growths not required for extension may be pinched as soon as they have made five or six leaves and before the whole of these are developed, the subsequent growths to be pinched at one leaf. When trees are much crowded early topping is calculated to aggravate the evil, and disbudding would be the most desirable. If good crops of fruit, regardless of the size and shape of trees, is the main object the branches cannot well be too thinly disposed. tben summer pinching will scarcely be needed and very little pruning at any time. Leaves should not be permitted where there is not space for their growth without crushing violently against each other.

1197. **Mint in the Garden.** This useful herb is by no means difficult to suit as regards aspect, and if the bed 'gets sunshine at any part of the day it ought to do well. The main thing to ensure a plentiful supply is to trausplant a few roots every year to entirely fresh soil, as it soon gets tired of one spot and will die out if confined to it. But nature itself helps it to do this as its roots keep pushing outwards on to fresh soil from the center, and in this way will travel over a large area in a few years. If the soil is heavy a plentiful supply of gritty soil or old mortar rubbish will help to make it more congenial to the roots, which are liable to rot away in winter if the soil is very wet.—E. H. Lamy.

1204. **Mulching Fruit Trees.** In order to derive the the full benefits from mulching, the manure should be put over the roots in May or early June. Then the virtues of the manure are generally washed down to the roots, and the moisture is retained in the soil to such an extent that should dry weather follow, the new wood, foliage, and fruit will become fully developed. Many do not attempt this until the atmosphere is excessively hot and the soil dust dry from the effects of a July sun.—C.C.L.

1208. **Toads our Friends.** I only wish I was near to you; I would gladly take them. You need not have any horror of them, as they are perfectly harmless. I have got four or five in my greenhouse and they are so tame I can do anytbing with them; they will feed from my hand. I may futher say they are the greatest friends the gardner has got, as they eat woodlice, slugs, and lots of other insects that so infest the greenhouse. I would not have one of mine hurt in any way if I knew it. I watched one the other day and saw him catch no less than five or six woodlice in about two mintes.—L.J,

1,23. **Cactus for Day Blooming.** Epiphyllum truncatum and its several varieties are among the most desirable as they flower freely during the winter months Of the spring and summer blooming varieties Phyllocactus phyllanthoides, P. ackermanii, Cereus flagelliformis, C. speciosissimus, are very desirable and easily grown species.—C. E. P.

How to Bud Roses.

The explicit directions for budding Roses, given in a recent number of Gardener's Magazine, London, can hardly fail to be welcome to a great many of our readers.

Budding is unquestionably the most important of the methods by which the multiplication of Roses can be effected. It is not sufficient to know that the soil should be rich, the water supply liberal, and the details of pruning properly carried out. The cultivator must make himself acquainted with the peculiarities of the stocks and endeavor to become proficient in working them, for it is only by raising at least a portion of the stock at home that he can hope to derive the fullest possible amount of enjoyment from his Roses or occupy a leading position at the exhibitions. It cannot be too widely known that the majority of the finest blooms annually staged at the public

exhibitions are cut from maiden plants, and generally speaking the advantage which the nurseryman usually has over the private grower is due to the large breadths at his command of plants raised from buds inserted in the summer previous.

There is yet another point of considerable importance. Frequent removals of Roses after they have been worked is not favorable either to longevity or vigorous growth. Therefore it is a decided advantage to plant the stocks where the trees or bushes are wanted, and then bud them and allow them to remain undisturbed. It is not always practicable to plant the Briers or Manettis in their permanent positions, when grown simply for the embellishment of the flower garden. The space may not be available at the time or there may be an objection to fill unoccupied beds and borders with subjects that will not at once commence to produce a display of flowers. Therefore in many instances the Rosarian is compelled to plant the stocks in a nursery bed and leave them undisturbed until they have been worked and had one season's growth. Even then the Rosarian who buds his own Roses will have an advantage over those who obtain their trees from a distance. He will be able to take advantage of the most favorable opportunities for transplanting as they will not be out of the ground when the work is properly done, for any length of time, the roots are not in any way injured by exposure to atmospheric influences. When the stocks have to be planted elsewhere than in the beds and borders of the pleasure grounds, the most suitable place for them is a spare quarter of the kitchen garden, as the thorough tillage it will have previously undergone will be favorable to the production of an abundance of fibrous roots and strong well-ripened wood.

The best period of the year in which to bud both Briers and Manettis is from the middle of the current month to the end of August, and the earlier the buds are inserted after the second week of June the better, provided the operation can be satisfactorily performed. Usually the stocks are in the best possible condition for entering the buds during July. The stocks will require some attention, and where there is a superabundance of shoots some must be removed. The proper course to take in the preparation of Brier stocks of all descriptions is to select at an early date the two most promising shoots near the top, and rub off all the others as they make their appearance. When the stock is rather weakly, one or two shoots in addition to those required for budding may be allowed to remain to assist in strengthening the stock. But, as a rule, two shoots only should be left. If the thinning of the shoots still remains to be done, considerable care will be necessary in reducing the number. To allow all to remain until the autumn will not be advisable, and the removal of any considerable proportion will probably so far check the flow of sap as to greatly interfere with entering the buds. Speaking generally, the best course will in these cases be to remove about one-half of the superfluous shoots now, and the remainder either when the buds have started and are growing freely, or early in the winter. The shoots selected for the reception of the buds should be wholly untouched by the knife, or be shortened just sufficiently to admit of the bud being inserted at the base without any great difficulty. In shortening the shoots for the purpose of expediting the work, it must not be forgotten that the more severely they are pruned the more likely is the flow of sap to be checked. When they are cut back rather hard, as is sometimes done under the impression that the vigor of the shoots is diverted to the buds entered upon them, it is frequently necessary to delay the operation of budding until the flow of sap has been so far restored by the production of secondary shoots that the bark will part readily from the wood.

The proper time for commencing to bud a

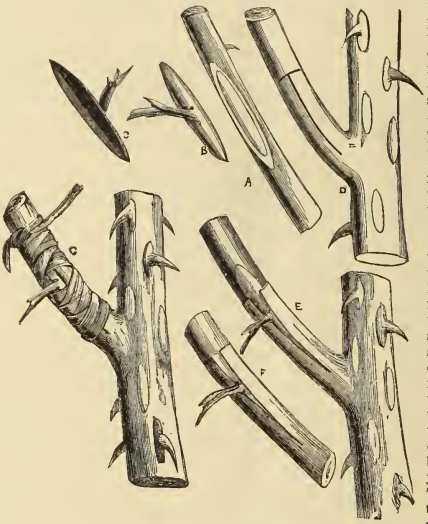


FIG. 1. HOW TO BUD ROSES.

Rose depends wholly upon the condition of the stocks, and it may be stated as a general rule that it is useless to attempt it unless when the bark parts freely from the wood. After rain this happens with more certainty, and if the weather is cloudy there will be less evaporation, and consequently a much better chance of success. Therefore, as far as practicable, choose dull weather —and if after a good soaking of rain so much the better—for it is essential to success that the bark of the bud and of the stock be brought into conjunction quickly, and at a time when there is plenty of sap in the latter. In bright, hot weather the operation should be performed early in the morning or in the evening; and when the bark does not part so readily as could be wished a thorough soaking of water in the afternoon will frequently cause the sap to rise sufficiently free during the night to admit of the buds being successfully entered in the morning or evening of the day following. To water Rose stocks on a large scale will in most cases be impracticable, but where there are two or three hundred only, it will not be a heavy task to well saturate the soil about their roots, and as the watering may make considerable difference in the result the labor should be willingly given.

The best heads of standards and the most shapely dwarf bushes are formed of one bud only, but to avoid losing a season two should be entered. The head of each Brier should, as a rule, be limited to two shoots each, and if both buds take, remove, at the spring pruning, the top one by a clean, slanting cut through the stock immediately above the lower shoot. If this is done the top of the Brier will heal over, and conditions being favorable, a healthy growth will follow. Frequently Briers decay half through where the Roses are united to them in consequence of the want of attention to the healing of the head of the stock. Everything being in readiness, cut as many scions as can be used in an hour or so, attach a label to each so that no mistake may arise, and stand them in a water-pot in which a little wet moss has been placed. As the scions are taken from the trees the leaves should be cut off immediately below the lowest pair of leaflets, as by thus reducing the evaporating surface the shoots do not so readily part with the moisture. This practice should certainly be adopted when the scions are obtained from a distance. Taking the shoot firmly in the hand, take off the bud with a small slice of bark and wood, as shown in the accompanying sketch at A. The bud, when it has been cut from the shoot and has had the leaf removed just below the leaflets, is represented at B. The wood being removed by the thumbnail we have the shield C consisting of the bark, the bud, and a small portion of the leaf stalk.

To enter the bud make what is technically known as a T incision at the base of the shoot as shown at D. It is important in making the cross incision at the top not to cut into the wood because of the liability of the shoot to be snapped off by the wind at that point where a comparatively deep cut is made. Because of this it is becoming the custom to make the longitudinal incision only. But the T incision is the best adapted to the requirements of beginners, because of the facility with which the bud can be inserted, and a neat junction effected at the top line. The incision having been made and the bud prepared, the bark is slightly raised by the handle of the budding knife, and the shield thrust into its place as at E. Here it will be seen the top of the shield overlaps the top of the incision, but this overlapping must not be allowed to continue. Consequently the top of the shield must be neatly cut to fit the top of the T incision as at F, where we see the insertion of the bud completed. It now remains to be bound up with cotton wool or bast. Either may be used with success, but bast is perhaps the best. In using bast select soft strips, and keep them in a can of water ready for use. It is essential to bind with care, and allow the leafstalk with the bud at the base to peep out as at G, so that when the latter starts into growth it will not meet with any check to its full development. It remains to be said that buds on Manettis and Dwarf Briers from seed and cuttings should be entered as close to the ground line as possible, that when they are replanted the union may be below the surface without the stocks being buried to any considerable depth. (The young plant as it should appear, is shown at the right of the smaller illustration, while the plant shown at the left is budded wrongly and worthless.)

In about six weeks after the insertion of the buds carefully examine the heads, and if the bud is swelling and the binding has the appearance of being rather tight, loosen the ligature. In some cases it may be advisable to remove the ligature and rebind the bud. To avoid the risk of having the buds blow out, the new growth should receive support immediately the shoot is of sufficient length to be influenced by the wind. The best way of supporting them is to tie a stiff stick, about a third of an inch in diameter, to the head of the stock and secure the young growth to it as it rises. The sticks should be long enough to be from fifteen to eighteen inches above the head of the stock when securely fixed to it.

THE COMPLETE GARDEN.

XXVI.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page 193*)

CUCUMBER (class C). It is easy enough to grow Cucumbers in plenty when you have rich soil, and can manage to keep off the yellow-striped bug, and the Melon vine disease. This task calls for the means and remedies mentioned under "Melon," and of which planting in an altogether new locality is the surest. Prepare the soil thoroughly by plowing and harrowing, then mark off furrows from 4 to 6 feet apart each way, according to vigor of variety, and put a few shovelfuls of well-rotted compost into each intersection. Mix this thoroughly with the soil, making a low flat hill, upon which drop the seed and cover lightly. For salads and general summer use, plant as soon as the ground has become warm. The usual time to plant for pickles is latter part of June, and even July will do. Keep the ground well cultivated, the hills hoed up, and all free from weeds until the vines cover the ground. The fruit must be picked regularly and clean every day or two, as the productiveness of the vines is greatly impared by every specimen left on them to ripen its seed.

Early Russian is the earliest, and needs only 4 feet square for each hill. The fruit is small, but produced in pairs in greatest abundance, and makes nice small pickles. Early Cluster, Green, Prolific, and Nichols' Medium Green can be recommended for second early, and especially for pickles, and Long Green, Boston Pickling, White Spine, etc., are very popular sorts for Cucumbers, and also for larger pickles. Tailby's Hybrid is excellent for general family use. For forcing purposes under glass Early Frame is a favorite, but Long Green is also much grown. The West India Gherkin or Burr Cucumber (see illustration) is a species distinct from the common Cucumber; fruit from 2 to 3 inches long, and much esteemed for pickling material. The plant is a strong grower, and the hills should be 5 feet apart each way. Usually the cultivation of Cucumbers is profitable only when raised in the vicinity of large cities, or where a local demand exists, while pickles can sometimes be shipped quite a distance to market, or to pickle factories with fair profits. It is always safest, however, to grow the crop under contract with the buyer at a stipulated price, unless a home demand is assured.

DANDELION (class F). A favorite plant for spring greens, and valuable as a spring tonic. The wild sort, so common in fields and meadows, is used quite largely, but recent improvements by selection of seed from choice plants, have led to their cultivation for home use and market.

Sow seed as early as the ground can be got in order, in drills one foot apart, thinning to a few inches apart. Being perfectly hardy, it only needs the care usually required for other close-planted vegetables. The crop is ready for use in fall or early winter, and if left, will give an abundance of greens in early spring following. Sometimes the plants are blanched, by gathering the leaves up together and placing a large inverted flower pot over each plant. Thus handled it affords a salad not unlike Curled Endive, but coming earlier. Improved varieties are the Moss-leaved, the Thick-leaved or the Cabbaging, the Large-leaved now generally grown, and Very Early, shown annexed.

Fig. 2.
Rose budded too high.

Fig. 3.
Rose budded right.

DILL (class F). Much used by the Germans, especially as flavoring in the preparation of their "Dill" or "Sour Cucumber" pickles. All parts of the plant have a flavor and scent like that of Fennel and Mint combined. Sow in drills one foot apart. It is hardy and needs but little care, and generally will reproduce itself freely from seed shed by the plants the season before.

EGG PLANT (class C). For starting the seed of this half-tropical plant, a sharp bottom heat is needed, and after this has subsided, the young plants should be pricked out into another freshly-made hot bed, as they will not thrive in heat only just sufficient for Tomatoes. Give each plant plenty of room. An empty Tomato can, with a hole punched through the bottom for drainage, seems to suit the Egg plant exactly. Aim to have the plants early and large; when the soil has become thoroughly warmed through in spring, transplant in very rich ground in rows three feet apart, and two feet apart in the row. Give plenty of fertilizer, and clean and frequent cultivation. Its most formidable enemy is the Potato beetle, and this is so fond of the foliage, that in many localities it is often next to impossible to save the plants from utter destruction in spite of all poisonous applications. New York Improved is the favorite for market, on account of the large size of fruit. Black Pekin is also much grown. Early Long Purple, shown in illustration, grows six to eight inches long, and two to three in diameter. It is somewhat earlier, and suitable for culture at the north. The newly introduced—in reality very old—"Tomato Egg plant," of which the Potato bugs seem to be especially fond, so that they eat leaves; stalks and fruit, leaving only the seeds, is in its present form without practical value, and only interesting as a curiosity.

ENDIVE (class F). This is much esteemed as a salad, especially for fall and winter use, and we find it quite plentifully in city markets at that time. Sow in one foot drills, thinning to one foot apart, and when the plant has attained its full size, blanch it by gathering up the leaves and tying them by their tips in cone shape. In from three to six weeks it will be nicely blanched and fit for table. Green Curled is the variety generally planted by market gardeners. French Moss Curled is particularly handsome. White Curled must be used when young.

FENNEL (class F). The leaves are used for fish, sauce, and for garnishing. Sow seed in drills, in early spring, and give cultivation same as other plants.

GARLIC (class F). This is grown similar to Onions from setts. Plant them four inches apart in one foot drills early in the season, and otherwise treat like Onions.

HORSE-RADISH (class D). Delights in rich, deep, moist soil, and is generally grown as a second crop following early Beets, Radishes, Peas, or other early vegetables. Manure the ground well, and dig it deep. Sets are pieces of straight smooth root, six or eight inches long and of about pencil thickness, cut square at lower and slanting at upper end; and these are planted one inch and a quarter apart, by simply dropping them in holes made deeply with dibber or crowbar, and pressing the soil back against them with the same implement. The crop is dug and marketed in fall after being planted, but the plants make larger and better roots if left in the ground for another season.

KALE (class C). See Borecole.

KOHL RABI (class E). Where much trouble from the black flea beetle is expected, seed had better be sown in a frame where the young plants can easily be protected, and transplanted in the open ground when large enough. Otherwise seed can be sown in 1½ foot drills, like Turnip seed, and thinned to 8 or 9 inches apart in the rows. Give common good cultivation. It is a vegetable intermediate between Cabbage and Turnip, partaking somewhat of the flavor of both. Though liked and freely used by the Germans, it has not come much in use and favor with native-born Americans.

Dandelion: Very Early.

LAVENDER (class F). A popular, aromatic, perennial herb, growing about 2½ feet high with numerous stems. The plant delights in a light calcareous soil, and is often grown as an edging to beds of other plants. Can also be propagated by division of clumps or from cuttings. Sow seeds in early spring in drills one foot apart, and give common good cultivation.

LEEK (class F). Very hardy and easily cultivated, but succeeds best in light, well-enriched soil. Sow seed in one foot drills as soon as ground can be got in proper order, covering seed about ½ inch deep. When the plants have grown 6 or 8 inches high, they may be transplanted 8 or 10 inches apart in one-foot rows, and set as deep as possible, in order to blanch the neck and make the product more attractive to the eye. American Flag is the favorite market sort.

LETTUCE (class F). One of the most important crops of the market gardener, both for forcing and out-door culture. It is grown in hot-beds and forcing houses all through the winter and early spring. For earliest out-door culture, the plants are started during the fall, and wintered in cold frames until the ground thaws out in spring. They are then set in well-prepared and very rich soil in rows one foot apart and 6 or 7 inches apart in the row. Frequent stirring of the soil, and occasional light dressings of nitrate of soda promote rapid development, large size, and delicious crispness. In the home garden seed is generally sown as soon as the ground is in proper order, in rows one foot apart, and the plants must be thinned to 6 or 8 inches. This thinning may be done gradually, and the thinnings used as leaf salad. The remaining plants generally form full heads. An eventual surplus in the home garden can be utilized with profit by taking a daily ration to the fowls when kept in confinement. Such treatment increases egg production. Hundreds of most excellent varieties have been introduced in recent years. Of all these Boston Market is yet the best and most reliable for forcing, although Tennisball is also used for early spring planting. For later use we have almost perfect sorts, Deacon, California Butter, Henderson's New York, and especially in Salamander, all of which give very large and solid heads and stand the heat pretty well. The Cos varieties are of a conical form; and to be had in perfection, should have the

tips of leaves tied together to insure blanching. Paris White Cos is as good as any, but none of them are grown to any great extent by American gardeners.

MARJORAM (Sweet, class F). The leaves and ends of shoots are used for seasoning. Sow in warm soil in rows one foot apart and give ordinary cultivation.

Egg Plant: Early Long Purple.

MARTYNIA (class D). An annual of the easiest possible culture, often grown to furnish pickle material. The pods which while very young are used for this purpose, are of singular shape, and have procured for it the popular name "Unicorn plant" in England. Plant the seed when ground has become warm, in rows two feet apart, and thin to about the same distance in the row. Plenty of seedlings generally spring up the year following from seeds in pods that were left on the old plants to ripen. The illustration shows single pod, and branch with pods.

MELON (class D). To come to perfection, Melons need soil with considerable sand in its make-up, a warm location, and sunny exposure. Watermelons often do very well on soil of medium fertility, especially if planted after Clover, but for Muskmelons the land can hardly be made too rich. No fertilizer equals well-decomposed stable manure for the purpose, although it can generally be supplemented to advantage with wood ashes or a good complete commercial fertilizer. The following practice can be safely adopted for the musk varieties: Plow under a good coat of stable manure, mark off rows from 5 to 8 feet apart each way, according to vigor of variety to be planted, and at each intersection mix a quantity (several handfuls or even more) of wood ashes and one handful of some good commercial fertilizer thoroughly into the soil and in this drop a few seeds. Cover them lightly, and firm the soil over them with the back of the hoe. Rows may also be made of uniform width, say 8 feet, for varieties of varying vigor, and the "hills" prepared at greater or smaller distance in the rows to suit the variety planted.

The enemies to be dreaded are the yellow striped Cucumber beetle and the Melon vine fungus. The former can be kept in check by keeping the young plants dusted freely with plaster, or air-slacked lime, and by pushing the plants to rapid growth. The Melon-vine fungus has to be fought or prevented by crop rotation, or perhaps by preventive applications of sulphate of copper, or sulphate of iron.

Cultivation is an easy matter since the hills are so far apart, but frequent hoeings should be given, always drawing the soil up toward and around the plants. Cultivate freely, and keep all weeds down, until the vines cover the ground. Applications of washing suds, fresh and hot from the washhouse or kitchen, during dry weather are always appreciated by the plants.

Hackensack is the most popular variety for market, and Early Nutmeg, Casaba, Bay View, are much grown. Montreal Market is a large variety much esteemed for forcing at the north. In the newer Emerald Gem we have a variety of exquisite quality but rather small in size, and moderately prolific. It is really the "gem" of the Melons, and can be grown in hills as close as four feet apart each way.

Watermelons are grown in a similar way, except that they are more partial to sandy soil but can get along with smaller rations of manure. The hills should be from 8 to 10 feet apart each way, and cultivation given same as Musk varieties. Of the many varieties grown for market, Mountain Sweet, Ice Rind and Ice Cream are quite popular, and in fact, there are a great many other good varieties. For the home garden the round, medium-sized Volga has hardly an equal in crispness, delicacy of flavor, productiveness and general desirability.

MINT (class F). The leaves and ends of shoots are used for seasoning. It is a perfectly hardy perennial, preferring cool, moist soil, and is generally propagated by division of the creeping root-stock. Plant in early spring one foot apart.

MUSTARD (class F). Both the white and brown variety, which are quick growing annuals, the latter often a troublesome weed, are much esteemed for greens especially in some parts of the South, and the young leaves are sometimes used for salad. A large curled-leaved variety is very superior for either purpose, but seems to be only little known. Sow seeds in early spring rather thickly in one-foot rows, and give the usual cultivation. Guard against the flee beetle.

Some Giant Trees of America.

W. A. ENGARDE, PHILADELPHIA, PA.

Information relative to the forestry of the world, and particularly that concerning the woodland giants of this country, will always prove valuable and interesting reading to those interested in facts associated with the wonders of the vegetable kingdom.

Among the conspicuous representatives of American trees is the celebrated Northbrook Chestnut tree, which grows in Chester County, Pennsylvania. It is eight feet in diameter, and is still green, vigorous, and thus in distinguished contrast with the famous, but somewhat smaller, Chestnut trees at Cedar Croft, in the same county. Recently an illustration has been given of the monstrous Chestnut on Mount Ætna, which is sixty feet around. This venerable monster is now reduced to a mere shell, but in days of yore was the scene of many important gatherings of royalty.

Many magnificent and colossal White Oak trees are growing in different parts of the United States. Prominent among these are three: first, that at Mantua, Monmouth County, New Jersey, which is more than six feet through; second, that at Berkeley, in the same state, which is about eight feet through; and lastly, the mammoth tree known as the "Preaching Oak," which stands near the James River, back of Harrison's Landing, Virginia.

The large Cypress in Bartram's garden, Philadelphia, as well as the large ones that grow in the swamps of the Pearl River, are notable trees. The famous Montezuma or Cortez Cypress, now in the last stage of decay, illustrates the size, age and whole character of the largest of the Mexican Cypresses. This tree is rich in historical associations. It was standing at the period of the conquest of Mexico, and near it some of the most tragic events of that great struggle occurred.

The old Monteray Cypress, in California, is probably one of the oldest trees in North America, and stands among the naked granite rocks like a sentinel watching the advancing waves of the Pacific Ocean.

The Zephyr Flower.

MRS. J. S. B. THOMSON, SPARTANBURG CO., S. C.

Until recently the Zephyranthes were classed among Amaryllis; now they are generally known as Zephyranthes or Zephyr Flowers, and no name being more appropriate. Best known among them are Zephyranthes rosea, Atamasco and Treatia, catalogued usually as "Fairy Lilies." The flower of Z. rosea is a delicate, lovely pink; Z. Atamasco a pure pearly white, with delicate green throat; Z. Treatia, a native of Florida, has flowers same color as Z. Atamasco, but otherwise inferior to it. Z. Atamasco is a native of the country from Virginia, south to Florida and Texas.

In Z. candida we have another very desirable variety with flowers entirely distinct in shape and of two colors—white and rose, and with Rush-like leaves. As a companion to these I have a variety of a deep yellow with brown throat, known to botanists as Habranthus Andersonii, but classed recently among the Zephyranthes.

The bulbs are all hardy south of Virginia, half-hardy north. All are lovely and easily forced into bloom, if desired in greenhouse. They are planted here in the south as border plants, require little room, and are easily cared for, yet no flower I know gives a more ethereal grace, to a collection than these delicate Lily-like Zephyr flowers.

SOUTHERN DEWBERRY. A seedling variety of this found growing originally in the corner of an old cornfield in Florida, was mentioned by Mr. P. W. Reasoner of that State as having proved very productive of delicious fruit, better in flavor than any Blackberry. Mr. Reasoner considered this Dewberry, which ripens in Florida about the middle of April, and bears for three weeks, more profitable than the Strawberry in that section.

INSECTS AGAINST INSECTS. The work of breeding and introducing insects to destroy insects goes merrily on. Though the efforts of Prof. Riley of the Department of Agriculture, an Australian parasite of the cottony scale so destructive in California Orange groves, has been introduced by the thousands, and the results seem to justify the highest expectations of the promoters of this enterprise. Perhaps it will not be many years, before insect parasites and insect diseases will be the most potent means at the grower's command of fighting the bugs, grubs and other insects that threaten to destroy his crops.

AMPELOPSIS ROYALII. I have been acquainted with this and studied its habits for many years. It is as yet but little known, and I have found out its proper name only recently. When young it seems at first to be identical with A. Veitchii, but after three or four years shows its great superiority, having large leaves and bearing more berries. The plant which I have had under

Martynia, or Unicorn Plant.

observation has been growing for the past eight or ten years upon the cottage walls of one of my acquaintances, a plant of A. royalii on one side, one of A. Veitchii on the other. At the blooming and seeding season the greatest difference is noticeable, A. Veitchii bearing few seeds and sparsely scattered over the vines, while A. royalii bears them in greatest profusion and in great clusters resembling currants. In gathering the seed the vine is so vigorous that branches eight to ten inches long can easily be spared from it, whilst it requires patience to gather seed of A. Veitchii. The leaf is of the same shape as that of A. Veitchii. A. quinquefolia, a native of the south, has five lobes and also climbs differently from the other two varieties.

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. JULY, 1889. No. 10.

July.

July—for you the songs are sung
By birds the leafy trees among;
With merry carolings they awake
The meadows at the morning's break,
And through the day the lisping breeze
Is woven with their tree-top glees.
For you a fragrant incense burns
Within the garden's blossom-urns
Which tempt the bees to hasten home
With honey for their honey-comb.
The river like a looking-glass
Reflects the fleecy clouds that pass,
Until it makes us almost doubt
If earth and sky arn't changed about.
July—for you, in silence deep
The world seems fallen fast asleep.
—*F. D. Sherman.*

THE PLANTING SEASON in the garden don't end yet—not until November.

THE POTATO BEETLE is said certaiuly to be on the decrease in the far west.

JULY PLANTED GLADIOLUS. So good an authority as C. L. Allen says in the Rural New Yorker that to secure the full measure of beauty in the Gladiolus it should be planted during the first half of July.

COTTONWOOD POPLAR. The west is at last learning the true worth of the Cottonwood Poplar tree which has been so extensively planted in city and country of that region, because of its rapid growth. At the recent nurserymen's convention one intelligent delegate earnestly discouraged its planting because of its destructiveness to other growths and of its then dying early. He said it is a murderer, killing every other growth by absorbing moisture and then it commits suicide.

THE SEEDSMEN. About 50 members of the Seed Trade Association met in annual convention at Washington on the 11th and 12th insts. Officers for the ensuing year were elected as follows: President, H. W. Johnson, Philadelphia; Vice-President, J. C. Vaughan, Chicago; Secretary and Treasurer, Albert M. McCullough, Cincinnati; Assistant Secretary, Frank T. Emerson, Omaha; Executive Committee: John Allan, Picton, Ont.; Wm. Meggat, Wethersfield, Conn.; John Fottler, Jr., Bostou; S. F. Leonard, Chicago; H. W. Wood, Richmond, Va.

THAT SUGAR TRUST. Fruit growers keenly feel during the canning season the monstrous grip of the infamous sugar trust. Granulated sugar that two years ago could be bought of nearly all retailers at six cents a pound can not now be had short of about nine cents a pound. The difference between these two figures goes into the pockets of the owners of the great sugar trust that was formed in October, 1887. They secured absolute control of the market, and have advanced prices to suit themselves. Sugar cannot advauce much farther, for now the price is near a figure that would admit of profitable importions. It is a cousipiracy against the people that must be put dowu. To do this two ways are opeu, one is the rigid and prompt application of the laws against conspiracies, the other the repeal of import duties on sugar until such a time as the trust may feel the effects of importation. In any event, come the remedy as quickly as possible, no relief will be felt duriug the present year.

DAMAGE BY FROST AND FLOOD. It will be some time before we begin to realize the full extent of the damage done to this year's fruit and other crops, not to mention the apalling loss of life and property by the May frosts and floods. Over large areas fruit growers are bewailing the almost complete loss of promising Apple and Grape crops by the frost of May 29th. Fortunately the great diversity of soil and climates of the States almost excludes the possibility of such a calamity becoming universal. We shall have some fruit, but for once no reason to complain of over-production. The floods also have done considerable damage to horticulture in some memorable instances. We are privileged to make a few extracts of a private letter written by Mr. Harry Chaapel, seedsman and florist, of Williamsport, Pa., to one of our acquaintances. "On June 1st we were completely flooded—4½ feet of water in office, 6 in greenhouses and store, and still more in seed store. Seeds all lost, plants rather muddy. My house stood nobly in water more than a day and night. The water came less hurriedly than the Johnstown flood. No glass in house lost. Over 200 hot-bed sashes lost and broken. To-day—a week after the flood—we are trying to get our stores open to do business. I am far from discouraged, as my loss compared to that of some is small. The entire business portion of the town was in water five feet or more, and our large dry goods, grocery, shoe and other stores present a pitiful sight."

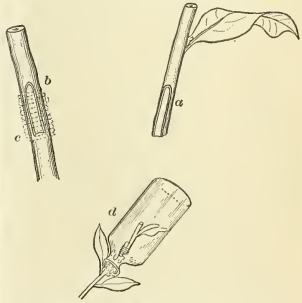
THE FLORISTS' CONVENTION. Buffalo's location so nearly midway between the "East and West," and its nearness to Canada, should render the coming meeting August 20-22, the most largely attended convention of the Society ever held. Our local organization is not so strong as that of New York, Philadelphia or Chicago, hence the local attendance will not equal that of some former meetings, but this should be more than offset by the fact that 22 railroads terminate at Buffalo, giving quick, cheap and direct communication from all sections where floriculture has made the greatest advances. That Niagara Falls is a suburb of Buffalo, should also draw many florists here who might feel that they could not spare the time and means for a similar trip elsewhere. On another page we point out various other inducements which should lead to a large attendance. All those railroads that are represented in the Trunk Line Passenger Committee, the New England Passenger Committee, the Central Traffic Association and the Southern Association, offer a rate of 1½ fare on the certificate plan to visitors. Tickets will be good for three days before opening and three days after close of convention. Delegates will pay full fare going, getting from their ticket agent at starting point a certificate stating this fact, and having obtained the signature of the Secretary of the Association at the meeting to this certificate, they will be entitled to return ticket at ⅓ fare. For the convenience of the visiting florists we offer herewith a list of the hotels of Buffalo, from which special rates have been secured for couvention delegates: Tifft House (headquarters of the Society), Tifft House Block, $3.00 per day; Iroquois, Eagle and Main, $3.50 $4.00 per day; The Niagara, Porter avenue and Seventh street, $3.50-4.50 per day; The Genesee, Genesee corner Main, $3.00-3.50 per day; Mansion House, Exchange street corner Main, $3.00 per day; Stafford House, Washington street corner Carroll, $2.00 per day; Tuckers's Hotel, Exchange and Michigan streets, $2.00 per day; United States Hotel, Terrace corner Pearl street, $1.50-2.00 per day; Eagle House, Washington corner Eagle, $2.00 per day. Gruener's Hotel (German), 20 East Huron street, $2.00 per day; Southern Hotel, Michigan and Seneca streets, $1.50 per day; St. Johns House, 39 East Swan street, $1.50 per day; Brunswick House, Exchange street corner Washington street, $1.50 per day; Fillmore House, Michigan and Carroll streets, $1.50 per day. Applications for rooms may be made direct to the hotels, or of Thomas Clayton, Chairman Hotel Committee, 90 Richmond avenue, Buffalo, N. Y. Visitors are invited to have their mail matter addressed to themselves, POPULAR GARDENING office, 202 Main street, for the convention season.

Cornering the Cabbage Maggot

D. M. DUNNING, CAYUGA CO., N. Y.

I believe that I have found a remedy for the Cabbage Maggot. On May 20th, I noticed that an acre of early Cabbage and about ¼ acre of early Cauliflower were lagging in growth in spite of favorable weather and plenty of rain, and on examining at least twenty plants by taking them up entire, I found their stems below ground entirely encased in maggots and in some cases the ball of earth at the roots was alive with them—a nasty, pasty mess.

After consultation with the gardener in charge we decided to try an application of lime and liquid manure, having plenty of the latter on hand. We haul liquid manure in a tank holding about 120 gallons on a two wheel cart made for this purpose. Next morning we procured ten bushels of fresh burned lime and with about 100 gallons of the liquid in the tank, put in five pecks of



Grafting the Lemon and Orange. *See next page.*

lime and this was thoroughly stirred for some ten minutes, and then drawn off from the bottom of the tank into common watering cans from which the sprinklers were removed. A pint of the liquid was poured around each plant, using in all about 1,000 gallons and the 10 bushels of quick lime. On a portion of the patch fresh gas lime was used in place of the quick lime.

On the 27th of May a careful examination of at least a dozen plants was made by digging them up entire. Where the quick lime was used not a live maggot could in any case be found. What astonished me most was the rapidity with which the plants had made new roots, some of them in places being as fine as silk fiber and four to six inches long, and in other places looking more like a web of mould than plant roots, yet strong enough to hold quite a weight of earth attached to them, showing how rapidly nature will repair injuries when given a good chance.

Where the gas lime was used the effect was not so good, there being a few live maggots found under the clump of roots, and many of the plants were undoubtedly injured as only about one half of this portion were saved, although subsequently treated with the quick lime. On the portiou where the quick lime only was used, not one plant in fifty is missing. The average size of the plant at the time was about the size of a man's hand or larger, and June

6th they were fully three times as large and growing vigorously. I think the above application combines the two necessary features of a remedy in this case, viz: something that will kill the maggots, and at the same time stimulate the plants to a new growth of root. The lime destroys the worms and does not seem to injure the plants in the least, while the manure water keeps the ground moist and cool and helps the plants to get started again. Strong lime water alone, no doubt can be made successful, and if necessary the plants may be stimulated with artificial fertilizer in solution. I think the eggs are often laid on plants in the seed bed, and another year shall apply strong lime water to the plants when transplanting and also make earlier examinations of the plants in the field.

Grafting the Orange and Lemon.

Where is the window gardener who has not many times wished to possess a grafted Orange or Lemon tree? A question put to every commercial florist many times every year, is "can you graft my Lemon or Orange tree?" Now this operation of grafting the members of the *Citrus* family is a very simple one provided certain conditions are observed, and we purpose in the present article to to tell how it may be successfully done by the amateur.

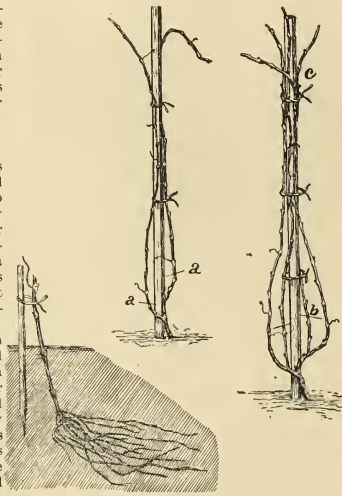
First as to the stock, the "wild" Lemon to be operated upon. Both the Orange and Lemon are generally grafted or budded on the Lemon stock. Choose perfect seeds or pips from common Lemons, dry them well and sow in light sandy soil in a shallow box. When the seedlings are several inches high,set them separately into small pots using a light rich fibrous earth. Were they to be grown on a large scale it would be equally safe to set them into rich light garden soil instead of potting.

Two of the requisites in successful Citrus grafting are warm weather and protection of the graft from the air. During July and August is the preferable season. The stocks should be the size of a pencil or nearly that. The bud or graft may be procured from any thrifty tree of an improved variety, which at the time has half ripened wood. Such a section of the wood should be taken as has plump eyes. The veneer method of grafting shown in our illustration is the best.

Lemon Tree in Pot.

The graft is prepared as indicated at *a* by cutting it off nearly square into a slight slope away from the leaf side. Then a shaving is taken off as shown, cutting smoothly and a little below the bark. The stock is cut as at *b* first with a crosswise cut, then with one lengthways, from above down to the first cut and to match in shape with the cut on the graft. The cut surfaces of graft and stock are then brought together and tied with some firm soft material as indicated by *c* in illustration.

After the above details have been attended to, shorten the stock back to have one leaf remaining above the point of union, (our engraving shows none) and smear the grafted point over with soft clay. The next step is to provide for keeping the graft clear from air during the time of the union. This is shown at *d*. A small jar or a wide-mouthed bottle is placed over the graft, and its mouth around the shoot is packed closely with moss, cotton, or soft paper. The plant should at the same time be shaded, but no place either under glass or within can be too warm for it at this stage. When the graft has taken, which may be known by its showing signs of growth, gradually harden it off by removing the material from the mouth of the bottle tor a few hours daily, increasing gradually each time until it is hardened.



Culture of the Grape. First, Second, and Third Year.

Lemons may also be budded during the summer months in the same way as Peach trees, but as trees of better form and also earlier are secured by grafting, this course is the preferable one. All trees of the Citrus family should be freely supplied with water while in a growiug state. The pots should be kept well drained with pot shreds or the like in the bottoms. As the balls of earth become matted with roots the plants should be shifted into larger sized pots.

It may not be generally kuown how to distinguish between the young plants of the Lemon and the Orange. The leaves of the Lemon as shown in our second engraving usually have a plain, or nearly so,leaf stalk, while those of the Orange have what appears like an extension ot the leat-blade downward in the form of a small wing on each side of the stalk. Some botanists regard this peculiar form of leaf as indicating a reduced compound leaf.

CULTURE OF THE GRAPE—SECOND PAPER.

Planting, Pruning, and Training the Vine.

BY DR. J. STAYMAN, LEAVENWORTH CO., KANSAS.

In pruning we must observe nature, and follow her precepts. A tree grows upright and supports itself, while a vine trails and needs a support. The one may bear fruit on old wood and spurs, but the other only bears from new wood which must be annually renewed. We find vines trailing on a tree, but we also see them trailing on low brush, and bearing fully as well, if not better. This seems to establish the principle (which we think cannot be successfully controverted) that it is as natural for a grape vine to trail on a low support as it is to climb high up into space.

The best system of pruning and training the vine is that which is in harmony with the principles of nature, and in trying to make it intelligible, we will commence with the planting of the vine and give the progressive steps.

The ground should be thoroughly ploughed and pulverized about eighteen or twenty-four inches deep, and on steep hill sides, even deeper. Then lay off the ground on gentle slopes for strong growing varieties as the Concord and Ives 8 feet by 8, and on steep hill sides and for slow growing varieties as the Delaware and Jessica 6 feet by 6 and set short stakes for each vine. Procure good, strong, well-rooted one-year-old vines, shorten-in their roots to about twelve inches long, dip them in water and keep moist by either wrapping in a sack or placing them in a basket with damp moss.

Now let a person go in advance and dig out the holes for planting, about eighteen inches long, twelve wide, and eighteen deep on the lower side of the stakes, and close to them without removing them. If the ground is level always open the hole on the same side of the stake and with the rows. Let another person follow immediately after with the damp vines, and plant them in the fresh soil by spreading out all the roots regularly on the same side from the stakes, then fill in good strong soil amongst the roots and pack it tight, by geutly tramping the earth if not too moist. When finished, the stem should be close to the stake with two buds above the ground, as may be seen iu the left cut. If the work is done in the fall which is the best time for planting in Kansas, mound up the earth over the top of the vines and remove it early in the spring before the buds start. Stakes should now be procured about five feet long and about one inch and a half in diameter, which will do to train the vines on the first two years. Some persons let their vines trail on the ground the first year, but this is a slovenly practice and costs more in the end, for your trellis must be erected one year sooner, or you will have to procure stakes the second year.

If your vines are strong train up two canes the first year (tie with Willow, straw, etc., cut up in suitable length). Your vines will grow more stocky than if one cane only had been trained up.

Keep the ground well cultivated and clear of weeds throughout the season; you may, however, plant between the rows, Strawberries, Tomatoes, Turnips, and light hoed crops. Raise no layers from your vines as they weaken your plant, except to replace a missing vine close by. In the first fall after planting the vines will appear as in the center with two canes. You may prune them in tall or spring to two spurs of two buds each.

The second year train up four canes from the two spurs as shown to the right. If we were to train up but two canes as generally recommended they would grow about ten or twelve feet long, and concentrate too much growth on the top of the vine, which would have to be cut away. Moreover they would be in danger of being injured by high winds etc., but if we train four canes they will each be shorter, and shorter-jointed, consequently there will be more strength concentrated in the roots, stock and spurs.

Whatever gives an undue length of growth without corresponding stockiness adds succulence to the growth of both roots and

stock. This may be verified by the long slender plants, being deficient in strength and hardiness as the leaves are thinner and thrown farther apart. This is a very important principle in Grape training.

Notes from the Popular Gardening Grounds at La Salle-on-the-Niagara.

A Plan of the Grounds. If the reader must very carefully use his eyes in order to comprehend the features of the plan which we take pleasure in presenting this month, it is because the bringing of the many details of our 13 acres into the length of a page requires considerable minuteness of parts. The plan is an accurate one of the POPULAR GARDENING grounds reduced to a scale of about 10 feet to 1-16 inch, and as such we believe it to be worthy of some study by our readers who take an interest in the work being prosecuted on what some term "our subscribers' Central Experiment Farm." The dark portion represents these grounds, the lighter parts the neighboring orchards and gardens, which to the exteut of thousands of acres, almost completely hem in the farm under consideration.

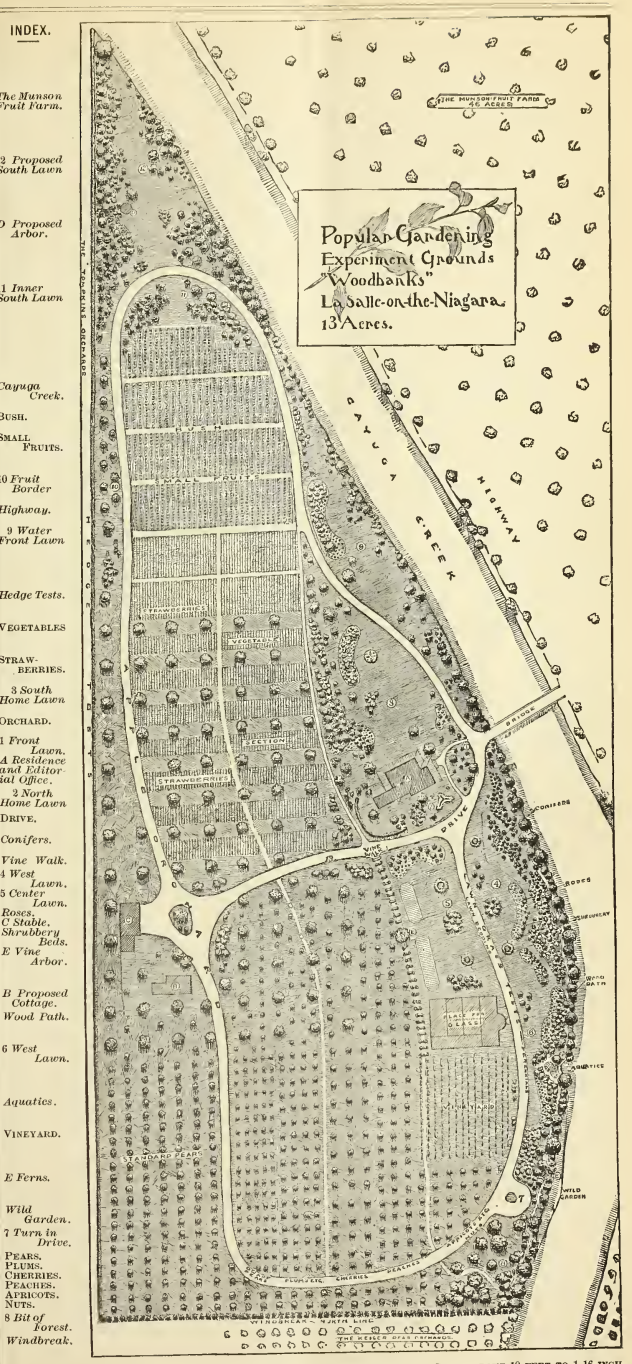
Of the various improvements indicated on the map, those of upwards of two-thirds of the area represented have at this time been carried out in the planting and other early stages of the work. The plats marked 12, 11, 10, and parts of 9, 3, and 5 are yet incomplete, while there are also vacancies in the fruit plantations awaiting later varieties to be tested. Almost every detail of lawn trees, walks and drives about the house A, as well as of the plat 4, 6, 8, are accurately shown in the engraving. The Apple orchard to the rear of the house, consisting of trees eight years planted, was on the ground when the present owner bought here. The drive indicated on the upper part of the plan has not been completely opened.

Looking to the north (lower part of map) a visitor would also find almost every detail fully carried out. The Standard Pears appear to the left in the engraving, and next to these in the order named are Dwarf Pears, Plums, Quinces, Cherries, Peaches, Apricots, Grapes, Nectarines, Nuts, etc. The new lawn extending from the turning place 7 to the bridge, is with the exception of a portion of plat 5, a complete sward over which the mower has at this date passed several times. As a grass plat it is especially interesting as showing eight distinct tests of grasses for lawns, either in separate varieties or mixed. The same lawn, mainly in the half towards the creek and bordered by an attractive friuge of natural wood, supports an extensive planting of ornamental shrubs, trees, hardy flowers, evergreens, Roses, etc. In the main the soil where these growths stand is kept tilled the plantations being beds and borders in effect, cut into the lawn.

The vine walk between plat 5 and the orchard, and extending to the vineyard, is in part planted to an assortment of creepers. The same walk takes a sweep around to the creek bank as shown in the lower part of the engraving, and here it continues through the natural growth of wood, shrubs and plants, the wild garden that occupies this bank and throughout its length back to the bridge. To the south of the bridge and house for a distance of some 300 feet the natural wood of the bank has been thiuned out somewhat and the grade improved to form an easy slope of lawn from the house to the waters edge, as illustrated on page 165, May issue. Beyond this, and to the extreme south point, this woody bank has been allowed to remain very nearly in its natural condition. It is decidedly attractive.

In further issues some of the plats of the grounds will be illustrated on an enlarged scale, to show the detail of the arrangement for setting forth the principles of laying out fruit, vegetable and ornamental plats.

Promising Strawberries. We do not feel called upon to speak critically and in detail about the one hundred or more varieties of Strawberries now growing on our test grounds, since the plantation was only established with plants set last autumn, and some as late as this spring, and the plants at that were obtained from nurseries far and near, and not exactly in uniform condition when received. This we can say, however, that some of the newer sorts give considerable promise of value. Among them we have the Haverland, with early, elongated, large fruit and healthy foliage: the Warfield, with plenty of large, fine fruit, fully as early and also very nearly as



ACCURATE PLAN OF THE GROUNDS NOW BEING IMPROVED. SCALE ABOUT 10 FEET TO 1-16 INCH. AT THIS DATE THE PLANTING HAS BEEN ABOUT TWO-THIRDS COMPLETED. THIS FARM OF 13 ACRES BORDERED ON ONE SIDE BY THE WOODY BANKS OF THE CAYUGA CREEK IS LOCATED 6 MILES FROM NIAGARA FALLS IN THE MIDST OF THE FAMOUS FRUIT GROWING AND GARDEN REGION OF NIAGARA CO., N. Y. VISITORS TO THE GROUNDS ARE ALWAYS WELCOME.

firm as Wilson, and large thrifty foliage. Among other especially thrifty sorts the Bubach stands conspicuously with its mammoth foliage, but no fruit as yet; Logan well set with rather late fruit; Itasca forming immense stools with late fruit; Gandy's Prize, fine foliage, but yet without fruit; Cloud, another late berry; Jessie, Ivanhoe, etc.

The Wilson, we repeat, cannot yet be spared for this section. In health and fruit production it is little behind the very best in the lot; and on our neighbor's (a Strawberry grower's) grounds it yields a fine crop, while Jessie, Sharpless, and a number of other sorts lost almost every berry by the nocmorable frost of May 29th.

For the purposes of fall planting with the expectation of a crop next spring, the Wilson ranks yet among the most reliable sorts, but from our limited acquaintance with Warfield and Haver-

TRELLISE FOR LIMA BEAN.

land, we should consider them of greater promise in this direction than of the rest. Further trials will tell the story.

Trellis for Lima Beans. For our row of Limas 200 feet in length we have made a cheap trellis as illustrated above, and which for several years we have used for Lima and other Pole Beans. For this trellis heavy posts are set firmly and deeply at the ends of the row, with smaller but reasonably stout posts or stakes 20 feet apart between them. The tops of these of course should be in even height, so that a straight, stout wire can be run between the two end posts over the tops of the intermediate posts or stakes. Another lighter wire is stretched between the posts about six inches from the ground, and common white cotton yarn wound zigzag around the two wires. If the posts are set straight and uniform, the wires stretched tightly and the yarn adjusted regularly, such a trellis will be not only useful but highly ornamental from the start, and when vine-clad present quite an attractive feature of the premises. With a trellis of this sort the vines need hardly any attention, so far as tying or fastening to the support is concerned. They always take kindly to the strings.

We believe in planting our Limas in a continuous row, and pretty thickly besides. The greater amount of seed required is of little consequence compared with the advantages of the full stand of plants which in insures. Should there be a bare space in the row, after all, it can easily be remedied. First dig a little hole where you want the plants, then take up with spade or trowel a clump of soil with a few plants on it, where they stand too thick, and plant where wanted. Limas transplant quite readily any way.

Our Vineyard. The long continued warm weather of April and May had given us a delightful feeling of security; but the destructive frost towards end of May brought a sudden awakening such as neither fruit grower nor gardener fancies. Whole vineyards in this neighborhood lost their entire fruit, and it is feared that the damage will extend over another season, since considerable new growth had already been made, and nearly all of this was killed back. Our young vines, being set somewhat late, did not suffer as they otherwise would have done; but nearly all the new growth on them was destroyed. The Clintons, and a few others, and strange to say, a scattering vine or two among the Niagaras, Wordens and Concords, of which there are a number planted, escaped entirely unhurt. Not in the least disheartened, however, all vines have begun to make new growth in good earnest.

Protection Against Frost. The single circumstance that our garden was made rather late, saved us much worry concerning our crops when the indications pointed to a frost. A few of Henderson's Bush Lima Beans and some early Potatoes were really the only vegetable crops exposed, and they were covered up with soil on the evening previously, and suffered no injury. Some of our neighbors had acres of Tomatoes planted, and few, if any, of the plants escaped, except in one instance, where the plants were bent over to the ground and covered with soil, as we did with our Beans. A patch of Sweet Corn we saw treated in same way with entire success. A few days later we felt confident to set our Tomato and other tender plants in open ground, and they are doing finely indeed. There is hardly ever a gain in planting them before the beginning of settled warm weather—say first of June in this latitude.

Weed Destruction. The extremely wet season compels us to use horse cultivators and hand wheel hoes pretty freely. On the other hand it makes hand weeding, especially weed pulling, quite easy. But just in such times promptness of action is of utmost importance. Weeds grow fast, and if their destruction be delayed to the latest presumably safe date, another rainy week may set in, and at the end of it the garden be overrun with weeds almost beyond redemption. The free use of the wheel hoes, however, and an occasional hand weeding keeps the vegetable section clean and beautiful to look at, so in reality we fear no danger. In loose, sandy soil the fingers often answer very well for a "hand weeder," but where the soil is hard or baked, some sort of tool with a sharp edge, to gouge into the ground and cut out the weeds is required. We make use of various hand weeders, as Lang's and Hazeltine's, or simple home made devices, knives, etc. Almost any sharp-edged small tool will answer the purpose. Some years ago we gave to our boys in the Onion field a common iron spoon each for weeding. This works well in scooping the soil away from the bulbs, which should grow on top of the ground, not in it. Now we generally use Lang's weeder to scrape the soil aside and to let the bulbs stand as indicated by the figure at the left in illustration. If the soil is drawn up to the plants, as shown at the right, the Onions are said to be more liable to run to neck. Such specimens are not desirable, nor allowed on our grounds.

Strawberries in New Jersey. A Review of the Season.

WM. F. BASSETT, ATLANTIC CO., N. J.

The Strawberry crop of Southern New Jersey has been a good one this season, but prices ruled low, partly because Maryland and Delaware berries were later than usual as compared with New Jersey, and consequently came more directly in competition with them. As usual, Crystal City came in a week ahead of other varieties. We have tried nothing yet which will take the place of it for the table as it is so early and so good, but it is not sufficiently productive for the market. May King is also a necessity on account of its extra quality, and it sometimes produces paying crops for market, but oftener not over ⅝ as much as Crescent and other market sorts.

Among newer varieties Warfield No. 2 is most promising for market. It is pistillate, and an immense runner like the Crescent, and like that makes rather small plants under ordinary circumstances, but the berries are 50 per cent larger on an average through the season, firmer and of better color, and at least as productive, a small plat of them (1-40 of an acre) having produced this season at the rate of nearly 7,000 quarts per acre with ordinary treatment. This berry is broadly conical with a slight neck, of a very bright crimson scarlet as usually picked for market, coloring all over very evenly. When fully ripe it is a dark glossy crimson. It is, however, too acid to eat without plenty of sugar and cream decidedly promising.

Haverland, another pistillate variety, is equally large and productive, and would be equal as a market berry if not rather light in color which is a light scarlet. It is not so acid as Warfield, but rather watery and insipid in flavor. Some of these which were transplanted in May, when nearly ready to bloom, produced a fair crop. Gandy is a promising very late variety, being this season just two weeks later than Crystal City. It is an exceptionally strong grower, and the first berries which ripened were the largest of the season, but the balance of the crop has not kept up the extra size. In color it is a bright scarlet; the quality is good, and it is firmer than any other variety we ever tried, except Atlantic, but it has not this season produced enough to make it a paying variety for market, and a considerable per cent. of the berries have a hard tip. It spite of these defects, however, we value it highly as a late variety for our table, and think it has come to stay.

We hoped to see Jessie turn out a bigger crop this season then last but it has not done so, and although it has some excellent qualities as a market berry, prominent among which is great firmness, we fear that for our section, it will only be retained for its extra quality, and will not be much grown for market. It also has the fault of being very variable in size, producing some very large berries and quite as many small ones.

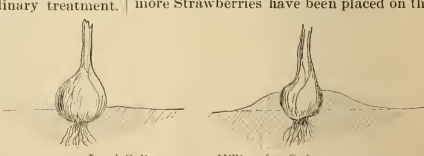
Bubach No. 5 is remarkable for size of growth, very large and very productive, yet I do not like it: it is soft, and most of the berries cockscombed with deep and irregular sutures between the lobes.

Bomba, with us, rusted both last year and this worse than any other variety, and of course the fruit was worthless. Pearl I have only seen fruiting on very poor sandy land without culture, and it produced all that could reasonably be expected. The berries are good size and good in quality and fairly firm, but not very bright in color. Plants which we set in September last on good soil are making a vigorous growth.

Cloud's Seedling set this spring gives promise of being more productive, and of larger size than any other very early variety we have yet seen, and it is of fairly good quality, but not nearly as good as Crystal City. Among older varieties which have some excellent points we shall retain Prince of Berries and Indiana, the former for its good quality and lateness; both would be good market varities if a *little* more productive.

We would drop Cumberland Triumph were it not that there is some demand for plants, as it is but little, if any more productive than Jessie, and softer and lacking in flavor, and if we retain Kentucky it will be for the same reason, as Vineland more then fills its place being similar in style of growth, quality, lateness and general appearance, except that it is rounder in form, and it is considerably larger and more productive. Mammoth, which should have been noticed among new varieties, has only produced a few scattering berries of irregular size and more irregular form, and ripening all through the season from rather early till quite late, and has been characterized as a mammoth fraud.

I think it is an unquestionable fact that more Strawberries have been placed on the



Level Culture versus Hilling for Onions.

market than could be sold at a remunerative price to the growers, the only parties who have realized fair pay for their services being the pickers and the transportation companies, but it may be an open qestion whether a wider distribution could have been effected in any manner to use the whole crop at paying prices. It is a matter of considerable importance just now to the Blackberry growers, for the crop last year

was quite too heavy for the market, and with a much heavier stock of canned fruits on hand now than last year, and a prospect of fully as heavy crop, some new expedient must be adopted or prices will be ruinous. In other branches of the business some arrangement would be effected to hold back enough to maintain prices, and there can be no doubt that if all the growers would leave ¼ to ½ their acreage without picking at all, there would be enough for all paying demand, and something might be realized.

The Bethel Apple of Vermont.

T. H. HOSKINS, M. D., VERMONT.

It is rather singular that an Apple so long in cultivation and of so much merit as the Bethel, should not yet have obtained admission into the leading pomological works like Downing's and Thomas'. Mr. Downing was engaged just before his death, in trying to settle the identity or difference between the Bethel and a fruit called the Stone Apple, grown somewhat extensively in St. Lawrence county, N. Y. The writer was assisting him in this and was able to determine the fact of identity, by discovering that the Mr. Stone who brought the cions into New York was an emigrant from Bethel, Vermont, and took the cions from thence before any definite name had been given to the fruit in its native locality.

The Bethel has been grown in the White River Valley, (tributary to the Connecticut) for about 40 years; but who originated or first propagated it I have yet to discover. It first attracted attention in Orleans county, Vt., in the northeastern part of the state) by the hardiness of the tree, where no other late winter Apple except recently Scott's winter, has proved able to resist a climate in which 40° below zero is a temperature reached frequently with occasional dips of 4 or 5 degrees greater cold.

It is probable that the slow spread of this Apple is due to the fact of its tardiness in coming into bearing in which it rivals the Northern Spy, being also, like that variety, a good bearer after ten years from setting. Certainly it is why I myself have but a single tree, from the crop of which two rather imperfect specimens are sent herewith to the editor. North of the Baldwin range, in New England, the Bethel is unquestionably the largest and best long keeping Apple. I leave the editor himself to pass upon its merits. The fact that it is an annual bearer, giving good crops in the off years, together with its other merits, are leading to an increased demand for the trees where the variety is known. The fruit is large, in good soil often very large, oval, heavily striped with two shades of red upon a yellow ground, having before being handled a blue bloom much like the old Blue Pearmain. Its flesh is yellowish, half tender, sub-acid in flavor and it is liked wherever known both for desert and cooking.

[Apples received in good condition. A beautiful fruit, apparently a good keeper, nearly sweet, of agreeable but by no means high flavor, and otherwise as described by Dr. Hoskins.—ED.]

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

HARDINESS OF ORIENTAL PLANTS. I wish to add to your valuable notes on the Oriental Poppies that Papaver bracteana has proven absolutely hardy in root on our lighter, friable soil, with thermometer 35° below zero, without snow or other protection. I wish also to add that all plants, shrubs and trees, from the home of *P. bracteana* in north central Asia, and the valley of the Amur, have proven iron-clads here so far as tried. As examples Bocconia Cordata from that section has proven hardy in bulb without winter covering. The home of the *Fraxinella Japonica* is said by Maximowich to be in this region, and its roots are as hardy with us as those of our perennial weeds. The North China Peonics were also from this region and are perfect with us. Pyrethrum Coruclia, and others of its type, are perfect in root, and are said to be from the region north of Bokara. Rosa rugosa we first received from Japan, and wondered that it should prove so hardy. But we now find its original home was north central Asia. We also wondered at the perfect hardiness of Cut-leaved Birch until we learned that its original home was the valley of the Amur. Even many plants, shrubs and trees from points south of the 40th parallel in Central Asia are hardy with us, of which Bokara Clover is an example.—*J. L. Budd.*

MULBERRIES FOR BIRDS. I have a large number of White Mulberry trees in full bearing, of the fruit of which the birds are very fond. I have also several early Richmond Cherry trees, of which the birds reap much more benefit than I. Some seasons I do not get a ripe Cherry, but I notice that just as soon as the Mulberries become so far advanced as to be sweeter than the Cherries, the birds leave the Cherries at once. The great objection to the practical working of the suggestion to protect our marketable fruits from birds by planting Mulberries, is that the Mulberry ripens and is gone long before Grapes can be damaged, and do not ripen until after the earlier kinds of Cherries have been eaten by the birds.—*C. Ogden.*

NOTES ON GRAPES. While I agree with Mr. E. P. Powell, Oneida Co., N. Y., in most of his remarks, I take a different stand on some points. Woodruff Red is a large handsome Grape here, and of much better quality than I expected, and far ahead of Moore's Early in the market. Early Victor as grown here is a week earlier than Moore's Early, and a much better Grape, even better than Worden to my taste, while the bunches are by no means small when grown as it should be. Half a pound is nothing unusual for a good bunch. Mr. Powell's article is a most excellent one for the amateur and the home grower; but the man who grows to sell Grapes must be guided by what takes the public taste, and select for his own use as Mr. Powell does. I have not sold fifty pounds of Grapes in three years myself, but if growing for that purpose would try to gratify a taste that exists which is more for show than quality. Empire State don't shrivel here nor drop off the bunches, and if not very high toned, is very sweet and pleasant.

FRUITING NOVELTIES QUICKLY. I recently bought three new Peach trees—Lovett's White Wonderful and Globe. Paid a high price for them. When they came (June-budded trees) neither had six inches of wood, and roots were very small. From such trees I could not expect fruit short of three or four years. So I took the tops off, and in two of them there was but an inch or two to spare, and budded in strong trees that will make top enough to have fruit next season. I left them undisturbed for two weeks, then when they had taken began to cut the tops of the trees off. Some of the buds are already growing, and some the trees will be headed back to the bud, and the whole force of the tree sent into it. To the best of my knowledge I never saw this in print; and think that many would practice it if they knew how easily it is done Some of buds were set on bearing trees, so that there is no doubt about their making fruit buds in this latitude. *S. Miller, Montgomery Co., Mo.*

IMMERSION FOR INSECTS. After reading this English remedy for insects I found a Chrysanthemum with green fly on it, and immersed the whole top in water for 48 hours without serious injury to the plant, but neither did it kill all the aphis. I then took another and covered it for an equal time with Tobacco dust, with less apparent effect on the plant and a complete extermination of the aphis. I also took a third and immersed it in water 62 hours and it came out looking quite sick, but there were still a few aphis remaining. But even if fully successful this water remedy would be of little value, because it requires the suspension of the plant over a vessel of water just in a position to immerse the whole top without submerging to the pot, and this is too much trouble.—*Wm. F. Bassett.*

JAPAN PERSIMMONS. We have native varieties here that surpass any of the Japanese varieties. I have tasted and eaten of eight different ones. Some were sent to a prominent horticulturist in New York, who in answer stated that they were finer flavored than the Japanese. The smallness in size, and the large number of seeds in our natives is the objection, and this has been overcome to some extent. One with but very few seeds, sometimes none, five and six inches in circumference and better than any Japanese I have tasted; it ripens in September, long before frost, and is my favorite. The tree is not six feet high, bore about 40 specimens last season for the first time, and I would not take $50 for it. Not having any trees of it to sell, I have no axe to grind. Have two other varieties nearly equal to this except they have too many seeds.

THE WILSON STRAWBERRY. This has been praised for its productiveness, and condemned for irregularity of size and shape. Of all the large number of varieties, however, I recommend it for the home growers who can not afford to give it much attention. It will give him a supply and perhaps a surplus to sell. Yet it should not be neglected, and will repay good care as well as any other berry. Under fair treatment it averages well in point of size, and when dead ripe, it is to my taste as luscious as any cultivated kind. Verily, we can not yet spare the Wilson for it fills a place not occupied by any other.—*A. P. Reed.*

MICE IN HOT-BEDS. A short time ago we noticed an item giving directions for making a mouse-proof hot-bed. At the time ours was made (the usual way) and the mice were making sad havoc with the young Lettuce and Tomato plants. Knowing their fondness for cheese, we sprinkled several pieces with London purple and scattered them about on the boxes. The result could not have been more satisfactory (to us), as there has not been a mouse seen or a plant injured since.—*J. T.*

THE ROBINSON PLUM. This, although advertised as such, is by no means Curculio-proof, but it requires no special attention as it bears so enormously that the curculio is beneficial rather than injurious, as it thins the fruit, leaving about what the tree ought to carry.—*J. T.*

SAWDUST AS MOLD AND FERTILIZER. From observation and experiment I am confident that sawdust has value additional to that as an absorbent and plant food. It is more than a mere vehicle for other fertilizers. Hard wood sawdust as "chip dirt," has a fertilizing capacity of its own. The soil beneath where such sawdust has rotted resembles the black alluvial loam of Minnesota and other western regions. Tomato plants set in this soil, make an immense growth of foliage, too immense in fact for producing much fruit. Now I contend that hard wood sawdust, when well rotted, furnish a fine mold equal in value to leaf mould for potting purposes, as well as a mulch for trees and shrubbery, and a lawn fertilizer. When used as absorbent you make it doubly effective, of course, but surely it has also virtues of its own.—*A. P. Reed.*

THE BUFFUM PEAR. This originated about half a mile from here. The original tree standing within sight of my window, is a grand old tree, and bears a good crop annually. It is said to be over a century old. We consider the Buffum a good Pear. It should be picked before it colors and put in a dark place.—*Benjamin Abney.*

THE RESIN COMPOUND. This may be applied in double strength from that given on page 205 as a wash for the stems and branches of trees to destroy wooly aphis or root louse of the Apple. In one-half the strength of the original receipt it makes an excellent foundation for all spraying compounds. For codlin moth, canker worm, Plumb curculio, or any insect that eats foliage or sucks sap from the trunk, branches, twigs or foliage, indeed for killing all common fruit pests at "one full swoop," there is nothing better than this solution to each 500 gallons of which is added one pound of white arsenic dissolved by boiling in one gallon of water in which one pound of concentrated lye had been dissolved. Then add one-half pound of London purple made into a paste with cold water. Also dissolve in sufficient water 20 pounds of sulphate of copper (blue stone or blue vitriol), and then add. This gives us a spraying solution both for insects and fungus diseases. The resin is the very best thing for plant lice (aphids) and other soft bodied things that suck, but is also of the greatest use in sticking the arsenites to the foliage. London purple is only added to give the wash a suspicious color to warn all who handle it. The compound can be used on all fruits without danger except Currants, Strawberries, Gooseberries and others that are used soon after sprayiug. It is valuable as a first spray for Grape vines, and will free them at once of insects, and prevent disease. The Plum curculio can also be completely controlled by this wash.—*D. B. Wier.*

Some Fruit Notes from My Grounds.

E. P. POWELL, ONEIDA CO., N. Y.

CURRANTS. Of all the small fruits I like the Currant best. If grown in rich, strong soil you can have fruit from the different kinds until late in September. The Versailles is in my judgment the best red—at least as good as Fay; and the White Grape is best of the whites. There are several advantages in growing the whites. The birds do not so easily see them, probably considering them unripe fruit. They will often strip a bush of red and wholly neglect a white bush by its side. The white is by odds the sweeter and richer, and in every way the better table fruit. It also is the better cropper. But on the other hand the whites do not market as readily, although people are getting educated to know the best. Besides, in an acre of mixed bushes, you will find the Currant worm knows the difference, and takes the white by preference. It is well to plant a few Gooseberry bushes scattered about your Currant field. The worms always prefer these and can be fought on them, but on the whole no plague can be whipped more easily than the Currant worm. Apply hellebore early, as soon as they begin to work.

PLANTING. When you plant a new orchard, depend on it its whole success depends on the treatment your trees get for the first three years. They should first of all be carefully mulched, and always kept mulched. They should be limbed low to the ground, that is, if Pears, down to three or four feet from the earth, and if Apples, five feet. Then keep suckers and useless shoots out, and give the tree limbs all the strength. Young orchards often waste so much strength on useless wood that they lose three or four years of time. So your profit goes. Trees should be kept pruned so that large limbs need never be cut away. Merely rubbing with the hand will remove when just starting what will need a saw and large wound in a few years. Don't think this simply a matter of nice culture; it is a matter of profit and loss, of life and death. Fruit growing is a farce if you do not attend to it. The poorest trees in the world to take care of themselves are Apple trees. As to the borer, you must go about with a wire twice or three times a year and bore him. You can eliminate him in two years from your land, but you must always watch.

BIRDS AND FRUIT. One year I bagged my Grapes. It took much time and labor and did not pay. Where birds destroy a great deal it may be well to do it. I shut up my hens and I poison the sparrows. It is curious how all the robins in central New York find out when my early Richmond Cherries are ripe and come in crowds, jawing me if I claim one. But I have them now, for each year I cover my dwarf Richmonds as well as the Montmorencys and the common acid Cherries, with mosquito netting. I ate my last Cherries of early Richmond last year from the tree the middle of September. The Cherry is a grand fruit to keep if protected. So you see I had them from May on for four months, and nearly every day I crawled through the netting and enjoyed my favorite summer fruit. Is is as delicious as it is healthy and when dead ripe is too nice to sell. Birds should be encouraged, however, so I leave a few trees uncovered, and then make up by planting enough Berries for all of us and for market also.

Hints on Marketing Methods.

L. B. PIERCE, SUMMIT CO., O.

One point not usually touched upon by writers and essayists on market gardening is the desirableness of planning so as to equalize the loads and adapt them to distance travelled. The party growing cheap, bulky crops, as Pie-plant, Cabbage, Potatoes, Turnips and Squashes, should live not more than four miles from market, while the grower of Strawberries, Peaches, Celery and Asparagus may be ten miles distant and still make it pay. The grower of early Onions should also grow Asparagus and if his taste inclines that way, he can add a plant house to his business and grow Cabbage and Tomato plants for dealers to sell in flats. The grower of early Cabbages can add Raspberries to his load with profit, and early Peas can be marketed with Strawberries, while Tomatoes, Peaches and Blackberries work in well together, the idea being to have a part of every load consist in something high priced in proportion to its bulk. A bushel of Strawberries worth $3 can be easily added to ten bushels of Peas worth 40 cents per bushel, making the load bring a total of $7, and the Strawberries will be sold at the same places as the Peas, while if the load consisted of seven or eight additional bushels of Peas, to make the same amount it might be necessary to drive three or four miles farther and spend several extra hours. The same I have found true with Tomatoes; ten bushels at 30 cents makes $3, but a bushel of Blackberries at $4, or two bushels of Peaches or Bartlett Pears at $1.50 doubles the receipts while it adds only from one tenth to one fifth to the weight. The grower of Celery, who has to market his crop through the winter, can draw away a good many bushels of Turnips, Potatoes, Parsnips or winter Apples, without overloading.

I find a growing tendency among market gardeners, as they pass the meridian of life, to engage in fruit growing, but many do not use due care in the selection of varieties suited to the soil or locality. In the first place the best market gardens are on flat bottom land, soil which is wholly unadapted to the growing of tree fruits, and in many instances to all the small fruits except Currants and Strawberries. This land is farther unfitted by heavy manuring for a series of years, which causes a rank succulent growth and subjects the trees to winter killing. If fruit growing is added to market gardening land adapted to it should be planted, leaving the level low lands to be still devoted to their proper crops.

Thinning Fruit With Incidental Pruning.

W. W. FARNSWORTH, LUCAS CO., O.

The practice of removing the surplus fruit from trees which have ambitiously undertaken more than they can properly perform without injury to the present crop and permanent injury to the trees themselves in many cases, is an operation which needs only a careful, thorough trial to commend itself to all painstaking fruit growers.

Many who acknowledge that the crop after thinning will sell for more money per tree than if not thinned are still unwilling to admit that the gain will pay for the extra labor involved. Well, about how much more time is required to remove 500 Apples, Pears or Peaches in June and 500 more in October than would be occupied in picking the entire 1,000 in October?

Further than this, it is a well known fact that the production of the seed of a fruit causes by far the greater draft upon the vitality of the tree than the formation of the pulp surrounding it, also that 1,000 small Apples will contain nearly twice the weight of seeds found in five hundred specimens double their size of the same variety and thus be much more exhaustive to the tree.

We might in this connection mention an incidental benefit which may result from thinning of fruit. The horticulturist may, in thinning the fruit, notice many young shoots that by pruning time next spring will become stout limbs to be cut off, whereas now they may be easily rubbed off while the plant food required for the formation will be saved for the tree and fruit.

The Early Cabbages Weighed in the Balance.

In our continuous tests of the different varieties of Early Cabbages—new and old—we have not yet found anything that might threaten to drive the old, well-tried and ever-reliable Jersey Wakefield out of popular favor as an early market sort. Of all the very early kinds this is yet the best. Closely following it we have the Vandergaw, introduced a year or two ago by Mr. Burpee, and indeed one of the finest medium early sorts in existence. Henderson's Early Summer is also excellent and reliable. As a reliable sort for general use, both early and late, and a boon to the home grower, especially if possessing but little skill as a gardener, or unfavorable soil or location, Early Winnigstadt can hardly be surpassed. The practice to introduce strains of old varieties under new names, must necessarily lead to much confusion in nomenclature, yet the selection of the best strains of any one variety is a matter of much importance. The horticulturist of the Ohio Experiment Station has tested many of these strains for the sake of comparison, and reports that in no other vegetable is the effect of selection more marked, and in none the necessity of good stock more apparent. Early Wakefield also was the leading sort. Among the varieties tested were the following:

Burpee's Advance took 112 days from date of planting to maturity; average weight of heads 2 lbs. and 14 oz. A mixture of several varieties, some plants resembling Early Wakefield, but the majority more like Early Etampes. Usually soft and unmarketable.

Berkshire Beauty requires 139 days to mature; average weight 2 lbs. 14 oz. Heads solid, but show tendency to rot.

Chase's Excelsior requires 120 days to mature; average weight 4 lbs. 8 oz. A strain of Early Flat Dutch. Very uniform and reliable for heading. Heads solid, and of good size and form.

Early Dwarf Flat Dutch requires 130 days to mature; average weights 3 lbs. 8 oz. Good stock; shows but slight variation.

The Early Flat Dutch varieties, grown by Landreth, Maule, Henderson, Burpee, Brill, Vick, Harris, Gregory, Livingston, and others, are all about the same with a little variation in average weight; require 130 days to mature, and are good stock.

Early Etampes requires 112 days to mature; average weight of head 2 lbs. 12 oz. Foliage of a lighter green, and heads more pointed than Wakefield. Habit of growth much the same as that variety, but will perhaps bear closer planting. About as early as Wakefield, but much inferior as a market variety. Heads usually loose and unmarketable. Not adapted to this climate.

Early Drumhead requires 130 days to mature; average weight from 5 to 6 lbs. per head. It is apparently a good strain of Early Flat Dutch.

Early Bleichfeld Giant, requires 130 days to mature; average weight about 3 lbs.; heads usually a little flattened; very solid; a good second early variety.

Early Deep Head, 130 days to mature; average weight 4 lbs. 14 oz. A very uniform and reliable strain of Fottler's Brunswick.

Early Dwarf York, formerly highly esteemed, but now superseded by better sorts.

Early Wakefield, True, requires 112 days to mature, average weight 3 lbs. 8 oz. Stock very uniform and true to type. The most reliable of all early varieties. The Early Wakefield is grown by nearly every seedsman, but considerable variation is found in the stock received from the different sources. Some was very poor, and others with different degrees of variation.

Early Summer, good stock, grown by nearly all seedsmen. Considerable variation, however, found in stock furnished by the different ones. Requires from 118 to 122 days to mature. Weight of heads from 2 lbs. 8 oz. to 4 lbs. 10 oz.

The following varieties were found to be poor: Early Oxheart, Early French Oxheart, Early Mohawk Market, Early Bonanza, Early Baclan, Early Canajoharie, Early Tourlaville, Early Paris, Nonpareil, Premier, Tunnel, Habas.

Fottler's Improved Brunswick, requires 144 days to mature; weight 4 lbs. 12 oz. An excellent second early variety. Uniform and decidedly good stock.

Low's Peerless, requires 130 days, weight 4 lbs., a good strain of Early Flat Dutch. Rather better than Early Summer.

New York's Wild Fruits.

A study of the wild fruits of the country, and their comparison with the cultivated sorts that have sprung from them, is not only interesting, but instructive in showing us what has been accomplished in the instance of some fruits, and suggesting the possibilities hidden in the development of others. Prof. C. H. Peck has recently given to the press a résumé of the wild fruits of New York State.

The Fox Grape is abundant, and its berries are about three-fourths of an inch in diameter. The Summer Grape has a smaller berry, which is pleasant to the taste. The Frost Grape is another variety of wild grape. A fourth variety is the River Bank Grape, from which the Delaware has been derived. The Fox Grape is the parent of the Isabella, Concord and other varieties. Wild Pears, Apple, Cherry, Plum trees, etc., and wild Strawberries, all common in the forests of the state, have by cultivation given us the rich fruits now on sale in our markets. The Juneberry (or Service or Shad berry) is found growing wild all over the state. The berries have been offered on sale in various localities, generally under the name of "Blueberries;" but they are yet inferior to that fruit. There can be no doubt, however, that the Juneberry offers a promising foundation for a fine fruit which may soon be as common in our markets as Currants or Raspberries.

White and Black Thorns do not afford desirable fruit, as it is too dry for eating. Many varieties of the Plum tree are native here. Four species of the Cherry are found growing wild within our borders, all more or less infested with black knot, and hence dangerous to those under cultivation. Four species of the Raspberry are indigenous to the state. The red Raspberry of commerce is derived from the wild red variety. The black cap variety is inferior as a fruit, owing to its large seeds and less abundant pulp. The wild Blackberry is vigorous, and a more delicious fruit than any cultivated variety. It is a question whether the Blackberry of cultivation has lost flavor by domestication, or whether it is derived from another variety.

Of Strawberries we have two wild varieties, the Woodland and the Upland berry. These are reputed to possess flavor superior to that of the cultivated varieties. The Gooseberry is also a native of the State, and is found in two varieties. The red Currant is said to be indigenous to northern New York. The Cactus is represented by one variety called Prickly Pear. The genus Viburnum of the Honeysuckle family affords five species producing edible fruits, but not of much importance. These are known as Cranberry tree, Haw tree and Sheepberry. The Heath family have more ornamental flowers than edible fruit. Only one of the family produces edible berries of commercial value, and this is the Huckleberry, which grows in all parts of the state. A tendency of a plant to vary its fruits in color, size and flavor indicates a possibility of improvement by cultivation. There are nine species of this berry found here. No attempt has yet been made, says Prof. Peck, to cultivate either the Black Huckleberry or the Blueberries, although both are highly esteemed for the table. We would rather say that the many attempts made (as for instance by the New York experiment station, both with the Huckleberry and the Blueberry) have thus far resulted in failure. A. S. Fuller alone, we believe, claims to have made some headway in this direction, although we do not know with what practical results. Two species of Cranberry are found in the state, designated as the small and large Cranberry. The Wintergreen produces a red berry which is often found in the markets. The Persimmon is rarely found here. The Black Nightshade produces a black berry formerly regarded as poisonous, but along the Mississippi they are used in the making of pies. The Rackberry bears a fruit about the size of a Pea, which is quite edible. The Red Mulberry is related botanically to the Bread fruit tree. We have ten species of trees bearing edible nuts, and altogether seventy-five varieties of the vegetable kingdom bearing edible fruits.

Evaporated Sulphur for Mildew and Insects.

One after another of the fungus diseases of plants are brought under the control of growers by the careful investigation of experts. Lettuce is one of the foremost crops for forcing under glass, and often a very remunerative one. Mildew, however, has always been a great obstacle to success, and frequently ruins the entire crop.

Prof. S. T. Maynard, of the Massachusetts Experiment Station, finds that evaporated sulphur is a very effective cure, not only for this form of mildew, but also for many others, and for insects besides. Before looking for remedies, he says, we should take advantage of preventive measures. Experience has shown that, 1., Lettuce must be grown at a low temperature, ranging from 35° to 40° at night, to 50° to 75° during the day, to escape mildew. 2. An abundance of plant food must be provided at all times. 3. Nitrates of soda and potash are valuable in developing a vigor of leaf that will tend to resist the attack of the mildew. 4. An abundance of water must be used, but the drainage should be good, and the watering done in the morning or on bright days only. 6. Sudden extreme changes of temperature must be avoided.

To test the value of evaporated sulphur as a remedy for Lettuce mildew, Prof. Maynard allowed the temperature of the house on the nights of March 12th, 13th, 14th and 15th to run up to 50°, 66°, 47°, and 51° respectively. Most of the crop had been cut for market, but what remained was now badly mildewed. Two kettles of sulphur were kept running from 6 to 9 o'clock on each evening the vapor being very abundant. Except where the vapor could not penetrate among the leaves, the mildew was certainly very much checked, and no new growth appeared on the exposed surface of the leaves. The conclusion is that evaporated sulphur will largely prevent the development of mildew, but when it has once become established, it will not entirely destroy it.

Application of Remedy. A kettle or basin of sulphur (brimstone) heated to nearly the boiling point, is kept in the room for three or four hours twice or three times a week. Prof. Maynard used a Florence or Monarch hand stove with the sulphur in a tin or iron kettle. Enough sulphur must be evaporated to fill the room with the vapor, so that it will be visible, and give something of the odor of sulphur. *Burning* sulphur is quickly destructive to all plant growth, and every precaution should be taken that it is not heated so hot as to take fire or that the kettle does not get upset. The lamp or stove should have a broad base, or the kettle be placed on a tripod with feet well spread. It should be placed under the bench where it can be readily seen, but where the clothes of a person passing by may not catch upon it and upset it. To allow the sulphur to burn even a few minutes might result in the destruction of hundreds, perhaps thousands of dollars' worth of plants.

Rose Leaf Blight. The same remedy has also proved effective against leaf blight which attacked the Roses last fall, breaking out in large, dark brown or nearly black spots and often covering and destroying the entire leaf. After a few week's use of evaporated sulphur no new spots developed on the leaves and none have appeared since.

Rose Mildew. Evaporated sulphur with this malady scored a complete success. Prof. Maynard thinks the disease is brought on (1) by the exposure of the plants to draughts of extremely cold air when they are growing rapidly; (2) by high temperature running the same both night and day; (3), by watering or syringing just before night; (4) by too little water; (5) by extreme dryness; (6) by poor drainage, and (7) by a deficiency in plant food. Since the use of evaporated sulphur was begun in the houses it has been almost impossible to find enough mildew on the plants to afford specimens for examination in the laboratory.

Red Spider. In greenhouses where the air is kept dry and at a high temperature, the little red spider, (*Tetranychus telarius*), is often extremely troublesome. In the Rose and other rooms at Amherst, where the sulphur has been evaporated regularly, scarcely a specimen can be found, and if at any time they are found upon plants, an exposure of a few hours in the room where the sulphur is boiled will exterminate them.

Mr. E. W. Wood, of Massachusetts, has used the same remedy with complete success, as early as 1885, for red spiders and mildew in his cold Grapery, and also as a preventive for the fungus growth that causes the dropping of the leaves of the Chrysanthemums after they have been taken from the ground in the fall. Mr. Wood reports that the red spiders appeared on all his eighteen vines the last of July, 1885. The foliage commenced turning brown and their webs covered the under side of the leaves. So he procured some flowers of sulphur and using an ordinary sauce dish of glazed granite ware, put in the sulphur to the depth of one and one-half to two inches and placed it over the blaze of the second size Summer Queen stove, boiling the sulphur three and one-half hours, until the room was filled with the vapor. The most careful examination with a microscope made next morning did not reveal a live spider in the house. From that time on the new foliage was as clean and bright as in the early part of the season, and the fruit ripened perfectly. The remedy was found equally effectual in destroying mildew, which occasionally appears in most cold Graperies.

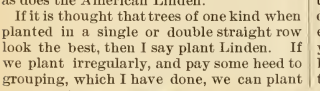
Why Not Plant the Linden?

In one of the bulletins of the Agricultural College, Mich., Prof. A. J. Cook makes a strong appeal for the American Linden or Basswood tree. It is a tree of rare beauty, he says, and a more vigorous and rapid grower than either Maple or Elm. Insects rarely attack it, and it is easy to transplant. So far as Prof. Cook has observed, ten transplanted Basswoods live to one of Maple.

The Linden, furthermore, is a very valuable honey tree, usually giving honey very

plenteously, and of most excellent quality. When we plant a Linden, then, we are adorning our street or grounds with a tree that will very likely live and thrive, a tree that will surprise us with its rapid growth and development, and a tree that will bless the coming generation with the valuable product which it so bountifully yields. I believe there is no native deciduous tree that offers such inducements for transplanting as does the American Linden.

If it is thought that trees of one kind when planted in a single or double straight row look the best, then I say plant Linden. If we plant irregularly, and pay some heed to grouping, which I have done, we can plant



Layering Squash Vines to defeat the Borers.

all kinds of trees with excellent effect. Were it not for the inconvenience of this style of planting, when we come to use our mowers to cut the grass along the way side, I should certainly advise this irregular planting and grouping. Owing to the enhanced beauty, I prefer it with the inconvenience thrown in.

Mushrooms in Caves and Tunnels.

One of our Orange County friends often spoke to us with considerable enthusiasm of opportunities for Mushroom culture on a large scale hidden in some of the abandoned tunnels near the Hudson. We are well aware that there are plenty of such chances (and most excellent ones, too) scattered all over the States, and believe that before long many of them will be taken hold of by men with sufficient capital to push Mushroom culture in the same way as now done in France and England. Our illustration represents a railroad tunnel near Edinburgh, Scotland, successfully worked for Mushrooms by the Scottish Mushroom Company. The original, from which this is a reduction, appeared in "Mushrooms for the Million."

Flat beds are formed along the narrow side of the line, ridges across the wider space from the wall to the rails. The Mushrooms are produced mainly from September to July, sometimes as high as a ton per week. The whole length of the tunnel is occupied with beds, and about 3000 tons of manure are said to be in use at present. New soil and manure are said to go in daily, and the old soil is taken out. The aggregate length of the beds is three miles.

Defeating the Squash Borer.

The Squash borer is usually called the worst and most difficult to handle of any of the garden pests, but we do not find it so. Since adopting the method of layering (shown in illustration), some years ago, we have had no more trouble. The insects were given full sway, and tunneling through the main stalk near the surface of the ground, they often completely severed all connection between the vine and its original roots, yet the roots emitted in great abundance from the soil-covered joints maintained the plants in full vigor and health. Prompt action will generally insure success. Pile on fresh soil over the first one or two joints just as soon as the vines begin to run. This probably can not be done with Summer Squashes, but owing to their quick growth and early bearing, the home gardener usually has what fruit he may desire of them by the time that the vines give out in consequence of borer work. It is merely a matter of conjecture, but we believe that the moths might often be kept off, or the eggs and larvæ destroyed before much damage is done, by daubing the stalks near the ground with some resinous, sticky substance, or coating them with molasses.

The layering method has one drawback. It gives us an easy means of protecting the crop, and a sense of security which would naturally induce us to neglect the destruction of the enemy. This should not be. It is every grower's duty to carefully hunt up every one of the rascals before they leave the vine, and kill it, and in this way to reduce as far as possible the numbers of borers that will come to trouble us another year. We do not remember that we ever had Melon or Cucumber vines attacked by the Squash borer, while our Squash vines were rarely free. On the other hand, the latter were never injured by the Melon fungus, so far as our observation goes; while this fatal disease often entirely ruined our Cucumber patches and done serious damage to the Melon vines.

The Nurserymen's Convention. A Large and Business-like Meeting. Valuable Discussions.

The fourteenth annual convention of the American Association of Nurserymen, at Chicago, June 5th and 6th, was the most successful meeting of this Society for many a year. The attendance reached near 300 members, who were present from all sections of the country, with much the larger percentage from the Western States. A number of delegates were accompanied by their wives or daughters, which latter were elected honorary members of the association. What contributed greatly to the marked success of this meeting was the plan of having a large number of short spirited papers instead of a few lengthy ones as formerly. Thus the responsibility of the meeting rested on many. Where there is wide responsibility there is a deep interest also. The discussions were more lively and valuable than any we recall of former meetings.

The officers chosen for the coming year are as follows, being in the main re-elected:

President, George A. Sweet, of Dansville, N.Y.
Vice-President, C. J. Carpenter, Fairbury, Neb.
Secretary, Charles A. Green, Rochester, N. Y.
Treasurer, A. R. Whitney, Franklin Grove, Ill.
Executive Committee, Leo Weltz, Wilmington, Ohio; S. D. Willard, Geneva, N. Y., and S. M. Emery, Lake City, Minn.

The place of next meeting is New York City. Following is a synopsis of the proceedings:

ON THE IMPROVEMENT OF THE NURSERY BUSINESS. S. M. Emery, of Minn., in his paper deplored the bad effects on the business of agents who make the sales at a high price retaining to themselves three-fourths of the proceeds as against a petty one-fourth to the grower. Then they generally manage to fix the responsibility for losses, for which their own acts are to blame, on the grower. The man who retails $10,000 worth of stock has a better income than a Congressman. Such a state of things does not prevail in the dry goods business, in which sales are made through agents. What can be done is the question hard to answer. Reckless planting on the part of the nurserymen must be avoided. The cost of raising the different kinds of trees must be considered and a preference be made for those which, under the particular circumstances of each nurseryman, can be grown at the best profit. Too much stock of certain kinds has been grown, and which in order to overreach others has been put out at ruinously low figures. No man can afford to sell Apple trees at two cents apiece, as has been done by some.

Robert Douglass, of Wisconsin, said he never employed agents. But there are agents and agents, and the question is can not honorable men be employed the same as is done in our large wholesale dry goods and other houses. The reduction of the tariff on nursery stock has worked a great loss to American growers. The cheap labor of Europe becomes our direct competitor. Stock can be shipped from Holland to New York cheaper than from Wisconsin to New York.

NEW VARIETIES OF PLUMS. S. D. Willard, of Geneva, N. Y., touched upon the increased interest now bestowed on the Plum, coupling this to some degree with the advent of the Wild Goose species. This sort, while possessing little comparative worth where the European varieties will succeed as in the east, yet has value in certain localities. Concerning the European class, he spoke of the *Field* as being much like Bradshaw; *Stanton Seedling*, a dark purple, fine for canning, a long keeper. *Prince of Wales*, an English variety, productive, large, of medium quality. *Middleburg* resembles a Prune in its keeping qualities, and promises to be desirable for market. *Shipper's Pride* was referred to as a market variety; *Guii* very large, blue, coarse, sweet, hardy, good grower, one of the best for market. *Hudson River Purple*, fine grower and productive. *Peter's Yellow Gage*, valuable, very productive, for one yellow this would be Mr. Willard's choice. *Canada Orleans* ripens early August, handles well. *French Damson*, dark copper color, medium size, excellent; the Damsons as a class are hardy and productive. *Shropshire*, flesh amber colored, enormously productive. Of others referred to *Garfield* was mentioned as keeping until December; *Botan* may have some value; *Kelsey's Japan* is not sufficiently hardy for the Middle States.

In the discussion which followed the conclusion was reached that while *Moore's Arctic* is hardy and reliable in northern New England, it proves to be tender and worthless in Ohio and other points of the same latitude, because of dropping its foliage, which prevents the wood from maturing. Mr. Augustine, of Illinois, spoke of the failure of all the European class in the West, one acre of the *Wild Goose* or *Wolff* being of more value than 10 or 15 acres of the former class. Mr. Carpenter, of Neb., said the *Pottawatamie* in general was the same as the Wild Goose. The *De Soto*, *Blue Damson*, and some others do remarkably well in Nebraska, 42° parallel.

Prof. Budd, Ames, Iowa, referred to such varieties of the American race as *De Soto*, *Wolff*, *Rolling Stone* and some others bearing annually. Of the Chickasaw race the two best are *Forest Rose* and Mc———. *Pottawatamie* is a cross between the Chickasaw and Sloe; a good bearer, but one of the smallest of its class and comparatively not of much value. *Marianna* is tender in tree and bud, has not fruited in seven years. *Wild Goose* is tender. *European Early Red* fruited in many places in his locality; has no curculio; *Lombard* is tender. Mr. Patton of the same State declared the *Wild Goose* as worthless on the 42° parallel, and the same of all the European varieties that succeed in the East. *De Soto* is free from blight. *Forest Garden* blights badly. If in the West attention would be turned to improving the native sorts, they would not long want a good Plum. Mr. Yonger, of Neb., pro-

Mushroom growing in a Railroad Tunnel.

nounced the *Forest Garden* the best of all with them; the *Miner* and *Wild Goose* hardy. Mr. Kellogg, of Janesville, Wis., looks upon the *De Soto* as the best for Wiscousiu, and *Barrett's American* as one of the worst.

Concerning the *Kelsey* and *Simoni* Plum, Mr. Chase of New York had had the former three years in nursery with every appearance of its being as hardy as the Bradshaw. Mr. Van Lindley of North Carolina, said the *Kelsey* does well in his State, and is the only new Plum of promise for them. Mr. Lippincott, of Alabama, cousiders the *Kelsey* and *Simoni* both very hardy and fine south of Tennessee. Prof. Budd, of Iowa, pronounces *Simoni* only as hardy as the Wild Goose. It comes from extreme northwestern China, from a dry district where the air and soil are dry; it is valuable for cooking and for dessert. Stands heat but not cold; has more of Peach and Apricot flavor than of Plum. One delegate said that by top-working the *Kelsey* on hardy varieties it will be adapted to cultivation much farther north.

The Grape Industry in Missouri. G. E. Meissner, of Missouri, in a short paper, spoke warmly of the quality of the Grape products in his State. The black rot had given Grape culture a great check, many cultivators giving up their Concord and Catawba plantations. Varieties like Ives and Cynthia are changing the aspect of the industry. Great hopes are entertained that cultivators will soon have the better of black rot and mildew by means of the copper remedy introduced from France.

Small Fruit Varieties. T. F. Longenecker, of Dayton, Ohio, doubts if one-fourth of the nurserymen yet know the possibilities of the *Crescent* Strawberry. It is the almost universal report of market growers that it returns more money than any other variety. *Bubach* has generally been found reliable. Our want is a reliable perfect flowering variety. *Jessie* meets this nearer than any other recent introduction. *Haverland* a Crescent seedling like its parent does well over a wide range. This and the preceeding one promises better for profits than any other new ones he knows of. Both take the impress of varieties used for fertilization in a marked degree. In Blackberries *Ancient Briton*, *Agawam*, *Taylor*, *Snyder*, have proved the most reliable in his vicinity. Geo. Kellogg of Wis. finds *Jessie* in sandy soil does not bear with uniform freedom, thinks it may do better on clay. Mr. Webster of Ill. reported *Bubach* and *Jessie* quite poor this year on his clay soil. Had found the *Warfield* to sell in Chicago for $1 a case more than any other sent. It bears and propagates well and will ship safely for any distance. The *Nemaha* Raspberry was said by Mr. Green to be much like Gregg except hardier.

Cause of Buttons in Strawberries. Prof. Budd lays it to the conditions for perfect fertilizatiou being unfavorable. Downer's Prolific, is the best fertilizer for Crescent. Too often there are too few of the fertilizing varietics set; there may be an absence of bees, or showers may prevent the carrying of pollen As a rule would advise one row of the perfect for every row of the imperfect sorts. In some seasons the so-called perfect varieties may have so little pollen as not to fruit perfectly. Mr. Weed of Ohio said that in the Barnesville region Wakefield was regarded superior to the Crescent. Spoke highly of planting Wilson and Crescent in mixture; under such circumstances on clay soil the product has been enormous and the quality very fine, aud in size almost equal to Sharpless.

Commercial Fertilizers in the Nursery, Green Manures. Thomas Meehan's paper "Should a Nurseryman use Chemical Fertilizers," is given in full on another page. In the discussion which followed, Mr. Fox of Wis., said he had used Pacific Guano on very steep land with good results. Believed in using the best grades, and had confidence in the honesty of some makers. In the Hammondsport Grape region commercial fertilizers were much used, aud with good results. Mr. Willard of N. Y. believed that many fertilizers sold were not worth one-fourth of what they cost. Mr. Hicks of Ala. had found some good and some otherwise. Mr. Palmer of Ohio, said that no reliance can be placed on the exhibits of vegetables, etc., made at fairs by fertilizer companies. They picked up select products wherever they could for showing. The principal secret of growing premium Potatoes was elbow grease and sharp steel. Mr. Mann, of Illinois, spoke of its having been shown that nitrogen can only be available as it is thrown off by microbes and that these are not attracted by fertilizers as they are by manure.

Prof. Budd related an instance of where Corn grown on laud where Rye had beeu plowed under had reached a height of four or five feet, where ou the same land and under similar circumstances, except that a fertilizer was used instead of Rye, the growth was but three or four feet at the same time. Even dry straw or Corn stalks creates a vegetable mould for bacteria to act upon. Tho French say that enough nitric acid falls in the summer showers to answer for any crop, provided there is vegetable mould in the soil to have it act upon. You must have this element. In the West if he was going to sow a fertilizer it should be salt or ashes. Mr. Watson, of Illinois, stated that Mr. Phœnix of his State had great faith in the worth of salt. He started with five bushels to the acre and increased to 10 or 15 bushels. An Ohio delegate believed that Rye brought to head and plowed under when in bud gives the best results. Mr. Caywood, of New York, had rapidly brought up poor land by sowing Rye in the fall, plowing it under in the spring following immediately with Corn, which in turn was plowed under. After such a course could raise any crop. Mr. Webster, of Illinois, placed Clover first for plowing down, and Southern Cow Pea next, plowing this uuder when it is as high as the chin. Mr. Rowe, of Wisconsin, referred to the fact that in the Orange district of California, commercial fertilizers were used with success. Mr, Kellogg, of Wisconsin, had used fertilizers manufactured to his order on alternate rows of Strawberries, and could see no perceptible effects.

(To be continued.)

BY-NOTES FROM THE CONVENTION.

But two New Englanders were present. Is the East tired of going West? New York next year.

President Sweet's address made no great impression. It was not read.

The vote of thanks to Commissioner Colman an ex-president of the association, for the interest he has taken in introducing the copper remedies for Grape rot was as unanimous as it certainly was a graceful act.

Soon every nurseryman will be the architect of his own tree digger.

Mention names, Mr. Willard! Our genial neighbor hardly did himself credit to hold to himself certain exclusive information regarding the evil doings of commercial fertilizer makers, and not benefit his craft by naming names.

Who calls friend Kellogg the "Sarcastic Badger?"

The Quiet Men on Hand. Mr. Geo. Josselyn is one of the quiet men. He says nothing, but keeps on sawing wood.—Chicago Daily.

George Washington Albaugh will be recognized as the gentleman previously known by the initials N.H., but G. W. will in all probability stick to him now since he was rechristened by Mr. Morey. Mr. Albaugh comes from the little town of Tadmor, Ohio, and was known in the convention as the silver-tongued orator. He was also speaker pro tem. of the Ohio Legislature. He is so devoted to the nursery business that he has drawn up a codicil to his last will and testament providing for the final disposition of his body in a grave to be dug by the lightning tree digger, the body to be embalmed in fire-proof burlap and moss.—Daily Herald.

Nothing Green about Secretary Green's plans for holding couventions. That one of having the sessions and the exhibits under the same roof that sheltered the delegates during their stay was a stroke that elicited much praise. It no doubt added much to the general interest. A good plan to be repeated.

The earlier date did itself credit for cool weather.

Those New York Fellows. We believe Mr. Sweet, of this State, is the first president that was ever re-elected. The Secretaryship again comes to this State, while we retain a place in the executive board.

What an unquenchable hungering and thirsting for information about new varieties.

If the nurserymen heard nothing more than this by ex-president Albaugh, the going to Chicago was not in vain: "Handle your trees while out of ground as things of life."

Why not, Mr. Watrous? The paper on protecting originators of new varieties for which you were down was not heard from.

Forestry. Vice President Carpenter, the enterprising Nebraska nurseryman exploded some of the current statements of the press regarding the relative position of forestry in this country and abroad. More on this subject in later issues.

Nurserymen are certainly behind the times in the matter of an improved nomenclature for fruits, many years, in fact, to the rear of the pomologists. Notwithstanding the stirring speech of Pomologist Van Deman, of the Agricultural Department, and ably followed by others, the Society took an indifferent stand on the subject. We hope the friends of the association will permit Secretary Green on his own responsibility to embody the improved lists prepared by the American Pomological Society in the forthcoming report. The nurserymen should by all means take an advanced stand in working an improvement here.

The Nurserymens' Protective Society held its session on the evening of June 5, and elected officers for the ensuing year as follows: For President, G. W. Campbell, Delaware, Ohio for Secretary, Thos. B. Meehan, Philadelphia, Pa. This association which was referred to as a wheel within a wheel by one soured correspondent a year ago, is entirely distinct from the American Association, being purely a commercial organization looking to the protection of the craft from unreliable buyers, and the meetings are occupied solely with revising the commercial rating of purchasers of nursery stock. It is an older society by fourteen years than the American Association.

Articles That Were on Exhibition. The *Lightning Tree Digger* works from one side of trees, requiring a rouud trip to dig a row; its advantages, light draft, low price; N. H. Albaugh & Son, Tadmor, Ohio. . . . A handsome exhibit of *Raffia*, the tying material derived from the Madagascar Palm *Raffia Ruffia*, by H. S. Anderson, Union Springs, N. Y. . . . *Eureka Land Marker*. A three-wheeled device for marking nursery or other rows, iron throughout; by W. H. Briggs, Covington, Ohio. . . . *Tree Digger*, by L. G. Bragg & Co., Kalamazoo, Mich. . . . *Common Sense Cultivator*. . . . *Nursery Hoe*, with long narrow blade and spring steel *Dibble* for nursery use, by P. B. Fisher, Tadmor, Ohio. . . . Fruiting canes of the *Crandall Currant*, the promising new black-fruited Current, by Frank Ford & Sons, Ravenna, Ohio. . . . *Rhus Cotinus Wood*, showing its beauty when worked and polished. Engraving of flower framed in wood of same. This is said to be the Shitten wood of scripture. Fraser & Lippincott, Huntsville, Alabama. The same firm also exhibited of their southern grown *Pear seedlings*, *June budded Peach trees* four and five feet high, one year from the pit. . . . *Evergreen seedlings* in fine assortment and of splendid growth, from three inches to three feet high, the Blue Spruce and Dwarf Mountain Pine included, by D. Hill, Evergreen specialist, Dundee, Ill. . . . *Grape vines*, from T. S. Hubbard Co., Fredonia, N. Y., showing the adaptability of the soil in this locality for Grape vine culture. . . . Southern grown *Nursery stock*, retarded by ice process. Huutsville Wholesale Nursery, Alabama. . . . Plaut in pot of *Miami Strawberry*, a variety for which great lateuess is claimed; by J. D. Kruschke Piqua, O. . . . *Palmer Raspberry* showing a single strong cane, bearing a remarkable crop of fruit. F. R. Palmer & Son, Mansfield, Ohio. . . . *MeMaster's Box Straps* for strengthening shipping cases. Quincy Staple Manufacturing Co., Quincy, Ill. . . . *Evergreen seedlings* and photographs of the methods employed in raising seedlings of Norway Spruce windbreaks, 70 feet high, etc. The E. H. Ricker Co., Elgin, Ill. . . . *Fruit plates* by the Rochester Lithographing and Priuting Co. . . . New seedling *Strawberries*. . . . *Haverland Strawberry* by M. T. Thompson, Lakewood, Ohio . . . *Western Union Strawberry* . . . *Western Tree Digger*, showing recent improvements, including disc coulters. N. A. Whitney, Franklin Grove, Ill. . . . *Retarded Trees*, by new storage process without ice, in good condition for planting. *Mahaleb stocks*. *Evergreen seedlings*, branch of Marianna *Plum*, etc. J. B. Wild & Bro., Saxcoxie, Mo.

1,257. **Trimming Currants.** The old wood should be cut out each spring before the leaves push out, pains being taken to keep the centre open or of a spreading rather than a compact habit of growth. Pure hellebore and a good bellows used with thoroughness will conquer the currant worm every time whether the growth be heavy or light.—M. B. F.

A Handsome Floral Design. The Improved "Rock of Ages."

The beautiful custom of using flowers as gifts and otherwise at funerals has brought in a demand for some floral pieces of massive proportions and elegance. A common design of this character in the past has been the elaborate and handsome piece known as the "Gates Ajar," but its very elaborateness is an objection to it. Something that is more simple, and at the same time more massive and stately in character is much to be preferred on occasions of this kind.

Of various designs that have come from the makers of wire forms to meet this demand, none has met with more favor than that known as the "Rock of Ages." But the forms as they are sent out, consisting of an upright cross, very massive in its proportions, and having a large cubical base, present too many straight lines and angles to be entirely satisfactory. A great improvement on this is the handsome design ot the same name shown in our engraving on this page and as made by a leading florist of Buffalo. This design for beauty, dignity and simplicity is unequalled by any floral piece we have ever seen, and as such pleasure is taken in describing its construction.

THE IMPROVED "ROCK OF AGES" FLORAL DESIGN

The common "Rock of Ages" form, having a cubical base, is used as it comes from the wire worker. But to this is attached underneath a rough board bottom of a shape something as shown in the lower figure anuexed. This form is used for securing the essential characteristic of the design namely: an imitation in flowers of an irregular pile of stone from which the cross rises instead of from a cubical floral base. Starting with such a bottom of irrregular shape sphagnum is piled on to it and against the original wire base in a manner to imitate the stones of various sizes. The sphagnum is secured by winding round and round. It is seen that two of the round parts (*a a*) of the bottom are much larger than the others, the object of this being the formation of two stones on opposite sides of sufficient size to receive respectively the lines "Rock of Ages" and "Cleft for Me," worked in small fresh flowers, or in colored immortels on a base of other flowers. In all about seven or eight "stones" are made to constitute the base, the smaller ones being formed in a double tier.

In the making-up of the design after all parts, cross included, are filled with sphagnum, flowers are used something as follows: The cross is made of white blooms throughout, one kind like Carnations being preferable to a mixture. Special pains should be taken to have the corners and angles carefully defined. The "stones" are made usually each of a different colored flower, those rather dark being preferred. For a ground on which to letter, sometimes a surface of Sweet Alyssum is used, or Pansies or Violets are very suitable. One or two of the smaller "stones" may be made of crimson Carnation with good effect.

Aside from the flowers thus used on the body of the design, there is made an elaborate loose garland of Roses, having long stems and tied to have the cut ends of these protruding freely. This garland is attached with its stem end to the base of the cross as if it grew from the pile of stones. The other is carried over an arm of the cross and is allowed to hang loosely down the other side. By using Roses of one color, as rose or yellow, the effect of thus having a simple loose garland extend over the plain heavy cross of white is extremely beautiful.

After the "stones" and lettering of the base have been formed, this part is finished by using Fern fronds and long-stemmed flowers in the crevices as if they had grown there. A line of Fern fronds is inserted at the extreme bottom of the base all around. For flowers to be used as if growing from the crevices, such simple kinds as Pansies, Daisies, Lily of the Valley, Roman Hyacinths, etc., are to be preferred to any others. Some of their foliage should always be used with them to better give the appearance of their having grown from the rock pile.

About Some of the Newer Begonias.

W. F. LAKE, ERIE CO., N. Y.

At the appearance of the florists' catalogues each season, I almost invariably turn first to the pages devoted to Begonias, and especially to the new introductions. Begonias are so easily grown, and so well adapted to shaded windows (providing that care is taken to keep dust away from the leaves), that they become favorites with those giving them a trial. One soon desires to possess all the really valuable new kinds as fast as they appear, and does not tire of the old varieties nearly so fast as in the case of Geraniums and more common plants. I usually have about fifty thrifty plants, of nearly as many different varieties.

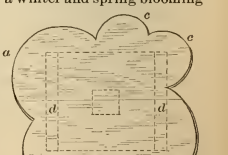
In house culture, the chief requirements are a partially shaded location, a light open soil, and a warm, moist atmosphere. I have a way for helping to secure this desirable air moisture (not only required for Begonias, but also for the general collection of plants) which I have never seen in print nor used by any one else, and find it very valuable. It is to let sponges become filled with water and place among the pots of plants. As the water evaporates, directly under the leaves of the plants, the troublesome red spiders become discontented and sick.

By the use of the sponges, the pots may be placed considerably closer together than where saucers of water are employed to meet this end; but care should be taken that the sponges are not put directly on the earth in the pots as they are liable to make the earth too wet, when it becomes soggy and injurious to the growth of the plant. In the case of large specimens, the sponges may be placed among the branches without harm, and oftimes with much good in preventing the red spider. Water may be occasionally sprinkled on the foliage, if care is taken that the sun does not shine thereon until it becomes dry. Thus treated, specimens may be had which are the finest of conservatory or house plants.

There are some of the more tender varieties of the flowering section, and the smaller growing Rex which do not grow very luxuriant outside of the greenhouse, but if placed in a Wardian case will grow entirely as large and fine, and when used with Ferns make a very pretty arrangement.

Following are mentioned some of the recent introductions growing among my collection: Argentea Guttata, a cross between Olbia and Alba Picta with purple bronze, oblong leaves, with silvery markings. Has white flowers, and does very nicely in common window. Compta, a Brazilian variety of very free growth, its leaves surmounting pale pink footstalks five inches long. The leaves are satiny green with silver tinge along the midrib. Diadema is a distinct variety though not entirely new. Leaf is rich Olive green, very nicely spotted with white, and above average in size, growth inclined to be compact. A cross of this variety with Rex has produced a kind called mirabunda, which is most beautitul, being a thrifty flowering variety, leaves clear green, with silver dost and marblings. If the plant is small, one at first sight would be sure to call it a Rex.

A gem among Begonias, combining beautiful foliage with flowers as well, is B. maucata aurea. The plain manicata with its clean and glossy green leaves is a very fine plant, but when it comes to having the leaves so beautifully blotched with cream deepening into canary, no other Begonia, especially among the light kinds, is so attractive. The combination of colors is most pleasing. For a winter and spring blooming Begonia, nothing can be superior to freeflowering Semperflorens Amelia Bruant. It is a strong free-growing sort of sterling worth. It has the habit of frequently blooming at the junction of the ribs of the leaf which impart a novel appearance when exhibiting this peculiar character. It is not fixed, however, for like other kinds it flowers from the axis of the leaf. The flowers are carmine rose, a color not common among Begonias flowering free-



Form of Base used in the Improved Rock of Ages. a, b, c, for giving shape to the "stones," d, slats against wire base.

ly at this season. It should become as widely distributed as Rubra, for it certainly is as valuable in general points, while for me it has bloomed in every instance much earlier, when the plants were quite small, which cannot be said of Rubra.

Among new Rex varieties, there are a number of desirable plants offered this year. Lucy Colosson, Leoudsii, Andalusia, Edward Kennedy, Le Florifre, and Roi Ferd. Major, are especially fine. The Countess Louise Erdody which has been given more prominence than the other kinds I cannot say is as much appreciated by me as it is not so striking. The variety is certainly distinct and peculiar in its leaf growth, having two lobes at the base, one of them winding in a spiral-like way until we find in a full grown leaf four twists lying on the top of a leaf nearly two inches high. While it is a curiosity, and should be found in all collections of a dozen or more plants, one would not be apt to make it the subject of first choice in making up a collection.

To Messrs. Hill & Co. the Begonia lovers of this country are indebted for much special attention bestowed on this valuable class of plants and the care taken in putting only the best and most easily grown ones before amateurs.

I have not mentioned the Tuberous Begonia in this article because I have had no experience with the named varieties. I find that a package of seed will produce as fine plants as can be had among many named collections, and costs much less.

Begonias. Some Points in Culture. Varieties.

MRS. L. H. GALE, BARTON CO., MO.

I have been led to study up some of the most particular points in the cultivation of Begonias, and to select some of the newer as well as the older varieties for recommendation, and am to-day positive of having one of the most complete lists of these charming plants to be found in any collection. The idea, a mistaken one, seems prevalent that Begonias are hard to grow. In fact they are of the easiest management, and should be in every collection of plants, especially for house culture. Give the plants thorough drainage, and prepare the soil by mixing one-third sharp sand and a rich loam, the rest leaf mould. Pot and water sparingly until good root action is secured, and they begin to grow well. They are not subject to insects. They require to be kept clean. Most Begonias do best grown in pots, and are not designed for outdoor planting.

Begonia Louis Chretien. Has a beautiful Strawberry lustre like changeable silk; flowers large, of a lovely pink shade, the zone marked rose and amber.

Begonia Carrier. Flowers of moderate size, pure white and in clusters, small olive green leaves, very bushy habit, hardy, easy to grow, and in bloom the entire year.

Incarnata. This is perhaps the most reliable of all the Begonias for flowering during the winter months; large pale pink.

Benantii. A very compact variety, rarely attaining more than five inches in height. Flowers pure white, produced in such quantities as to nearly hide the beautiful foliage.

McBethii. Of the Weltoniensis type with deeply indented leaves, which are fine and small; shrubby in growth and very free flowering, being constant the year round. A fine summer bedding plant, if given a light soil and perfect shade. White flowers, waxy in texture, and carried in panicles.

Semperflorens Amelia Bruant. A wonderfully free flowering Begonia of sterling worth and great beauty. This has the habit of blooming at the junction of the leaves, and it imparts a novel appearance when exhibiting this peculiar character. Flowers carmine rose, and produced in great abundance during the winter and spring months. We recommend this to all lovers of Begonias.

Semperflorens gigantea rosea. One of the best Begonias. The following are its beautiful points: It is vigorous and upright in growth, and has very large flowers of a clear cardinal red, the bud only exceeded in beauty by the open flower, which is borne on a strong stem. The leaves are smooth and glossy, and attached closely to the main stem, and forming a shrubby round plant. It flowers continually from October to May, and is most certainly one of the most satisfactory plants in the whole family.

A TRAILING FUCHSIA.—*Fuchsia procumbens.*

Rubra. And now comes the prince among Begonias; for if you only have one plant let it be a Rubra Begonia; for it will prove a constant delight. It is the fastest growing Begonia I know, and will in a few years reach the top of your window, sending up heavy stiff canes an inch in diameter, and rising beside them will grow strong slender branches, gracefully drooping under heavy waxen leaves, and pendant panicles of coral red flowers, as large as a hand. We have a medium sized plant with more than twenty such panicles. These are the cream of all the Begonias, and are medium in price and are all winter bloomers.

An Interesting Trailing Fuchsia.

The graceful and compact habits, and the free flowering character of many of its varieties, render the Fuchsia a general favorite. Most of the species are natives of Central and South America, where they are found in shady, moist places, and on the mountains of Mexico, Peru and Chili. These species have given us some of our most attractive plants for the outside border, and choice and interesting subjects for inside culture. Most of the fine varieties which now grace our gardens, conservatories and greenhouses, are the result of hybridization by the skill of florists.

To New Zealand we are indebted for the charming trailing species, Fuchsia procumbens, which is so well adapted for a hanging basket in the window, and indeed a most charming plant for the purpose. It was introduced in 1874. This exceedingly pretty creeper is principally grown on account of its large, oval, magenta-crimson berries, which remain on for months, and are very attractive during the winter. Our illustration is reduced from Amateur Gardening. The plant throws out shoots from one to three feet in length, covered with roundish leaves about the size of a quarter-dollar, and bearing small, but pretty, green and purple, reflexed flowers, showing a little bunch of stamens with pollen heads of beautiful blue color. It does best in a rich light soil. Like the other Fuchsias, it is deciduous, and requires a season of rest.

As the leaves begin to drop in autumn, the plant may be taken out of the window if objectionable, and placed in a less prominent position, where it can still have a little light and an occasional watering until the leaves are all off. Take care not to damage the shoots whilst the plant is thus stored away, as they are necessary for flowering the following season. In about three months from the time the plant went to rest it will be breaking out again, when it should be brought into the light. Give a good watering to soak the ball through, and in a day or two shake out and repot it, afterwards rehanging it up in its place in the window.

1269. **Strawberry Seedlings.** These are very easily grown. Select fine, well-ripened berries, and rub them up in sand. Then sow this sand on shallow boxes filled with fine, rich loam. Sift a little loam over the sand being careful not to cover the seed more than a quarter of an inch. Now compact the soil in the boxes by pressing it down with a bit of a board. Place the boxes in a cold frame and cover with a slatted shade. The latter consists of a frame the size of a sash having strips of lath nailed across it an inch apart. Its object is to break the force of the sun's rays. Be careful not to let the soil in the boxes become dry. The young plants will appear in two or three weeks. Leave the boxes in the cold frame until spring covering them, when the soil is about to freeze, with a layer of leaves an inch or two deep. Remove the leaves in spring, and after the young plants have started into vigorous growth, transplant them to a well prepared bed. They should bear fruit the year following. E. S. G.

1271. **Unsatisfactory Grape Vine.** Evidently the vines are not true to name. An expert might graft them with a better sort, but it would probably be as well for the inquirer to root them out and plant anew.—E. S. G.

1278. **Encyclopedia of Gardening.** The Illustrated Dictionary of Gardening is the best modern encyclopedia of gardening. It may be had of James Penman, No. 12 Dey street, New York City.—E. S. G.

1284. **Hellebore for Aphis on Roses.** Hellebore will not kill aphis on Roses. Dip the infected branches in strong Tobacco water or in kerosine emulsion made by adding one quart of kerosene to a very strong solution of soap, made by dissolving four pounds of soap in one gallon of hot soft water, stirring the mixture thoroughly until it is cold.—E. S. G.

1314. **Violet Leaves Damping off.** This is probably caused by injudicious ventilation, although in some cases the trouble appears even where ventilation seems properly attended to. Charcoal is sometimes used and recommended as a preventive. All the affected leaves should be removed by hand picking. Then sprinkle a little powdered charcoal into the heart of the plant, and give free circulation of air.

Sweet Pea.

Why I love you so is plain to see—
You are the dearest flower of all, Sweet-Pea!

A bit of purple cloud caught on a stalk;
A rosy vapor floating up and down my garden walk!

The spirit of a flower, with wings of flight,
Yet held by clinging roots for our delight.

A lovely type you are of souls, ah me,
Earth-bound yet ever reaching up, Sweet-Pea!

M. F. Butts, in Wide Awake.

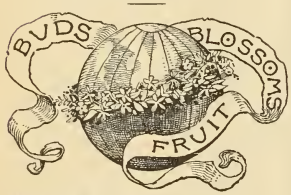
Among the Lilies.

She has been among them lately,
Where they grow so white and tall;
She has touched their blossoms stately,
She, the fairest flower of all.

Something in her face doth show it—
Breathes the tale where'er she goes
Shall I tell you how I know it?
There is yellow on her nose!

—*H. M. H.*

It is evening in the park,
And the softly coming dark
Sees the toads
Snipping up the helpless flies,
Each a dainty, juicy prize,
In the roads.



Sweet Williams gain in popularity.

Liberal feeding for Phlox Drummondi.

Our grounds are your grounds; visit them.

The voice of the lawn mower is in the land.

Green fly on Roses mean defective plant health.

Late growth in Raspberries is all right. Try it.

The bloom of annuals advances with the season.

We want no better orchard cultivator than the Disk harrow.

Defective ventilation is a great enemy to small greenhouses.

A healthy toad would take good care of the insects in one hot bed.

The Edinburgh, Scotland, botanic gardens are now opened to the public on Sundays.

Would you have a collection of hardy perennials? Many can easily be grown from seed.

Plants of Mammoth Improved Dandelion have been received and are growing on our grounds.

We here repeat that in summer watering little and often is not desirable. Soak the soil way down.

Piasa King Asparagus, from Piasa King farm (Godfrey, Ills.,) was fine, tender and delicious "grass" indeed.

The roar of Niagara Falls may be clearly heard in all favorable weather at Woodbanks, six miles away.

"**Miticuttah.**" "Silens Messor," etc.,—what kind of lawn mower nomenclature is this? Will our English friends explain?

An Apple, bloomless, seedless, coreless, is announced from Flag Pond, Va. Is it one of nature's freaks or of man's humbugs?

Sunlight is one of nature's greatest antiseptics. In the construction of forcing houses as much sunlight as possible should be admitted.

Why plow up a Strawberry bed when only two years old? I have a bed 16 years old and it bears as well now as ever.—*W. W. R., Toronto, Can.*

Next month we will illustrate a simple and useful non-patented cultivator which is at work almost continually in the POPULAR GARDENING grounds.

Onion Fly. An English gardener insists that to scatter sand that has been soaked in petroleum over the beds, will keep away this pest that leads to so much trouble.

This We Have Learned. Under the best of garden culture a plot of Strawberries in which all runners are clipped will bear far less fruit than one in which free running is allowed.

A Good Work. Will not every reader help on the cause of horticulture by influencing one person to subscribe to this, the cheapest and the leading horticultural journal of this continent?

The Colerain, a new white Grape, has done well on Mr. Carman's grounds, and conditionally he regards it as the best native white Grape in cultivation. It is thought it will adapt itself over a wide range of country and climate.

Flower pots are useful, but for many purposes connected with plant culture boxes or tubs are decidedly better. Butter tubs after once having served their purpose can generally be had very cheap at the groceries, and when painted red or brown are not at all unsightly.—*T. R.*

Ants on Lawns. I tried every known persuasive to make colonies of ants move off my lawn, of which they occupied a portion of about four feet in diameter, but all in vain. At last I applied hellebore mixed with a little sugar to each ant ,hole—and now they have disappeared. —*Mrs. W. H. Dick.*

A berry crank, that is what I was called ten years ago, being the only man in Vernon Co., Mo., who grew berries. Now our most intelligent men and women are becoming "berry cranks," and I receive more inquiries how to grow small fruits, etc., than I have time to answer.—*Jacob Faith.*

A delicious privilege of our village homes is this living and growing up with fruits, flowers and vegetables. I object to flowerless lawns, to fruitless, flowerless, vegetableless places, however correct otherwise, simply because they can not be considered well furnished,nor the children reared there well brought up.—*F. K. Phœnix.*

Insects on Plants. I have discovered one thing of value in greenhouse management, and that is that insects do not like the atmosphere and treatment which plants most enjoy. Give the latter proper air, light, heat, space, soil and water, and insects are easily kept down; neglect them as to these points, and the insects will thrive.—*Jennie Raines.*

We venture to say that no visitor to the POPULAR GARDENING grounds at La-Salle-on-the-Niagara in this year of 1889 will be disappointed with the work in hand, if only the fact be kept in mind that this is the first season's work. All operations have been pushed with vigor, and the work in its infancy can hardly fail to be satisfactory of inspection by horticulturists.

English Layering Pins. In the English market may be found neat and serviceable layering pins made of galvanized wire in the patterns shown annexed. One of these pins is double looped—the other single looped. The former has a stronger hold on the layer and is less liable to cause the branch to break. This one is furnished at about 25 cents a hundred as against 18 cents for the single.

What glorious benefit from thorough mulching in this dry weather. Ask the poor plants how the rough straw or manure mulch looks in the garden and see what a unanimous vote they give in commendation of the supreme beauty of the mulch. Handsome is that handsome does, and I hold with the mulch protected plants that in time of severe drouth thorough mulch is the handsomest garden adjunct.—*F. K. Phœnix.*

Strawberries in Central Kansas. Here it is usually hot and dry during the month of July, sometimes beginning in latter part of June and extending well into August. I find the James Vick the hardiest and most prolific under these conditions from among Manchester, Downing, Crescent, Countess and Wilson. My Manchesters were entirely killed during the dry spell of last August. These dry seasons render the red varieties of Raspberries incapable of withstanding the winters and care bestowed upon any of them is generally fruitless effort.—*J. A. Smith.*

Zinnias in Pots. Every flower grower knows that there is generally a scarcity of gay blooming plants late in autumn, and although Zinnias are not generally cultivated in pots, they are most valuable for that purpose, their gay colors and fine large globular flowers making quite a display indoors long after they cease blooming in open beds, where damp nights and heavy rains generally cut short their beauty. Any left over from planting should have their flower-buds nipped out and be potted up at once for this purpose, after which set them in the shade for a few days until they get a hold of the soil and then put them out in open situation.—*Canadian.*

To Florists. By all means make your plans to attend the Buffalo Convention of Florists to be held Aug. 20-22. You will find ours an interesting city to visit and in the floral embellishing done on our thousands of lawns, some valuable lessons may perchance be learned. The Buffalo parks and cemetery are not excelled on the continent; these you must see, and Niagara river and falls at our door are worth a journey of thousands of miles at any time to behold. The POPULAR GARDENING grounds at La-Salle-on-the-Niagara with the experiments in lawn making and flower and shrub bedding of special interest to florists, must also be kept in mind. Rochester, with her famous nurseries, is but two hours' ride from here. Come to Buffalo.

Herbaceous Grafting. It is not generally known that Coleus and even Cucumbers and other herbaceous plants may be grafted quite successfully, and surprising effects may often be secured by such operation. To graft Coleus choose vigorous young plants, cut horizontally to the wood where it is a little smaller than an ordinary lead pencil, and split the stock in the center of top, about one inch deep. The stock and base of scion of course must be of same thickness, so that the rinds meet. Use firm little cuttings, not too soft, about one and a half inches long, for cions. Cut wedge shaped, one inch in depth and insert into the split stock. Bind with soft worsted. April and May are the best months for the operation. The plants should be kept in a propagating case or bed in a temperature of 70° to 80° and remain shaded until the union is formed

Nasturtiums and Petunias. Last summer I saw some beautiful dwarf Nasturtiums and broke off several slips with different colored flowers. They rooted easily, made strong plants and in February commenced to bloom. The colors were very soft and brilliant. The pot stood on a bracket in my small conservatory and the leaves were close to the glass. They will not do well unless they have a great deal of sunlight. Close to the bracket is a pot holding Petunias which grow like vines, the tops being close to the window in the roof. There were several kinds in one pot and the lovely flowers opened every morning. The Nasturtiums and Petunias alone made a brilliant show. They are so easy to grow that it makes them the plants for amateurs. Nasturtiums do not need much water, but the Petunia while in bloom is the thirstiest plant I know of. I fill the saucers sometimes twice a day. I find slips broken off in the summer are better for the house than seedlings and you can easier choose the colors.—*Sister Gracious.*

Blue Gum Tree. It is only a short time since the praises of the Eucalyptus globulus (Blue Gum tree of Australia) for its beauty, usefulness and its malaria-absorbing qualities were sung in almost every agricultural periodical. Yet all this clamor has not been able to make it popular for the simple reason that it is entirely unsuited for open air culture in this country, being disease-afflicted in Florida, and too tender everywhere much north of that state. For pot culture, especially when treated as an annual, however, it is an interesting subject, of beautiful habit of growth, as a glance at the illustration will show. Leaves are of a bluish green color. Good plants can readily be obtained in one season by sowing seeds in January or February, in light rich soil and exposed to a temperature of 55° to 60°. They need plenty of water in summer but no particularly high temperature. Their growth is rapid and the size they attain in one season's growth generally enforces their retirement in fall. The leaves of Eucalyptus citriodora or Lemon-Scented Gum Tree, when gently rubbed, emit a pleasant odor. This species is also well suited for pot culture in the same way as E. globulus.


English Layering Pins.

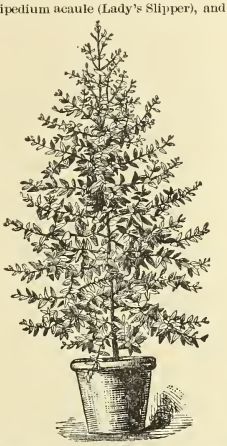
Detroit Flower Show. Our first exhibition took with a rush. Over 14,000 people went to see the flowers two days and the second evening the crowd inside the rink was so great the doors had to be closed for an hour and meanwhile thousands collected outside and some waited two hours for a chance to pay their quarter to see the show. There were beds arranged on the floor, the pots put into sawdust, so it was like looking down on a bed of flowers in the garden; beds of Geraniums, Begonias, Marguerites, Carnations, while choice Roses were arranged on shelves. There were twenty-one booths with the young ladies attending dressed in costumes appropriate to the flowers they represented and sold. Twenty-one different charities will be benefitted, and each will get over five hundred dollars. Daylight was

shut out, and the soft electric lights in different colored globes brought out the beauties of the flowers. The success of the floral exhibition shows the growing love of flowers and the need of just such opportunities to see them. The success of this one makes it probable we shall have a like occasion every year, and they ought to be yearly institutions in every city large or small.—*Sister Gracious.*

Packing Plants. The other day I received a few plants by way of exchange. The light pasteboard box in which they were enclosed was crushed, the very thin paper around the box badly torn. At some postoffice a coarse string had been tied around to keep it on the box. The plants had a small bit of cotton around the roots, which were as dry as dry could be and so were the plants. I suppose many have not the proper materials for wrapping up plants, as do the florists. Waxed paper is almost indispensable, and so also is Moss. I always save the light wooden boxes, the paper and the Moss when I have packages from the florists, so that I am usually well supplied. One can make the waxed paper in the following way: Take some thin, light paper, tissue is best, and lay it on a stove griddle just warm enough to melt the beeswax, and rub it over until every part is covered. Those who live in the country can get plenty of Moss; those in the city can get the Sphagnum at the florists or where they keep florists' supplies. The Moss should be thoroughly wet and then squeezed so that it will not drip. Wrap the paper around the plants. If they do not fill the box, put in something that will, so that they will not shake about. Tie up the box and direct it. Then wrap in paper, directing that and tying it neatly and strongly with twine. Thus prepared plants will go safely for a long distance, and retain their freshness.—*M. D. Welcome.*

Celery in Partly-Shaded Ground. Last year I had a part of a row of Celery along the north side of an out-building in my garden, and that part was very much larger and better than any on which the sun shone in the middle of the day. This year I have planted rows of Peas and Sweet Corn alternately, east and west, and when the Pea vines are removed Celery plants will be set so the Corn will shade them during the hottest part of the day. I will report results, and would like others to do the same. I grow Celery plants by sowing the seed as early in the spring as the ground can be made fine, in drills, covering as lightly as possible, and laying a six-inch board over the row and firming the ground by walking on same. This makes a much nicer looking bed than when the feet alone are used. Then I give the bed a thorough sprinkling, and cover it with a piece of old carpet to keep the ground from baking or becoming dry. By turning up the edge of the carpet it can be seen if the ground needs sprinkling, and this I frequently give on the carpet. The carpet should be removed as soon as the plants begin to show. I grow seedlings of Primula, Gloxinia, and similar plants in boxes, by placing boxes on the north side of a building, and covering box with a damp cloth which I moisten two or three times daily. Thus grown there is no danger of ground becoming too dry and killing the seed.—*E. P. Robinson.*

Forest Leaves I have recently seen the practice of collecting leaves for manurial purposes severely condemned as merely "robbing Peter to pay Paul," and their value for this purpose estimated very low. With regard to the latter point I think one only needs to observe the rapid improvement of the soil in forests where they have been allowed to remain and decay for a series of years to be convinced that they furnish considerable fertilizing material. The question of the policy of removing them is one which depends much upon circumstances. Unless upon very rich land it will doubtless be better to allow them to remain while the trees are small or until they are well and deeply rooted so as to be able to take care of themselves, but after they acquire considerable size, there are instances where I think they can be made to afford a large amount of bedding for domestic animals and largely increase the manure pile without serious detriment to the trees. There is a grove of Oak and Pine trees occupying about an acre, within a few rods of my house, the Pines being six to eight inches in diameter and the Oaks three to four inches. About ten years ago one half of this grove was thinned, removing the inferior trees and underbrush and from this portion the leaves have annually been raked off and used for bedding, while the other half was left without thinning and the leaves allowed to remain on it, and the trees are at this time fully as good as the raked portion, the moderate thinning seeming to have made up for the removal of the leaves. There are also incidental advantages in this case. This grove was left as a wind-break and to afford a pleasant resort in summer, and this treatment has kept down all the undergrowth of small bushes and the ground is almost as smooth and clean as a floor. There were also a few plants of Cypripedium acaule (Lady's Slipper), and this



Eucalyptus or Blue Gum Tree grown from seed.

clean surface appears to favor the vegetation of their seeds so that at present they have increased to nearly 100. In many cases by taking a little time to plant suitable native plants near the trees so they would not be disturbed, quite a flower garden might be had in such a grove.—*W. F. Bassett.*

Spoiling Simple Operations. It is not often the case that marked success in the culture of plants accrues to those who ignore the directions and results of experience of successful and competent cultivators as given in the horticultural literature of the day. As a sample of the ignorance of the right methods for performing common every day operations, reference need be made to but one, that of repotting and potting plants. A very successful lady amateur was relating to me what a wonderful thing she had just accomplished in the safe removal from one pot to another of a large plant pot-bound for several months. It was first watered thoroughly, then a long slim-bladed knife was run around the edge of the pot, then by pushing up through the pot the piece of broken pot which had been previously placed there, it was finally scooped out and went on fairly well after being transferred to its new quarters. She pointed to me a fine specimen of Hoya which needed removing very badly, but was still in perfect health, saying: "I dare not undertake to repot that plant; do you not think that the pot had better be broken with a hammer in order to save it?" I simply loosened its fastenings from the conservatory wall, turned the pot upside down, to her horror, and gave it a smart rap on the shelf near, when it slipped out of the pot without a root being bruised, and though in full bloom came out without the least visible harm. This plant completely covered one side and the roof of a 8x10 conservatory and was the most prolific Hoya I ever saw. Then another person complained of losing such a large per cent of plants received by mail, blaming the florists for inferior plants or packing. When questioned as to treatment after being received, it came out that they were subjected to a warm bath for an hour (which is somewhat too long for best results usually) and then were put on the back of the kitchen stove to recuperate. If after the bath the pots had been placed in a box and covered with a sash to make it more greenhouse like, or even put up with the other plants there would have been no just cause for complaint. The suggestion of a box was tried with the next order and not a plant died.—*W. F. L.*

New York Flower Notes.

Trade is so very dead just now that it is difficult to find any original features. With the spring exodus the best of the florist's patrons leave town and business becomes hopelessly dull. Festivities are all over and there is nothing to fill their place.

Decoration day was pretty good for the florists; less designs were sold, but there was a very large call for loose flowers and pot plants. The call for plants was very large indeed, not only in the city, but in all the suburban towns. Lilium Harrisii in pots sold rapidly; all sorts of white flowers and potted Pansies were in demand. There was a good deal of out-door stuff in the market, which tended to lower prices. Out-door stuff seemed to be a week or ten days ahead this season. A tremendous crop of flowers from out-door shrubs was sold around Decoration day—Mock Orange, Weigelia, Deutzia and Spirea. Mock Orange was in great favor, but of course it was very cheap.

Just now the street venders seem to get most of the flower trade; Pond Lilies, Magnolia and Kalmia seem to be their strong points. A great quantity of the blue Corn flower is to be seen; there has been an attempt to boom this as a more choice and expensive flower under the description of the Royal Flower of Germany, but while it is well liked it will never be an expensive flower.

Lilac is pretty well gone now though a little is still seen from northern New England. It is always asked for during June, being such a favorite bridal flower.

Big corsage bunches now seem a thing of the past; they are never seen on the street worn by women of good style. The favorite at present is a little breast knot of field flowers for the promenade; for ceremonious occasions a bunch of Orchids or fine Roses. The attempt to popularize the Gardenia for men's wear seems rather to have failed.

Scarlet and orange Nasturtiums, with their foliage, have been used with good effect in luncheon arrangements. The arrangement is usually simple; a loosely filled bowl or low basket in the center, with trailing sprays about the table. Excessively elaborate decorations are never seen at these simple entertainments.

La France Roses are still much affected for ladies' luncheons, a single fine Rose being given as a favor. The best Roses, however, are now gone. The crop is chiefly from outside, and of course these never compare with well-grown indoor Roses. The few Beauties to be seen are but melancholy specimens. Next year the market will most likely afford a very much larger crop of Madame DeWatteville; it has been a great success both with the grower and the seller. Marquis de Vivens will be well grown, too, and we may expect a very thorough trial of Souvenir de Wootton, Mr. Julius Roehr's new Rose, a sport from Anna Alexieff, will receive a good deal of notice from the trade; it is very promising and evidently a fine thing.

The Rock Rose (Cistus) is an English favorite which now is now being tried here; some plants were noted at Henderson's. A pretty thing too; is it going to be a success in our climate? So many of the European favorites fail.

It is probable that a good many will try that pretty little Allium Neapolitanum, for it was much admired, and perhaps there may be a few other novelties in the bulb line. Irises, which were tried, do not appear to make a success. If only some of the big showy sorts could be forced about Christmas they would bring a satisfactory price. Prices realized by forced shrubs during the past winter were not very large.

Although most funeral notices are followed by "Please omit flowers," a fair amount of decoration is still done in this direction, though it is more apt to take the form of loose flowers and pot plants. All sorts of handsome decorative plants are used. Some beautiful effects are produced on the plaques covering the entire top of the casket. Sometimes they are made of solid Ivy leaves, with a loose bunch of choice flowers falling across from one corner. Cattleyas are generally used in choice funeral arrangements.

Among baskets the Marie Antoinette shape leads, though the French fish basket and some high square styles are often well filled. For table use a low plaque basket is always chosen, but these other styles are often stood about in decorating for a reception. Ribbon is still used but not so recklessly as formerly. High tripod baskets are not very much used, because it is impossible to drape them without making them look clumsy. The stands are in the way, and experience shows that the simpler a basket is, the better it may be filled.

Bouquets are as large as ever, but the favorite floral gift takes the form of choice loose flowers.

EMILY LOUISE TAPLIN.

Wilson Strawberry. Our most valuable Strawberry in Georgia is the Wilson.—*P. J. Berckmans.*

Thinning Pears. I believe there is not much profit in Pears unless thinned out properly.—*G. Zimmerman.*

Spraying Trees. The reason why my fruit was so fair was the spraying of Paris green given to the orchard when the fruit was as large as Marrowfat Peas.—*J. J. Thomas.*

The Baldwin Apple. There seems to be more money in it than in any other variety,and I think that is all there is in it. Nobody puts a Baldwin in the cellar for home use.—*R. W. Watson.*

Average Orchards. Our orchards are very far from being what they ought to be. There are instances of exceptionally good culture and good management, but these are few.—*P. Barry.*

Berry Harvester. Last season was dry and picking hard, the berries adhering to the stems with great tenacity. But on moist land the harvester worked well. Must learn how to use it before it is a success.—*Mr. Case.*

Choice Pears. The sorts which sold at highest prices were Bartlett, Seckel and Claregeau—the Bartlett for its general popularity, the Seckel for its high flavor, and the Claregeau for its surpassing beauty of appearance.—*J. J. Thomas.*

Apricots and Nectarines. These are not a success in common hands. A few choice varieties of the Russian Apricots we think worthy of trial, particularly Gibb, Alexis, Catharine, Alexander Nicholas and J. L. Budd. They give a succession, but we do not wish to speak too confidently.—*P. M. Augur.*

Fruit Trees Along the Roadside. From the long lines of Apple trees that skirt the roadside adjoining many of the farms of Genesee County, crops in paying quantities are already being harvested. Mr. Charles E. Cook the past season gathered from about 50 roadside trees 200 barrels of choice winter Apples of the Northern Spy variety.—*Irving D. Cook.*

A Great English Society. Though its arrangements are far from faultless, the Royal Agricultural Society of England is beyond all question the greatest and most successful association of its kind in the world. It consists at present of nearly 11,000 members, and the prize money which (with extra assistance from outside) it offers for the great show to be held at Windsor, in June, amounts to £12,000.

Juneberry. I have been experimenting with the dwarf varieties of Amelanchier for about fifteen years, and I have several varieties growing upon my place in Kansas which are abundant bearers, extremely hardy, and have never been troubled with any fungus. Have sold four to five hundred quarts of the fruit in a season, generally at good prices. The varieties differ greatly. I have one from the mountains of Pennsylvania which is of unusually fine flavor, and very promising.—*H. E. Vandeman.*

Commercial Fertilizers. These should always be used to supplement, and never to supplant our home manures. They should be used only in such rations as are safe and healthful, never passing the maximum of a truly economic application. If we desire perfection in fruits, we must supply in the best and most available form the elements needed in the desired article. It is better, however, to supply a little more than the estimated need of the plant than to fall short.—*P. M. Augur, before Am. Pomological Society.*

Cemetery Arrangement. Cemeteries should be as beautiful to drive through as to walk through, and roads must be carried on and over the hills and knolls. Steep grades, however, should be avoided, unless they are absolutely necessary, or otherwise they will be constantly washing out, and always a trouble and expense in keeping up. They must be placed, too, in harmony with the general design of the whole, which must be in the eye of the landscape gardener as the conception of a beautiful landscape painting is in the eye of the thorough artist before he places it on canvass in all its details.—*Association of American Cemetery Superintendents.*

Late Cultivation of Raspberries. H. M. Engle, Pa.: I think it best, as a rule, to cultivate Raspberries later than other fruits. I have noticed that those canes which are produced late in the season bear the best the following year. A. S. Fuller, N. J.: I am satisfied that a late growth of Raspberries is to be encouraged. The trouble all through the South is that in summer the leaves burn so that the canes do not matnre. In the mountains of New Mexico I have seen snow upon the bushes when they were full of leaves and fruit, and yet there was a full crop the followiug year. The ability of late growths to endure cold is especially true of Red Raspberries, but also to some extent of Black Raspberries and Blackberries.—*American Pomological Society.*

Working Men and the Study of Botany. An exhibition of marine plants, Mosses, Ferns, shells, etc., extending over five days, was held recently in Aberdeen, England, by the workingmen of that place. This is the third exhibition of the kind, but the present one, both in point of nnmbers and the quality and neatness of handling of the specimens, far eclipsed the previous two. It says a great deal for the members of this society, all of whom are working men, that they are able, during their limited leisure, to gather together such an excellent collection. These exhibitions are intended to foster a love of research among all classes of the community, and if we are to judge by their large numbers of visitors who nightly crowded the hall, this worthy intention should be to a great extent verified.

Plums for Market. Bradshaw is a large early purple variety, of fair quality, that always sells well, because it is large and handsome, and also because it may be put into our market before the same is supplied from New York aud elsewhere. The tree is a thrifty upright grower and comparatively free from the black knot. Smith's Orleaus is of good size and showy, covered with a deep purple bloom and sells well, though only of fair quality. The Lombard is a well-known fill-basket variety of medium size and fair quality. It is reddish purple in color and the tree is an enormous bearer. The variety needs to be thinned to secure fruit of good size. Here we are inclined to stop, but if a yellow Plum were to be added, it would be Prince's Imperial Gage. *F. C. Hyde*, before *Mass. Hort. Society.*

Rooting Cuttings of House Plants. Plants can be easily grown from cuttings in moist sand. Place an inverted tumbler or glass shade over them, as it will greatly promote the growth by retaining the moisture. Mnch depends upon the selection of the cutting; if too young and full of fresh sap, it will fade away from too much evaporation; if too old—hard and woody—it will be too long in striking root. Select a cutting that is perfectly ripened, from a vigorous shoot, a trifle hardened at the base, with a joint near the end of the cutting, as all roots strike from it; keep up a good supply of moisture and you can hardly fail. I usually start cuttings early in August, so that they get in fine growing condition before frosty nights compel me to bring all plants indoors. We feel quite inclined to leave them out as long as possible—this is a mistake; the change will be too great if taken immediately into a heated room. With the best of manuagement they feel the change, but by using care they recover much more quickly.—*Mrs. Arnold, before the Wis. State Hort. Society.*

Planting Apples for Export in Canada. The best time to sell any article is when it is first ready for market. If farmers would grow the right varieties, they would receive better prices. Formerly the English market took any variety that was good in appearance, now they want a really good Apple. While some shippers have lost money the past season, those who handled the right varieties, packed and culled properly, have made money. Apples should bring what they are really worth, and the practice common with buyers of going to a man and paying so much per barrel for his Apples in bulk is bad, as in that case, he aims to produce quantity regardless of quality. When the shipper could pay $1.50 per barrel for such Apples as King Tompkins, Ribston Pippiu and Blenheim Pippin, some other varieties are not worth more than $1.00. The Greening is coming up in value in the English market. Great care is necessary in recommending what varieties to plant, as some varieties succeeded best in one section and others in another, perhaps but a short distance from it. Liberal treatment of the orchard in the matter of manures is essential to success. Our Apple market suffers severely from bad handling of the Apples, from the fact that Canadian Apples are sold by auction on the Liverpool market by commission men. Canada has comparatively a monopoly of the production of first-class Apples, and for this reason there was little or no danger of a glut in the market. The American Golden Russett at the spring season brings better prices than any other variety. It is folly to plant many varieties, as too many farmers have done in the past. The new Apple called Enormous,of which we are now hearing such good reports, is probably only the Alexander with a new name. This has been done frequently with this variety, and as it is unusually handsome, the tree sells readily from the colored plates, although only a fall Apple.—*A. M. D. Allan, before Dominion Farmers' Council.*

Manures for the Orchard and Garden.

[Extract of paper read before the Western New York Horticultural Society by Joseph Harris.]

Manure is a by-product. Its price is determined, not by the cost of production, but by competition among consumers. If stable manure were sold in Rochester for 10 cents a load, there would be just as much produced as if it sold for $2.00 a load.

This view of the subject seems to be overlooked. If gardeners, nurserymen and fruit growers would study the subject of the oft ridiculed "special fertilizers" I am confident they would soon be able to use them with great profit, and not be obliged to bid against each other for the by-product of the city stables.

We greatly need some reliable experiments with nitrate of soda, sulphate of ammonia, superphosphate, potash, etc., alone and combined in different quantities and different proportions. Our average commercial fertilizers do not contain as much nitrogen as Clover hay, hence gardeners, nurserymen and fruit growers often find little benefit from their application.

The profit of using nitrogen depends on the price of the product. Artificial manures will make trees grow but it would not pay to use them on a timber lot to grow wood for fuel at $3.00 per cord. It is strange that this point is not more generally recognized. We hear now-a-days a great deal about "nitrogen free extract" or "carbo hydrates" or "digestible woody fibre." They are all classed together and in tables of nutritive food values are estimated to be worth $18 per ton. Calling Timothy hay $15 per ton; Indian corn 60 cents a bushel; Potatoes 30 cents a bushel; Apples $1.50 a barrel; Pears $3.00 a barrel; Peaches 70 cents a basket, and Strawberries 2 cents a quart, we have the following market prices of a ton of carbo-hydrates: Timothy hay, $30 per ton, Indian Corn $30 per ton, Potatoes, $58 Apples, $125, Pears, $250, Peaches, $500, Strawberries, $750 all per ton.

The significance of these figures is obvious. Chemists are not going to persuade people to eat what they do not like. It is useless to tell us that Corn and Potatoes are the cheapest food we can eat. As fruit producers we should study to grow those crops that people are willing to pay a good price for. And if we grow crops in which the carbo-hydrates, instead of being worth $30 per ton, are worth $100, or $200 or $300 or $500 or $1000 per ton, we should see to it that the plants have all the food and especially all the nitrogen, that they want to produce a maximum growth. It will not pay, perhaps, to use nitrogen to grow carbo-hydrates in Hay, Corn, Oats and Wheat, but it will pay largely to use them to grow carbo-hydrates in Apples, Pears, Peaches, Strawberries and other fruits. But it should be understood that when we use manure for fruit trees we should see that the fruit trees get it. If we grow Wheat Oats, Potatoes, Beets, Strawberries and seeds among our Peach, Pear, and Apple trees, we should have to furnish an excessive supply of nitrates before the fruit trees would get much of it. The greater portion would be absorbed by the annual crops and weeds, and it may well happen that a moderate dressing of manure would, by increasing the growth of the weeds, actually lessen the crop of fruit, for the reason that the greater the growth of weeds the more water they evaporate and the drier would be the soil where the roots of fruit trees are searching for food and water.

As vegetables and fruits are improved, they require richer land, just as improved herds of animals require richer food. I do not call grass and hay rich foods; neither are phosphoric acid, potash, soda, lime, magnesia and other ash constituents rich food for plants. They are absolutely indispensable, but in addition to these we must

have a liberal supply of nitrogen. It is nitrogen that makes rich land. Of the three most costly ingredients of plant food, nitrogen, phosphoric acid, and potash, nitrogen is the only one that can be evaporated or washed out of the soil, and it is only in the form of *nitrates* that nitrogen can be washed out of the soil. And there seems good reason to believe that it is only in the form of nitrates that nitrogen is taken up by ordinary plants. If we use nitrogen in sod, green crops, barn yard manure, blood, flesh, hair, wool, or even in the form of ammonia,it must first be converted into nitrates before the plants can take it up or before it can be washed out of the soil. If it were not for this fact, our soils would long ago have been exhausted of nitrogen. Every summer a certain portion of the nitrogen in the organic matter in the soil is converted into nitrates, and if the nitrates were not taken up by the plants they would be washed out of the soil the coming winter and carried by the rivers to the ocean. Of course this kind of farming does not pay. Rotation of crops enables us on the one hand to keep the land cleaner, and on the other hand, Clover roots go deeper into the subsoil than Wheat roots, and have a greater capacity for taking up nitrogen from weak solutions in the soil. In other words Clover has a greater capacity for stopping the loss of nitrates from leaching than Wheat. And probably the same is true from Indian Corn, Beets, Rape, Turnips, and all crops that continue growing late in the Autumn It is probable that as the roots of fruit trees are absorbing food from the soil all the time, winter as well as summer, there need be little loss of nitrates on land covered with an orchard.

One thing is certain, our orchards need more nitrates, or as we used to say more available nitrogen. If we can get nitrogen, it is a comparatively cheap and easy matter to get phosphoric acid, potash, etc. The cheapest source of nitrogen is the organic matter in the soil, and this is derived from a previous vegetable growth, possibly some of it thousands of years ago and some of it only last year. The more recent the growth the more readily it is changed into nitrates. It is only within the last dozen years that we know how the nitrogen of organic matter was converted into nitrates and thus rendered available food for plants. The change is effected by a minute plant, or what would popularly be called a fungus. The essential conditions for its growth are air, a moderate temperature, moisture and lime, potash or soda.

Stagnant water, by excluding air, stops its growth; so does a reduction of temperature to near freezing and dry soil. A drained soil, well tilled and repeatedly exposed to the air, with the necessary moisture and a temperature ranging from 50 to 100 degrees are highly favorable to its growth. This is a far cheaper way of getting nitrates than sending to South America for nitrate of soda. If the matted sod in orchards was plowed, harrowed and cultivated and exposed to the air, as soon as the soil got warm these nitrate producing plants would grow and produce nitrates for the growing plants, and if there were no growing crops or weeds on the land, the trees would get the nitrates. If you let them, the crops and the weeds will take up the nitrates. You can convert nitrates into carbohydrates in the form of weeds that pay nothing, or into carbo-hydrates in the form of grass or grain that pays a little, or into carbo-hydrates in the form of fruit or garden truck that is worth four or five, or ten, or twenty times as much as in the form of grain; or you may convert it into a block of nursery stock that is popularly supposed to be worth a king's ransom. If we put on half the quantity of ordinary manure, and sow broadcast 200 lbs. of nitrate of soda per acre in addition, this will be fully equivalent to a good dressing of the very richest of compost, and a good deal cheaper. I say nitrate of soda, because it is not only a cheaper source of nitrogen than sulphate of ammonia or the organic nitrogen in our different fertilizers, but the nitrogen is in just the condition necessary for absorption by the plants. I have used it with great advantage on Peaches, Strawberries, Roses, Currants, Raspberries, Asparagus, Celery plants, Potatoes, Onions, Beets, and nearly all garden crops. For several years we could not raise Peaches; the leaves curled up and turned yellow in June, and frequently fell off, and in a year or two the tree was dead. For two years the trees that have had nitrate have shown little or no symptoms of the disease—if disease is it. The leaves had that dark green luxuriant color that is the characteristic effect of liberal manuring, and better than all we had fine crops of Peaches.

But will not nitrate produce a spongy growth with immature buds, easily killed in the winter? I think nitrate of soda *sown early in the spring* has precisely the opposite effects. Nitrate applied early in the spring are taken up by the Peach trees in May and June, or at the very time that the trees usually show signs of a lack of vigor. Late in the summer or early fall, little or no nitrate of soda would be left, and consequently would produce no late spongy growth of wood. It is true that Peaches could be grown forty years ago where they do not now flourish. May it not be that the organic matter in the new soil held more water, and consequently furnished the Peach trees nitrates early in the spring, and that what our Peach trees need to make them as healthy and productive as formerly, is a liberal supply of nitrates *early in the spring?* And a market gardener, instead of using such excessive quantities of manure for the purpose of getting nitrates for his early crops, might well try if a direct application of 400 or 500 pounds of nitrate of soda, with a small dressing of manure, would not be at least effective, and far cheaper.

Management of House Plants.

[*Abstract of paper read by George C. Watson before the Clyde Grange Natural History Society.*]

The cultivation of flowers is an occupation that improves alike the body, mind and heart. It is an almost certain indication of purity and refinement.

We can afford to cultivate and study flowers, if for no other reason than their cheerful surrounding. Many do without flowers because they think they cost too much time and trouble, but all things worth having cost considerable, and anything worth having is worth working for. Oftentimes the partial success or in many instances, total failure in the cultivation of flowers is due to the fact that we try to do too much, that our gardens are too large and not sufficiently cared for. No one should have more ground devoted to a garden than can be kept in the highest state of cultivation. Excelleuce affords satisfaction aud pleasure,while failure brings mortification and pain.

The same may be said of house plants, or plants kept within doors during the winter; too often do we see many plants crowded together in a poorly lighted window, compelling each plant to take on a form never intended by nature, and foliage quite different from that desired by the owner. One of the chief requisites in management of house plants is plenty of sunshine, next an atmosphere neither too dry, nor too close,and a uniform temperature, lower during the night than during the day.

Watering. Rain water is better than spring, or well water. Hard water may be greatly improved by adding a drop or two of ammonia, or a little soda, a small nugget about the size of a pea to every gallon of water used. Morning is the best time to give water, and evening next. Never water houseplants when the sun is shining brightly upon them. The supply of water must be regulated according to the demands of the plants. The condition of plant and soil is the best guide. Never give water when the soil is moist to the touch. Nearly all plants require more water when in bloom than at any other time, more in a warm temperature than in a cold, and more when in a state of active growth than when at rest. Plants in open rooms usually require water once a day and some demand it twice.

Syringing. Cleanliness is essential. The leaves of plants should be kept free from dust, hence frequent washings are absolutely essential, although when watering, never wet the flowers of a plant, nor allow drops of water to stand on the leaves in the sunshine. Never allow water to stand in the saucers of the pots unless the plants are semi-aquatic. Watering supplies plant food or elements of fertility contained in itself and converts the plant food, or nourishment of the soil into a liquid form so that it may be absorbed by the roots. The roots of a plant should be kept moist not wet. Where the drainage is the most perfect, plants will generally be the healthiest and will need watering the oftenest.

Give house plants as much light as possible during the day, and darkness with a lower temperature at night. A uniform temperature of 60 or 70 degrees in the daytime, and 40 to 45 degrees at night, will give the best results. Turning the plants toward the light should not be done, unless done regularly. Besides light, house plants require a good supply of fresh air. Ventilation is absolutely necessary.

Refreshing Cut Flowers. The question is often asked "how can I restore or refresh this flower?" It may be a rare flower, or one that is prized highly, as the gift of a friend. In either case joy will follow its restoration. Cut flowers have frequently been restored to freshness, even when every petal is drooping, by placing the stems in a cup of boiling hot water, leaving them until the petals have become quite smooth, then cutting off the cooked ends and placing in luke warm water. For this purpose rain water is thought preferable. The freshness of cut flowers is due wholly to two conditions. Either evaporation from the flowers must be prevented by enclosing in a case containing a saturated atmosphere, or the evaporation must be supplied by moisture at the cut end or stem. This stem is composed mostly of woody fiber, or cellulose, whose power to absorb water soon diminishes, hence to enable the stem to absorb the most water, the end must be frequently cut off.

Location of Orchards at the Northwest.

[*Extract from paper read by Prof. J. L. Budd, before Iowa State Horticultural Society.*]

For our commercial orchards we must look to wholly unsheltered sites on the higher bluff lands of our streams, on the prairie divides between our rivers, and on the high moraines found here and there over our State. In the location of home orchards on the prairies, the points most perfectly above the frost and fog lines should be chosen for the orchard, and it must ever be kept in mind that windbreaks are desirable to protect the home grounds, but the orchard needs all the air movement from the west and north it can get.

As to the stems, experience in all countries now favors low heads, the setting of the trees at a marked angle towards the one o'clock sun, encouraging the heaviest top on the south side, and even screening the trunk on the south side until the spread of top will sufficiently protect from sun-scalding. As to culture, we may not need the continued stirring of the soil required in drier climates, but all experience favors stirring the soil in the early part of the season in young orchards, and shading the soil with a crop of buckwheat during July and August.

Our experience also favors the idea that seeding down after the trees come into bearing is attended with grave difficulties in the way of hardening, drying and impoverishing the soil on which the trees must feed and perfect their crops. If *we must seed down*, manure liberally, and leave all the grass on the ground in the latter part of the season, feeding it off to calves, hogs or sheep, up to the first of July.

Low Land Drainage.

[*Extract from address delivered by E.B.Hersey before the Farmers' Meeting, Boston, Mass.,—with discussion.*]

Many years ago corporations were organized in Massachusetts to drain the lower lands. But they made three great mistakes.

Their first effort of drainage was to run a main ditch through the center and then they made side ditches leading from the high land directly to the main ditch. In going over New England to-day, you will find large numbers of meadows drained in that way, but all the water that comes between these drains, unless they are very thick, works clear down through the land. The better way is to run a ditch around the land, and thus cut off all the water that comes down from the high land. That, we understand to-day, is the proper way to drain. It is true, there may be water that comes up in the center of the meadow as a boiling spring. Then the proper way to do is to dig a drain directly to the main drain.

Small meadows may be drained entirely by a ditch around the meadow. I do not believe it is economy to lay underground drains, except where the lands are very valuable. Common farmers cannot afford it, and drains do not take the water as open ditches do. I know open ditches are not desirable, but, when you consider how much less work it is and how much water they take, I think we had better have an open ditch on the edge of the low land.

The next mistake was in not having fall enough at the outlet. The moment you begin to draw water down below the surface, the meadow soil begins to decompose and settle.

If you draw water eighteen inches below at first, in a few years the meadow settles so as to

be only nine inches above the water. When they found the meadows became too wet and the course grasses began to come in, they began to cart on sand. This was the third, and most fatal mistake, because every load sank the meadow lower by its weight. Many acres I have seen carried under water after it has been drained, by loading with sand.

DEPTH OF OUTLET. If we have a chance to draw water two, three or four feet below the surface, we may reasonably expect to have a valuable meadow that will not only bear good grass, but can be brought into use for garden purposes. The soil will settle at least one-half. It may be more, but if you draw the water four feet below the surface of a meadow, composed of grass, roots, peat, you may expect it will settle two feet and then you will be two feet above water, and it will last a great many years. But you must look forward to the time when even then it will sink too low. Now there are very few meadows where the water cannot be drawn four feet by digging some distance. By the expenditure of $10 or $15 per acre most of our meadows might be drained, and some for a great deal less than that.

Land which is covered with wood and has always been in wood, is really the most valuable for agricultural purposes. The material of which such lands are composed is so near plant food that I had really rather take a piece of woodland and clear it up and drain it than take lands that are filled with hassocks and grass. In clearing wet laud I would recommend that a machine be used to draw the stumps to one side rather than from the center upward.

UNDERDRAINAGE. There are meadows where it is best to underdrain. Not with pipes. It is pretty difficult to underdrain soft meadow with pipe. It can be done better by digging ditches some three feet deep and rather narrow, with a fall of five or six feet. A board plank is laid in a shoulder in the ditch, to cover the water passage down eighteen inches from the surface, (with cross pieces laid every eight feet across the ditch, the water passing through the open space below), and it works admirably.

There are meadows that have a sandy bottom, where the vegetable substance is not more than two feet or a foot and a half deep. It is difficult to draw water very deep, because, the bottom being sandy, they fill up very easily to the bottom of the black soil. These meadows will bear saud much deeper than meadows composed of eight or ten feet of decayed vegetation. Each man must be wise enough to treat his land in the best and most economical way.

DISCUSSION. Mr. Philbrick: My land was a swale, through which flowed a small brook. There was little difficulty in getting an outlet for the water at three or four feet below the surface. The bottom was, however, very variable in character. In some places it was peat to a depth of four or five feet, in some places hard pan and clay, in some places quicksand. The only way to handle such land is to lay tiles, and where the bottom is soft, lay them upon boards. The drains being nearly level for considerable length, great care was required to give them a uniform pitch, with no depressions below the true grade, such places being sure to fill up with sand or mud, and cause stoppage. Stone drains will not answer under such circumstances. Where the bottom is soft, either peat or quicksand, stones will sink into it and choke the ditch, and even tiles must be laid on strips of board and carefully blocked at each side to make them work well.

These drains have been in use, some of them sixteen years, some three years, and have succeeded perfectly, making the very best land upon my farm for all garden crops, from a tract that was previously almost worthless.

The labor required to clean out an open ditch and keep it in order will cost a very heavy interest on the cost of underdraining. Land can be underdrained at a cost of $60 to $75 per acre in a most thorough manner, under most expensive conditions, and it may often be done for considerably less money.

Mr. Warren Frost: I like that old style of digging a good broad ditch in the center of a meadow. I believe the laud is too valuable to have open ditches. We have wooden drains, but they need watching. Sometimes, when we have great floods, if they give way we lose the crop. Forty years ago we had a meadow on our place so wet through the season that you could hardly walk across it with shoes on without wetting your feet. We thought we would try and dry the meadow. We had a very dry season, and along in September we put on a four horse team, and it was ploughed up. We broke it up and dug a main ditch through the center four feet deep. We struck gravel after going down about four feet. We went on the first of April and could go over it as well as any other part of the farm. It worked down and then we put on the sand. We sanded it over, and the meadow could not be bought to-day for a thousand dollars an acre. Potatoes, Lettuce and Cabbages, and nearly all vegetables thrive ou it. It is one of the most valuable plots of land I ever had. We have raised over $1,000 worth of vegetables a year and as good as any can be grown. We use stable manure and Canada ashes. The latter give good results.

Mr. Ware: I am satisfied that in some places wooden drains can be used. In some places,—peat meadows for instance—you can put in Hemlock boards. They will last many years under water. Take Hemlock and lay a "V"-shaped drain. Make a three-cornered box, a little water running through will clean it better than run through a four-sided drain. It cost but little and is better than any other. I am satisfied that stone drains would not be economical even if you have stone to get rid of, for you can put in tile drain with less cost.

Should a Nurseryman use Commercial Fertilizers?

[Five minute paper by Thomas Meehan, read before the recent Nurserymen's Convention.]

To ask this seems to me like inquiring, might he eat beefsteak? Some may and some may not; and some may at one time when, at others, it would be improper. We would use them only to a limited extent. We use almost wholly manure from horse railway stables. It is so satisfactory that we desire no other.

We have been told by friends that this is wasteful; that most that we pay for and haul away, is but water; and in a whole cart load of stable manure all that is of use to a plant may be carried in a saucer. But this is true of almost everything. Water is the chief article we pay for in a Peach or a Watermelon; and the whole profit a baker derives from a barrel of flour consists in the water needed to turn it iuto bread.

The bulk of what an animal eats is rejected. The proportion of food assimilated by the animal is ridiculously small, yet is that bulk of waste useless? Would the animal thrive as well if only that which it assimilates were given to it? No one will believe it; and I equally believe that bulk is of great value in manure, though there be no great proportion of immediate value than in the food of animals.

It has been said of a Scotch Laird who was enthused with agricultural chemistry, that he once told his farmer that the time would come when he could carry the manure for an acre of ground in one vest pocket. "No doubt, my Lord," was the respectful reply, "aud he will most likely carry the crop from it home in the other."

We have got no further than that to day. The concentrated manure has not given us the great crops. Bulk, with all its hard labor and supposed waste is popular with all, but only when they can be had at reasonable rates, are commercial tertilizers popular at all.

The expression, "reasonable rates," to my mind, tells the whole story. No nurseryman can succeed without rich soil. A half starved tree is like a half starved animal. The spark of life is low. An accident to a man of low vitality may be fatal. The man with strong vital power will easily survive that which will kill the other. Transplanting is an accideut; a blow at vital power. Mortality among trees where the ground has beeu allowed to become poor is always greater than where good food is continued with the trees. Many understand this and will give more for trees from a well fed nursery than for trees from poor concerns. But usually the nurseryman cannot get more. His only comfort is then, that he doubles his acreage. He gets trees as large in one year as he would in two on poorer soil. He must have manure. If he canuot get the bulky kind at a reasonable rate, he must get commercial fertilizers.

It is to my mind wholly a question of profit and loss to be determined only by actual experience in each case.

But so much am I attracted by bulk, that in many cases where others would use commercial fertilizers, I would prefer to plough in a crop of green Clover, though I lost the use of the ground for a whole season. If the ground did not grow good Clover, I would use Lupines or green Corn.

It may be gathered from my remarks that I think a Nurseryman may sometimes profitably use commercial fertilizers, but that I think I should use them less than some others would, through favoring bulk, as a very useful ingredient in a good manure.

Palms for Florists; Their Culture.

[Abstract of paper by John Miller before the Buffalo Florists' Club.]

I wish to treat of such as are of value to the commercial florist, on account of the large sales for all purposes of decorations, such as we come in contact with everywhere.

Raising the Plants. Palms, with one or two exceptions, are grown from seed. The preparation of soil is of great importance. The best is one-fourth sharp sand, one-fourth leaf-mold and one half virgin loam, old rotten sods taken from a cow pasture being generally preferable.

The seed boxes should be new or newly painted so fungus will have no chance to penetrate into the seed when germination takes place. A depth of two inches, well drained, is sufficient; place in a temperature of 70° with a gentle bottom heat. Seeds of Pandanus utilis and Latania Borbonica would not germinate in a cool house without bottom heat, but as soon as they were transferred to heat the plants appeared in a fortnight after. They should never be exposed to the full rays of the sun; the glass should be shaded either by unbleached cloth or by a wash.

Kinds of Palms. I find it difficult to name the sort for first position, favors being about equally divided between Kentias and Arecas. Both kinds are graceful and handsome with many advantages over all others. Kentia Australis, Balmoriana, and Fosteriana are the three principal varieties usually grown in this country but they are not as handsome. I had the good fortune to see the first plants of Lindenii, McArthurii, Bowrcii, Mooreii and Wenlaudii sent to this country (one to Mr. Isaac Buchanan, the other to Mr. Robert Buist.) They were brought by Mr. Veitch from Lord Howes island, near the coast of Australia. Few would have suspected then that Kentias would fill such a demand as they do.

Arecas are certainly a worthy class. A good grown plant of Verschafeltii, lutescns, rubra or supida is an object of grace and beauty. Still others of their kiud, fully as elegant and some even more handsome, such as Madachas careinsis, manastachia and alba, are almost ignored by florists of this country. Speaking of Arecas as a whole, I consider rubra the peer of all, being of unusual growth and very ornamental. Under my personal observations this variety recovered its symmetrical beauty from a very dilapidated condition in twelve months, where lutesens, its companiou in misfortune, was not itself again in two years. By this we can judge of its value for decorating purposes, as all of us know a poor used up Palm is not a very handsome subject in the house, espcially when we receive a visit from a neighboring gardener or a distant friend.

Cocos as an ornamental Palm is only useful for conservatories; their ornamental and graceful foliage is too easily injured and the plaut of too slow growth in reasonable time. Weddleana is the peer of this family. Nucifera, commonly called imperialis, canuot be grown well without bottom heat. Flexuosus, Romanzaffiana and corouata, are all handsome but of no use from a florists' standpoint, as the plants are too easily injured and very slow to recover. Many of you, no doubt, have special favors, hence my preference may not meet with your approval.

Latania Borbonica I consider the Palm for the million. Its ornamental beauty is so well known by every one, from the mechanic to the millionaire, that further praise is not necessary. The same may be said of Pandanus utilis, another class very ornamental with lasting qualities if not overwatered, which is really its only weak point. Veitchii leads to great expectations, as its variegated foliage gives it a great advantage over utilis; being also easily propagated by off shoots freely produced, makes it a very profitable plant to grow. Javonica is equal in foliage to Veitchii, still it never gained public estimation.

The Phœnix, commonly known as late Palms, as a class fill a want for decorative purposes not easily filled by any other. Rupucola for a center of a parlor display will show its finely cut foliage equal almost to Cocos Weddleana. As a rule the whole family is well furnished with foliage, and

of very symmetrical habits. Dactilifera, Reclinata and Sylvestris are of the same habit as the above, and the varieties mostly met with. Three handsome varieties seldom seen are Farinifera, Leonensis and Fennis. The whole Phœnix family delights in a house with a temperature from 50° to 54° and rather a tighter and more sanded soil.

Chamærops are less graceful in habit than the others we have mentioned. One variety, C. palmata is found to luxuriate in several parts of our most southern states. S. Furtunii has proved itself perfectly hardy in England and several other parts of Europe. S. humilis, humilis gazilis, exselavis and macrocarpa are among the best classes for decorating lawns in this climate, on account of their hardy qualities. Coryphas I consider about equal to Chamærops.

Seaforthia elegans, I am sorry to say is very seldom found in fine large specimens, still as small plants they are quite useful,

Caryotas, commonly called the Fish-Tailed Palm, from its leaves resembling the fins of fishes, are very ornamental, stately and graceful, still the formation of leaves is so abundant and therefore too heavy for the stems, and must be handled with great care, otherwise their beauty would be destroyed. We find only three varieties of this Palm, viz.: Cariota urens, sabolifera and furforacea. Edulis and Sylvestris I cannot praise, as both Kentias and Arecas are greatly superior in all respects.

Aradoxa regina, commonly called Royal Palm, is very handsome when well grown, still the plants fall a prey very often to red spider or trip; both insects will destroy its handsome appearance in a very short time. All of this class luxuriate in a moist climate. Our extremely dry summers injure the plants, and therefore good specimens are scarce.

Pritchardias pacifica, grandis and filmentosa (also known as Brahia filamentosa) are a beautiful class in form of Livistona with large fan-like foliage and stem, and ribs of foliage covered with white down. They are ornamental, rapid in growth and worthy of a place in any collection.

Cycas, a branch of the Cycad family, consist of C. circinalis, C. circinalis glauca, C. media, indermidia, revoluta, servensii and undulata. Revoluta, no doubt, is the best known of this family. Circinalis the most handsome, with favors about equally divided between the other varieties named above. They as large specimens are about equal to tree Ferns in beauty. Their quality for outside decoration is splendid after the young foliage is fully developed, and their useful feathery leaves are used quite extensively for funeral decorations.

CONDENSED GLEANINGS.

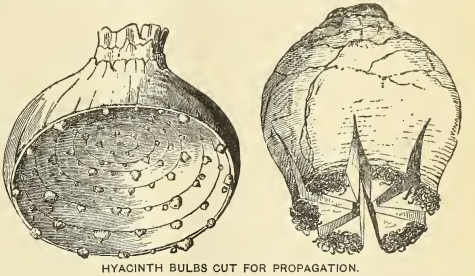
Support for Climbers Essential. A distinctive fact in plant growth not generally thought of, is the waste of vital force in all vines unable to clasp surrounding objects by tendrils or by their young shoots. By actual experiment, the yield of flowers and fruits on uncared for vines has been decreased sufficiently to prove that the little time needed to tend these plants at the proper season is a paying investment. Vegetable gardeners have long been aware of this in cultivating Lima Beans, although many of them may not know how very important it is to assist the tender tips to clasp the support. And the same rule governs growth and development of Peas, especially the taller kinds. If no support is furnished them the inconvenience of gathering the crop is a small matter in comparison with the loss sustained by the plant in its efforts to climb as nature intended. The same law applies to plants cultivated for the flowers. Annuals, such as Cobœa, Baclyana, Cypress-vine, etc., will produce finer and more blossoms if supplied with adequate support than if permitted to struggle along unassisted. Perennial wood-climbers are no exception. If we remove the support from Wistarias, Tecomas, Celastrus, etc, their nature undergoes a change, and the inclination to climb is apparently lost, but if at any time some foreign body is placed near by, the old tendency returns, and the young shoots eagerly clasp it and at once begin their normal upward growth. Gardeners have taken advantage of this peculiarity, and by close pruning as well as dispensing with any support have metamorphosed the climber into a pretty tree-like shrub. The solution of this apparent mystery is not difficult. The change of habit is due to loss of vital force occasioned by the plant's struggle for its natural condition. This same principle may be exemplified in the Grape, which, although producing a crop when pruned severely and tied to a single stake, does not yield so abundantly as when growing freely over an adequate trellis.—Josiah Hoopes, in N. Y. Weekly Tribune.

Self-Drained Flower Pot.

Causes of Unequal Rainfall. Rain is caused by the cooling and condensation of the moisture in the air. The warm winds from the south and the east are full of moisture taken up from the Gulf of Mexico and the ocean. Coming to the cooler land, they gradually become cooled, and their moisture, therefore, falls as rain, till, by the time they reach western Kansas and Colorado, the moisture being gone no more rain can fall. But the winds which come from the north and west are colder than the land; and as they sweep over it they gradually become warmer; so that instead of giving up their moisture in the form of rain, they are constantly taking up moisture from the earth. Hence our north and west winds are dry and mean fair weather; while the south and east winds bring rain. For this reason, also the eastern and southern States have an abundance of rain; the central and western States are often very dry. At great heights the air is cooler, hence when a warm moist wind strikes a mountain range, it rises high in the air to pass over. In so doing it becomes cooled, giving up its moisture, and passes over to the other side as a dry wind. This shows why California receives sufficient rain to make the soil fit for cultivation; while Nevada is nearly rainless and barren. The great extent of country known as the Great Basin—which reaches from Oregon on the north to Mexico on the south, and from Colorado on the east to the Sierras at the west, comprising an area of not less than 200,500 square miles—receives over a great part of its surface an annual rainfall of not over four inches, and is for this reason a desert.—St. Nicholas.

Ring Budding the Walnut. One way of budding the Hickory, Pecau, and some species of the Walnut (*Juglans*) is what is called ring-budding. It is done in June when the bark "runs" or peels easily. Take cions from the size of a lead pencil to half an inch or more in diameter, with good healthy, but dormant buds. From this cion take off a ring of bark from one to two inches long including a strong well-developed bud, using great care to in no wise even bruise or touch its inside surface. The branch or little seedling to be operated upon should be as near the same size of the cion as possible. Cut it back to a stump, and from this take out a ring of bark of exactly the same length as the one to be inserted. The ring from the cion is carefully split and placed on the stock, being sure that the split edges and the upper and lower ends join exactly. To do this and make the bark and wood fit closely, it may be necessary to take off a small strip of the bark from the edge of the ring. The greatest care must be used to have the work done neatly and quickly, lest the tender surfaces of the cambium are injured by rough handling or by long exposure to the air. Bind the whole securely with waxed cloth, leaving out the bud only. If the work is not done in the best manner it will not be worth while to do it at all.—Report Department of Agriculture.

By-Products in the Garden. Peas are the direct crop, the empty Pea vines are the by-crop. Turnip tops, Radish tops, Pea pods, Bean vines, Potato tops—all these parts of our garden plants that cannot be eaten, are by-crops worth real money. You can't exactly sell them in market, but you can sell them to yourself by burying them as fast as they gather. In this way they become fertilizers, and save money in the manure bill, and add money by increasing future crops. In my own little home-lot everything, including all the waste from the kitchen, is buried in the soil every day. In this way, not only is the troublesome "garbage question" settled, but the place is kept neat, sweet and clean at all times. From a series of experiments I find that ordinary kitchen waste disappears and turns into good soil in about a week after it is buried in the ground. Thus a troublesome domestic by-product is sold to the garden, together with all the by-crops, from Cabbage leaves to Onion tops. It pays to keep a home-lot, if only to have a bank in which to deposit unsalable by-products—a bank, too, that pays good dividends.—American Garden.



HYACINTH BULBS CUT FOR PROPAGATION.

Scientific Flower Pots. Journal of Horticulture illustrates and describes an improved plant pot, invented by a Yorkshire amateur, and put on the market under the above name. They are found serviceable in preventing plants suffering from drouth during the prolonged absence of the owner. The plants derive sufficient moisture from the water rising up the porous earthenware legs of the pots by attraction, also in the form of vapor. They are attached to the saucers, and as the roots of the plants are above the water they cannot be water-logged. They are made in different sizes, and will probably be tried by many amateurs who are absent from their homes during the day, and their plants suffer in consequence during hot weather. Moisture in the form of vapor rising amongst Ferns, and, indeed, most plants in dry conservatories, is beneficial in the summer months. Water in the saucers also keeps snails and slugs from the plants.

Potash Fertilizers for Fruit. Potash fertilizers have decidedly improved the desirable qualities of fruits. Wherever the percentage of this element has been raised, the change is accompanied by an increase of sugar and decrease of acid. This is important—a matter of dollars and cents. Other things being equal, the fruit with the largest per cent of sugar will bring the highest price. Moreover, less desirable varieties may be brought up to a higher standard, thus giving value to some good quality, as hardiness and prolific bearing. The fact that the quality and character of garden and orchard products can be modified by the effect of special fertilizers is of immense importance in its practical as well as scientific bearing.—Mass. Experiment Station.

Propagation of Hyacinths. Our illustration, adopted from Gardener's Chronicle, shows some of the better and more convenient of the various devices for propagating this popular bulb. One way is to scoop out the lower part of a large bulb, allow it to remain in a dry shed for a few weeks to callus, and plant. The illustration gives an idea how the bulblets form in large numbers attaining the size of Peas by another season. With good care and space these bulblets make large bulbs in four years. Another method is to make incisions from the base of bulb upward, as may be seen in the figure at the right in illustration. The bulblets form, and are treated same as when grown by the other method.

Coal Ashes for Fruit Trees. There can be no doubt that coal ashes spread under fruit trees are very helpful, especially as a mulch. Coal ashes are light, and the fact that they have not much manurial value makes them all the better for keeping down grass, which depletes the soil of the moisture that the trees need. Three or four inches deep of coal ashes spread under trees keep the soil moist and cool. If they are spread on the sod they kill the grass, and this with the decaying sod roots make a fine feeding place for the roots of the tree. It is probable also, that under this mulch the soil itself undergoes important chemical changes, fitting its manurial elements for absorption by roots.—Boston Cultivator.

Ridding Land of Plantain. One year I plowed up an acre of solid Plantain, broken only by a little Sour Dock here and there, and grew a good crop of Early Rose Potatoes on it. Then I sowed a half bushel of Timothy seed to the acre, with a sprinkling of Red Clover in the spring following, and secured an excellent stand of grass, in which no Plantain ever showed itself for years, until the meadow was drowned out again by a flood. This treatment will also kill Sour Dock, Smart Weed, Foxtail grass and almost every other weed.—Stephen Powers, in National Stockman.

Mailing Fruit Blossoms, To keep fruit blossoms, particularly those of the Orange, fresh and send through the mail, clip the stem from the tree and insert its cut end into a raw Potato. Then place a quantity of damp cotton in a light box, and upon it the stem with the blossoms with Potato attached, covering the same with another layer of damp cotton. Wrap securely and fasten with a string, but do not seal. In this condition the blossoms will keep fresh for days, and carry safe to their destination.—Cal. Fruit Grower.

Salt as an Insecticide. Unquestionably salt, in sufficient quantities, will kill perhaps every insect that lives in the ground. The trouble is that it is sometimes difficult to apply enough, in the case of certain crops without doing damage to the plants. However, we have known salt to kill Strawberry plants, while killing the insects for which it was applied. It will not do to apply it in too large quantities or on the plants themselves.—Western Rural.

Ventilated Barrel. Scientific American describes a new patented barrel intended for shipping, and shown in illustration. It is formed of two or more layers or thicknessess of splints crossing each other diagonally, the splints being nailed to each other and to the supporting hoops as many hoops being employed as are deemed necessary or desirable. The head or bottom of the barrel may be put in in any desired manner.

Sweet Peas. Nothing in the way of flowers gave us more pleasure last season than our Sweet Peas. A bit of wire netting, large meshed, was rolled into a cylinder and fastened to a stake in an upright position, and the vines clambered all over it, blooming freely, until frost. They were of all colors and very fragrant, and were found to be very useful as a constituent of bouquets.—Orange County Farmer.

Banking Against Peach Borer. An Illinois correspondent reports having successfully resisted the Peach borer for twenty-five years by banking about the trees with earth in May (here in Michigan it would need to be in July). This mounding method was not found reliable here in Michigan and the trees were thought to be made less hardy by it.—Prof. A. J. Cook, in New York Tribune.

Cost of market garden crop two miles from a city, estimated up to the time of harvest, including all the varieties usually grown (except Asparagus, which is more expensive and more remunerative) averages about $125 per acre, and during a favorable season a good truck gardener ought to net, clear of all expenses, $100 per acre for the total area cultivated.—Practical Farmer.

The Slat Shipping Barrel.

Orchard for Early Fruiting. Matthew Crawford tells the Ohio Farmer that an extensive Apple grower of Illinois plants only half as far apart as the trees should stand permanently, and then he brings three-fourths of them into bearing as soon as possible by girdling, letting them produce all they will until the permanent ones need the room. The girdled trees are then cut out.

Fine Oldenburg Apples. Dr. Hoskins finds that by gathering the finest colored Oldenburgs, and keeping them a while on shelves in the cellar, they ripen much better than upon the trees, and are in prime condition for market.—Canadian Horticulturist.

Death to Weevil. Put the Peas or Beans in a pail and cover them with water, if warmed a little all the better. Let them remain in the water from eight to twelve hours, and every weevil will be destroyed.—Missouri Experiment Station.

Cuthbert Raspberry. Each succeeding year that I grow the Cuthbert increases my liking for it, and did it ripen ten or twelve days earlier I should consider it the most reliable and profitable Red Raspberry grown.—Corr. Country Gentleman.

Potatoes Running Out. There will be no danger of a variety of Potatoes "running out" if the best tubers are saved for seed every year. Careful selection of the seed and good cultivation will improve the variety.—Western Rural.

Russian Apricots. With all the testimony before me I do not hesitate to say that the Russian Apricots have not proven a failure, and they are well worthy of further trial in Canada.—D. W. Beadle, in Can. Hort.

Climbing Plants. The "Dutchman's Pipe" (*Aristolochia sipho*) affords a most abundant shade. Some of the species of Clematis are fine low-growing climbers.—American Agriculturist.

Wire Worm and White Grub. A crop of Buckwheat will certainly rid land of the wire worm, and perhaps of the white grub.—American Agriculturist.

Old Melon Seed. Four and five year old Melon seed is best, the plants growing shorter jointed and more compact.—Corn. Country Gentleman.

Vegetable Products on the Table.

Rhubarb Cream Pie. Make Rhubarb sauce, by stewing soft with plenty of sugar; beat in each cupful two teaspoonfuls of smooth Corn-starch, and the yolks of two eggs. Bake in open crust, and make meringue of the whites of three eggs.

Fried Egg Plant. Parboil for 15 minutes in salt and water, then drain carefully. When ready to use, dip in the beaten yolk of an egg, sprinkle with bread crumbs and fry brown in butter. Season with pepper and salt. They must be sent to the table hot.—N. E. Farmer.

Cooking Cabbage. If plunged immediately into boiling instead of into cold or tepid water, but little odor will be perceptible in the house. Boil not longer than thirty minutes, and if it is then properly served with a cream or butter dressing, it will take a fastidious palate to tell the difference between it and Cauliflower.

Fried Raw Potatoes. Pare and slice thinly into cold water some medium-sized Potatoes; drain into a colander and put into a frying-pan, in which are two tablespoonfuls melted butter; cover closely ten minutes, removing only to stir them from the bottom to keep them from burning; cook another ten minutes, stirring lightly all the time until lightly browned.

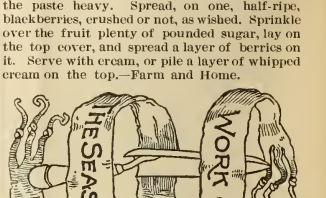
Egg Plant. Take the egg off the vine when soft. Cut in thin slices and sprinkle with salt, about an hour before cooking, then drain well, wipe with a cloth and boil until tender enough to mash like potatoes, make very smooth, add 2 or 3 tablespoonfuls of sweet cream, salt and pepper. Turn into a baking dish, cover with bread crumbs and bake half an hour.—N. E. Farmer.

Blackberry Jelly. Put the fruit into a stone jar, cover it closely, and let it heat very gently in the oven, or put the jar in a saucepan with enough boiling water to heat half way up the jar, until the juice flows freely. Pour off the juice until no more will flow, then turn the remaining fruit on a sieve covered with thin muslin, and let the juice drip through. Allow for each pint of juice a pound of crushed loaf sugar. Boil the juice alone for ten minutes, then add the sugar. Stir and boil quickly, until, when tried in the usual way, it will jelly. Small jars are best for potting jelly, as the contents can be used directly the jars are opened.—Farm and Home.

Cabbage in Half an Hour. Have plenty of salted, boiling water, in which a teaspoonful of soda has been dissolved, plunge the Cabbage in, top downward, leave it uncovered and let it boil until tender; that will be as given in the time-table, from twenty minutes to half an hour. Take it out into a colander, drain well, put into a hot dish, put in bits of butter, some salt and pepper, and serve at once. It will be as delicate as Cauliflower; the color will be retained, and there will not be an unpleasant odor over the house, such as is always associated with boiling Cabbage. Try it once and then see if the school kitchen learning has not gotten several steps in advance of your old methods.—Wide Awake.

Cream of Cauliflower Soup. Soak a Cauliflower one hour. Boil slowly in boiling salted water until tender. Drain. Reserve a scant pint of the flowercts, chop and pound the remainder. Melt three tablespoonfuls of butter, add one small Onion cut fine and one bay leaf. Add 2 tablespoofuls of flour, the mashed Cauliflower, 1 teaspoonful of sugar, salt and pepper. Cook ten minutes. Rub through a sieve. Then add gradually one quart of white stock. When boiling add one pint of milk and one-half pint of cream. Strain, add the flowerets, and serve. After cooking ten minutes the bay leaf is removed and the Cauliflower and flour added. The milk should be added according to the thickness desired.—Mass. Ploughman.

Blackberry Shortcake. Mix into half a pound of self-raising flour a quarter of a pound of firm butter or lard. Add by degrees about half a pint of cold, boiled milk. Mix all up with a knife, and as quickly as possible. Turn the paste on to a floured board or table, dredge the paste with flour, roll it out to the thickness of half an inch, and cut it in round pieces the size of a large tea plate. This may be done by laying a plate over the paste, and cutting round it. Lay the cake on a floured baking tin, and bake until done—about half an hour. When done, slip a knife around the edge, and separate the cake in two by pulling it apart—cutting with a knife would make the paste heavy. Spread, on one, half-ripe, blackberries, crushed or not, as wished. Sprinkle over the fruit plenty of pounded sugar, lay on the top cover, and spread a layer of berries on it. Serve with cream, or pile a layer of whipped cream on the top.—Farm and Home.



HOUSE PLANTS.

Ageratum, when intended for winter blooming should not be allowed to flower too freely now.

Anthericum. When repotting, wash the soil all off the roots, to avoid the necessity of using very large pots.

Azaleas need frequent syringing to prevent injury from red spider.

Balsams are sometimes used for a window plant after frost in the fall. The plants wanted can now be taken up from the beds and set into large pots.

Begonias intended for winter blooming should be shifted as required. An abundant supply of water and rich soil are their chief requisites.

Browallias can yet be grown from seed for winter blooming.

Chrysanthemums. To secure fine specimens stimulate to robust, healthy growth. Water copiously during dry weather and use liquid manure freely. The plants should stand at some distance from each other that each one may have its full allowance of air. The leading shoots must be pinched back occasionally to obtain nice compact specimens. Stake as needed.

Ferns will grow rapidly if kept in a warm, moist situation and well supplied with water. With proper drainage there is hardly any danger from overwatering

Fuchsias. Such as have been used for late blooming should now be planted out in a half-shady, deep border. Old plants now at rest, intended for winter blooming, may be removed from the pots, cut back within three or four inches from the roots, the soil washed off, and repotted in fresh, rich loam. Water should be given sparingly at first.

Geraniums, kept in plunged pots for winter blooming, must be kept pinched back to cause bushy, stocky growth. Remove all flower buds.

Heliotropes for winter can still be propagated.

Red spider to be kept in check by free syringing.

Roses for winter blooming must not be allowed to make rapid growth now.

Shading. Plants in the house are apt to suffer from lack of shade. Unless pots are plunged shelter the roots by placing boards against them to protect them from the burning sun.

Sphagnum Moss. The year's supply should be secured while the swamps are dry. Haul the moss to the high land, and leave it there to drain and dry out for some weeks before taking home. You will have less water to carry.

Slips. Cuttings of Colens and other plants now strike easily. Take off the desired slips, insert them in sand or soil, either in pots or in open ground somewhat shaded, and as soon as rooted put into small pots.

Winter plants plunged in pots to be kept scrupulously free from all insect pests. Water freely. Stake where needed. Pinch back for compact growth.

LAWN AND FLOWER GARDEN.

Bedding plants to be kept in good order. If one is disposed to outgrow another, cut it back.

Borders can be kept in order easiest by the frequent use of a long-toothed steel rake.

Caladium esculentum. To make really grand plants, form basins around them and fill these frequently with liquid manure.

Cannas to be treated like Caladium.

Dahlias need staking to prevent them from being injured by storms. The side branches are apt to be broken if left without support.

Edges should be kept well defined. Trim neatly at least once a month with a sharp spade or edging iron

Gladiolus. The stems of all tall growing Gladiolus and similar plants—Tuberoses, Lilies, etc.—should be supported by neat stakes.

Geraniums are now blooming freely. Remove all decayed leaves and faded flowers frequeutly. Loosen the surface of the bed, especially in dry weather, and water freely. All plants when in bloom need more moisture than at other times.

Hibiscus can be easily propagated from cuttings of half-ripened wood.

Justicia carnea. Cuttings of the half-ripened wood root readily.

Lawns to be mown frequently except in a hot, dry time, when too close cutting will be injurious. If crab grass gets into the lawn it should be mown as soon as tall enough to cut and before it produces seed. Docks and other large weeds must be pulled by the roots when the ground is wet and soft.

Mulching. Dry, pulverized soil makes a most excellent mulch. Keep surface of flower beds well stirred especially after a rain.

Pæonies. If seed of these and other hardy plants is not wanted, cut the clusters away as soon as out of flower. Seed production taxes the vitality of all flowering plants more than flowering does.

Tillage. The surface of all beds and borders should be frequently stirred, by means of hoe or rake, especially after each rain. This not only keeps the ground open and free from weeds, but also adds greatly to the general attractiveness of the premises.

Violets. Keep well cultivated and free from weeds. Water during dry, hot weather.

Watering, if done at all must be done thoroughly. A mere sprinkling is worse than useless. Nothing short of actual soaking will have a lasting beneficial effect. As soon as the surface is dry enough after water is applied, it should be stirred thoroughly with a rake or hoe.

PLANT CULTURE UNDER GLASS.

Caladiums to be kept in a warm, moist situation, and as close to the still shaded glass as possible. Gradually shift into larger pots to obtain fine specimens.

Camellias. The soil in pots often dries out before we are aware of it. In a bad case plunge the pot in a tub of water until thoroughly soaked through.

Cinerarias. Shift the newly started seedlings into larger pots. Each plant should stand by itself, so that the leaves of one will not touch those of the next. Water as needed.

Cuttings may be made of Geraniums, Pelargoniums and other house plants, also of rare bedding plants, if a large stock for next spring is desired.

Gloxinias to be kept in a warm, moist situation. Water thoroughly when needed, without wetting foliage. They should never be allowed to suffer for want of water.

Green fly can be kept off Cinerarias, etc., by scattering Tobacco stems freely among the plants.

Greenhouses. There will hardly be a better time than now to repair and clean plant houses. Replace lights where broken; scrub brick and wood work thoroughly and otherwise get house in shape for stocking up. A neat and attractive appearance should be maintained all through the season.

Gymnogrammas, commonly known as Gold and Silver Ferns, need a warm, moist situation. Water the roots thoroughly but do not wet the tops, as this not only destroys their beauty but often the plants also.

Liquid manure may be given occasionally and with beneficial results to Hardenbergias, Marantas, Lemon and Orange trees, Strelitzias, etc.

Pelargoniums, after blooming, should be allowed to become rather dry, then trim into shape and remove to a half-shady place. Do not water them until the wounds are healed and new growth has commenced.

Primulas in cold frame to be kept cool and watered sparingly.

Red Spider. Syringe the plants freely every bright sunny day towards evening, and fumigate frequently to subdue red spider and green fly.

Watering should be carefully attended to during the heat of the present month. No growing plant must be allowed to dry out at the roots.

FRUIT GARDEN AND ORCHARD.

Blackberries. Directions for Raspberries will apply.

Budding can be performed as soon as well-ripened buds can be had and the sap in the stock flows freely. Reject all soft immature buds, as for instance those at the extremities of twigs. Remove ligatures when the bud has become firmly united with the stock.

Currants. Remove all weak and superfluous branches after fruit has been gathered. Give a liberal dressing of good harnyard compost, then keep the ground well cultivated, and the plants free from worms.

Gooseberries to be treated as directed for Currants.

Mulching. A few inches of well pulverized soil—in other words thorough and frequent cultivation—answers all the purposes of a perfect mulch. A light covering of hog hay, straw, coarse manure, or litter of some sort, and even stones, will do for a mulch, where cultivation cannot be freely given.

Pruning. Remove superfluous shoots on all fruit trees, and pinch back those growing rather too rank especially on Peach and Pear trees, in order to equalize the growth and give the trees a symmetrical appearance.

Raspberries for table use to be picked by hand. When intended for evaporating the berry harvester should be given a trial. Cultivate the home market. Late growth of cane need not be feared, especially with the red varieties, since this apparently immature growth generally winters well. Hence cultivation need not stop on that account. Pinch back the ends of canes and laterals.

Strawberries. In the south a fair crop may be grown from plants set in fall before. The earlier such plants are set the better will be the crop. In the north the first crop is hardly ever sufficiently large to make fall planting profitable, even where potted plants are used. If this method is to be tried, plant just as soon as potted plants can be had. Old beds overrun with weeds had better be plowed up. The new plantations are to be frequently cultivated and kept free from weeds. In hill culture the runners must be removed as soon as formed. In the matted row system they must be confined to a reasonable width of row, allowing space between the rows for cultivation. Always run the cultivator in the same direction between the rows.

Thinning. Peaches and Pears, where too thickly set, can yet be thinned, and this should be done at once and severely in order to secure superior size and quality of the crop, and therefore the best returns in dollars and cents.

VEGETABLE GARDEN.

Asparagus. Stalks should now be allowed to grow unmolested until autumn.

Beans. Bush varieties may yet be grown for succession. Cultivate and hoe all earlier plantings frequently but never when wet with rain or dew. Where vines of the pole varieties have missed the pole or trellis asslstance should be given.

Beets. Repeated sowings of the early table sorts for succession are yet in order.

Cabbage. Set plants for late fall and winter use in well manured and well prepared soil. Cultivate and hoe plants already established frequently. Apply buhach when the green worm makes its appearance.

Carrots. Keep well cultivated and free from weeds. Thin where needed. In an emergency sowings can yet be made, especially of the earlier sorts.

Celery. Plants can be set during this month for fall and winter use. Get good, strong, stocky plants, and set in moist soil, if in cloudy weather all the better, and in a hot, dry time towards evening. Pack the soil firmly about the roots. Shading for a day or two will secure a full stand even during a hot dry spell. White Plume is a good self-bleaching sort, and best for early use. Golden Heart can be recommended for general crop.

Corn. To have tender boiling ears until the first fall frost, repeated plantings may yet be made. The Evergreen variety will have time to ear if planted in the early part of the month.

Cucumbers for pickles should now be planted in warm, rich soil. Protect from bug attacks by keeping vines dusted with plaster. Cultivate and hoe freely. Let no specimen mature on the vines, and remove fruit by cutting off with a sharp knife or scissors. Pulling it off is apt to injure the vines.

Cultivation should be given freely to all crops. Keep the surface of the whole garden stirred to prevent rapid evaporation in day weather and to insure freedom from weed growth. Thin plants where too thick in the rows.

Egg Plants must be kept coated with the Paris green mixture for Potato bugs. Hoe crop frequently.

Endive. Sowings to be made for succession. The bed should be well prepared. Have plants standing about eight inches apart in the row, and when the leaves are six or eight inches in length, gather up over the heart and tie with some soft material to blanch.

Kohl Rabi. For fall use plantings may be made the latter part of the month.

Leek. In cultivation draw the soil up to the plants to bleach the lower part well.

Lettuce. For succession repeated sowings may yet be made. Deacon and Salamander are good sorts for summer as they staud the heat quite well.

Melons. Guard against injury from bugs. Cultivate well and hoe often. Applications of washiug suds during dry weather seem to be greatly rellshed by the plants.

Okra. Thin to eight or nine inches apart in the row; otherwise treat like Corn.

Onions. Use wheel hoe freely, and allow no weeds to grow. One or more small rations of nitrate of soda, or a top dressing of some rich compost, especially of hen manure, between the rows, may be given at this time, and as a rule, with great benefit to the crop.

Parsnips. Treat like Carrot.

Peas. Remove the vines after the crop is gathered and plant the ground to Cabbages, Turnips, Celery, etc.

Pepper. Plants can yet be set in open ground. Apply composted hen manure to the growing plants, hoeing it well into the soil.

Radish. Sow for succession, and the late sorts for fall use.

Spinach. Sow for succession at intervals of a week or ten days. Firm the ground well over the seed.

Squash. Cultivate and hoe freely. Cover first joints of vines to make them strike root.

Tools. Keep sharp and bright.

Turnips. Sow the Ruta Baga varieties at once, the other sorts by last of month.

FRUIT AND VEGETABLES UNDER GLASS.

Figs, kept in pots and tubs need thorough watering, preferably with liquid manure.

Grapes in early houses will now be fully ripe, and if kept cool and dry can be had in perfection for a long time. In intermediate houses the air should be kept damp until the black varieties are nearly colored when moisture should be less freely given. Late houses should be dampened regularly every morning. Keep shoots tied to trellis; thin where needed. Avoid cold draughts of air through the building.

Peaches grown in pots or tubs in cold houses need frequent syringing and applications of manure water twice a week.

Plums and Nectarines. Treat like Peaches.

Sashes of frames and vegetable forcing houses are now out of use and should be stored under cover. Repair where needed and paint at the earliest opportunity. Good care of expensive requisites pays well.

THE POULTRY YARD.

The Average. Seven chicks to each setting of eggs is considered a good average hatch.

Empty the Fountains. Don't allow water to stand in them over night. It quickly gets impregnated with poison from the confined atmosphere.—Maryland Farmer.

Watering Chicks. During the summer old fruit cans cut down and nailed up to a post or on the side of a poultry house or floor will make good places to supply water.—Am. Farmer.

Floor for Poultry House. The best floor is cement; then use plenty of dry soil as a deodorizer. Or, if the dry soil has not been provided when winter comes, use sifted coal ashes.

Fresh Eggs in Demand. Assure your customers that your eggs are collected daily, and only from your own yards, and you can dictate the price. To test this, go into the market and try to procure eggs known to be strictly fresh.

Remedies for Insect Pests. Buhach and Kerosene are the never-failing remedies for insects that infest fowl houses, the Buhach to be dusted through the feathers of the fowls, the Kerosene to be sprayed all over the inside of the house.

Beans for Fowls. There is little food of a more nutritious character. Let them be boiled soft and mashed with Potatoes and a little meal. Farmers having a quantity of old Beans unfit for the table can thus utilize them.—Md. Farmer.

Feed and Care. It is not the breed so much as the feed; it is not the feed so much as the care, but the better the breed, the better the feed, and the better the care the better will be the results. Luck has little to do with it. National Stockman and Farmer.

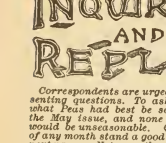
Procuring New Breeds. O. S. Bliss says, in the New York Tribune, that if one wants to introduce a new breed there is more economy and satisfaction in buying a trio or pair than in buying eggs. There is satifaction in seeing what the parent stock is. He who begins with an egg has to "go it blind" to a certain extent.

Unprofitable to Keep. It is poor policy to keep over till late in the fall a large crop of lusty cockerels, if there be a market for them early in the season. They consume a great deal of food until maturity, and will not increase much in value from broiler size, unless one get a good price in the fall.—Nat. Farmer.

Broken Bones for Fowls. Laying hens are very fond of broken bones. They help to digest other food when they cannot get at sharp gravel, and with the strong digestive apparatus which fowls have, every part is made use of. The only advantage from burning bones is to make them break up more easily. The fowls certainly do not like them as well, nor are they so good for them as when broken up without burning. Amateur Cultivator.

Little and Often. It is not expected that the farmer should be everlastingly fussing with chickens, and coaxing them to nibble some choice and dainty food. All they want for health, growth and good condition is plain, nutritious food, fed often and a little at a time to suit their digestive organs. Early and late is a good rule in feeding. After chickens are one-third or one-half grown, coarse and bulky food may be mixed with grain to good advantage. It will not pay to feed costly food to chickens intended for market. National Stockman and Farmer.

Fattening Chickens. Build a coop with slatted bottom and elevate two feet from the ground. Let the house be dark. Put holes in the front so the fowls can put their heads through and eat and drink from troughs on the outside. Fill one trough with water, one with feed and another with gravel, broken oyster shells, etc. Feed scalded, or slightly boiled corn; the latter is the best, and mix with lard. Also give Indian meal and boiled Potatoes, mashed together, for a change, as well as Oats, boiled meat, or meat scraps, three times a week. Occasionally give milk, with powdered charcoal in it, to drink. The latter whitens flesh.—Germantown Telegraph.



Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. No more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such, give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,298. **Rooting Rose Cuttings.** When is the best time for it, and how done? I have tried, and failed.—MRS. J. W., *Muncie, Ind.*

1,299. **Mulch for Blackberries.** Can pine shingle tow, chips, shavings, etc., be used for this purpose with safety?—J. H. P., *Burlington, Vt.*

1,300. **Ampelopsis Veitchii.** How protected during the first winter?—W. B., *Tyngsboro, Mass.*

1,301. **Destroying Weeds on Lawn.** Will "I. M. R., New Bedford, Mass.," please give description of implement used to pull up the weeds?—MRS. L. T., *Stockbridge, Mass.*

1,302. **Plums on Hill Side.** Are Plums adopted to a steep northern slope or what other tree fruit would do?—I. C., *Town Hill, Pa.*

1,303. **Sod for Small Fruit.** What is the best way to enrich and prepare it for planting next spring?—I. C., *Town Hill, Pa.*

1,304. **Barrenness of Grapes.** My two or three Hybrids and a Brighton Grape bloom freely yet set but little fruit. Why?—L. J., *Bordentown, N. J.*

1,305. **Name of Plum.** Can you tell the name of a blue Plum in size about like a large Bantam egg?—J. N. A., *Boston, Mass.*

1,306. **Insects in Cistern.** How can I get rid of water lice in cistern? All remedies thus far have failed.—MRS. M. J. H., *Lawson, Mo.*

1,307. **Gladioli Roots Rusting.** How can it be cured or prevented?

1,308. **Rose Cuttings.** In what material and place will fall prepared, half-hardy Rose Cuttings for open air culture keep and callous best over winter?

1,309. **Treatment of Rose Seedlings.** The main crop of plants from fall-sown Rose Seed, finds our clay loam too hard to break through the second spring. Is clear sand the best covering?—F. K. P., *Delavan, Wis.*

1,310. **Dewberry Plants.** How can I get the most plants from them?—C. C. C., *Dowagiac, Mich.*

1,311. **One-Seeded Grape.** Is there another besides the Niagara?—L. H., *Winchester, Iowa.*

1,312. **Bagging Grapes** How and when is it done?—J. D., *Macomb, Ills.*

1,313. **Japan Anemones.** I bought some Alba and Rubra a year ago last fall. They are fine, large, healthy-looking clumps, but none of them has flowered yet. What shall I do with them?—MRS. Z. Z. M.

1,314. **Violet Leaves Drooping.** What can I do to prevent or cure it?—CARUS, *Cof. Co., Neb.*

1,315. **Improving Sandy Soil.** How should I treat land that is rather too sandy to hold moisture and manure well?—R. T., *Warwick, N. J.*

1,316. **Asparagus Tennissimus.** When and how is it propagated?—A. G. H.

1,317. **Automatic Force Pump.** Is the Hydronette of Rumsey & Co., Seneca Falls, N. Y., automatic, or is there an automatic force pump?—A. G. H.

1,318. **Russian Mulberry.** Is it a good tree for lawn, or for its fruit, or for forest culture?—R. T.

1,319. **Passion Flower.** How is it propagated?

1,320. **Girdling Appletrees.** At what season, and how is this done, to induce bearing?—E. A. C., *N. Y.*

1,321. **Embossed Paper Bouquet Holder.** Please give address of manufacturer?—J. B., *Albany, Oreg.*

1,322. **Pea Weevil.** How can I keep my seed Peas free from them?—R. T. G., *Kalamazoo, Mich.*

1,323. **Strawberries in Young Orchard.** Is this a good location for them?—E. B. D., *Rochester, N. Y.*

1,324. **Value of Manures.** What is more profitable to use, commercial fertilizers at current rates, or stable manure at 25 cents per wagon load when the latter has to be hauled half a mile?—B. Y., *Richmond, Va.*

1,325. **Land Plaster.** What is its fertilizing value?—D. J. D., *Manchester, Vermont.*

1,326. **Plants for Exhibit.** Is greenhouse or out-door culture preferable for Coleus, Begonias, Fuchsias and Geraniums intended for the exhibit in the fall, and to be kept over winter for stock?—A. G. C., *Mass.*

1,327. **Improved Beehive.** Where can I get one of the most improved make?—A. H., *Newark, N. J.*

1,328. **Grafting Clematis.** Which is the best time of the year for this?—J. M., *Hamilton, Ont.*

1,329. **Root Pruning.** I desire more information on Root Pruning, both in the form of repeated transplanting, and in that of regular Root Pruning in the young orchard, for Pear, Plum, perhaps Cherry and Apple Trees.—SUBSCR.

1,330. **Planting Raspberries.** When is the best time, fall or spring? What hardy kinds, both red and black, would you recommend to plant for market?

1,331. **Hardy Roses.** Name the best three.—M. H. L., *Toledo, Kan.*

1,332. **Marechal Niel Rose.** What treatment shall I give my young Niel Rose, kept in a general-purpose greenhouse, to obtain most flowers next winter?

1,333. **Transplanting Rhubarb.** When is the best time to divide the hills so as to have stalks for use next spring? How long does it require to become fit for use from seed?

1,334. **Improving Clay Soil.** Will lime improve my heavy wet, clayey soil, which I have to use for a truck patch, and which I am not in shape to drain? How much lime shall I apply?—W. C., *Holmesburg, Pa.*

1,335. **Bones for Fertilizer.** What is the easiest way of dissolving them, or making them quickly available for fertilizer?—F. N.

1,336. **Date Palms.** What is the proper treatment for those raised from stones last spring?—R. St. J., *Neb.*

1,337. **Wide Planting for Grape Diseases.** Will planting vines a greater than the usual distance apart, have a tendency to prevent Grape diseases?—N. W., *Vineland, N. J.*

1,338. **Weeping Willow.** Is it hardy here with mercury occasionally down to 40° below zero?—C. W., *St. Paul, Minn.*

1,339. **Seed of Squirrel Corn.** Where can it be obtained?—E. J. T., *Franklin, La.*

1,340. **Asparagus Bed.** How long can it be expected to do well with good feeding and care? Mine was made eighteen years ago, but seems to fail of late, and shows bare spots.—H. R. M., *New York City.*

1,341. **Worms in Dried Fruit.** How can I get worms out of Dried Apples and Berries? T. W., *Pa.*

1,342. **Heating Amateur Greenhouse.** How does H. J. Emmerich prevent loss of heat if he permits direct draft from oil stove to outer air for ventilation?—J. S. R., *Portland, Oregon.*

1,343. **Plan of Family Small Fruit Patch.** I want to grow a free small fruit (no Grapes) supply for use, fresh, canned and evaporated through the year. How should a plat 100 by 220 upland loam western slope be put to this use, and what kinds well drained?—I. C., *Town Hill, Pa.*

1,344. **Tree Cricket.** What is the insect that has laid its eggs in openings resembling sewing machine stitching in double row in the twigs of my Plum tree?—SUBSCRIBER, *Indiana.*

REPLIES TO INQUIRIES.

1,292. **Lice on Cabbage.** It is doubtful if there is a practical method for ridding Cabbages of lice. I have tried several so called remedies. The kerosene emulsion will kill all the lice that it comes in contact with, but it is impossible to reach them all. And owing to their remarkable power of multiplication the plants will soon be as much infected as ever. Keeping the ground thoroughly cultivated is as likely as anything to prevent the injury.—E. S. GOFF.

1,315. **Improving Sandy Soil.** Soil of a somewhat sandy character, although excellent for garden purposes on account of warmth, ease of manipulation, and quickness of responding to fertilizer applications, has the one great fault of allowing moisture, and plant foods with it, escape to the lower strata by leeching much faster than is often desirable. This fault is most apparent when the soil does not contain much decaying vegetable matter (carbon), and hence may be remedied by abundant applications of barnyard manure. This course is naturally an expensive one, and a good dressing of clay can often be made still more effective in correcting the mechanical deficiences of sandy soils, and at the same time to add the element potash, which is often deficient in such soils. It can be put on the land during the fall or winter, at any time when most convenient, and the frost will act on it and pulverize it. A correspondent of Gardeners' Chronicle stated that he is able to tell to a yard, by the look of crops, where the clay was put; and one that has had several dressings always carries better Strawberries and culinary vegetables than either of the others, which have not had any. The land on the first named quarter is more holding of moisture, the clay taking that nature from dew and rain, and which it retains better, and absorbs more of the juices of the manures used than the undressed land. For mixing with light loam for potting Strawberries, clay is of great value, and so it is used, in the same way as with manure or leaf-mould for growing Melons, which like stiff soils, but in either case it should be such of it as has become ameliorated by exposure to the weather. Some gardeners, no doubt, have too stiff and unworkable kind of clay, and long for the lighter material, but the remedy in their case lies the other way, and road scrapings, leaf-rakings, and rubbish-heap ingredients, properly and continuously employed, will soon effect an improvement.

1,196. **Echeverias for Bedding Out.** A leaf and small portion of the stalk of E. floribunda splendens and the sprouts that appear below the plant of E. secunda glauca and E. metallica are used for propagation, and should be allowed to become dry or callused before potting in a soil mixture containing two thirds sand. When well rooted the plants may be bedded out or repotted in a compost of equal proportions of leaf mould, fine sand and well rotted hen manure. They are also propagated from seed which can be obtained of any florist. Seed should be planted early in the season, and require considerable heat. May is a good time to strike cuttings of Echeverias.—E. L. P., *Crawford Co., Pa.*

1,171. **Propagating the Oleander.** In July make cuttings of the new growth about three inches in length, place in a small bottle containing soft water. Set in a pot, fill the space around bottle with sand and give a southern exposure. Cuttings should be shaded for a few days —E. L. P., *Crawford Co. Pa.*

1,216. **Bottom Heat and Plant Growth.** My experience is that bottom heat stimulates root growth, and heat from above top growth. Onions and Radishes grown in a hot-bed were all that could be desired, while Lettuce made a weak and slender growth. Of the same vegetables grown in cold frame the former two made only sufficient root growth to sustain life and the latter was fine. The result was also good with Lettuce grown on the floor of greenhouse. —E. L. P., *Crawford Co., Pa.*

1,298. **Rooting Rose Cuttings.** This can be done at any time when the wood is in proper condition. Florists generally use one-eye cuttings. The wood is fit for cuttings when the flower bud appears on the shoot. The joints are cut about one quarter of an inch above the eye and the stem on each cutting left about one inch and a half long. The leaf is shortened somewhat and the cutting put in sand upon sharp bottom heat until the roots appear when it is at once potted off in thumb pots. Another way of propagating Roses is described in Mr. Henderson's Practical Floriculture. The cuttings are made with three or four eyes just after the wood is ripened enough to show the rudiment of the buds at the axil of the leaf. Such cuttings can be made any time from October to January and placed in cold frames, planting in same way as Cabbage or Cauliflower plants that are to be wintered over, and subjecting them to the same winter treatment of airing yet keeping them as free from severe freezing as can be done during the winter. Rose cuttings placed in such frames about the end of October will be rooted and fit to pot in March. People not having the convenience of frames may do it equally well with the protection of the ordinary garden hand glass. In either case it is necessary that the soil be thoroughly drained so that no water stands on it in winter, and if the soil is not naturally sandy it had better be prepared in about equal proportions of sand, leaf mold and loam well mixed together. The cuttings may be inserted quite thickly, say one-half to one inch apart, and three inches between the rows. One thorough watering will usually be all that is required until the cuttings begin to root in spring.—P. G.

1,303. **Sod for Small Fruit.** Give a good dressing of barnyard manure in autumn and plow in early spring to the whole depth of the surface soil. If the subsoil is not naturally of a porous character it should also be stirred by means of a subsoil plow Next cut up the lumps, sods, etc., by means of a disk or other deep cutting harrow; roll, if necessary, and pulverize the whole surface nicely with a smoothing or a Meeker disk harrow. This will be good enough preparation for planting small fruits.

1,304. **Barrenness of Grapes.** The cause—a most common occurrence—of this is want of proper pollen at the time of blooming. Many varieties, especially of the pure species, the riparia, rupestris, cordifolia, æstavalis, etc., always have reflexed stamens and if standing at a distance from vines having erect stamens, will not set much fruit, yet will bear abundantly in the vicinity of varieties with erect stamens. In nature even these practically pistillate vines find plenty of pollen, since over one half of the wild vines are purely staminate or male. Prof. T. V. Munson's observations have served to make fruit growers in general pay more attention to this point, which has considerable practical bearing. Lindley, Brighton, and many others (most of Roger's Hybrids among them) have reflexed stamens and if planted alone in vineyard are almost fruitless, but planted among Lady, Martha, Concord or many others that have erect stamens and bloom at same time with them will bear abundantly. The variety to be fertilized should begin blooming a day after the one which is to furnish the pollen. A Grape vine remains in bloom from three to eight days and each flower must be fertilized the first or at furthest the second day after it opens. Even the bearing vines with erect stamens do better if some properly selected males be planted in the vineyard, and it would not be a bad thiug to use some of the wild male varieties of the woods for this purpose, planting them among our cultivated sorts according to their requirements, and merely for the sake of their free pollen producing and distributing qualities.—P. G.

1,320. **Girdling Apple Trees.** Girdling is intended to influence bud development on the wood that is to bear the fruit the season following. A ring of bark variously stated as from one quarter of an inch to several inches in width, is removed from the body of the tree below the branches, or from all or part of the branches near their base. This stops the returu flow of the sap and tends to the formation of fruit buds at the expense of the wood growth.

1,305. **Name of Plum.** This can hardly be given without a fuller description. It might be the Bradshaw, perhaps the German Prune.—P.G.

1,321 **Tree Cricket.** The damage was done by the tree cricket, or Snowy tree cricket, an insect nearly three quarters of an inch long, of a whitish green color with darker stripes on the head and thorax. The shrill notes of the male can be heard in the bushes and trees all day long. The female, thrusting her ovipositor obliquely more than half way through the tender canes of Raspberries, Blackberries, Grapes, Peaches, Plums, etc., places one of her long, narrow, yellowish eggs into each opening thus made. From five to fifteen eggs are deposited in one row, and the injury to the cane or twig weakens it frequently in such a way as to cause it to break off or die beyond the spot affected. This, however, is not the only sin of which the tree cricket is guilty. It lives on the juices of cultivated plants, and in order to get at the sap for food, cuts off leaves, blossoms and young fruit, often entirely denuding vines of leaves and clusters; and while it may be said in its favor that in infancy it lives largely on plant lice and other injurious insects, yet such good services do not begin to make up for the vandalism which it practices in later life. The remedy generally recommended consists in hunting up, removing and burning the affected canes and twigs in the winter or spring. Luckily for the fruit grower the tree cricket has a powerful and active natural enemy, the cricket catcher, a small black wasp not very different in shape from the common blue-black mud wasp, one-half inch long, with seven-eighths inch expanse of wing. In an essay read before the Western New York Horticultural Society in the year 1858, Mr. W. L. Devereaux gave the first description and life history of the interesting and useful insect ever published, and his investigations show us a very convenient method of dealing with the tree cricket. The cricket catcher selects hollow stalks of plants, especially of the Wild Lettuce (*Lactuca canadensis*) for a nursery for its offspring. Having found a last year's stalk still standing erect, with the top broken off, says Mr. Devereaux, our cricket catcher makes a sort of stopper or nest in the hollow stem near the ground, with pieces of dead grass and fibres. Then she begins to stock up with tree crickets for her first offspring. When the number gathered up suits her, a neat partition is made of grass. This closes the one nursery or store house from the one to be made above. An egg is fastened to the lower or first cricket in each section. The crickets are not killed, only paralyzed by a sting and devoured by the young of its enemy alive Mr. Devereaux estimates that each female cricket catcher destroys 1,000 crickets and he advises to provide the insect with a home as we would our bird friends. Since he has allowed the Wild Lettuce to mature its stem in his Grape rows the crickets have been mightily thinned out. Has fastened the stalks of it in his Raspberry bushes with good results. The moral is obvious.—P. G.

1,323. **Strawberries in Young Orchards.** There can be little objection to the practice of planting Strawberries among a recently established orchard and it has much to recommend it, provided that the ground is well enriched. All kinds of small fruits, in fact, seem to thrive in the congenial vicinity of young trees, with what little shade and cooler atmosphere they provide. Sometimes these fruits escape injury from a late spring frost when small fruits in open field are badly damaged.—P. G.

1,324. **Value of Manure.** Good stable manure at 25 cents a load, even if it has to be drawn several miles, is an extremely cheap fertilizer, and much cheaper than commercial fertilizers at current rates. A fair average sample of farm yard manure compared with fertilizers, is worth from $2,00 to $2.50 to the ton.—P. G.

1,325. **Land Plaster.** This is sulphate of lime, and can be regarded as plant food only in the limited sense that it provides lime and sulphuric acid. It is valuable chiefly for its chemical action on the soil, by which locked-up plant food is made available, and for the fact that it makes an interchange with the volatile carbonate of ammonia, resulting in the two compounds, carbonate of lime, and sulphate of ammonia, the latter a fixed form of that valuable plant food. Plaster has often the happiest effect upon Potato vines, Corn, upon Clover and in fact any of the grasses, without our being able to tell just in what way it exerts its beneficial influence.—P. G.

1,327. **Improved Beehive.** Buy one from the nearest dealer in bee-keeper's supplies, or make one according to instructions often given in modern bee literature. You may also address A. I. Root, Medina, Ohio, for information, price list, etc.

1,330. **Planting Raspberries.** The usual time of planting is in early spring, although autumn planting is a good practice when good plants are to be had. The latter, and care in planting, insure success at either time Among the hardy sorts for market there is none now among the Red varieties that surpasses the Cuthbert. In many localities, and especially for general purposes, the Turner is a most excellent berry and quite largely grown. Hansell, as an extra early sort and Marlboro, with its later and very large and luscious fruit,are worth a trial. Of blackcaps try Ohio,Souhegan and Gregg.

1,333. **Transplanting Rhubarb.** The root stock and consequently the number of stalks issuing from it are apt to grow much too large in the course of a few years for the good of the size of the stalks, and the plants, for this reason, must be occasionally taken up, the roots divided, and replanted in strong, well-enriched soil, not less than four feet apart each way. This is usually done in spring. Seedlings will be large enough to produce stalks for table or market the third season from seed

1,334. **Improving Clay Soil.** So long as the clay is wet,no permanent and decided improvement is to be thought of until the surplus moisture is removed by drainage. This course alone will do more to make the soil looser and warmer, and give larger crops than any other treatment. Sometimes the increased crop of a single year, especially of garden stuffs, small fruits, etc., will more than pay the whole cost of underdraining. If the clay is very tenacious and hard to break up, the mere application of sand—the more the better—would do much in the way of correction; and good manure, or in its absence peat or muck, with plenty of commercial fertilizers, should be used rather freely. Green crops, especially Clover, plowed under, can also be relied on to improve such soils. Applications of air-slaked lime will prove beneficial.

1,335. **Bones for Fertilizer.** For the home garden, and in a small way generally, we have always considered fire the simplest and most effective agent for the transformation of bones into an available fertilizer. Small quantities may be thrown into any wood stove, upon a brisk fire,and then scattered upon the land together with the ashes. Or, a big fire of brush and other rubbish may be started outdoors and the bones thrown upon it. The ashes then contain the phosphoric acid of the bones, reduced to a fine white powder, and are a most excellent fertilizer for soils or crops needing potash and phosphoric acid. Of course the few per cent of nitrogen that fresh bones contain, are lost by this treatment. These can be saved by the adoption of the course, recommended by Prof. W. C. Stubbs, of the Louisville Experiment Station. Break 100 pounds of bones into small fragments, and pack them into a tight cask with 100 pounds of good wood ashes which have been previously mixed with 25 pounds of dry water-slacked lime and 12 pounds of "sal soda" (washing soda). Twenty gallons of water will saturate the mass and more may be added as required. In two or three weeks the bones will be soft enough to be turned out on a floor and mixed with two bushels of good soil.

1,336. **Date Palms.** Phœnix dactylifera thrives best in a compost of loam, peat and sand. If you have them in small pots, transfer to larger ones as needed. Palms delight in a warm atmosphere and only there will make quick, thrifty growth. Syringe or sponge freely during the summer,

1,337. **Wide Planting for Grape Diseases.** Even single vines are by no means exempt from mildews and rot, but attacks may be less frequent, or less severe. From the Vineyardist we learn that successful growers on Lake Cayuga plant their vines much further apart than they are grown on the shores of Seneca and it is probably done as a precaution against the Grape diseases. There is good reason to suppose, says the Vineyardist, that the remedy is a good one, as these diseases are the results of close and dense foliage, a hot and humid atmosphere and lack of air. More space where the summer fogs occasionally prevail may be the dictate of wisdom.

1,339. **Seed of Squirrel Corn.** Plants of Dicentra canadensis may be had of Edward Gillett, Southwick, Mass , perhaps seed also. Send for price list to address given.

1,340. **Asparagus Bed.** The condition of the bed seems to indicate that it has seen its best days, and it will certainly be a wise move to set out a new plantation without delay. In the selection of soil and site give a moderately rich, naturally drained, warm, sandy loam with southern or southeastern exposure the preference. Prepare the bed thoroughly by deep plowing, cross plowing if needed, harrowing, etc.; then plow out the rows deeply, four or five feet apart. Set good strong plants (one or two years old) one to each foot or eighteen inches (many prefer even two feet distance between plants) cover lightly with soil and scatter some high grade complete fertilizer, as for instance a good vegetable or Potato manure, into the furrows, and afterwards, in working the soil, gradually fill up even with the surface. Well rotted compost may be used in place of the fertilizer. If you plant in fall, the rows may be filled with salt and with dry forest leaves, chaff,or other fine litter. If bleached "grass" is desired, the plants are set at least six inches deep; if intended to be cut near surface of ground, four inches depth are fully sufficient.

1,308. **Rose Cuttings.** See reply to 1,298.

1,322. **Pea Weevil.** Seed Peas and Beans can be rid of weevil larvæ in several ways. One, and the simplest way is to plunge them for a few moments in boiling water. Another and a very good and effective one is what is called the bi-sulphide of carbon treatment. The seed is put in a tight box or barrel, a small,vessel containing half a gill of bi-sulphide of carbon placed upon the seed and the receptacle kept tightly closed for at least forty-eight hours. The drug will then have evaporated and permeated all through the seed so that every weevil is killed. Don't overlook that the vapor is extremely inflammable. The operation should be carried on outdoors or in an open shed, and the seed, when emptied out, kept away from light or fire.

1,310. **Dewberry Plants.** These can be propagated in same way as Blackberry plants and are even still easier to grow. In the autumn dig up the roots and make cuttings about three inches long, put them in boxes with alternate layers of sand and bury the boxes in a well drained spot until spring. Then plant thickly in nursery rows and cultivate like Blackberry cuttings. Cuttings of the green wood also root readily in the propagating bed. You might also try making layer plants from the green wood. In fact it is easier to propagate the Dewberry than to kill it.

1,312. **Bagging Grapes.** This to be effective in protecting the clusters from mildew and rot, should be done as soon as possible after the vines have done blooming. Common manilla grocery bags are used, and if water-proof all the better. Cut off the corners at the bottom, to give a chance for the escape of rain water that may in some way get into them. Also cut the open end rounding so that the flaps can be easily pinned around the cane, with the cluster inside the bag. Another good way is to take a piece of strong water-proof manilla paper ten by six inches, and fold in funnel shape around the cluster so that its stem enters at the small end, while the open end hangs downward, perfectly surrounding the cluster. The paper is fastened and held in place by a single pin.

1,318. **Russian Mulberry.** Prof. Budd answers a similar inquiry in the Farmer's Review as follows: The Russian Mulberry is not fit for an ornamental tree, shade tree, or for forest planting. Like the old Morus multicaulis, it has an eternal tendency to throw its most vigorous shoots from near the ground. In Nebraska it will have greatest value as a wind-break or screen to shelter from wiuds or snow. Planted three feet apart it assumes a low, spreading form and has thick, handsome foliage. For arresting wind sweep it has no superior among the deciduous trees. In addition it also bears fruit abundantly, which is valuable for attracting the birds in Raspberry and Cherry time. As to its size and quality for other uses, the less said the better, unless some special variety be selected larger and better than we have yet seen in this country. At Orel, in Central Russia we heard of a variety with large and good fruits. We ordered plants of it which will soon tell the story as to size, quality and value. The so-called white Mulberry makes a pretty good tree where it proves perfectly hardy. If put out for forestry plantatiou it should be planted as closely as other trees to give it clean, upright growth. If set for shade or ornament, it will need as much room as Box Elder. If set for feeding silk worms,put in hedge row five feet apart and train low.

1,258. **Book on Amaryllis.** "Bulbs" by E. S. Rand, gives as full culture directions as any publication that I am acquainted with.—M. B. F.

1,259. **Aphis on Roses and Fuchias.** I use Sturtevant's Tobacco and Sulphur Insecticide on Roses. It ought to work equally as well with Fuchsias.—M. B. F.

1,261. **Pine Sawdust as Manure.** My experience with sawdust of any kiud whether used by itself or mixed with other material has been anything but satisfactory. It certainly should never be used on heavy soil, aud I have yet to see where even light sand has in any way becu benefited.—M. B. F.

1,262. **Grapes and Strawberries in Colorado.** There is no apparent reasous why you should not succeed with the hardier varieties of Grapes, such as Concord, Worden, Clinton, etc. Try some of the common Strawberries at first, Crescent, Chas. Downing, Sharpless and Cumberland Triumph are first class. The first is a pistillate variety aud should only be planted in alternate rows with some perfect flowering sort, such as the others named. A southern or southeastern exposure would be earlier than any other location, and would be preferable on that accouut. —M. B. F.

1,264. **Muriate of Potash.** Try Bowker Fertilizer Co., Boston, Mass.,or Mapes' Formula & Peruvian Guano Co., New York.—M. B. F.

1,265 **Sprouting Magnolia Seed.** Sow as soon as ripe in a frame, and keep moderately moist until germination takes place.—M. B. F.

1,266. **Arbor Vitae from Seed.** Sow early in spring under glass and as soon as the seedlings have reached sufficient size, harden off and put out in the open ground. No particular care is required as they are of sturdy growth.—M. B. F.

1,267. **Barren Vines in Grapery.** Does the old growth die down to the ground or only the lateral branches? Grapes produce their fruit on new growth each season But vines are sometimes barren with no apparent cause. I have in mind an Isabella which grows or did grow near my boyhood home. For several years every pains was taken with it but I never to my knowledge produced a single bunch of fruit —M. B. Faxon.

1,268. **Fruit Dryer.** The Zimmerman, made by the Zimmerman Machiue Co., of Cincinnati, Ohio, gives excellent satisfaction here in the East.—M. B. F.

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1,270. **Roses not Blooming.** You do not say whether your Roses are in pots or not, but presumably in either case they need more nourishment. Fine ground bone worked into the soil lightly is as good as anything. Do you cut them back sufficiently?—M. B. F.

1,271. **Unsatisfactory Grape Vines.** I am not acquainted with the Ives, but the true Concord certainly out to ripen with you as even in Northern Vermont it ripens perfectly nearly every season Give the new growth a good cutting back in July. It can do no harm. Possibly your vines are not true to name —M. B. F.

1,272. **Grapes on Walls.** If on the North or South sides of a farm would be an advantage, but if the opposite in ordinary locations they would succeed just as well without.—M. B. F.

1,274. **Tree Paeony.** Temple & Beard, Shady Hill Nurseries, Cambridge, Mass., make a specialty of this class of plants. A postal card will bring catalogue.

1,275. **Strawberry for Amateur.** On light soil try Chas. Downing or Cumberland Triumph, on high rich soil Jucunda or Black Defiance.—M. B. F.

1,276. **Well Rotted Sawdust.** Unless thoroughly decomposed, don't use it. It is a cold sour nature, and will breed ants both large and small by the million.—M. B. F.

1,269. **Strawberry Seedlings.** Patience is a prime requisite in raising seedling Strawberries. The best plan is to save the best-shaped well-ripened berries Take some clean sharp sand and squeeze the berries into it, working the berries up so as to separate the seed from the pulp. After this is thoroughly done, set aside until the whole is dry. About the middle of July select a partially shaded location where the soil is a light friable loam if possible, scatter the seed and sand as evenly as possible over the surface, and cover to the depth of one-half inch by sifting light soil or a mixture of sand and leaf mold over the top. Firm the soil thoroughly by "patting" down with the back of a spade or with a board Keep the surface evenly moist, not wet The seedlings should make their appearance in about two weeks and by the close of the season if everything is favorable, will be from two to three inches high. Upon the arrival of the first light snow cover to the depth of an inch with straw or better still if available some evergreen boughs. If the plants are not too thick they may remain in the seed bed the following season but wherever transplanted all that is necessary is to treat the same as old plants. The character of the different varieties cannot be definitely determined under four or five years, though some fruit will be produced the third year. Many of the seedlings will closely resemble the parent plant while others will be very different.—M. B. FAXON.

1,279. **Ants on Strawberry Plants.** If your bed is not too large, use a strong Tobacco water decoction pouring it in and about their burrows. If the plantation is large, of course, this would be too troublesome a method —M. B. F.

1,280. **Forcing Strawberries.** I have yet to hear of any one who has made a great success of forcing strawberries The secret of the whole thing is that the plants need rest I experimented in a small way a few years ago with the Bidwell and Jas Vick. The latter did the best I took layer plants rooted in "thumbs" and afterwards potted in four and then in six inch pots, Rich soil was used with a liberal amount of compost so with plenty of moisture the plants made a vigorous growth As freezing weather came on they were removed to a frame but were given plenty of air through the winter. About March 1st they were placed in light heat and afterwards into a warm bed. I raised quite a crop of fine looking berries though they were lacking in flavor. I do not know how well they might have done if grown in a house but I would not advise any one to place too high hopes on the results.—M. B. FAXON.

The Culture of Chinese Primroses.

JOHN F. RUPT, CUMBERLAND CO., PA.

The Chinese Primroses stand without a rival amongst the winter-blooming plants for easy culture, profusion of bloom and great variety and beauty of flowers. Their improvement during the past few years has made them universal favorites for house culture, so much so, that nearly every florist makes sure to have a good supply of them for his fall trade. The plants are always free of insect enemies, and require but ordinary care to have them produce an abundance of large and highly colored flowers.

The colors range from pure white to the most beautiful crimson-maroon, while there are also striped varieties. The flowers, when well-grown, are very large and showy, measuring one-and-a-half to two inches in diameter, borne upon tall stems, making them conspicuous above the foliage. They will well repay all the care bestowed upon them by continual blooming the entire winter.

In order to obtain the best results in their culture the most important factors are good seed and suitable soil. The soil should be prepared several months previous to the time when wanted for use. Woods mold, well decayed sod, and a liberal amount of well-rotted stable manure will make a good compost. For use it should be finely sifted, and a small quantity of sand added.

The most suitable time for sowing the

DOUBLE CHINESE PRIMROSE.

seed is in July, the plants then commence to bloom about the beginning of December, and continue in perfect flower until spring. If started earlier the flowers will not be so fine during the winter, when they would be most appreciated. Sow in shallow boxes or pans, filled about two inches deep with earth. Sow thinly, press with the bottom of a small flower pot and cover evenly with soil one-sixteenth of an inch, smooth off and press again rather firmly, cover lightly with moss or blades of grass to keep the soil from drying out, then dampen it. Keep the pans or boxes in some shaded and dry place where the wind cannot reach them. Do not give much water, only enough to keep the soil damp. As soon as the plants make their appearance the covering should be carefully removed, and the boxes kept in a well-aired place where there is plenty of light, but not in the sun. The greatest trouble in Primrose growing is the damping off of the young plants while yet in the seed boxes. This can easily be overcome by giving plenty of air and light. After being transplanted the trouble will be over.

When the plants are of sufficient size and have made some fibrous roots, they should be planted into small pots, the smallest that can be had, using sifted soil as described, then give a pretty thorough watering and shade for a few days, afterwards setting them in as light and cool a place as can be found, keeping the soil moderately moist. In all stages of growth an over-supply of water should be avoided; it being better to allow soil to become quite dry occasionally. When the pots become filled with roots the plants should be shifted into three-inch pots, and treated as when in small pots. As soon as these pots are well packed with roots, when the lower leaves begin to turn yellow, they must be put into larger pots; the lower leaves should be cut off and the plants set a little deeper than they were before. Use four-inch pots for this planting. Should they require another repotting use larger sized pots as most suitable to the size of the plants. They must be kept in vigorous growth to bring the flowers to the largest size and greatest beauty. A small quantity of good fertilizer mixed with the soil when repotting will prove beneficial.

About the time the flower buds appear the plants should be set where wanted when in bloom, they then become adopted to the place, and will do better than if changed while blooming. When set in a window they should be placed near the glass to have a good share of light and a cool place. If lightly shaded the flowers will be larger and of brighter colors than when kept under the full rays of the sun.

When it is desired to keep Primroses over the summer, put them in a frame or under a tree. They will need very little attention during the summer. About the first of September take them out of the pots, cut off nearly all the roots and leaves, plant into smaller pots and start to growing. When they have made good growth shift into larger pots. Though they generally give satisfaction they seldom produce flowers as fine as those on young plants.

Lawn Trees for Kansas.

J. ALBERT SMITH, LINCOLN CO., KANS.

Why do so many of the catalogues recommend Catalpa and Russian Mulberry as lawn and shade trees? These trees are admirably adapted to withstand the extremes of heat, drouth, and cold, and cannot be too highly recommended for timber claims and forest culture. But when used for this purpose they should be planted about four feet apart, and afterward thinned out as they begin to crowd each other for room; in this way they trim themselves and form better heads higher from the ground than they would otherwise. The Mulberry on a lawn, as a single specimen, sprawls out and sprouts from the base of the main stem, and presents very few attractive features. The Catalpa is a little better for a shade tree, but requires careful training, and even then is not nearly so good as the Soft Maple, White Elm or Black Locust. Its leaves are large, the branches coarse and not very numerous, and the amount of shade it casts is not worth mentioning.

In this country, where the prairie soil is naturally rich in plant food, it is a mistake to add barnyard manure for evergreens. Such a course generally insures the tree's death. The soil should be clean and mellow, and free from manure. The Red Cedar proves to be the hardiest evergreen with us, the Scotch Pine acting second. I am growing a Colorado Blue Spruce, and it promises

Single Chinese Primrose

well. I begin to think it may be the best evergreen for a dry, arid climate. The present high price asked for it places it beyond the reach of the average planter. Don't recommend Norway Spruce and Arbor Vitæ for Western Kansas; they are invariable failures even here, and we are in the central portion of the State.

THE COMPLETE GARDEN.

XXVII.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page 230*)

NASTURTIUM (Class C). This is quite common as an annual in our borders and flower gardens, but rarely cultivated as a vegetable in the home garden. The flowers are sometimes used for garnishing salads, while the tender flower buds and the seeds while young are pickled in vinegar, or used for seasoning. The Dwarf variety is preferable to the tall or climbing sort for this purpose. It is easily grown. Sow seed in drills three feet apart and give common cultivation.

OKRA (Class D). The Gombo or Okra, a native of South America, is a common vegetable at the South, but not generally grown in Northern gardens, probably for the reason that the young seed pods, which are the edible part, and used for soups and stews, etc., soon lose that tenderness (which characterizes them in a warm climate) when grown in the colder North. In some parts of middle and south America the ripe seeds are browned and used like Coffee. Seed may be planted somewhat like Corn, either in hills two feet apart each way, or better in drills three feet apart, and the plants thinned to one foot apart in the rows. Same cultivation is given as to Corn. The long-fruited, growing three or four feet high and having seed pods of from 6 to 8 inches in length, is the variety most usually grown.

PODS OF LONG OKRA.

ONION (Class F). As a farm garden crop Onions are grown from what is popularly called "black" seed, and a great variety of soils can be made use of for the purpose—clear sand, sandy loam, clay loam, muck, etc. The chief essentials are perfect drainage, and fertility of the soil, with plenty of good manure or fertilizers, early planting, and clean cultivation. Make the ground as rich as you can, always avoiding manure containing weed seeds, and making liberal use of well composted stable manure, wood ashes, top dressings of fertilizers, nitrate of soda, etc. Prepare the ground well, although deep plowing is hardly necessary. A favorite and commendable practice is to select a piece where Carrots, Beets or similar vegetables have been grown, plow after the crop is harvested in fall, and cart the compost to the field during fall or winter, whenever convenient. In spring cross-plow or stir the ground thoroughly with cultivator or disk harrow, etc., until a perfect seed bed has been prepared. In some cases, where a Meeker harrow is not at hand, the hand steel rake may have to be used in applying the finishing touches. Provide the required seed, which should be of best quality, and tested long enough in advance, to give you full assurance of its freshness and vitality. Seed is not reliable after the first season, and should be used when a year older only in rare cases, and when special circumstances seem to justify it. Sow in straight drills twelve to eighteen inches apart, using at the rate of from four to six pounds of water-cleaned seed to the acre. This should be done as early in the season as the condition of soil will permit. As soon as the rows can be seen, it is time to start the wheel-hoe, and this must be used very freely, to keep the surface of the soil stirred and free from weed growth. When the little Onions are a few inches high, the first hand weeding must be given. One careful going over, pulling up every weed by the roots is much better and of more lasting benefit, than two weedings by careless youngsters whose only aim is to get the job off their hands, or the money for the work into their pockets. These hand weedings must be given as often as required, to keep all weed growth down. The crop generally matures in August. The tops then assume a yellowish appearance, and generally die down. The bulbs may then be gathered, either by hand pulling, or with a wooden rake, three or four rows of them piled together in windrows, and left a few days to cure. The tops are then twisted or cut off and the bulbs spread on a board floor under shelter or taken to market.

The chief market sorts are Red Wethersfield, Yellow Danvers, Silverskin, Yellow Dutch, and the Southport Globe varieties. The Italian varieties, Giant Rocca, Mammoth Tripoli, and others of that class, are much esteemed in the home garden, or for market at the South, for their large size and mild flavor. They are not very good keepers.

In the Middle or Southern States Onions may be sown in autumn and a good crop obtained early next spring.

The usual way of growing early green Onions for market is by the use of setts. These are dwarfed bulbs, grown in drills one foot apart, using 30 pounds or more of seed to the acre. Growing thickly in the rows (no effect at thinning being made) they hardly ever grow larger than a good-sized marble, and in fact, the smaller ones are preferred. These bulbs are planted out early next season, in rows one foot apart and a few inches apart in the rows, and are pulled when yet young and in a growing condition as fast as they can be marketed to advantange. Yellow Dutch, and Silverskin are popular sorts for this purpose.

The Potato Onion produces no seed. The bulb is planted in spring, and produces a number, sometimes eight or more Onions in a cluster around the original one. It is grown in the Southern States. The Egyptian or Tree Onion bears bulblets instead of seed. It is perfectly hardly everywhere, but valuable only on that account, as it forms no marketable bulb and even the flavor of the leaves is not especially good.

PARSLEY (Class F). Much valued as a market garden crop in a small way, the aromatic leaves being used for garnishing and flavoring soups. Seed requires several weeks to germinate, then starts somewhat feebly and for that reason should be sown with care and in well prepared soil. Have drills one foot apart, and when plants are well started thin two or three inches apart, The plants soon grow strong and thrifty and will give little chance to the small weeds. The curled varieties are generally grown in preference to the plain leaved sort.

PARSNIPS (Class E). Cultivated somewhat similar to Carrots or Beets. Only fresh seed can be relied on to germinate. Sow in drills fifteen to eighteen inches apart, firm the soil well after sowing, and thin the plants, when well started, to stand three or four inches apart in the rows. As with Carrots it is a good practice to mix a few Radish seeds with the seed when sowing this crop, to indicate the exact location of row for the purposes of early cultivation. The wheel hoe should be used freely, and the weeds removed out of the rows by hand or a narrow hoe. The plants soon grow strong and will then pretty much take care of the weeds. The crop whether intended for market or stock, need not be harvested until spring. Like Salsify, its quality is improved by freezing.

PEAS (Class C. and D). Large crops can be grown on soils abounding in potash. Wood ashes, or other fertilizers having a large percentage of potash, generally give best results. The dwarf varieties are grown in drills two feet apart, the tall varieties in drills three feet apart. The early smooth varieties are quite hardy, and may be sown just as soon as the ground can be got in proper condition. The finer or wrinkled sorts when planted early and with a long, cold and wet spell immediately following, are apt to rot in the ground, and should not be planted until more favorable weather has set in. When weather and soil conditions favor germination, one quart of seed will do for from 150 to 250 feet of row, according to variety and width of rows. But when sowing very early in spring, in ill-prepared soil, or in deep furrows, it is safer to sow nearly the quantities of seed recommended in seedmen's catalogues, say one quart to each 100 or 125 feet of row. The dwarf varieties will do well without support, but the tall kind must have brush or a trellis of some sort to climb over. Cultivate and hoe frequently. Among the earlist smooth kinds we have the popular Alaska, Rural New Yorker, and the various "Extra Early" Philadelphias, Dan. O'Rourkes, Earliest and Bests, etc. All these are quite similar in general habit of growth and bearing, and neither of them is as productive, as large and delicious in kernel, nor as good generally as the wrinkled sorts. The list of the latter comprises American Wonder, very dwarf, but good and generally reliable, the various Gems (well worthy of the name) Bliss Abundance and Everbearing (the latter not only productive, but of excellent quality also), Stratagem, one of the finest Peas in existence, Yorkshire Hero, Champion of England, etc. The last named is very tall, and as prominent for quality as it is for thrift. There is still another class, the Edible Podded or Sugar Peas, many of them like the Giant or Scimitar Sugar Pea shown in engraving, bearing immense pods of a peculiar crooked shape. They are not in general cultivation with us, but the pods are sweet and tender.

PEPPER (Class D). Plants are usually started in hot-bed or greenhouse in March or April, but the seed to germinate requires rather a higher temperature than Tomatoes, but not quite as high as Egg plants. When the weather has become thoroughly warm, say June 1st, in the Northern and Middle States, the plants should be strong and ready for setting in open ground, occupying a space of two by two and one-half feet each. They are easily transplanted, and when well fed with good warm manure, especially poultry droppings, make a good growth and produce fruit abundantly. Both green and mature Peppers are largely used for pickling materials. The old and popular Bullnose or

Mammoth Tripoli Onion.

Bell Pepper is now entirely eclipsed by the Ruby King, Golden Upright, etc., with their large-sized fruit that is produced in great abundance. Red Cluster is a smaller but firey sort, making a very ornamental little plant entirely covered with the bright red fruit; Celestian Pepper is ornamental enough for pot culture; fruit medium size, light yellow turning to purple, and of quite strong flavor.

POTATOES (Class C). Early Potatoes often fit nicely into the crop rotation of the market garden; in the home garden, of course, they are a necessity. Later varieties are and must always be relegated to the field. Rich soil suits these early dwarf sorts very well and they also take very kindly to the high-grade special Potato manures. Mark out furrows from two and one-half to three feet apart, and four inches deep, in otherwise well prepared soil, and drop fair-sized pieces of well preserved seed tubers eight or ten inches apart, cover lightly and strew the fertilizer (from 400 to 1,200 pounds per acre) over the drills. In working the soil fill in the furrows gradually. Cultivate frequently and hoe when necessary. Apply Paris green or London purple in water or plaster whenever bugs are troublesome. If preferred the hills may be slightly hilled, although perfectly level culture will generally give just as good results. When the tops have nearly perished it is time to dig the crop. Early Ohio is yet the first early good Potato and generally reliable for garden culture. Early Sunrise follows it closely and is also worthy of trial. The various Early Rose seedlings and Beauty of Hebron well deserve their popularity as early sorts for market and home use.

SWEET POTATOES (class B). Warm soil and climate are required to grow them to perfection. It is by no means difficult to grow large tubers even at the north; but they are almost always watery and lacking in flavor. To grow the crop, plants should be started in hot bed, about six weeks before they will be wanted for setting in open ground. The new manure of the bed is covered with an inch or two of sandy soil, and the seed tubers are placed upon this in a single layer, closely together, and then covered with three or four inches of sand. Water occasionally.

When the plants (or slips) are ready, prepare the ground for the crop by marking out furrows four feet apart, and place a shovel full of good compost, or a handful or so of some good Potato fertilizer every two feet in the row, and over this draw the soil up to form little mounds, flat on top. Then pull the plants, dip their roots in water, and set one upon each mound, so that it will stand in a little depression in the center. A little water may be poured around the plant in this depression if soil or season is in the least dry. Be sure to set firmly into the ground. Where the soil is loose enough, the index finger of the right hand may be used as a dibble.

Cultivate and hoe frequently, and when the vines begin to run freely, litt them off the ground from time to time to prevent their rooting. Just before frost the crop should be dug by means of a spading fork, care being taken to lift up each plant with all its roots and tubers without bruising the latter. Leave in the sun to cure, then store in a warm dry room.

Close Cropping for Money and Health.

E. P. POWELL, ONEIDA CO., N. Y.

I have nine acres of land. My house stands near the center. In front is a tree lawn of about 2½ acres, to the east a lawn of flowers a little less than half an acre. These are filled with rare and choice trees, shrubs and flowers, and my drives wind in from the east highway and from the north, and meet around my house; thence moving southward to barns and gardens. The hedges border the drives and not the street and are mostly Arbor Vitæ and as fine as the United States can show. My vineyard covers about one acre, and Berries and Currants another acre. The whole land slopes with swales and knolls to the southeast and overhangs the Oriskany valley. In sight of the city of Utica and half a dozen villages, it is considered one of the handsomest sites in New York state, and is certainly for fruit the best in central New York.

Now I will show you my gardens and vineyards and you shall criticise as freely as you like. My Currant field is set in rows seven feet apart, and between the Curraut

EDIBLE PODDED PEAS.

bushes are set Cuthbert Raspberries. These double the profit of the field and do not injure or suffer injury. Of course I keep in each hill but four or five canes and do not let the suckers spread. This field is very profitable with Currants at two dollars and a half a bushel and Cuthberts at four or at three and a half. I grow White Grape and Versailles as my choice, even above Fay. This looks like crowding plants but if you will try it you will find it a success. The ground is strong and rich and not allowed to get poor.

Between Grape rows of eight feet apart are rows of Currants. In or under the Grape trellises are Strawberries. The Strawberry crop under such circumstances is not ideal but it is good. Cumberland is best for this culture. Considerable hoe work is required and is given. I get the interest of the ground in Strawberries; then again in Currants and finally a good profit in Grapes. The vines are but half of them bearing beyond their first crop, but Berries Grapes and Currants from two and one-half acres netted me about $300 this year besides all that we could use ourselves. In full bearing the two acres will readily return from $700 to $800 a year. This does not account for the expense of cultivation, that is for the general help about the place part of which of course goes to the Berries and Grapes. I employ expensive help on the whole because it is the most reliable.

I do not call this an ideal success. My horticulture is a side issue, but brain work demands reaction, change of occupation, etc. Dr. Holmes has his carpeuter shop where he recuperates with jack planes and turning lathes. Dr. Beecher used to run a wood saw for himself and some of his poor parishioners. Most of us would prefer gardening as a recreation. In no way can I hope for health, clearness of mental vision, and quickness of pen without a frequent retreat from my study to my flower lawns and fruit gardens. This explains that my gardens are not intended for ideals in the way of productiveness. Cash returns are not sought for as the first point but are welcome in their way.

Farmers generally cultivate or try to cultivate too large farms. The day of profit from large farms in most parts of this State is past. The culture of small fruits does not show any signs of outgrowing the demand. You need not fear to plant. But as a rule it is best to have a variety of fruits so that if one fails there will still be a fair income. In such farming the women of the household ought to be as deeply interested as the men. Instead of cheese and butter making go out and pick Berries. No matter how cultured a woman may be, health is a desideratum, and fruit culture is what is needed.

Roses for the Home Grounds.

C. L. VALENTINE, N. J.

Roses most desirable for greenhouse culture, are not, as a rule, the ones that most fully meet the popular need for the home garden; for the same qualities desirable in a florist's Rose frequently render it unfitted for out-of-door culture, and many of those that are best for forcing, because of unusual size, or fine shape of bud, fashionable color, or some other purely commercial reason, have not the vigor of constitution needed for an out-of-door Rose, or else cannot endure the effects of sun and storm on their color or texture of bloom. Marèchal Niel, Niphetos, and the Bennett Roses furnish good examples of this. Bennett becomes single, and faded, and anything but desirable as the summer heat increases; Niphetos is entirely too delicate for out-of-door culture, while Niel is successful only under the favoring conditions of southern climate. These Roses are all ranked as first-class, and the novice is almost sure to make mistakes in selection unless he has some other guide than the catalogues.

For general out-door planting, a Rose to be thoroughly satisfactory, must be of good vigorous constitution, a free bloomer, fragrant, and of good form and substance. It must be to a certain extent mildew resisting, or it cannot perfect its flowers, and its must be full double to be good in anything but the bud state. Among well-known sorts LaFrance, Elise Boelle, and Gen. Jacqueminot form a very satisfactory trio of hardy kinds, while Catherine Mermet, Marie Guillot, and Coquette de Lyon are excellent Teas, though the last mentioned of each trio would be better if it could be more double.

Really the most popular style of Rose, the one that calls forth the most ardent admiration from the great mass of people, is that having a shaded ground color, with petals laced or edged with some contrasting color. About the best known of these is the "Tulip Rose," Madame de Watteville. The ground color of this is a creamy yellow, sometimes slightly shaded with blush, while each petal is edged with bright pink, sometimes darkening to crimson. Peter Henderson considers that this Rose exceeds in beauty every other Rose in cultivation. It is strong and vigorous, free blooming and well adapted to the home garden.

Among the newer ones Princess Beatrice, sent out by Bennett as an extra vigorous variety and the best Tea he ever raised, is in the same style, canary-yellow shading to apricot, and laced with Rose color.

The most striking Rose of this style, however, is Lenciole, a new sort first sold at retail last years. This is a wonderful color, combination, golden yellow, fawn color and bright peach, red predominating. The buds are of very fine shape, long and pointed.

REPORT ON THE CONDITION OF THE FRUIT CROP

From our Correspondence, June 20, 1889.

EXPLANATION: Five indicates a very heavy crop; 4 over average; 3 average; 2 under average; 1 poor; 0 total failure. Kinds chiefly grown indicated by full face figures

EASTERN SECTION.	Apples, early.	Apples, late.	Cherries.	Grapes.	Peaches.	Pears, early.	Pears, late.	Plums.	Quinces.	Raspberries.	Blackberries.	Strawberries.	Currants.	Gooseberries.	Correspondent.
CANADA.															
London	3	4	2	0	2	3	3	2	3	4	4	2	2	2	John M Denton.
Providence N. S.	2	2	3	3	.	3	3	2	3	4	4	5	3	5	H. Chapman.
Providence Quebec	2	2	1	3	0	0	0	1	0	3	3	3	3	3	Annie L. Jack.
St. Catherines	2	3	2	2	3	2	2	4	3	3	3	3	3	3	A. G. Hull.
Welland Co.	2	2	2	2	2	4	4	2	2	3	3	2	3	2	E Mordcn.
MAINE.															
Androscoggin County	3	3	0	4	0	2	3	1	0	4	3	3	4	4	L. F. Abbott,
Cumberland "	3	3	2	3	.	3	3	3	.	4	3	3	3	3	A. P. Rced.
NEW HAMPSHIRE.															
Cheshire County	5	3	3	1	.	4	3	2	.	2	3	5	4	.	Marcus Ellis.
Rockingham "	.	4	3	.	4	4	4	3	4	3	3	2	5	.	George Q. Dow.
MASSACHUSETTS															
Boston County	2	2	3	3	.	2	2	1	3	4	3	1	4	.	M B. Faxon.
Hampshire "	3	3	4	4	4	3	3	4	.	3	4	2	.	.	L W. Goodell.
Hampshire "	4	4	3	4	5	4	4	3	.	3	4	4	4	4	Wm N. Hoyt
Hampshire "	3	3	2	4	4	2	.	3	3	2	4	1	3	4	S T Maynard
Middlesex "	3	3	3	3	4	3	3	2	3	4	4	4	3	3	Wm C Strong.
Middlesex "	2	2	4	4	.	3	3	.	2	4	4	3	4	.	Warren H. Manning.
Plymouth "	2	2	3	3	0	4	4	3	2	3	3	3	2	3	Ira Copeland.
Worcester "	3	3	2	4	2	3	2	3	2	3	3	2	3	3	W. H. Perry.
CONNETICUT.															
Hartford County	3	4	2	3	3	3	4	3	3	3	4	3	3	3	S. B. Keach.
Middlesex "	.	3	2	4	4	3	3	1	.	5	5	5	4	.	B G. Northrop.
New Haven "	2	3	3	2	4	2	4	4	2	4	5	3	3	3	E E. Burwell.
Tolland "	3	3	2	.	4	3	3	4	3	3	3	2	2	1	Wm H. Yeomans
NEW YORK.															
Albany County	4	3	5	4	3	4	3	3	3	4	4	4	3	3	J. A. Lintner.
Chautauqua "	4	4	3	2	0	3	3	3	3	3	4	2	3	3	S. S. Crissey.
Chautauqua "	3	3	3	2	1	3	3	1	3	4	4	5	4	3	E. H. Pratt.
Chautauqua "	3	3	3	3	1	3	3	3	3	3	3	3	3	3	L. Roesch
Cayuga "	3	3	3	4	3	3	3	3	3	5	5	3	4	3	W. S. Andrews
Cayuga "	3	4	4	3	4	3	3	2	3	4	4	2	3	3	D. M. Dunning.
Duchess "	1	1	4	5	4	3	4	2	4	4	3	4	4	.	Floyd Quick.
Erie "	3	3	0	0	.	3	3	0	0	3	.	3	5	5	Esther Shisler.
Erie "	.	1	1	0	2	2	0	.	.	.	.	3	3	3	G. Zimmermann.
Genesee "	2	2	2	1	0	2	3	3	2	2	2	3	3	3	N. Bogue.
Livingston "	1	1	1	1	0	3	3	1	0	1	4	1	3	4	L. D. Elder.
Monroe "	3	2	3	1	2	3	2	3	2	3	3	2	3	3	Ellwanger & Barry.
Monroe "	3	2	1	0	0	3	1	1	0	4	3	2	3	.	Jos. Harris.
Monroe "	3	3	3	3	2	.	.	2	3	1	1	0	3	3	Diamond Grape Co.
Niagara "	2	2	3	1	1	1	1	3	0	2	1	2	3	.	J. S Woodward.
Niagara "	2	2	4	1	1	2	2	3	1	.	.	1	.	.	E. Moody & Sons.
Niagara "	2	3	3	0	2	2	2	3	1	2	2	2	3	3	Henry Lutts.
Niagara "	2	1	1	3	1	3	3	2	1	5	4	3	3	.	J. E. Perrigo.
Oswego "	2	2	2	4	3	3	3	3	2	3	3	5	4	3	L J. Farmer.
Oneida "	3	3	1	2	.	3	3	1	1	4	3	4	3	2	E. P. Powell.
Orleans "	4	3	3	2	3	3	3	4	2	5	5	2	5	4	V. Bogue
Ontario "	1	1	2	2	2	2	2	1	1	1	.	3	3	.	Friedemann Greiner.
Ontario "	2	4	4	2	4	4	4	4	2	3	.	2	3	3	Ward S. Smith.
Onon "	2	1	2	3	.	4	4	0	.	4	4	3	3	.	P. E Dawley.
Queens "	.	3	1	3	2	2	2	.	.	4	4	3	3	3	Chas E Parnell.
Steuben "	0	0	0	0	0	0	0	0	0	1	1	1	1	0	W. E Weld.
Suffolk "	1	2	1	3	2	1	0	.	2	4	4	5	5	4	P. H Foster.
Suffolk "	3	4	2	3	2	3	3	.	4	5	5	5	4	4	E. D Putney.
Seneca "	2	2	2	2	2	2	2	4	2	3	3	2	2	.	Geo. A. Bonnell.
Ulster "	3	3	2	4	4	3	3	4	3	4	4	3	3	3	H Hendricks.
Wayne "	2	2	4	5	3	4	4	3	3	4	4	5	4	0	R. H. Cole.
Wayne "	.	2	2	3	1	2	.	1	2	3	.	3	3	.	David Lake.
Wayne "	3	3	0	0	0	3	3	0	1	1	1	2	2	3	Allyne Bros
Wayne "	2	2	4	1	3	4	4	1	3	4	3	4	3	2	W L Devereaux,
Wayne "	1	2	2	0	2	1	1	.	2	2	2	3	3	3	J. Irving Johnson.
Yates "	3	2	4	2	3	2	3	2	3	4	4	1	3	3	Geo. B. Arnold.
NEW JERSEY															
Atlantic County	2	2	3	3	2	1	1	1	2	4	5	5	3	5	Jno. Butterton.
Atlantic "	1	1	2	1	4	1	2	1	3	4	5	4	3	3	Wm F. Bassett.
Burlington "	2	2	3	3	4	2	3	.	3	4	4	3	3	3	John S. Collins.
Burlington "	3	0	1	3	2	3	2	0	2	5	3	2	0	B. D. Shedaker.
Cumberland "	4	3	1	1	3	3	2	1	3	4	5	5	3	3	Alex. W. Pearson.
Cumberland "	2	1	0	1	1	1	3	.	3	3	5	1	3	0	Theo F. Baker.
Essex "	.	.	3	4	5	4	4	.	.	4	4	3	3	.	T. H. Spaulding.
Essex "	3	3	2	0	3	4	3	3	2	4	3	3	2	3	E. P. Williams
Monmouth "	2	1	1	3	2	3	3	.	.	3	3	3	3	.	E S Black.
Middlesex "	5	5	4	4	5	4	4	5	5	4	5	5	5	4	Byron D. Halsted.
Mercer "	4	4	1	2	5	2	2	1	3	4	3	3	3	3	C Ribsam & Sons.
Mercer "	3	3	1	3	3	2	.	.	3	3	3	3	3	3	Chas Black
Monmouth "	2	1	1	1	3	.	1	.	.	3	5	3	.	.	E. T. Field.
Passaic "	4	4	3	5	.	3	3	5	3	5	5	5	5	3	E. O Orpet.
DELAWARE															
Sussex County	3	3	.	3	3	3	.	.	.	3	3	.	.	.	Wm. P Corsa.
Sussex "	2	2	.	.	2	.	.	.	.	.	.	.	.	.	R. S. Johnston.
Sussex "	2	3	1	0	3	3	3	0	0	3	5	4	.	.	J H vyers.
Kent "	1	1	3	1	3	3	3	2	2	4	4	4	2	2	A Pullen.
VERMONT.															
Chittenden County	3	4	2	3	.	4	3	1	.	5	5	3	5	4	W. W Cook.
Orleans "	1	1	0	3	0	0	0	2	0	4	2	5	4	3	T. H. Hoskins.
DISTRIC COLUMBIA.															
Washington	4	4	4	4	4	4	4	.	3	3	4	3	3	4	John Saul.
MARYLAND.															
Baltimore	3	3	2	0	2	2	2	0	3	4	5	5	5	4	Chas. H. Lake.
PENNSYLVANIA.															
Bradford County	3	3	2	1	2	3	3	1	.	1	1	3	2	.	Fred W. Card.
Chester "	3	3	2	3	4	3	3	3	2	4	4	4	3	3	J. A. Roberts.
Chester "	2	1	0	0	2	3	.	1	3	.	4	2	4	3	Chas. Istan.
Crawford "	4	3	2	3	.	3	.	.	.	5	4	4	4	3	Mrs. E. L. Patterson.
Cumberland "	3	4	2	5	4	2	3	.	4	5	4	3	5	5	John F. Rupp.
Dauphein "	2	2	3	3	4	4	4	1	2	3	4	5	3	.	E. C. Brinser.
Franklin "	3	2	4	3	3	4	4	4	3	5	5	5	5	4	E. B. Lang.
Lackawana "	4	4	0	2	0	4	4	0	0	3	3	4	0	0	Isaac F. Tillinghast.
Lancaster "	4	4	1	1	5	3	3	1	3	5	4	5	4	3	Daniel K. Herr.
Lancaster "	3	2	3	3	4	3	4	2	3	4	4	3	2	2	W. M. Engle
Philadelphia "	2	2	1	1	3	2	2	1	3	3	3	2	3	4	Thomas B .Meehan.
CENTRAL SECTION.															
OHIO.															
Belmont County	3	2	.	2	4	5	5	2	3	4	5	5	3	4	E. W. Reid.
Cuyahoga "	.	.	3	3	3	3	2	3	3	3	5	4	2	3	M. T. Thompson.
Cuyahoga "	2	2	3	4	1	3	3	3	3	4	5	4	4	3	E H Cushman.
Delaware "	2	2	3	3	4	3	3	2	2	3	3	4	3	3	Geo. W. Campbell
Fairfield "	2	1	4	4	3	2	2	2	3	5	5	5	3	2	D. Brant.

Henderson's Dinsmore seems to be giving excellent results as a perfectly hardy, dwarf, incessant-blooming, deep crimson, hybrid perpetual. It may prove better than Jacqueminot in some respects as it is more double than that favorite.

Among the very new kinds Marie Lambert is called the "White Hermosa." This means that it is exceptionally good outside, and an incessant bloomer. The blooms are not large, however. It is one of the most promising for outside culture.

But so far as may be stated with certainty from one year's trial, Mr. J. H. Laing is the banner pink Rose for our gardens. Thus far it seems to have no faults, at least there has been no whisper of any in the reports. Remarkably strong and healthy, extra free-flowering, with large sized blooms that are fine in both shape and color, exquisitely fragrant, and not subject to mildew, it seems to leave nothing more to be desired. This Rose is said to have attracted much attention in England as well as here. It must not be confounded with Mrs. Laing, another pink Rose sent out many years ago.

As an example of the present gushing style of launching new Roses on the public here is a quotation from the catalogues: "This superbly beautiful Rose resembles in color the delicate hues seen in the inside of the fairest deep sea-shells, rosy flesh bathed in golden amber, immense egg-shaped buds, broad, shell-like petals, and large, full flowers, exceedingly sweet." All this beauty to be obtained for twenty cents!

Have we not at last come to the point where new Roses must be described in plain language? There is nothing further that may be said of future aspirants for favor for we have no words left to express more than has already been said of others. Let us return to plain statements of facts.

Condition of the Fruit Crop.

On this and the following page we give a full and clear report of the condition of the fruit crop of America as it appears at this date, June 20. Thanks are due again, and hereby extended to our numerous correspondends who so promptly responded to our call. In a few instances the returns arrived too late for publication.

The report shows that this year's crop is not a surperabundant one, all tree fruits, especially in the sections where most largely grown for market, are below the average, and among the small fruits only one found crops rated higher than average, namely Blackberries, Raspberries and Strawberries.

A computation shows the following average yield of each kind of fruit for the whole country, the figures corresponding with those named under the explanation at the head of report, 3 indicating an average crop.

Apples, Early	2.75	Plums	2.52
Apples, Late	2.70	Quinces	2.25
Cherries	2.77	Raspberries	3.55
Grapes	2.80	Blackberries	3.80
Peaches	2.70	Strawberries	3.20
Pears, early	2.70	Currants	2.95
Pears, Late	2.72	Gooseberries	2.86

We leave it for the present to our readers to draw their own lessons from these figures, or if they wish, to compute the average yields for their respective states or sections.

Early Beets and Tomatoes.

[Paper prepared by Joshua Allyn for the Minnesota Horticultural Society.]

Beets. About the middle of March the seed is sowed in shollow boxes about twenty-four by eighteen inches in size, four inches deep. I try to have four hundred to five hundred plants in each box; they are placed in hot house and forced to rapid growth until middle of April; then set boxes in cold frames and gradually harden them until they will stand quite frosty air.

By the first week in May they will do to set out or transplant in bed. As soon as the ground can

CENTRAL SECTION.

(Continued)

		Appl's e.	Apples l.	Cherries.	Grapes.	Peaches.	Pears e.	Pears l.	Plums.	Quinces.	Rasp'b.	Blackb's.	Straw'b's	Currants	Gooseb's	Correspondent.
Franklin	County	3	2	3	3	.	3	3	4	3	4	4	4	4	4	W. J. Green.
Greene	"	3	4	3	4	5	3	2	3	2	3	5	4	4	3	Robert L. Dean.
Licking	"	1	1	3	3	3	3	3	2	3	4	5	4	3	2	A. M. Nichol.
Lucas	"	2	2	4	3	4	2	2	2	3	3	4	2	4	3	W. W. Farnsworth.
Lake	"	3	2	3	4	0	1	1	0	3	5	4	3	2	3	J. H. Tryon.
Montgomery	"	3	3	3	4	4	4	4	4	4	5	5	5	3	4	Tho. F. Longnecker.
Montgomery	"	3	2	2	3	3	3	4	3	4	4	5	5	3	4	N. Ohmer.
Montgomery	"	5	5	4	3	5	4	4	3	3	3	3	5	3	3	Hoover & Gaines Co.
Portage	"	3	4	2	4	1	3	3	1	3	4	3	3	3	3	Adrew Nillson.
Summit	"	4	2	4	1	4	.	2	4	5	5	4	4	4	4	M. Crawford.
Summit	"	3	1	1	3	0	3	2	0	3	5	4	3	3	3	L. B. Pierce.
Washington	"	3	2	1	3	2	1	1	1	.	4	4	3	2	2	W. W. Rathbone.
KENTUCKY.																
Jefferson	County	3	3	3	3	4	3	5	2	0	3	4	4	.	.	F. Walker.
INDIANA.																
Carroll	County	2	2	3	1	1	3	2	3	4	5	4	3	3	2	Julia M Kantz.
Delaware	"	3	2	2	3	2	2	2	2	.	5	3	2	.	.	Granville Cowing.
Fountain	"	2	2	5	2	3	1	1	1	0	5	5	3	1	3	John Wade.
Hendricks	"	3	3	4	3	3	3	3	3	.	5	5	4	3	3	Mordecai Carter.
Jasper	"	3	3	3	3	4	1	1	3	3	3	3	2	3	3	Walter L. Gumm.
Marion	"	3	2	3	1	4	3	3	3	4	4	4	2	2	2	Wm. B. Flick.
Putnam	"	3	2	4	3	5	3	3	4	1	4	5	3	2	4	W. H. Ragan.
Tippecanoe	"	2	3	3	2	1	2	3	3	1	5	4	2	3	3	J. Troop.
ILLINOIS																
Bloomington	County	3	2	3	3	4	.	.	4	.	3	5	4	4	3	Sidney Tuttle.
Champaign	"	2	2	3	4	1	4	.	2	.	3	4	2	.	.	G. W. McCluer
Hancock	"	3	2	4	5	3	3	4	5	3	3	4	3	3	4	A. C. Hammond.
Jackson	"	3	2	2	3	2	3	3	2	3	5	5	2	3	3	Geo. C. Hanford.
Kane	"	3	4	4	3	.	.	.	.	.	3	4	3	0	3	D. Hill.
Madison	"	5	5	5	3	4	3	2	2	3	4	4	3	3	2	Mrs. M. Bucknell.
Marion	"	5	5	3	3	3	3	3	1	3	5	5	1	1	1	J. Spencer.
Marion	"	4	3	3	4	4	4	4	3	.	3	4	3	3	3	B C. Warfield.
MICHIGAN.																
Berrien	County	5	2	3	5	4	4	4	5	2	5	5	4	3	.	W. A Smith.
Allegan	"	2	2	2	3	1	.	.	.	.	3	3	1	3	3	Byron Markham.
Berrien	"	2	2	3	2	3	2	2	.	.	2	2	2	.	.	R C. Thayer.
Mason	"	2	2	3	.	1	.	.	.	.	2	2	3	2	2	J. E Campbell.
Oceana	"	2	2	2	1	3	.	.	3	.	.	.	1	.	.	E. J Shirts.
Ottawa	"	3	3	.	2	2	1	.	.	.	.	.	.	.	.	I. Marsilg.
Ingham	"	2	2	2	2	2	2	3	.	2	2	2	2	2	2	Robert L. Hewitt.
Kalamazoo	"	2	3	4	2	1	3	3	3	2	2	3	3	4	4	J. N. Stearns.
Lenewee	"	3	3	4	3	4	3	3	5	3	4	4	2	3	3	Peter Collier.
Kent	"	3	3	2	3	3	3	3	2	.	2	4	2	2	3	F. E. Skeels.
Monroe	"	2	2	3	2	2	4	4	2	3	2	2	3	3	3	E. Inglefritz &Sons
Ionia	"	2	2	3	2	3	3	4	2	0	4	4	2	3	2	Geo. Hosford.
Van Buren	"	4	5	4	3	4	4	5	3	5	5	5	4	5	4	T. T. Lyon.
WISCONSIN																
Brown	County	3	3	1	2	.	0	0	1	.	4	3	5	5	3	J. M. Smith.
Dane	"	3	3	.	.	.	.	.	4	.	3	5	3	3	3	E. S. Goff
Ontaganie	"	2	2	3	2	.	.	.	3	.	4	4	3	4	4	W. D Boynton.
Rock	"	3	3	4	3	.	.	.	4	.	4	4	3	4	3	B. S. Hoxie
Rock	"	4	4	4	5	0	0	0	4	0	4	5	5	5	5	Geo. J, Kellogg.
Sauk	"	3	3	1	2	1	1	1	4	.	2	3	2	3	3	A. Clark Tuttle.
Shiocton	"	3	3	4	2	.	.	.	2	.	5	5	4	4	3	Elen E. Rexford.
Walworth	"	3	3	4	3	.	.	.	2	.	3	4	3	4	4	F. K. Phoenix.
SOUTHERN SECTION.																
TENNESSEE.																
Gilson County		1	1	3	4	3	2	2	1	0	3	3	2	.	.	C. M. Mervin.
Knox	"	3	.	4	.	5	3	3	2	.	5	5	3	.	3	C. S. Plumb.
MISSISSIPPI																
Oktibbeha County		5	5	.	4	5	.	.	.	5	.	.	.	5	.	S. M. Tracy.
GEORGIA																
Chatham	County	1	1	0	3	3	3	2	3	3	0	3	2	0	0	T. L. Kinsey.
Dekalb	"	4	3	5	5	5	2	.	5	3	5	5	4	1	0	Swanton.
Augusta	"	3	3	.	4	5	3	3	5	.	2	3	2	.	.	P. J. Berckmans.
VIRGINIA																
Accomack County		3	2	4	4	3	1	1	0	2	3	3	4	3	3	McMath Bros.
ARKANSAS																
Pulaski County		2	1	.	4	1	1	1	2	.	3	5	4	.	.	W. K. Tipton.
NORTH CAROLINA																
Milford County		2	3	3	3	4	3	3	3	0	3	4	3	2	3	J Van Lindley.
SOUTH CAROLINA																
Chester	County	3	3	5	3	5	4	4	4	.	2	4	2	.	.	H A Green.
Spartanburg	"	5	.	5	5	5	3	3	5	3	4	5	1	0	0	Mrs. J. S R. Thomson
FLORIDA.																
Manatee	County	.	.	.	5	5	.	.	5	3	.	5	5	.	.	Reasoner Bros.
St John's	"	.	.	.	3	1	.	.	3	.	.	3	2	.	.	W. C. Steele.
TEXAS.																
Grayson	"	3	3	3	3	1	2	3	2	2	3	3	3	0	3	T. V. Munson.
Grayson	"	3	4	.	4	1	3	3	2	.	.	5	5	.	.	J. J. Fairbanks.
WESTERN SECTION.																
MINNESOTA.																
Grant	County	2	2	0	0	0	0	0	3	.	4	2	4	3	2	S Frogner.
Houston	"	4	3	.	2	.	.	.	4	.	4	3	2	2	2	John S. Harris.
Minneapolis		2	2	.	3	.	.	.	.	.	2	.	1	3	3	L. Asire.
NEBRASKA.																
Butler	County	4	4	5	5	0	4	5	3	0	4	3	3	4	3	C. J. Palmer.
Jefferson	"	2	3	5	5	5	3	2	2	.	4	4	5	3	2	G J Carpenter.
Omaha	"	.	.	4	3	.	.	.	3	.	2	3	1	3	3	F. W. Taylor.
Nemaha	"	3	3	5	4	5	4	4	2	.	5	5	5	4	3	Robt. W. Furnas.
IOWA.																
Allamakee	County	4	.	.	1	.	.	.	3	.	4	4	2	2	2	John F. Dayton.
Jones	"	3	.	.	3	.	.	.	4	.	3	4	4	3	3	Edward Hoyt.
Mitchell	"	3	2	.	3	.	.	.	4	.	2	4	2	3	3	T H. Lovejoy.
Scott	"	3	3	4	5	4	1	1	4	0	5	5	3	3	2	Mrs. M. R Waggoner
Story	"	4	3	4	2	2	.	.	4	.	4	2	2	4	4	J. L. Budd.
KANSAS																
Douglas	County	2	2	5	3	4	2	3	3	1	4	4	5	1	1	B. F. Smith.
Douglas	"	3	2	5	3	4	3	3	1	3	4	4	5	2	2	A. C Green & Bro.
Lawrence	"	2	2	4	3	.	3	3	2	2	4	4	4	2	4	G C. Brackett.
Leavenworth	"	2	2	3	3	4	3	3	1	1	3	4	4	3	3	J. Stayman.
NEVADA.																
Washoe	County	3	2	5	3	1	.	2	3	.	4	4	4	3	3	W. S. Devoe.
MISSOURI																
Barton	County	5	5	4	5	5	4	3	4	2	4	5	5	2	3	Lon H. Gale.
Bates	"	3	2	4	4	3	2	2	2	1	4	4	5	3	4	Henry Speer.
Bushburg	"	3	3	4	5	4	3	3	0	1	3	3	3	.	.	R Bush
Greene	"	3	2	4	5	5	2	2	4	3	4	5	5	5	3	D S Holman.
Jackson	"	2	2	5	3	3	2	1	3	2	5	5	4	3	4	L. A. Goodman.
Jasper	"	3	2	5	4	4	3	4	5	3	4	5	4	3	3	Z. T Russell.
McDonald	"	3	3	4	4	5	3	3	4	.	3	4	4	.	.	Mrs Lora S. LaMance
Miller	"	4	4	4	5	5	3	4	3	3	2	5	3	2	3	N J. Sheperd.
Montgomery	"	3	2	4	3	5	4	3	3	0	4	4	5	3	4	Samuel Miller.
St. Louis	"	3	2	3	3	2	3	3	2	1	4	4	4	1	.	M. E. Murtfeldt.
CALIFORNIA.																
Sonoma	County	5	5	5	5	2	3	2	4	4	5	5	4	4	3	D. B. Wier.
WASHINGTON.																
Pierce	County	2	2	5	0	1	4	4	3	1	5	5	3	2	2	J. M. Ogle.

be worked in the spring these beds must be manured, plowed, dragged and worked thoroughly,and two or three times before setting the plants. This stirring the ground warms and loosens it, and the young roots can soon get the benefit to repay all trouble.

The same directions can be followed for Turnips,Onions, etc., especially when sets are scarce. Early Onions can be grown this way, and only need to be tried to be followed each year.

EARLY TOMATOES. Tomato seeds are sown in same kind of boxes as Beets. For the earliest varieties sow first of March. We use Canada Victor for early. A week later sow late kinds. With us the Acme does usually best for late. The first aim is healthy,stocky plants, and I urge them as fast as possible. With this object in view they must have plenty of fresh, warm air to grow dark-colored leaves, heavy roots and thick stock. I do not allow mine to stop growing.

When they have three or four leaves I pick out with care, transplant in other boxes, same size, give same temperature and treatment until about the middle of April, when they are ready to leave the hot house for the compost bed.

The method of forming the compost bed is a point I shall have to explain; it is made of stable manure hauled during winter months, and the deeper the better. I place my frames on this and fill them in with earth,five or six inches deep; place on sash; in a day or so the dirt is warm; then use all the care possible in setting out the plants. Leave sash off all the time it is safe, giving the tops all the air you can. The under heat will take care of the roots.

With proper attention, by the tenth or twentieth of May you will have No. 1 plants, heavy roots, full tops with buds and even blossoms.

They are now ready for transplanting on a light, sandy soil, sloping to the south, should be well worked and manured. The last plowing I have done on the day I set them out, as I give it a good top dressing; then thoroughly drag it. Before taking up, the ground must be saturated, then in the morning lift each one from the bed with plenty of earth; press the earth to a ball between the hands; place in a cool cellar in boxes until setting out in the afternoon.

Now I have one hand go with narrow spade, and spade holes about six inches deep, another hand with water, a pint or more to each hole; another hand drops the plant in the hole,and the last one places the plant aright, firmly settles the dirt and the plants will not even wilt. The cultivator should be started, in a day or two.

The compost bed is used for Lettuce and other early things. When fall comes I have a fine bed of manure, well rotted ready to haul on the land.

New York Market Quotations, Showing Tendencies.

	Week ending June 19.	Week ending June 5.
Apples—Russet, prime per bbl		2 50@3 00
Russet, fair to good		2 00@2 25
Baldwin, pr. to fancy		2 50@3 00
Baldwin, fair to good		1 75@2 25
Peaches—Ga., per 24 qt. crate	50@1 75	
S. C., per ½ bu. box	1 00@1 50	
Plums—Wild Goose, 24 qt. crate	1 00@2 00	
Per quart	6@ 8	
Cherries—Fancy, large, per lb	12@ 15	
Medium sized, soft	8@ 5	
Sour, sound	6@ 8	
Strawberries—Western N. Y.,qt	16@ 18	
Jersey, big varieties	10@ 20	5@ 7
Jersey Wilson	6@ 8	3 8
Raspberries—Red, per plnt	10@ 15	
Jersey Black Cap, plnt	7@ 8	
Huckleberries—Jers. qt	14	
Gooseberries—Green, per qt	5@ 6	
Apples—Evap'r'd, pr. to fancy	4½@ 5	4½@ 5
Evap'r'd, common	3½@ 4½	3½@ 4½
Evaporated N. C., sliced	2½@ 3½	2½ 3½
Evap. State, quarters, 1886	2½@ 3½	2½@ 3
Evap. Ohio and Mich., qrs	2½@ 3½	2½@ 3½
Evap. Chopped, per lb	1½	1¼@ 1½
Evap., cores and skins		1
Peaches—Del.,evap'r'd, peeled'88	10 @ 13	10 @ 14
Del., evap'r'd, unpeeled '88	5 @5½	5 @ 6
North Carolina, peeled fancy	8	8½
Southern, unpeeled	2½	2½@ 3
Raspberries—evap'r'd '88	19	20
Sun-dried 1888	17@ 18	18
Cherries—Evap., per lb	10@ 11	12@ 15
Huckleberries—Evap	10@ 11	10@ 11
Plums—Evap , State	5½	5½
South Damson, per lb	5	5
Blackberries—1886, Evap	3½@ 4	4
Potatoes—Southern new	3 00@4 00	3 00@6 00
Southern, seconds and culls	1 00@2 50	1 50@3 00
Old	1 25@1 62	1 00@1 50
Asparagus—Choice, per doz. bun	1 25@1 50	1 25@1 50
Fair to good	1 00@1 25	1 00@1 12
Cabbage—Southern	1 00@1 75	1 50@2 50
L. I., per 100	2 00@3 00	
Cucumbers—South., per crate	40@1 50	50@3 00
Green Peas—L. I., per bag	1 00@1 75	1 50@1 60
Jersey, per bbl		3 00@3 50
Onions—Bermuda, per crate	50@ 90	50@ 60
New Orleans, per bbl	3 00	1 50
Squash—Florida, per bbl	75@2 50	50@ 75
String Beans—South., per ½ b. c	25@1 50	2 00@3 50
Md. Wax, ½ bbl. basket	1 00@2 00	
Tomatoes—Florida, per crate	1 00@1 75	1 00@2 50
Turnips—Jersey White 100 bun	2 00@3 00	3 00@4 00

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. AUGUST, 1889. No. 11.

The Country.

It calls me: It calls me!
The hot city street
Has changed to the meadow,
And under my feet.
The grasses and field flowers
Bend low at my tread,
And the fair summer wind
Sways the boughs overhead.
Youths' Companion.

SELECT THE best plants for seed.

IF AMERICAN-grown Cauliflower seed has any weak points they are not yet apparent.

SOMETHING NEW IN ROSES. Mr. Carman of the Rural New Yorker, has had remarkable luck in hybridizing Roses, according to his report. A cross ascribed to Harrison's Yellow upon Rosa rugosa has brought out a new Rose with flowers so much like the famous General Jacqueminot as to deceive good judges. The foliage, however, is different, being more like that of the rugosa parent, and best of all it is less subject to the attacks of insects than anything in its line we now have, for this one is a perpetual bloomer. Notwithstanding Mr. Carman's reputation as a careful fertilizer, the question will naturally arise in the minds of many as this new comer is compared with its assumed parents, which so widely differ from it, whether there may not be some mistake as to the parentage. However that may be such a Rose as Mr. Carman describes is a welcome addition to our all too meager list of hardy, vigorous, handsome, perpetual kinds.

THE COMING BUFFALO INTERNATIONAL FAIR. One of the most successful fairs ever held on American soil was that of the International Fair Association of this city last year. It was however but an initial one of a series of annual fairs to be held in Buffalo and the indications at present are for a much more successful exhibition this year than was the last one. The cash inducements in the way of premiums certainly should call out an additional large display for these aggregate, $100,000 A liberal proportion of this money is offered to horticulture and we hope to see a much larger display of exhibits in this line than last year. Those enterprising nurserymen, florists and seedsmen of New York and other states who fail to bring their products into prominence at this fair will certainly miss a great opportunity. The attendance is certain to exceed that of any state or provincial fair many times over. Let horticulture be represented therefore as it deserves to be in this rich horticultural district of Western New York. The days of the fair will be September 3 to 13 inclusive. For premium list and all particulars address secretary, C. W. Robinson, Buffalo, N.Y.

Welcome to Buffalo.

The florists of the American Association and their friends are welcome in large numbers to this city at Convention time, August 20 to 22. The press of Buffalo, the local florists' club and our citizens in general hope for a large attendance of a body of men and women so respectable as are the American florists. Do not for a moment feel that because our city is not the largest city on the continent that we cannot care well for you however numerously may be your attendance. We are a city of nearly 300,000 inhabitants and are well used to large conventions. Dozens of them are held here every year, including State political conventions and many of a national character.

Buffalo is a favorite city for conventions. Her large Music Hall unequalled for size in the State, her large new hotels, her cool and salubrious lake breezes in summer, her delightful shaded streets, her large parks, her libraries, her wonderful grain elevators the largest in the world, her coal handling facilities, her places of amusement, her water scenery, her lake and river excursions, her close proximity to Niagara Falls, and most important her position as a leading railroad center, all serve to give various and unequalled advantages to convention visitors here. And the florists will find themselves the recipients of many attentions designed to make their stay pleasant. An excursion to the Falls of Niagara is contemplated for the visitors in body, under the management of the Buffalo Florist Club.

As for the convention never was a better programme prepared, and all may be sure that the proceedings will pass off with interest and profit to all. Delegates and friends are invited to mail their letters care of POPULAR GARDENING office, 202 Main street, Buffalo, previous to or during the convention. An invitation to visit our office in the city and our experiment grounds at La Salle-on-the Niagara is extended to all florists; come and see us. We repeat the announcement of last month that nearly all the main railroad lines offer a rate of 1⅓ fare for round trip tickets on the certificate plan to visitors. Tickets will be good three days before opening and three days after close of convention. Of local Committees Mr. D. B. Long is secretary for exhibits and Thomas Clayton for hotels and receptions.

The National Flower.

Nearly a year ago POPULAR GARDENING gave some reasons why the Panicled Phlox better than any other flower was entitled to be the National Flower. In the extensive discussion of this subject which has since transpired we have not met a single good reason why the colors of our favorite should go down before any other contestant for the honor. The Phloxes possess a long array of good qualities; they are noble in appearance, they are popular wild and garden flowers and lastly they are in no sense weeds, a thing not to be said of numerous rivals.

Of other flowers that have been mentioned it is true that in one or two "straws" taken the Golden Rod has received the highest number of votes. But such results in no wise indicate the popular sentiment, coming as these ballots have chiefly from professional men and artists. No doubt the Golden Rod forms a charming subject for the painter's canvas but this cannot remove the odium of its being a field and fence corner weed and so known by the majority of people. A national flower should be a popular flower, one that can be cultivated and loved by everyone. Give the Golden Rod an ell in the garden and it will quickly take a rod. We might as well decide for that other beautiful but unmitigating weed the Field Daisy, which today is the ruination of many farms, howbeit a favorite with city belles and with artists. The national flower must be no weed.

Judged by its beauty alone and we might quickly decide in favor of the Mountain Laurel, which in this contest has some strong friends. But who outside of the mountain districts, few and far between, where the shrub is found, have any knowledge of it? Here and there a botanist may know the flower, but otherwise not one person in a thousand the country over. It is next to never found in the garden because it is hard to cultivate; the writer in his considerable acquaintance with the gardens of the country does not recall ever having met the shrub in cultivation. Clearly the national flower must be a more popular flower than is the Mountain Laurel.

The beautiful little Mayflower or Trailing Arbutus as a national flower has many advocates. It is one of the choicest of our wild flowers, modest, sweet, handsome, and in no sense a weed. But this flower is open to nearly the same objections as the Mountain Laurel; it is hardly known by the great

A Simple Weeding Device. See page 249.

mass of our people living away from the comparatively few locations where it abounds. Another objection to the Arbutus is that it is next to impossible to succeed in transplanting it to and cultivating it in the garden. It can never become a really popular flower if indeed it will not in time become extinct as many fear it may.

The native Sunflowers and Asters have been mentioned. As a class these are coarse, bold and even weedy flowers hence must be consigned to back rank in the contest. The Sunflowers of which the large annual species stands as the popular representative are brazen faced and hold their heads high considering the ease with which they spring up from seed under the rudest culture. Their usefulness in the capacity of malarial absorbers in the vicinity of garden pools and pigsties and the seeds as poultry feed must debar them from being esteemed as a typical national flower. The American national flower must be a choicer flower than this would imply.

To return to the Phloxes. In these are to be found all the qualities that should prevail in a national flower and not an undesirable one in the entire family. Unlike the Rose, the Aster and many other fine flowers which are debarred because of their cosmopolitical character the Phlox is distinctly American, no known species being attributed to any other land. The proud Panicled Phlox, from which sprung the improved hardy Phloxes that adorn gardens everywhere, is found growing wild in woods and river banks from Pennsylvania and the Carolinas westward, while that universal favorite, the Drummond's Phlox, is a native

of our southern states, but is known and loved wherever flowers are grown. The beautiful creeping Moss Pink (*Phlox subulata*) with its dense tufts of rose-colored flowers in May, abounds on rocky hillsides from Pennsylvania to Georgia and Kentucky and yet makes a charming addition to the choicest flower garden, being widely cultivated. The eight other species of Phloxes, included among American wild flowers are found in various parts of the country, every one of which is pleasing and interesting and not a single member possessed of weedy characteristics.

It is a noble family of American flowers, perennials and annuals, and one which can only bring joy to him who beholds the various species either in the wild state or where cultivated.

It is a popular class of flowers. No person who sows a dozen packets of flower seeds fails to make two or three of them Drummond's, Phlox in some of the many colors from pure white to richest crimson and violet that the class affords. No planter of a garden of hardy flowers sets a dozen kinds without including one or the other of numerous hardy Phloxes in the collection.

The Phlox as the national flower would call forth the favorable comments of other nations for these choice Americans are much cultivated and most highly esteemed everywhere abroad. Witness for example, a leading German seed house offering seeds of 133 varieties of annual Phloxes in his catalogue, while leading foreign nurserymen include hundreds of named varieties of the perennial species of Phloxes in their lists of hardy plants.

WEST LAWN (4 ON MAP) AT WOODBANKS SHOWING PRESENT-SEASON IMPROVEMENTS

Fruits, Shrubs, and Flowers for a Small Home Lot.

E. P. POWELL, ONEIDA CO., N. Y.

"I am going to move out of this large city with its crowd, and with my wife and two boys take up a bit of land in Nebraska, and put into it some elbow grease and patience: not expecting to get rich all at once, but to get comfortable and live as we go along. Now will you make a list of fruits just such as you would plant if you were going to start a small home of your own? I shall not want one extra tree or bush, for there will be no market; but I shall want every sort needful to round out the seasons with all sorts of natural good things."

That is the right sort of the fellow I said. So I began to think what fruit I could not do without. I must have of apples, for summer, Sweet Bough, Red Astrachan, Summer Rose; for autumn, Porter, Autumn Strawberry; for winter Baldwin, Greening, Fameuse, Northern Spy, Wagener, Hubbardston, Roxbury Russett, Pound Sweet, and another very late keeping sweet of superb quality and great beauty that I intend to let the public have some day. These will be Apples enough; and a list to cover the seasons; not one of which I could myself spare.

Of Pears I should insist on the following as needful to my comfort: Tyson, Bartlett, Anjou, Flemish Beauty, Sheldon, Howell, Seckel; and for dwarf Josephine, Louise, and Duchess.

Of Plums I should want without fail Green Gage, Lombard, Pond, Reine Claude, and Shropshire Damson. Of the natives I should demand Robinson, and De Soto, or at least two of the most prolific. There is not so much difference in the quality of our natives as in their bearing proclivities. Some of these will not bear at all. Wild Goose under ordinary circumstances is absolutely barren, therefore to be omitted.

Of Cherries nothing could coax me to be without a small garden of Morello, Early Richmond, Large Montmorency; and where the Begarreaus will thrive I should have Elton, Gov. Wood, and Napoleon.

As to Apricots everyone must judge for for himself. But Quinces I would not do without, planting only the Apple or Orange.

Grapes I grow with zest, but could reduce my list to the following and still remain happy: Diamond, Duchess, Gaertner, Worden, Brighton, Iona, Goethe, Jefferson,—the last three for moderate climates. There are three or four more I think I should very much want.

Of Currants give me only White Grape and Versailles. Of Gooseberries Smith or Houghton will do; but Industry will not do. We have not yet an ideal Gooseberry.

Of Strawberries I should select Haverland, Cumberland, Sharpless, Bubach No. 5, and Jessie; or if only two are wanted Haverland and Sharpless.

Of Raspberries you will do well to select Turner, for early, Cuthbert for late; and of blacks take Palmer for early, Hilborn for medium and Ada for late. If a yellow is needed select Brinckle's Orange or Golden Queen. The first is far the best but not so hardy. Tyler or Souhegan will make fine crops of fine berries if you choose more. But I think we can safely settle down to the three first named Palmer, Hilborn, Ada for a succession of superfine berries and truly hardy; as Gregg is not. Then for purple you can plant New Rochelle and Shaffer's Colossal.

Of Blackberries select a clean spot that you can give up entirely to them and plant Agawam, Minnewaski, Erie, Snyder; or if only one, plant Agawam. Let them cover the ground and mostly go uncultivated.

Here you have all you need for a small place to give you full succession. Set your Apple trees thirty feet apart and the Plums and Cherries be in rows between. Let your Pears stand in your grass lawns, only have them forked about and mulched.

The berry garden should be planted so far apart in rows that you may grow your vegetables between; say eight feet, and the work will mostly be done with a horse. My suggestions are wholly on the supposition that you intend to raise only for home use. Take of Apples and Pears two trees of a kind; of Plums one, and two if you have room; Grapes one vine of each, always buying two year olds; of Currants and Raspberries you can't get too large a supply from 25 bushes of Currants, 25 of red Raspberries, 25 of blacks; and 25 purples. Do not plant many Strawberries but till well.

ORNAMENTALS.—My correspondent also asks: "Will you tell me what shrubs and plants you have especially become endeared to, and can't get on without? I am sure it will aid me a good deal in selecting when I am to be confined to a few roots and must restrict my greed for everything pretty." Some people have a hobby or a few hobbies, and are guided in their selection a good deal by fashion. Fashion in trees and flowers changes as it does in dress and style. I would not go off on a Chrysanthemum craze, or a Sunflower craze, or any other craze; but would have such flowers as specially do me good. Now there are some such that inspire one physically with health and psychically with good wholesome thoughts. At random I select as most important a plenty of clover; if you cannot have it in fields, cultivate small lawns of it for the wholesomness of the odor. Do not mow it but grow it. Then I want as many Lilacs, Syringas, White Lilies, and as much Mignonette as possible. Sweet flowers are sanitary, and go not only to the heart but the brain. I like also a group of old fashioned herbs, Fennel, Summer Savory, Thyme, Bergamot and Wormwood. These are useful in winter but they purify the air in summer.

As for Roses everybody needs a nice assortment; and it really is not so very important which of a dozen lists one prefers. I have a special fancy for a few of the older sorts such as Madam Laffay, Cabbage, Jules Margottin and even the old Cinnamon Rose. If brought down to five sorts perhaps I should select General Washington, Hermosa, La Frauce, Papa Gontier, and General Jacqueminot; but should immediately wish to add five more and then probably double that list.

Now you want a few sorts of flowers that give most satisfaction with least trouble. Select (1) Perennial Phloxes; (2) Gladiolus; (3) Lilies candidum, speciosum, tigridium, auratum, canadense and Harrisii, a bed of each, (4) Hollyhock, (5) Geraniums, (6) Dahlias. Of annuals get on with only Mignonette, Nasturtium, and Sweet Peas; or one or two old friends.

The prettiest home in the world makes use of native trees. Keep the old trees that you find standing if you go to a wooded district. When buying trees not native get only one of a kind no matter how pretty you think them—that is for a small lawn. Every locality has also some fine native shrubs; by all means use these. Plan more for outdoor life than for indoor; and consi-

der the lawns and gardens as "home" quite as much or more than the house. I hope these notes will answer the letter and possibly help others besides.

Notes from the Popular Gardening Grounds at La Salle-on-the-Niagara.

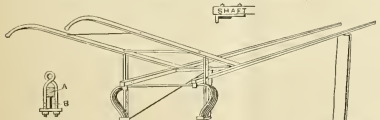
The West Lawn. This month we invite our readers to a peep at the grounds at "Woodbanks," as made possible by the photographic (heuce accurate) views on this and the opposite page. The first of these views is of a portion of the West Lawn, with its cultivated borders, and the natural fringe of trees at the back. These trees are located on the bank of the Cayuga creek, a sight of which is caught beneath the foliage at the extreme left in the engraving.

This view is interesting from the fact that all the improvements shown have been made since April 1 last. Previous to that time Corn and Oat stubble occupied the space which now consists of a beautiful grass sward, embellished with tree, shrub and flower borders. In its preparation the land was first plowed and subsoiled, then graded and evened-up with scraper and float to its present form. It will be observed that the grounds are slightly undulating with the border of young Conifers to the left front situated on one crown and the distant borders on another, a slight valley extending crosswise between them. This pleasing form of contour, while in a degree natural, was considerably emphasized by scraping a small quantity of soil from the valley to the crowns.

THE FRUIT AND VEGETABLE TESTING PLATS AT WOODBANKS. LETTUCE IN FOREGROUND.

Following the evening-up process, lines of sod were laid to define all borders and the drive (a little of the latter is shown at the extreme right lower corner). After this the borders were given form by elevating their centers with earth taken from next to the sod edge and the main surface for turf was prepared and sown with grass seed. The planting was done as described in a previous issue of this journal.

The borders of woody growth are planted with trees and shrubs in the main from two to four feet in height. The small circular one in the foreground is referred to in another department of the paper as being very handsome; it is planted with Blood-leaved Plum (*Prunus Pissardi*) in the center and a line of variegated leaved Cornelian Cherry shrubs outside. The large irregular border to the left is devoted to Evergreen trees of numerous kinds. Beyond this is met a narrow stretch of grass and then a double line of borders with grass walk between, and which is known as the Shrubbery Walk for these borders on both sides are filled with hardy flowering shrubs in large assortment. At one point the inner borders are broken in two by the grass walk meeting the main lawn and here a bed of scented Geraniums, as seen in the engraving, is located. Borders of shrubbery and hardy perennial flowers extend along the margin of trees as far as our view shows and even beyond. Throughout the margin of trees on the creek bank is a pleasing wood path along which numerous wild shrubs, flowers, ferns, aquatics, etc., abound.



AN EXCELLENT NON-PATENTED CULTIVATOR.

The Lettuce Plot. There are so many fine varieties of Lettuce now in cultivation, and new ones constantly being introduced, that we might plant any one or two out of dozens of them, and claim that we have the very best, especially when a cool moist season, and top dressings of quickly available nitrogenous fertilizers aid in the production of tender, succulent growth and crisp, brittle stalks and foliage. We here give a photographic view of part of our Lettuce bed, showing our method of growing the vegetable in drills. The plants are thinned as fast as wanted for use from the time they begin to head.

Salamander, we find, is yet a superior sort for market, giving fine solid heads, although in our whole collection it was the very first to go to seed.

Prize Head is a strong growing sort of dark brown color, with large but rather loose heads. Not a variety for city market.

California Butter has thick dark green leaves, makes fine solid heads, and is slow to go to seed.

Early Ohio Cabbage is an exceedingly vigorous grower, a beautiful variety with curly leaves, and forming large solid heads.

Buttercup seems to be appropriately named, and is truly beautiful with its golden butter-colored leaves. Nothing more delicate in the Lettuce line has ever come to our notice. The plant is only a moderate grower.

Improved Hanson, of the well-known and excellent Hanson type, grows very vigorously, heads solidly and stands the heat moderately well, but although as crisp and brittle under our treatment as any of the others, appears somewhat coarse in leaf.

New White Russian Summer stands the heat as well as any sort in the lot and makes large, firm and tender heads.

Gold Nugget, in fine, delicate appearance only second to Buttercup and of fair growth, began to send forth seed stalks with Salamander.

New Queen, a large sort with solid, often pointed heads, of somewhat coarse appearance, but not inferior to others.

Bloomsdale Early Summer forms good heads, standing a little longer than Salamander; a good sort for market.

California All Heart makes curly leaves and fair heads.

Select Curled India has curly leaves and forms large but loose heads.

Midsummer is of dark brown color, somewhat like Prize Head; growth moderate and heads somewhat loose.

Golden Curled, a large-leaved sort of the character of Improved Hanson or New Queen, and forming fine solid heads.

New York again comes out with dark green foliage, exceedingly large curled leaves and fairly good heads, one of the most vigorous growers of the whole tribe.

Tomhannock is the peer of New York in immense growth of foliage, which is curled, brownish, beautiful, but on account of loose heads only adapted to the home garden.

Brown. Of brownish color and fairly good growth. Heads are very firm and excellent for the table.

Home Made Hand Weeder. Hand weeding is a tedious job at best and we should always try to relieve it of its worst features by the early use of the steel rake wherever there is a chance for stirring the soil about young plants, perhaps even before they have broken ground, and of good hand weeders afterwards. Promptness of action is the chief point of importance, however. We have the Lang and Hazeltine weeders, and they do very well indeed, but are in no way superior to the simple contrivance illustrated on first page. It is nothing more nor less than a silver table knife, which had its point broken off by accident. The blade was heated in the fire, and hammered into a curve, and both edges sharpened on the grindstone. The illustration makes its use plain. Any knife of good material, spoiled for table use by wear and tear, or by the loss of point, can easily be transformed into a very serviceable weeder.

Weed Cutter and Cultivator. We have noted with considerable satisfaction the gradual reduction in the width of cultivator blades, from the old clumsy plow shape to little more than finger size. Small and many-bladed cultivators make the very best of soil stirrers—but they are not perfect as weed cutters. Where thistles and larger weeds of that class abound as they do (or did) on our grounds, a tool is needed, such as manufacturers have not yet given us; one with a sharp edge that will cut off every larger weed smooth and clean below ground.

Our illustration shows the knife attachment which we had made at the nearest blacksmith shop, and which works to our entire satisfaction. It not only slashes down the weeds, thistles included, wherever it goes along, and enables us to keep drives and walks perfectly clean, but also serves a most excellent purpose in loosening up hard baked soil, and as a cultivator generally. The knife part consists of a simple piece of spring steel, 1¾-inches in width, and about six feet long, costing less than 50 cents. It is bent in the shape shown, and firmly attached to the shafts of an old-fashioned cultivator, with braces, etc., as required. The forward or cutting edge should be kept well sharpend. Can be made of any width desired; is simple, cheap, and decidedly useful and effective.

Pruning Bush Fruits. In old country gardens we generally find the Currant in bush form, but the Gooseberry as standard. The latter as a little tree always looks neat and trim with its large and magnificent fruit, and presents quite a favorable contrast to the neglected Gooseberry bushes we find in some American home gardens. Our European brethren, however, have the climate in their favor. To fight against heat, and drought, and mildew, as we have to do here, is uphill work. The tree form shown in Fig. 2 of our illustration, has never given much satisfaction to American growers. The wood soon gets old, and ceases to bear freely; and then we have no remedy except to start a new plantation. For this reason the bush or renewal system, practiced also with the Currant, and illustrated in Fig. 1, is much to be preferred. We allow the canes to bear fruit for a year or two, and then cut them out and let young canes take their places. This insures thrifty wood, and plenty of good fruit. Mildew is the great enemy to the cultivation of the large and fine foreign sorts of Gooseberries in the United States, hence we try to guard against infection by giving free circulation of air, thinning the canes thoroughly, and leaving fewer of them to each plant than indicated in Fig. 1, and than would be safe for the Currant. With Raspberries and Blackberries we believe in close pruning. This has many advantages. It thins the fruit and consequently makes it larger. It forms close, strong bushes that are able to stand up against the winter's storms. It makes cultivation and picking easier and safer, and saves torn clothes and flesh. The canes during summer assume the form as shown in Fig. 3. When three feet high for Raspberries, or four for Blackberries, the young growth is pinched back, and the smaller canes removed entirely, so the next season there will be only four or five strong canes as in the Blackberry bush, Fig. 4. Stopping the growth from the tip of the cane by pinching naturally brings out the laterals, and when these have grown a foot or so, we pinch them back also, but leave each one a little longer than the next one above it, thus getting each cane with its laterals into the shape

of a pyramid. Some growers advocate leaving the old canes ou the bushes, as a kind of winter support. We prefer to remove them. It looks better, and is safer generally. Many insects and their eggs are removed with them, and perhaps disease spores, too; and any further drain on the vitality by remaining canes is stopped.

Cabbage Maggot and Lime Water. We have tried the caustic lime water remedy for the Radish maggot, and are rather inclined to believe that, if thoroughly applied, its effectiveness is beyond question. Still we do not wish to speak too positively, and perhaps excite hopes which, after all, may not be realized. Air-slacked lime has always been recommended as a remedy for maggots by good authority, but seldom done much good in severe attacks, except when applied in excessive quantities. Fresh lime water, which is sure death to earth-worms, and other soft-bodied grubs and worms, can easily be applied directly to the plants so that it will reach almost every maggot, and on account of its caustic nature can be expected to be of greater effectiveness than the milder form of air-slacked lime, which is mostly or wholly a carbonate. We made the lime water very strong, and applied it to some Radishes until we felt sure the liquid had reached every part of the root. Only in a few instances did we find a few live maggots on plants thus treated, a day or two afterwards. The period of maggot attacks was just approaching its end. We shall be on hand with the lime water when another attack begins, and try to reach definite conclusions. In the mean time we should like to have our readers experiment in the same direction. The prize is great—control over one of the worst pests of the garden. It is only a few months since we heard Prof. A. J. Cook, so ready with his devices of fighting insects, pronounce his inability to subdue the maggot. We believe that now we are on the right track. To treat plants in seed bed with caustic lime water may turn out to be a most excellent precautionary measure, although our untreated plants in hot-bed were not touched by the maggot. After setting our earliest Cabbage and Cauliflower plants, late in April, every other one in each row was kept covered with one of our tile-like plant protectors for a number of weeks. All plants thus treated made a much faster, healthier and more succulent growth than the unprotected ones, and none of them was attacked by the Cabbage fly, until slightly after the protectors were removed. The result is that the protected plants remained in full health and vigor, while the others died—every one of them—victims of the maggot. This may also suggest a way how to prevent injury from maggots. Evidently the fly does not care to enter a tube surrounding the plant. Let us keep on investigating, for the maggot must go.

Success and Failure in Planting. Reference was made in a previous issue of the remarkable success that has attended the recent planting operation here this spring. True, the season in the main has been favorably damp and wet, yet at planting time there were some hot weather and dry winds which had a very trying effect on the started trees found on our hands before all could be set in place. Among our evergreens we now detect in certain kinds some loss that had not shown earlier, but this is really no surprise; it is directly traceable to these trees having been imperfectly heeled in by the carelessness of a workman. The thorough tramping of the soil over the roots after the trees from the boxes were put in place in the trenches and the roots covered had in this instance been neglected. The loss from bad heeling-in of trees the country over is something apalling every year, and the nurseryman gets the blame for the stock thus injured not then growing. Nurserymen themselves are, however, too often not blameless regarding their faulty ways of handling trees before they ship them to their customers.

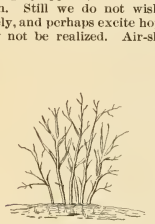


FIG. 1. CURRANT BUSH.

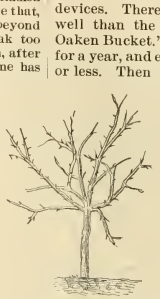


FIG. 2. GOOSEBERRY IN TREE FORM.

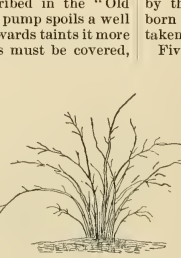


FIG. 3. RASPBERRY BUSH.

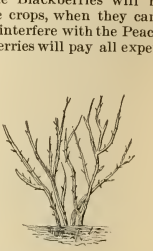


FIG. 4. BLACKBERRY BUSH.

Death in the Well.

D. S. MARVIN.

Some of the so-called improvements of the age in which we live are not equal to old devices. There never was a more healthy well than the one described in the "Old Oaken Bucket." A new pump spoils a well for a year, and ever afterwards taints it more or less. Then our wells must be covered, which deprives the water of the necessary aeration; but worst of all, the cover, as usually put on, makes a harbor for toads, rats, mice, worms and insects.

I cleaned out one of these covered wells a year ago and took out 69 toads, and many dead angle worms. The water had become unfit for use; it is now good and palatable. I dug down and cemented it three feet below the top of the wall, then made a six-sided frame with an air trough beside the pump and cemented up around the frame, so that no worm, insect, or animal can now crawl into the well.

There are many wells all over the country that contain tainted water, germs of typhoid fever, etc., that might be made pure in thus protecting them from the ingress of organic matter, and by placing a sink from the spout with an underground drain to carry off all waste water and slops. Slops might almost as well be thrown directly into the well, as in the hog wallows beside them, for the poluted water is sure to sink to the lowest drainage point, the well itself. More people die each year from the use of this tainted water, than from whiskey.

Planting a Peach Orchard.

THEODORE GOODRICH, UNION CO., ILLS.

Any soil that will grow a fair crop of corn, will grow a Peach tree. After plowing the grounds, lay it off in straight rows 20 feet apart, by running a two horse plow twice in a row, and throwing the dirt each way, as deep as the plow will run. Mark it across in the same way.

Dig a hole 3 feet across at the intersection of the furrows, 12 inches deeper than the tree is to be set. In the bottom of the hole put a pint of commercial fertilizer, or a half bushel of stable manure, and mix it well with good surface soil. In the absence of these, chip manure, bones or old boots may be put in the bottom of the holes. These materials gradually decay and feed the tree for years to come. Set the tree, fill up the hole treading the earth firmly meanwhile, and leaving the tree no deeper in the ground than it was in the nursery.

The entire ground may be planted to small fruit, either Strawberries alone, or Strawberries and Blackberries. If Strawberries, set a row in a tree row, leaving out a 6 feet space for each tree, and 4 rows in each middle, making the rows 4 feet apart. If Blackberries or Raspberries are to be added, set them 4 feet in the row, a row in the tree row and one midway between, making the rows 10 feet apart. Plant a row of Strawberries midway between the Blackberries, and the ground will be as closely planted as it ought to be and raise trees.

Keep the tree ground clear and trees will be well cultivated. Ground in this way made to carry double, should be well fed.

When the Strawberries have grown two crops plow them under. The trees will be large enough to bear some the fourth year; by that time the Blackberries will have born two or three crops, when they can be taken out if they interfere with the Peaches.

Five crops of berries will pay all expenses of raising the Peach trees and a handsome profit besides.

My ground is planted in the way described. In setting the Strawberries, I plow out a deep furrow, partly fill with compost, level off with soil and set the plants.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly would be welcome.

WHY PRICES OF FRUITS ARE LOW. The chief trouble with Apples is that large and small specimens are mixed together, and every man's fruit differs from almost every other man's in size and appearance. Fruit put on the market as A No. 1 turns out to be second or third grade. I have seen Apples faced nicely, but eight inches down they were a poor lot. No wonder they bring all sorts of prices. So with berries. Strawberries in our market sell from 3 to 25 cents per quart, depending on the condition of fruit and reputation of the grower. My berries go to the market just as they are picked in the patch. I do not believe in sorting berries, as the first grade has to bring a big price to let you out whole on the inferior grade. My customers know me and my berries, and never examine my boxes below the top. Fine stock always holds its own. It is a great mistake to ship berries to more than one commission merchant in the same place at the same time, as this brings the different lots of your own produce in competition with each other, and tends to depress the prices. One competing dealer will offer a crate of your berries for $3.00, another for $2.75, and perhaps the third for $2.50; and the lowest figure must prevail in the end.—*S. R. Kramer, Franklin Co., Ohio.*

LIVING FENCE POSTS. The advice to plant trees to serve as living posts for a wire fence seems to me of very doubtful utility. In laying out fences along the edge of a piece of woods we have frequently used living trees, sometimes young and and sometimes old—Chestnuts, Oaks, Linden, Beech, Elm and others—in the way suggested. This is all right for a time; but soon the bark grows over the wires and staples, and more or less trouble, especially in repairing or removing fences, is the sure result. Often the wires and staples have to be chopped out of trees, and sometimes the wires cut into the wood of younger trees so deep that their lives are endangered. Perhaps all this might be avoided, however, by nailing a board firmly to the tree, and fastening the wire to this. In our practice living trees have often proved most excellent posts for straight or zigzag rail fences, and I rather favor the plan of planting a row of quick growing timber trees 10 or 12 feet apart (according to length of rails to be used) along a line where a permanent rail or board fence is thought to be desired.—*G. R. T.*

CULTIVATION OF PYRETHRUMS. Fruit and vegetable growers of this country use quite a deal of insect powder every year, but they might

use a still greater quantity to advantage if more of the strong home-growu article (Bubach) and less of the always weaker, and often entirely stale imported "Persian" or "Dalmatian" powder were offered for sale. Few people would believe what vast difference there is generally in the strength of the two kinds until they have made repeated trials with both. Few stores keep the better article, consequently the poorer imported stuff is much too largely used for the users' own good, and the confidence of the general public in the efficacy of all insect powders has always been somewhat limited. California is probably not the only State in the union where the Pyrethrum cinerariæfolium could be successfully grown. The Florida Dispatch, in a recent number, expresses its belief that the soil and climate of that State are particularly fitted for it. Silicious and dry soil is best adapted to its cultivation. Moisture and the presence of clay is injurious, the plant being extremely sensitive to an excess of water, and would in such a case perish immediately. The seeds should be planted in seed beds, the earlier the better if season is favorable, and the beds frequently watered until the seeds germinate. After the plants have attained a sufficient size they are transplanted about 20 inches apart in their permanent place. The plant is a perennial and commences to bloom the second year. No particular cultivation is required or necessary except to keep the ground free of weeds, and fertilized occasionally, if unusually poor. Pyrethrum roseum has also been grown successfully and without difficulty, not only in Florida, but also in various other states, north as well as south, and indeed nearly everywhere where tried. The heads should be gathered during dry weather, just before they open. They must not be exposed to the sun or to artificial heat, but carefully dried under cover, and then packed tightly in sacks ready to ship to the manufacturers. The stalks are also utilized, after the blooming season is over. They are cut abont four inches from the ground, dried in the same manner as the blossoms, and mixed with them in the proportion of their weight.—*R. G. T.*

Golden Beauty Plum. I send you by mail a clump of the Golden Beauty Plum alluded to recently to show you its productiveness, in which it surpasses all other plums I ever met with; and unless thinned out severely it is no good. I could have shown you limbs a yard long strung all along just as this bunch is. It is among the latest, and although not of a very high tone, is sweet and pleasant. Nearly a freestone. Makes a very nice preserve. Will grow on any kind of Plum or Peach root. Very strong grower and bears early. When properly grown they will average a little over an inch in diameter, perfectly round, of a pale golden yellow. I shall market mine in boxes and crates, same as we do Strawberries. This variety with Blue Damsons in alternate boxes make a pretty show.—*S. Miller.*

Two Best Chickasaws. In the nursery convention report I am made to say that the Forest Rose and Maquoketa are the best of the Chickasaw family. This is correct in the sense I intended, viz.: These varieties are hardier in wood and fruit bud than any of these species we have tried, and they bear annual crops without much regard to the weather, or the theory that the varieties of this species will not bear at the north unless fertilized by other sorts. In size and quality they are not superior to the Wild Goose, which is not hardy with us.

Rhus Cotinus. The note on the fine exhibit of the wood of *Rhus Cotinus*, or *R. Cotinoides*, as I believe the botanists call the Alabama species, brings to mind the fact that the Purple Fringe of South Europe, as found in the eastern nurseries, is not hardy here. But we have a larger growing variety from East Europe that is perfect, and I think more beautiful in foliage and flower. It is now twelve or more feet in height, and attracts much attention. This I believe is the true "Shittim Wood" of the Bible.

Dwarf Juneberries. We have gathered the Dwarf Juneberries of Massachusetts, of the varied neighborhoods of the Western States, from the Rocky Mountains, and from East Europe and Central Asia. We have just tested the ripe fruit—protected from the birds by mosquito bar—of fifteen varieties and species. In my opinion all of the largest and best are reducible to three species, viz.: *Amelanchier alpina*, *A. botryapium* of Europe, and *A. lancifolia* of Asia. Of our native varieties the largest and best fruit is from the *A. alpina* of the mountain slopes west of northern Texas. Of the European species the varieties brought to public notice by Dr. Hall, of Davenport, Iowa, Mr. Williams, of Chester Center, Iowa, Mr Carpenter, of Fairbury, Neb., and others, are practically the same thing. All of them are small in size of plant, great bearers, and the plant is as large, and I think, as good as the largest of the swamp Huckleberries. But with us the fruit is not obtainable unless protected from the birds by netting well put on. But I am told that plantations of an acre or more are not seriously interfered with, probably for the reason that the birds of the near vicinity do not make much show with a large crop. In my opinion the only hope of materially improving the size and quality of the berry is by crossing them with the true Service tree of west Europe, and that would probably increase the size of the plant.

Triumph of Asia. Of this new race of the Melon, Prof. E. S. Goff says in the report of the Geneva station: "Plant moderately vigorous, productive, stems three to five feet long, fruit roundish or slightly oval, very dark mottled green without stripes; well developed specimens 7½ inches in diameter; flesh rich red, very sweet and pleasant, seeds small black." As this was introduced from Asia by the writer, I wish to add that this Melon will ripen at the west on any good Corn soil, and with as little care in planting and cultivating as is needed by the hardy Squashes. Last year it gave us a full crop on a piece of ground on which the common Melons would have proven a total failure, and planted about the first of June. Another peculiarity not noted by Prof. Goff is this: Its hard but thin rind preserves the flesh with unimpaired flavor for many weeks. It was served in fine condition at the horticultural meeting at Cedar Rapids last winter in January, yet the specimens shown were ripe the middle of August.

Two Valuable Apples. To-day I have been looking up the record of two Iron Clad varieties of the Apple which have been widely tested, and admiring our trees laden with perfect fruit in the orchard. (1) *Arabian* (No. 184). As introduced by the Department of Agriculture, this is a variety of the Duchess family. The tree has proven fully as hardy and it is as early and regular in habits of bearing. At first it was pronounced to be Duchess, and some growers have it mixed with the Duchess in nursery and orchard. With us it is fully a week earlier in ripening, the fruit is more definitely striped, is much less acid, and the texture of the flesh is much finer. When ripened in the house it is really a good refreshing dessert Apple. Our students soon learn to pass the Duchess trees to reach this. While it is not true to name the Arabian being a late and different apple, it will be difficult to change. Hence the true *Arabian* (No. 257) can be called "*Arabka*" as suggested by Mr. Gibb. In the west and cold north the Arabian has come to stay, as it is a far more valuable Apple for home use or market than the Duchess. (2) *Red Transparent*: This has been long grown in England, and it is found in Ohio and other states under local names. It is true to name as imported by the Department as No. 333. Its first specimens are small, and the verdict is "of no special value." But in the west we are finding the tree a true Iron-clad, and that a little later than the Duchess it is loaded with handsome and good fruit of the season of Red Astrachan, which it much resembles. Indeed it is said that the Astrachan is a seedling of the ancient Red Transparent of Russia. Even the insertion of the stem in the basin is precisely as in the Astrachan. It is about like it in color and size, but mildly sub-acid in flavor. In addition to its being a much better Apple for home use or market, the tree is proving a heavy and constant bearer while the Astrachan with us rarely gives a full crop, and the tree is not hardy.

Prunus Simoni: Three years ago we set out a row of Simon's Plums, using one-year-old plants. Intending to train them laterally on wires, they were set at an angle of over 45 degrees, putting nearly all the stem under ground. As they started upright shoots from the stem they were permitted to grow with a view to test the bush plan. At this time they are bushes rather than trees with several stems, and with branches to the ground. In this form they have stood the recent test winters almost perfectly, and are now quite well loaded with fruit which is now (July 5) much larger in size than any Plum and wholly free from curculio or gouger marks.

As it has been said that the fruit has no value, I will state that in my opinion the authors of such statements have only tried it for dessert use for which its flesh is too firm, and its flavor not the best. When used for stewing or canning it has the Peach flavor without the Peach bitter. When better known I think it will be prized for culinary use on the northern border of the Peach belt.—J. L. Budd.

Costly Sugar. That's right, whack away at the sugar trust. Hit hard. Give the express companies a little attention, also. We might not feel so harsh towards them if they did not use their influence in Congress to prevent proper postal legislation. Has it occurred to the reader that when he goes to buy clothes or shoes or a stove or a hoe he must pay a certain price, for the dealer says it has cost so much and he cannot take less, and the manufacturer has said this before the dealer? If we are not disposed to pay the price we must do without the shoes or hoe or dress. But when we come to sell we can not say that our fruits or vegetables have cost so much and we must have that and a living profit. Oh, no. The price is again fixed for us, and without reference to the cost of our products. We can not make prices when we buy or when we sell. Why is this? And is it not responsible for some of our hard times?

The Soft Maple. One serious objection to this tree is that no other is more infested with worms. One cannot rest well in the hammock when worms are continually dropping upon him or her. Nor does one enjoy eating in the shade of the trees when worms are falling on the table. All in all, the Box Elder is the most satisfactory shade tree for me. It grows fast and strong, makes a dense shade, and is beautiful and clean. The Linden is indeed a good shade tree, but it will not everywhere do so well as for Prof. Cook.

New Strawberries. This season has increased hereabouts the popularity of Bubach's No. 5 and Warfield No. 2. Lady Rusk, originated by one of the largest Strawberry growers in the country and by him well tested, is being tested in a score of States, and I predict that it is one of the coming berries. Sucker State still holds its place. Jessie has been disappointing. The most money is yet in the fruit or vegetable that produces the greatest quantity of fine appearance in the general market. Nine out of every ten final purchasers are ignorant of varieties. They cannot recognize one variety from another, nor do they know the characteristics of each variety. In fact, many don't know even the names. In buying, they make price the first thing. Low price sells. Next comes general appearance. If the article is handsome, it goes. In time the mass of buyers may be educated beyond this, but they are not so educated at present. When they are so educated, it will pay to raise the best all around berry, and to put the name of the variety with your name on the crate. Now, a grower may find enough people who know a good berry and will pay for it, to make it worth while for him to bother with these special customers. But most growers will find it most profitable as yet to look out for only quantity and looks.

Bagging Grapes. I don't believe it pays to bag Grapes for market. It may for home use—certainly will if you use Concord. Bagged Concord are of good quality.

Potatoes Running Out. The Western Rural makes its assertion too broad when it says "there will be no danger of a variety of Potatoes 'running out' if the best tubers are saved for seed each year," as quoted by you. Fertile soil and good cultivation are more important. Poor ground and poor cultivation, more than small tubers for seed, cause Potatoes to deteriorate. To good seed you must add good soil and good cultivation if you would not have your Potatoes run out.—*John M. Stahl, Adams Co., Ill.*

Gladiolus. Yes, the proper time to plant Gladiolus bulbs to get the best results is, as stated on page 221, in July. But it will not do to let that statement go without an explanation. The bulbs to be planted in that season must be kept in a cool, dry place or they will become so dry that their vitality, in a measure, will have become impaired, which will not do. For autumn flowering select the strongest bulbs; when taken up put them in a cellar during winter, where the temperature is but little above the freezing point; let the room be dark, and allow but little circulation of air. In such a place the bulbs will be but little dried or shrunken in July. Then give them the best place the garden affords, and the result will be all that could be desired. Spikes of immense length, flowers of enormous size with substance to match; results that cannot be obtained in midsummer.—*C. L. Allen.*

Strawberries in Missouri.

SAMUEL MILLER, MONTGOMERY CO., MO.

Many contend that Strawberry plants should not be cultivated in the spring when ready to bear a crop. This I am ready to dispute, for the past spring I overhauled my whole plantation. The mulch was removed; the ground got a good hoeing, not more than an inch deep; the mulch replaced, and a better crop I never grew. Even plants received from a distance set out gave us some splendid berries. The following is the proper plan to proceed, in case the same plants are to bear another crop: Clear away the mulching, cut all the old leaves off clean around the crown and replace the earth. Cultivate thoroughly and let no runners catch, but keep them cut off as fast as they grow sufficient to tax the plants. If the soil is not rich, apply well-rotted manure and work it in, or use fresh stable manure with plenty of straw with it as a covering in the early part of winter. The crop that such plants will bear will astonish a beginner.

Should the bed, however, be too old to take another crop from the standard plants, the best plan is to mow the whole bed, remove the hay or leaves; then cultivate deeply between the rows, level off the ground and let them run at will. They will by fall cover the whole ground. Just before winter sets in, line off a strip six inches wide near the middle to leave, and dig all the rest under. This will give a strip of young plants that will bear a full crop of the finest berries. The leaves that were raked off when moved should all be put back again for a part of the winter coverings. In a case of this kind you will not be troubled with weeds the following spring and summer, unless you use a covering containing foul seeds, a thing always to be avoided if possible.

SETTING OUT OLD PLANTS. While this is usually condemned it is sometimes practicable, when we have a lot of healthy young plants that bear for the first time, and don't like to plow or dig them under. When a plantation is set out on the stool system, the plants are not allowed to bear the first season, and are therefore two-year plants when bearing a crop. Dig the plants up carefully, cut off all the leaves but a few of the youngest, and set them out at once, spread out the roots carefully which should be cut back to four or five inches. By fall these will make splendid stools and be likely to bear a full crop. Of course the runners must be kept off.

One season it was so dry here for months that no young runners could catch, and we had to depend on old plants. These, however, were set out in the spring. The following season the crop was unusually good on these plants. I have just now a bed of Gandy still in fruit, every plant of which will be carefully taken up and set out as soon as the fruit is over. This is the coming berry for a late crop, and in my estimation is the most valuable late Strawberry yet produced. It is of largest size, handsome form, beautiful color, very firm, and of good quality. Carries its full crop of fruit high. Plant healthy, vigorous and productive. This and Bubach's No. 5 are the two varieties that I shall plant of. This latter is to my notion nearly up to the mark. Some say it is not firm enough, and others that it is not of good flavor; to neither of which I agree. My berries of this variety were picked one day, shipped 100 miles the next and arrive in excellent condition, commanded the highest price in a city of 20,000 inhabitants, and pronounced the finest in that market up to their time, and I expect a similar report on the Gandy. The plant of the Bubach is all that can be desired and quite productive. Jessie is the variety that I used as a fertilizer. Gandy bears a perfect blossom. There is no use in commenting on the old varieties as they all bore a splendid crop.

It is, at this writing, just thirty-three days since we had the first ripe Strawberry, and we have a prospect of some for ten days longer—the longest period of Strawberries that I have experienced in my many years of growing this fruit.

POTTED PLANTS. I am often asked what I think of potting young runners? My answer is, "not much." I use pint fruit cans, with the end and the side seam melted open. Close the can, sink it under the young runner and, when well established, cut off the runners and lift the can, where the tin will spring apart, and you have the plant ready to set in its place. It is less trouble than potting, and serves as good a purpose.

When plants are scarce and I wish to set them three feet apart, I take care that the end of the runner cut off is set on the opposite side of the direction the young runner is to go. Let this make two or three plants in a line, and by fall it will make nearly as good a stand as if three times the number of plants had been set out.

I cannot conceive how so many manage to get along without this noble fruit who have land to plant upon. Quite a number or persons have said to me this season, after leaving the patch, "That's the first mess of Strawberries I ever ate."

The New Strawberries in Ohio.

E. W. REID, BELMONT CO., O.

This report is about berries grown on same kind of soil and with the same exposure and attention.

Sharpless. Some years it will yield a good crop on certain soils, if said ground contain enough moisture to feed a heavy foliage, with sufficient manure for fertilizer and mulch, otherwise you had better steer clear of it. We only place value on it as a pollen producer for Crescent, Haverland and also Warfield. It requires a moist soil, and with us this means a low spot, and when placed in such eight times out of ten it is injured by late frost.

Warfield No. 2 was never pushed by much advertising, hence the sale of plants was not as large as some other varieties of less importance. With us I must say it was wonderful, producing a fine, large berry of good color and gloss. My attention was attracted to it by its productiveness and ability to hold its size throughout a long period. While in Chicago in the height of the season I examined quite a number of crates, and they showed this characteristic to hold their size better than any other variety, consequently sold at a premium.

Bubach No. 5. Of a superior quality, but not so fine as Warfield No. 2; fruit larger, but does not carry its size so well. Fruit a little rough; plant prolific.

Burt Seedling. Quite a surprise to us. At the end of the season the fruit was still large and firm; plant a good grower, fruit large, firm and good color, and quite productive for a large berry.

Haverland. Berry productive, size large, plant a strong grower, and if properly fertilized will produce more fruit than any variety on our ground. Its greatest fault is lack of firmness, but for a home market will carry very well. You need not fear to plant it.

Logan. Another surprise. All those who saw it in fruiting on our place were pleased, saying it was the finest Strawberry on the farm. Size very large, firm, color bright, quality good, foliage strong and a dark green, and plant productive.

Gandy's Prize. Quite late, quality poor, moderately productive, but profitable, being a late fruiter. Berry quite firm and sells at a high figure.

Jessie. Not as good as expected by us. Large, early, moderately productive, fine, but fruit small at end of season.

Pearl. Good grower, fruit good size. Will stand shipping quite well. Productive.

Mammoth. Large, firm, rough after first pickings, and irregular in size and shape.

Lida. Good grower, fruit medium size, firm, good flavor and quite productive.

Itaska. Poor grower; will not stand the winter with us unprotected. Quality poor and quite soft.

Crimson Cluster. Gave us some fair fruit, but was not profitable. Good grower for hill culture.

Summit. Very large, firm, but plant a poor grower and foliage easily affected with rust. Gave some fine fruit.

A seedling from J. M. Little, Ont., gives great promise; it is very late, large, firm, very productive, and has a dark color. Apparently a seedling of Sharpless or Belmont. We look for a bright future for it.

Strawberries in New York. Notes From My Beds.

E. P. POWELL, ONEIDA CO., N. Y.

No very early berry as yet surpasses Dutchess. But it is hardly worth while to plant it as others come so soon after.

Haverland and Cumberland are next. The former is a very long lady finger berry and Cumberland is oval, conical and very light red. It is almost as fine flavored as Lennig's White, but too soft for shipping; grows well in sun or shade, on all soils, and is prolific. But I believe Haverland is the most prolific of all sorts that I have, of large or very large berries, clean and smooth. Its flavor is not quite up to Cumberland, but it is really excellent. Its color is bright when fully ripe, but it is delightfully eatable when not fully ripe. I will hereafter plant heavily of these two berries.

May King is small, prolific and in flavor no way so good as to compensate for its other defects. I will never plant another. It needs a tree agent to puff it up to high rank.

Summit is a noble berry in size and is bright and beautiful. It proves also a prolific berry with me, and as for flavor it is among the best. It must go among the late ripening sorts—one of the latest.

Bomba I cast out. Its color is a dull, dark red and it rots very easily. The flavor is generally bitter. It bears well, however.

Logan I consider a fine berry and do not agree with the Ohio Experiment Station's report that it is unworthy a place. It is a roundish, light red fruit, with good foliage and fair growth.

I started with some prejudice against Jessie, but have got well over it. The berry is enormously prolific—next to Haverland. It is very handsome, very large and very good. It should be classed with Bubach, but is darker and more prolific, and does not average as large; its flavor is better. Both are among the indispensable sorts.

Lida is a reasonably fine berry in all ways as also Jewell and Belmont, but I see no reason for planting any more of either. Jewell is rather tart, and Belmont is one of the berries that varies with soils largely. Of the three on my soil I should decidedly prefer Jewell as to size and productiveness, but it does not average with Sharpless or Ontario or with Bubach and Jessie.

Prince of Berries is really a handsome fruit with golden seeds set in bright crimson. The size is a little more than medium, elongated sideways from cone shape. The flavor is extra and the berry compact, and only a medium prolific sort. It is about as early as Sharpless.

I have let Warren drop out of my beds by accident. I considered it for size and quality one of the best and a medium prolific sort.

For an early, bright, prolific berry Crescent must yet be planted, but it is almost as sour as Wilson. Haverland is almost as early and is free from the burning acid.

Ontario is so much like Sharpless that it is not easy to get true stock. I am sure some of the plants sent me are Sharpless; the rest differ slightly in being less flattened and more ribbed and ripening to the tip. It may, however, be classed with the Sharpless, being no great change or improvement.

Sharpless is one of the five or six best as yet, of high flavor, immense size and bears well on strong soil. It requires clean culture but endures a good deal of shade if necessary.

Downing never did anything remarkable on my grounds and I have about dropped it.

Bidwell may as well be left out hereafter. It goes into the characterless list.

I am sorely disappointed in Itaska. It grows poorly, bears enough berries, average size, below medium, with a few large berries. It is a hopeless failure here.

Why anyone should plant Hoffman I cannot see. It lacks pretty much everything.

Indiana is early, small, inferior and has no claim to one foot of soil.

I am trying Pearl and find it grows well and promises well. The plant is strong.

Ohio for late is at least a good berry and better than Kentucky, but I cannot yet report fully as to its merits.

If I were to name the berries richest for eating I should say Cumberland first and Summit next but might change my mind easily. If I wished to select the three or four handsomest I would take Summit, Jessie, Bubach, Prince of Berries. Triomphe de Gand, however, in flavor alone, is almost or quite superior to any named. And undoubtedly the most delicious berry I ever tasted is Lennig's White, but you cannot get from it even a decent crop.

Now if I were about to set a garden of half an acre I would select the following if looking for profit: (1) Haverland, (2) Jessie, (3) Summit and Bubach, (4) Cumberland, adding a small proportion of Logan for later, (5), Sharpless or Ontario, more probably the former, (6) Manchester and Ohio for late. For home use I would add a row of Prince of Berries; if planting only for home use, would take about the same list in smaller proportions.

I am testing and shall plant Miami, Cloud and Pineapple at once, with prejudice much in favor of all of them. Of Eureka I have also formed a high opinion and intend to plant freely. Vick is no longer fit to hold a place in our gardens, as also Wilson; they are insufferably acid and indigestible. Henderson is firm in flavor but bears slimly. The Wilder was highly flavored, but not good enough for a permanent place.

Later Notes. Itaska and Bomba grow in compact clumps, especially the former, and stems and leaves crowd each other. Their style of growth is bad. They do not make good runners or good stools. Both should be at once discarded. But Bomba in best cultivation is prolific.

Summit is one of the berries never quite praised enough. Mr. Crawford never exaggerates what he offers the public. Let me tell you that in the Summit we have a new style of berry, more like a Pear than a Strawberrry. It is solid, compact, heavy, almost the size of a Seckel Pear. It ripens very slowly, one side colored several days before the fruit is fully ripe. It is high and full flavored. If Haverland lacks, it is in intensity or strength and fullness of flavor. Summit bears in such a way as to cover three weeks for family use. I like it better each time I examine it. Am inclined to prefer it as a fruit to Jessie and Bubach.

Now let us go over the rows carefully and study growth. Nothing can be finer than Bubach with its tall leaf stalks, large foliage, bluish-green color, easily distinguished among a hundred sorts. Prince of Berries has short leaf stalks and brittle; and the masses are too close to the ground, but the fruit stands up on stiff stalks among the leaves and is seldom dirty. Sharpless is a grand grower of fine foliage but the fruit gets dirty if it can, resting its great weight flat on the ground. Summit stands on stiff stalks in spite of weight and its foliage is simply medium. It is a fairly good grower of fine leafage. Jessie gets more dirty, but the foliage is abundant. The meanest foliage of all is that on Itaska and Bomba. Cumberland has a habit of holding up its stalks, and hanging its berries face downward. It is not so easy to see the ripe berries and they incline to a pinkish red. The Cumberland make a mat of plants speedily.

There is hardly a doubt but the best method of growing the Strawberry is in matted rows. I succeed decidedly better by planting in the spring. As a rule one should raise his own plants and so not seriously disturb them in transplanting. But if set in the fall I prefer early September and after well watering mulch each plant with a double handful of manure. Then lay three or four flat stones about the plant to keep the hens off and the ground cool.

It does not pay to grow small fruit or poor fruit. There is a quick demand for all fine fruit and a slow market for the poor. So you will find it best to select and grow carefully and the former only.

The Strawberry makes a neat border for flower beds and gives you profit as well as beauty. Use Cumberland for this purpose. Always have an alley way outside the border for the hoe.

If you grow Grapes you may easily have a row of Strawberries underneath each trellis and so increase your profit. I think the vines serve as a mulch and shade to the roots and thus benefit the vines. But there must be free hoe work.

Cut Worms and How to Manage Them.

Few, if any American gardeners are spared the sorrow of having to make more or less intimate acquaintance with the cut worm and its work. Prof. C. P. Gillette of the Iowa State Experiment Station, in Bulletin 5, gives a most excellent resume of the best methods of treating the pest.

Every man, he says, must adopt the remedies that seem to him, in his particular case, to be most practical. Prevention is always better than cure in the treatment of cut worms.

Proper Rotation of Crops. It has been found that the worms are seldom harmful even on sod, unless the field has been in grass for more than two years in succession. The worms, feeding on grass roots are most numerous in old pastures and meadows.

If such land is turned over in the spring and put to Corn, Sorghum, Tomatoes, Cabbages, Beans and the like, there will be so many hungry worms to feed and so little for them to feed upon that they will soon eat off every green thing. Then, in order to prevent cut-worm depredations, the rotation must be so managed that no crop to which the cutworms are partial is ever growing on land that has been for more than two years previous to grass.

Plowing. If the ground be plowed before the first of September, and kept thoroughly tilled from this time until cold weather comes on so that no green thing can grow, the few worms that may come from eggs that were laid before the plowing will all be starved to death, as will also the webworms and wire-worms that may be present.

If early plowing cannot be employed, plow in the fall, the later the better. When cold weather comes on the worms go a few inches below the surface and spend the winter in earthen cells. If the plowing be done after these cells have been formed, freezing and thawing will destroy many of the worms and many will be picked up by insectivorous birds. The cut-worms are nearly always worst on ground plowed in the spring.

Copperas Remedy. This remedy is to be used when cut-worms are supposed to be in the soil at planting time. Put the seed in a tight tub or barrel, and pour in enough water to keep it well covered when it swells. For each bushel of Corn add a pound or a pound and a half of copperas dissolved in warm water. Stir well,and allow the Corn to remain in the copperas water 24 or 30 hours. Stir several times while soaking. Then take it out and sprinkle a small quantity of land plaster over it—enough to keep the grains from sticking together—and plant. When prepared as directed, if a change should occur in the weather to prevent planting, the Corn may be spread out on a floor and allowed to remain until good planting weather. It will turn black in color, but that will not matter. I believe this application would be a remedy against the ground squirrels also.

Trapping the Worms. There are two methods of trapping the worms that are much prized by some. One of these consists in walking through the field and thrusting a pointed stick two or three times into the ground by the side of the plants. The worms in their wanderings are said to fall into these holes out of which they are unable to climb. A boy is sent over the field to thrust the same stick into the holes the next day following. The other method is to scatter over the field a great number of little branches of Clover or other green material, under which the worms will gather for food and protection and where they may be easily gathered and destroyed. These green bundles may also be poisoned with Paris green or London purple. The Grass should be tied in small compact bunches so as to hold moisture and the application should be made several days before the Corn or other plants are up to furnish food for the worms.

Inclosing the Plants. Tomatoes, Cabbage and like plants may be very easily and cheaply protected by inclosing the plants with stiff paper or tin. Old tin fruit cans or a stiff quality of paper may be used or paper may be wrapped about the roots when the plants are set out so as to project above the surface and exclude the worms. Tins may be preserved and used year after year.

Trapping the Moths. All of the cutworm moths are night-fliers and lovers of the sweet. Collectors take advantage of this fact and smear the trunks of trecs late in the afternoon and then go out in the evening with their lanterns and catch the moths while feeding.

Ways and Means of Utilizing Our Fruits.

The ease with which fruit crops can be produced under favorable conditions in this glorious country brings the problem of "What shall we do with our fruits?" face to face with every grower. While it is true that we never yet have had, or are likely to have, an unmarketable surplus of really first-class fruits, the competition of poorer grades is often ruinous. The remedy consequently, would be in the direction of producing more of the good, and less of the poor article.

Mr. P. J. Berckmans treats the subject of utilizing our surplus fruits in Southern Farm, and his suggestions are well worth considering and heeding.

If fruit growers will pay strict attention to the following points connected with preparing their products for market he says, they will greatly aid in preventing the market being overstocked and keep prices up to a paying point.

1. Place yourself in a position to be kept advised daily as to the needs and tone of any market you intend to supply. To this end find a reliable commission man and follow his directions.

2. Ship only the very largest and best specimens of fruits in neat and attractive packages. The "Standard one-third bushel fruit crate," is most desirable, and well known in the Northern markets.

3. Let the contents of each package be of the same size. The price is based upon the smaller samples of the fruit.

4. Do not be too hasty in shipping fruit that has not attained proper size and color. Unripe fruit if sold at all, is sold usually at a price barely sufficient to cover freight.

5. Do not mix several varieties of Peaches, Pears, Apples in the same package. Mixed lots are difficult to sell.

6. Follow the suggestions of your commission man as to packing, etc. He is better able to judge of the needs of his market from his end of the line than you are.

Commission men have as much interest in securing good prices for the produce consigned to them, as you have, hence a mutual understanding will always make the best of friends. As the tone of a market fluctuates daily, it is obvious that the fruit grower should keep in daily correspondence with New York, Philadelphia, Richmond, Chicago, Cincinnati, etc., and act according to best reports he may receive.

Method of shipment is a question that must be left to each individual to solve. To avoid as much as possible any delay that may injure the condition of the fruit and reduce its selling value, it is always advisable to ship fruit by express.

I have thus far referred only to the disposal of the higher grades of fruit. The question of utilizing the second and third grades is more difficult to solve.

Evaporating fruit pays only when a sufficient supply is assured. To erect an evaporating plant requires a certain capital which one must be assured of being productive of a fair interest before the venture is made. Let fruit growers of a given neighborhood combine either in the purchase of an evaporator and work it upon the co-operative plan or let them enter into an agreement with some enterprising man to supply him with a sufficient quantity of fruit of a price stated before hand, and thus induce him to erect the necessary buildings and apparatus. By these means over-ripe or small fruit which would not pay to ship to a distant market can be utilized at a fair return to the grower.

Evaporating fruits like other pursuits, requires experience in order to bring success; generally, except where the quantity of available material is too small to warrant establishing a large evaporator, it would pay fruit-growers better to sell their second and third grades of fruit to an evaporating establishment rather than to undertake to work it up themselves upon a small scale. There are other ways of utilizing inferior fruits which will occur to some of our inventive fruit-growers.

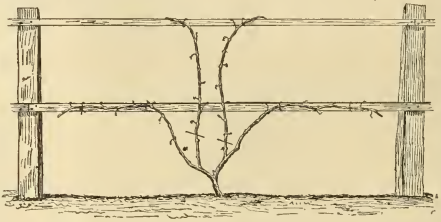
An Easily Made Ladder.

CHAS. GAYLORD, MIAMA CO., OHIO.

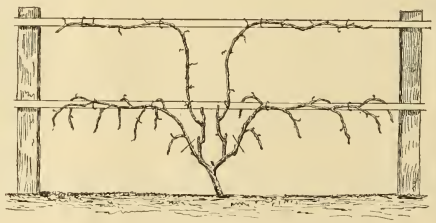
One often sees fruit growers, farmers and others suffering endless inconvenience for want of a ladder, or else assuming risks in using a poor one, in a manner wholly unjustified in view of my simple plan for making and easily adopted by anyone.

I picked out two good fence boards six inches wide and 14 feet long for risers. At the top short bolts were inserted to hold the boards close together at this point. Then the other ends were spread to two feet and one-half apart and a temporary prop inserted to keep them so. Next rungs and bracers were provided of pieces one inch by 2½ inches. The former were let in to gains on the front of the ladder with a space of 15 inches between them from center to center. On the back two similar pieces were let in for permanent braces. All were well nailed.

My ladder thus made is stanch and convenient especially among fruit trees. It should be added that the bottom of the uprights, instead of being cut off square are slightly sloped so that the ladder rests on the full width of the board as it leans somewhat.



SECOND YEAR GROWTH BY LATERAL RENEWAL SYSTEM.



THIRD YEAR GROWTH BY LATERAL RENEWAL SYSTEM.

CULTURE OF THE GRAPE—THIRD PAPER.

THE LATERAL CANE HORIZONTAL, RENEWAL SYSTEM.

DR. J. STAYMAN, LEAVENWORTH CO., KANSAS.

In our introductory article on Grape culture we gave our manner of preparing the soil and planting the vines with a few preliminary remarks upon pruning and training on stakes the first two years. So far we differ but little from experienced vineyardists except in training up a few more canes, if the vines are strong. Any system of training must be based on the following fundamental principles:

(1). It is as natural for a Grape vine to trail low as to climb high.

(2). Whatever gives an undue length of growth without corresponding stockiness, makes the vine less hardy and more subject to disease attacks.

(3). The tendency of the sap is always towards the highest bud; therefore an upright position increases the length of growth, while a horizontal position tends to check it.

(4). The laterals are shorter jointed and have better developed buds than the primary canes, hence their wood is firmer, and their buds more suitable for fruiting.

(5). The leaves require light; the fruit shade; hence their leaves should be fully exposed to the sun, and cover the fruit.

(6). Grapes are only produced on the current year's shoots from wood from the previous season's growth; hence to produce yearly fruit the wood must be renewed annually.

(7). The health and hardiness of a vine is in proportion to the dark green color of the foliage (chlorophyl). Whatever adds to the size, substance and color of the foliage gives size and quality to the fruit.

To train the Grape in conformity with these fundamental principles I use a trellis made as follows: The posts are of durable timber, as for instance Bass or White Oak, six feet long and about three inches in diameter, sharpened or pointed at one end, and driven into the ground two feet deep, and sixteen feet apart in line with the vines midway between every other vine. The end posts are firmly braced.

Now procure No. 11 or 12 wire, the latter is generally used, and if galvanized it will be better, but will cost about one third more. Put up but two wires, the first about two feet from the ground, and the second about eighteen inches above it. Fasten the wires on the posts with staples or wrought nails, and bore holes through the end posts and put the wires through them, and at one end through a round cross piece about two inches in diameter and ten long, by which you can wind up the wires in warm weather and slacken them when cold. They may be kept from unwinding with a nail.

If your trellis was erected the second year, then use this for tying the vines to, instead of the stakes as advised in my second paper. Train the two strongest canes from each of the spurs on the lower wire, and tie as seen in upper Fig.; then train up two other canes to the upper wire, if too strong pinch them back at or near the lower wire. Keep off all strong growing suckers which would have a tendency to rob the canes, cultivate the grounds, keep free from weeds during the season. In the fall of the year your vines will have the appearance as shown in upper Figure. The horizontal canes may now be pruned to about ten buds each and the upright canes to two spurs of two buds each as seen in the cross marks in same Figure.

In the third year if your vines are Concord, strong and vigorous, you may let them bear about 20 to 30 bunches of Grapes to a vine. They should now be tied firmly to the trellis with willow, or otherwise, in a horizontal position as seen in lower Figure. From each well developed bud on your vines there will be a shoot and on each of these new vines there will be from two to three bunches.

In the spring when the buds first burst open, you may see the small embryo of Grapes on delicate shoots which push forth as the season advances. They are seldom beyond the third joint. When these shoots from the arms or horizontal canes have made about eight inches of growth, and have fully shown all the embryo fruit, pinch off all the ends of the strongest leaders just beyond the last bunch. If they are not fully developed go over them again and if any of the buds have produced two buds rub off the weaker. Also pinch off the ends of the leaders of the weakest shoots from each spur, but the strongest shoot from each spur train up without pinching back till about twenty inches high, then pinch it back to lower wire, (see lower Figure.) From the axils of these two upright canes other shoots or laterals will start. Train up but one from each to the upper wire and as they

grow, tie along the upper wire, but the other lateral should be broken or pinched off.

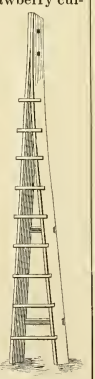
Covering Strawberries From Frost.

T. B. TERRY, SUMMIT CO., OHIO.

One night in the latter part of May the thermometer stood at 42° at sundown. It was clear but there was some wind from the north. At 10 o'clock the wind died away aud a killing frost was certain. Then we went to work to save our Strawberries. Two loads of straw were drawn out and spread over a quarter of an acre. Before we quit it got so cold the leaves were frozen stiff. The ground was frozen the next morning an inch or more deep. But few of the blossoms on the covered berries were injured, even where the covering was not done until the leaves were frozen. Very few blossoms escaped on some plants left uncovered. The straw was poked off on each side next morning, and left on top of the mulch already there. It has been used since. The work was not very great, of putting on and taking off, and we thought we had done a nice thing until Judge Miller's article on page 202 was read. Why didn't we let the frost take part of the fruit—do the thinning that he would have the little girls do? Had we better have gone to bed and left her to manage? I don't feel quite certain of it yet. Perhaps the Judge lets his Strawberries grow in pretty thick matted rows or refers to that kind. Ours were in hills two feet apart. We had an idea that the roots of each plant had feeding ground enough to carry out all they undertook in the way of berry making.

In this locality one needs to pay as much or more attention to the ability of a Strawberry to stand frost as he does to its earliness, lateness, size or quality. We have 13 of the highest praised varieties growing, and find equal difference in them in this respect. The kinds that we finally settle on as the best for our soil will have to be the ones that stand freezing pretty well.

For two years past we have used a Planet Jr. cultivator among our newly set Strawberries. It always exasperated me that I could not run closer to the plants without throwing dirt over the leaves—that I had to leave so wide a strip for the hand hoe. This year, after looking over all the advertisements and seeing uothing that suited, I went to work aud made a Strawberry cultivator that suits me. I took a piece of pine plank, two inches thick and six inches wide, and two feet long, bored holes in it and drove in Thomas harrow teeth, as shown by dots in cut. Then all the teeth and teeth standards were taken off of one of the Planet Jr. cultivators and this piece of plank was bolted under the frame. Six bolts (B in engraving) with hooks at one end and nuts at the other for attaching to frame. Hooks go over top of frame. The wheel was left on.



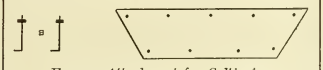
An Easily made Ladder.

This gave me a good cultivator with nine half-inch, round harrow teeth to do the work of stirring the soil. I can run right up to the body of the plants, leaving almost nothing for the hoe to do. The round straight tooth next to the row will push the outside leaves aside without injuring or covering. In very clean land perhaps more teeth might be put in to good purpose. Another advantage, it cannot "track," as common cultivators will, and it stirs all the surface about 2 inches deep and leaves it always perfectly level. We are farmers and can always take time to do the horse work in our fruit garden; but in a busy time the hand work bothers us, hence our study to get tools that will do away with as much of it as possible.

Orchids—The Flowers of the Air.

The Orchid is uo flower for the million. To come to perfection it requires conditions which only skilled growers and a well-filled purse can supply. So the masses will have to be satisfied with enjoying and studying the varied forms of this class of plants, the grotesque beauty, and odd coloring and marking of their flowers at the occasional Orchid shows in large cities, or during the visit at the greenhouse of a grower.

There are, for instance, several amateur Orchid growers in Chicago, among them Mr. John Lane, who amuscs himself by taking good care of a large number of strange



Harrow Attachment for Cultivator.

"beauties" of the air. A reporter of Inter-Ocean recently gave au account of his visit at Mr. Lane's greenhouses.

Mr. Lane, he said, led the way through the back yard along walks bordered by Fuchsias and Pansies to the greenhouse, where his chief treasure, the Laurenciana, a variety of the Cattleya Mossiæ, was in blossom.

The plant hung suspended from the roof of the greenhouse by wires, the greenish grey roots, matted around the block of cork upon which it was growing, or sweeping downward, suggestive of the snaky locks of the Medusa. The flower itself was like some etherial tropical bird with extended wings. It was pale purple, a latrate form, with two erect petals, two larger at the side, a lip fluted and striped within in velvety lines of darker purple. Anything more delicate and beautiful could hardly be imagined, and it was a striking contrast to the apparently lifeless mass of roots from which it sprung. This species is a native of Brazil.

The other gem was a raceme, eight or ten inches in length. In the tropics, where it is found, these racemes frequently attain a length of twenty or thirty-six inches. The yellow flowers, growing to the pendant stalk by their invisible stems, looked like a cloud of yellow butterflies poising in mid-air.

The roots of all the varieties look much alike, and it is doubtful if any body but an expert could tell them from one another.

"There are varieties to be found right here in Cook County," Mr. Lane explained to him, "and throughout the United States; but of course they do not compare with the tropical species. Those attach themselves to trees, and are found by Orchid huuters, who make a business of exploring the forests to collect them for the market. The roots have wonderful tenacity of life, and can scarcely be killed. They are packed and shipped—to New York, for instance, and there they are sold at auction, the species generally being known. They change, however, under cultivation, and a variety of this species, the Cattleya Mossiæ, will have new markings, or some slight alteration of form. When this happens the grower turns to his catalogue, and if it is not described there he knows he has a new variety, and the price has ruu away up."

"This, for instance," pointing to a purple flower, "I bought of a florist in the city. It had never bloomed. He did not know what it would turn out. I offered to take the risk, and gave only $1.75 for it. It proved to be one of the fine ones, and it is worth $50. I was offered $5 for the flower alone.

"It blooms only once a year, and a plant produces but one flower. With care, however, this flower will last from six weeks to three months. It must be kept from gaslight, furnace heat—and a drop of water on the petals ruins it."

He explained that Orchids are propagated by dividing the plants, which may be crossed with other species, as is done with Geraniums and Roses. It takes from three to five, and even ten years, for a plant thus propagated to produce blossoms.

They require very little water, and it is usually lightly sprinkled on the roots. They are air plants—drawing their entire sustenance from the atmosphere. The little bundles of roots are flattened out and fastened to blocks of cork by fine wires and hung where they may have sufficient light and air. In a little while the plant throws out a network ot suckers and fastens itself to the cork. The wires that held it in place are then removed, and like Topsy it "just grows," without further attention.

Mr. Lane regarded the spidery-looking things with affectionate solicitude, knowing that each held within it some form of exquisite beauty, of delicate tint and varied color, which is like the soul, sometimes shut up in a gaunt and withered body.

A Word for the Abutilon for Window Culture.

MRS. LORA S. LA MANCE.

It is strange that the Abutilon is not more popular for window culture. It has every good quality demanded for ordinary room culture, as the plants have a thrifty habit, are not sensitive to changes of temperature, are in bloom the full twelve months of the year, free from insect enemies, and capable of standing more neglect aud abuse than almost any other. It ought to be called the "busy woman's flower," it comes so near taking care of itself, always growing and blooming, whether kept cool or warm, in sun or in shade.

The only fault I have ever noticed, is the tendeucy toward too tall and spindling a growth; but this can be easily prevented by a little judicious pinching back when small. The more they are pinched, the bushier they will become, and the more flowers they will bear. The Abutilon does not cover itself so completely with bloom as some plants, but as it is always in bloom, it is more satisfactory for window-culture than the old standby, the Geranium, which is almost certain to take a provoking resting spell right in dull mid-winter, when needed most. The foliage of most sorts is attractive, and some sorts are beautifully variegated in leaf. The bell-shaped flowers, curiously veined and flushed are not so striking as some flowers, yet pretty and attractive, and the range of colors is wide. The new double is odd, but is not as graceful as the airy bells of the ordinary single form.

Young plants do not cost much, bloom quickly, and the purchaser can select the colors most wanted, but they can also be easily grown from seed, and if started early will bloom the same season. One of my seedlings, planted in the open ground, attained a height of nearly seven feet, and was much admired. Of course the frost cut it down, as it was too large to move. Abutilons in pots can be sunk in the ground for the summer, and those allowed to bloom freely will give as many flowers the next winter as those whose buds have been picked off. The plants need re-potting but rarely. The Abutilon is a good plant for those to try who can not succeed with house plants, as there is nothing "fussy" about it.

1,324 **Value of Manures.** Of course much depends upon the quality of the stable manure, and a "wagon load" is rather an indefinite term but ordinarily 25 cents per load for good manure would be considered a bargain.—F.

1,318. **Russian Mulberry.** For a lawn it is very desirable. Judging from own experience it is of very little value as a friut.—M. B. F.

The Fraxinella: A Fine June-flowering Hardy Plant.

The subject of our engraving and sketch is not as commonly met in American gardens as its great merits should entitle it to be. It is a plant of conspicuous beauty when in bloom and afterwards the neat, smooth, dark green compound foliage is more attractive than that of the average occupant of the hardy border. There are two varieties: the one having white flowers, the other pale purple flowers pencilled with darker lines. As seen in our illustration, re-engraved from the London Garden, the blooms are borne on numerous tall upright racemes. Altogether a well grown clump of the Fraxiuella (*Dictamnus fraxinella*) is certain from its beautiful neat habit and striking flowers to arrest attention and command admiration in the summer flower garden.

Besides being of interesting form and striking appearance the Fraxinella is strongly and agreeably scented both in foliage and flowers and on this account it is in much favor with many for drying and placing in rooms. Of the two varieties the white is somewhat the smaller grower, but it is not a delicate plant and is equally deserving of culture with the other, if, indeed, it would not, in many cases, be preferred because of being pure white. We have never found this plant in the least difficult to cultivate in our own gardens, but complaint as to this sometimes comes from those whose gardens are of heavy soil, and perhaps not well underdrained. It delights in a light, loamy earth, and if partial shade is provided it is all the better suited. Although entirely hardy some shelter as where there is a hack ground of shruhs is favorable to the growth of the plant.

While the Fraxinella seeds freely it is not the easiest of plants to increase in this way as the seeds often fail. The best time for sowing is immediately after the seeds ripen. Those who are not aware that the seeds often lay two years before germination may have made the mistake of throwing them out after one season, thinking they were useless. To increase the plants by division is also not easy, which fact, with the foregoing one, sufficiently accounts for the comparative scarcity of the plants. Usually a large percentage of the divided roots die, while those that succeed require several years before they attain a pleasing size. We have heard of this plant heing propagated hy cuttings of new flowerless shoots in the spring, but have never tried this method.

Plants of the Fraxinella can be procured at all nurseries where the raising of hardy perennial flowers receives fair attention.

CLUMP OF THE WHITE FRAXINELLA.

A Home-made Plant Pit.

"ELDER'S WIFE," LIVINGSTON CO., N. Y.

I never before wintered my plants so successfully as last season. Previously I had had only a dark frost-proof cellar, the windows of the living room and an adjoining bedroom for winter plant quarters. Last fall I had constructed a long desired pit and in this I wintered 40 Chrysanthemums, 50 or more Geraniums, a lot of Amaryllis, Fuchsias, and a variety of other plants, including 25 Cacti, Opuntias, Mamillaria, Echinocacti, Cerei and Stapelia, with gratifying success, and very little trouble.

It was made and managed thus: The only availahle place to build the pit was already occupied by a leaky and now abandoned cistern. This was ahout 7 feet deep, 8 feet long and 6 feet hroad, of oval form, dug down to a rock hottom, and stoned up. It adjoined the cellar on the west end and was in a rather steep bank facing south.

The wall hetween the cistern and cellar was removed, and a door put in here, the broken wall was relaid, leaving the interior something like a horseshoe in shape: the ground was leveled to the top of the cistern wall, on this was laid the sills of 6x8 scantling halved together and spiked at the corners and to the side of the house.

Inch hoards six inches wide were used for rafters, cross strips were let in, to support the roof boards on the north side and that side and the west end were boarded and hattened. The roof on the south side had a wide board nailed on next the ridge and one at hoth the east and west ends, to reduce the amount of glazing required. The remaining space, 5x6 feet, was covered hy three sash, containing six panes each. The sash had once done duty as wall show case doors, and cost less than $1.00 each; just outside the sashes at top and hoth sides au eight inch board was set on edge and nailed fast.

The north side of the roof and the west gahle were theu bauked with earth, and over this and on the board portions of the south side were placed leaves to a depth of 6 or eight inches and weighted down with boards. The sashes should have been hattened down and provision made for covering it on cold nights, hut other cares crowded out these details.

The interior furnishings consisted of a wide shelf across the west end, level with the sill and the east end the same, a narrower one along the south side and a set of shelves upon the noth side from the floor up.

The south side shelf contained Violets, Daisies, Alyssum, Verbenas, Pansies, etc., which required plenty of light and grew low; most of these bloomed pretty constantly during the winter. The hroad shelf on the west was filled with Geraniums, Roses, Stocks and many others; these all grew very slowly and some budded and hloomed. The corresponding shelf on the east held a large box containing the Cacti, and in the farthest corner a hox of Fuchsias. These grew slowly, but strong and stocky, and in March began to hloom. The northern tier of shelves had at the top Ipomea, Lophospermum, Solanums, Sea Oniou, Acacia, Nasturtium and Geraniums, the next lower one Amaryllis, and below these on henches along the south and west were Hydrangea, Agapanthus, Salvia, "Cactus Vine," and Chrysanthemums.

The winter was a very mild one, and the temperature averaged ahout 45° until the last of January; February was quite severe all through, 8° below zero occasionally, and the morning temperature in the pit was 30° several times, and I was quite certain that when spring opened, my floral treasures would he dead. When the outside air hegan to grow milder and the frost fell from the glass like snow and froze the leaves stiff wherever it rested, you may imagine that I felt decidedly blue, hut after the performance was repeated several times without apparent injury to my pets, I hegan to regard it with less apprehension. I have since come to the conclusion that the uniform low temperature had made them hardy and the lucky accident of having it at the west side of the house where it escaped the morning sun, were the causes that combined to prevent a failure.

Heretofore I have never heeu able to grow Farfugium successfully on account of red spider, hut a small one put in the pit last fall has become a splendid plant. Altogether I am well pleased with my pit and shall endeavor to make some arrangement for keeping the temperature a trifle higher during cold snaps, without artificial heat if possible.

In common with all pits mine was somewhat troubled with dampness, but not mouldy, and water stood upon the floor quite frequently. Finally Idug a hole in one corner where the rock did not quite floor it over, into this I sweep any water that gathers and it oozes away at leisure.

Opposite is a sectional view of the pit complete. A small ladder gives me access to any of the plants I desire to attend to. The temperature is regulated to some extent hy opeuing or closing the door leading into the cellar. The cost was not great since the digging and stoning up was mostly done already; the lumber was a cheap grade of Hemlock. The work was done by the "Elder" himself after plans of my own, so that the chief expense was the glazing, which in this case was not great. I have hopes of making it do duty during summer by removing the sashes and substituting oiled cloth and growing Fuchsias, Begonias and such like plants, which thrive best in partial shade and moist atmosphere.

I have never before had my Cacti start into growth so early and so thriftily as this year, and this is the treatment they received during the past winter:

In Novemher I placed them upon a high shelf in the plant pit underneath the boarded portion of the roof, where they had a moderate light, and a little late afternoon sun. The air, of course, was damp, as it is in all pits, and I gave them not a drop of water from the time I put them there until the middle of March, then the sun being high enough to heat the pit somewhat during the middle of the day, I drew them out under the sash-covered portion where they received the full sunshine during the greater part of the day, and about once a week gave them a very little water, increasing the amount with the plant's growth.

The temperature averaged about 45° most of the winter, but during the cold snap iu February I found it had fallen to 30° on several occasions and entertained grave fears for the lives of my pets in general and Cacti in particular, but, though my collection embraced Cereus, Echinocereus, Opuntia

Stapelia, Mammilaria, Phyllocactus, etc., I suffered no loss. I had supposed some of them were too tender to bear so great a degree of cold, but having them all growing in one large, shallow box I could not favor the tender kinds and had no suitable place to keep the whole lot aside from where they were. I am well pleased to find that they can be wintered so easily as I had refrained from enlarging my collection partly from the supposed difficulty in wintering them.

Preparing Plants for the Winter Window Garden.

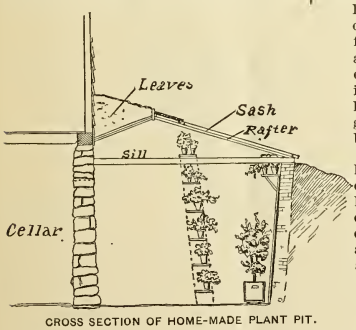
W. F. LAKE.

It is too often the case that the window garden is without flowers in abundance during the latter part of fall when all plants are gone outside, and in many cases this lack enters into the winter months. While it is not so easy to have an abundance of the general collection of house plants in bloom during this period, as nature seems inclined rather to retard growth even of the healthiest and strongest specimens until the genial sunshine of later months is more plentiful, there are a number of plants and common oues, too, which may be had in fair amount of bloom, if attention to preparing them for this purpose be given during the summer and early fall months.

The principle that no plant can be expected to flower profusely during summer and then do double duty by blooming well in the winter is a safe one on which to rely. Successful amateurs are learning that it is not only the florists who may have flowers in winter, but that if plants be given similar treatment as winter flowering ones receive at his hands, a fair degree of satisfaction may be had for early blooming, and a greater degree for still later in the season when there is more sunlight, even in an ordinary window.

A good lesson may be learned by a walk through a florist's grounds at this time. There are quantities of Bouvardias, Carnations, Heliotropes, Geraniums, Begonias, and the like without a single flower on them but in fine stocky condition. The flower buds are being all kept down by pinching, which results in the bushy plants that produce a heavy crop of bloom during the winter months because they are in the right condition for the work.

Many grow Geraniums, etc., in pots during summer which is a good plan, but if this has not been done those which have been planted in beds may be lifted, for though they may have become well established and are pushing root and top vigorously, the roots will not by this time have pushed out so far that much injury will result from lifting. Later lifting gives us much more top growth, but the roots have spread over so much ground it is impossible to retain them all.



CROSS SECTION OF HOME-MADE PLANT PIT.

There are a number of summer blooming bulbs which make fairly good early winter bloomers. For example, if we take those late Gloxinias which have not flowered at the time of drying off the rest, move them to a warm place and water freely, growth will continue so that flowers will come at an acceptable time. I have had Gloxinias as late as Thanksgiving and even later. There were among my Achimenes a small scarlet variety, unnamed, which was quite willing to flower in winter and often the early started summer plants would continue in bloom late into the fall. This is true of some varieties of Tuberous Begonias when grown in pots.

August is too late to sow seeds of Primroses, Cinerarias, etc. for early winter blooms, but just the time for making attractive specimens for spring. The plants of these for early should now be making vigorous growth and be repotted quite often. They require a shaded place.

It will require some careful attention during the summer to keep insects from Cinerarias, for the aphis is particularly fond of it, and when once established it takes considerable to dislodge him without injury to the plants.

In the recent improvements made in that grand flower, the Chrysanthemum, we have a nice number and variety of late blooming sorts which add greatly to the attractiveness of the window garden in late fall and early winter. If more plants of these late kinds than are needed to simply fill up the window be grown, and retarded by keeping them in a cold room after the buds have just begun to open, the season is easily prolonged through the holidays, but the blooms never seem to be as lasting when once allowed to open as those which had no interference with their natural course.

Watering of plants for winter blooming especially should be given careful attention, as a stint in this direction during hot weather cannot result in anything short of positive injury, and therefore decreasing the supply of bloom.

The Virginian Creeper in Gardens.

The uses to which the common Virginian Creeper *Ampelopsis quinquefolia* can be put for adorning the garden are endless. Herewith are given two sketches of pleasing ways in which we have seen this plant employed on a recent trip through the country.

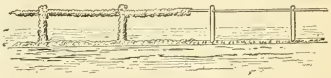
The upper sketch represents a division line in the gardeu, consisting of a row of posts with rods of iron extending from one to the other at top and bottom, and covered with the shoots of this creeper. The effect is light and pleasing, and for many places where some light dividing mark is desirable in a garden, nothing more satisfactory could be produced.

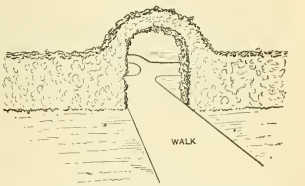
The lower engraving is that of a lattice work fence and archway covered with this vine. In this case the lattice work consists of unplaned strips one inch thick and two inches wide, crossing at an angle of 45 degrees. The arch was made of boards at the sides aud cross strips at top and bottom.

Culture of the Vallota or Scarborough Lily.

This remarkably attractive home and conservatory plant, although closely allied to the Amaryllis is yet strictly evergreen or perennial in its foliage. To keep it entirely dry at the root through the winter is to court failure in its culture. Fairly treated and no plant will make a better display of bloom in the window or conservatory during the late summer months than this.

The most successful mode of culture to adopt in general with the Vallota is to repot just before it commences to grow, which will be about March or April. For the first two months after repotting water cautiously. Towards June sufficient roots should have formed to warrant water being given daily, and in July weak liquid or artificial manures may be safely applied. From the middle of June until flowering begins an open somewhat sunny spot is the most suitable place





USES OF VIRGINIAN CREEPER IN THE GARDEN.

for it, standing he pot on coal ashes. Exposure to the sun in summer helps to ripen the growth, and this, in our experience, is, in ninety-nine cases out of every hundred, the secret of getting it to flower annually.

When the flower spike shows it is advisable to discontinue the application of manures in any form, as these have a tendency to cause the bloom to develop too rapidly to last long in good condition. By the time flowering has ceased the growth of the bulb will be completed for the season, and then a cool light position must be found for the plant or plants, and less water be given. The process of withholding the latter must be gradual. Give just enough to the soil fairly moist from October to December, and from thence to repotting time, sufficient to prevent the soil becoming dry. If these cultural details are carcfully followed we wiil guarantee that every moderate-sized bulb will flower annually.

Avoid extremes in watering if possible. In repotting do not remove the offsets from the large bulb unless for growing into separate plants. Never at any time use pots that are dirty, or in excess of the size of the bulbs. We know of many plants that have been growing and flowering to the utmost satisfaction without repotting for several years by giving some weak stimulant during summer when it is making its growth.

1,286. **Tulips from Seed.** Raising seeding Tulips is a very tedious operation The seed is very slow in germinating, and rather uncertain. Yours may come yet though the chances to the contrary are about as good. Seed should be sown in gentle heat in February in light sandy soil and let to remain in their seed bed until the following spring, all the treatment needed in the mean time being to keep free from weeds and giving light protection during the winter. After being planted in a permanent bed it would take from four to six years before the bulbs will flower. After a number of years, more or less, these seedlings break into different colors but how many of our average Americans are willing to wait for these changes?—M B Faxon

1,266. **Arbor Vitæ from Seed.** "It is grown by sowing the seed in early spring, in a bed of very fine soil, if mucky and wet all the better, covering very lightly with sand or pulverized peat, which must be kept constantly wet until the young plants appear, which will be in two or three weeks. The young plants resemble small sprigs of moss, and will attain a height of two or three inches during the first summer. The real Arbor Vitæ leaf sometimes appears late in the season, but usually not until the next season. They must be kept constantly watered during the first season, and should be shaded from the sun.—Geo. Pinney., Door Co., Wis.

Old-Fashioned Posies.

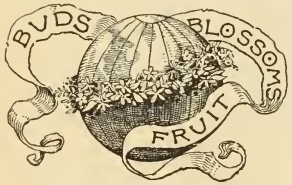
Oh, for the dear, old-fashioned posies
Growing close by the kitchen door;
Poppies soft to bring forgetting,
Balm and Mint for a spirit sore.
Heartsease sweet for hearts that are aching,
Ragged Ladies and Four O'Clocks;
Marigolds with wealth uncounted,
Cabbage Roses and Hollyhocks.
Old-time Pinks with their spicy odor,
Tiger Lilies and Columbine;
Honey sweet in its golden chalice,
Humming birds in the climbing vine,
Sunflowers tall that turn their faces
Out to the west as the sun goes down;
Morning Glories that close and cower
Under the rays of his burning frown.
—*Evening Wisconsin.*

The Yellow Bird.

There's a gay little yellow bird flitting about
In the Maple just over the way,
'Mong the scarlet twigs, now in and now out,
Now pausing, as if some wish or some doubt
Had hidden his wings delay.
O dear little bird with your golden vest,
I hope you'll decide to stay;
For nothing shall ever your hrood molest.
If you'll come and build your beautiful nest
Of lichens all green and gray.
—*Julia Anna Wolcott, in Christian Register.*

The Little Gardener.

I know a gardener bright and spry,
But for a certain reason
His crops, tho' blest with culture high,
Are far behind the season.
More faith is what the laddie needs.
For he is always douhting,
And every day digs up the seeds
To see if they are sprouting.
—*Youths' Companion.*



August for Pansy sowing.

The hoe mulch for drouth.

Plum sprouts are bad lawn weeds.

A dirty plant house is abominable.

Label the ornamental trees and plants.

For mildew on Roses give better culture.

The Cut-leaved Currant is a pleasing shrub.

On to Buffalo. American Florists Aug. 20-22.

Flowers on the table add a relish to the meal.

A garden can hardly have too many fine Pansies.

Liquid manures for quick action in plant growth.

Early Cabbage. The Wakefield shows itself yet at the head.

It is good time yet for sowing seeds of most hardy perennial flowers.

Our lawn mowings go for mulching or as a morning meal in the poultry yard.

The old talk of Tomato foliage as a repeller of insects, revived annually, is nonsense.

Of dwarf Evergreens at "Woodbanks," the Dwarf Black Spruce is the handsomest.

Two in One The California Florist and Gardener "consolidated" with Pacific Rural Press.

A "skimpy" supply of fruits and vegetables is anything but creditable to the large land owner.

Rubber bands for tying Asparagus is the suggestion by Prof. Green of the Ohio Experiment Station.

Three things for continuous bloom in all annuals—liquid manure, removal of faded flowers and the hoe.

Will the coming florist attend conventions? Certainly! that's what he's coming to Buffalo for. August 20-22.

In many places the purple Clematis is so commonly grown that to meet an occasional white or blue is a great relief.

English gardeners are severely criticising the management of the horticultural department of the Paris Exposition.

Winter Radishes may be sown throughout this month. Try the Mammoth California for size, crispness and mildness.

How so many people can get along without flowers and fruits is a puzzle to me, says Judge Miller. It is to us, too.

For quick growing or forcing Radishes the Early Erfurt and the Earliest Carmine Forcing have turned out the best on our grounds.

Among many varieties of Strawberries, Crescent, Haverland, Bubach and Jessie have proven the most profitable here.—*T. F. Longnecker, Ohio.*

Everlasting Pea. I have a row of this perennial over 30 feet long, which is a perfect hedge of bloom for weeks every summer.—*M. Grace, Newport Co., R. I.*

Of course you desire the finest blossoms and most of them in your Cobœas, Cypress vines, and other climbers. Then supply them with adequate support.

The most attractive bed on the POPULAR GARDENING grounds is a large circular one devoted to the Blood-leaved Plum, with a margin of variegated-leaved Cornelian Cherry.

Plant Labels. A subscriber complains of the perishable nature of florists' plant labels and the writing thereon, and speaks in favor of using zinc labels written on with indelible ink.

Carnation Maggot. Some English florists complain of the ravages of an insect (maggot) which feeds on Carnation leaves. Its parent is said to be a fly somewhat resembling a mosquito.

The cultivation of hardy perennial flowers is real gardening in a way that bedding plant culture is not. Why? Because the former are in their natural state, the latter for the most part are art improved.

New interest is added to Tulip culture by the announcement of Messrs. Krelage & Sons of a new race of these flowers named *Tulipes Darwin.* Amongst the colors are a "porcelain blue" and "delicate violet."

La Salle-on-the-Niagara. To such florists as favor us with a visit at "Woodbanks" during convention week we believe we can show some new ideas in decorating lawns with hardy trees, shrubs and plants.

A Good Verdict. A Boston jury has given $2,057 verdict to a florist where greenhouses suffered injury from the negligence of city labor in digging up the streets in the winter season and exposing the water pipes connected with them.

Safety in Weakness Only. Remedy for black rot in Grapes, although prepared with care, proved too strong, and on some of the vines burned the foliage badly. I am going to continue applying it with the solution weaker.—*Smith Nichols.*

A comparison of the Wild Strawberry with the cultivated made at the Ohio Experiment Station showed that while the former has six per cent of seeds the latter has only 1 52 per cent., giving us a reduction of quantity of seed by cultivation of 4.5 per cent.

A white Fuchsia, that is, the flowers being white throughout, has been secured by the veteran Fuchsia raiser, Mr. George Fay, of Lewisham, England. It is a vigorous grower and free bloomer, the foliage and flowers of good form and altogether as beautiful as its name.

Thummage. Old Lady to Huckster—How much are the Strawberries? Huckster—Fifteen cents a quart. Old Lady—With or without thummage? Huckster—What is thummage? Old Lady—The number of Strawberries which would go into the space your thumb occupies in that quart cup.—*From the Owl.*

Another Parker Earle Strawberry, to be introduced by Prof. T. V. Munson. The originator, James Nimson, of Texas, writes to the Rural, that in fruitfulness, beauty of berry, high quality and vigor of plant, it certainly surpasses anything, even among the many "wonderfuls" in the Strawberry line growing on his grounds.

Decidedly a horticultural subject—that is the family horse, and for this reason we desire to call special attention to a tastily gotten up, substantially bound work of some 150 pages, published by the Orange Judd Co., of New York. The author, Geo. A. Martin, presents his subject "The Family Horse," in all its various aspects.

Sowing Fine Seeds. Under this head come the Calceolarias, Cinerarias, and some others now seasonable for sowing. Bear it in mind that shallow planting, thorough firming, and keeping surface moist but not wet, are the secrets of success in sowing such. A pane of glass or a thin covering of sifted sphagnum secures the moist surface condition.

Saving Tomato Seed. Five years ago I began growing Acme and Livingston's Favorite, and last year have saved the seed from the first ripe Tomatoes. Now I get the first fruit at least three weeks earlier than I did when I first began to plant. I have this day (July 5th) picked as fine a basket of fruit as I used to the first of August.—*S. M. Hoyt, Neb.*


Extension Plant Support.

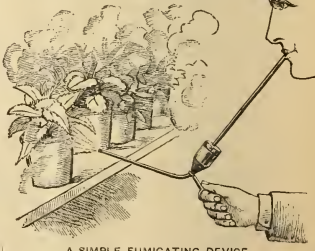
A Flower Support. The engraving of a flower support given on this page is from an English source and well represents the advantage there may be in the use of some such a device in floriculture. This one is made of tinned wire. Its good points are that it can be adjusted to a flower in half the time it takes to tie them; it holds the flower perfectly secure; can be easily removed when desired and will last for years.

A New Use for Plants. In the dry air of our furnace or base burner heated houses the pianos suffer as well as the health of human beings. The piano gets out of tune often and perhaps the sounding board cracks and a large bill for repairs is the result. A shelf of thrifty plants in the room is constantly giving out moisture, good for the lungs and the piano. We ought to keep plants for the sake of economy.—*Sister Gracious.*

Handy Things for Ornament. If one thing more than another should serve to promote an intense love for country life, it would, according to our idea, be a deep border of irregular flowering outline along one or more sides of the lawns and devoted to a collection of small trees in the back ground and shrubs and hardy flowers in front. Such a border should combine to a handsome show of flowers and foliage the season through. Keep the soil tilled.

Grape Culture in Wisconsin. Where the Apple is unable to stand the winter's cold the flexible Grape vine can be laid down and buried out of harm's way until danger is past. At least this conclusion might be based upon the results of experiments made by Prof. Henry of the Wisconsin Experiment Station. Among good Grapes that ripen in Wisconsin summers under the treatment indicated Prof. Henry names Delaware, Concord, Worden, Salem and others of the Roger's Grapes.

Water Lilies. I have a tub of Water Lilies in my yard sunk to the brim. Last winter I put some boards over it and covered with coal ashes. They kept well. This spring as the Lilies did not grow as fast as I desired I put in a large pailful of liquid manure. In a few days they threw up large, beautiful, healthy green leaves, and soon blossomed. Since then I have given them another pail of manure water, and the tub is now full of large, rank green leaves, very beautiful.—*Miss Jennie Spencer.*


A SIMPLE FUMIGATING DEVICE.

Flint's New Work on Grasses. This handsome volume of 398 pages is from the press of Lee & Shepherd, Boston. It is a revised edition of a former work by Mr. Charles L. Flint, who is a recognized authority in this field. In the present work the author aims to embody the most recent practical and scientific information on the history, culture and nutritive value of the grasses

and grains, with a view to reudering the subject clear to the average cultivator of grasses. The work is a welcome additiou to the literature of American agriculture.

The florist who leaves our city at convention time without having seen the Buffalo public parks will have missed a view of some of the finest parks in America. The lake and Niagara river scenery from the "Front" is, we think, unequalled as a water view anywhere in America; the artificial lake of the Central park, with its well planted shores, is far and wide pronounced the finest thing of its kind on the continent, while the Parade grounds provide charmiug scenery of a type peculiar to themselves. We are not ashamed to show our ample parks and boulevards.

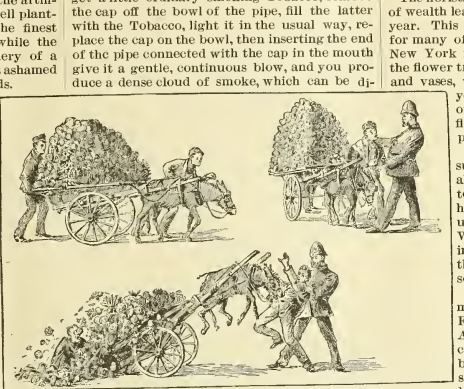
Domestic Fertilizers. Our thrifty German neighbors, in their small gardens, raised all their vegetables and often had a stall in the market to dispose of the surplus. On asking one what made the ground so tertile she answered: "We bury all our swill, sprinkling it with wood ashes, also put the wood ashes on the grass. The dish water and soap suds are also thrown around the roots of the plants. The bones left from the table are buried near the Grape vine. In the fall we dig a trench and the leaves, stalks, and withered flowers are put in, earth thrown over, and the next spring the ground is rich for planting.—*Sister Gracious.*

Remedy for Cab bge Worms. Natural agencies, especially insect parasites, seem to be at work to lessen the number of Cabbage worms from year to year; but we still have to add our mite in this direction by applications of strong insecticides, preferably Bubach. A writer in American Agriculturist suggests poisoning butterflies. He attaches artificial flowers securely to the top of sticks eighteen to twenty inches long, covers the flowers with arsenic mixed with sugar or with a sweet paste of any sort and puts the sticks into the ground at intervals throughout the field. The butterflies are attracted to the flowers and get enough of the poison to give them an effectual quietus.

Woman Fruit Growers and Florists. What better field of usefulness could be pointed out to those members of the gentler sex who desire to fight life's hard battles on their own hook and perhaps single-handed, than fruit and flower growing? Says Mr. Morgan in the "Nineteenth Century:" A woman is at home in a garden. The physical work connected with dress making, telegraphy, type-writing, and all other departments of labor open to women, is much heavier than is required for the bulk of horticultural operations. In growing flowers, for example, the minute care and attention necessary are by no means unfitted for women, while in fruit growing the same remark applies to a great extent. The healthfulness of horticultural occupations is well known, and even working in hot-houses does not, with ordinary care, perceptibly affect gardeners, who are notoriously long-lived men.

A Poland Honeysuckle. Under the name, Lonicera confusa, we have from Poland a variety of the Honeysuckle, which I believe is a variety of Lonicera Halleana, which came to this country from Japan. Our collection from East Europe and North Central Asia has varieties of nearly all the species we have from Japan and China, and we might reasonably expect to secure varieties of Halleana from Persia, Bokara and other points in south central Asia. Our confusa has the leaf, habit of flowering, and beauty and rare fragrance of flower of Halleana, but it comes into bloom earlier in the season, has larger bract leaves at the base of the flowers, the leaves are thicker and brighter green above, and above all for our use the plant endures a far lower temperarure without winter protection. As this desirable variety is common in Poland and North Silesia under the name of L. confusa it has probably been introduced into the Eastern States. If so I should be glad to learn through POPULAR GARDENING if it has proven as desirable as Halleana and in what respects it differs from it. At this time we do not have L. Halleana on the grounds as our recent test winters have run it out root and branch though well covered. With us it is not hardier than Viburnum plicatum while L. confusa only kills back at the points of growth which does not lessen its value, or its long continued blooming.—*J. L. Budd.*

A Simple Plant Fumigator. A Mr. Toope, an enthusiastic plant cultivator of England, gives out a very simple contrivance for fumigating plants on a small scale to kill green fly. It is made of stout copper in the torm of an ordinary clay pipe but with the addition of a movable cap in which is inserted a tube for a mouthpiece. The ends of this pipe should be tinned where it is put into the mouth. In its use one has only to get a little ordinary smoking Tobacco, remove the cap off the bowl of the pipe, fill the latter with the Tobacco, light it in the usual way, replace the cap on the bowl, then inserting the end of the pipe connected with the cap in the mouth give it a gentle, continuous blow, and you produce a dense cloud of smoke, which can be directed to any part of the plant infected with insects. The fumes cause the insects to dislodge themselves at once, even in the most remote part of the sheaths of the leaves or flower. Wherever it has been tried on a variety of plants it has been found to answer exceedingly well. For instance, on many Orchids experimented on, there were thrips far down in the sheaths of the leaves, which no insecticide would reach without injuring the plant, but after a few moments gentle application of Tobacco fumes they were destroyed, and no harm done to the plant. Then again, for window plants, an appliance of this kind is particularly valuable, as it enables each plant to be kept thoroughly free of insects at a minimum of cost and trouble.



A Big Haul. *Upshot and Downfall.* *An Officers Call.*

TRUCKER, DONKEY AND THE LAW.

Statues in Public Parks. If we must have public statues—a fact still to be doubted—says Mr. Higginson, they should be away from the haunts of men where they will not affront the living and may exhort or reprove them. But the moment we pass into a park or a garden we are supposed to seek the influences of nature, so far as they can be brought near a city. The stiff hard lines of a monumeut, the unnatural outlines of a statue, destroy the natural impression; and the statue is the worst of the two, as has been said, because it is the less appropriate, and can be less relinquished into nature's hands. Moreover, the tendency of these things is to multiply themselves. One or two such objects may do no great harm. In its early days even a rural cemetery may be soft and graceful. But if you once forget the difference between park and cemetery, then the park tends at every step to become a cemetery in appearance; a new monument, a new statue, a new fountain, occurs each year; and at last societies are formed which prosecute this marble work as if it were a virtue. The public garden in Boston is already half spoiled; Everett and Sumner disfigure in death the city which they ornamented in their lives; and one almost wishes that etherization had never been invented, since it simply transfers to the eye the pain elsewhere alleviated. Central Park is suffering in the same way, and even the beautiful Fairmount Park at Philadelphia. It has recently been stated that the late Governor Seymour and others went before the New York Park Commissioners when the plan of Central Park was under discussion to protest against the introduction there of personal or emblematic structures, or anything but what properly belonged to landscape gardening. It is now too late to save the older parks and public gardens, but it may be possible to protect new ones. Otherwise, in a hundred years no man can possibly tell whether he is entering a park or a cemetery, except by looking in his guide book.

New York Floral Notes.

It goes without saying that the florists have nothing to do these broiling days. Business is dullness itself; however, there are very few flowers in the market. No good Roses, but we could hardly expect them. Any fine basket or bouquet must now be made of Orchids. There are no weddings of note and no fashionable entertainments.

The florists complain very much because people of wealth leave town so early now—earlier every year. This entirely ruins the late spring trade, for many of the best flower buyers now leave New York immediately after Easter. Nor is it the flower trade only; window boxes, flower beds and vases, which were formerly planted each year, are now neglected, because no one is at home. Some of the city florists have places of business at Newport, where trade now is good.

Water Lilies are used a good deal this summer; the pink Cape Cod Lily, and also some of the exotic varieties, Lotus; too. Hodgson, who during the summer has a fine establishment at Newport, uses aquatic flowers quite extensively. When cut, the Lilies are best placed in a dark cellar. They are brought into the light when needed for use, and soon open.

Some of the finest baskets this summer have been made of Orchids and Farleyense Fern, usually the Marie Antoinette shape. Very often the so-called pot covers, pot-shape baskets of braided straw and Willow, gilded or stained, are handsomely filled with a loose mass of flowers; fine Roses are especially handsome so arranged. The taste in baskets is entirely for the simpler forms, though these are often quite expensive, through their fine workmanship. Very handsome ones are of braided straw and wicker, stained a metallic green. Pottery jardinieres and flower holders are very handsome, both in the majolica and newer tapestry ware. The favorite style in majolica usually imitates the Japanese.

The handsomest new thing in the nursery trade is certainly Peter Hendersou's strain of French Cannas. They are remarkably handsome; big Iris-shaped flowers of the most gorgeous colors. They will run Gladiolus very closely in public favor, once they are well known. Many of them show similar coloring to Ehemannii, but the spikes are always erect; others are brilliant scarlet and vermilion, and another strain is golden yellow or glowing orange, flecked with crimson after the manner of an Odontoglot. They are all dwarf in habit, with good foliage, and they are so remarkably showy and effective that it would be hard to say too much in their favor.

A good many of our growers show signs of being infected with the "aquatic disease;" Mr. Sturtevant's example seems likely to be followed in this line. The Sacred Lotus has proved so very successful out of doors in this latitude, that more are trying it. Certainly every local florist who can manage a tank or pond might make an effort in this line; let his customers see the glorious Lotus, a mass of stately flowers and noble leaves, and there is likely to be an increased demand for it. Most, if not all of the rarer tender Water Lilies can be bloomed well outside in the summer. An excellent method in vogue is to plant these tender varieties in tubs, which are plunged into the out-door tank or pond in June. It is very easy to take them up and lay them away for the winter where they will be free from frost. Some object to such a tank near the house on the ground of their mosquito producing propensities, but no larvæ will breed there if the tank is stocked with gold fish.

A good many of the men who handle Orchids and more who do not, say that the bottom is going to drop out of the market one of these days. It is almost impossible to realize the thousands of Orchid plants imported during the last two years, and still they come. Some of them have sold for extravagant prices, but that is only in the case of rarities, but well known varieties have usually brought low prices. Talking of Orchids, it is a little odd to see a well-known perfumer advertising Orchid perfumes, Vanda, Miltonia, Stanhopea, Anguloa, Galeandra and Calanthe. Whether made from Orchids flowers or not, one cannot tell—should rather doubt it—but they show the popular interest in these plants. The maker expects the Orchid fever to popularize them.

EMILY LOUISE TAPLIN.

We plant more trees than the whole of Europe.—*C. G. Carpenter.*

The cry is for a regulated market system for Grapes.—*Chas. Mitzky.*

I do not believe that any real bad person ever cultivated flowers.—*Hornellsville Farmers' Club.*

Ox-Eye Daisy. The progress of this weed west is about 25 miles a year.—*Mr. Albaugh, Miami County Horticultural Society.*

Apples for Central Illinois. The general opinion prevailed that for Central Illinois, the Wealthy and Pewaukee Apples were very good.—*Illinois Horticultural Society.*

Carbolic Acid for Curculio. I have been using lime and carbolic acid, and the neighbors complain I am driving the curculio to them.—*Prof. Dewitt, Ill. Hort. Society.*

Fruit Diet. Fruit is a natural diet for mankind; it gives tone to the system, color to the cheek, twinkle to the eye, and firmness to the muscles.—*Miss Lucy Gaston.*

Fruits at Northwest. The fruit grown in the Northwestern States, or which is likely to be grown there in the future, will probably be confined to the hardy varieties of Apples.—*T. T. Lyon.*

Refinement in Flowers. When I go by a house where flowers are well cultivated, I think there must be cultivation inside. When a man can sit down in his own yard and enjoy flowers, he grows better day by day.—*Hornellsville Farmers' Club.*

English Filberts. Browne—Two years ago I planted five, the last one of these is now barely alive. They mildew badly. Riehl—I got some from Philadelphia a few years ago, but they all died. Am now trying to grow them from the nuts.—*Illinois Horticultural Society.*

Strawberries in Illinois. Of the newer ones, Bubach and Haverland seem to be valuable. Hart's Minnesota is a large, productive berry of good quality, rather soft, but would be good for a local market Jessie, Belmont, and Monmouth are not productive enough.—*E. A. Riehl.*

Good Packing Pays. Common sense ought to teach a man that with the exhorbitant freight charges we have to pay, we get so much better prices for good packing that we not only save the freight on the poor Apples, but get a great deal more on the good ones than altogether would bring.—*C. Thorp, before Missouri State Horticultural Society.*

Blackberry Wanted. We need better varieties of the Blackberry; we have none that is entirely satisfactory. The Kittatinny is tender and too subject to rust. The Lawton is rather too tender and apt to turn red after picking. The Snyder is all right except that it is too small. A really good Blackberry that is hardy, healthy and productive is wanted, and if early so much the better.—*E. A. Riehl.*

Garden Work. Turnips will be sown July and August and Cabbage plants set in July. We have succeeded with the curled Savoy by setting the last of June. Lima Beans often need help in starting their race up the poles: tie them with a wilted straw. Pull up the old Pea vines and throw to the hogs, and no not let a crop of weeds take their place. If rich enough it will be a good place to sow a few Turnips by and by —*J. M. Pearson.*

Bird Lime for Thrips. Prof. Forbes, of Champaign, offers as a remedy bird lime, or oil sprayed on the plants. This makes the leaves sticky, and the bug when he alights is held fast and dies On some plants sprayed with oil they found thousands of these bugs dead a short time afterwards This insect sucks the nutriment from the plant and eats the pollen, so that it cannot fertilize. Hence the Strawberry buttons which we have in such abundance.

Making Home Attractive. Home and horticulture are extremely near neighbors. Where gardens and flowers are cultivated, a home is near—generally a home of culture and refinement. It may be very unpretentious, yet a home in the truest sense of the word. The criminal classes do not receive their early training in such homes Flowers were created for all—rich and poor alike, the mansion of the great and the humble cottage of the peasant. They fill the heart with hope and make life's load lighter in their culture.

Black Knot. I have successfully tried linseed oil on the black knot for the past three years. Applied it with a paint brush, daubing the knots which prevents the knots from increasing, while the trees keep on growing. Tried it on 40 trees where the knot had appeared, and had no trouble. We much prefer cutting off all the excrescence before applying the remedy; and have used chloride of lime and crude petroleum. But excision is the most reliable remedy, if used on the very first appearance of the disease, instead of first leaving it for months.—*Mr. Briggs.*

Cherry Culture. A. H. Gaston claimed that the Wild Red is especially valuable for grafting or budding; the stocks always remain larger than the grafts or buds. They are a great improvement on the little Dwarf Mahaleb stocks which are short lived and ought not to be used for propagating purposes. Capt. Augustine, of Normal, and several others could not grow seedlings from the Wild Cherry, and further contended that they have Mahaleb trees 25 and 30 years old, still bearing profusely. Dr. H. Schroeder added, as good varieties, the German Glass and the Oestheim, both hardy and good bearers.—*Ill. Hort. Society*

Influence of Home. The best education I ever had was what my mother gave me as I worked with her among the flowers. You can't start a real home without something to beautify it. We go to the flower garden to get the decoration for the grave and for the bride. Let one of the family pass through the flower garden; he can hardly resist plucking a flower here, pulling a weed there or helping a struggling climber to a firm hold. Suddenly his eye catches some new beauty; he calls some one else to admire it; then another member of the family is attracted to the spot, and before you know it you have a family gathering about one of the most beautiful alters God ever gave to man.—*Member of Hornellsville Farmers' Club.*

Lower Express Rates. The American Seed Trade Association has been appealing to the express companies for lower rates on prepaid express packages of seeds, and has been measurably successful. Ten of the largest companies in the United States have adopted a rate as follows, which took effect the first of June: Prepaid packages of seeds and bulbs may be carried at 10 cents for each package containing 1½ lbs. (24 oz) or less. When package exceeds 1½ lbs. in weight the charge is one cent additional for each two ounces, unless graduated rate is less. If the through rate exceeds $8.50 per 100 lbs, no package weighing over four lbs. will be carried at these rates. When passing over the lines of more than one company the charge is not less than 10 cents for each company.

Select Apples and Pears. P. Barry at meeting of Western New York Horticultural Society, named the following Apples as the best for Western New York, in which good judges will agree: Fall Pippin, Fameuse, Chenango, Gravenstein, Jersey Sweet, Maiden's Blush, Oldenburg, Stump, for autumn. And for winter, Baldwin, Esopus, Spitzenburg, Golden Russet, Jonathan, Northern Spy, Red Canada, Rhode Island Greening, Tompkins King. For Pears—Chas. Downing would take, if for one only, Bosc; next Dana's Hovey; then Tyson, Boussock, Sheldon, Anjou; and for market, Bartlett, Angouleme, Lawrence, Anjou, Winkfield. For larger collections, Dearborn's, Giffard, Manning's Elizabeth, Petite Marguerite, White Doyenne, Frederic Clapp, Madeline, Emile d'Heyst and Souvenir d'Esperen.

Enemies to Stone Fruits. The Plum borer attacks the crotches, but the larva has also been found in the wood, two inches under ground. It is dusky brown in color, and, in this connection, is different from the Peach-borer, and may be thus distinguished. They spin small webs, in which they pass the winter, and emerge in the spring as moths. The species seem to be single brooded. A minute beetle, that preys under the bark, bids fair to become destructive to stone fruits. The female excavates extensive galleries under the bark. The young larvæ move out to right and left, quickly destroying the trees by girdling, when numerous. The adult seems not to be largely migratory. Prompt destruction by burning infested trees seems, as yet, the only feasible means of destruction. In Europe, many parisites infest the pest, but in this country only one parasite has yet been observed to do so.—*Prof. Forbes, before Illinois Horticultural Society.*

Cheap Evaporator. At a small expense I made a dryer which has done good work. I laid up a brick wall of three sides, about thirty inches square and three feet high, inside of which I placed an old box stove, of large size, and on top of the brick work I set a box 27 x 28 inches inside, and about five feet high above the brick work, with a door in front, which, when open, would admit ten sliding trays 27 inches square. These trays were made of light basswood frames and mosquito netting tacked on the under side of the frames—although they could be used either side up. The netting required replacing once during the season. In the evening my son or hired man would pare about a barrel of Apples in an hour, one other person and myself would trim the ends, cut the Apples half in two, and our two little girls, aged seven and nine, would spread the fruit on the trays and I would slide them into the dryer. In this way we usually filled the dryer in sixty or seventy minutes. We endeavored to have the temperature 150 degrees, and about 120 degrees after the fruit was partially dry. We had a ventilator, 6 x 27 inches, near the top which could be opened or closed as desired, but should always be kept open while in use. At bed time we filled the stove with large wood, closed it tight, and in warm, dry weather our Apples would be nicely evaporated in the morning. Out of this little cheap dryer we have taken over seven barrels of nice evaporated Apples well pressed down, over two barrels of Peaches, besides Currants, Corn, etc. I should have said that this dryer being one inch longer from front to back than the trays, it admits of a space of one inch at the back of the first tray, and also at the front of the second, and so on alternately. I have found this better than a half inch space in front and back of each tray.—*Mr. Arnold, before Michigan Horticultural Society.*

Principles of Crop Feeding.

[*Extract of paper read by Prof. W. O. Atwater before the Massachusetts Horticultural Society.*]

In the following are given some of the fundamental principles of plant nutrition as applied to the ingredients of the food of plants, their sources, application, etc.:

1. A part of the food of plants comes from the atmosphere; the rest is furnished by the soil. If the available supply of any one of a number of substances needed for plant food be too small, a light yield is inevitable. If, for instance, all the other conditions for a profitable crop of Corn or Potatoes are fulfilled in the soil, except that potash is deficient, the crop will surely fail. But if the potash be applied the yield will be abundant.

2. The most important soil ingredients of plant food are potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, chlorine and some compound of nitrogen. Plants also take silica, soda, and some other materials from the soil, but these are needed only in minute quantities, or not at all.

3. In removing crops from the soil we take away plant food. This is the chief cause of soil exhaustion.

4. Soils vary greatly in their capabilities of supplying food to crops. Different ingredients are deficient in different soils. The chief lack of one may be potash, of another phosphoric acid, and of another several ingredients, and so on.

5. Soils fail to furnish enough of food for crops chiefly because the materials are not in available forms. A soil may have thousands of pounds of phosphoric acid within reach of the plants, but locked up in fragments of rock so that the roots cannot absorb it, and then the crop will fail for lack of phosphoric acid.

6. The sterility of many soils is due more to their mechanical condition, their texture, and relations to heat and moisture, than to lack of plant food. Such soils want amendment first and manures afterwards. Some soils will give good returns for manuring; others, without irrigation, or amendment by draining, tillage, the use of lime, marl, or muck, etc., will not.

7. The chief use of fertilizers is to supply plant food which crops need and soils fail to furnish.

8. The indirect action of applications in improving the mechanical condition of the soil and rendering its stores of plant food available, is often very important. Hence lime, plaster, etc., are frequently more profitable than fertilizers.

9. Plants vary greatly with respect to their demands for food and capabilities of gathering it. Hence, the proper fertilizer in a given case depends upon the crop as well as upon the soil.

10. The only ingredients of plant food which we need to consider in commercial fertilizers are potash, lime, magnesia, phosphoric acid, sulphuric acid, and nitrogen. Of the list, magnesia is generally abundant even in "worn-out" soils. Sulphuric acid and lime are more often deficient

and hence one reason of the good effects so often observed from the application of lime and plaster. The remaining substances—the phosphoric acid, nitrogen and potash—are the most important ingredients of our commercial fertilizers, because of both their scarcity in the soil and their comparative high cost

11. The chief use of commercial fertilizers—such as guano, phosphates, bone, potash, salts, and special fertilizers prepared by formulæ for different crops, is to supply nitrogen, phosphoric acid and potash.

12. These materials are expensive, but the right ones in the right places are nevertheless very profitable. But the same fertilizers in other cases bring little or no return.

13. It is not good economy to pay high prices for material which our soils themselves may furnish, but it is good economy to supply the lacking ones in the cheapest way. Farmers cannot afford to use commercial fertilizers at random, nor to have their crops fail when a small outlay for the proper fertilizer would secure them a bountiful harvest.

14. The only way to find out what our soils want is to study them by careful observation and experiments. Success in farming as in other business requires the use of brains.

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

THE GROWTH OF ROOTS: ILLUSTRATING ARTICLE ON "MODERN FRUIT CULTURE IN ENGLAND."

Modern Fruit Culture in England.

[Abstract of paper read before the Rochester (England) Farmers' Club, by Mr. George Bunyard.]

The drawback to successful culture of fruit in England is undoubtedly the want of quality in our produce, either in size, color or condition, due not so much to the fault of the cultivator as to the want of propitious seasons, and to a general absence of combined sunshine, or an equality of temperature and the want of rain at the right time. Abnormal seasons we cannot prevent, and it is to a different system of culture that we must, I think, look to gain all possible benefit from the little sunshine we do have, and to store up its effects.

What I venture to call the modern system consists of growing trees on surface-rooting stocks, which, I believe, have not yet been fully or largely tried in this country. I have taken up a few Pear, Quince, Apple, and Paradise stocks to illustrate my remarks. The Pear stock (fig. 1) produces few but strong forked roots with a minimum of fibres, and its appearance justifies our practice in using it for orchard trees, as the strong roots act as anchors to secure the tree in its position, and to enable it to bear the weight of its crop.

In the Quince stock (fig. 2) we find the conditions reversed, and the fibres outnumber the anchor roots and are predominant, while again, if we take the transplanted Quince stock (fig 3) we get the fibres still more developed. In the Crab Apple stock (fig 4), we see the same process as in the free Pear stock (anchor roots with a few fibres). It is this which is used for the Apple trees prepared for orchards, and it is eminently suitable for the purpose. In the Paradise Apple (fig. 5) we get again the same surface root and fibres that the Quince stock presents.

Surface roots must receive the benefit of the rains, sun and air more than the anchor roots, which are, by reason of their position, more removed from such benign influence. We find by experience that Pears grafted upon Quince stock and Apples upon the Paradise stock can and will produce handsome, clean, well-colored and full-flavored fruit even in adverse summers.

Hitherto this culture has only been carried out in gardening work, and I fully believe that the agriculture of the future must find its profit in gardening methods, if we are to keep the hardy fruit trade in British hands. The practice of winter manuring has done much to increase our crop and induce quality, and I would go further, and give also a top-dressing in May or June of long dung fresh from the stable, or of London dung or moss manure. This latter is, I think, the best for our purpose; it is easily carried on to the land in baskets, and as it contains a large proportion of urine and ammonia, it is quick in action and effective for its purpose Liquid manure is most valuable, and can be applied at any time, but to best advantage in May or June.

If care and attention to mulching be carried out on existing orchards, a marked improvement would soon be manifested, and it would have the effect of bringing up the surface roots, which would be more amenable to treatment, and within the influence and warmth of the sun. I am of the opinion that it is in the direction of more careful cultivation, combined with vigorous pruning of the branches, and also attention to the thinning of the fruit that we must look for improvement in our orchard plantations.

I feel sure that plantations of dwarf trees alone or dwarfs with standards at 30 feet apart will be the orchards of the future. Before embarking largely in this modern culture a trial orchard can be started with, say ten trees each of twenty sorts. The beneficial effects of heavy manuring are frequently seen in our Strawberries Gooseberries and Raspberries in the garden, and I think much more of this must be done. I should only advocate free cropping sorts for the dwarfs. Much expense is saved in picking, by no ladders being required; and the land must be good for fruit growing or it had better be left alone.

Garden Vegetables: Discussion on.

[From the Proceedings of the Massachusetts Horticultural Society.]

William D. Philbrick said in regard to growing good late Lettuce, that in a soil naturally moist, as for instance in peat land, he had met with good success, although in a warm, dry soil it is not to be expected. He recommended White Egg Turnip as the best for the table. It is a French variety. This may follow a crop of Peas if the land is rich enough, but otherwise should be sown earlier. One ought, in most cases, to get a succession of crops in one season from the same ground; the land might be made to do double, or even triple service in our kitchen gardens as well as in our large market gardens. It is only necessary to plant the first crop early enough, and sometimes the second crop can be planted before the first is off. Squashes might thus follow early Potatoes. If the Potatoes are of the early kinds, the Squash vines would generally overrun the Potato vines when these were done growing.

W. W. Rawson advised the cultivator to grow their own plants and sell to others rather than buy from others. He said that in the growing of Celery, flat culture is preferable; the formation and growth of suckers is to be encouraged, as it adds fullness to the head. He had found the Boston Market, or strains derived from it, to be as good as the crimson Celeries for winter keeping. Boston Market is inferior in vigor of growth to the later strains; as compared with the Arlington, for instance, it gave not more than one half the yield. Successive crops should be taken from the same ground, in one season. Crops so raised cost no more, if as much, and it would be even easier by this plan to keep the ground in a neat and attractive condition

George A. Tapley said he had planted Beans as early as the 15th of April: a portion of the same seed planted ten days later came along at least a week behind that planted first. He had grown Beets in forty-eight days from the seed, and Squashes in sixty days from the time of plowing the land. He had often raised three crops of Beets and sometimes taken off a crop of Spinach besides, making four crops in one season from the same ground. He sowed the Spinach between the rows of the first planting of Beets and removed the Spinach, all at once, about May 25th, sowing the second crop of Beets the same day. The first crop of Beets was harvested the 29th of June. On the 10th of July, the first crop of Beets being off and the second growing, he plowed for and planted the third crop of Beets between the rows of the second. Mr. Rawson understood from this that Mr. Tabley got only two crops of Beets—two half crops and one whole one, and Mr. Tapley agreed that it did not show successive crops out of the same rows, but still thought the ground had yielded three full crops of Beets by the method of successive plantings in alternate rows.

In reply to an inquiry about Cauliflower culture, Mr. Rawson said the best cultivators do well if they succeed with Cauliflowers three times out of four. There was one season, about five years ago, when every one succeeded, and since then scarcely any one has. This result, he thought, was not from any fault in the seed; it was probably due to lack of moisture. Any prolonged period of drought, even eight or ten days, unrelieved by artificial watering, is very detrimental to this crop. His own success was attributable solely to having provided the watering just when it was needed. He had previously stated his experience with a field of three acres which was on the point of suffering from drought, and was relieved and made largely profitable as the result of a single extensive watering. He would also recommend the use of potash—not in a small way, but liberally; a ton to the acre would not be too much. An inch of water once a week will be readily utilized by the plants.

William E. Endicott, though disposed to consider that the green-fleshed Melons, as a class, are superior in flavor to others, instanced amongst orange-fleshed varieties, Shaw's Superb, which he thought as good as any of the green-fleshed kinds. This variety grows very even in quality scarcely any are medium or poor. He also commended the Butmau Squash as of fine quality and an excellent keeper. He had kept one of these in perfect condition for a year and a month and twenty-one days.

James J. H. Gregory said he has an island under cultivation, off Marblehead, where the atmosphere is cooler than on the main land, and Cauliflowers there grow to extraordinary size. Experimental gardens give very disappointing.

results as regards this crop, both in respect to its growth in the heads and its yield of seed, which latter varies from sixty pounds to the acre down to a teaspoonful. In some kinds the seed wholly fails to form, this being quite common with the foreign sorts. Some sorts have an abundance. He preferred the salmon-fleshed Melons to the green-fleshed kinds, as being superior in quality. Many Melons are no better than Pumpkins, especially the early ones and those brought from the south. Melons should never be gathered till the stem has "sprung"—that is, parted from the fruit—more or less. The public should be educated to know the taste of Melons in a state of perfection. We can, if we will, produce the musk varieties to the very best advantage and so as to command the market to the exclusion of all competitors; but the present practice of gathering the fruit half-ripe spoils its quality and hurts the market for the native crop.

The Butman Squash should be allowed time to harden its shell before gathered; it should have the whole season for it, and should have an abundant provision of manure. It is rather a shy yielder, but if purchasers would pay proper prices it could be more generally raised and brought to market. He thought the subject of proper fertilization was one on which much that had been published was very unreliable. He gave as an instance the extravagant commendation of kelp as a fertilizer, which was diligently put forth some twenty years ago, though now generally forgotten. It came from a man who had the imagination of a poet and missed his calling. The speaker would lay down one general principle; supply phosphoric acid to the land, and it will not leach away (unless on very sandy soil); on fair tillage land it will stay until taken off in crops. Mr. Rawson confirmed the statement as to the inferior ripeness of the Melons commonly offered in the market by our gardeners; but thought it impossible to do any better with the native or common kinds. He recommended the Montreal green-fleshed Melon as firmer in texture when thoroughly ripe than the common kind, and as bearing handling with less injury. In reply to the question whether Arlington men could raise a hundred bushels of Spinach on twelve hundred square feet of land, Mr Rawson said that that product could be attained anywhere with plenty of fertilizer and moisture. Mr. Endicott called attention to *Stachys tuberifera* as a new vegetable highly prized in France. His opinion of it was not high. The tubers are small, deeply creased, and very difficult to keep over winter except in the ground, it being hardy.

Practical Methods in Drainage.

[Abstract of address by Prof. G. E. Morrow, before the Illinois Tile Makers' Association.]

Free flow of water at outlet is the first consideration. Good depth is important, but not so essential as this. Having outlet covered by water at times, as in streams, is objectionable, but is less so than is often supposed. Such drains should enter stream in nearly the direction of current—not at right angles to this.

Main Ditches. Often the outlet on the farm or near by is an artificial open ditch. Frequently the most important first work in drainage is to open or straighten the natural water channel. On prairie lands these are often twice or thrice the length necessary, thus reducing fall or checking flow. Open ditches, with rare exceptions, should have very sloping banks, with earth taken some distance from the edge. Road ditching and grading is often badly done—leaving holes in the lowest places, with little care in providing outlets from these. The road ditches must often be outlets for the farm drains. The main ditches should be first planned and dug, generally following lowest land, avoiding sudden curves and unnecessary windings.

Side Ditches. The laterals usually should follow any side depressions. Their direction will depend largely upon the slope of the land. For wide, nearly level tracts, it is better to have two, three or more lines parallel to each other than to have one main drain with short ditches at right angles to this. To drain a pond, go to it and through it often, with little regard to direction of other drains. Sometimes cross ditches toward the upper end of a marshy tract, with one main through the center, will do as much work as several lines lengthwise the marsh.

Depth, size of Tile, etc. As to depth we often must do as we can, rather than as we would like. Three feet is a good depth. If the land slopes to the drain from either side this is often as good as more. There is no need of having a main designed simply to carry water, deeper than three feet. Where there is almost impervious sub-soil, extra depth is of little advantage. No accurate rule can be given as to size of tile needed. The slope of the surface, rate of fall in ditch, depth of ditch, porosity of soil, character of tile and rapidity of rainfall, all have effect. It is needless to provide for instantaneous carrying off of exceptional rainfall. Little harm and some good comes of having lines of tile overtaxed for a short time. Tile larger than is needed cost more and are not so good. It is a common mistake to lay too small tile in main drains; almost an equally common one to have upper end of side drains larger than necessary. A long line of tile of same size is either too small or larger than necessary at upper end. There are places where a well-laid two-inch tile is as good as one of ten inches. The rule that tile carry water in proportion to square of their diameter is not strictly correct—large tile carrying proportionately more. It would be safe to let five lines of five-inch tile discharge into a ten-inch main. In our prairie lands, there is little danger of getting too much fall, but very slight fall will answer with careful laying. A line of tile without any fall, but with good outlet, would have some flow. The larger the tile the less the fall needed. When there is slight fall, it is better to sacrifice a little in depth to increase the fall. Uniform fall is better than making changes. Generally, the safe rule in practice is to take all you can get and not stop because there is little.

Leveling. For determining the rate of fall and depth of ditch, a good "level" in the hands of a man with some training and experience is the only absolutely safe method. When there is much work on very level ground, it is good economy to secure services of a competent engineer. This is not an essential in many cases. Simple devices may be substituted with success. Flowing water in the ditch can be made a safe guide. When the surface has fairly uniform slope a tightly stretched line above the ditch may be depended on. A straight edge with upright and "bob" may be used. Accurate leveling with exact statement as to depth of ditch at stakes even ten feet apart will not secure a well graded bottom. Ditchers often make mistake of measuring from the surface, raising or lowering the bottom with the roll of the surface.

The great mass of our ditches are still dug by spades. Inexperienced ditchers are apt to make a ditch wider than necessary. One foot at the most is all that is needed at the surface for a three-foot ditch, this sloping inward to the size of the tile. If the soil is so hard as to require the use of pick more width will be required.

Tools. Two spades and a "scoop" or tile hoe, are all the tools essential to good work. The plow can sometimes be used to good advantage. There is good promise of successful ditch-digging machines; little, I fear can be expected of tile-laying machines.

Laying Tile. There are some advantages in completing ditch, and commencing laying tile at upper end. For long lines it is, in practice, often better to commence at the outlet. Usually it is best to have the layer stand in the ditch. Get the tile as close together as possible. The outlet should be protected. Having a plank box drain at outlet often works well. A coarse screen over outlet is desirable. Side drains should enter mains at slightly higher level. Tile with "joints" for entering drains are much better than relying on cutting for an opening. The tile should always enter at an acute angle. The tile should be covered at once. There is little danger of filling the tile by the loose earth entering, if they have been well laid. The plow can be used to advantage in this work. Where ditch passes through hedge row or near trees it is well to cover the joints with scrap tin or iron, or even to use larger tile as collars, to prevent entrance of roots. Silt basins are often desirable at junction of different lines, or where there is marked decrease of fall. If not kept cleaned out or if surface water can flow in at top, they may be worse than useless. Long lines of tile may often be of great value in giving supply of water for stock.

A difficulty is in getting and keeping a clean and easy approach. It is better to have the watering or basin at side of the line of tile, connected with it by a line. Thus the main line will not be effected, even should the stock trample up and for the time destroy their drinking place.

Quality of Tile. Not all tile makers are perfect and sometimes they make quite too much use of the color, degree of burning or of glazing of their tile. Given tile made of any fair clay, straight, smooth on inside, free from flaws, with ends at right angles to sides, and fairly well burned, I count glazing or extra hardness, of little importance. If there is competent supervision, paying ditchers by the day is usually better than payment by distance. The prices charged by professional ditchers are frequently excessive. In good soil, three foot tile drains can be completed for 25 cents a rod.

Hardy Ornamental Shrubs for Gardens, Lawns and Hedges.

[Paper read by Jackson Dawson, gardener at the Arnold Arboretum, before the Massachusetts Horticultural Society.]

What shrubs can be called perfectly hardy in our rigorous New England climate? Such shrubs as would live and grow and flower in any ordinary, well-prepared soil without any protection whatever, either by covering or by being planted in a sheltered position, and that when once properly established, would, with ordinary attention, give satisfaction to the planter.

There are many of our finest shrubs that do well if care is exercised in the selection of situation and soil, or if they are protected for a few years until well established, that would not do well otherwise, but these could not be termed hardy, neither would they give satisfaction to the general planter, who, as a rule, knows nothing of the care required to bring such plants to perfection.

Many in planting new places procure catalogues and make out their lists from them, selecting all that is represented as most rare and showy, or they may have made their list from plants that they have seen in some exhibition, never thinking that they require any extraordinary care in situation or culture to produce such specimens as they have seen at the exhibitions. Now this all a mistake, for many catalogues are deceptive, and the sooner nurserymen and others learn to send out correct catalogues, the better it will be for all.

The public want trustworthy information, and the catalogues of nurserymen and seedsmen are good places to give honest descriptions of plauts, and if they have any weak spots to point them out, stating whether they need protection or a special situation, and in what way. This would not lessen the sale of this class of plants, and people would plant intelligently, knowing the places or positions where they would succeed.

The object of this paper is to give the names of such as under ordinary conditions have stood the test of cold and heat, or as many of the best of them as there may be room for, and these will be ample to select from. Many of them are natives of our own woods and fields, and compare well with their allies from other climes, whence we import them at so much cost. For many large as well as small places they can be used to great advantage, giving a finer general effect throughout the year than many of the exotics.

Before passing to the general list the essayist glanced over the field to see what we have in our own country. What, he asked, can be more beautiful then the Kalmia (Mountain Laurel) clothing our hills from Maine to Georgia? or our swamps of *Rhododendron maximum*, or our mountains covered with *R. Catawbiense*? or our native Azaleas, such as *calendulacea*, with flowers varying from yellow to flame color; *arborescens*, with its snowy white and pink flowers and scarlet stems; *viscosa*, which fills our swamps with its white fragrant flowers, or *mudiflora*, that grows so luxuriantly on some of our dry hillsides.

Equally beautiful are our fields of Rhodora, with its purple bloom; our Viburnums, with their corymbs of pure white flowers in summer, followed in autumn by their many-colored fruits, from scarlet to purple, which in some species last well into winter, enlivening the season when nearly everything else is past.

Then there are our Cornuses, with good flowers and blue and white berries, and many-colored woods, cheering even in winter; the Wild Roses that bloom from June to August; the Sumacs, with their fine tropical foliage and brilliant colored seedheads; the Wild Plums, especially *maritima* and *pumila*; the many species of Thorns, which are beautiful both in flower and fruit; our Spiræas, white and purple: the White Fringe; the Clethra, with its fragrant white flowers from July to September; the Holly and the Black Alder, which are most beautiful, if fruiting spec-

imens are selected, the fruit holding on well into the winter. Even now a specimen in the Arboretum is as brilliant with its scarlet fruit as in October. The Ink Berry is a fine evergreen shrub. Especially ornamental as under shrubs are the Halesia (Silver Bell or Snowdrop tree). The Andromedas and the Huckleberries and Blueberries are all useful and nothing can excel their rich autumn coloring. The Shad Bush (Amelanchier) is almost the first shrub to blossom in our woods, and the Barberry, with its fragrant yellow flowers and scarlet fruit, is very ornamental; and so are the Wild Honeysuckles, with scarlet and orange flowers. Other beautiful native shrubs are the various species of Philadelphus, Potentilla, Hypericum, Rose Acacia, Elderberry, Indigo shrubs, Ampelopsis, Bitter Sweet and many others, many varieties of which are easily transferred from their native haunts to the lawn for permanent

Mr. Dawson next gave a general list of hardy shrubs, beginning with the Clematis, of which he named the following species: *Virginiana*, white, a climber; *Pitcheri*, dark purple, flowering all summer; *crispa*, pale blue, fragrant; *Verticillaris*, with large, pale purple flowers; *Vitalba*, the travelers' joy of the English, white; *graveolens*, yellow flowers in late autumn, the seed pods very showy; *Davidiana*, fine porcelain blue, fragrant flowers, resembling minature Hyacinths; *robusta*, white, one of the finest of the late blooming species. The varieties of *Jackmanii* and other garden varieties are too well known to need more than mention.

Xanthorhiza apiifolia is a beautiful low shrub, with chocolate-colored flowers and autumn foliage.

Most of the varieties of *Pæonia Moutan* are hardy, with fine, showy flowers.

The *Calycanthus floridus* and *lævigatus* (Allspice bush) are desirable for their fragrance.

Schizandra Chinensis is a fine climber with fragrant flowers and scarlet fruit.

Of the Moonseed we have three species, *Menispermum Canadense*, *Dauricum* and *Japonicum*; they are good plants for covering posts or small arbors, the foliage being of a rich green.

The *Akebia quinata* is also a fine vine for rock work or trellises.

Of the genus *Berberis*, the best are *B. Canadensis*, a native species; *B. vulgaris* and its varieties, with yellow, red, purple and white fruit; and the variety with purple foliage. *B Thunbergii*, a fine low-growing species from Japan, is one of the best of all, being brilliant all winter. *B. Sieboldii*, known in gardens as *B. Hakodaka*, is also a good one.

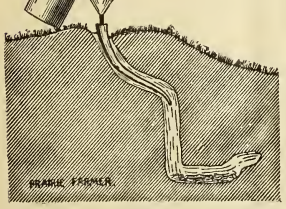
Iberis coriacea and *Alyssum Cneorum* are dwarf shrubs, with white and yellow flowers.

Hudsonia tomentosa and *H. iricoides*, two native shrubs, when once established, will grow in the most exposed places.

Hypericum Kalmianum and *H. prolificum* from Lake Superior, and *H. aureum*, from Tennessee, are the best of the genus and bloom well during the latter part of the summer.

Actinidia polygama, a strong rampant growing vine from Japan, has white flowers and light, green edible fruit, in size like a large Grape.

Zanthoxylum Americanum (the Toothache tree), and *Ptelea trifoliata* have inconspicuous flowers,



Use of Fuma Carbon in killing ground Vermin.

but grand foliage, and the fruit is ornamental.

Of the Holly family, which are hardy, we have *Prinos verticillata* (Black Alder), with both red and yellow fruit, *Ilex lævigata* and *I. glabra* (Ink-berry), with black fruit and evergreen leaves; also *Nemopanthes Canadensis*, with rosy purple fruit.

(To be continued.)

CONDENSED GLEANINGS.

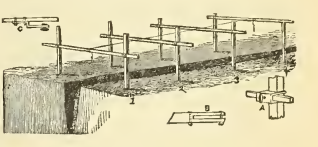
Laying Out Tile Drains. Prof. Carpenter gave in Drainage Journal the following illustrated method for laying out ditches and leveling the bottom. If no survey has been made we can use the following method to determine the fall and the grade line: At No. 1 in illustration we set our first cross-bar and stakes so as to give a depth of four feet. At the farthest distance that can be seen we set another cross-bar and stakes so as to give us the required depth at that point, say three feet. To find the fall between these two we have only to sight over a level of any construction, from the first cross-bar to the last, and measure the intersection of this sight line to the cross-bar, which will serve to show if we have any fall or not. After we find that there is sufficient fall between the two cross-bars, any number of intermediate ones can be set by sighting, and accurately too. Leave these in until the tile are laid under any given one and you will find the work done with all the accuracy needed, and in much less time than if you had attempted any method which depended on leveling the bottom itself. Subsequently Prof. Carpenter has recommended the stretching of a cord tight over the top of the cross-bars, and to measure from the cord to the bottom of the drain to determine the level required for the bottom of the ditch. It is also necessary to have a tight line near the surface of the earth to guide the ditcher in setting the ditching spade. It is desirable to have the sides of the ditch even and straight from point to point at top and bottom, and especially so in the bottom.

Fuma Carbon Bi-Sulphide. Prairie Farmer calls attention to this as a vermon killer, and illustrates how it is applied to the burrow of an animal, (prairie dog in this instance). The sulphide should be introduced well into the hole by means of a rubber tube, being poured into a connecting funnel from a can as shown. After half an ounce or more of the sulphide is run in, the tube is withdrawn and the hole covered with earth. This liquid boils at 118° F.; and, the half ounce of it quickly diffuses itself throughout the burrow, and acts the same as chloroform would do. Indeed, bi-sulphate of carbon could be used as an anæsthetic, except that its odor is not too agreeable. The vapour is not dangerous when breathed in the open air, but should not be breathed in a close room. For rats: Send the liquid well into the hole, and stop it up. For weevils, etc.: Half an ounce per ton of grain in a closed bin is sufficient. Saturate a cloth with the liquid. For ants, etc.: Put a dose in the hole and cover it up. The fuma carbon bi-sulphide is not poisonous, nor will it injure the skin or clothes. If the vapour is inhaled in the open air, it will not effect the operator. Keep it in a cool place and away from the fire.

Brussel Sprouts and Savoys. Many people object to Cabbage and even to Savoys—Cauliflower they have found uncertain in our climate, and hard to grow without the aid of glass. For a delicate form of Cabbage, Brussels Sprouts are to be commended. They require a rich soil, and if success is expected they must be abundantly fed. The seed should be started early, and the plants should receive the same treatment as Cabbages, but the sprouts last all summer, and should be placed where they can have the whole ground for the season. The plants grow with a large, loose, Cabbage-like top and a tall stalk below, over which Cabbage-like heads form, which can be gathered all summer and until the hard frost of the north may destroy them. In Virginia they usually endure the winter, and furnish an abundance of greens when planted late in summer. Boiled in clean water and dressed with cream, the little heads make a good substitute for Cauliflower. The plants grow tall and top-heavy, and in small gardens it will pay well to stake and tie them up.—W.F. Massey in G. and F.

Preserving Apples and Pears. My aim is to keep them in condition some months longer than can be done on fruit-room shelves and on warm dry boarded floors. I prepare a mixture as follows: 2 or 3 bushels of cocoanut fibre, 1 lb. of powdered charcoal, 1 oz. of powdered sulphur, and ½ oz. of salycilic acid, all duly mixed. Place a layer of this about 1 inch thick on the damp bricks or stones in as cold a cellar as you have—temperature, say, 35° or 40° at this time of the year—then spread out the fruit evenly, then more of the mixture just to cover the fruit, and another layer of fruit and so on. The fruit must be hand-picked, and treated as tenderly as eggs. My Jargonelle Pears are picked just before they begin to spoil on the trees, and before the birds spoil them. The ripening of the fruits will be retarded by their being placed in these antiseptics on the cold, damp floor of bricks or stones; the materials must be damp but not wet. I consider this as following Nature as nearly as can be.—Cor. Gardener's Chronicle.

Exposing House Plants to the Sun. One of our floral writers calls attention to the danger of letting the pots in which our plants are growing being exposed to the sun. We doubt if there are not many of The Rural's readers who have never thought of that. We confess that we never realized the danger as much as we have since reading the article of this writer. The fibrous roots soon grow to the side of the pot, and these are baked in full sunshine, trebly hot coming through



CUT TILE DRAIN LAYING.

glass which condenses its rays. The root tips are soon killed. The whole ball of the earth is baked over and over daily, and yet people wonder why they don't succeed with house plants. Shade the sides of the pots always, either by plunging in a box of sand, moss, cocoa fibre or ashes, or place a thin board on edge across the front of the plant shelf that will come almost to the top of the pots. A good way to screen them is to set each pot in one two sizes or more larger, filling the space with moss or sand.—Western Rural.

Peach Yellows. According to my observation the Peach is less liable to disease under high culture than when neglected, or on poor soil. On the principle that yellows will appear under all conditions, many growers give the tree little or no attention, depending upon one or two good crops for profit before the disease attacks them. This is opposed to systematic good culture, and to the careful orchardist is especially repulsive. If cultivators generally would study the practical part of the subject, and note the conditions under which the disease appears, and is increased, they might render valuable assistance. The yellows is no respector of varieties or places. Where it finds proper conditions for development there it operates and continues its work of destruction. However, we can unite upon the heroic rooting-out and burning of any infested trees as soon as the disease is discovered.—Josiah Hoopes in New York Weekly Tribune.

Roses Not Blooming. Mr. John Thorpe, during a brief visit to the Rural grounds, pronounced some half a dozen tall Rose bushes to be Manetti Roses. We had never suspected it, not being familiar with this Rose, which is used chiefly for stocks upon which to bud other Roses either of feeble constitution upon their own roots, or those that will not readily root from cuttings This Manetti is a very shy bloomer. It always has as many as seven leaflets—rarely nine. It may be known by this characteristic Have you any Roses in your collection, readers, that do not bloom? Perhaps in your case, as in ours, the varieties budded upon them have been winter-killed and the Manettias, which are great to sucker, have grown up in their stead.—*R. N. Y.*

Rolling Onions not Recommended. Some three years since as my Onion tops began to go down I, for trial, forced down the tops of a number of rows. In harvesting the crop I measured the ground and the crop, also a corresponding amount adjoining, and found a decided difference in favor of letting nature do her own work, which I have always done since. The present season, soon after Onions began to mature and the tops to break down it commenced to rain and continued at intervals for two weeks. The Onions commenced a new growth. It seemed necessary to roll down the tops, but this had only little effect, as the growth continued.—Farm Life.

Secret in Growing Roses. A congonial soil is first requisite for success. That in which the Rose delights more than any other is a deep, rich, heavy loam, moderately moist The Rose is a gross feeder and will at all times resent neglect. Poor soil will not yield good Roses. No, not even poor ones. A liberal supply of plant food is absolutely necessary. The amount of flowers is proportionate to the growth of the plant; they will appear just as fast as the wood is produced

that bears them, and the wood is produced according to the supply of plant food furnished — American Agriculturist.

Wistaria as Standard. During the month of May the visitor will be most especially impressed with the very handsome Wistara that are planted through the grounds and many of which are grown as standards. One in particular is alone worth a visit, and could a photograph be taken from it when in full flower, many now ignorant of the possibilities of this plant would be surprised at its rich appearance. Some idea may be had when it is stated that it was covered by hundreds of clusters of flowers, in such profusion that few of the leaves could be seen.—A. E. Whittle, in American Florist.

Seed Growing on the Pacific Coast. The seed trade appears to be destined to a very great expansion in California at a not very distant period. In the single county of Santa Clara, not less than 1,200 acres are now devoted to the production of garden seeds. Over 60,000 lbs. of Lettuce seed, and 120,000 lbs. of Onion seed have been shipped east from these grounds in a single season. The rapid increase of business in California indicates that on at least of the great centres of the seed business is to be in this State.—Soc. of Arts Journ.

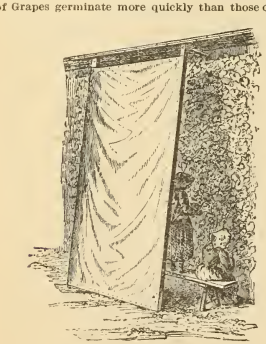
Look After the Weeds. Burdocks, Yellow Dock, Mullein, and the like, should be cut off with a hoe just below the surface. Poke root and Skunk Cabbage should be cut early and often. Thistles should be continually cut till choked out. Allowing weeds to go to seed in various places on the farm does not pay, although it yields a large return in trouble in fighting weeds.—Mass. Ploughman.

From Parks and Gardens of Paris we take the annexed illustration of a shade or screen intended to shield the Grape thinners from the strong rays of the sun during their work. Such an appliance is especially sensible for European gardens where Grape vines are so often trained against high walls, exposed to the noon sun, and might be found useful in other ways besides viticulture.

Mildew of Gooseberries. One cause for mildew on Gooseberries, Grapes, etc., is too thick foliage or being grown with too thick tops. Thin out thoroughly and you will prevent mildew to a great extent. Currants and Gooseberries should be well and heavily mulched with coarse litter.—Indiana Farmer.

Apple Exports. More Apples have been shipped from America to Europe the past year than ever before in a single year, the total being 1,401,381 barrels. The largest previous shipments were in the year 1880-81, when the exports reached 1,228,706 barrels.—Mass. Plowman.

Germination of Grape Seeds. A French horticulturist has found that the seeds of the finest varieties of Grapes germinate more quickly than those of the



Shading for Grape Thinning.

commoner sorts, and that seeds fresh from the fruit germinate better than dried ones.—Indiana Farmer.

Shipping Potted Roses. Matthew King plants a few grains of Rye in pots from which the earth is to be turned in a ball for shipping. The matted roots of the grain very effectually hold the mass together.—California Florist.

Flea Beetle on Potatoes. The unleached wood ashes have the effect of repelling the flea, but it is necessary that every leaf should be covered underneath as well as on top to give perfect protection.—R. N. Yorker.

Thinning. It will pay to thin Apples when large fair, even fruit will bring twice or three times as much per barrel as the small ones.—Western Rural.

Evaporated Apples. The production of evaporated Apples in this country in 1888, is estimated at 300,000 50-pound boxes. About 88,000 boxes were exported.—Western Rural.

Love's Labor Lost. Attempting to mend a half worn-out, old orchard by filling in vacant spots with young trees.—Farmers' Home Journal.

Preserve Freshness. Leave no vegetables exposed to the hot sun after they are gathered.—American Agriculturist.

Pulling off Grape leaves is as bad as to let the bugs destroy them. Corr. Country Gentleman.

Dead grass and leaves should never be burned.—Garden and Forest.

Vegetable Products on the Table.

Squash Pie. One egg, one pint of milk, one cracker rolled fine, one cup of sifted Squash sugar, Nutmeg and Cinnamon to taste.

Spiced Plums. One gallon Plums, one pint vinegar, one quart sugar, Cinnamon and Cloves whole. Boil several hours and seal.—Md. Farmer.

Spiced Currants. Six pounds of fruit, four of sugar, one of seeded Raisins, one pint of vinegar two tablespoonfuls of Cloves, three of Cinnamon and one of Allspice. Boil slowly one hour, stirring constantly.

Vegetable Soup. One pint of vegetables, including Turnip, Carrot, Onion and Celery; cut into small pieces and boil one hour in water enough to cover. Add one quart of clear stock, a little more salt; boil a few minutes and serve.—Am. Rural Home.

The New York Sun Cholera Mixture. Take equal parts of tincture of Cayenne, tincture of Opium, tincture of Rhubarb, essence of Peppermint, and spirits of camphor. Mix well. Dose: 15 to 30 drops in a wine glass of water, according to age and violence of the attack. Repeat every 15 or 20 minutes until relief is obtained.

Blackberry Cordial. Two quarts of Blackberry juice, one pound of loaf sugar, one-half ounce each Cinnamon, Nutmeg, and Cloves, one-fourth ounce Pimento. Boil all together a short time; when cold add one pint of the best brandy. Cork and seal well and it will keep any number of years. The older the better.—P. Farmer.

Baked Tomatoes. Take Tomatoes fresh or canned, chop them, place among them any good meat finely minced, Parsley, some bits of butter, stale bread crumbs or macaroni boiled; have on the top of the baking dish a layer of crumbs season the whole with pepper, salt, a little minced Shallot; bake until slightly brown.—Western Rural.

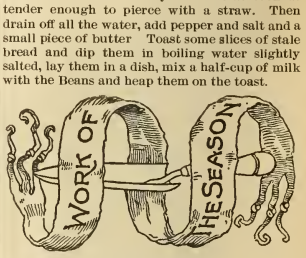
Fresh Salad. To keep Salad plants, like Lettuce, Celery and Cress fresh and crisp, do not put them wholly into water, but wash them, wrap them in a wet cloth and lay next the ice or in a cool cellar. Sprinkle Peas, Green Corn, Beans, with water, throw a wet cloth over them and if kept in a cool place they will be fresh and crisp when wanted.—Michigan Farmer.

Watermelon Rinds. Pare thin and cut in fancy form if you choose; take weak alum water and pour over them boiling hot; let them stand a day and a night, then strain off and boil in clear water till they are quite tender; make a syrup of equal parts of vinegar and sugar, enough to cover the rinds; add a few sticks of Cinnamon, a few Cloves and a spoonful of Ginger. Boil the rinds in this till they look clear, skim out carefully into your can or crock, then pour the syrup over them boiling hot, and seal or cover tight and they will keep all right.

Stuffed Tomatoes. Melt one tablespoonful of butter, add one half Onion cut fine. Fry until yellow, add three-quarters of a cup of meat chopped fine, three sprigs of Parsley, one and one-half cups of bread crumbs soaked in water and squeezed dry; one egg, one teaspoonful of salt, one-quarter saltspoon of Cayenne and some of the Tomato pulp. Cut a piece from the top of Tomato, scoop out part of the inside and fill with the above mixture. Cover with buttered bread crumbs and bake fifteen or twenty minutes. Any kind of meat that chances to be left over can be used.—Mass. Plowman.

Fried Tomatoes. Select the largest, firm, ripe Tomatoes for frying. Cut in halves and put in a frying pan with two tablespoonfuls of butter. Place the Tomatoes with the skin side down and on the top of each half put as much bread crumbs as it will hold, seasoned with salt and pepper. Cover and allow them to cook ten minutes; then take out the Tomatoes on a platter and set where they will keep hot. Prepare a gravy as follows: If the butter has cooked away, add a little more to the frying pan; pour in half a teacupful of boiling water; thicken with a teaspoonful of flour wet with a little water. Stir until it boils, season with salt and pepper and pour over the Tomatoes.—Prairie Farmer.

String Beans on Toast. Get a quarter of a peck of snap Beans. Break off each end as small as possible, drawing down the strings if there are any. Break each Bean into pieces an inch long, and if they are large split them with a sharp knife lengthwise. Let them lie in clear cold water twenty or thirty minutes. Drain them, cover with boiling water, and boil steadily for about an hour. They are done as soon as tender enough to pierce with a straw. Then drain off all the water, add pepper and salt and a small piece of butter. Toast some slices of stale bread and dip them in boiling water slightly salted, lay them in a dish, mix a half-cup of milk with the Beans and heap them on the toast.



HOUSE PLANTS.

Abutilon. Turning the pots from time to time will prevent their rooting into the sand or soil beneath.

Anthericum. The variegated form requires considerable root room. If this tendency becomes inconvenient, the soil may be washed off the roots, and the plants repotted in fresh soil in smaller pots than could be used otherwise.

Allamandas delight in a warm, moist situation, and in light fibrous soil. If flowering freely give liquid manure at times. Cuttings of the half ripened wood now root readily.

Aspidistras Give liquid manure while leaves are making rapid growth.

Balsams can now be taken up from the beds and put into large pots for the window after frost.

Begonias. Flowering plants to be shifted into larger pots.

Callas. Start into free growth for early blooming, giving rich soil and plenty of water. Pots need not be large, but should have perfect drainage.

Chrysanthemums are benefited by giving weak liquid manure once or twice a week. Stake as required. Dust with Tobacco when aphis are troublesome.

Cuttings of Clerodendron, Ficus, Rex Begonias, and other tropical plants can be rooted by the amateur now better than at any other time. Place the green cuttings in sand, cover with some glass vessel, and water lightly as needed.

Earth Worms. When troublesome to Roses in pots, apply caustic lime water, not too strong.

Geraniums. Prevent rooting into the plunging earth, by turning the pots occasionally. If nice bushy specimens of the fragrant sorts are desired, pinch the excessive growth back now.

Ivy Geraniums. Cut back old plants to be lifted as they start into growth. Place in rather small pots. Repot young plants for rapid growth.

Lemon Trees. Repot as needed. Leaves and stems should be occasionally sponged with soapy water.

Mahernia Odorata should be repotted by middle of month. Keep young plants growing rapidly.

Orange Trees. Treat like Lemon trees.

Palms. Repot as required. Keep well watered. Sponge off the leaves occasionally.

Potting Requisites. Get in a supply of soil, sand pots, moss.

LAWN AND FLOWER GARDEN.

Ageratums for winter flowers to be cut back.

Asters. Keep ground well stirred among them. Water, mulch and stake if required.

Climbing vines need training until all bare spots are covered.

Climbing Roses. Remove the superfluous shoots. Tie the remaining ones neatly.

Coleus and other foliage plants need frequent pinching back to induce compactness and shape. Propagate young plants for wintering over.

Chrysanthemums. Plants in open ground to be potted for exhibition should be taken up at once to have a chance to become established.

Cultivation. Keep the soil between all the plants stirred frequently.

Dahlias. Prepare for late storms by staking and tying. For fine flowers remove some of the branches.

Everlasting flowers to be preserved for winter use should be gathered before fully expanded, tied in small bunches, and hung up in a dry shady place, with heads downward.

Euphorbia jacquinæflora should be repotted early this month, and strong shoots be pinched back to induce bushy growth.

Hanging Baskets and Vases. Give liquid manure once or twice a week. Loosen up the soil occasionally by means of a sharpened stick, and keep trim by removing dead and decaying foliage.

Lawn. Cut moderately now until fall rains start the grass into new growth.

Lilies. Unless it is desired to save seed, cut away seed vessels as flowers fall in order to strengthen bulb. Pick off caterpillars.

Lilium Candidum. Bulbs may now be taken up, separated and replanted.

Pansy. Sow seed for spring flowering in nicely prepared cold frame, covering with white-washed sash or muslin frame.

Propagation. Many kinds of ornamental shrubs can now be increased by layering.

Pruning. Excessive and unshapely growth of shrubs on the lawn to be pinched back.

Rhododendrons. Remove all seed vessels.

Stakes. Provide them for all plants needing them to guard against injury from fall winds. Use neat, natural stakes rather than the painted ones.

Verbenas to be pinched back as needed.

PLANT CULTURE UNDER GLASS.

Achimenes delight in warmth and moist atmosphere. Roots must not be allowed to get dry.

Bedding plants of choice kinds, or where large stock is desired for next season, may now be propagated from cuttings.

Chorozemas and similar hard-wooded plants to be repotted as needed; leading shoots to be pinched back occasionally. Sponge off daily, and water thoroughly, but not too often.

Chrysanthemums intended for show should have the soil removed from top of pot and replaced by some rich compost. Stake and tie as needed.

Climbing Vines. Syringe freely to guard against insect pests. Train and remove dead twigs, leaves, etc. Give manure water freely.

Diosma Fragrans. Treat like Chorozemas.

Ericas, Epacri, etc. Directions for Chorozemas will apply.

Ferns to be repotted as required. Give water to the roots freely and keep in warm, moist atmosphere.

Geraniums for winter bloom to be held in check. To provide plants for house use next spring begin propagating by cuttings now.

Greenhouses. Inspect sashes, heating apparatus, etc., and repair where needed. Make all preparation for fall. Provide stock of soil, sand, pots, moss, and all other requisites.

Gloxinias when done blooming to be removed to a cold frame, preferably placed over a bed of coal ashes. Shade sashes heavily and gradually lessen amount of water given.

Repotting. Old pots should be soaked and washed clean, and new ones provided when needed. Repot all plants that are likely to require it, so that they become well established before cold weather sets in. Give good drainage and set the plant in center of pot.

Rhyncospernum jasiminoides. To destroy insect pests wash the leaves and branches thoroughly with soapy water as soon as the plants are done flowering. Repot as needed.

Seeds. Sow of ten-week and intermediate stock for winter bloom. Smilax for next year's plants.

FRUIT GARDEN AND ORCHARD.

Apple Trees. Discontinue cultivation at end of month to prevent late growth. Keep newly set trees well mulched. Remove superfluous shoots and pinch in the new growth of all trees to induce development of well shaped heads.

Blackberries. Pinch back the new canes when about four feet high, and the laterals at about fifteen inches. Cut out and remove the old canes.

Budding of Peaches, Nectarines, Apricots, etc., may now go on. Watch the ligatures, and cut them promptly as soon as stock and bud have become united.

Commission Dealer. Select one that you have confidence in, and stick to him year after year so long as he treats you well. It is not a good practice to ship to more than one party in the same place.

Currants. Thin out suckers. Remove superfluous wood. Keep bushes well cultivated and free from weeds.

Gooseberries. Treat same as Currants.

Guarantee cards, with the shipper's full name and address, guaranteeing contents of package of good uniform quality, may be put inside of every package of really first-class fruit.

Insects. For aphis dip the affected twigs into a strong decoction of Tobacco stems or other Tobacco refuse, or spray the trees with it. Hunt up the Apple and Peach tree borers and kill them. Also put a band of tarred paper or a mound of coal ashes around the base of each tree. Destroy the nest of the fall web worm. Gather caterpillars on Grape vines.

Marketing. Early varieties of Apples and Pears now ready should be picked before they have softened at all. Pack according to the rules of your market, always taking care to have the fruit firm in the package so it cannot shake and become bruised in transit. Peaches when picked for market should be in that condition that they will be in a state fit to be eaten by the time or soon after it reaches the consumer. Over-ripe fruit must be consumed at home, or disposed of to canners, evaporators, etc.

Packages, crates, half barrels, baskets, etc., should be provided in advance, be bright and clean, and just of the kind most popular in your market. Each package to be plainly and neatly marked with the grower's name and address.

Plum Knot. Remove affected limbs, or cut the warts off with a sharp knife, and apply linseed oil to the wounds.

Raspberries. Treat as directed for Blackberries, unless it is desired to increase stock of plants. In that case allow the shoots to grow at will, then fasten the tips to the ground by means of wooden pins, small stones, or a little soil, etc., and leave undisturbed until the plants are ready for taking up.

Sorting. All tree fruit should be assorted and packed in three grades. Have same size and quality from top to bottom. Face top layer, turning each specimen that the bright side appears uppermost. Neatly round off the top. Never ship anything as first class unless it is strictly so.

Strawberries. Keep beds well cultivated. To make new plantations now let runners form into thumb pots, and when well rooted, remove to permanent beds.

Thinning may yet be done for late fruit. Remove all the inferior specimens, and especially those showing signs of worm attacks. For exhibition fruit select a thrifty branch, and remove one-half or two-thirds from it, leaving only the finest specimens.

VEGETABLE GARDEN.

Asparagus. The bed must not be allowed to become overrun with weeds.

Beans for snaps may yet be sown for succession.

Broccoli and Brussels Sprouts. Cultivate frequently and hoe deeply.

Celery. Finish setting plants for winter and spring. Handle the self-bleaching varieties for fall use, and cultivate and hoe all frequently, but shallow. Applications of fertilizer along the rows, and a light mulch around the roots are of considerable benefit.

Chervil. The Tuberous sort can now be sown.

Corn Salad. Sow in drills a foot or fifteen inches apart. Keep weeds down by the frequent use of wheel hoe.

Cresses. For succession sow every two or three weeks in shallow drills one foot apart.

Cucumbers. The fruit whether for Pickles or Cucumbers must be gathered at least every other day. Cut it off with a sharp knife or pair of scissors, never pull or tear it off. Specimens can be allowed to ripen on the vines only at the loss of part of the green crop. While gathering the crop, pull up any stray weed that may show itself. A last sowing may yet be made first week of this month.

Cultivation. Keep the ground between all crops that do not yet cover the ground, well stirred by means of cultivator, hoe or rake, and kill every weed to be seen. When one crop is removed from any part of the garden, plant another at once. This continuous cropping should be kept up all through the season.

Corn. Remove all ears or tops affected with smut, and destroy them.

Cabbage. Cultivate and hoe deeply. A top-dressing of some good fertilizer around the plants will be beneficial.

Endive. For a succession sow at intervals, then thin to one foot apart in row, or transplant to that distance, in rows fifteen inches apart, in rich soil, and tie up and bunch as wanted for use or sale.

Leeks. In hoeing draw the soil up to bleach them.

Lettuce. For succession, if desired, sow every two weeks.

Melons. Specimens setting towards last of the month, that can not be expected to mature before frost, may be pinched off carefully. Otherwise do not disturb vines more than is needed.

Onions now begin to ripen. When the tops get yellow and fall down, pull and gather in windrows, or place in thin layers in a dry shed to cure. Then remove the tops, where needed, and store the bulbs in a cool dry place.

Peas of the earliest sorts are sometimes sown this month for a late fall crop. But it is an uncertain one except under unusually favorable conditions.

Potatoes. Harvest the early sorts as soon as ripe. Store in a cool dark cellar.

Radishes. Continue to sow summer sorts for succession. Also sow winter sorts at once.

Spinach. Sow for late fall crop.

Sweet Potatoes. Cultivate and hoe, lifting the vines off the ground to prevent them from striking root.

Seeds. Select the earliest and most perfect specimens of Tomatoes and Egg Plant, also the earliest and best filled pods of Lima Beans for seed.

Turnip. Sow the quick growing flat Strap-leaf sorts in drills one foot apart. A dressing of superphosphate in the drill is very beneficial to this crop.

Tomatoes. The prompter the ripe ones are picked, the faster the crop will develop and ripen. Pick off all the imperfect or spotted specimens you happen to come across. Look out for, catch and destroy the green Tomato caterpillar.

FRUIT AND VEGETABLES UNDER GLASS.

Figs. Give water bountifully to the roots during hot weather, and occasional application of liquid manures. If allowed to get dry, the plants are liable to drop most or all their fruit.

Grapes. Give air freely to earliest houses, and keep vines in a state of rest. In intermediate houses free air, but no water should be given. Late houses require to be kept as cool as possible. Syringe freely. Fumigate once a week.

Guavas in tubs or pots should not become dry at the roots, or the fruit will drop off. Thin fruit where set too thickly.

Strawberries. Keep the plants, potted last month, in a cool, airy, half shady spot, and in a vigorous growing condition.

Tomatoes. Seedlings or cuttings for winter forcing may now be started in four or five-inch pots.

THE POULTRY YARD.

Ventilation. Keep the poultry house well ventilated and thus insure healthy fowls.—The Poultry Raiser.

Care of Turkey Chicks. Keep those late-hatched turkeys growing right along, and they will make fine market birds, and bring a good price along the latter part of February and the forepart of March.—Am. Farmer.

Late Chickens. They should be well fed and well cared for in every way, else they will never pay for raising. When kept comfortable and well fed, late-hatched pullets will be ready to lay next spring when the earlier-hatched pullets are taking a rest.—Am. Farmer.

Save the Best for Breeding. Don't market all the hens that are over one year old. It is from well matured parents that the most vigorous offsprings come. So select the most vigorous and motherly for next season's breeding stock, and don't try to force them to lay eggs during the winter; they will be ready to lay earlier and produce more vigorous stock if allowed to rest until the breeding season opens.—Ind. Farmer.

Remove Broken Eggs. Egg shells should never be given to hens as they will learn the vice of egg eating thereby. When an egg is broken in the nest or yard it should be removed as soon as discovered. A hen seldom begins to eat egg shells until she finds one broken by accident, or until she becomes accustomed to egg shells that may be thrown in the yard.—Mirror and Farmer.

Preparing Fowls for Market. The dry process is quite superior to the old scalding practice. As soon as the fowls are killed and while their bodies are yet warm, the feathers can be pulled out quickly and easily, and are more valuable when saved in this condition, and the flesh of the fowl seems to be cleaner and presents a more attractive appearance when marketed, which has much to do with the price obtained.

Save the Hen Manure. If you will give only one-seventh the attention to your hen manure that you do to collecting the eggs it will help you a long way on the feed bill. Make a bin large enough to store the manure. Before you wish to use it have the wash water saved on wash days and dampen it slightly, stirring it up with a hoe and working it well. By the time you wish to use it, it will be nicely pulverized and a rich fertilizer. If you choose you may add land plaster or muck but do not add horse manure to it.—Cor. Orange County Farmer.

Apoplexy Among Fowls. A fowl taken at first with lameness, and which in the course of a day or two will stagger about, make a rush for the food and stumble over it, with an appetite always good, is troubled with apoplexy. Bleeding, by opening a vein under the wing and feeding on light food will be helpful and in some cases will effect a cure. It is possible, however, that this may be one of the results of a long course of in-breeding, by which the constitutional vigor has been impaired. Possibly too much meat has been given or the hens may be too fat and if a warm breakfast gives place to a diet of Oats and Wheat in equal parts or better still Barley, the chances are that there will be a marked improvement.—Cor. Farm and Home.

Market Quality of Fowls. If every farmer would raise only the best quality of poultry for market and abandon the dunghill altogether, a higher price and greater demand for poultry would be the result. Coarseness of flesh and dryness are qualities to be avoided. The fine-boned, plump juicy fowl will always command a high price. When a customer once secures a carcass of good quality he will certainly inquire for more of the same kind, and with many the price paid will be no object. Farmers should use the Dorking a season, then follow with the Pit Game for a cross. If this course of alternating with a Game and Dorking or other large breeds was practiced every year there would be a great demand for such birds, and it would pay well to those raising them.—N. H. Mirror.

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unreasonable. Questions received before the 12th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following.

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,345. Apple Seeds. Where and at what price might they be sold ?—H. J. B., *Mohawk, Ont.*

1,346. Apple tree Bark Louse. What can I do for my Apple and Pear trees ? The limbs are covered with small white spots.—F. L. F., *Mertztown, Pa.*

1,347. Canning Fruit, Sweet Corn, etc. Some one please tell how to have it keep.—S. M. S., *Lafayette, O.*

1,348. Budding Peaches. Please give us lucid directions as for Rose budding in June number.

1,349. Marianna and Abundance Plums. Are they genuine, worthy novelties ?

1,350. Plums, Cherries, Apricots. What varieties do I need for home use, especially those that will bear within a year or two after setting ? Thermometer here seldom goes lower than two degrees below or higher than 90 degrees above.—G. W. B., *Agassiz, B. C.*

1,351. Remedy for Pear Blight? How can I prevent it ? Will stock of varieties subject to blight render the graft more easily attacked ?

1,352. Pears Cracking. What will prevent it ? Will lime tend to check it ?

1,353. Rust on Raspberries. How can it be prevented ?—W. H. H., *Lebanon Springs, N. Y.*

1,354. Yield of Strawberries. What is considered a good average crop ? What variety is most productive? —I. P. N., *Mayfield, Cal.*

1,355. Musa Ensete. How grown from seed ?—D. M. D., *Carpentera, Cal.*

1,356. Grass from Lawn. Can it be utilized for manure, and how?—G. W. B., *Rutledge, Pa.*

1,357. Herbaceous Plants. How can I raise them successfully ? Sowed last year with all care, but none came up.—R. S., *Ont.*

1,358. Jacqueminot Rose for Summer. How shall I treat it to keep it dormant for summer flowering? It is now in 6-inch pot. Have a small conservatory.—C. N. C., *Chapo, Ill.*

1,359. Cyclamen Persicum. How to be treated after blooming in pots, to keep it over for blooming again ?

1,360. Lily of the Valley. How are the pips treated? I have not been successful in getting a nice bed of them.—C. D., *St. Paul, Minn.*

1,361. Propagation of Gooseberries. What is the best way? either by layering or from Cuttings.—L.C.P., *South Bethlehem, Pa.*

1,362. Aphis on Currants. How can I rid my seedling Currant bushes from the pest ?—SUB., *Wisconsin.*

1,363. Quince Leaf Blight. What ails my Quinces ? The leaves on my five-year old trees annually turn brown, and finally drop off. Five applications of the copper mixture had no effect.—T. T., *Lancaster, Pa.*

1,364. Hyacinths. How are they grown in moss and in glasses ? When started ?—H. C. L., *Penn Yan, N.Y.*

1,365. Pot-Grown Strawberries. In setting them should the ball of earth be soaked and roots separated? —K., *Concord, N. H.*

1,366. Cabbage and Cauliflower. At what date should seed be sown here to winter over in cold frame, and whether in the frames or in the open ground and transplanted ?—C. L. N., *Winchendon, Mass.*

1,367. Currant Cuttings. Should these be taken as soon as the leaves fall or later ?—R. J. N., *Warsaw, Ind.*

1,368. Pansy Plants for Spring Blooming. Will seed sown Sept. 1st give plants that will bloom in June? —Miss N. S., *Kent, O.*

1,369. Tobacco Fertilizer. Of what fertilizing value is Sturtevant's Tobacco and Sulphur Insecticide and Fertilizer ?—J. W. P., *New Rochelle, N. Y.*

1,370. Cauliflower. Name best variety for home use and market ? In Sept. 15th early enough to sow for wintering over.—P. Z. N., *Vincennes, Ind.*

1,371. Lawn Mower. Is any machine provided with a grass box or attachmeut for collecting the grass as fast as cut ?—D. S. T., *Newport, R. I.*

1,372. Green Manuring. What crop is best to sow in fall to turn under next spring ?—G. L. T., *Macon, Ga.*

1,373. Tennisball Lettuce. Are there two varieties of Tennisball Lettuce ? If so, name difference.—P., *Rutland, Vt.*

1,374. Adirondack Potato. What are the characteristics of this ? Is it of much value?—E. L. C., *Saco, Me.*

1,375. New Nasturtium. Is there a new variety called Comedian, and what are its characteristics ?—M. A. B., *Passaic, N. J.*

1,376. Gladiolus. How shall I treat bulbs when through flowering ? Last season I packed them in sand and about half of them rotted.—N. T., *Auburn, N. Y.*

1,377. White Tulip. What is the best double white Tulip ?—P., *Bismark, Dak.*

1,378. Lawn Seeding. When is the best time to seed down ? Are the so called special mixtures for shady locations of value ?—B. A. L., *Clinton, N. Y.*

1,379. Bloomless Hoya. My three-year old seems strong and healthy. Why no bloom ?-I. W. S., *Mokeno, Ill.*

1,380. Tomato Leaf Blight. What can I do for it ?—G. W., *Prosser, W. T.*

1,381. Gloxinias. How must I treat them both before and after blooming ?—A. G. W., *Malone, N. Y.*

1,382. Gooseberry Culture. What, if any, publication or treatise is there on this subject ?

1,383. Latest Strawberry. Which is it for Western New York?—H. G. B., *Eureka, Wis.*

1,384. Cut Flowers. How should they be kept to preserve their freshness ?—M. R. SUB.

1,385. Plum Trees Dying. The bark on my trees turns dark on one side, splits, and reveals the wood dying beneath. What can I do for it ?—R. S., *Ont.*

1,386. Rhubarb. Roots planted this year. How soon may stalks be used ? How long in spring is it safe to pull stalks on two year old plants ?

1,387. Grape Mildew. What remedy is there for my Grapes ? Leaves turn up, but no insect is visible.—T. W. L., *Va.*

1,388. Killing Woodchucks. Can it be done with dynamite, and how ?—J. T. M.

1,389. Wintering Celery. What is the best method on small scale for home use ?—SUBSCRIBER.

1,390. Manure for Orchard. Can it be safely applied in autumn ?—O. M. MCR.

REPLIES TO INQUIRIES.

1,275. **Strawberry for Amateur.** I have found nothing equal to the Crescent Seedling fertilized with Capt. Jack or Wilson.—J. RIDLEY.

1,274. **Tree Pæony.** Evergreen Nurseries, Evergreen, Wisconsin, have imported plants of the Tree Pæony at 50cts. each.—GEO. PINNEY.

1,270. **Roses not Blooming.** Mildew is the probable cause of the buds shrivelling and appearing out of shape. Try Henderson's Mildew Mixture, and apply according to accompanying directions.—C. E. P.

1,272. **Grapes on Wall.** I would keep them on the frame, and nothing less than six inches from the wall.—C. E. P.

1,275. **Strawberry for Amateur.** I would not confine myself to one variety. Charles Downing and Sharpless are excellent sorts.—C. E. P.

1,276. **Well Rotted Sawdust** is not good manure for berries unless well mixed with good stable manure and allowed to remain in a pile for some time before using.—C. E. P.

1,282. **Early Radish.** Red Forcing Turnip or Early Scarlet Globe are the best varieties for forcing.—C. E. P.

1,284. **Hellebore for Aphis on Roses.** Hellebore is applied by being dusted on with a gun or bellows while the foliage is moist with dew. For the Aphis or Green Fly I prefer Tobacco dust or Insect Death powder to be applied as above advised.—C. E. P.

1,257. **Trimming Currants.** Currants do best when kept well pruned and thinned out. I would not trim them up four or six inches, but would cut the old wood out, and allow the strong young wood to fruit.—C. E. P.

1,259. **Aphis on Roses and Fuchsias.** Where the plants are grown under glass, these pests can be easily destroyed by fumigating with Tobacco stems once or twice a week. In the open air an application of Tobacco dust will destroy them. It should be applied early in the morning while the plants are wet with dew.—C. E. PARNELL.

1,357. **Herbaceous Plants from Seed.** Perhaps the want of success was due, not to the failure of seed to germinate, but to the ravages of insects or slugs. The seedlings are often eaten off as fast as they make their appearance above ground. To outwit the slugs, one of our foreign exchanges advises to sow the seed in shallow pans or boxes, as may be most convenient, and place them under glass. Sow thinly, that there may be no occasion to thin the seedlings before they are large enough to be picked off. When of a suitable size prick them off into boxes or pots or in the open ground, but the most satisfactory results are obtained by pricking off the small growing kinds into pots or boxes, and putting the others in beds in the open ground. The beds must be made moderately firm and have the surface made quite fine. The seedlings should be put about four inches apart each way, be well watered, and shaded from the sun in bright weather. A sharp lookout must be kept for the slugs until the seedlings are established and commencing to grow freely, or a large proportion will probably be destroyed.

1,347. **Canning Fruit, Sweet Corn, etc.** Mrs. W. D. Devol, at a recent meeting of the Muskingum (O.) Farmers' Club, told her way of canning. She thoroughly cleans the fruit before cooking it, and sweetens it ready for the table. While bottling she allows the vessel of cooked fruit to remain on the stove, where it keeps hot, as this is the secret of success. With a gasoline stove the canning may be very comfortably done. Keep the covers and the rubbers of the bottles perfectly dry. Mrs. Devol prefers the self-sealer with the beer-bottle lid-fastener and keeps the bottled fruit in a dark place.

1,363. **Quince Leaf Blight.** The Quince leaves submitted to me for examination are affected with a disease to which we have given the name Leaf Blight. It is caused by a parasitic fungus which we have quite fully described and figured in our Annual Report for 1888. What follows is in part a quotation from that article. The disease first shows itself in the shape of small, dull, carmine-red spots which appear first on the upper, and finally penetrate to the lower surface of the leaf; the color soon changes from red to a dark brown, with a slightly elevated, minute, black spot in the center. The spots also increase in size, and if very numerous, the tissue between them also turns brown, and loses its vitality. As soon as the leaf becomes badly diseased it falls off; and if another growth of leaves is produced, these, too, become diseased. The spots are usually about one-fourth of an inch in diameter. This wholesale destruction of the foliage interferes very seriously with the growth of the wood and the maturing of the fruit. The seed or spores of the fungus are borne in compact masses, and as seen by the naked eye consist of little black-specks seated upon the brown spots. Under proper conditions of moisture and heat each spore is capable of infecting a healthy leaf. The spores that are formed late in the season live over winter in the old leaves so that it is readily seen that the latter, if allowed to remain under the trees, are a constant source of danger. To get rid of this infectious material the leaves should be raked together in the fall and burned. As an additional means of preventing the disease the trees should be sprayed with a solution prepared as follows: Into a 1-gallon vessel pour 1 quart of ammonia (strength 22° Baum), add 3 ounces of carbonate of copper, stir rapidly for a moment, and the carbonate of copper will dissolve in the ammonia, forming a very clear liquid. For use, dilute to 22 gallons. Make the first application when the leaves are about two-thirds grown—taking care to reach every leaf—and repeat at intervals of three weeks throughout the season. It must be borne in mind that in nearly all fungus maladies the treatment is preventive and this disease of the Quince is no exception to the rule. It will be sheer folly to begin spraying the trees after the disease appears. The whole secret of success in such work is *early treatment.*—B. P. GALLOWAY, Chief of Section Vegetable Pathology Dep. Ag.

1,298. **Rooting Rose Cuttings.** Hybrid Perpetuals and any others equally hardy may be readily started in the open ground any time after suitable firm, partially ripened, growths can be obtained. A shady location is essential. Teas and other tender sorts should be started in pots, and given protection under glass.—M.B.F.

1,299. **Mulch for Blackberries.** I should much rather use straw or Pine needles. Chips or rotted shavings make a snug harbor for all manner of pestiferous insects. We use salt marsh hay in this locality but of course in the majority of places this would not be available.—FAXON.

1,300. **Ampelopsis Veitchii.** If well started it will need no protection. If not use a covering of Rye straw or similar light material as the vine will not be so high but that can be readily done. —M. B. FAXON.

1,302. **Plums on Hill Side.** Yes they would be as well adapted to this location as any fruit you could select. Heavy soil is preferable.—F.

1,303. **Sod for Small Fruit.** Your best way would be to plant some hoed crop next season before setting your small fruits. If you cannot conveniently wait, plow to a medium depth the coming fall and in the spring work thoroughly with a disc or wheel harrow, then plow the second time before planting. Well rotted manure is adapted to all fruits in any location. Bone dust is perhaps the best of the manufactured fertilizers, though unleached wood ashes or any high grade phosphate is good.—FAXON.

1,305. **Insects in Cistern.** In order to have pure water you will necessarily have to clean it out. Then use a few pounds of powdered borax, taking pains that it is thoroughly stirred in. Should any bugs afterwards make their appearance make a fresh application, though so large a quantity will not be required as at first.—F.

1,309. **Treatment of Rose Seedlings.** Mix the sand with leaf mold or well rotted compost.— M. B. F.

1,310. **Dewberry Plants.** They may be propagated from root cuttings the same as Blackberries. Every piece of root that has an eye will grow if planted in light friable loam.—M. B. F.

1,313. **Japan Anemones.** The soil can hardly be made too rich for this class of plants. Very likely this is where the cause of the trouble lies. —M. B. FAXON.

1,315. **Improving Sandy Soil.** The best plan where a muck or peat deposit is available is to cart on a quantity, applying the same as stable manure and work into the soil by plowing and harrowing. I have seen wonderful results from this treatment.—M. B. F.

1,323. **Strawberries in Young Orchard.** If the ground is not too much shaded you could not choose a better location, other conditions being favorable.—M. B. F.

1,326. **Planting Raspberries.** I prefer to plant in the fall as they start very early in the spring and in moving it is next to impossible not to break the buds badly. Cuthbert is with me the best red and Gregg the best black.—M. B. F.

1,328. **Weeping Willow.** Is perfectly hardy even in most exposed situations.—M. B. F.

1,343. **Plan of Family Small Fruit Patch.** If a plan were drawn showing about the quantity of each variety or kind to be planted in a certain allotted space, it could or rather would hardly be adapted to two different families as nearly every one has some preference for a particular berry or fruit. In starting a patch of this kind, however, if the soil is in good condition, the portion of it which is planted to Blackberries and Raspberries may be double cropped by putting a double row of Strawberries between each of the others. We are seldom troubled with an oversupply of this fruit in the home garden. Strawberries may be planted during this and next months, and the plants later in the fall or spring as desired.—M. B. FAXON.

1,351. **Pear Blight.** The only remedy known to us is to prevent infection. Every diseased part of a tree should at once be cut out way below the line showing symptoms of the disease, and promptly burned. Heavy manuring with raw yard manures seems to increase the dangers of blight attack, while seeding down to grass and moderate feeding, especially with mineral manures only, seem to fortify the trees against infection. Over rapid and forced growth, and consequent succulence of wood is to be avoided. For a preventive application to the soil, next to mineral manures, we would recommend sulphate of iron (copperas) and napthaline, the former to be scattered (or sprinkled in solution) all over the ground for the purpose of killing the fungus spores resting in the soil, the latter (napthaline) to be placed directly under the tree in limited quantity, for the purpose enveloping it in an atmosphere of napthaline vapors through which the spores of the blight fungus will not be very likely to pass without there vitality.

1,385. **Plum Trees Dying.** Bark on Plum, Cherry, Peach and other fruit trees is frequently injured by freezing, subsequent exposure to the sun rays in just the way described. The only preventive we could suggest, is to shade the trunks in early spring which may be done by means of boards, straw, evergreen boughs, or in any other convenient way.

1,388. **Killing Woodchucks.** For people who are used to handling dynamite, or are not afraid of it, the task of getting rid of any animal burrowing in the ground, when the burrow can be found, is an easy one. All you have to do is to insert a small charge, say one-quarter or one-half pound, with cap and long fuse attached, into one of the holes, placing it as far back as possible, so that the end of fuse will just stick out. Of course you must be sure that the animal is at home. Then stop up all the holes of ingress and egress, tightly, especially the one where the dynamite is inserted. Then fire the fuse, and you will have no more trouble from that particular animal. Another apparently good way of getting rid of burrowing pests—by means of hi-sulphide of carbon—is described elsewhere in this issue.

1,282. **Early Radish.** In Boston the Long Scarlet and French Breakfast take the lead.—M. B. F.

1,285. **Helianthus Multiflorus fl. fl.** Plant the seed as you would common Sunflower. It is of no more difficult cultivation.—M. B. F.

1,287. **Herbert and Gærtner Grapes.** Try H. S. Anderson, Union Springs, New York, and Ellwanger & Barry, Rochester, N. Y.—M. B. F.

1,316. **Asparagus Tenuissimus.** Sow the seed in the spring and treat in the same manner as the common variety. Seeds of this class of plants are slow in starting.—M. B. FAXON.

1,291. **Windmills for Pumping Water.** The Iron Turbine is liked as well as any and on the whole has the preference here.—M. B. F.

1,493. **Melon Vine Borer.** A small quantity of finely sifted coal ashes in the hill at the time of planting will in a large measure prevent the work of the Squash maggot. It would douhtless work quite as well with Melons though of course it is too late to try it this season.—M. B. F.

1,494. **Apple Tree Blight.** In that portion of the Champlain Valley occupied by Chittenden Co., Vermont, the blight which you speak of has almost ruined some orchards. No remedy has so far been discovered.—M. B. F.

1,295. **Pear Leaves Wilting.** Probably a borer is at work in the stem just above the surface. If so you will notice the chips. Probe for him with a piece of small wire.—M. B. F.

1,297. **Pansy Culture.** We are not acquainted with any larger work on the subject. Mr. William Toole gives the following instruction in his Guide to Pansy Culture: Seed to produce plants for early spring blooming should be sown from middle of August to middle of September, and the young plants wintered in a cold frame. Boards may be used instead of glass to cover with. South of Central Illinois it is better to depend mainly on spring and early summer flowers from seeds sown in the fall. Plants started in the greenhouse early in January are not quite so early, and if the frame plants are transplanted once, as early as spring will permit they are as good in every respect. Few persons who buy plants know that in the North our most beautiful Pansies are in autumn from spring sown seeds. Start in hoxes in the window, giving the young plants plenty of light and not too much heat. If the soil is rich enough, and not too dry, or in too hot a situation, Pansies, with frequent cultivation, will stand a long siege of hot weather, if no seeds are allowed to form. With this care one can have Pansies from young plants in midsummer. The plants which have flowered in the spring will do well again in the fall if the long branches are cut hack late In June. The plants which have flowered through the summer and fall, will usually winter over well if protected with a light covering of straw or leaves, but thorough surface drainage must he provided to prevent water from accumulating around the plants and forming ice about them. In the cold frames a considerable mixture of sand is desirable, as the plants with prospect of winter better in sandy than clayey soil. Pansy seed should be sown thinly in shallow furrows, not more than one-sixteenth of an inch deep, made with the sharpened edge of a piece of lath. The seed bed should be mellow and rich, leveled and smoothed before the seeds are sown, and after sowing the seeds should he covered evenly, and the surface pressed with a piece of hoard. The seed hed should be watered and shaded until the young plants are up, after which they should be gradually accustomed to full light. A rich sandy loam is best for Pansies and if not too stiff, a clay soil is better than that which is very sandy. But whatever its texture, the soil should he made rich with well-rotted manure thoroughly incorporated with the soil, and stirred several times while the plants are in the seed bed. This thorough preparation of the soil is very important. Transplant after the plants have attained the fourth or fifth leaf and before they have become drawn and slender with crowding. A hot situation facing the south, should be avoided. Temporary shade during the hottest portion of the day in extremely warm weather, would be an advantage, hut shade the whole season through will not admit the brightest colors or an abundance of flowers. If watering is necessary the ground should be well soaked in the evening and thoroughly stirred, about two inches deep, next morning, as soon as the soil is dry enough. Cultivation without watering is better than watering without cultivation. Keep the buds picked off after transplanting until the plants are well established, and also during very hot weather, for a good display of flowers in the fall. When growing where they are to stay, a square foot of space should he allowed each plant. Frequent stirring of the soil is necessary between the plants until they are too large.

1,346. **Apple Tree Bark Louse.** The pest troubling your Apple trees probably is the Scurfy bark louse. Its original home is on the bark of our native Crab trees, but recently the insect has become quite common on our cultivated Apple and Pear trees, and Mountain Ash also. The color of its eggs, which are a purplish red, leaving a blood-like stain when the scales are mashed against the bark distinguish it from the oyster-shell hark louse, an insect that somewhat resembles the Scurfy bark louse but has white eggs, and is also quite troublesome to Apple and Pear trees. Both insects are preyed upon, and thus kept somewhat in check by various insect parasites, by the twice-stabbed ladybird, and by some of our insect-eating birds, and the treatment for hoth is also the same. No better remedies have yet been found than those mentioned in Saunder's Insect Injurious to Fruits. During the winter the trees should be examined, and the scales scraped off, and thus a large proportion of the insects may he destroyed. The insect should he fought also at the time when the eggs are hatching, and the young lice crawling over the limhs, as then they are tender and easily killed. The time of hatching should he watched, and while the young larvæ are active, the twigs should be brushed with a strong solution of soft soap and washing soda, or syringed with a solution of washing soda in water made by disolving half a pint or more in a pailful. Painting the twigs and branches with linseed oil has also been tried with success. As a precautionary measure every young tree should be carefully examined before being planted, and if found infested should be thoroughly cleansed.-M.R.

1,348. **Budding Peaches.** This operation is quite similar to that of budding Roses shown on page 218 (June Number). It must be performed at a time when the bark of the stock parts readily from the wood. For buds select young shoots of this season's growth from strong and healthy hranches. Cut the leaves off at once leaving only the stuhs, and reject the soft immature buds at the upper extremity of each clon. The bud is inserted in young wood (same year's growth), and a smooth place, generally near the ground, is selected for the operation. Part of the lower hranches may be removed previously to facilitate the work. Make the incision in the shape of a T, same as was directed for budding Roses, using a sharp knife, preferably the so called "Yankee" budding knife which has a rounded point; then lift the edge of the hark with the blunt hack of this rounded point, and insert the hud. Most budding knives, however, are provided with an ivory handle, and then the end of the latter is used for loosening the edges of the incision, by thrusting it under the hark. Cutting the buds is done about the same as for Roses, and in June budding the wood is always left on the bud; but for fall budding peaches the wood is generally removed. Mr. A. S. Fuller gives the following directions for cutting Peach buds. Hold the branch or shoot containing the buds in the left hand, and with the smaller end toward you; insert the knife blade about one inch below the bud; cut a little deeper than you would if the wood was to be left in; pass the knife above the bud about one inch, then cut across through the hark only, about half an inch above the bud; then with the finger and thumh lift up the hark, at the same time press gently forward and the bark and hud will come off, leaving the wood beneath adhering to the branch. Before inserting the bud ascertain whether the "chit" or embry bud, was left intact. In inserting the bud this is held between the forefinger of left hand, and when the knife is withdrawn after making the incision, the lower point of bud is placed under the bark of the stock, and thrust down into position. If the upper end of bud is too long, so that it does not pass completely under the hark of the stock, it must be cut across so as to allow the bark which remains with the bud to fall into place rest firmly on the wood of the stock. A strip of basswood hark, raffia or whatever tying material may be used, is now firmly wound around the stock, both above and below the hud, covering the entire incision, and leaving only the hud and the leaf-stub uncovered. In ten or fifteen days the union will have taken place, if it does at all, and the bandage must at once be removed or loosened, which is most conveniently done by a careful cut across it with a sharp knife.

1,334. **Cut Flowers.** To keep cut flowers in glasses and vases fresh for the longest possible time, the first requisite is to keep the water in which they stand perfectly fresh, either hy frequent renewal, or hy the addition of some antiseptic, like salicilic acid, or perhaps of ammonia, nitrate of soda, etc. The ends of the flower stalks should be cut from time to time. When cut flowers are to be preserved in their first freshness for some special use, says an Exchange, it is better not to put them into water, but, after wetting them well, to wrap them closely in paper or lay them in a pasteboard box and put them in a cold place, the colder the better, so long as their is no danger of their freezing. When stood in water it is not essential that the water should daily be changed. The addition of small quantities to keep the vessel full will answer quite as well. But the vessel should not he very small. To cover many cut flowers in glass which contains hut little water is to insure the quick fading of the flowers. Care should be taken not to allow the stems rest upon the hottom, as in this case they find it difficult to absorb the water. After a day in water in a warm room they will be greatly refreshed if taken from the vase at night, thoroughly sprinkled, wrapped, stems and blossoms and all, as closely as possible in a soaked cloth, and laid aside until the morning. They will be much fresher than if they had been left in their vases, yet will not have bloomed out so much. Before thus laying them aside and again in the morning a bit of each stem should he cut off, as the end soon hardens, and it is needful that the mouths of the sap vessels he kept open. This can also to be done once or twice a day, even if the flowers are kept constantly in their vases. Roses which have drooped hefore their time—as, for example, when worn on the dress—may be wonderfully revived if the stems, after being thus cut, are placed for ten minutes in almost boiling water and then removed to cold water. It is also well to add a little charcoal or ammonia to the water in which flowers are standing. The disagreeable odor which appears when Mignonette and certain other flowers have been for a few hours in water may he prevented by removing in advance all the leaves from those parts of the stems which are within the vase. It is the quick decay of these leaves which produces the odor.

1,328. **Propagating Clematis.** Clematis may be propagated by means of cuttings, layers, and grafts, hut as grafting and striking cuttings require considerable skill and experience to insure a full measure of success, layering is the best method for those who are not proficient in propagating these plants. The layering should be done when the wood is moderately firm, and in your case it will be preferable to layer the shoots in pots. Take a sufficient number of five-inch pots and after placing bits of crocks in each, fill them with a sandy mixture and place them in convenient positions about the plants from which the layers are to he taken. When this has been done bring down the shoots, cut them partly through in a slanting direction and peg them securely in the pots, one in each, and cover with sand. The soil must be maintained in a nice moist state, and the pots should, if possible, have soil or coal ashes packed about them.—A. H. E.

1,352. **Pears Cracking.** This disease, which is quite distinct from the ordinary Pear blight, is the one long known to horticulturists as "leaf blight" or "scald" of the Pear. It is quite destructive, and the writer has had some experience with it in New Jersey. Singularly enough it did not seem to spread, but attacked the same tree year after year, with perfectly healthy trees almost touching it all around. The symptoms of which are described by Professor Galloway under "Quince Leaf Blight" (Reply to No. B 63). The same fungus attacks both fruits. The fruit on attacked Pear trees also shows the carmine-red spots, and these afterwards grow darker in color. The skin becomes very much roughened, and the fruit cracks deeply in the flesh, thereby spoiling its appearance, and rendering it liable to speedy decay. Where the disease appears more or less, every year, says the report, it would be well to thoroughly spray the trees before the buds begin to swell, with the Bordeaux mixture, prepared as follows: Dissolve 16 pounds of sulphate of copper in 22 gallons of water; in another vessel slake 30 pounds of lime in 6 gallons of water. When the latter mixture has cooled, pour it slowly into the copper solution, care being taken to mix the fluids by constant stirring. When the leaves are about two-thirds grown, a second application should be made, this time, however, using a solution prepared in the following proportions: 6 pounds of sulphate of copper, 6 pounds of lime, and 22 gallons of water. Dissolve the copper in 16 gallons of water, and slake the lime in 6 gallons, then mix as described above. The mixtures are to be sprayed over the entire trees by means of a force pump. It would also be well to repeat the applications of the weaker solution every three or four weeks until middle of August. This treatment, if properly carried out, promises to give relief.

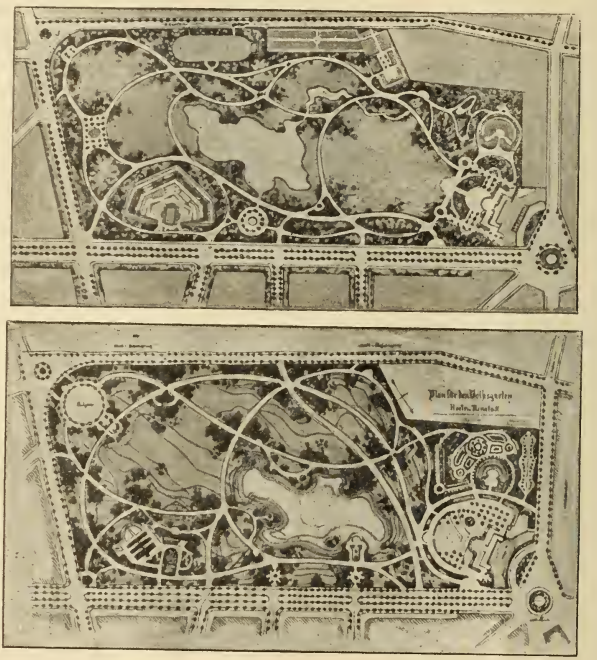
1,356. **Grass from Lawn.** The most sensible way of utilizing law mowings for fertilizing purposes is to feed them to poultry or other stock. If such and similar materials, however, are to be used directly as manure, this can be done by adding them to the compost heap. Mixing them well with the animal manures. Where the latter are not at hand, the mowings may be piled up in a square heap, with other vegetable refuse and the kitchen slops emptied upon it from time to time as accumulated. Or the grass may be mixed with loam and composted.

Two Plans for a Park at Cologne-on-the-Rhine.

Some years ago when we visited the old "Volksgarden" which these plans later on were designed to modernize and render worthy of a large city, we found much to criticise in the arrangement—among other things an undue crowding with trees which were too close even for underbrush to grow, hence bare ground beneath, etc. How different was this from Battersae park, London, as we had seen it shortly before, or some of the parks of Paris as we saw them a little later. Some of the flower beds, on the whole, we thought capable of affording some satisfaction to the visitor, but there was too much wood of an inferior kind, and the whole in other ways far from what such grounds ought to be.

These facts were also recognized by the city authorities, and resulted in the offer of two large prizes for best plans of a veritable "people's garden." The upper one of the two accompanying plans received the first prize, but not being held in close conformity with the peculiar lay and formation of the site, was not adopted for execution. Neither was the plan which received second prize.

Plan No. 2 (the lower one in our illustration) was designed by Mr. Kowallek, the director of city gardens, and accepted by the city. The arrangement of the roads and walks is such that the visitor will have no need to inquire for the chief points of attraction. Following the graceful curves,



TWO PRIZE PLANS FOR A PARK AT COLOGNE-ON-THE-RHINE.

he is led up to them; or, if he wishes, to the various exits. At the same time there are numerous by-walks and paths that afford easy means of distribution, and guard against the danger of unpleasant crowding on days when the park is more than usually thronged with people.

In the lower right-hand corner, outside the park enclosure, we have the Eifel place, with fountain surrounded by lawn, etc. Four streets from the city unite here, and naturally the chief entrances to the park are to be found near. This, with the restaurant with music hall—the leading attraction for Germans—in same corner but inside the park limits, are on higher ground, and afford an imposing view of the grounds, and upon the clear waters of the lakelet with its fountains, water fowls, etc.

The grounds around the music stand towards the park side are laid off in beautiful walks, shaded with large trees, cool and pleasant. Near by is the old fort, transformed into play grounds for children, and surrounded by a fine display of carpet bedding, etc., on one side, and the wonderful Rose garden, in two sections, on the other.

Near the lakelet, a little to the left of the restaurant, we find the indispensable "mineral water" stand, where the popular drink is dealt out in summer, while in winter all sorts of liquids, more or less alcoholic, are sold to the skaters.

The transformation of the old grounds into this beautiful park or people's garden involves an expense of only about $200,000—a mere trifle compared with the cost of similar institutions in America.

Garden Preparations at the Paris Exhibition.

The transformation of an ordinary section of ground, perhaps even a desert, into a blooming park with wide stretches of beautiful lawn, gigantic trees that for all the world look as if they had occupied the ground for centuries, trees in fruit, and shrubs in flower, pleasing colors and contrasts, cooling shade and fragrant atmosphere, and all this work of years crowded into the space of a few months—that is what the preparation of the grounds for any of our modern "World's Fairs" amounts to. The French, we may be sure, are fully equal to the task imposed upon them by the approaching Paris Exhibition, and American gardeners, who visit the grounds, will be rewarded by many novel and curious sights in landscape gardening, pruning, training and grafting fruits, etc. A correspondent of Gardeners' Chronicle gives the following vivid description of it:

What was but a few weeks ago cartruts and rubbish heaps is now being rapidly transformed into neat gravel walks, green lawns, and shrubberies. Already some of the newly sown lawns are quite green and fit to be mowed, and very fine effects are produced by carrying the green lawn right up amongst the low plants at the edge of shrubberies. Some large bunches of bronze and red Pæony leaves with gold and silver Euonymus bushes looked very effective in the delicate new Grass. In the main part of the Exhibition ground in the Champ de Mars the lawns are at a low level flanked by a terrace, on which are planted large Palm trees about 20 feet in circumference.

The most interesting portion of the Exhibition to the gardener will be the ground on the north side of the river sloping up to the Trocadero Palace, and which is almost entirely given up to horticultural exhibits. The lower portion parallel with the river is devoted to fruit trees. Here are hundreds of Apples, Pears, Plums, Peaches, and Apricots, trained in every conceivable fashion, and as regular as the diagrams in an illustrated catalogue. There are beds illustrating the culture of Apples, Pears, Plums, and Cherries as standards, half-standards, pyramids, and bushes; then close fences and trellises showing different ways of training, such as single, double, forked and crossed cordons, espaliers horizontal trained, vertical trained, and radiating; then illustrations of the best way of filling a fence or trel-

lis with various-shaped trees at the most economical distances apart.

There are also specimen trained trees, 5 inches or 6 inches diameter in the stem, in the form of perfects fans, tables, dooms, or pyramids, exhibiting wonders in the art of training, inarching, grafting, and budding. Here we can see beautiful little Currant and Gooseberry trees on stems each 4 feet or 5 feet high, some having cup-shaped heads, some drooping, others trained to fill the low spans on a wall between fruit trees.

Then the advocates and adversaries of grafting should see the specimens illustrating the growth of grafts and buds one, two, and three years old. I was particularly struck with the vigor of a Bigarreau grafted on St. Lucie Cherry one year old. The shoot was about 1 inch in diameter, had been topped at 5 feet, and had twelve lateral branches. It evidently showed that the stock and graft agreed pretty well with each other; but then further up in the grounds can be seen grafts which do not agree so well with the stock, such as Broom on Laburnum, and Acacias and ornamental trees.

Next to the fruit trees come the ornamental deciduous trees, amongst which Prunus triloba and the Forsythias were the most noticeable in bloom. Then beds of Magnolias, Azaleas, and Evergreens illustrating the best and most ornamental forms of planting. The main features of these gardens have remained ever since the last exhibition, and the little lake formed by the stream meandering out from the rockery is exceedingly natural and picturesque. A great number of aquatic plants have been planted in pots in this stream and are beginning to show above water.

I had the opportunity of going with a friend to see the Japanese gardens. The Japanese told us they had lost many of their plants coming over, chiefly the stunted Pines, so that the exhibit will not be so great as was intended; however there are some very curious forms of the dwarf trees, some of which are upwards of 100 years old and are carried about sticking to a mass of rock as a piece of furniture. The Japanese are busy making up the ground, sowing seeds, and arranging their flower-pots, as they have some hundreds of Lilies just shooting up.

The flower beds by the sides of the paths are being filled up with showy flowers such as Pansies, Wallflowers, Stocks, Anemones, Forget-me-nots, Carnations, etc., so that in a short time the whole place will be glowing with color. I was much struck with the beauty of a little border plant growing in tufts about 6 inches high and literally smothered with its pretty flowers. It is called Nycterinia selaginoides, and is well worth growing in any garden.

THE COMPLETE GARDEN.

XXVIII.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page 244*)

RADISHES (Class E. and F.) This may be grown as a crop by itself, or as a by-crop between rows of Cabbages, Cauliflowers, Carrots, Beets, and various other vegetables, both under glass and in open air. Select any rich sandy or loamy soil, well provided with mineral plant food and sow seed in drills, one foot (more or less) apart, and one-half inch deep, firming the soil well over the seed. Afterwards thin to one or two inches in the drills, according to variety, and give clean culture.

The two enemies which the grower has to guard against are the flea beetle and the maggot. Soap, wood ashes or plaster mixed with Paris green, dusted over the young plants just as soon as they appear above ground, will save them from the flea, but it is a hard task to subdue the maggot. Plenty of lime in the soil, or soaking the soil around the young plants with caustic lime water is the only remedy we can suggest.

The small red Turnip-rooted sorts, like Early Erfurt, Scarlet Turnip, Early Carmine, etc., are generally used for forcing, also the olive-shaped and white-tipped French Breakfast, which is a favorite with market gardeners, and deep scarlet Olive. All these small varieties can be recommended for the home garden for first early. Long Scarlet Short-Top, Long White Vienna and Chartier are somewhat later long kinds. For summer the White and Yellow Summer Turnip and White Strassburg are excellent. Among the winter sorts we have the Black Spanish, the Chinese Rose, and the large, mild, and very reliable California Mammoth. All these are generally sown in July, August and September for a winter crop.

RHUBARB OR PIE PLANT (Class A). This belongs to the permanent border, and may be grown from seed or propagated by division of the root stock. Sow the seed in shallow drills in rich soil one foot apart and thin or transplant to 10 or 12 inches apart. In fall or spring after transplant to the permanent bed, four feet apart each way in well-manured ground and giving clean culture. The varieties generally grown are Wyatt's Victoria and Wyatt's Linnæus. Size and excellence of the leaf-stalks, which are used for pie material, however, are dependent more on good culture and plenty of feed, than on the selection of variety. Plants grown from seed show considerable variety in habit of growth.

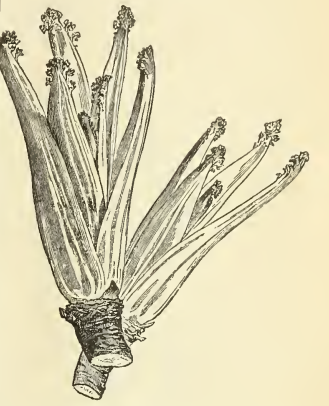
ROSEMARY (Class F). Seed may be sown in drills one foot apart and the plants thinned if needed. The usual way, however, is to plant tufts of it in well drained soil. Here it will remain and yield its leaves, which are used for seasoning, for many years without requiring attention.

SAGE (Class F). This perennial also grows without much care and attention on drained soil. May be grown from seed or

LONG STANDING SUMMER SPINACH.

propagated by layers. Sow seed in spring in permanent bed in drills one foot apart, and leave plants 10 or 12 inches apart. The leaves are popular for seasoning, especially in sausages and meat dressings.

SALSIFY (Class F). Also called Vegetable Oyster. Sow seed in spring, in ground prepared same as for other root crops, having drills one foot apart and thin to four inches. The ground is kept clean and mellow by the frequent use of wheel and hand hoe. The roots are in best condition after frost, and may be gathered all winter when the ground is open. What is wanted for winter's use, however, may be dug in November or December, and packed in sand in the cellar. The main crop can be left out where it grew and only at the extreme north will it be found necessary to give slight winter protection by a light covering of litter or by simply drawing a little soil over the plants with the hoe. The newer Mammoth Sandwich Island is the best variety.



SEA KALE.

SAVORY—SUMMER (Class F). The leaves and young shoots of this annual are used for flavoring. When danger from late freezing is past, sow seed in drills one foot apart and thin to a few inches apart in the row. Cultivate the same as directed for other herbs.

SCHOROZONERA (Class F). This, although a perennial plant, resembles Salsify in a general way but the leaves are broader and the root black in color. It is grown from seed, and cultivated exactly like Salsify, but the roots may be left to grow the second year, and used even after the seedstalks have made their appearance. Sometimes the leaves are used as a salad.

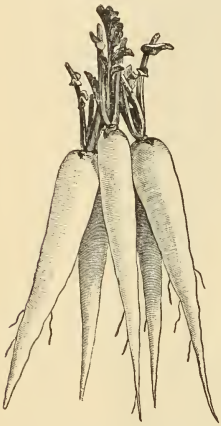
SPINACH (Class F). A vegetable that is perfectly hardy and of easiest culture. For a late spring crop seed is sown as early in spring as the soil is in proper condition; for a fall crop we sow in August and for an early spring crop in September and October. The ground should be well prepared and enriched, and seeds sown in drills one foot apart. Thinning, although advisable where plants are crowding too closely, is seldom practiced. When the plants have attained their full size just before pushing up the seed stalk, or at any convenient time before, they are cut close to the ground with a scuffle or Crescent hoe, and used for the table or marketed. Leading varieties are the Round Leaf, Thick-Leafed, Viroflay, Savoy-Leaved and the Long Standing. The latter is more tardy in going to seed and therefore more valuable for summer than any of the others.

The New Zealand Spinach, a plant of different genus, is sometimes used in the home garden as a summer variety. It needs warm, rich soil and more space than the true Spinachs.

SQUASH (Class D). These, like Cucumbers and Melons, are of a tender nature, and should not be planted until the ground has become thoroughly warm and then only in very rich active soil so to insure the quick, healthy growth which is one of the best means of preventing serious injury from insects. The Bush or summer varieties are somewhat hardier and may be planted a few days earlier than the running or winter sorts. The former are planted in hills four feet apart each way, the latter require from eight to twelve feet distance between the

hills. When the plants are up keep them lightly dusted with plaster or air-slacked lime, to protect from bugs, and when well established, remove all but the two or three best plants in each hill. Cultivate freely and in hoeing draw the fresh soil up around the plants. As a protection against borer injury the first two or three joints next the root may be entirely covered with moist soil. Harvest the winter sorts before even the slightest frost could touch them, and store in a dry room.

Among the early or Bush varieties we have the White and Yellow Bush Scalloped, Bos-



LONG WHITE VIENNA RADISH.

ton Marrow, and the Summer crookneck. The latter is especially popular for the home garden. The list of fall and winter sorts includes Essex Hybrid, Marblehead, Butman, Vegetable Marrow (a favorite English sort) and Hubbard, the latter most popular for market. Cocoanut and Little Gem are small, but prolific sorts, good for summer or winter, with running vines and of the greater hardiness of the Bush class.

THYME (Class F.) This, also a perennial, and easily propagated by division or cuttings, is generally grown from seed as an annual. Sow in shallow drills one foot apart, in April or May, and thin to 6 or 8 inches. Cultivate same as other herbs. The leaves and young shoots are used for seasoning.

TOMATO (Class B.) This crop is too easily grown for a field crop to make its cultivation profitable for the market gardener except for the very early demand. The main crop is a farm crop more than a market garden crop. A few dozen plants properly taken care of will give the home grower a full supply.

To secure early fruit we must start the plants early under glass, give them plenty of room to grow stocky, and harden them well before setting in open ground. This transfer should not take place until the atmosphere and ground has become thoroughly warm, which at the north is not much before June. The soil should be warm, but it need not be very rich. In thin sandy soil have the hills three and one-half feet apart, and before setting the plants mix a shovelful of wellrotted compost, or a little complete concentrated fertilizer with the soil. In heavier soil the plants should be set further apart, certainly not less than four feet, and when very rich, five and even six feet each way. Cultivate and hoe occasionally until size of vines forbids. In the family garden the plants may be trained to a simple trellis ,tied to a stake, or given some sort of support if such is desired. The grower for market simply allows his vines to spread over the ground with equally good results so far as fruit is concerned.

To produce largest possible crop, the Tomatoes should be promptly gathered as fast as they reach or approach maturity. This treatment gives those coming after them a fair chance. The leading ones among a large number of varieties for market are Acme, Perfection, Paragon, Favorite, Potato Leaf. Early King is an extra early but rather inferior sort: Dwarf Champion an ideal sort for the home garden. The latter, on account of its compact and rather upright growth can be planted as close as three feet apart each way.

TURNIPS (Class E). As these are perfectly hardy they may be sown very early in spring to be used like Beets for bunching. For main crop, as also in the home garden, Ruta Bagas or Swedes are generally sown in May or June, and the quicker growing Strap-leaf sorts in July and August or even later. Sow seed in drills eighteen inches apart; guard the young plants against fleabeetle attacks by sifting plaster, air-slacked lime or wood ashes over them, and when well established thin to 6 or 8 inches apart.

The leading Swede (Ruta Baga) varieties are American Purple Top, Laing's Improved Swede, Shamrock, Large White French, Sweet German, etc. Among the Strap-leafs we have Red-Top, Extra Early Milan, Purple-Top, White Globe, White Egg, etc. Seven-Top is grown for greens at the south.

SEA KALE (Class A). Sea Kale, although one of the most delicate and palatable of table vegetables, is scarcely known in our markets and only very rarely cultivated in the home garden. It can be grown from seed or from division of the roots. If from seed, select well prepared and well enriched ground and sow in spring in drills one foot apart, and when the young plants have made four or five leaves, transfer to the permanent bed in rich soil three by two feet apart, and give good culture. Or if old roots can be obtained these are cut in pieces four inches long and planted in hills, as directed for seedlings. The plants need protection against northern winters, and the crowns must be covered by a pretty thick layer of coarse manure or other litter. The third season from planting the young shoots may be blanched and used. The crowns in early spring are covered with some suitable material, sand, mold, etc., to exclude light and blanch the shoots. Sometimes inverted flower pots, boxes, etc., are used for the same purpose with good effect. When cooked Sea-Kale is pronounced by many epicures to be superior to Asparagus or Cauliflower.

Achyranthes- Culture and Varieties.

CHAS. E. PARNELL, QUEENS CO., N. Y.

The several species or varieties of Achyranthes form when taken together a very interesting and useful group of highly ornamental bright-leaved Foliage plants belonging to the Natural Order Amaranthaceæ. They may be described as being stove or warm green house plants of somewhat succulent habit, and rapid growth attaining a height of from twelve to twenty inches and having opposite cordate or oblong lanceolate leaves which vary greatly in color, some being carmine, crimson and bronze, while others are beautifully marked and veined with green, yellow and pink. The flowers are quite insignificant. All are of the easiest culture, and retain their bright colors throughout the hottest summer weather. All are very beautiful, indeed, and are largely employed in ribbon gardening and other situations where plants are to be grown in certain shapes and forms. They require the full sunshine to bring out, and perfectly develop their intense colors. They can also be grown to good advantage as single specmens or groups in the mixed border, while for show or exhibition purposes or for the decoration of the warm greenhouse during the winter season their value is recognized.

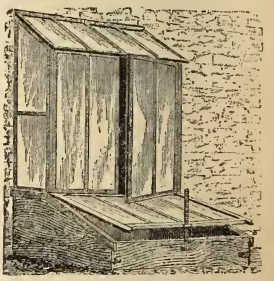
For the decoration of the flower border, or for use in ribbon work, bedding or massing purposes, young plants should be rooted as early in the season as possible, and grown on in a moderate temperature, until the weather becomes settled (or about the middle of May) when they can be planted outside. Previous to that time they should be pinched back occasionally, to obtain compact plants. For inside decoration during the winter season, or for show or exhibition purposes, some of the most promising of the young plants should be selected and planted out in a deep well-enriched border, where they will require but little care and this will consist in pinching them back about once a weak in order to obtain compact specimens. Water thoroughly whenever necessary. About the tenth of September they should be taken up and potted. In potting use porous or soft baked pots, and let them be proportionate to the size of the plants, drain well and use a compost composed of two-thirds turfy loam, one-third well decayed manure, and add a fair sprinkling of bone dust. Water thoroughly and place in a close moist situation for a week or ten days, so as to enable them to take hold of the soil; then they may be brought inside.

For winter they should be given a light sunny situation where an average temperature of 55 is maintained. Water should be given thoroughly whenever it is required, and as soon as the plants have become well rooted, liquid manner should be given once a week. Slugs are very partial to the Achyranthes and will soon ruin a plant if permitted to have their own way. Among insect pests green fly and red spider should be carefully guarded against. Propagation can be most readily effected by cuttings of the half ripened wood.

The generic name is derived from "Achuron" (chaff) and "Anthes" (a flower) in allusion to the chaffy nature of the floral leaves

The following are the most desirable Achyranthes varieties:

A. Verschaffelti, a native of Brazil, leaves cordate in shape, the upper side being of a dull crimson maroon, underneath they are of a deeper crimson. Stem crimson, a robust growing variety attaining a height of from eighteen to twenty-five inches. *A. V. aurea reticulata* is a variety of the above, of dwarf



ENGLISH TOMATO FORCING FRAME.

compact growth. Its leaves, which are of a light green color, are regularly marked with a net work of yellow. Stems purplish carmiue. A very pretty variety. *A. V. acuminata*, a variety of spreading habit, having sharply acuminate dull crimson leaves. *A. V. Cascii* differs from the above in the variegation of its leaves, which are light green with yellow veins. Stem purplish crimson. *A. Lindeni* is of dwarf compact habit growing about eighteen inches in height, leaves lanceolate in shape and of a dark blood-red

color. *A. L. Aurea reticulata*, a distinct and beautiful sub-variety of the above, having light green leaves which are beautifully veined and marked yellow, sometimes blotched with red. *A. L. Emersonii*, a variety of A. Lindeni, having bright red leaves and stems—One of the best. *A. Collinsii* grows about two and a half feet in height, of compact habit. Leaves willow-shaped, most beautifully variegated with golden yellow and green. Stems and midribs bright crimson. *A. Woolseyii* is a very distinct, dwarf minature variety growing about sixteen inches in height, of compact habit with small foliage of a deep bronze color.

English Tomato Frame.

Our English cousins like Tomatoes as well as we do, but they find it not quite so easy to produce them. England's sun is not warm, and her skies not bright enough to bring the crop to perfection and maturity in the open air. But the fruit is too good to go without, and since it cannot be grown otherwise a system of forcing has to be adopted by them.

A good way of summer forcing is shown in illustration. The frame is shaped like a desk with book case and intended to be set against the south side of a wall. The desk part gives us admission to the soil, in which the plants are growing. The upright, which is all surrounded by glass, except at back, gives sufficient space for a single row of plants. The front, consisting of swing doors, and the top, can be opened for ventilation. English firms manufacture such frames in any length desired, and offer them for sale at about $3.00 to $3.25 per running foot.

Onions: Cheap Weeding and Costly Seeding.

FRED W. CARD, BRADFORD CO., PA.

Some time since I saw an article in one of the agricultural papers recommending raking over Onions with a garden rake soon after they were up, to destroy small weeds. Acting on the suggestion, I made a small hand drag in the form of a "wing" or "butterfly" drag except that there are two center pieces fastened together with hinges and the arms framed directly unto these. The material used was one inch ash board, with 10 penny steel nails about two inches apart, for teeth. There are three arms on a side and the whole is three feet long, and the same in width. A strip is fastened to the end of the center pieces for a tongue.

Have tried this two seasons but prefer using it before the Onions are up. This year the first time, which was about ten days after sowing, I went crosswise of the rows, and lengthwise a few days later. While it does not work as completely as one might wish, I find that it destroys many weeds without injuring the Onions, and requires but little time to do the work. The first weeding is usually the most tedious and expensive, and anything that will lessen that work is worth looking after.

I would recommend using thicker lumber and larger nails, as mine is not heavy enough without weighting. Also I think that if the tongues were fastened on top a little back from the end, it would draw more evenly, as I find it necessary to fasten a rope from the end of the tongue to the back of the drag to prevent the front end from being lifted from the ground.

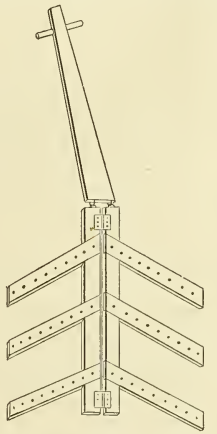
EXPENSIVE SEED. I have usually paid more for seed than my neighbors, and have never had any that was not good until this year, when I bought two pounds of my seedsman's "own growth" and a pound not their own growth. The difference can be plainly seen from any part of the field. Not more than half of the cheap (?) seed grew.

It is of course impossible to estimate the difference in the crop now, but I think it safe to say that one pound of the good seed will produce at least twenty-five bushels more Onions than this pound of cheaper seed. In that case, at fifty cents per bushel, an average price, there is $11.50 loss on the crop to be added to $1.50, the price of the seed, making the cost $14.00 as compared with $2.25 the price of the good seed.

It is but fair to state that I purchased one pound in the same way last year and could see no difference, but I ran the risk, and this time I am caught.

Fruit Picking Devices.

While it is true that we have been making considerable progress in the construction of ladders and other devices for picking fruit, there seems to be still latitude for much further improvement. We are yet far from perfection. A section ladder which we have



ONION WEEDING: A SMALL HAND DRAG.

in use, and which consists of a number of adjustable sections each seven feet long, does very well; but when a length of four or more of these sections is required, it makes a pretty heavy ladder to lift, and sometimes we get afraid of it, especially when there is no support whatever between top and foot.

The orchardist needs quite a variety of sizes of ladders, and there is no need of having any of them very heavy. Young straight Basswood trees sawed once through the center, and then trimmed down to make them light enough, are splendid material for the sides. Light double or step ladders of various lengths are also a necessary requisite in every orchard. If we add to this the simple board ladder described elsewhere in this issue, we will have a pretty good outfit in the way of "climbing" devices,

We doubt whether a better receptacle could easily be found for gathering Apples and Pears than a light round willow basket of half-bushel size, with strong handle and hook fastened to this, so the picker can hang it readily to the nearest limb. In order to facilitate the lowering of the filled baskets to the ground, we generally make use of a piece of washline. One end of this is fastened to a limb near the picker, and the other end supplied with a hook, is attached to the basket when full, and the latter lowered to the ground, to be emptied there and pulled up again into the tree by the same means. Planks or ladders may often be laid from limb to limb in a tree, and if properly fastened, will supply a safe and convenient foot rest for the picker. Great care, of course, is always required in placing all such supports solidly, and where the least doubt exists, to tie them, and ladders also, firmly to the tree to avoid their moving about, or giving way suddenly. Broken limbs often are, and may be in your case, the result of neglect.

The Rascally English Sparrow.

The Department of Agriculture, Division of Economic Ornithology and Mammalogy, has issued a voluminous pamphlet (over 400 pages) on the English sparrow. It presents the subject in all its various phases and aspects, gives a heap of evidence both for and against the sparrow, and, in summing up reaches the conclusion that the bird is a nuisance and unworthy of protection.

From this standpoint it recommends the immediate repeal of all existing laws which afford protection to the sparrow and the enactment of laws prohibiting to give them food or shelter, and protecting their natural enemies, especially the butcher bird, sparrow hawk and screech owl. The authors are not in favor of a bounty for killing the birds, but advise people, for their own good, to shoot, trap and poison them, to destroy their nests and disturb their roosting places. The devices for trapping the sparrow, described by word and illustration, and the methods of poisoning mentioned are for the most part simple and practical. Altogether the pamphlet is quite interesting and useful. Every reader should apply to their Representative in Congress for a copy, which is free to all.

Few sinners, however, are as black as they are often painted. That the sparrow does now and then a good deed, is admitted by nearly all, and some people speak quite strongly in favor of the bird. It is well to hear all sides. The Daily World has just undertaken the "Sparrow's Vindication."

It begins to appear, says the World, that the English sparrow has been grievously misjudged and slandered. He was brought here to protect the trees against caterpillars but for many years it has been asserted over and over again that he was a worthless little beggar who fed fat upon the crumbs in back yards and totally neglected his work as a caterpillar exterminator. Popular displeasure with him found expression a year or so ago in a bill before the Legislature making it a penal offense for anybody to feed sparrows or protect them.

The blizzard of March, 1888, very nearly exterminated the birds, and their number in New York and Brooklyn is still very small. Apparently as a consequence the trees are this year infested with a species of caterpillar whose presence first shows itself in what looks like a white fungus growth on the under side of the branches, but which is in fact the resting-place of the eggs and larvæ of the insect.

The trees are suffering terribly. Many of them are dropping their green leaves, which dry up and fall without ripening. Others attacked by the more advanced caterpillars, have had their leaves eaten up, leaving nothing but midribs to show that there ever were any leaves. Meanwhile the sparrows are daily and industriously engaged in tearing the egg depositories to pieces and feeding upon their contents. But there are not enough birds for the work, and it seems a fair inference from the facts that the trees are being destroyed because of the enormous depletion of the sparrow population, and that while we have been abusing the impudent little birds for doing nothing in former years they have really saved our trees until now from the pest which afflicts them now.

Ripeness in Water Melons.

People who have grown Water Melons year after year, especially for market on a large scale, have no difficulty in picking out

the ripe ones by sight and sound, yet this same task often perplexes the novice who goes in his garden for a ripe Melon and fears to lessen his limited supply by either slashing into them before maturity or leaving them until decay has set in. Few naturally fine vegetables or fruits are more disgustingly bad than an over-ripe Watermelon. B. F. Johnson tells in a recent number of the New York Tribune how we can easily tell a ripe Melon from a green one.

While growing, he says, and up to the time it has reached the point of maturity, a Melon is a perfect solid with no solution of continuity in its substance. At that stage, and before, the Melon has nearly all the gravity of water, and when immersed, it will barely float, or if it floats will show only a fraction of surface above the water line. But on reaching the mature stage the cells begin to contract and shrink, cavities occur, and the Melon loses in weight, if not in outside appearance. Before maturity,on being struck lightly with the knuckles or snapped with the thumb and finger, the sound following is resonant, similar to that of a whole glass or crockery dish: whereas, if the fruit be ripe, the sound is flattened, showing a solution of continnity in consequence of the shrinkage of cells.

Therefore to tell whether a Melon is ripe or still in a green state it is only necessary to snap two or three at the same time, choose the ripest and that has the dullest sound. It is common that southern Melons are picked and forwarded before they are ripe, and if on testing them there are none but those which respond to the trial blow with a resonant sound, they should be rejected as unfit for the table.

Fruit Matters in Illinois.

[Recent discussions of the Alton Southern-Illinois Horticultural Society. Reported by F. C. Riehl.]

Browne: Am afraid we cannot use the spraying method on Peach trees. I sprayed one of mine last year and it is barely alive now. In Southern Illinois, last year, they tried spraying Peach trees with a solution of two pounds of London Purple to 300 gallons of water, and even then some of the leaves fell off. Think we had better keep the spraying nozzle off the Peach trees until we know more about it. Davis: Spraying does not prevent the falling off of young Apples, that usually takes place soon after the fruit is set. All fruit trees do this when overloaded. It is nature's way of thinning.

Vineyards. Browne: I have procured a pump, which cost about $25, and shall use the Bordeaux mixture. If by an expense of $30 or $35 we can save an entire crop of Grapes, it will certainly pay, and someone must try the experiment. We have found that it does not pay to bag Grapes for market. If the bags are put on right and in time, they will preserve the Grapes, but even then the skin is so tender that they will hardly bear handling For family use and for exhibition, bagging is all right, but for market purposes, we must find some other means by which to get ahead of the rot. Think Moore's Early and Worden are about the best market Grapes we have. Generally speaking, white Grapes are not so good for market as black ones.

Small Fruits. Jackson: On March 15th I burned off an old patch of Sharpless and Miner Strawberries, and they are now apparently in splendid condition for a crop. Jno. Riggs—Mr. Vandenberg has a patch of Red Raspberries, principally Cuthbert, that are nearly all dead, though the plants look strong and healthy. What is the cause of this? Browne—It is caused by a beetle that bores into the cane a few inches above the ground and deposits its eggs in it. This causes the immediate death of the cane.

Jackson: I think my patch of Brandywine killed out because the plants were old and had exhausted the nutriment in the soil, and I believe that this is one of the principal causes of rust on Strawberries. When the patch gets old the plants become weak, and hence fall easy victims to the disease. It is not necessary to grub up a plant that has rust. Cut it off with a hoe and leave. Davis: I prefer to grub them up and carry them just as far away as possible. Two years ago I noticed one rusty plant in a small patch of Kattatinnys but paid no attention to it. The next year the whole patch was rusty.

General Notes and Items.

Worthy of Imitation. It is indeed a beautiful work of charity in which the Boston Flower and Fruit Mission engages. Every Tuesday and Friday morning, from half past eight until noon, Parker Memorial Hall is now kept open for the receipt of flowers, plants, fruits, fresh vegetables, jellies and eggs, which are distributed amongst the poor and sick in their homes, and in the hospitals, etc. Such Missions exist also in other large cities; but it is an example that should prove infectious, and the infection should sweep through the whole length and breadth of the land, like a fire of holy love, and kindle up Fruit and Flower Missions in every hamlet, town and city. A strong appeal will bring out an avalanch of gifts of things, many of which are of little or no value to the owner, yet a boon to the suffering member of humanity who receives them. Verily lcre is a wide field for satisfactory work.

The Outlook. All indications at this writing point to a much less abundant supply of leading fruits—Grapes, Apples, etc.—than we have had for several seasons. The output of canned goods also seems to be on a greatly reduced scale this year, and there is every reason to expect an upward movement in prices of fresh and evaporated fruits, canned Tomatoes, and similar articles. Let our readers make the best use of their produce. Market the best; evaporate and can the rest. Let none go to waste. Tomatoes also are easily canned; and much safer, and more wholesome in glass jars than in tin cans. Let the good housewife make a note of it.

Greenhouse Heating. The results of Prof. Maynard's tests of the hot water and steam methods singularly enough seem to contradict what is generally accepted as a fact by all large florists, namely that the steam method is the more economical of the two. The average daily temperature in the house heated by hot water was slightly above the temperature in the house heated by steam, and yet the consumption of coal in the latter was decidedly larger than that in the former. We hope Prof. Maynard will continue these experimeuts.

Apple Crop in Western New York. Unfavorable as was the report on Winter Apples for the Western New York Counties in our July issue, the prospects seem to grow even less encouraging. The leaves of the trees about La Salle are effected by a blight which causes their edges to crumple and turn black and the fruit drops or is effected by scab. From Orleans county which adjoins Niagara Mr. Virgil Bogue who a month ago reported an average crop, now says Winter Apples are a total failure.

Cabbages Bursting. Tipping or kicking over mature heads that show this tendency is a practice we have followed for several years with apparently good results. While it does not prevent the final catastrophe, if the mature heads are left out an unreasonable length of time during the growing season, yet the heads seem to keep on growing longer and larger without cracking open than they might be expected to do otherwise.

Transplanting Evergreens in Summer. While planting may be safely done in the hot months yet all things considered, the spring is the better time for planting. Packing for market or shipping, use plenty of moss, only damp—not wet. Sun or wind should not be allowed to strike the roots. Pack as well and as quickly as possible, and, in planting, firm the soil well about the roots.—*Samuel Edwards.*

A Yellow Cuthbert. In the January number, mention was made of this: Last year for the first time, I found among my Cuthberts a Yellow Raspberry like the former in every respect save color. Time will show what it amounts to, but I think it is a seedling from Cuthbert.

Our Neighbor's Hens. A penalty of seven dollars with costs is what the Connecticut Legislators have provided by a new law for the misdemeanor of letting one's hens trespass on other people's gardens. Go thou and do likewise, we say to the legislators of New York state.

The Leader Grape, a new Ohio variety, promises remarkably well according to those who have met it in fruit. "White, of best quality now known, as hardy as Concord and healthier, cluster fair sized and altogether beautiful" is the report. We shall iuvestigate.

Industry Gooseberry has proved free from mildew in some localities, and subject to the disease in others. Growers disagree on proper treatment for the prevention of mildew, some recommending heavy manuring, others warning against such treatment.

Weeds Seeding. Many a clean garden up to August will find enough weeds yet at hand to sift the ground over with seeds.

Received at this Office.

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Reports from the Consuls of the United States. No. 103, March. 576.

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Thirteenth Annual Report of tbe Trustees of the Cooper Union for the Advancement of Science and Art. Edward Cooper, President, New York City.

Tenth Annual Report of the Secretary of State of Michigan, relating to Farms and Farm Products. Lansing, Michigan. 162.

Nineteenth Annual Report of the Entomological Society of Ontario for 1888. W. S. Saunders, Secretary, Toronto, Ont. 92.

Thirteenth Annual Report of the State Horticulture Society of Missouri. L. A. Goodman, Secretary, Westport. 788.

New York Market Quotations, Showing Tendencies.

	Week ending July 10.		Week ending July 3.	
Apples—Astrachan, per bbl.....	1 50@2 50			
Bough, per bbl.....	75@2 00			
Southern, per 1-2 bbl crate...	50@1 00		25@1 25	
Peaches—Ga., per 3-to-bu. box...	75@1 00		75@1 50	
S. C., 1-2 bu. box....	1 50@2 00		1 50@2 00	
N. C., per 24 qt. crate.....	1 00@1 75		50@1 50	
Plums—Wild Goose, 8 qt. crate..	75@1 00		1 00	
Pears Ga., Le Conte, per bbl...	2 50@3 00			
Bell, per bbl.....	2 50@3 50			
Cooking, per bbl.....	2 25@2 50			
Cherries—Fancy, large, per lb..	12		10@	14
Large kinds, soft.....				9
Medium sized, ...				4
Sour, round..			6@	8
Strawberries—Western N. Y., qt.	5@	11		
Raspberries—Up-river red, cup.	3@	5	3½@	4
Jersey, red, per pint.....	3@	5	3@	4
Jersey Black Cap, pint.....	2@	4		
Gooseberries—Green, per qt....	4@	5		
Huckleberries—Jersey, qt.....	6@	8	10@	11
Md. and Del., per qt.....	4@	6	8@	10
Currants—Large, per lb.....	1@	5	3½@	5
Small, per lb.....	1@	3	3½@	4
Blackberries—Dewberry, Wilson, qt	4@	6	10@	12
Wilson,,Md. qt.....	3@	4	8@	10
Watermelons, Ga., per 100.....	10 00@20 00		12 00@25 00	
Apples—Evap't'd, pr. to fancy...	5½@	6	5@	6
Evap't'd, common.....	4@	5	3½@	4¾
Evaporated N. C., sliced.....	3@	5	3@	
Evap. State, quarters, 1886...	3@	3½	2¾@	3¼
Evap. Ohio and Mich., qrs...	3½@	4	2¾@	3½
Evap. Chopped, per lb.....	1¾@	2½	1½@	1¾
Evap., cores and skins.....	1½@	1¾	1	@ 1½
Peaches—Del.,evap't'd,peeled'88	10@	13	10@	13
Del., evap't'd, unpeeled '88..	5 @	5½	5 @	6
North Carolina, sealed fancy				8
Southern, unpeeled.....	2 @	3	2 @	3
Raspberries—evap't'd '88.....	18@	19	19	
Sun-dried 1888.....	17		17@	18
Cherries—Evap., per lb.....	9 @	12	10@	14
Huckleberries—Evap..			10@	11
Plums—Evap , State.....	5½		5½	
South Dauuson, per lb.....		5		5
Blackberries—1888, Evap.....	3½@	4	3½@	4
Potatoes—L. I., bulk per bbl....	1 50@1 75			
Southern.....	1 00@1 50		1 75@2 25	
Southern culls.....	50@	60	75@1 00	
Cauliflower, per bbl.....	1 25@2 50		1 25@3 50	
Cabbage, Long Island, per 100...	1 50@2 50		1 75@2 25	
Corn, per 100.....	75@1 00			
Cucumbers, Southern, per crate	15@	20	40@	75
Long Island, per 100.....	30@	40		
Green Peas—L. I., per bag.....	1 50@2 00		50@1 00	
Onions—Egyptian, 2 0-lb. bag...	2 25@2 50		3 25@3 50	
New Orleans, per bbl.....	1 50@1 75		3 00@3 25	
Eastern Shore, per bbl.....	1 00 "	1 25	2 25 "	2 50
Squash—Long Island, per bbl ..	1 00 "	1 50		1 50
String Beans—L. I., per bag.....	1 00 "	1 50	50 "	1 00
Tomatoes—South., selected.....	1 25 "	1 40	50 "	1 00
Jersey, per crate.....	1 50 "	3 00		
Turnips—Jersey white, 100 bun..			2 00@3 00	

POPULAR GARDENING

AND FRUIT GROWING.

"ACCUSE NOT NATURE, SHE HATH DONE HER PART; DO THOU BUT THINE."—MILTON.

Vol. IV. SEPTEMBER, 1889. No. 12.

Once more the liberal year laughs out,
O'er richer stores than gems of gold;
Once more with harvest song and shout
Is nature's bloodless triumph told.
Our common mother rests and sings,
Like Ruth, among her garnered sheaves;
Her lap is full of goodly things,
Her brow is bright with autumn leaves.
O favors every year made new!
O gifts with rain and sunshine sent!
The bounty overruns our due,
The fulness shames our discontent.
We shut our eyes, the flowers bloom on:
We murmur, but the corn ears fill;
We choose the shadow; but the sun
That casts it, shines behind us still.

Whittier.

NOW FOR fall slipping of plants.

IN THE Buffalo parks September sowing of lawns is preferred.

PROTECTION. Tender plants that are shielded from the early frosts usually pay large returns in bloom during the warm days which follow.

WOOD WOOL. This material begins to be regarded in Europe as most suitable material in which to pack soft fruits. Imported toys are usually thus packed. The material is soft elastic, cheap. It comes from the wood of the Aspen Poplar and does not seem to impart its woody smell to fruits packed in it.

PRIMULA OBCONICA. We observe that this interesting little plant is becoming quite popular, and frequently seen on the exhibition table. It may be well to once more call attention to its poisonous qualities. An exchange cites several instances of inflammation of face and hands, being caused by working these plants.

HORTICULTURE IN SCHOOLS. The "Industrial Agricultural Education Bill" has been introduced into the English House of Commons. Its object is to secure for children in rural districts practical instruction on fruit, flower, and vegetable growing, packing fruit for market, keeping cattle and other like subjects, and also to carry on this instruction after the children leave school by lessons to begin evenings and Saturday afternoons. An admirable move, indeed.

SEPTEMBER FAIRS. Of course our readers will visit the autumn fairs freely. By a close study of the exhibits, and in conversing with the exhibitors, who are always glad to talk about their exhibits and their ways of managing, many valuable new points will suggest themselves to the observant visitor. It is true there are traps set for the unwary, rum stands, wheels of fortune, auctions of "gold" watches, etc (let this be said to the shame of the fair managers); but the sensible visitor will pass the swindlers by, take the information that is so freely offered keep his money, and put in a day or two much more profitable than he could at home.

JAPANESE VEGETABLES. The prefix Japanese, Chinese, Russian, etc., gives us by no means an assurance that a variety of fruits or vegetables is of special value, or unusually promising. Far from it. The real good ones among all the many newer introductions are few. We have already noticed and pictured the Japanese Squash, which has often been introduced into Europe and America under the name "Yokohama." Now we feel inclined to say a good word for the Japanese Egg Plant, of which we have two varieties, Early Round and Early Dwarf. Both are hardy, so that we had no trouble in starting plants early in April in a very cold frame. The round sort gives quite fair-sized fruit, is early, apparently productive without spines. Perhaps not large enough for market, but valuable for the home garden, and altogether interesting.

American Florists in Convention at Buffalo. Well Attended Sessions.

It does one's heart good to meet with the florists. The sessions during the three days of the meeting, Aug. 20th to 22d, were well attended, and every indication pointed to a state of prosperity unparalleled among horticultural societies, which like the florists', stand solely on their own resources. The annual membership fee, a year ago, had been raised from $2.00 to $3.00; yet, according to the Secretary's statement, members have paid their annual dues without complaining, and the society counts as many members as ever. The treasury is moreover now well supplied with funds.

How different is this state of affairs compared with the usually cramped finances of national and state fruit and vegetable growers societies.

For place of next meeting Boston was unanimously chosen.

The election of officers for the ensuing year resulted as follows, secretary and treasurer being re-elected, viz.:

President, J. M. Jordan, of St. Louis, Mo.; Vice-President, Michael H. Norton, of Boston, Mass.; Secretary, Wm. J. Stewart, Boston, Mass.; treasurer, M. A. Hunt, Terre Haute, Ind.

An abstract of President May's address is given elsewhere in this issue. A large number of valuable papers were read. Abstracts of the most important of them will appear in our columns latter on. In the following we give a synopsis of the proceedings.

EXPRESS RATES. Mr. Peter Henderson states that the express companies now charge double rate for plants, flowers, etc., forwarded in open packages. To secure single rate, the plants, etc., must be done up in such a way that they can be mixed up with other merchandise. This is a hardship, since plants during summer cannot be shipped safely unless more or less exposed. The only remedy we have against the express companies, unjust decree is to ship all plants as much as possible by freight, which, however, will not do for long distances.

DUTY ON BULBS. Mr. Henderson speaks in favor of the reduction or entire abolition of the duty on flowering bulbs. Bulbs for forcing can not be grown in America, hence we have no need of any duty on them "for protection," and such tax only serves to make them dearer and to reduce their use. Mr. Allen, of Garden City, has stated to the speaker that he can grow Gladiolus and some other out-door bulbs cheaper than they could be imported, hence protection is not needed in this case either. The abolition of duty on Lily of the Valley bulbs has been beneficial to the florists and to the public at large, and there is no reason why the duty on other bulbs should not be abolished also. This sentiment prevailed after some discussion, and a resolution was adopted expressive of a desire for the reduction or entire abolition of bulb duty.

BADGE BOOK. To facilitate the mutual recognition of members at the meetings, the society on recommendation of the committee having the matter in charge, adopts the "badge book" system which has given such good satisfaction to the nurserymen at their conventions. Mr. Chas. A. Green, who has a copyright on the badge book, has graciously given his consent to its use by the society.

NOMENCLATURE. The committee report complains of the exaggerations in cuts and chromos, and calls it a nuisance which it seems should be abolished. The recommendation that a committee be appointed to whom catalogue makers should submit their catalogues, and cuts and chromos of novelties with specimens for comparison and endorsement, is readily adopted by the society. The general feeling against the abuse in question appears to be very strong.

SOME OF THE BEST ROSES OF RECENT YEARS. What has become of all the new introductions? asks Mr. Wm. C. Barry. Of nearly 400 varieties introduced in England in four years, only 40 or so are generally exhibited, and only 10 are commonly planted and really good Roses. His complete list and description of varieties which he has found superior for out-door culture, will be given later. In the discussion following this paper, Mr. John Thorpe says Roses in the garden are of as much importance as Roses in the greenhouse. Out-door Roses are the people's Roses. Has seen Mr. Carman's hybrids of Rosa rugosa. They do not seem to be affected by black spot. The society should try to make the cultivation of hardy flowers more popular, not confine themselves so exclusively to cut flowers. Mr. Henderson states we should grow the Monthly and Tea Rose varieties in preference to the Hybrid Perpetuals. The cry is always for hardy Roses and perpetual bloomers. The Hybrid perpetual is in most cases disappointing.

ELEVATION OF FLORISTS' BUSINESS. This subject was treated by Mr. Robert Craig, of Philadelphia, Pa., and very ably too. Horticulture itself, he says, is elevating in its character—morally, mentally and physically. In our relations with one another we have often been too lax. Just obligations ought to be met and considered sacred. The catalogues, although in some instances guilty of exaggeration, in the main contain sound teachings. One firm last year had all cuts taken from photographs. Novelties should be well tested before sending out. Few of the great things survive the first year. Generally the man who reaches highest success is the specialist. In seeking to improve we should not think to see very rapid or startling results. Improvements go slow. Boston first and Philadelphia next, have been made horticultural centers in consequence of large appropriations from private individuals for the establishment of horticultural institutions (Arnold Arboretum, etc.). Such institutions should be established in other large cities. Mr. Craig also alluded to the World's Exhibition in 1892, and spoke of the importance of having the floral industry well represented in the Committees. The exhibition will be another means for us to learn and advance. French florists excel in tasteful conception of decorative art, but Americans are ahead in the cut flower business.

(To be Continued.)

By-Notes of the Convention.

BOSTON'S turn next.

CANADA was well represented.

PRESIDENT JORDAN sounds well.

FIVE HUNDRED florists saw Niagara Falls.

THE FLORISTS Hail Association is a success.

IT WAS IDEAL Convention weather, cool and bracing.

THE EXHIBITION of four herbariums was a stride in the right way.

IT WAS the most business-like convention yet held by the association.

JAMES HENDRICK of Albany is a ready debator and makes telling points.

THE FLORISTS' PROTECTIVE Association is now a regular branch of the Society.

THE TREASURER now receives $200 in compensation for his arduous labors. It is well.

THE BUFFALO 600 Acre Park proved a surprise to many of the 600 visitors who drove through it.

THE SOCIETY has reached its Jordan after climbing a western Hill and enjoying a delightful May-day.

THEIR NATURAL SPHERE. Perhaps it is the greatest Horticultural Society on earth because there are so many women members.

MR. MAY ON NOVELTIES. The new things we get from abroad are novelties only in name and not worth the paper it takes to describe them.

THE STANDARD POT. A certificate of merit is to be awarded next year to the potter who conforms most nearly to the standard given by the Committee.

A GENUINE SURPRISE to President May—the presentatiou of a fine microscope by the Society in recognition of his valuable services. And it moved him deeply.

THE FLORISTS talk well and to the point usually. Still there is not quite that freedom in the discussions which one meets when fruit growers get together.

QUITE ENGLISH YOU KNOW. Mr. Peter Henderson the vetcran florist aud author was struck by the resemblance of the meadow of Buffalo Park to Hyde Park of London.

CHRYSANTHEMUM EXHIBIT in Indianapolis November 5th. Mr. Hunt announces that Mrs. Benjamin Harrison offers a silver cup as a National Prize for the most promising seedlings.

EX-PRESIDENT THORPE looks upon the French Cannas of which Henry A. Dreer showed so fine a collection as the most valuable novelty of the decade. His judgment carries great weight.

ORCHIDS. A great debt is due to Pitcher and Manda for their fine exhibition of Orchids; and to the Manda brothers, for their courteous answers concerning these rare flowers as given to the many enquiring sightseers.

MANY VISITORS called at the POPULAR GARDENING office, many more at the Experiment Grounds of the paper located at LaSalle. The editors greatly regret that they could not personally meet all of these friends.

IF OUR fluent correspondent W. Falconer, who takes in these conventions, could only speak in public as readily as he writes, what a power he would be in the meetings. He should overcome his natural modesty in this respect.

A SPECIMEN fruit or flower, put on paper in natural size, looks exaggerated, says Mr. Henderson. We always thought it looked rather smaller than its original, and for that reason were inclined to excuse a slight exaggeration.

THE SHORTEST SPEECH of the meeting was made by Mr. Henderson. It contained one word "no." It was in answer to the query Can the Society do anything to regulate the prices of bedding plants throughout the country?

A WORTHY RECOMMENDATION. Dr. F. M. Hexamer to represent Agriculture on one of the Committees of the coming World's Fair! He has the Society's unanimous and enthusiastic endorsement. Of course, John Thorpe should have charge of the horticultural branch.

A NATIONAL CHRYSANTHEMUM SOCIETY, with John Thorpe, President, W. K. Harris, Vice-president, Edwin Lonsdale, Secretary, John Lane, Treasurer, and a membership of more than fifty—an offspring of the Florists Association, born, Minerva-like, in full armor and equipment.

THE ASSOCIATION learned that it is no mistake to take its mammoth self to a city that in population ranks below the largest eight cities on the continent. But then Buffalo has an unequalled hall for conventions and the unparalleled Niagara Falls as a suburb. Do come again.

WHAT STUMBLE at the National Flower not daring to tell your choice? We are disappointed. And yet it is worthy of mention that an unofficial canvass among the florists by a representative of the Buffalo Commercial Advertiser showed more votes for the Perennial Phlox than for all the others combined. The florists at least will not vote for a weed.

A Fine Summer Blooming Plant: The Rose-colored Cone Flower.

Among the stouter-growing hardy perennial plants which give entire satisfaction in the writer's garden is the Cone flower (*Echinacea intermedia*) or as some call it the Rose-colored Sunflower, and of which an engraving showing the bloom somewhat below the natural size is annexed. It has been a wonder to us that more has not been made of this fine plant in the catalogues of hardy plant growers, for in our garden it certainly has always ranked among the best. It is a fine clean-growing plant reaching a height of three feet to four feet and blooms for many weeks in midsummer. When placed near to perennial and other Sunflowers it always attracts favorable attention because of its close resemblance to the flowers of that genus, excepting in the color which is a fine rosy purple.

THE ROSE-COLORED CONE FLOWER (*Echinacea intermedia*).

In order to grow this plant well a deep well drained soil is the most suitable. In our own garden we have given it a place anywhere in the garden and have always found it to be very free in growth and bloom. Although its fine qualities are brought out beautifully by contrast when it is grown near to the Sunflowers proper, yet it must not be so near any plants of the latter that they will rob it of needed moisture and plant food. It is admirably suited also to be associated with the Tritomas, Eryngiums and similar strong plants. A group of this plant alone and occupying a bed of light rich soil on the lawn could not fail to please.

Echinaceas are propagated by division of the root in autumn or early spring, or by seed. It is proper to state that the roots must not often be disturbed. Our leading growers of hardy perennials, can supply the plants at about a quarter of a dollar apiece.

Notes from the Popular Gardening Grounds at La Salle-on-the-Niagara.

A Good Summer Lettuce. In our Lettuce notes of last issue we have not done justice to the Mid-summer Lettuce. This we find is emphatically a long standing summer sort, showing no inclination to run to seed. It has given us fine crisp, solid heads long after all the other varieties had given out. We shall continue to plant the Mid-summer for home use.

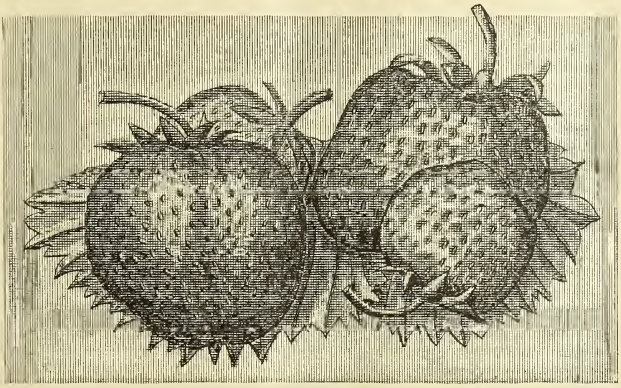
Buhach vs. "Insect Powder." It is no wonder that people have so little faith in the efficacy of insect powders, after trying the stuff generally found in the drug stores, take the advice to try buhach, with a good deal of skepticism. But the difference in strength between the fresh Californian product and the stale imported article is like that between vigorous manhood and decrepid old age. Being out of buhach we bought a pound can of the "best" imported powder; but we could not fail to notice the great difference at once. To "lay out" the Cabbage worms at all, we had to apply it in concentrated form, and then it did not act as promptly as the diluted buhach. But the most convincing proof we had in trying to kill a lot of Bean weevils in a box near our desk. The weevils had come out of a lot of seed Beans, and thousands of them were confined in the comparatively small box. The insect powder was thickly strewn over them, and the box tightly closed. In spite of this the weevils lived several hours, and even the next day we found a few live specimens. From our previous experience with buhach we are sure that every weevil treated with it in the same manner, would have died in a very few minutes. The moral is, to use no other brand but the pure unadulterated buhach.

The Lawns and the Drouth. Previous to July the season was very wet in this vicinity: since July 4th we have had not enough rain to soak down half an inch. The effect on the lawns is striking: those parts sown previous to April 20 are green and handsome while the later sowings are considerably browned.

Two Strawberries little known. There have been a great many Strawberry varieties introduced of late under high pretensions, and more or less retained in cultivation that are of less merit than either of the two sorts which are pictured from life in annexed illustration. The "New Dominion" (at the right) is a Canadian sort quite freely grown for market between here and Toronto. The berry is of pretty fair size, and wherever we have seen it in field culture, it averaged larger than Wilson, (which is yet the favorite with growers in this section) under the same treatment. Our neighbor E. P. Bowen, who is an old and very intelligent fruit grower, places the New Dominion at the head for market, so unreservedly, that even he has discarded all other sorts. The general verdict of people who have tested it more largely for market, seems to be that they realize ¼ more returns from it than from the Wilson. Its shape is not exactly beautiful, perhaps might be styled clumsy; but color bright red, ripening up evenly. Flavor fairly good, not high.

Of the "Long John" (shown at the left in illustration) we have spoken before. Had it been introduced with the same vigor and with the same high claims of superiority as were Jewell and Jessie, and under a name more descriptive of the berry and less of the originator, there can be no doubt it would have had a big run, and certainly retained its popularity longer than Jewell. The "Long Johns" like the "Big Bob" and "Jumbos" are dead failures in name.

Mr. Burdett, as a matter of course, is very enthusiastic over this berry, and grows no other. Of thousands of seedlings originated by him in the course of a long life, this is the only one he has retained, and his success with it is phenomenal. But he gives it good culture, and close attention, and markets his berries in Buffalo, the same morning they are picked, in fancy packages, realizing fancy prices for them. Mr. Jewett, another intelligent fruit grower of this vicinity, also places the Long John at the head as a berry for our near markets. The plants on our grounds are vigorous, almost too free in producing runners, and decidedly prolific, giving us fruit until quite late in the season. A characteristic of the varieties is that all the first berries on each plant are double, parting easily in the center, and of the uniform shape, shown in illustration. The late berries are single. Quality fair, somewhat reminding of Wilson.



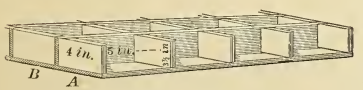
LONG JOHN AND NEW DOMINION STRAWBERRIES.

Neither of the two sorts is remarkable for firmness, and would probably not carry to distant markets in good shape. For a local market, however, we think they certainly have points of merit which entitle them to a careful trial.

Useful Plant Boxes. On the place of Mr. J. H. Jewett a neighboring market gardener of La Salle, we saw in use in the hot-bed during last spring many transplanting boxes or trays similar to the ones illustrated in the lower engraving on this page. A is one the trays B. is another. They are made of half-inch stuff of the dimensions given or near this, and are used for starting the plants of early Melons, Tomatoes, Peppers, etc., up to planting out time from the last bud. As each tray of about four compartments has but one nailed side (the other side being that of the next tray against which it is set, B against A) it is as easy in transplanting to slide out the block of earth with its plant without breaking the earth as ordinarily is the case with transplanting potted plants.

The upper illustration shwos a box such as the writer has used many of in greenhouses with excellent economical results. It is designed to

A GREENHOUSE TRAY.



VEGETABLE TRANSPLANTING TRAYS.

take the place of earthen pots; in which to grow plants like Geraniums, Coleus, Ageratums and other free-growers in the greenhouse, either when brought along for flowers or in keeping them over to provide propagating material, for the next years stock. These boxes are made to flake out earth at the sides and ends, thus permitting of readily renewing the earth if occasion requires. The advantages of these boxes for many purposes are first their low cost being made of cheap, rough lumber, second durability as compared with pots, and third ease of handling.

Notes by Judge S. Miller.

LUCRETIA DEWBERRY. So different were the opinions expressed upon this fruit that I felt indifferent about getting it, until the spring of 1888. This season it is fruiting quite liberally, and in my opinion is a valuable berry, very large and of excellent quality. Some say too sour. Not so when ripe and a peculiar Cherry flavor will suit many. This being so much earlier than any of the high bush, Bramble Blackberries is another valuable feature. On June 28 I picked as fine Lucretias as I ever saw of any Blackberry; some were ripe a week before.

Conducting the young runners of two rows together on the space between, gives every alternate space bare, and allows a convenient passage for picking the fruit. This training Dewberry vines to stakes is thought by some to be a new idea, but it is not, for I did it forty years ago, and it is nearly that long since I grew any Dewberries. It is an interesting sight to see one of these pillars while in bloom, and still more so with the big black berries nearly equal to the half of a middle finger in size, and plenty of them. The coming winter I shall cover my vines a little, for when Missouri takes it into her head, she can match the more northern states for cold, 32° and 40° below zero having been recorded near here before now.

Last fall I took up all the young plants and treated them in a bed to set out a new bed this spring. Did not cover the old vines as I wished to test their hardiness. Some of the new runners are sending out side branches two feet long already; these will be headed back to about six inches, the main canes to six feet, which will be tied to stakes next spring.

RASPBERRIES. The crop was a splendid one here, and Centennial decidedly the best early Black Cap. Gregg about the most valuable late one. I like Turner for early red and Colossal for late. Marlboro is a failure with me unless protected; Cuthbert nearly so. Henrietta is the largest of them all, and of fine flower, but must be laid down and covered in winter, which so few are willing to do.

THE BLACKBERRY. The Lawton and Kittatinny failed so completely with me that they were abandoned. Snyder and Triumph have taken their places.

Snyder, it is true, is rather small particularly as usually pruned; but of fair size when well cut back, or rather the laterals thinned out; for cutting back too close destroys the finest berries. Its immense productiveness and hardiness make up for all other defects. Triumph is a superb large one and productive, but unfortunately is not proof against some of our severe winters. I formerly considered it perfectly hardy, but have learned differently.

Taylor's Prolific is all right in all respects, but so repulsively thorny that I dislike working about it. Stone's Hardy is I think among the best. In quality it is very superior. The Freid Blackberry originated in Potter County, is unquestionably one of the most valuable in our whole collection, and is extensively planted when known. It has the peculiarity of growing a clump of large berries in a round bunch, a whole hand full all ripe at one time, of good quality and quite hardy.

If any growers have followed my suggestion of training but one shoot to the stool, I wonder if they have had my experience. Although they were looking grand, when a storm literally wrecked them. Hereafter, if this is tried, each one must have a stake to be tied to.

Erie fruited for the first time and is an excellent berry; large and n early round, Minewaska has a few berries, not yet ripe.

A WILD PATCH. Of the high bush Blackberries I now have about an acre of as fine fruit as I ever saw, all seedlings, the seed of which was distributed over the ground by the birds from my planted patch, where Snyder and Triumph are grown. Mr. Riehl of Illinois recently stated that we had as good wild Blackberries as the cultivated ones, and in here we have this verified.

Some berrries resemble Snyder, some are like Triumph, while others seem to be a cross. No small berries in the whole lot such as is usually found wild. Some are nearly half as long as my middle finger and luscious. Here is a natural patch that is valuable, and on which bushels will go to waste. Simply because the market prices would not pay the express charges. To gather this fruit so far as we want it, it requires passages to be cut through.

Points In Quince Culture.

The Quince under good culture is often quite a profitable fruit, and this probably for the reason that there are certain difficulties to overcome beyond those we meet in Apple or Pear culture. With a thorough knowledge of these difficulties, and the means how to overcome them, the task of growing Quinces in plenty becomes comparatively easy. Our friend, Mr. Augur of Connecticut, says in a recent number of the N. E. Homestead:

There are several diseases of a fungoid character which attack the foliage, fruit and young wood of the Quince, such as leaf blight and black spot on the fruit. As preventive measures, on land heavily manured, an annual application of 20 to 30 bushels per acre of slacked lime will be desirable in early spring just before the first working of the soil. This will counteract accidity in the soil. Lime is also to a certain extent a fungicide. In addition to this, in June, July and August, dress the trees with a mixture of four parts of lime to one of sulphur, intimately mixed. This should be dusted lightly and thoroughly all over the foliage and fruit, as a fungicide, or rather preventive of fungi.

Insect depredations are perhaps more to be feared. First the borer. This is the same that attacks the Apple, the Wild Thorn and Mountain Ash. He is a voracious fellow and if allowed, will bring grief to the Quince grower, in the wholesale destruction of trees. First, if found in the tree, cut and expurgate, using a sharp-pointed knife and a sharp-pointed spring wire, then fill the excavation with soap. To prevent his entrance remove the earth in May from the base of each tree and apply freely the following wash: To a pail of common lime whitewash add one quart of soft potash soap and one quart of strong tobacco lye, all well mixed. All the ingredients are healthful to the tree. Each tree should be examined in May when applying the wash, and again in September, to be sure of exemption. Tarred paper has been recommended as a preventive, but it is attended with danger. The curculio, the Apple worm and other insects attack the fruit, causing wormy, knotty and imperfect fruit. Thorough, timely and repeated spraying with London purple or Paris green will prevent these. It has been truly remarked that all these difficulties put money into the pocket of the cultivator who learns how to skillfully combat them.

Varieties. The Orange, Pear, Champion and Meech Quinces are all good. I advise the planting of select seed to secure new and more desirable varieties. Another word of precaution: Whenever any fungus trouble is seen, its removal at sight is always in order. It should be invariably burned to prevent is dissemination. This applies not only to the Quince but to all other fruits. Success is not all in land, location, variety or surroundings. It is largely in the cultivator. I know of the most notable success in Quinces, and the most complete failure only separated by a division fence. One man brought all conditions into requisition; the other neglected all: it was simply a difference in the men.

Summer Work Among The Berries.

L. B. PIERCE, SUMMIT CO., OHIO.

Next year's crop depends largely upon the character of the growth made this year, and in all small fruits the character is largely determined by their treatment during August and September. Growth made after that is soft and immature, and consequently tender, easily suffering from winter weather that would not injure growths made earlier.

Cultivation of early Raspberries is the first job, as they are drooping in their nature and speedily spread out so as to make it difficult to work among them. If one is hurried, the cutting out of the old wood can be delayed until winter or spring as it seems to make little difference with the following crop, when it is removed.

In taking it out in mid-summer when the new growth is tender, a careless hand will often seriously injure the new canes so I generally let it remain until the spring pruning when the absence of leaves and the laterals make the work comparatively harmless and much easier.

Summer pruning is injurious to both Raspberries and Blackberries, and should not be indulged in to any great extent. A friend of the writer had a fine plantation of three acres nearly ruined by the work of some boys whom he set to taking out the old wood. In order to get the old canes easier they indiscriminately slashed into the new growth and the plants never recovered.

It is important, however, that superfluous canes should be cut out, the number left being determined by the strength of the soil and age of the plantation. Two or three good canes to a hill is better than more.

With red Raspberries of the suckering varieties attention to thining and narrowing the rows is very important. The rows imperceptibly encroach on the spaces day by day until they get to be much too wide. It is not uncommon to see rows thickly massed with plants, and 18 inches wide, when they should not be more than six or seven.

Raspberry suckers are apt to slip between the cultivator teeth and continue to grow in spite of repeated cultivation and such I chop off with a hoe.

Blackberries in a wet season make constant encroachments on the spaces reserved for the cultivator and I find it necessary often to adopt heroic measures with such rank growers as the Erie and Rochelle.

One should be clothed in tight fitting duck overalls and engineer's jacket, with buckskin gloves, and armed with a forked stick in the left hand and a short grass hook in the right and a pair of puning shears in the hip pocket. Thus equipped one can carry on a very successful campaign against suckers, projecting bushes and fallen canes. Sometimes it is necessary to straighten up a leaning cane that it is not best to cut off, and in this case the forked stick is of assistance in placing it behind or interweaving it with a neighboring plant so it will be supported. The lopping off of projecting canes will make it easier to drive the horse near the row, and pleasanter for the driver as well. An observing and careful person will also frequently see where he can bring the fruit out into sight by the removal of overhanging sprays.

I know an old fruit grower who always makes the first picking of Blackberries himself and carries a pair of pruning shears, nipping away new growths so that it is much easier to pick the fruit.

Poor Market Gardening will not Pay.

EDGAR SAUNDERS, CHICAGO, ILL.

A quarter of a century ago, railroads had not cut such a figure in shipping garden sass and fruits as in our own time. Profits have been cut down, and we fear at least in this city, a more careless system has been the result, among the many. A correspondingly poorer or less skillful set of men have been forced into, or have taken, the place of the once money-making calling of the market gardener. But a slipshod method will never pay, and the market gardener needs to turn over a new leaf, and do as is now done in other branches of business, apply as far as possible labor saving machinery, and put in heavier capital. The time for small things seems to be past the world over evenin gardening and farming.

The percentage of profit on the sales of a few thousand dollars is not enough to keep one man and his family, as the time go, in the necessaries of life. While the same percentage many times multiplied might mean a fair competency.

Specialties grown on land and in a locality emminently fitted for the purpose, (as witness the Kalamazoo Celerey growers' efforts in this direction the past decade) command the markets, and control in a measure shipping facilities, so that in spite of low prices they bring fair returns.

There are cases within 20 miles of this city, where specialties in a line like Winter Squash, Horse Radish, Pickles and other things similar, are grown in vast quantities and almost exclusively on the one crop idea. We admit that an occasional year the thing is overdone. The past year has been one of them, but this will correct itself. So long as land is plenty, which will be the case for a long time yet, it is easily possible to overdo any thing that is raised from the soil, with railroads all the time improving on their means of distribution. What is wanted is a closer business relationship, between the grower and the seller; for they are two seperate and distinct businesses, each equally necessary to the other, and as far as possible prevent gluts in the principal distributing centers. The telegraph, telephone, and railroads must all be brought into activity for the coming day.

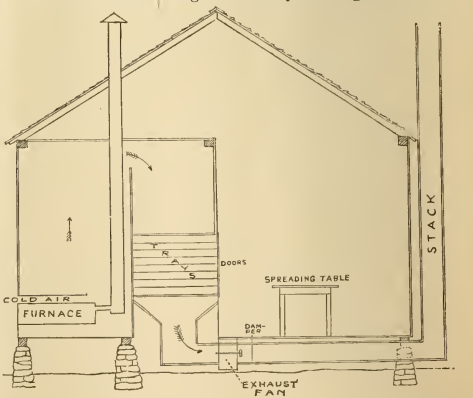
A Cheap and Useful Home Evaporator.

J. E. PERRIGO, NIAGARA CO., N. Y.

The evaporator drawing of which I herewith enclose, has been in use last fall and winter, and I was very much pleased with its work. In applying the heat in this way we get a more even temperature, as the heat rises to the ceiling, and is drawn down through the fruit, thus drying it more uniformly than when the fire is directly under it. I used a fan manufactured by E. West, Lockport, N. Y., which did good service. The evaporator might be used without fan, but in that case could not do as much work. One great advantage of the fan is you can get an even circulation which you can't get without it.

I think that hot air applied in this manner is better and cheaper than steam. If the present low prices of evaporated Apples continue, it would not pay to build and hardly for those that have evaporators to start; but the crop of Apples will be light, and and for that reason I think the price will advance.

The following will serve to explain arrangement of my building. The furnace



MR. PERRIGO'S DOWN-DRAFT FRUIT EVAPORATOR.

room is lined with fire-proof paper and should be air tight or nearly so. We take in cold air directly over furnace, whence it is carried back over surface of heater to rear of heater by means of a sheet-iron jacket which thoroughly heats it and also furnishes draft and helps circulation.

I have 6 sections in my evaporator for racks, each section is partitioned off by itself, thereby causing direct draft through each. There is also cut off between them two outside sections so that I can use the others without them. The exhaust pipe is attached to center of dryer and is made of sheet-iron and 20 inches in diameter, and

leads under floor of house to stack. The furnace is set in the middle of the room opposite exhaust pipe. My furnace will burn either coal or wood.

COMMENTS BY READERS.

A department to which all are invited to send notes of experience and observation concerning topics that recently have been treated on in this journal. Many such contributions monthly are welcome.

STATUES IN PARKS. What you quote from Mr. Higginson in reference to statues in parks is mostly sound, yet I see no occasion to object to a fine statue in the center of small parks or triangles in thickly settled cities, as in Washington. In large areas of grass, like the croquet and base ball grounds in Central Park one or or two monuments or statues do not, I think, injure the general effect. The main trouble is that the introduction of one leads to another and everybody's favorite finally gets admitted until the business is overdone. A laughable instance of the misuse of statuary has come under my notice. A man who, by a fortunate invention had suddenly become a millionaire, made the tour of Europe, and brought back with him a taste for statues, and three marble statues which were distributed in his closely planted grounds of three acres. One, a beautiful statue of a winged Mercury, was poised on a painted pedestal at the corner of the greenhouse, and apparently ready for a flight in the direction of the stable two rods distant. Between the statue and the stable was a massive Oak tree that would pretty effectually stop the flight of a robin, to say nothing of a full-sized god, and it left the disagreeable impression that the god would ignominiously be balked in his attempt to fly to the peak of the stable. The statue represents the god of commerce and gain (a fact of which I presume the owner was ignorant) and it would have been more appropriate to have him start from an appropriate pedestal in front of the office, or from a niche near the library window of the rich man's palatial residence. As it was, one's admiration for the beautiful marble imitation of perfect youthful manhood was lost in curiosity as to why he should be trying to fly from a painted wooden stump to the peak of a very inferior barn. In the winter it was not so bad, for one could imagine the naked god as starting for the hay mow to seek some protection from the bitter cold.—*L. B. Pierce.*

PROTECTING CHERRIES FROM BIRDS. Mr. Charles Gibbs, of Abbottsford, Canada, has remarked that the worst drawback to the culture of some of the dwarf-growing East European Cherries is the fact that the fruit turns red, and is attractive to the birds several days before it gets its final size and perfect maturity of flesh. This is especially true of Spate Amarelle, Shadow Amarelle, Large Long Late, and Double Natte. These varieties are very hardy in tree and fruit bud, perfect in foliage, and they bear full annual crops when young, but they are not ripe and ready for picking in their most perfect state in less than twelve days after they redden sufficiently to attract the birds. This season every Cherry was taken from the trees not protected, while those protected with musquito bar have given full crops of fruit of large size and excellent quality for any use. The trees are small in size and easily covered, but musquito bar is too light, fragile, and perishable, to be profitable. In Europe I saw netting made exclusively for this use. Is it obtainable in this country? If not, it should be a hint to manufacturers to produce it. As properly made covers would last several years, the demand would rapidly increase.—*J. L. Budd.*

PEACH TREE CULTURE. You often tell us about Peach growing, and that we would have more nice fruit if we would go at it in the proper way. But here where the crops were winter-killed for five years in succession, we lost confidence in the fruit, consequently our trees were somewhat neglected. The severe winters injured the wood of the trunks and larger limbs, and they are now almost ruined by a dry rot, while the outside has sufficient life to produce foliage and fruit. The heading back annually was omitted, hence the trees grew long, limber and straggling. The past two seasons have given full crops, and although the fruit was properly thinned out, the defective wood, and the long leverage, has brought nearly half my fruit to the ground at one end of the limbs, while the other end is still attached to the tree by a little bark and wood, which will, in many instances, convey sufficient sap to mature the fruit. The young trees that are now coming on will be better cared for, annually headed back and cultivated. My opinion is that to obtain the most substantial Peach orchard, the pits should be planted where the trees are to stand. When a lot of Peach trees

GRAFT KILLED BY SUCKERS.

on the same ground wear out, the ones that last the longest are volunteers, whether budded or left natural. I attribute this to the tap root being left perfect. Cultivate well from youth up; head back half the previous year's growth each spring and thin out the fruit when too much sets, and if the seasons permit we will have Peaches. A young orchard without a crop of fruit should not be cultivated too late in the season, as it will have a tendency to make late growth which a severe winter if following, will injure, but if a full crop, the cultivation should continue throughout the season. Once in company with a friend in York Co., Pa., standing on a hill we could look across about a half mile to another hill sloping towards us on which were about five hundred Peach trees. About one-half the orchard had a rich green color and the trees nearly double the size of the other part. When asked whence the difference, the reply was that the whole orchard was planted at one time with the same kind of trees, the land prepared in the same way and of like quality. The treatment alike with this exception, that when plowing, one summer, inteuding to go over the whole piece, something occurred to prevent finishing. The healthy looking tract was the one that had been plowed, the other part the one left unplowed. He said the crops corresponded in point of quality and product with the looks of the trees. It was a surprise to me that the omission of one plowing should make so vast a difference, but thirty years' experience since then has convinced me of the necessity of stirring the soil in a Peach orchard. Here we know nothing of the yellows, and I am somewhat sceptical about its being a disease. While the borer seldom injures our trees, yet it is well enough to look for them, and, if found, cast them out. Our early Peaches here nearly all rotted; the curculio and wet weather done the business. Heretofore we were not troubled with this insect on the Peaches, but now we will have to spray our trees, or trap the turk somehow. The past mild winter seems to have been to their advantage. I would advise the planting of good, hardy varieties of stones and let them come into bearing. I have two trees just now coming in, seedlings of Baltimore Beauty, that surpass the original. Planted last spring a dozen trees from seed sent me from afar off that shall fruit without budding. If the fruit does not suit me they can be budded with whatever we wish in the Peach line, and but one year's time lost.—*S. Miller.*

BLUE GUM TREE. Your article in July number is rather mislcading, and does injustice to one of the best trees grown in Southern California. In San Diego County it is grown for fuel—for shade and wind break, and in many places for the health giving properties it is said to possess. A forest of Eucalyptus is a pleasing sight, as this tree has a majestic appearance when properly grown, growing so closely as to form a dense shade. The timber from such a forest will be ready for use in three years—the trees can then be cut to within a few feet of the ground, and soon the old trunks will be a mass of young shoots. The Encalyptus is easily propagated from seed. I had about 50 young plants raised from one packet of seed sown in a cheese-cloth covered hotbed It may be "disease afflicted in Florida" but certainly not in Southern California. The Eucalyptus belongs to the order Myrtaceæ and is a native of Van Diemans Land.—*Mrs. Z. May Waite, Cal.*

EUCALYPTUS TREE An item in your publication for July must have caused a smile on the face of every Californian who read it. You say that the Blue Gum tree is entirely unsuited for open air culture in this country, being disease-afflicted in Florida, and too tender everywhere much north of that State. Here it grows everywhere, whole forests of it for fire wood; and I have never heard or seen any disease upon it. Its growth is very rapid and one is seldom out of sight of the trees from 75 to 150 feet in height. It seems funny to us that it should be raised in pots. It is plain, however, that California is still almost a foreign country to many people of the east—*E. Birdsall.*

BIRDS AND GRAPES. In June number a correspondent recommends planting figs as a preventive of damage to Grapes. I advice planting Sunflowers near vines. I have practiced it for years, and never yet failed. The seed is also excellent feed for fowls and horses You have to plant them but once, as some of the seeds drop to the ground and will come up the following spring.—*L. Fox, Ont.*

ENGLISH SPARROW. Yes, he may have some good points—they are far and few between, like $5.00 gold pieces in a church contribution box. May the blizzards have what the 12th of March 1888 has left. In the mean time it will be well to assist a little in clearing the country of this nuisance. Mr. Coleman recommends to dissolve arsenite of soda in warm water, at the rate of an ounce to a pint. Enough of this is poured upon wheat in a closed vessel to cover it, and the wheat left to soak for at least 24 hours. Then take out, dry it, and it is ready to do its murderous work. Three kernels of it are sufficient to kill a sparrow. The best time for operation is winter, when other birds are absent, and the sparrows hungry. The poisoned wheat may be scattered in the streets and highways, where the birds are in the habit of cougregating in flocks after passing teams, and it will have a quieting effect on them.—*R. G. R.*

Grafting and Suckers.

The accompanying illustration taken from an English paper, very forcibly reminds of two common errors which can not be too often and too emphatically called to the reader's attention. One is the disregard of many growers for the congeniality of stock and graft in grafting fruit and ornamental trees; the other the common evil of neglecting to remove suckers of the stock especially in Roses, and thus allowing them to rob the graft of its nourishment. The result of both errors is the gradual decline, and perhaps final death of the graft. The habit of forcing unsuitable unions in grafting ornamental stuff seems to be a very common one with English propagators; at least so we infer from the vigorous protests against the practice in the English Journals. The lesson which we wish to impress upon our readers, is this, that a frequent inspection of grafted shrubs on the premises will often reveal a tendency towards just such a development as the illustration shows. Remove the suckers.

Nitrate of Soda as an Aid to Success.

In this era of close competition in all pursuits of life, success comes only to the person whose management is charaterised by more than average shrewdness, and who utilizes pretty much all new resources as fast as modern researches in his particular line of work place them at his disposal. This is especially true of all occupations which have soil culture for a basis.

About the greatest expense connected with gardening and fruit growing for market is the cost of manure; and in this item alone there is so much latitude for mismanagement and sinful waste on one side, and close economy on the other, that the course which each grower is induced to take for the solution of this problem, often alone determines the outcome, whether signal failure, or decided success.

We have before this spoken of nitrate of soda as the cheapest source of the available nitrogen that the market gardener stands so greatly in need of, and as a means to produce thriftiest growth without the excessive use of high priced stable manure.

While English gardeners and farmers make use of this substance quite extensively, unfortunatly it is as yet comparatively little appreciated in this country. Mr. Joseph Harris, who has done more than anybody else to call the attention of American gardeners to the advantages they might derive from the use of nitrates, gives in American Agriculturist the following interesting data on the subject.

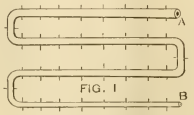
The chief point from which nitrate of soda is obtained is Iquique, Chili. There is an export duty on it of ten dollars per ton. Vast beds of it extend for two or three hundred miles along the west coast of South America. These beds are supposed to have been formed by decomposing sea weed.

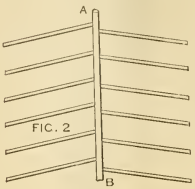
There are two grades of nitrate exported, one that is almost chemically pure, that is used for the manufacture of nitric acid and other chemical purposes, as well as for cheap blasting powder and fireworks as a substitute for saltpetre (nitrate of potash); the other grade contains four or five per cent. of impurities, principally common salt, and is sold at a lower price for manure. This cheaper grade has not, as yet, been imported into this country, owing to the fact that nitrate of soda is almost unknown as a fertilizer with us, and it does not pay the importers to keep it. The few farmers who use nitrate of soda in this country have to buy the high-priced pure article.

In Europe where enormous quantities are used for manure, especially for Sugar Beets, the cheaper grade is imported; it is ground fine, and the farmers have no trouble in getting or using it. In this country the importers do not dare to bother with the small quantity at present used by farmers.

The nitrate is shipped in strong, coarse bags holding about three hundred pounds each, and by the time they arrive here, the bags are more or less rotten, and before they can be sent out the nitrate must be rebagged. This is done, not by emptying the old bag, but by slipping a new and larger bag over it. Before sowing the nitrate, empty the bags on the barn floor and break up the lumps, and run it through a sieve. A sieve used for sifting ashes will do, though a finer one would be better. Break up all the lumps keep sifting and breaking until all will go through the sieve. Four or five pounds of nitrate will adhere to the bag and cannot be removed. Our own plan is to soak the bags in a barrel of water and use the nitrate by pouring the solution on the ground among Peach trees, Grape vines, Gooseberries, Currant bushes, etc. In pouring it on the ground care should be taken not to let it splash on the leaves, it may injure them.

After sifting the nitrate, sow it broadcast, but it should not be sown on the leaves when they are wet with dew or rain. If superphosphate is sown with nitrate of soda the two may be mixed together, if dry and the mixture is used immediately. If damp and the mixture is allowed to remain unused for some weeks, there is more or less loss of nitrogen. This is one reason why our manufactures of fertilizers do not use nitrate of soda. There is not only a loss of nitrogen, but the mixture becomes damp and lumpy in the bags and is difficult to





METHODS OF TILE-IRRIGATION.

drill. For this reason nitrate of soda will always have to be purchased separately, and farmers will have to do their own mixing. As soon as the nitrate producers in South America learn that fertilizers are used in this country they will probably afford us the same facilities for getting it as exist in Europe. At present not a pound of fertilizer nitrate is imported into this country, while the imports to Europe last year, largely of nitrate, aggregated 4,807,000 bags of about three hundred pounds each.

Under-Irrigation with Tile.

The control of soil moisture, by storing up part of the water supply during a time of excessive rainfall for use at a subsequent draught, is a problem that has long occupied the minds of good cultivators. We have begun to realize, that for general outdoor garden crops soil soaking is the only effective method, and that mere surface sprinkling is apt to do more harm than good.

Our modern improved appliances for drawing water from wells by the use of windmills, have made it feasible to fill at comparative light expense, tanks constructed somewhat above ground, and thus obtain the necessary water, and pressure for flooding smaller areas in a short time.

Where *acres* are to be irrigated, however, arrangements of this kind will soon find their limit of usefulness, and a more generous water supply is needed. This can sometimes be obtained by tapping a stream, pond or canal; or by damming a stream of water, above the land to be irrigated. Opportunities of this kind are frequently met with; but they are seldom utilized.

Some years ago we obtained good results by damming a little stream or brook flowing by just above a ⅛ acre patch of Celery, the rows running with the natural slope of the land, and letting near the whole of this water run along in little channels made by the hoe between the rows, until the whole ground had a complete soaking. It took tons of water, but the result was gratifying.

Ever since then we have been wishing to prepare a piece of land for underground irrigation, in somewhat the same way, as we find it described and illustrated in a recent number of Drainage and Farm Journal.

The use of common drain tile from two to three or four inches in size, says our contemporary, affords a very convenient and a successful method of underground irrigation.

Fig. 1 illustrates a continuous line of tile to be laid across the incline or slope of the land with very slight fall—sufficient to afford a slow current of the water. A portion of the water escaping through the joints of the tile, rises by capillary attraction toward the surface of the soil. The lines of tile are laid at a depth of one foot or fifteen inches below the surface. The excavations for the tile may be made cheaply by plowing out the trenches, passing back and forth with the plow three or four times in the same furrow. Little labor will be required to bring the bottom of the trench to a regular grade. The lines of tile should be laid as close as ten feet apart; less will be better. The water turned in at the stand-pipe A will pass along the tile to the further end, which is closed. As much as one acre may be included in one system if the surface configuration will admit of it. The tile of the upper end may be as large as five inches, falling off to four, three and two inches.

In the adoption of this or any other system, reference must be had to the inclination, minding always the law of gravity.

Fig. 2 illustrates a main tile four or five inches in size, or larger if necessary, with branches of smaller tile three inches or less, the outer ends being closed. The sizes of tile both for the mains and laterals may be reduced in size as the further end is approached. The water enters at stand-pipe A, following main pipe and branches to B.

Fig. 3 is a cross section showing the effect of under irrigation on the soil. The water naturally tends to sink in the soil, but not so deep as to go beyond the feeding ground of the roots of the growing crop—the capillary action of the soil brings a portion to the surface. It is well to remark at this point that if two or three inches of the surface soil is kept very fine by frequent stirrings that it will serve as a mulch to prevent the moisture evaporating so rapidly at the surface.

This system of irrigation has the advantage of cheapness of material, construction, and the economy of water. In addition it supplies the water where it is needed without puddling the surface, and allows the cultivation to go on without hindrance.

A small area may be prepared at a time for underground irrigation at a reasonable cost, and when done it is a permanent improvement. A few hundred dollars and the labor required with care, will put several acres in condition to test the efficiency of such system.

Fruit Rooms. How Conducted and Managed.

The subject of fruit storage and storage houses is yet one of paramount importance, and, to judge from the repeated queries and lively discussions at every horticultural meeting, of greatest interest to the average fruit owner. The veteran J. J. Thomas, in a recent number of New York Tribune, offers some valuable suggestions in regard to fruit rooms and their management.

For common capacity, says he, the leading and essential requisites are a building or room with non-conducting walls, and ventilating windows which may be opened on cool nights for the admission of cold air and be closed again for retaining this cool air while the temperature is higher outside in the daytime. In very cold weather in

winter the windows are, of course, closed to prevent freeziug. One or two thermometers are to be used and frequently consulted for maintaining an even temperature. Such a house, properly regulated, will keep fruit a few degrees above freezing through a large part of the year, except in summer, when there are no cool uights for filliug the apartment with cold air.

In a building like this, regulated as described, wiuter Apples, which commonly decay before the arrival of the warm weather ot spring, have been retained in good condition until the middle of June; and our early winter Pears, such as Lawrence and Nellis, have been kept in fair eating condition into February and March. This fruit-room may be a separate apartment in the basement of a dwelling; or it may be a building specially erected for the purpose.

If a separate building it may be placed on slightly descendiug ground and sunk a foot or two below the surface, but this is not absolutely essential. Erect the frame of six inch studs, or eight inch if the building is large, and cover the iuside, as well as the outside, with building paper, the studs being placed just far enough apart to receive the strips of paper with a little lap. Then board up both sides, over the building paper.

This double wall will be hardly sufficient protectiou against cold in the north; and additional protection is afforded by nailing vertical strips of lumber, an inch or two square, on every joist, adding another covering of building paper and another boarding. This will make three thicknesses of boards and three of building paper, and be sufficient to exclude hard frost without the addition of any sawdust-filling, which, if used, will be liable to cause crevices by settling or to be disturbed by vermin. Use double doors.

Some fruit-houses have been built with two feet spaces filled with tan or sawdust, requiring useless labor and expense, as half that thickness would be quite enough in any case. The roof will be made in the same way as above described, with the shiugles added. For small and very simple fruit-rooms or fruit-houses, windows placed on opposite sides, which may be opened to any degree either for the gradual or copious admission of fresh air, will be sufficient.

For a separate building, there should be a plank or board floor, with openings for the entrance of air from below, or there may be a slatted floor, which will always allow the entrance of the warmer air from the earth below and prevent the freezing of the fruit, in the same way that a basement is kept from freezing by the warmth of the earth. There should be ventilators in the underpinning of the building, which may be shut for the exclusion of warm air from without or opened to admit cool air in the night.

When cold air is to be admitted, the current for its entrance is caused by an Espy or Mott ventilator above the roof, which always produces an upward draft when there is any wind or breeze. A small fruit-room may occupy a portion of the basement of a house, if separated from the rest of the basement by a double brick wall, and a double wall is provided outside above ground.

The same treatment must be given it as for a separate building, in maintaining a uniform temperature through windows on opposite sides, which are to be opened or closed as already described. Although less perfect than a separate fruit-house, it requires less care in attendance, and such fruit-rooms have kept winter fruit several weeks or even months longer than by common management.

In large fruit-houses, two stories high, the entrance should be through the upper story and down a flight of stairs, so as not to disturb the cool and equal temperature below in warm weather through the outside door.

Fruit for immediate or early use may be placed on a series of shelves, one above the other, in the center of the apartment for the attendant to pass around to select ripening specimens. Long keepers, or such as Russets, which shrivel easily, may be headed up in tight barrels, where they remain till spring. An intermediate way is to put the fruit in flat boxes, 1½ feet square and three inches deep, one box placed above another, in piles two feet or three feet high. All are easily examined by setting the top one off, then the next, and so on, thus forming a new pile.

No large fruit grower, to make the most of his products, can hope to get along without such or a similar structure.

Among the Summer Flowering Shrubs.

JOSEPH MEEHAN, PHILADELPHIA CO., PA.

Passing among various shrubs in flower in July I could not but feel that the merits of the Dwarf Horse Chestnut, *Pavia parviflora*, is not half recognized. The bush I saw was 5 feet high and so many broad, while erect from its surface of bright green foliage sprang not less than 200 flower spikes. It is easily grown, and as it gives no promise of great beauty when small, it agreeably surprises every one when it flowers.

Another pretty bush in bloom at this time is the Trumpet vine. The one before me had been tied to a 6 feet stake for a few years, and when the stake rotted away it stood erect itself. Grown in this way it flowers profusely.

The old-time favorite Hydrangea quercifolia was covered with its large panicles of flowers. While not as handsome as paniculata, it flowers a month earlier, aud its large leaves are considered quite attractive.

Azalea viscosa displayed its numerous white flowers. All other species were done blooming for some time, and, besides this, it happens that this one is less particular about soil than the others are.

Of Spiræas there are so many good pink ones that it is hard to say which are the best, but such sorts as Billardi, with columnar spikes, Hegeliana with pyramidal ones, and paniculata with heads still broader at the base, would please any one. To get the most out of Spiræas they should have a deep soil, and intelligent pruning when done flowering.

The Cephalanthus occidentalis, a neglected native shrub, is as pretty a one as there is. It is not particular as to situation, and when set out by itself it forms a rounded head of much beauty. Its white balls of flowers are so numerous, and the whole bush so attractive that every one who sees it, expresses surprise that it is not more extensively planted.

The largest flowered one of the various species of Hypericums is the calcinum. I measured some blooms which were over three inches across. The deep yellow color and the bunch of numerous fuzzy stamens in the centre make these flowers uncommonly attractive. Near by was the Japan species, patulum. The flowers are about two inches in diameter, aud are in great numbers. Both of these get cut back a little in hard winters, but this makes them all the bushier for it.

The pretty little Erica vagans was at this time covered with its small bottle-brush like heads of white flowers. Another species, capitata, and their near relative the Calluna vulgaris were also blooming. It takes an extremely hard winter to hurt these, and I have never known them to be completely killed. They seem to thrive the best on gravelly soil, or at least on that of an open nature. As with Azaleas and Rhododendrons a stiff soil is death to them.

Growing Fine Pansies.

JOHN P. RUPP, CUMBERLAND CO., PA.

The Pansy has undergone wonderful improvement within the past few years. This summer I have had Pansies which were as near perfection as could well be looked for. They were very large, of circular form and of the most beautiful color. Many persons came to see them, and the invariable comment was that they were the finest Pansies they had ever seen. In the following I give my method of growing these perfect flowers.

Seed of the very finest varieties bought from reliable seedsmen, was sowed early in August in a well-prepared bed. The seedbed was located in a well-aired, sunny spot in the garden; the ground being sifted to a depth of about three inches, and a good amount (about one-fourth) of finely rotted stable manure mixed with it. The seed was sown thinly in drills one-fouth inch in depth, the ground firmly pressed, and light watering given. The bed was at once shaded with a muslin sash raised eight inches from the ground. This shade remained until the plants were up, when a lathe screeu was substituted, which was removed when the plants had made a good growth.

The ground had not been allowed to become very dry, a sprinkling being given promptly as the surface dried. At the time of sowing the seed I also prepared a compost by mixing in a heap of equal parts of cow manure and good garden soil, letting it remain until wanted for use. In the beginning of October the Pansies were transplanted into a bed, made close against the east side of the dwelling house, and prepared by digging to a depth of twelve inches, throwing out the clay or any poor soil, then putting in the compost of cow manure, having it well mixed and tramped in quite firmly until the bed was full.

The plants were then set in at a distance of six inches apart each way and kept well watered until established.

Late in the fall a heavy mulching of finely rotted manure was given to protect the plants from severe freezing. Early in the spring this was removed from close around the plants, allowing it to remaiu on the bed. When they began to bloom all the flower-buds were pulled off until the plants attained a good, strong growth. The flowers then were of the very largest and finest. All not producing flowers up to the standard were pulled out, so that seed of none but the finest would be gathered. When the ground became somewhat dry, a good watering was given. The bed being in a shaded situatiou it was protected from the hot afternoon sun and produced a perfect mass of Pansies during the entire summer.

By giving them a little extra care and selecting a protected place for the bed, any person can grow Pansies to perfection, and can find a source of exquisite delight when looking into their beautiful, smiling faces.

1,418. **Lime on Muck.** To fit spongy muck land for gardening purposes, nothing is of greater importance than thorough drainage. The next step will be "to sweeten it," *i. e.*, neutralize the acids contained in it. This may be accomplished by applications of lime, ashes or any other alkaline substance. The caustic forms of lime, of course, will be the more effective ones, and so we would prefer the different forms in the order named as follows: Ground or pounded quick lime, water-slaked lime (hydrated), air slaked lime (hydrate and carbonate). The clear carbonates—chalk, marl, old air-slaked lime, etc., have much less effect. The quantity of lime required depends on its caustic nature, and on the acidity of the land. Try 10 barrels of fresh slaked, or twice that quantity of air-slaked lime at first, note the result, and repeat as needed. Wood ashes contain not only a mild form of lime (carbonate), but also caustic potash, and a quantity of phosphoric acid, and heavy applications of it are the very best treatment that could be given for your muck soil. It not only tends to sweeten it, but also provides just the elements of plant food in which in all probability it is deficient.

The Common Alders.

Most of our readers from New England northward far into British America, and westward to Oregon, are well acquainted with the Alder which clothes the margins of streams and swamps with dense thickets; and have learned to look upon its bark as containing great medicinal (blood purifying) properties.

All the species of the genus Alnus, of which there are about fifteen, half of them

FIG. 1. BLACK ALDER.

FIG. 2. FERN-LEAVED ALDER.

FIG. 3. CUT-LEAVED ALDER.

in North America, prefer rich damp soil, and like Willow, are nsefnl in consolidating banks, and covering damp, low-lying lands which would otherwise be almost treeless, with a heavy growth of wood and leaf.

The European Alder (*Alnus glutinosa*) is often cultivated in Europe for its wood. It usually does not attain more than 40 or 50 feet in height, but in good soil near water, specimens are occasionally found 70 feet high, and two or three feet in diameter.

Woods and Forests speaks of the industrial wants which the Alder supplies. The wood which is white when alive, turns red when cut, and afterwards a pale pink, the latter color being permanently retained. It is suitable for a number of purposes for which Poplar and other similar light woods are used. Although lasting but a short time when exposed to the weather, Alder wood is extremely durable under water, and is largely used by engineers for fonndation piles. The celebrated bridge of Rialto, at Venice, is said to be built on Alder piles. Alderwood charcoal has the reputation of making superior gunpowder.

Some of the varieties are quite handsome ornamental trees. In onr engraving taken from Woods and Forests, we present the common form of Alnus glutinosa, (in fig. 1.) with male and female catkins; leaves of the Fern-leaved Alder (*A glutinosa imperialis*) in fig. 2, and those of the Cnt-leaved Alder (*A. g. laciniata*) in fig. 3.

The Fern-leaved is a variety of seedling origin, apparently quite as vigorous and rapid grower as the common Alder; and its beautifully cut leaves and general habit render it a valuable addition to any collcction of trees. The edges of the leaves turn npwards in more or less shell-shaped fashion.

The Cut-leaved has flat cut leaves with broader, shorter lobes than the preceeding; aud is also a handsome variety of vigorous growth. A fine specimen at Syon, England, 40 years ago, measnred 63 feet in height, the diameter of the trunk three feet, and of the head 63 feet. The Cnt-leaved is frequently met with, same as the common Alder, in a perfectly wild state.

Among other interesting snbvarieties of the Black Alder (*glutinosa*) we have the Oak-leaved (*A. g. quercifolia*), a vigorous grower and qnite ornamental, and the Hawthorn-leaved (*A. g. incisa*) with small leaves resembling those of the Hawthorn.

Lawns and Their Management.

M. B. FAXON, SUFFOLK CO., MASS.

In the formation of a new lawn it would be difficult to say which was the more favorable time, spring or fall, as much depends upon the character of the season. If fall is selected, the earlier the sowing can be done after the usual summer droughts are past the better—say the very last of August or early September. The first work is to get the ground graded according to the location, or the fancy of the owner. The whole should be plowed well and evenly.

If the snbsoil is at all hard, let a snbsoiler follow the surface plow.

Harrow until the whole surface is smooth. Use only the best and cleanest seed that a reliable seedsman can sell you. A quart will sow about 300 square feet, and from five to seven bushels will be required for an acre. If possible never use stable mannre on a lawn, as there is always more or less weed seed in it. The best possible fertilizer to use in the begining is a heavy dressing of ground bone say from one to one and one half tons per acre. This will not only start the new growth well, but will last for several years. Gronnd Tobacco stems is the best top dressing that can be given, and nsed each season in connection with the bone dnst in the begining will insure a strong even growth.

The only way to get rid of the troublesome weeds is to cut them off below the surface as fast as they appear.

The renovating of an old lawn that has been worn out by neglect or other cause is generally unsatisfactory work unless the whole is torn up and treated as if new. But if this cannot be conveniently done, old lawn may be mnch improved by rnnning over with a light harrow or rake, stirring the soil as much as possible without injuring the roots. Then about half the quantity of seed recommended for new lawns should be sown and the surface again lightly stirred and thoroughly rolled.

Mowing should be commenced as soon as the grass has made a growth of two or three inches in the spring and continued every week or ten days until growth stops in the fall. When mowed often there will be no need of raking off the cut grass but if a rake is used it should be with blunt teeth so as not to injnre the roots. It is a good plan in any case to roll a lawn each spring, as this firms the soil wheu the frost has loosened it, and leaves the snrface smooth.

A Home-Made Hygrometer.

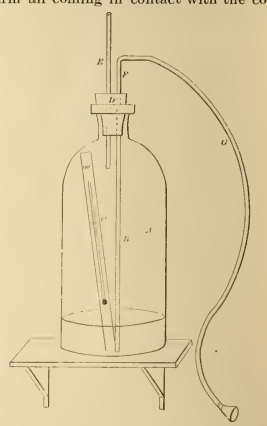
L. L. ESENHOWER, BERKS CO., PA.

Most means by which the weather is forecast are visionary and unreliable. Seldom, indeed, do we find any positive guide by which the temperature of the futnre may be known to a certainty. I herewith present an engraving of Hygrometer, home-made, and so cheap and simple is its construction, that there is no necessity for being caught by frost any longer. It is so unfailing in its action, that we can tell to a nicety in the latter part of the day or evening what the lowest temperature will be the ensuing night.

It consists first of a large glass bottle A, and a thermometer C inside of it. In the cork D are inserted two glass tubes E and F, one, E, simply communicating with the outer air; the other, F, reaching from the bottom of the instrument to the outside and euding at a right angle. The tube can be bent very easily by holding it in a gas flame, and giving it an easy bend. A small rubber hose G, ending in a mouthpiece, is attached to the end. The bottle contains a quantity of ether, which, however, must not reach the bnlb of the thermometer.

When we wish to know the temperature of the coming night, we simply blow into the mouthpiece attached to the end of our hose, in consequence of which the air vaporizes a qnantity of the ether, which in its tnrn will absorb an immense amount of heat. Keep on blowing for a moment or two, and you will find moistnre deposit on the ontside of yonr bottle; then quickly read your thermometer on the inside, and you have the lowest temperature of the ensuing night. This point is called the dew "point," and when that is reached, the temperatnre will not go any lower.

Now a word with regard to the philosophy of this valnable little instrument. Dew forms in consequence of warm air coming in contact with colder earth and plants, thus being forced to part with its latent (or insensible) heat. In so doing, however, it must precipitate, or free, the moisture it held in suspension. Now when you blow into the ether contained in your hygrometer, a quantity of it, becoming vaporized, abstracts a great amount of heat from the inside of the instrument. The result is, the warm air coming in contact with the cold



HOME-MADE HYGROMETER.

glass, parts with its latent heat, leaving the moisture it contained deposited on the ontside of the glass in the shape of dew. The reason why the temperature in nature never sinks lower than the dew point is plain. The air coming in contact with the cold earth and plants, parts with its moistnre. This changes from the vapour form into the liquid dew, which chauge resnlts in freeing the latent heat contained in the vapor. Dew is

nothing more than heat and moisture abstracted from earth and plants during the warmer part of the day, and given back when the dew point is reached.

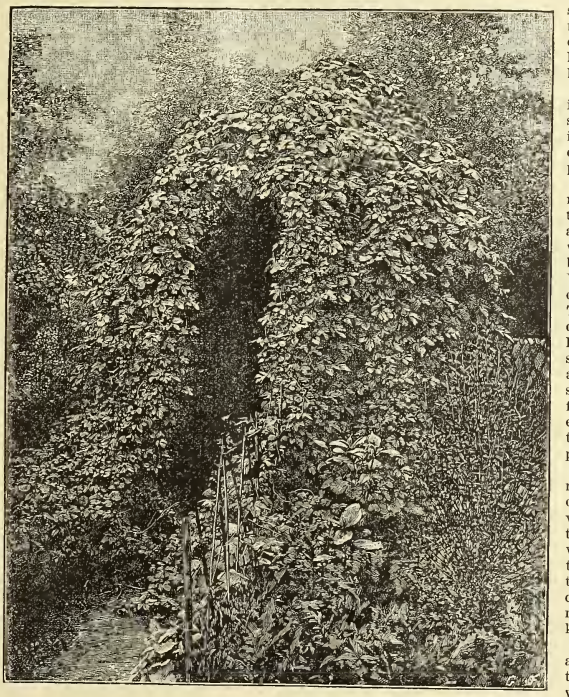
Care should be taken to keep the small tube closed with a cork to prevent the evaporation of the ether; if on blowing into the instrument you find the temperature to go below 32° before dew is formed then certainly you can depend on frost.

The instrument can be put on a small shelf of one of the posts in the summer arbor, or any out-of-the-way place, where it can be consulted at any time, and enable us to make timely preparations for the protection of plants against the early frosts liable to occur in early autumn.

Hop for Covering Arbors and Arches.

We have often seen the Common Hop employed as a means of hiding unsightly objects on people's premises, and as substitutes for other ornamental climbers, running up on poles or over fences and trellises. We were therefore by no means unaware of the usefulness of the plant for such purposes; but the annexed picture of a Hop-clad arbor, which we reproduce from our English contemporary Gardening Illustrated has certainly only served to strengthen our good opinion of the plant, and impressed us more fully with the fact of its being beautiful also.

The common Hop, says our contemporary, is one of the most beautiful and easily grown of all the hardy climbing plants. When planted to cover arches over walks, and intermingled with such a plant as Clematis Jackmanii, the effect, when its pendent branchlets are loaded with Hops in the autumn, and here and there masses of the Clematis flowers peeping out from amongst them, is extremely good. For planting in woods, pleasure grounds, etc., it is admirably adapted, as the rich vegetable mould generally found there is very conducive to the development of ample foliage and long, twining shoots.



HOPS COVERED ARBOR.

Plants and Bulbs for a Winter Garden.

W. F. LAKE, ERIE CO., NEW YORK.

Very often those who have had considerable experience and success in growing plants especially during winter are asked to prepare for a novice a list which may be expected to succeed reasonably well in an ordinary window, and produce enough bloom during the dull winter months that they may repay the care of them.

At the head of such a list, I invariably place the Chinese Primrose as giving the greatest satisfaction. The plants being dwarf may be placed nearest the glass, and compactly for they do not require large pots, and come in many colors and shades. A number of Begonias, are very well adapted for winter, and those varieties mentioned in the florists' catalogues as being good winter bloomers, may as a rule be entirely relied on. The Begonia seems well fitted to stand the dust and heat of the ordinary living room without complaint, though appreciating a frequent cleansing of its foliage.

Of those delightful summer plants, the Fuchsias, there is but two varieties which I have found at all worthy of general cultivation for winter bloom; Speciosa, and Mrs. Marshall. No satisfaction may be expected from these, however, unless they have been prepared for a winter season, and when put in the window are in healthy strong growth from old wood. A double white corolla Fuchsia first procured as Mrs. Elisabeth Marshall, but different from above, which are both of the single kind nevertheless very pretty, has given a fair amount of bloom by having strong growth from old wood, though its season was shorter than the single kinds.

Heliotrope Show Wreath, has done better for me than the purple kinds in winter, and is quite satisfactory. Bouvardias are good, if you are very sure of keeping them free of the red spider, if not let them alone for window culture. Callas, we all know their merits, but if you would have them large, strong and thrifty, don't forget these points. Good drainage, so that the hot, nearly boiling water applied every morning will soon pass to the saucer and be removed; plenty of well rotted cow manure in the potting soil, also leaf mold and sand so that it is nice and light, and porous.

Geraniums in the dwarf growing kinds will do very nicely, if kept cool. Here is a list I never do without. Evening Star, very dwarf, a most beautiful clear white, with pink center, and clear white eye inside of this. Cluster of medium size, very freely produced. New Life need no description, but care in choosing a plant that is true, which as it developes will show beside the usual stripe, salmon, scarlet, and in one instance some almost white flowers all on a single large plant. Madame Thibaut, double pink with whitish eye, and free. Madame Windsor, single salmon of a particularly pleasing hue. Ernest Lauth, the freest double crimson but rather awkward grower, though easily trained to good shape. Grand Chancellor, brilliant scarlet crimson, double. Princess Maud, same shade of single, with large white eye. Candidissima, double white, and Snow single white. This list is much larger in my own collection; indeed I have had a hundred or more kinds good for winter.

Maherina odorata with its numerous yellow sweet scented flowers is a pleasing departure from the ordinary, and blooms pretty much all winter.

But the best or at least most reliable things are the Dutch Bulbs, foremost among which is the ever welcome Hyacinth. Bloksberg, Lord Macauley, Veronica, Siam, La Tour d'Auvergne, Baron Van Tuyll, Heroine and Ida I depend most on for fine, large spikes, and an assortment of colors. Tulips are cheap and nice in a sunny window, entirely free from Aphis, but an eye sore if these are plentiful, for it is almost impossible to keep them off.

Narcissus force very nicely in the common window, and if one has nice varieties in the garden, they may be lifted, and will force quite as well as the imported bulbs, though it is well to include with each order a number of the newer kinds for the variety.

Amaryllis Johnsonii and one or two others of this class make grand winter plants if brought along in a sunny window, about the same temperature as for Geraniums. Grown in too warm a temperature, the spike is never so fine and lasting, while it is not uncommon to have it fail entirely.

The most attractive thing I ever grew in the line of Dutch bulbs, or least the one exciting most praise was a very large pot of Ixias and Sparixis. One does not often meet these bulbs, but it is because their merits are not generally known. They are very easily grown, the only extra attention is to give them a very liberal supply of water while in bloom if there are very many in a pot. The large pot referred to above had to be watered twice a day while in bloom. The small bulbs do not differ much in appearance from small Gladiolus bulbs, and the early growth also resembles this plant.

With all bulbs the period of bloom may be lengthened much by removing them to a cool place just before their flowers reach full size, and water them quite freely though not allowing it to stand in the saucers.

1,419. **Deformed Asparagus Shoots.** The probable cause of this is the difficulty which the young shoots have to encounter in pushing their way through hard soil. Give good cultivation to make the plants strong, and mix sufficient vegetable matter with the soil over the crowns, to make it verg loose and porous, and probably you will have no further trouble.

Under the Apple-Trees.

This is the orchard, here they grow,
The Apple-trees in triple row,
Ah, well I mind the years ago,
When we were young together.

They stand it well, this Baldwin, now,
The red fruit fairly loads the bough,
Has it forgot, I wonder, how
I used to dig around it?

This Pippin, standing next, they say
Bears Apples good the following May
Bite one, you'd think 't would last for aye,
Though all so fair and yellow.

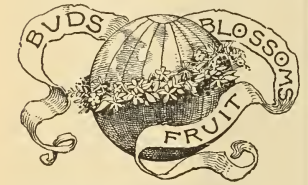
Such *men* I've known, pray who has not,
That hardened as they older got,
Would shrivel, shrivel, yes, and rot,
But never once grow mellow.

Youths' Companion.

To a Bird.

Sing on, sweet warbler, sing—
Sing thy Creator's praise,
Whose power supplies thy every want,
And lengthens out thy days.
How lonely were the woods,
Or hedgerows though so green,
Did not thy carols echo wake
While flits thy form between.

N. Y. Witness. *John Robinson.*



Oh! the dreadful frosts.

Give the Gladioluses support.

In Sweeden Mountain Ash berries are eaten.

We favor early lifting of plants to be kept over.

Nothing better for Grape posts than Red Cedar.

The Vine Walk at Woodbanks interests all visitors.

The White Tigridia should be Everybody's flower.

New York State Fair, Albany, September 12th to 19th.

Blood-leaved Filberts are true to name only in the spring.

Choose single Hyacinths and Tulips in the main for forcing. They do better than the doubles.

Pyrethrum roseum the "Insect Powder Plant" is with us in free bloom from seeds sown in April.

Perennial Sunflowers belong by themselves; any other plants near them are robbed of food and moisture.

The Garfield Apple is suspected by Mr. Cotta to be some German variety whose original name has been lost.

Annual weeds disappear from the lawn when kept mowed off. Fear not the Rag-weed; but pull up the Plantain.

If the Silver-leaved Poplar did not sprout from the root what a valuable tree it would be. Fine for contrasting with Purple-leaved Plum.

The Ox-Eye Daisy not an insect powder plant. So says Prof. Riley who has tested its alleged virtues in this direction. Sad news indeed.

The Hattie Jones is a new Strawberry of the Crescent type from Indiana. A single plant of them is reported to have had 163 berries on it at one time.

Take a Look Ahead. Hyacinths and other bulbs to be forced into winter bloom must first have roots. To have roots they should be potted early. The Catalogues are about ready.

The Merkel Red Raspberry, so Mr. John F. Rupp writes us, is really a remarkable thing for its non-suckering habit. In growth and general appearance it resembles the Blackcaps.

The Yale Strawberry introduced by S. Hoyt's Sons of New Canaan, has been awarded the prize for the best seedling variety introduced within the last five years, offered by the Massachsetts Horticultural Society.

Golden Dawn, a new double Geranium received from Peter Henderson last spring, has more of the yellow in its scarlet than anything we before have seen. It is a new departure in color, and as such worth noting; of free growth and bloom.

For Winter Bloom. If you have no specially prepared Geraniums then select suitable plants this month. Cut them back one-fourth and set in a shady, then a sunny place for a few weeks, sprinkling the foliage lightly several times daily.

Phloxes, Verbenas, Poppies, Asters, Zinnias, Petunias, Mignonette, Sweet Peas, and many more beautiful Annuals now in bloom—what a variety, what a display of colors, what a fragrance! And all this out of a few packages of seed.

Between a form of Leaf blight, the flea beetle and the dry weather, our Potatoes are having a rather hard time of it. The flea beetle which has only recently appeared for the first, is by all odds the worst. Now we can sympathize with Bro. Carman.

Fine Poppies. One cannot help becoming a friend of these too often disliked flowers if they will but sow such fine kinds as the following: Fairy Blush, The Mikado, Faust, Snowdrift. They have been the delight of all visitors to our grounds.

Two beautiful Apples of the crop of 1888 were received from Judge Miller on August 1st. Our Missouri friend has a way to preserve them of his own. If I lived in your latitude, he says, I would undertake to keep Apples two years. The expense is trifling.

Cut worms have bothered me terribly for the past four years, by cutting off my Lima Beans and Dahlias. This year I sprayed the plants with White Hellebore solution, wetting the ground thoroughly, and have seen no signs of the worms since.—*Mrs. Albert A. Darling.*

Cheaper Phosphoric Acid. There is a prospect that the basic process of manufacturing steel will be largely employed in America before many years, thus giving us in the waste product known and imported under the names phosphate meal, Thomas slag, etc., a cheap source of phosphoric acid in that form at home.

Tree Tomato of Jamaica, catalogued by Messrs. Henderson & Co. in 1886, but discarded since, is probably the same as the "Brazilian Tree Tomato" (Cyphomandra betacea) described and illustrated in June number. We grew plants, but lost them accidentally, and now are unable to get either seed or plants.—*L. G.*

The Chilian Beets can never become popular ornamental plants while we have the Coleus, Achyranthus, etc, on which to depend for effects in ornamental foliage. The former are attractive to numerous insects which spoil them; the latter are never so harmed. Leave Beets to the vegetable garden and the cow patch.

The General Royal Union for the cultivation of flower roots at Haarlem, Holland, will hold its 16th show of Bulbous plants March 20 to 25, 1890. A large number of prices are offered, and the show promises to be a great attraction. For particulars address Mr. D. Bakker, Gedempte Oude Gracht No. 110, Haarlem, Holland.

My Remontant Roses never before have bloomed so long, all through June and July, and bid fair to continue through August. Whether it is due to their having been transferred to new and richer earth, and receiving better culture, or to the frequent rains I do not know, but am delighted with the effect, whatever the cause.—*Elder's Wife.*

Begonia rubra gives the most satisfaction when trimmed back, or compelled to grow in a branching or tree form. Grown in this shape it produces a greater amount of blossoms. B. metallica does not bloom as freely as rubra, but its showy foliage seems to make up for this deficiency. The plant does not bear frequent changes and should be grown in the house.—*E. L. P.*

A Novel Plant. Miss Bacon (they have been discussing Orchids): "And now, Professor, I want you to tell me about the plant from which electricity is made." Professor Hohonthy (aghast): "The which?" Miss Bacon. "You certainly must have heard of it. Father says its high cost prevents the general use of electric lighting—I mean the electric plant."—*From Harper's Bazar.*

The Wilder Pear, received from Mr. Chas. A. Green, first week in August, was not only fair to look at, but very good to eat for so early a variety and in quality certainly much ahead of its still fairer contemporary, the Lawson, or Comet. The latter rots from the core, while our Wilder specimen, having been kept on our desk for some time, had just begun to decay from the apex, when we applied the final palate test.

A Shrub for You, Reader. Are you yet without the Panicle-flowered Hydrangea (*Hydrangea paniculata grandiflora*) in your collection of hardy shrubs? Then take our counsel and let not another planting season pass without setting one or more of these shrubs. The more we see of them the better are they liked. Young plants set at Woodbanks in May are now loaded with from three to twelve immense panicles each of bloom. A perfectly hardy shrub.

Geranium Slips root readily; if we only prepare them properly. Select a thrifty shoot, about 3 to 5 inches long. Cut off clean and smooth with a sharp knife, then remove the lower pair of leaves with a close cut, and trim the leaves left, so that the cutting will resemble the one here illustrated. It is now ready for insertion in the propagating bed, or in a pot or box of sand. Sandy soil will do in absence of clean sand. Fuchsia and other cuttings are prepared in same way.

Cutworms and Calosoma. I notice this year an unusal number of cutworm-moths; they often come into the window at night, flying about the light. The kinds most frequently found here are Agrotis devastator, messoria and clandestina. Fortunately the tiger beetles or ground beetles (Calosoma) were also quite numerous this spring. Often I found the larvæ in the act of devouring a cutworm. They frequently seize cutworms several times as large as themselves, holding on by the neck in spite of the victim's struggles, until the juice is all extracted and nothing but the skin left. The illustration on next page represents a group of most common cutworm-moths.—*Walter A., Lynn, Iowa.*

Saving Garden Seeds. It is a common practice for the ordinary farmer's wife and those in charge of the garden to use the best vegetable crop for house use, and when the Peas, Beans, Radishes, Sweet Corn and the like have dried and ripened, to gather the seeds for planting the following season. No wonder we hear of certain varieties running out, as they call it. Instead of that I always mark off enough of the best part of a row or patch for seed, don't take any from it, unless the small pods of Peas and Beans, the small ears in Corn, and the smallest Radishes. Then, when cleaning the seed out, take only the best developed. By this method there is a chance of improvement instead of deterioration. When the seeds are dry, put them in packages, and mark the year on the packet. The Sweet Corn I leave in the husk, and hang up in an airy place.—*S. Miller.*

A New Work on Grape Vines. Prof. P. Viala, of Montpelier, France, who made a tour of the Grape growing regions of this country under the direction of his Government in 1887, has just published a book, entitled *Une Mission Viticole en Amerique*, in which are embodied the results of his observations relative to our vines. Briefly, the work embraces a monograph of the North American species of the genus *Vitis*—description, history, synopsis, variations, hybrids, geographical range, natural soils, culture and horticultural value; and the principal fungus diseases to which they are subject. The volume contains eight finely colored chromo-lithographs, and covers 387 12mo. pages. An authorized American edition is being prepared by Mr. F. Lanson Scribner, who assisted Prof. Viala while here and accompanied him in his excursions to the various parts of the United States. The information gained by his observations here has enabled Prof. Viala to present many new points of interest and settle many disputed questions, hence the work will be one of great interest to all American viticulturists, and especially to those of Cali-

TRIMMING CUTTINGS.

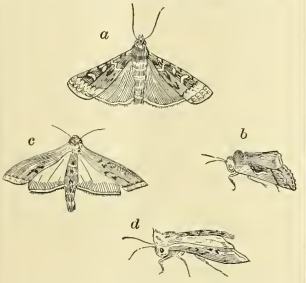
fornia. The title of the translation will be *American Grape Vines and their Diseases*. A second and supplementary work is promised on *Viticulture in America*.

Emergency Baskets. Why not have one under the plant shelf? Careful mothers generally provide in nurseries for sudden sickness or accidents, and plants take the place of children to those who can care for them. In my emergency basket is a hammer, scissors, tacks, string, old knife and cup holding Tobacco powder. If one had to look for these things, they would not be so apt to be used. Now, I can clip off a dead shoot or trim the branches with my scissors, tie up a straggling branch and woe betide a green insect that has slipped in, and malaciously began on a leaf; a pinch from my tobacco settles him. I also have a small box of sand, another of soil, and still another of tree mold, while a few small thumb pots are tucked away in a corner. So a few minutes here and there through my busy days keeps things in order, and is a delightful change from dish washing, or bread making. I know I can lay my hand on just what I want, so the few minutes' work among the plants does wonders. I have also a box for slipping, and another for seeds. The last has a movable glass top, made from a broken pane. What should I find in it one day but a small Elm tree, from a seed that had found its way in, and sprouted. I didn't have the heart to throw it out, and it has commenced a vigorous career in a thumb pot.—*Sister Gracious.*

Large Elm Trees Removed. I know of no city where the mania for removing large shade trees for the streets is so great as in Chicago; the streets being lined with Elm trees, moved when from eight inches to one foot in diameter. But as a centennial effort Mr. Simon, superintendent of the Graceland cemetery, has just moved two Elm trees that have been growing within six feet of each other the best part of the century, the larger being 3 feet 6 inches, the smaller over 3 feet in diameter three feet from the ground. Ordinary the large trees are slung between huge wheels constructed for the purpose, but this mass of earth and roots was very near fifty feet one way by thirty the other, weighing fifteen or twenty tons. A house mover done the job exactly as he would move a house, raising the mass by jack screws, and inserting great timbers underneath in all directions, then by means of a windlas and chains, the whole mass is moved, upright as it grew, slowly to a distance of nearly ¾ of a mile, a permit for the occupancy of the streets being obtained of the authorities. The house mover's charges were over $400, and so far the noble old twin monarchs appeared to have leaved out, as they must have done each spring since the time that the red man roamed over, and supposed he owned, the now mighty west.—*Edgar Sanders, Chicago.*

About A Japanese Rose. I like the Rosa rugosa for its sturdy, unique appearance, its handsome foliage, which emits a fragrance after a rain like the Sweet Briar, which delighted my sense of smell 60 years ago, when a large bush of it grew beside the school house door where I learned my A B C's. To this day I am reminded of that time whenever I pass a bush of the Japanese. Two plants are interwoven, a red and a white, and while net perfect in form they make a niee show, blooming nearly all summer. You will find the little Apples full of seeds, surrounded with a pretty thick pulpy shell, which has some taste in it that might possibly pe put to use if other fruit was scarce. The bright red Apples on the bushes look handsome when the latter is partly covered by snow. These seeds will grow readily when ripe if put in the ground in the fall; will grow from six inches to a foot the first year. It is possible that it would make a good stock to bud some of the hardy varieties of Roses upon. There are some Roses that give much better flowers when budded on some strong stock than when grown on their own roots. I have just now five varieties budded on a common annual bush, three of which are in bloom at this time, Marshal Nicl, Star of Lyons and Bride (this latter is a splendid bud), Vick's Caprice and Baron de Bonstettcu. The three last named are from buds taken from small plants got from abroad last spring; are now much larger than the plants taken from,and two have bloomed while the plants have not yet shown a bud. This Rose budding I practice all summer, and am greatly pleased with the results.—*S. Miller.*

Grouping Hardy Plants. A leading point in favor of many hardy flowering plants is that they possess a stately and ornamental appearance the season through, which fits them well for arranging in groups on the lawn. This is not the case, however, with all kinds. Of the former class we call to mind some pleasing masses we have met in the past. Paeonies are always in place when thus used; we have seen them growing in large groups of irregular outline, which were extremely satisfactory. By paying some attention to having the dark colors towards one end shading off to lighter and finally white at the other end, with perhaps a plant of the darkest set among the light ones for balancing the colors, the effect at the time of bloom is charming beyond description. In the Canadian Park at Niagara Falls is a large circular bed devoted wholly to plants of the Copper Day Lily (Hemerocallis) the appearance of which is handsome indeed. Yucca filamentosa similarly used, or



GROUP OF CUT-WORM MOTHS.

perhaps better if set into beds of irregular shape are unequaled for fine effect in lawn embellishment. The Plantain Lily, especially the large white (*Funkia alba*) is one of the handsomest of lawn plants if grown in partial shade in a light rich loam. Perhaps the first combination in this line we have ever seen was a simple group consisting of strong dwarfs of the common Blue Iris or Flag, intermixed with the graceful yellow Day Lily (*Hemerocallis flava*). Both plants were in bloom at the same time, forming a contrast in the color of the flowers most pleasing. Second to the color contrast was that of the erect pointed leaves of the Iris with the gracefully curving leaves of the Day Lily. The kinds of plants to avoid in this work are such as Delphiniums, Poppies and Sweet Williams, which present a shrubby appearance of leaf after the bloom is gone

Planting Bulbs. Notwithstanding it is a generally acknowledged fact that a garden without an abundance of blooms from the Dutch bulbs, coming as so many do in the early spring before other subjects of more tender nature dare put forth, is incomplete, there are many gardens throughout the country which are almost wholly destitute of such adornment, though there is a large annual outlay on the pretentious (and to many minds abominable) summer bedding. The outlay of a single season in this way, if spent for Lilies, Paeonies, and other fall-planted bulbs and roots, would cause annual rejoicing for many years, on the whole being far more satisfactory in the end, especially if money be an object. Among richer classes of people, Hyacinth, Tulips, and so on are often planted in the summer beds after they are destroyed by frost in the fall, and these bulbs are lifted before time for setting the summer flowers again. This is treating them as though they were annuals, practically. Its result is that any season's growth is not fully completed, rendering the bulbs impaired for further use, and is far from satisfactory. This plan might do in some cases of summer bedding where the things were planted in rows, setting the summer plants out between the rows in which the bulbs were planted the fall before; or instead of Geraniums being used in the bulb beds, let some thing not requiring such deep root growth be used, as for example the Verbena. The best way, however, is to plant where they may remain permanently, without being disturbed, as increased beauty and strength of the clumps each season will be the invariable result. The season for planting an out-door collection of bulbs extends over quite a length of time, especially in the case of Lilies which do not all ripen their growth at the same time, therefore varying the planting time. The work, however, should begin in early September by laying out the plot and deciding definitely as to the relative position of each subject, having in mind the growth and time of bloom of each. The ground also should be prepared some time before needed, by making it rich, light and deep. Sand and leaf mold are important factors to the greatest success with most of this class of bulbs.—*W. F. Lake, Erie Co., N. Y.*

New York Floral Notes.

Two or three of the large Rose growers have Rose houses in full bloom, and their friends are wondering how they do it, Perles especially- one man is credited with sending in one thousand blooms of this Rose in a single day. Of course trade is very dull, but there must be some money in it, or these Roses would not be produced now.

Some very fine funeral work has been done lately—not designs, which are not called for in the best trade, but decorations of the mortuary chamber. In some cases, where the remains have been lying in state for about a week, the decorations have been altered or renewed each day. These decorations consist chiefly of plants, though of course flowers are also used. The plants are disposed much the same as for a reception, but there is also some special decoration about the casket; it is surrounded by or banked in plants, and is usually covered with a plaque or pall of flowers. These plaques are usually made just large enough to cover the top of the casket, or they are arranged with an easy grace which removes the idea of any set design. One which had a loose ground-work of white flowers, with a Pansy border, had in one upper corner a loose trailing bunch of Cattleyas. These Orchids are very much used; they are especially useful at this season, when fine flowers are scarce. A lightly made, loose wreath of Pansies, with a trailing knot of Cattleyas at one side, made an exquisite funeral design for an elderly person—the wreath is one of the few designs which are without stiffness when rightly made. But a funeral wreath, when made according to the old fashion, very round, very white and very smooth, looking as if built with a trowel, is vastly different from the loose artistic garland produced by a good florist.

Peter Henderson's Gladiolus show made a welcome break in the monotony the first week in August. It was both large and good—the best show he has favored us with. The finest Gladiolus there was a new white, which, I fancy, originated with C. L. Allen. It is really a good white, having only a pale Lilac stripe in the lower petal; the spikes are large and the texture good. It has received a certificate of merit and prospective prize from the Massachusetts Horticultural Society; it must be exhibited there three succeeding years before it receives the final prize. On the whole the light colored Gladiolus were the best at this show; it was rather a wonder to see the flowers looking so good, after nearly a week of the wettest, gloomiest weather known.

Some of the new French Cannas were on exhibition; they are most charming. Unquestionably the finest Caunas seen yet; they are as showy as Gladioli. A brilliant carmine, Ulrich Brunner, is almost the handsomest; large Iris-shaped flowers, like Ehemannii, but an erect spike. They are very free bloomers, and make a beautiful group. Some showy varieties are golden-spotted and streaked with crimson and scarlet; they look more like an Orchid than a Canna.

Some of those wonderful Dwarf Lima Beans in pots attracted much attention; it certainly does look odd to see Limas growing on compact little plants the size of bush Beans.

Some beautiful specimens of the red-striped Lilium auratum (*L. auratum var. rubrum vittatum*) were very large and fine; this is a very showy thing for a large vase. Altogether a show most creditable and handsome.

Most of the city florists are buying up Palms and other foliage plants in a way that implies a large use for them next winter. A preference is shown for those which have been summering in the shade out of doors; they are so much hardier than plants drawn up under glass that they are very much more useful in decoration. A good many of the Palms, Seaforthias or Kentias, are planted three or four in a pot; this make a thicker, bushier looking plant, though it has a tendency to draw the leaves up; however, they don't show this in the group. In many cases the narrow, drawn up plants are quite as useful as the more spreading ones when forming a group, but of course usually the more robust a plant is the better.

Sweet Peas are regarded with a good deal of favor, but of course they are very cheap. A bunch of three or four blue Corn flowers is quite a fashionable boutonniere.

EMILY LOUISE TAPLIN.

No Good Blackberry. We have no Blackberry that is satisfactory. Snyder is about the best, but too small. —*E. A. Riehl.*

Flowers Bring Sunshine. Wherever I have found flowers in the yard I have found sunshine in the home.—*Hornellsville Farmers' Club.*

Mending the Orchard. If you must set a tree where an old one has died, remove a wagon-load of earth and replace it with fresh new soil.—*G. J. Kellogg.*

New Iris. Amoug the flowers at the show of the Massachusetts Horticultural Society, July 6th, the new varieties of Iris, exhibited by E. Fewkes & Son, were especially worthy.

Lucretia Dewberry. I have tried the Lucretia over which so much fuss has been made, and I am disgusted with it. It is a fine, large berry, but flat and hardly fit to eat.—*E. A. Riehl.*

Overproduction in Grapes. Acreage of Grapes could be increasel from one-third to one-half without any fear of overproduction to the market, if the marketing of the fruit was divised more systematically.—*Chas. Mitzky before Grape Growers' Association,*

Home Beauties. I believe in the male members of the family giving assistance to the ladies. Let us give them more time for thus beautifying our homes by making everything about the house as convenient as possible for them.—*Hornellsville Farmers' Club.*

Shipping Grapes by Freight. Small shipments of early Grapes in hot weather can not be safely made by freight under present arrangements, as sufficient attention is not now given by the railroads to small local shipments.—*Mr. Butler before Grape Growers' Association.*

The Yearly Fruit Allowance. Every family needs for each member 1 bushel of Currants and Gooseberries, 2 bushels of Strawberries, 1 bushel of Raspberries, 1 bushel of Blackberries, 50 pounds of Grapes and 2 barrels of Apples each and every year. This will give health, happiness and a love for the old home.—*G. J. Kellogg.*

Pear Dwarfs and Standards. A rich, strong, loam suits the Quince stock best, a lighter soil suits the free stock for Pears. The advantage of growing Pears on the Quince is early fruiting; whereas, the generally adopted axiom respecting Pears grafted on the free or Pear stock is, that—

He who plants Pears,
Plants for his heirs.
—*C. B. Saunders, England.*

Express Company Trust. The American, the Adams, the United States, the Wells-Fargo and other express companies are said to have formed a "trust" for the purpose of avoiding competition, increasing and maintaining uniform rates, all of which would probably be detrimental to the interest of Grape growers. Mr. Snow had been informed that the present rates would be maintained on heavy shipments, and those on small shipments to local points be increased.—*Grape Growers' Association.*

Seeds Not Guaranteed. At the recent meeting of the Seed Trade Association the following general disclaimer of responsibility for seeds sold was unanimously adopted to be used the coming season: "While we exercise the greatest care to have all seeds pure and reliable, we do not give any warranty express or implied. If the purchaser does not accept the seeds on these terms and conditions they must be returned at once, and the money that has been paid for the same will be refunded." (Here follows initials of firm.)

Utilizing Tomatoes. O. Gibbs, of Dakota, writes to the Minuesota Society, that his whole crop of Tomatoes ripened late, and after picking twenty bushels of well ripened ones, he used the green and half-ripened ones for feeding cows which ate them with a good relish, half a bushel at a ration. Horses also pronounced them good. He had fifty bushels, a supply for a mouth, to the end of October, before the advent of frost. He pulled up the plants by the roots, let them wilt two days, then shook the Tomatoes off and picked them up as we do Potatoes. If always making good feed, it may be well to plant them by the acre for late autumn green feed for cattle, as large crops might be easily raised.

Cape Cod Cranberry Growers. The second annual meeting and election of officers of the Cape Cod Cranberry Growers' Association was held in the town hall, Sandwich, July 9. The following officers were elected: President, J. J. Russell, of Plymouth; vice-presidents, A. D. Makepeace, Barnstable; Emulous Small, Harwich; secretary and treasurer, I. T. Jones, Sandwich. The executive committee was instructed to consider and report at a special meeting of the Association a plan for securing a uniform capacity for barrels and crates, and for preventing any person not a member of the Association from using any trade mark adopted by the Association and to procure legislation in connection therewith. The Association numbers one hundred members.

Close Planting in English Gardens. The Jersey farmer, cultivating 20 acres of land, and making a comfortable living of so small a surface, cannot afford to allow a single perch of it to remain unproductive, and every square yard is made to contribute towards the general expenses. The space alloted to kitchen gardening and fruit culture is generally near the homestead, the pathways being planted on either side with bush Apple and Pear trees, Currant and Gooseberry trees filling up the intervening spaces in the rows until the trees have grown sufficiently large to cover the whole space. These highly-cultivated and richly-manured pieces of ground are made to produce crop after crop in rapid succession. No sooner is one crop off the ground than another replaces it. The trees get the benefit of these repeated dressings and the manipulation of the soil.—*Chiswick (Eng.) Conference.*

Packing Plums for Market. The Plum is perishable, and more care in handling is required than often is given, especially on sorts designed to be sold on the retail stands of distant cities. These certainly should be picked with stems adhering and carefully laid in five pound to eight pound baskets; in all cases picking the small and inferior fruit by itself to be marketed as second class. And while the varieties designed for preserving need not be so carefully packed, equal care should be bestowed in sorting that no imperfect fruit be packed in packages denominated first-class. In doing which you will find someone ready to purchase your fruit at its full value, giving you fair compensation for all your labor and care, and you, in conclusion, abuudantly satisfied that well-grown Plums shipped in clean, neat packages at the proper time and to the proper markets are a crop not to be despised.—*S. D. Willard, Western New York Hort. Society.*

Protection for Grapes. While professional Grape growers are searching for a remedy for rot, or some means of preventing it, there is one fact that an amateur should never lose sight of —there can be no rot where the fruit is protected from dew and rain. Where vines are trained on a building under a cornice, the fruit never rots. A wide board nailed over the trellis, in so far as it protects the fruit from dew and rain, prevents the rot. A strip of calico, muslin or other fabric has the same effect. The liability to rot is also diminished in proportion as the vine is high. There is always less rot at the top than at the bottom of the trellis. Where vines are allowed to grow over the branches of trees with little or no care, there is but little rot, and the vines are remarkably healthy and productive. If one can raise this fruit without having it rot —and every one can—there is no reason why any person should hesitate to plant a few vines.—*Report of Summit Co. Horticultural Society.*

Bushels Boxes for Potatoes. Next to the Potato digger, the greatest labor saver on our farm, in the line of Potato culture, is our bushel box. Potatoes can go from the field to the grocer in the city, and then to his customer's cellar on spring wagons and under canvas, so they are fresh and nice as though just dug in his garden. The boxes, of course, are left with the grocer until emptied. When digging, the boxes are scattered through the field. A man can pick up a bushel almost without lifting, if he takes four rows at once. Then two men can empty them into the wagon, as it is driven through the field, very rapidly, or set them in, to go to the cellar. It is a great saving of labor over the common way of picking up in a basket aud carrying them to heaps, then picking them up again from the heaps into the wagons. These boxes hold a bushel level full, so they can be set up three or four deep in field, wagou or cellar. We have board covers to put on when it looks like rain, or to keep the sun from injuring the Potatoes. If you want to load a car from the field, they are just the thing. There are hand holes in the ends, so they are about as easy to carry as a basket. The size is 13x13x16, inside measurement.—*T. B. Terry, before a Farmers Institute in Wisconsin.*

The Early Peaches. Capt. E. Hollister:—We have on the stand to-day some very nice looking Peaches, but their excellence is confined to looks. Bite one, and your vision of bliss is quickly dispelled, eat half a dozen and the probabilities are that you will soon have cause to regret it. I have found all these early Peaches a nuisance They always rot badly and later in the season. would be pronounced unfit to eat. Alton Peaches have a reputation in Chicago, but if we send them much such early stuff we will soon lose our good name. Nearly all these varietics, Amsden, Alexander, etc., are seedlings of the Hale's Early and are all alike. Georgia and other southern Peach growing states have made the same mistake, and are suffering for it. About the first good Peaches we get are Troth, Early York, George the Fourth and Mountain Rose. E. A. Riehl:—I think Early York better than Troth, but I think Amelia and Flater's St. John earlier and better than any others that have been named. Have grown them and know them to be good. J. M. Pearson: I have always held that these early Peaches were a nuisance, and think the best thing you who have the trees can do, is to grub them out. If you market them, people get so disgusted with them that they will not buy good Peaches when they come to market. —*Alton Southern Illinois Horticultural Society.*

Overhead Heating of Plant Houses.

[*Read by E. S. Bartholemew, before the Buffalo Florist Club, July 26th.*]

What is Heat? Heat, according to modern theory, is a condition, a result. It may be the result of molecular action or energy. In the heating of plant houses, we have to do with potential molecular energybecoming kinematic by the clashing together of molecular atoms of matter in consequence of affinity called combustion. The heat thus produced, we employ by radiation.

Radiated heat is very diffusive, heuce, if we place our radiating pipes overhead and evenly distributed across our houses, a very much more even diffusion of the radiated heat and even temperature throughout the entire house will result. The object of glass structures, being to get a summer climate during the rigors of winter, we endeavor to make them practically as near frost proof as possible, excepting the roof, for which we use the clearest glass to be obtained, that the greatest amount of light may be admitted. We do not take into account the amount of molecular energy that may be imparted to the atmosphere in the house, or the heat that may be produced by the interception of such molecular energy.

Our glass roofs, practically, are the same as a thin sheet of ice, whenever the outside temperature is below 32° admitting the cold very rapidly. The question now arises, where shall we place our radiation, so as to meet this cold air and prevent its coming in contact witn the delicate foliage of the plants under cultivation, causing disease, mildew, &c. Shall it be near the glass, or overhead, or near the floor of the house? Common sense and reason would say, place the radiation where it will meet the cold air as soon as possible after entering the house, warming it, causing air currants, and thus diffusing the radiated heat, giving us a very even temperature through the entire house. If the cold air or frost coming through the glass, be met at once by the heat radiated from the suspended pipes overhead, there can be no danger from frost in any part of the house.

Some Tests. In order to test this question, I began some experiments which inteuded to show whether by placing the radiating pipes beneath the benches we obtain the best possible results in plant growth and blooms, or whether to cold coming through the glass did not too often reach the plants doiug injury to the foliage, thereby causing a diseased condition more liable to sporadic growth. Another question arose, whether by underheating we did not surround the roots of our plants with too high a temperature, with comparatively too low temperature of the atmosphere surrounding the tops to give large blooms with good substance of the petals. To assist in forming my conclusions, I instituted a series of experiments as to the comparative temperature of the soil surrounding the

roots and tops of the plants while producing their most active growth and greatest amount of blooms, out of doors as well as under glass, the amount of moisture being equal or nearly so. The several thermometric tests made indicated from 10 to 20 degrees difference between the temperature of the soil and of the atmosphere, when the plants were making their most active growth, giving a profusion of blooms. The soil indicated from 40 to 50 degrees. These tests were made during spring time. The result of these experiments formed a conclusion in my mind, that by placing my radiating pipes suspended near the glass would give me results more nearly to the out-door ones than by the low down radiation. Two years of experience with overhead radiation has given me even better results than I anticipated. I have also become more satisfied that most of the diseases of our plant houses are directly traceable to a violation of Nature's law in the methods of heating and ventilating plant houses as at present practiced.

Advantages of Overhead Pipes. The advantages I have found so far, are: First, It does not require so great an outlay for piping a house, a lineal foot of 1¼ inch, for steam, is equal to a lineal foot of 4-inch pipe for hot water underneath the benches. Steam at 2-pound pressure I have found that a lineal foot of 1¼-inch pipe will give sufficient radiation, if steam is used, for three square feet of glass; if hot water, then 1½-inch is sufficient for the same amount of glass. This for zero outside and sixty degrees inside. Second: I have found, by thermometrical tests, that the heat is very much more evenly diffused throughout the entire house, even within two inches of the floor, even under the benches not to exceed three degrees lower than at six feet above the floor. Third: Air currents are formed much more completely than by underneath radiation. The pipes being suspended just beneath the glass, the heat radiated from them immediately comes in contact with the cold air sliding along just beneath the glass, imparts heats to it and as it passes the line of pipes in its descent, it receives more heat, which it carries along imparting it slowly until the entire atmosphere of the house is evenly warmed, forming upward and downward currents. Fourth: The molecular or wavy action given to the air just beneath the glass by the radiation of the heat from the pipes, seems to have the effect of intensifying the light as it passes through it, and this intensification gives a greater amount of radiant energy, thus assisting in the diffusion tending to the equalization of temperature or equilibrium. That this intensified condition exists is shown by the fact that on very cloudy days, without any change in the thermometric condition of the pipes, while dark and after light appears, when the atmosphere is very densely cloudy, the thermometer, as the light increases, will show a rise of several degrees according to the idensity of the clouds.

That this takes place, to some extent, with under radiation is true, but not to the extent of the overhead. This intensified light has very much to do with the greater vigor and healthfulness of plants, for it is a well knowu fact, that the most healthful plants, the most intense coloring in blooms are found on that portion of the earth where the atmosphere is clear and the greatest number of rays strike the earth on a given amount of surface.

Fifth. By the overhead system of heating plant houses, the soil on the benches is warmed from the surface downward, just as we find it out of doors, the evaporation from the surface is slower, carries away the heat, the roots of the plants are therefore in a cool, moist soil, consequently healthier than where the heat is applied directly beneath the benches in a soil that is dry, a high temperature which forces the moisture rapidly away. Water is not needed so copiously at each watering, rarely so as to run through.

I am of the opinion that the atmosphere is, as a whole, moister, yet I have not used a hygrometer or wet bulb thermometer to determine that fact, judging by the sense of feeling. From my two years experience in the use of overhead radiation, the healthfulness of my plants, the abundance and size of my blooms, I am very sure I shall not return to the old system of heating. Surely there could be no more convincing proof than a thorough testlike this.

To those who are disposed to be critical or prejudiced against any innovation on old time ideas, I will simply say, that in plant houses where pipes are not used under the centre benches, or where solid beds are used, they are warmed by the general principle involved in the overhead, viz.: by diffused radiated heat, and I feel quite assured that the plants so grown on them, have ever been quite as healthy, given quite as abundant blooms, at least I know of Roses that have been planted twelve years in a solid bed and are at this time perfectly healthy and giving abundant blooms.

Growing Tulip Bulbs in England.

[*Abstract of paper read by Mr. James Walker at the Horticultural Club, England.*]

The three classes I wish to refer to are the Dutch or bedding, the Parrot, and the species of the genus Tulipa. Their culture is simple and well adapted to this country. The treatment of the varieties varies but little. The few species that are not quite hardy will be kept out of view.

The first thing to be done is to select a sheltered situation. The land ought to be sandy-light up to medium loam. Wet heavy land ought by all means to be avoided. Select a piece that has grown a crop without manure, then apply plenty of new stable manure. It may be put in just before planting with the plough. When recommending new manure, I am aware I clash with many good cultivators, but I here give the finding as I have found it - that is, our results have always been better from uew than from old manure. However, let it be old or new, it ought never to come in contact with the Bulbs.

Early in October is the best time to plant; 3 to 4 iuches deep, three inches between the Bulbs, and 8 inches between the rows represents my practice. Some recommend planting 6 inches deep, but when grown at this depth in large quantities the expense is largely increased in lifting. After planting there is little to do except keeping the Bulbs clean. For ordinary seasons they will be ready for lifting early in June. The time varies a little according to the season, but it is always safe to lift whenever the foliage begins to get yellow. If they have been in good quarters the flowering Bulbs in most instances will have produced a good second-sized and also a small Bulb, and the small ones will have developed into flowering Bulbs. I may here say that if they are allowed to remain in the ground after they are ripe the skin of the Bulb will be dark, and not the bright color a salable Bulb ought to be. When lifted they ought to be placed in trays, boxes, or laid out in lofts, with plenty of air. A dark shed or outhouse is preferable, for if exposed to the sun or much light the skin will crack and come off.

I have already said that the treatment is simple, but there can be no success if annual lifting is not practiced, and the lifting and planting done at the proper time. I have also said that the culture is well adapted to this country. Now how is it we do not grow our own Bulbs? Seeing that no nation in the world grants us the same privileges that we grant them, it becomes us to look round and see if we are uot spending large sums of money on a plant we could grow, if not better, equally as well ourselves. For a number of years I have planted Dutch-grown Bulbs alongside of home-grown ones, and the latter produced larger flowers than the former, and this was more striking in the Parrot species, a clear proof that these two sections prefer medium loam to sand. I am a little surprised that the species are not more cultivated. If we take Gesneriana, Fulgens, Elegans, Elegans alba, Retroflexa, &c., their effect in beds or borders is simply grand.

Can they be grown to pay? I have had some experience in growing them by the acre, and cannot throw out the hope that a fortune can be made, but if properly manged, a fair profit may be realized. In field culture we cannot always be certain of sound market flowers. I have seen a shower of hail damage thousands of buds, and the sun shiue out ten minutes afterwards and smile on all the destruction the hail had done. Partridges and rooks are fond of the buds when young. Such are a few of the difficulties to contend with. However, so far as I have seen, none of these misfortunes interferes with the development of the Bulbs.

Our advantages over the Dutch growers are better and cheaper land, and cheaper manure. Our great disadvantage is the want of skilled labor; in this the Dutch grower has yet a great advantage over us. I believe one of their workmen will lift as many Bulbs in a single day as ours would in four days.

I have a robust faith, however, that with a sturdy will and a little skill England may be made the home for the Tulip.

Nomenclature of Fruits.

[*Extract of Paper read by H. E. Van Deman, U. S. promologist, before American Nurserymen's Convention.*]

It has now been six years since our beloved and lamented Wilder delivered himself before the American Promological Society of the reformatory ideas regarding the nomenclature of our fruits.

The committees on nomenclature of the American Pomological aud American Horticultural Societies have officially reported in favor of measures looking to the practical application of the new ideas, and the former society has prepared and adopted a revised list of the leading fruits of our country. This revision has been made with the most sacrificing care and by the best pomologists of the day. It has been the idea to shorten, simplify, eliminate, and put into as plain English as possible the conglomeration of names that have been dug out of all the nations of the earth. The task has been far from a light one, and especially with the Russian list, and I am sorry to say it does seem in a great measure to have been a thankless one. I hope that the day will soou come when the Nurserymens' Association will be the active agent of carrying into effect what the other societies and private individuals have so well planned and begun.

Why has not the association taken official action to establish uniformity of names for our fruits? Certainly such a course would be most happy and profitable in its results.

Few nurserymen have made practical application of the rules that as members of one or more of the pomological or horticultural societies they may have helped to make or endorse. A careful examination of the nursery catalogues shows an array of synonyms that is truly discouraging. We find the Ben Davis Apple called New York Pippin in some of the Eastern states, and Kentucky Red in the South; we have Gilpin called Carthouse; Romanite, Little Romauite, and Little Red Romanite, according to previous knowledge, or, it may be, the fancy of the nurseryman. Some still hold to the old, useless and long ago discarded appendage "Pippin," which was first attached to Grimes Golden. The much simpler and equally intelligible name Westfield is often seen with the "Seek-no-further" attachment. Angouleme Pear has its old prefix and suffix both carefully preserved. Cumberland Strawberry has its "Triumph," and Woodruff aud Wyoming Grapes have their "Red" superfluities. The crop of swelling "Wouderfuls" and overloaded "Prolifics" seems to be still growing.

It is easy to see how all this confusion and useless bombast is originated and propagated. Some nursery man originates or purchases the stock of some new thing, and not to be outdone in a name he goes in for all the thing is worth, and perhaps more, too. Or he may, in his honest, ignorant simplicity, have found some old variety and renamed it.

Might not this association take some action that would in a few years induce the nursery men to submit their catalogues to a committee on nomenclature or some other authority by which the names be corrected, so that the same fruits may in time have the same names iu all places? Of course it will be impossible to change the local names, but the annoyance and inconvenieuce of teaching the people the correct names will be far less than to continue the present custom of everyone using such names as may suit their fancy.

The rules of the American Pomological Society regarding the name of new fruits are quite sufficient, but they lack practical application by the nurserymen of the country. If they were lived up to, there would be great advancement in knowledge, and the confusiou which now occurs would soon cease.

Evaporation of Fruits.

[*From recent discussion of Ontario Fruit Growers' Association.*]

Mr. BOULTER:—In the past few years quite a large number of small evaporators have been made and sold to farmers. There are lots of Apples that cannot be profitably sent in to the factory. They should be sliced up and bleached, and they could realize a good fair profit on them, because they could do this at home, and save drawing those Apples to market, to factories and to evaporators.

How to dry them has yet got to be learned by farmers. They will pick them up just as fast as they fall and draw them to a factory, and when they get there, they are pretty well up to pomace; whereas if they would peel these Apples at home they would save them. Farmers could save a good deal of money by taking one of these small evaporators, taking pains, bleaching it out with brimstone. In answer to the question, would it be profitable for a man to evaporate Apples, I say yes. I have two thousand Apple trees. If I had not a factory I would have a nice little evaporator and use up the Apples that I could not sell, that fell with the wind. The help around there could peel up a good many dollars worth of Apples of Apples that are now thrown away. If the farmers would do the work well they would get just as good a price as the Americans. I put them up in five, ten, twenty-five and fifty pounds boxes. I ordered a great many paper boxes from Montreal. Instead of selling them by the pound, the merchants would say, "Here is five pounds." The cost of packing is pretty heavy in a public establishment of that kind. The farmers could do that if they would get the little paper boxes. Put them in five pound boxes, lay the first course nicely, learn to be tasty and neat about it, and you will get a real good price for your Apples—much better than if you put them in 25 pound boxes; 10 pound boxes, however, are very nice. Oftentimes merchants would get 75 cents for five pounds. I don't believe a farmer can grow berries and evaporate them and make money out of them at present, because there are so many dried berries in the back counties that are picked and dried because they can't be shipped here; and the market is generally down to about 15 or 20 cents. Now, if you get four cents a pound for them fresh you better sell them than undertake undertake even to evaporate at that, because it will take four pounds of berries under the most favorable circumstances to make one pound of evaporated berries, and nearer five pounds. In large cities it is done. In Rochester a man has 200 acres and evaporates his Blackberries and makes money out of them. We never could; we gave it up.

MR. CASTON.—The equinoctial gales in September knock a great many Apples off the trees; and they are some of the finest specimens, and if you don't keep them you lose them, as Apples are a drug in the market in the fall of the year; and I think when people are a long way from the canning factory, if they could evaporate they would save a good deal that goes to waste.

MR. BOULTER.—Thousands of dollars could be saved to the country in that way. If a wind-fall Apple is cut up right away, peeled, the core punched out, put in the bleacher, and then sliced up, the bruises will bleach right out—it won't show in an evaporated Apple.

MR. CASTON.—How would 10 cents per pound correspond with green Apples per bushel?

MR. BOULTER.—The Golden Russett Apple will make about four pounds to the bushel. The Snow Apple will make less.

MR. DEMPSEY.—Bleaching is exposing the Apples to the fumes of sulphurous acid. I would ask any one to evaporate some Apples and not expose them to the action of this acid, but try them natural and see if they don't have the natural flavor; then take some Apples that have been bleached and cook them and taste them; and he will find that this bleaching process has a tendency to toughen the Apple. Even though you make them into pie, the toughness remains; but if they are not bleached the Apple cooks and swells up again just as nice as it come from the tree, and you can detect the flavor of varieties of those that are dried without the bleaching process. I admit that the trade requires white Apples and those men engaged in drying Apples don't care whether the Apples is a white-fleshed Apple or a yellow-fleshed Apple. The saccharine matter is what preserves the Apple, and there is a certain amount of that which must be destroyed by the action of the sulphurous acid.

MR. BOULTER.—I was under your impression when we first started. It is the same way with Hops. When I was in the Hop business, I went to Toronto and found I could not sell my Hops. I was told I would have to put brimstone in. The brimstone is driven off almost entirely by the heat. We bleach the Apple now as quickly as it is peeled. I believe that the bleaching process makes the Apple softer and better that it would without bleaching. You cannot tasted a particle of the brimstone, and I believe that is driven off with the heat. If the trade says, "We have got to have that kind of an Apple," you may talk till doomsday to tell a man you are selling better than what he says he wants and what his customers want. If they demand that kind of Apple they have got to have it.

American Society of Florists.

[Abstract from Pres. J. N. May's Address before the Society of American Florists, Aug. 20, 1889.]

As workmen and artists we must show that we are able to keep abreast of the times, and the best possible opportunity for us to do so is to meet and freely discuss all matteas of interest. Wonderful strides have been made in the making up of floral designs alone, within the last ten years, and other branches of our business have shown equal advancement. This is very largely due to the Society of Americin Florists; but no one will deny that we have ample room for improvement left. Let us then all unite and try to carry on the good work, for to elevate our business is to raise each and all of us on the plane of life. It may be well to consider for a moment what elevating our calling means. Higher art, broader views, honorable and strict integrity in all our dealings, and I know of no better means of advancing it to this plane than the education of young men who are to succeed us in this business.

Educating the Young. As we train the young men and boys now in our employ, so in a great measure will they conduct the future business. Therefore we should be careful to start right. To be a successful florist a youug man should have a fair school education, and in addition he should have a natural taste and love for flowers. This combined with a good business training and strict application will produce the desired result in most instances; and here I would like to give a word of advice to the young man who wishes to become a florist. The florist's path is not all Roses without thorns; neither can you be a successful florist without hard work, perseverance and strict application to business. Very many young men of to-day think they would like to go into this business because it is nice easy work, soon learned and lots of money to be made. There can be no greater mistake. When you start in business for yourselves, begin on a sound basis by meeting your obligations on time, live always within your income, incur no debts until you can see your way clear to pay them. This may be too slow for some but it is the only safe way, and will save you many regrets in after life. To learn the business requires a life-time study. An old friend said to me that he had been over fifty years at the business, but was only an apprentice yet. Our business is never learned except by continued study.

Many who have graduated from horticultural schools, although well versed in the theory of horticulture, are lamentably deficient in practical experience, and for some unaccountable reason, very few of them ever overcome the difficulty. Herbert Spencer says "all our industries would cease were it not for that information which men begin to acquire, as they best may, after their education is said to be finished;" and this is perfectly true of our business. Theory is very pleasant to read, but if you wish to get at the root of a tree you must take a spade and dig until you get it. I do not by this wish to convey the idea that I am not in favor of a good training school; on the contrary, I think it would be of great service to us.

Public Exhibitions. These are another means by which we can learn an immense amount of practical good. They are not only educators of florists, but of the whole public at large, and as such we should do all we possibly can to advance and extend them. I would earnestly recommend this society to use its best endeavors to extend horticultural exhibitions wherever possible, and would suggest that the horticultural press of the country could do still more in this direction.

New Seedlings. In our haste we do not give the time to this branch of the trade that we ought. The new things we get from abroad are novelties only in name and not worth the paper it takes to describe them. This is particularly noticeable in many of the new Roses sent to us from France of late years. Though there have been some grains among the chaff, very few are suitable to our climate. A wide and interesting field opens itself for us.

Business Methods. We, as a body, should take some means to protect the trade against those who buy goods, promising to pay at a certain time, and then utterly ignore the fact that they owe anything to the party furnishing the goods. There are many other loose practices in this business. In every business with which I am acquainted, except ours, any party allowing his bill to go unpaid, expects to and does pay interest for all such time allowed, and no business can be expected to succeed where one party uses the capital of another without fair compensation. All such abuses should be remedied by those who wish to be considered honorable men.

Nomenclature. The renaming of plants to suit the sellers' purpose is, to say the least, a very objectionable practice. A flower needs only one name, and that should be the one given to it by the raiser or introducer; and to any one buying an old variety at an advanced price, under a new name, it is an injustice, and works against the best interest of the trade all over the country.

The National Flower. We shall have to handle this subject with great care, as the matter has already received much attention from the press all over the country, and many of the leading people of the Union have already voted on it.

Retail Florists. We should use our best endeavors to protect the retail florist. From all over the country I have received letters complaiuing that the large wholesale growers are selling to private gentlemen at the same prices as to the retail dealers. This is undoubtedly a hardship and injustice, and should have our careful consideration.

Express Charges. To make matters worse, the express companies have now advanced the rates all over the country. Eight of the leading companies have signed a code to charge a uniform rate of five cents for each returned empty. This will add considerable to the expenses of the cut flower grower, and although the matter has been laid before them very plainly, showing the injustice of such charges, yet no good has resulted from it up to this date. From past experience I have little hope of getting any reduction in the charges for plants, but it is to our interest to take every means to protect ourselves.

Florists Hail Association. This has come to stay, and the increased interest on the part of the florists all over the country augurs well for its future prosperity. To those not already insured I would earnestly advise them to join it before the close of this convention.

Value of Time. It's better to do a small business on a sound basis than a large one on a rotten foundation. Time is of great value to us all; many of us are apt to ask for an extension to pay our bills, etc., but if we measure it right we can find time for all things, and time to get to this hall at the hour named in our programme; then we shall have more leisure to enjoy the beauties of this lovely city of Buffalo and its surroundings, its grand park system, which justly ranks among the finest in the country.

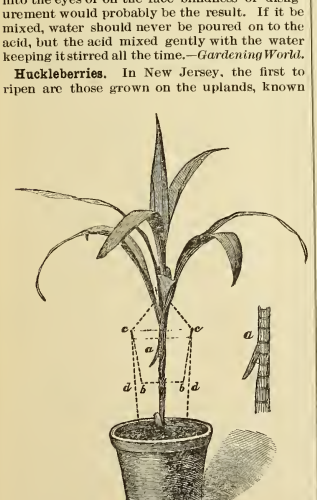
CONDENSED GLEANINGS.

Stem Rooting Dracænas. The stem is prepared by making a horizontal incision nearly half-way through the stem, just below the lowest leaves, and then an upward one, so as to form a tongue, as shown in the enlarged drawing of the stem *a*, then cut a thin wedge of wood, and put in between the severed part to throw it open. Now tie some damp moss round the cut, so as to form a ball of the size of a Cocoanut. This must be kept moist until the roots show themselves through the moss, then gradually sever the top off and put the roots, with a portion of the moss, in a five-inch pot of good soil, and grow on in the usual way in heat. A better plan, perhaps, is to use a clean three-inch pot, and soil instead of the moss. The pot in this case has to be sawed in halves, and to have the drainage-hole enlarged so as to fit the stem. Before putting the pot round the stem two or three more stout stakes, *dd*, must be fixed at equal distauces apart in the pot of the plant to be operated on, and of sufficient length to enable the sawn three-iuch pot to be secured to them. Fix the two halves of the three-inch pot round the stem, as shown at *cc* and *bb*, binding some fine wire round its exterior to keep the two parts together, then further secure the upper rim of the pot at *cc* to the states, and also carry three strands of the wire, as shown in the sloping dotted lines, from the rim to an upper part of the plant, for the purpose of preventing the pot moving downwards when the soil is placed inside. The great point is to make the pot perfectly secure at first, so it cannot move and thus

break off the tender young roots when they begin to form. In the bottom of the pot put a layer of moss, pressing this down firmly, then add sufficient sandy soil to fill the pot as far as the incision. In close contact with the latter put pounded charcoal and sand, but fill up the remainder of the space with soil. For the first few weeks the soil must be kept just moist. In about six weeks roots will have formed, and then should begin the work of gradually severing the upper part from the lower. It is best to cut a small notch in the stem just below the suspended pot, making a similar one at intervals of three days until a circle round the stem is completed, then sever it altogether, remove the stakes, wire, and sawn pot carefully, and put the new roots and soil intact in fresh soil in a five-inch pot. Sprinkle the foliage, and shade from the sun for a day or two, and all will be right.—Amateur Gardening.

Sulphuric Acid on Lawns. Sulphuric acid is often strongly recommended for destroying Plantains and Dandelions on lawns. I have often used it and found it very effectual. Take a large-mouthed quart bottle and fill it about half full of sulphuric acid; tie a piece of strong string securely round the top, attaching a piece of wood to carry it by. Then take an iron skewer about 15 inches or 18 inches long, and run it through a round flat piece of wood or a large cork at a convenient distance from the top to act as a guard for the hand; dip the skewer into the acid, and pierce the centre of the weed it is intended to destroy. Great care must be taken, as it is very dangerous stuff, and should never be left about or in the way of children, but always kept under lock and key when not in use. It would be wise on the part of the operator to put on some old clothes (boots especially), as the least drop will quickly burn a hole in them. The acid should not be put into watering pots or metal implements of any description, as it quickly corrodes. It is not necessary to dilute the acid with water, as a small quantity goes a long way, and the stronger, the more effectual is its action. In fact, it would be better not to attempt its use unless the operator fully understands what he is about. When sulphuric acid is mixed with water, violent action takes place, and great heat is evolved, the temperature reaching above boiling point, and should any get into the eyes or on the face blindness or disfigurement would probably be the result. If it be mixed, water should never be poured on to the acid, but the acid mixed gently with the water keeping it stirred all the time.—*Gardening World.*

Huckleberries. In New Jersey, the first to ripen are those grown on the uplands, known



STEM PROPAGATION OF DRACÆNAS.

as Blueberry. They are medium in size and very sweet. The next to ripen are those known as "Swamps," large, slightly acid, yet delicious to eat, and of a dark blue in color. They are very tender, but bear transportation when placed in small packages, say the quart berry baskets. While the blue variety grows on bushes ranging two feet high, the "Swamps" frequently grow to the height of ten feet. "Cracker," is not a favorite, being quite acid and on account of the seeds hard to chew. They are black, bear carrying well, and make good pies. Another variety is know as the "Dangle" berry. Many of them cling to the stems so closely that the stem is picked with the berry. These are as large as the "Swamps," about as tart as the "Cracker," and possess a bright blue skin. The variety called by the natives "Shiny Blacks" is firm and tart, poor fruit for the table but good for cooking. Another known as the "Hog" berry is a large brown fruit, but possesses no flavor and is not marketed. Commonly called Huckleberry, but I think the correct name is Myrtleberry.—C. W. Idell, in Farm and Fireside.

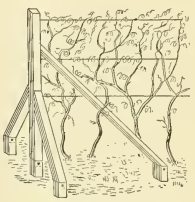
A Lasting Grape Trellis. A correspondent of Orange Judd Farmer speaks in favor of the trellis here illustrated. The part of the braces and posts buried in the earth is joined to the upper portion by mortise and tenon. By this arrangement, when the buried portion decays it can be renewed easily without loss of that part which is yet in a state of preservation, and which will last a lifetime, if painted. Posts and braces are joined in a similar manner at the top, being held in their respective places both above and below by loose fitting pins, which permit to their easy withdrawal. By removing the side braces the trellis can be laid down on its side, permitting the vine to be covered for the winter, if protection is necessary. I use Hemlock for posts and braces, but more durable timber below the soil. Posts are 4x4 inch, and 6 feet long. Side braces are 2x4, and 4 feet long, while the longer brace is 2x4, and 8 feet in length. I do not brace the central posts, except by the small ones shown in the drawing, as my rows are short, and the long ones are only needed at the end. But for field culture I advise bracing every post in the direction of the rows, for if braced in all directions, not near so many posts are needed.

Where Cauliflowers are Grown. It is not generally known that nearly eight-tenths of all the Cauliflowers which come to this market are grown within a belt of about 30 miles on Long Island. From Southold to Riverhead almost every farmer is devoted to their culture, the climate and soil being particularly adapted to their development. This year the product was much more than sufficient to supply the demands of the cities; so little houses were erected near the railway stations and scores of chore boys were set to work cutting up the flowers and pickling them. A somewhat singular incident in the growing of this plant is that in no other locality on Long Island, or for that matter in the New England or Middle States, have the farmers met with any success in its perfect production. The result is that Suffolk county has a monopoly of Cauliflower, which gives an income of nearly $300,000 a year.—Hartford Times.

Grape Vine Bark Louse. The brown, hemispherical scales of this insect are found during the month of June on the branches of the Grape vine, with a white, cottony substance protruding from one end. By the first part of July these cottony masses, which contain the eggs of the insect, have attained their full size. Soon the minute young, oval and slightly yellowish lice issue from it, and, scattering over the branches select places were they attach themselves permanently and suck the juice from the plant. Very fortunately, they are not usually very abundant, and, according to Sanders, may be scraped off with a knife or other suitable instrument before the young lice escape. Perhaps a quicker and more effectual way would be to use a sponge or brush and strong soap-suds; this would kill the young lice, if they had made their appearance.—Prairie Farmer.

Gold Banded Lily. I regret to name Lilium auratum as one not suited for general cultivation. The first season after planting it is a glorious addition to any flower garden, but each year thereafter, like the Hyacinth, it gradually decreases in size and effectiveness, until it ceases to live. I have had this Lily succeed satisfactorily two or three years and then mysteriously pass away without any apparent cause. Lilies are all fond of deep, light, moderately rich soil, with perfect drainage, and should have a fair amount of sand incorporated with it. Do not set the bulbs too deep; three or four inches will be sufficient, and in all cases place a handful of sand under each. Set in early autumn and mulch lightly with some light material—sphagnum moss is as good as anything. When growing never neglect to stake the stems securely.-N. Y. T.

Extending the Strawberry Season. Strawberries can be made a week or ten days later by mulching quite heavily, and leaving the mulch on until late in the spring This will enable the farmer to prolong the season of fruit if he wil uncover a part of his bed early, and the remainder ten days or so later. This plan will enable you to have berries on the table just about a month. I believe it to be best to plant in rows four feet apart, and form a matted row about eighteen inches wide, and leave the rest of the land bare of plants. In covering for winter protection, cover the rows quite heavily and then in the spring, before uncovering the rows, work the space between deep and mellow, and move the covering from the rows on to this mellow



A PERMANENT GRAPE TRELLIS.

strip. If there is not enough of this mulch to keep the fruit clean, you can add to the mulch in spring.—Cor. in Country Gentleman.

Pinching Pansies. I pinched off the ends of all my Pansies. This induced other branches to start, and these were pinched off when they had grown a few inches. In this way I had some compact little plants rather than the usual slender, sprawling specimens. I think this treatment would be of benefit to the Pansy under any circumstances, and I shall practice the pinching system the coming season. It is a characteristic of this most charming flower to send out but few branches, and these are so slender, as a general thing, that they are easily broken. If the plants will adapt itself to pinching, as I think it will, during its summer growth, I do not see why we may not have bushy, compact plants, with more flowers from them than we usually get from plants allowed to grow to suit themselves.—Vick's Magazine.

Heuchera Sanguines. This plant, now in bloom justifies all that has already been written and said in its favor. The flowers are borne on long, slender stems and are of a bright coral red. The foliage is handsome also, being mottled with brown. The plants from seed vary considerably in this respect. Our plants are twelve months old from seed, but we find that side shoots are freely produced, and these root readily and soon form nice plants. It would be interesting to know if any one has tested the plant as to its hardiness in the eastern states, it being a native of Mexico. It will probably prove tender, but even if this is so, the plant has the value of producing flowers in winter when potted and placed in a warm house where a temperature of about 50° can be maintained.—E. Orput in G. and F.

Care of Fruit Pays. The men who succeed best, obtain the best prices, and who receive returns every year, and those that take the best care of their trees and the crops which grow on them. They do not shake off their fruit in gathering, nor allow it to become small and wormy. They treat their orchards as well as they do their Corn and Potatoes—manure them as freely, cultivate them as carefully. They do not allow Apples to become small and scabby from overbearing, any sooner than they would allow a field of Corn to fail by planting three times too thick. Poor Pears can hardly be sold for fifty cents a bushel; the best, put up in the best condition, often brings from three to five dollars, if marketed at the proper season.—C. Gentlemen.

Planting Strawberries in Fall. The first early Strawberries come from plants two or more years old; hence it is often well to have an old patch somewhere to furnish the first family supply. But of course the largest and finest come from the new bed of younger and more thrifty plants. Very early spring is the best time in the whole year for Strawberry planting; but, if it was neglected then and you want berries the next year in June, you may have them by planting very early in August. But don't fool yourself into thinking that they may be planted at any time in the fall and then fruit to any extent the next June. They will not do it —J. H. Hale, in Ohio Farmer.

Keeping Grapes. Mr. Roe says that few of the early sorts will last long, but that some of the

later ones can be preserved a considerable time in boxes stored where the temperature is cool, even and dry. One October day I took a stone pot of the largest size and put in first a layer of Isabella Grapes, then a double thickness of straw paper, then alternate layers of Grapes and paper until the pot was full. A cloth was next pasted over the stone cover, so as to make the pot water tight. The pot was then buried on a dry knoll below the reach of frost and dug up again on New Year's Day. The Grapes looked and tasted as if they had just been picked from the vine.—Garden and Forest.

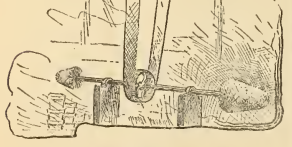
Weeds. I never saw a good gardener who knew or cared much about weeds. In fact, ignorance of weeds is commonly a proof of good gardening. All perish by the same process. When we all come to realize that we till for the good of the crop and not for the sole purpose of killing weeds, we shall have no occasion to study the tares, for they will never find the chance of growing. But some people cultivate only when the weeds force them to do so, and here the credit accrues to the weeds. Weeds are oftener a blessing than a curse. Even Virgil knew this.—L. H. Bailey in Garden and Forest.

Pot Washing Machine. The accompanying illustration shows a simple machine which Messrs. Alburger & Bro., Philadelphia, use to great advantage in cleaning pots The brushes on the end of the shaft are made of a shape to fit the inside of the pot, and several sizes are used, though one brush does the work for a number of sizes of pots. The shaft of the machine shown is revolved by steam power, but one can be easily arranged to be worked by hand power, and even in this way two boys—one to hold the pots and another to supply the power—can accomplish as much work as four or five working by hand. The wheel which supplies the power should of course be considerably larger than the one on the shaft, thus causing the shaft to revolve with sufficient rapidity to be effective and do quick work.—American Florist.

The Bush Lima Bean. which made such a sensation this season, has been grown for a generation in a secluded neighborhood in Virginia. Station horticulturists should study their local fruits and vegetables and thus bring into general use superior sorts, of which we now are ignorant, and by a system of exchanges between stations get them into notice, after which the enterprise of our seedsmen may be depended upon to scatter them over the country.—Wm. F. Massey in Philadelphia Press.

Preserving Cut Flowers. Immerse them in a solution of gum arabic and water two or three times, waiting a sufficient time between each immersion to allow the gum to dry. This process covers the surface with a thin coat of the gum, which is entirely impervious to the air, and thus prevents the withering of the flowers. Roses thus preserved have all the beauty of freshly plucked ones, though they have been picked several months.—O. Judd Farmer.

Hail Insurance. It costs less than fire insurance, and there is no reason why the Florists' Hail Association of America should not become in five years as rich and



A POT WASHING MACHINE.

powerful as its German contemporary, which has been in existence forty-five years.—John G. Esler in American Florist.

Guard Against Infection. Dead limbs on fruit or other trees should be promptly removed. The cutting should be below any diseased part, and the saw used should not be applied to healthy trees unless first washed with carbolic acid.—Md. Farmer.

Extensive Peach Growers. The Hale Brothers, of South Glastonbury, Conn., expect to harvest this season the largest crop of Peaches ever grown upon any single farm. All their trees of bearing age give promise of a full crop.—New England Farmer.

The Borer. Anything in the nature of lye will destroy the Apple tree borer before it penetrates the bark very far. After it is once under the bark following it up with a wire is the only way to destroy it.—Maryland Farmer.

Fully-ripened Grapes will endure severe cold. Patrick Barry says he has had ripe Delawares freeze without injury.—American Garden.

Raising Cucumbers. The greatest trouble with raising Cucumbers is to keep them picked while small. —Farm and Home.

Celery kept where it is grown is certainly superior to that which has been lifted.—G. and F.

What Shall We Eat? As a preliminary answer we reply—eat more fruit.—Medical Classics.

Vegetable Products on the Table.

Cranberry Sauce. One quart of Cranberries, one pound of granulated sugar, one-half pint of cold water. Boil fifteen minutes.

Elderberry Pie. Use mostly sugar with a little good vinegar, and a very few berries. A few slices of tart Apple are even better than vinegar.—Indiana Farmer.

Tomato Marmalade. Peel ripe Tomatoes, cut them in small pieces and boil till done; rub through a sieve and add one cup of sugar for each cup of Tomatoes; boil forty minutes; then pour in small jars.—Western Rural.

Cucumber Catsup. Grate the Cucumbers and strain off the water; to one-half gallon of Cucumbers add three large Onions, chopped fine; salt, Cayenne Pepper and Horse Radish to taste; bottle without cooking.—Western Rural.

Fried Apples and Bacon. Core and slice without paring eight large tart Apples; fry brown thin slices of bacon; remove from the pan and keep hot while the Apples are frying in the fat; drain and lay upon slices of meat.—West. Rural.

Red Cabbage Salad. A red Cabbage with a firm heart and two fine heads of Celery; cut up the best parts of these as fine as possible, mix them lightly together with two or three spoonfuls of a good salad dressing; garnish the dish with the top of the Celery, and serve.—The Lady.

Cucumber Salad. Take a large fresh-cut Cucumber, peel, and slice it as thin as possible; sprinkle a pinch of salt and pepper over it. Allow this to stand until wanted for the table, then pour over it one tablespoonful of the best vinegar and two to three tablespoonfuls of pure salad oil.—The Lady.

Pickled Walnuts. Pick when of a good size but tender enough to pierce with a pin. Throw into a brine and let stand for three days, making new brine once during that time. Rinse off and put in the sun, turning frequently until black. Pack in jars and cover with hot spiced vinegar. —Rural New Yorker.

Cabbage Salad. Cut the Cabbage very fine, and put into a dish in layers, with salt and pepper between; then take two teaspoonfuls of butter, two of sugar, two of flour, two of mustard, one cup of vinegar, and one egg. Stir all together and let it come to a boil on the stove; pour it hot over and mix well with cabbage; cover up.

Peach Fritters. Half can Peaches, each cut in half; one cup flour, one tablespoonful of butter, one egg. Make a batter of the last three ingredients, using about a cupful liquor from the Peaches to bring it to the required consistency. Dip the halved Peaches into the batter, and drop them one at a time into deep boiling lard. Serve with powdered sugar.—The Home-Maker.

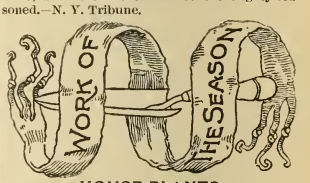
Peach Meringue. Cover a plate with paste and bake, then spread thickly and evenly with the fruit, pared and sliced. Over this spread a cupful of sugar and pinch of salt. Now beat the white of four eggs to a stiff froth, add five spoonfuls of powdered sugar, and flavoring to the taste, and pour over the Peaches; arrange in even and fanciful shape, and brown in a quick oven.—Florida Agriculturist.

Mushrooms with Toast. Rub the tops of the Mushrooms with a piece of flannel dipped in salt. Have some butter heated in a saucepan into which put the Mushrooms with salt, Cayenne and ground Mace; let them stew gently until the butter has almost disappeared, then add cream and the grated rind of a Lemon. Set back where they will only simmer until quite done. Have toasted bread cut in rounds, serve the Mushrooms on them, and put a squeeze of Lemon juice over each.—Country Gentleman.

Pickled Onions. Select small sized Onions, put into a pan, pour boiling water over them, peel out of the water, put into jars, let them remain in salt water three or four days, then rinse and drain one hour. Use good vinegar. For a three-gallon crock, take one cup of whole Pepper, one cup of whole Allspice, quarter of a pound of root Ginger, bruised. Let the spices come to a boil in the vinegar and throw over the Onions. Let stand five or six weeks before using, or until colored through. Will keep for years.—R. N. Y.

Potato Chowder. Cut half a pound of salt pork into thin slices and fry slowly, a very light brown; add five sliced Onions, and let them color slightly; peel and slice—dropping the slices into cold water —two quarts of Potatoes. Put a layer of these in a deep kettle; then a thin layer of pork and Onions; season each layer with salt and pepper, and dredge with flour. When all the ingredients are used, cover with two quarts of hot water, let it come slowly to the boiling point and cook forty minutes, or until the Potatoes are done. Minced Parsley or young Celery is a desirable addition.—American Agriculturist.

Tomato Sauce. This sauce cannot be too often repeated, it is so excellent with beefsteak, chops, fish, a boiled fresh tongue, and so many other dishes. Take a can of Tomatoes or a quart of bright red fresh ones and put them to boil in a porcelain-lined sauce-pan. Let the canned Tomatoes cook for fifteen minutes and the fresh Tomatoes for half an hour, after seasoning them with salt, pepper, two or three sprigs of Parsley, one of Thyme and a Bay-leaf. When cooked, strain the Tomatoes through a wire sieve, and put the puree over the fire with half a cup of rich brown gravy. Make a thickening of a tablespoonful of butter stirred in a saucepan till brown and mixed with a tablespoonful of flour. Add this by pouring the sauce on it gradually, constantly stirring. Let the sauce cook fifteen minutes after adding the thickening, stirring frequently. If too thick, add more gravy; if too thin, boil it down longer. Season again when done, as this sauce should be thoroughly seasoned.—N. Y. Tribune.



HOUSE PLANTS.

Abutilons. Those in the border to be wintered over should be lifted before frosty weather. Take up pot plants that have been plunged out doors.

Achania. Give timely attention to repotting and trimming.

Annuals. Many of these, like Asters, Balsams, Pinks, etc., are good subjects for window culture during the winter. Look out for a supply now by lifting and potting some of the finest shaped plants of the kinds desired.

Aspidistra. Propagate by division. Use small pots, and soil liberally mixed with sand. Sponge off the leaves before bringing the plants inside.

Begonias. Weltoniensis, during growth, will be helped by applications of liquid manure.

Cactus. Those planted outside should be taken up and potted before the fall rains begin.

Carnations for winter flowering to be taken up by last of the month. Remove some of the tops and carefully lift large balls of earth, which reduce with a pointed stick to a suitable potting size. Work rich fine soil between the ball and pot, pressing is down firmly, After potting give one thorough watering, and close shade with frequent light sprinklings of the foliage. Treat in this way for a week, afterwards give more light and space between them, but do not yet expose to the full sunlight for several weeks.

Cestrums. Reduce the supply of water as soon as done flowering.

Cyclamens. Old tubers will soon need taking up and repotting. Shift the young plants as needed.

Fuchsias. Winter bloomers, like Speciosa and others to be taken up and potted. For summer bloomers gradually reduce the water supply, and let them come to a state of rest.

Geraniums. Plunged pot plants must soon be repotted. Lift and pot those in the border that are desired for keeping over. Cut them back severely.

Hyacinth. For earliest flowers in winter, bulbs may now be procured and potted. They require a rich soil mixed with about one-third of clear sand. Put them away in a cool dark cellar for three or four weeks, or until their roots have spread well around the inner side of the pots. Then remove to the window and keep the soil moist. By planting at different times a continuous bloom may be kept up all winter.

Ivies. The bedded plants to be lifted towards last of month. Shift young plants as needed. Before taking inside sponge the leaves off thoroughly.

Jasminum Grandiflorum. Stimulate by giving occasional doses of liquid manure.

Jerusalem Cherry. Lift and pot, and give an abundance of water.

Oxalis. Repot and start into growth.

Petunias. Cuttings may be made from the old plants or the latter themselves may be potted, and will bloom in the house if kept at a temperature of 60° during the entire winter. The Dwarf Inimitable is the best. To bloom well the plant requires very rich sandy soil, plenty of light, but very little sunshine.

Rivinia humilis to be taken up and potted. It needs good drainage.

Tulips. Directions for Hyacinths will apply.

Taking up plants for wintering over is now in order. Those having been in bloom all summer should have part of their tops trimmed back. Handle plants as directed for Carnations.

LAWN AND FLOWER GARDEN.

Dahlias. Be sure the plants are properly labeled.

Everlastings. Gather the flowers before they open, Dry in the shade.

Frost is liable to come before the end of the month. Tender plants should be all in readiness for removal inside, or covering. When plants are killed and thus be rendered unsightly rather than a beauty, let them be removed at once, and the beds cleared and leveled.

Gladiolus are almost hardy, and will not suffer from light frosts if they were planted four to five inches deep as they should be. Support the spikes, and remove the flowers as they fade to strengthen the bulbs.

Hyacinths and other spring flowering bulbs should be planted as early as feasible. They require a deep, mellow, rich soil, free from standing water. Good-sized Hyacinths should be planted four to five inches below the surface; Tulips and Narcissus three to four inches; Crocus and other small bulbs, generally two to three inches.

Herbaceous Plants. When growth ceases, take up the roots, divide and replant.

Tuberoses and other tender bulbs should be taken up before frost kills the stalks to the ground. Dry before storing, and keep during winter in a dry place where the mercury will not fall below 40 degrees.

Lawns should be mown regularly until end of growing season. Rake off dry leaves, which may be used to cover tender plants during winter. When ground is wet and soft pull up Plantains, Dandelions and other perennial weeds.

Petunias, to produce good cuttings for propagation should be cut back at about the middle of the month.

Vases should be protected during frosty nights, and will then remain objects of interest some time after. Hanging baskets can be treated in like manner.

Walks to be occasionally raked and rolled to secure a firm even surface.

PLANT CULTURE UNDER GLASS.

Acacias. To prevent loss of foliage and flowers must be well watered.

Achimenes having ceased to grow should be removed to a frame. Gradually reduce heat and supply of moisture.

Begonias are benefited by applications of liquid manure, especially when coming into bloom. Remove to a light and sunny situation toward end of month.

Bouvardias. Lift and pot by middle of the month. Syringe and shade carefully until new root growth has commenced.

Caladiums. Treat like Achimenes.

Carnations. Lift and pot, or plant on benches. See also under "House Plants." Stake as needed.

Chrysanthemums. Lift and pot from lawn or border. Give liquid manure two or three times a week when well rooted. Stake and tie as needed all plants intended for show purposes.

Calceolarias. Water thoroughly as needed. Give plenty of room so the leaves of one plant will not touch those of another. Amount of shading should be gradually reduced toward end of month.

Cinerarias. Treat as advised for Calceolarias.

Crotons. Repot whenever needed. Syringe occasionally.

Dracænas. Treat like Crotons.

Greenhouse. Everything should now be made ready for the reception of plants. While house plants had better be kept out doors as long as can be done without injury to them, we can not afford to run great risks of exposing them to actual frost. Start up the fire as soon as required, so the plants will not suffer from dampness or want of heat. Fumigate twice a week as long as plants are kept in the greenhouse. This is especially useful from the start. Aim to have the plants free from insects when first put in, and it will be easy to keep them free by timely fumigation.

Gloxinias. Directions for Achimenes will apply.

Habrothamnus to be lifted and potted, and planted in a sunny position.

Pelargoniums. Give scant supply of water, and keep plants in coolest part of the house.

Pots with plants, when brought in, to be washed and plants neatly staked.

Primulas. The Chinese sorts to be treated as directed for Cinerarias.

Roses for winter flowering should not be allowed to become pot bound. Shift when needed.

Stigmophyllum siliatum, when flowering freely, is benefited by occasional doses of liquid manure.

Thunbergias are now making rapid growth. Liquid manure applications will greatly help them. Syringe to prevent red spider. Keep the young shoots tied.

Violets to be lifted and potted or planted into frames for winter blooming. They need much air.

Ventilation is needed in all favorable weather. Syringe the plant house occasionally. Remove dead and decaying foliage wherever found.

FRUIT GARDEN AND ORCHARD.

Apples. Pasture the orchard with sheep or swine in sufficient numbers to eat up the windfalls and the codling worms with them as fast as they drop. Or gather the fruit often and feed to stock. Pick the early varieties and dispose of them when mature. Relieve over-loaded limbs of young trees of part of their fruit, to guard against breaking.

Barrels. Lay in your supply for packing fall and winter Apples early, to have them on hand when needed.

Blackberries and Raspberries. Continue to trim as required. Keep the patch free from weeds.

Currants and Gooseberries. This month is the best time for striking cuttings. The ground is warm, the atmosphere generally cooler, just like an immense natural propagating bed. Insert the cuttings in a somewhat slanting position, leaving only one eye above the surface. Keep the old bushes free from weeds and properly trimmed.

Grapes. Ives and other sorts color before they are ripe Give them time to ripen on the vines. Gather carefully; remove every imperfect berry; store in a cool, dry place; pack in neat attractive packages.

Pears should be harvested as soon as the stem parts readily form the wood on gently lifting the fruit. Half barrels make superior packages for shipping.

Packing Fruit. Sort Apples or Pears in grades, and market only the better qualities. Keep the poor stuff at home for evaporation, canning, vinegar, or for stock. Pears and Peaches, etc., should be in such state of maturity when packed that they will reach the consumer just in best condition for use. When overripe or in the least soft, they are sure to rot before getting into the market.

Planting. If the intention is to set trees or small fruits this fall, get the latest catalogues at once, and order stock without delay. Prepare the ground well.

Strawberries. Cultivation and weed-killing should be kept up to prevent the beds from becoming overrun with weeds.

VEGETABLE GARDEN.

Asparagus. Remove the stalks from all beds before the seed is scattered.

Beans. Gather as soon as ripe, and store in a dry place. Select some Limas for seed.

Corn Salad now to be sown for winter.

Celery. The early crop will need handling, and later on earthing up. For winter handle latter part of the month.

Cauliflower. Treat same as late Cabbages. As heads begin to form gather some of the outer leaves over them and tie at the tips.

Cabbage. The late crop needs frequent cultivating and hoeing. Where the ground appears to be lacking in fertility, top dressings of manure or fertilizer will yet be beneficial. Apply buhach for worms. By middle of month sow seed of the early kinds to be wintered over in cold frame.

Egg Plant. Thin fruit on overloaded plants. Guard against Potato bugs.

Melons. Late specimens not likely to ripen should be picked off to save the strength of the plant for the earlier fruit.

Peppers. Pull the plants when frost threatens, and hang under a shed.

Root Crops. Pull up all weeds from among them before they ripen seeds.

Spinach. For spring use sow in forepart of the month.

Seed. If you save any, select the most perfect specimens for this purpose.

Turnips. Cultivate and keep free from weeds.

Tomatoes. When frost approaches pull the plants and hang under shed, or lay them close together under glass.

FRUIT AND VEGETABLES UNDER GLASS.

Frames. Repair where needed, paint and get ready for later use.

Figs should be watered frequently and abundantly until the crop ripens. Then gradually reduce supply of moisture.

Grapes. When wood in earliest houses is ripe clean off and lay down. Keep house cool. Successional houses to be aired freely. In late houses, as fruit ripens, keep the atmosphere dry.

Lettuce for early winter to be sown now for setting out in cold frame or cool greenhouses.

Parsley. Plant in a cold frame for winter use.

INQUIRIES AND REPLIES

Correspondents are urged to anticipate the season in presenting questions. To ask, for instance, on April 15 or 20 what Peas had best be sown, could bring no answer in the May issue, and none before June, when the answer would be unseasonable. Questions received before the 15th of any month stand a good chance of being answered in the next paper. Not more than three questions should be sent at one time. Answers to questions bearing on the comparative value of implements, etc., offered by different dealers must not be expected. Neither can we promise to comply with the request sometimes made to "please answer by mail." Inquiries appearing without name belong to the name next following

Replies to Inquiries are earnestly requested from our readers. In answering such give the number, your locality and name, the latter not for publication, unless you desire. Write only on one side of the paper.

1,391. Evaporated Sulphur. When used for Rose mildew in greenhouse is it put in the kettle dry or with water?—N. M. D., *Huron, Ohio.*

1,392. Watering Primulas, etc. Is water injurious to foliage of Primroses and Rex Begonias? If so, how can I keep them clean and free from dust?—J. M. W.

1,393. Pruning Raspberries. Should Cuthbert and Gregg be cut back where laying down for winter protection is necessary?

1,394. Hill Culture of Raspberries. Is this usually practiced now? At what distance for easy cultivation both ways?

1,395. Moore's Diamond Grape. How much earlier than Concord?—S. G. S., *Androscogin Co., Me.*

1,396. Amaryllis Japonica. Does such a one exist and is it hardy?

1,397. Wood Ashes. Are they a good fertilizer for Raspberries and Blackberries?—READER.

1,398. House Slops, Liquid Manure, Etc. Are they a good fertilizer worth hauling 2½ miles for meadow or cultivated land?

1399. Hauling Manure. Can it be done 2½ miles or more with profit? Will it pay better on meadow or high land?

1,400. Wintering Roots. Which is the best way of wintering Rutabagas and Mangels for stock without a cellar?—W. B. SPOONER, *Wis.*

1,401. Growing Seedlings. How are Roses, Raspberries, Gooseberries, etc., grown from seed, and how are seedlings managed?

1,402. Onion Sets. Should they be harvested before they are ripe?—H. H. R., *McGregor, Iowa.*

1,403. Pruning Red Raspberries. When should this be done?—P. T. R., *Scranton, Pa.*

1,404. Small Fruit Farm. What is the proper size for one man to work to best advantage? What kind of soil? Where is best location, South Jersey, Eastern Maryland or Virginia?—E. L. M., *Hager, N. J.*

1405. Book on Chemical Fertilizers. Which is best and where obtained? G. L. L., *Eden, Fla.*

1,406. Wintering Water Lilies. Are the tubs with the roots in it kept moist or dry in the cellar?

1,407. Soot for Flowers. When recommended for such use, is coal or wood soot meant?—J. E., *LeRoy.*

1,408. Evaporating Fruits. Please explain process for large and small fruits. Also process of bleaching.—F. L., *Benwood, W. Va.*

1,409. Protecting Grape Vines and Raspberries. How done to prevent winter killing?

1,410. Strawberries and Raspberries for Kansas. What varieties would you recommend for the climate of Central Kansas?—M. S. C., *St. John, Kan.*

1,411. Hardy Plants for Cut Flowers. Please give list of perennials suitable for bedding out that will resist 10° above zero without injury.

1,412. Successive Peaches. What good Peach will begin to ripen ten days after the Alexander, and another ten days later?—G. B. D. V., *Cachise Co., A. T.*

1,413. Beech Trees Dying. They begin to wither away at the lower and outer branches. Will topping and trimming back help them, or what shall I do?—C. W. D. P., *New Albany, Ind.*

1,414. Insect on Apple Trees. White wooly spots on limbs size of pin head. When crushed leave a red stain. What is it and what the remedy?—C. D. W., *Bogue Chitto, Miss.*

1,415. Hollyhock Fungus. What ails my Hollyhocks? Leaves and stalks are affected. Tobacco and whale oil soap, peroxides of silicates, etc., do no good. Can you suggest remedy?—A CONSTANT READER.

1,416. Weeping Birch From Seed. When should seed be sown, in fall or spring? Or are they propagated by other means?—J. L., *River S., Ohio.*

1,417. Worms in Strawberries. Sometimes we found two or three dark colored worms in one berry. They are about ¼ inch long, have a hard skin, and snap when pinched. What are they, and what is the remedy?

1,418. Lime on Muck. Soil of reclaimed sward meadow is too loose and spongy. Will lime applications fit it for celery and other vegetables? How much lime per acre?

1,419. Deformed Asparagus Shoots. They come up crooked with a groove on under side; shoots tough and worthless. What insect does the mischief and what is the remedy?—G. K., *Hastings, Mich.*

1,420. Colonizing Lady Bugs. The idea seems good, but how can we do it?—L. W., *Marshall, Mich.*

1,421. Lily of the Valley. When and how planted to flower next spring?—*I. G. N., Oregon.*

1,422. Ferns from Seed. Can they he grown in this way?—*Amateur.*

1,423. Spanish Peanut. If this valuable for the south where the Virginia succeeds?—*Georgia.*

1,424. Keeping Sweet Potatoes. Please tell us best method for wintering.—*Jane, Newark, N. J.*

1,425. Bulb Growing. Please describe the different methods of propagating Lily and other bulbs. Will their size and number increase when not allowed to bloom?—L.

1,426. Prickley Comfrey and Winter Vetch. Where can seed be obtained?—L.

1,427. Trenching Vineyard. How does Dr. Stayman puiverize his ground for vineyard 24 inches deep, and what tools does he use?—F. R. W., *Ballena, Cal.*

1,428. Yellow Transparent Apple. Is it a reliable variety?—R. T. F., *Ohay, Ills.*

1,429. Flower Plants for Spring Sale. What plants can be propagated with best prospects of profit? Would like the advice of au experienced florist.—H. S. L., *Lacyville, Ohio.*

1,430. Fruits for Arkansas. What kinds and varieties of fruits, Strawberries excepted, early, medium, late and latest can be recommended for northeastern Arkansas?—J. F. M., *Harrisburg, Ark.*

1,431. Book on Begonias. Where and at what cost can I obtain a work on the subject?—C. J. S., *Texas.*

1,432. Currant Borer. What is the best remedy for the gruh that tunnels along in the center of my Currant canes so that they break down the next season?

1,433. Blackberry Rust. What is the best remedy? W. M. A., *Cincinnati, O.*

1,434. Killing Locust Trees. Peeling off a ring of bark in August, 1888, killed the trees, but sprouts came up thick all around. Do you know a better method of getting rid of trees?

1,435. Small Fruits on Clay Soil. What varieties would you recommend for gravelly clay soil, black on top, in West Virginia?—G. W. K., *Leon, W. Va.*

1,436. Pruning Peach Trees. Would you advise pruning young Peach trees in August or September to check growth of say, harden the wood and prevent winter killing?—A. S. M., *Fattenburg, N. J.*

1,437. Manure Pit. What is proper size and arrangement of pit to hold the manure from one horse for a year? Should it be cemented?—J. R. W., *O.*

1,438. Water for Plants. Is Iron and sulphur water good to water a general collection of greenhouse plants?—J. H., *Marshall, Texas.*

1,439. Mildew on Phlox. What treatment would you recommend?—N. A. C., *Orchard Park.*

1,440. Heating Greenhouse. What is simplest and cheapest method of heating greenhouse 30 feet long, 9 feet wide and 7 feet high at peak?—E. B., *Moravia.*

REPLIES TO INQUIRIES.

1,404. **Size of Small Fruit Farm.** It depends altogether on the size of the man. The intention to depend entirely on one's own labor in an undertaking of this kind, and to avoid laying out the work on a larger scale than can be tended to without calling on uncertain and probably unreliable help, is commendable, and augurs well. A small, modest beginning, carefully feeling one's way, and growing slowly but surely, as experience and the available market warrants, that is the only safe and sure footing for the novice in small fruit growing. With the bush fruits—Raspberries, Blackberries, Currants, etc.—there is less danger. A good farmer can take care of them nearly as easy as of Corn, since nearly all the work can be done by horse power. The chief concern here is the help needed in picking, and the market facilities. A home market for these fruits is better than the prospects of the far city market The beginner in Strawberry growing, however, should start very modestly. The novice may find one-half acre too much for him; while the experienced grower, with a trained intellect, who tends to his work promptly when needed, and makes every stroke tell, perhaps finds it easy to take care of five acres. As said before, all depends on the size of the man, and of his intellect and experience. We could hardly undertake to select "the best" location for our inquirer's small fruit farm. Central and South Jersey is a center of small fruit production, but the growers there complain of low prices. In northern New Jersey, near the coast, small fruits are generally in ready demand at fair prices on account of the multitude of summer visitors; but land and labor is somewhat high-priced. Eastern Maryland and Virginia have many favorable locations for the production of Strawberries for northern markets—only keep out of the reach of the maleria districts.

1,404. **Pruning Red Raspberries.** Summer pruning is undoubtedly the most sensible method. Pinch the tops of the young shoots back as soon as they have reached three or four feet in height. This will bring out the laterals, and give you a strong, low and stocky growth. If left to grow until now, however, canes had better remain as they are until spring, and then severely cut down before new growth begins. Black Raspberries and Blackberries are to be treated in same way.

1,353. **Rust on Raspberries.** The rust or Orange rust on Raspberries and Blackberries is a fungus disease of very contagious character, and its spread can only be prevented by timely removal and destruction (by fire) of every infected cane. As a preventative the plants should be trained and pruned in such a manner as to admit plenty of air and sunlight to the canes. In spring, before the young growth commences, a solution of sulphate of iron (green copperas) at the rate of 1 pound to 2½ or 3 gallons of water, may he applied to the shoots.

1,402. **Onion Sets.** These should be harvested when ripe, as indicated by the tops turning yellow and dying down. If the soil is sandy, as it should be, a trowel may be run under the row and the bulbs lifted out and thrown into a fine grain sieve, and the sand sifted out. Or they may be loosened with a fine steel rake, getting well under the bulbs and raking them together in windrows, to be left for a few days to cure. Afterwards they are gathered and stored in a dry loft, a few inches deep, or in open crates, and in due time cleaned by rubbing them together between the hands, to free them from tops and dirt. The final cleaning consists in running them through a fanning mill. All the bulbs that will not pass through a grain sieve having three-quarter inch meshes, are too large for sets and should be used for pickling.

1,393. **Pruning Raspberries.** If the canes have to be laid down for winter protection, it would not do to summer prune, and thus make the plants bushy. Wait until spring and prune while the plants are being laid down. This rule is valid for both red varieties and Black Caps, and for Blackberries also.

1,394. **Hill Culture for Raspberries.** The usual way of planting in field culture is in rows six to seven feet apart, having the plants three or four feet apart in the row. This admits of easy cultivation one way, and if properly done, will leave but little to do for the hand hoe. To allow cultivating them both ways the plants should stand five feet apart each way, and be thoroughly pruned. Summer pruning is more generally practised, and altogether preferable.

1,397. **Wood Ashes.** With plenty of hard wood ashes, both leached and unleached, preferably the latter, there will be no need of looking further for manure for any of the small fruits. Wood ashes contain the mineral elements of plant food, especially potash, which tends to give sweetness and firmness to the fruit, and strength to the plant. Good, hard wood ashes, unleached, are worth 25 cents per bushel for what they are.

1,398. **House Slops and Liquid Manure.** What a terrible hotel, that will allow the water from laundry and kitchen to run into a hole back of the building, and when the ground is well soaked and the hole full have another one dug and then also run full. Then there is a barn close by with lots of liquid manure, which could also be run into these holes. We do not know whether it would pay anybody to draw this liquid 2½ miles for meadow and cultivated land. A very rich it might pay for garden crops, and it would certainly pay the people in the hotel, host as well as guests, to have it drawn away speedily. They could afford to pay for having their premises cleared of the stuff that is making them a breeding place of pestilential fevers. We would not care to risk our lives boarding at such a hotel for any length of time. Make an arrangement with the hotel folks to divide the cost of hauling the dangerous liquid away. It will be all right in your garden, and help your meadow.

1,423. **Spanish Peanut.** This is the only kind known to us with which cultivators north of Maryland can hope to achieve success. It is materially earlier than the Virginia nut; pods small but well filled, and altogether considered of superior quality. From what a Floridian wrote to Southern Farmer, we infer that this variety is also appreciated at the South. I planted them along side of Virginia Peanut, he says, gathered them, and then harvested a crop of Whippoorwill Peavines from the same ground ere the Virginias were ripe. For an early hog food I know nothing superior, although the Virginias are vastly more prolific. The Spanish vine is much more delicate and makes a desirable forage for horses and cows. They are the easiest to gather. In this sandy soil we pull the vines by hand and do not lose one-tenth of the nuts. They must be harvested as soon as ripe or they will sprout, leave the nuts on the vines and they will keep indefinitely.

1,422. **Ferns From Seed (Spores).** An English paper states that this is a far more simple matter than many suppose. Pans, 12 or 15 inches in diameter, are the most convenient, and should be efficiently drained and be filled nearly level to the rim with a mixture consisting of peat, loam, leaf-mould and silver sand in about equal proportions. The loam and peat should be well broken up, and when the leaf mould has been added, be passed through a fine sieve, and the sand be well mixed with it. In filling the pans press the soil moderately firm, and when the surface has been made quite level, give a good watering with water as near the boiling point as possible. On this having soaked away, proceed to sow the spores, and this is best done by holding the fronds over the pans and lightly rubbing them between the finger and thumb to assist in rupturing the spore cases and distributing the spores. The pans must then be placed in a closed frame, and the soil be kept constantly moist by light sprinklings of water with a fine rose The spores of the stove Ferns must have the assistance of a brisk temperature, but the pans containing the spores of hardy kinds may he placed in a cold frame.

1,406. **Wintering Water Lilies.** No difficulty will he experienced in carrying Water Lily bulbs safely through the winter, if the water is turned off the tub in autumn, and these with the roots in them be placed in a dark cellar Keep the mud moist, so the roots will not shrivel.

1,415. **Hollyhock Fungus.** The trouble undoubtedly is caused by the old enemy of Hollyhock culture, the fungus Puccinia malvacearum, which usually makes its appearance in June or July, first on the underside of the leaves, rapidly spreading over their whole surface until the foliage withers and dies. Prevention is better than cure. Gardening Illustrated, as early as 1883, advises, as means of preventing disease, to give them a deep, well-worked, well-manured soil, and plenty room for the air to circulate among the plants. In crowded beds the disease appears to be more destructive than where sufficient space is allowed. Hollyhocks also need considerable moisture to do well, and mulching and watering will tend to prevent the attacks.

1,414. **Insect on Apple Trees.** The scurfy bark louse, of course. It is very troublesome over a wide extent of territory at present. See answer to 1,346, on page 267, August number.

1,427. **Trenching Vineyard.** I know of no effectual method of pulverizing the soil to the depth of 24 inches except by trenching. In fact I cannot see how it could be done in any other way, as the surface soil which is the richest should he turned below, and the subsoil thrown on the top This is the *sine qua non* of a good vineyard. It is not the moisture of the surface with the subsoil what is wanted but about 12 inches of the surface soil mixed up and put below, and the subsoil thrown on the top of it, a complete reversion of the soil, so the foot roots of the vines will have rich soil and make strong growth. There are other methods of partially accomplishing it One is to dig large holes and throw the rich soil below and the subsoil on the top. Another is to trench in narrow rows about two feet wide and deep, reversing the soil. And still another is by plowing with a heavy plow as deep as can be done, and follow after with a subsoil plow. This method might do in loose, rich or sandy soil, but in clay soil is of little value over digging holes. It is the cost of trenching compared with other methods that must be considered in going into the business on a large scale. Trenching costs about $75 per acre; trenching in narrow strips about $40; digging holes about $15, and plowing and subsoiling about $25. I know of no other machinery than the spade and shovel for trenching. If my articles are continued I propose to take up this matter at its proper place and time, and show the reason why we prefer trenching at the greatest cost as the cheapest and best, and in fact the only proper method of preparing soil for a vineyard. This may not reach the approhation of some, but we will have to come to it at last if we ever expect to reach the highest success in Grape culture. These articles on Grape culture are the result of more than fifty years experience, and I expect those who follow my directions to have no trouble from Grape disease, but plenty of good Grapes; and those who have old vineyards I think I can show how to renew them, and get good fruit without bagging medicine or spraying.—DR. J. STAYMAN, Leavenworth Co., Kan.

1,409. **Protecting Grape Vines, Raspberries, Etc.** At the approach of cold weather the Grape vines are pruned, unfastened from the trellis and laid flat upon the ground. They may he held in this position by simply placing a stone or other heavy object upon the end, and this will safely pass the winter anywhere except at the extreme north. Where the winters are usually very severe the vines should also be covered with soil, straw or litter of some sort; and perhaps this may be a good precaution with tender vines everywhere at the extreme north. Tender Raspberries and Blackberries are to be treated in a similar manner, but the cane being more brittle and more easily injured than Grape vines, need careful handling and gradual bending while undergoing the operation. A good practice is to throw one or two shovelfuls of soil against the canes on one side, and bend them over this by a sort of curve The tops are laid upon the ground near the next stool and held there there by another one or two shovelfuls of soil. Two persons can do this work very conveniently and quickly, and when growers learn to depend more on these easy modes of giving winter protection than on the chances of a mild winter, or supposed hardiness of plants they will have little reason to complain of winter kill, or of placing such an excessively great value on the ability of Grapes, Raspberries, etc., to endure the winter without such means of protection.

1,391. **Evaporated Sulphur.** The sulphur is put into the kettle without water, but should be exposed to steady, moderate heat only to prevent taking fire The Rose leaves sent us are badly affected with "black spot", which, according to the statement of the Massachusetts Experiment Station, will readily yield to the easily applied "evaporated sulphur" treatment.

1,360. **Lily of the Valley.** This likes a partial shade, soil composed of mellow loam, sand, well rotted stable manure. Spade the bed to the depth of two feet. Pips should not be placed more than two inches below the surface and about eight inches apart. Protect with Pine or Hemlock branches during winter.—E. L. P.

1,376. **Gladiolus.** Lift the bulbs in the fall before frost has injured the foliage (a slight frost will not injure). Remove the tops after drying in the air a few days; place in a paper sack and hang in a frost-proof cellar.—E. L. P.

1,355. **Musa Ensete.** I have had good success in growing Musa Ensete from seed by simply planting a single seed in a 4-inch pot filled with sand, and placing over the steam pipes in a greenhouse. It is necessary to keep the sand rather wet until the seed germinates, when they may be transferred to larger pots and a good rich soil. It will take several weeks probably for the seed to germinate, but a temperature of 80° to 90° F. will greatly facilitate this.—W. B.

1,373. **Tennisball Lettuce.** There are two varieties, one black-seeded and the other grey, or as usually called white. The leaves of the grey seeded sort are larger, broader, more varied than the black-seeded. They are also marked with reddish brown around the edges. Do not think it is of as good quality as the black seeded sort.—W. B.

1,345. **Apple Seed.** I very much doubt your finding a market at any price. Try some of the leading nurserymen, they could doubtless give you more information. A New York State man has made this business a specialty for years.—M. B. F.

1,346. **Apple Tree Bark Louse.** Give the affected branches a thorough application of kerosene emulsion. Apply with a brush or whisk broom. —M. B. F.

1,353. **Rust on Raspberries.** Apply dry sulphur by means of a small bellows upon the first appearance of the rust. This may not prevent it entirely, but will certainly check it.—M. B. F.

1,355. **Musa Ensete.** Seed should be sown in heat during early spring, and when the plants are quite small, they should be removed to pots. Planting can then be accomplished without seriously disturbing the roots.—F.

1,356. **Grass from Lawn.** Up to the middle or latter part of the season the grass should be cut sufficiently often to making raking unnecessary. Later on the clippings had best be placed on the compost heap.—F.

1,358. **Jacqueminot Rose for Summer.** Place in a cool, partially lighted cellar. Let the soil become quite dry, and keep in as near the same condition as possible. If water is given it should only be in small quantities.—M. B. F.

1,361. **Propagating Gooseberries.** Perhaps the easiest method is by cuttings, which should be treated in the same manner as Currants. Some of the varieties, the Houghton for example, being of a low spreading habit may be easily layered. Strong plants are obtained quicker this way.—M. B. Faxon.

1,362. **Aphis on Currants.** Apply Tobacco dust or sulphur liberally.—F.

1,364. **Hyacinths.** Earth is the best basis for Hyacinth growing, but moss may be used if desired. All the precaution needed is to make the moss as firm as possible around and under the bulb. Moisture should be given frequently but in small quantities. In water culture is a little more difficult, still many amateurs are successful. Choose sound, well-ripened bulbs as soon as they are to be obtained. Fill the glasses with pure water and place the bulb in position. The base of the bulb should nearly touch the surface of the water. Set the glasses in a cool dark room or closet, and let them remain until the bulbs have put out a growth of two or three inches, then gradually bring into full light. The main point is to keep the temperature of the water as even as possible.—M. B. Faxon.

1,365. **Pot Grown Strawberries.** If the ball of earth is dry and hard by all means shake out the roots, otherwise it is not necessary.—F.

1,366. **Cabbage and Cauliflower.** About the 15th of September. Sow in open ground and transplant to the cold frames. Just as well wait until early spring, however. Very few market gardeners about here now sow either of them in the fall.—M. B. Faxon.

1,367 **Currant Cuttings.** It would be better to wait until cold weather when the wood will have ripened more thoroughly. Pack the cuttings in clean dry sand and plant out as soon as the ground can be easily worked in the spring.—F.

1,368. **Pansy Plants for Spring Blooming.** Yes, seed sown early in September will under favorable circumstances give strong flowering plants by next June. The first buds should not be allowed to open, but should be pinched back.—M. B. F.

1,377. **White Tulip.** If confined to one variety I should say, LaCandeur.—M. B. F.

1,370. **Cauliflower.** Early Dwarf Erfurt and Lenormand's Short Stemmed are good varieties. I should say 25th of September would be early enough for Indiana to sow seed for plants to be wintered in cold frame.—M. B. F.

1,369. **Tobacco Fertilizer.** Judging from this season's experience, Sturtevant's Tobacco preparations are all that is claimed for them —F.

1,371. **Lawn Mower.** The "Henderson" made by P. Henderson & Co., New York, has a grass box for collecting grass clippings, also the Philadelphia which is handled by nearly every seedsman in the country.—M. B. F.

1,372. **Green Manuring.** I prefer Rye to any other crop for this purpose as it grows quickly, is easily turned under, and in my experience has always been attended with satisfactory results.—F.

1,374. **Adirondack Potato.** This is a round, red variety of vigorous habit and finest quality; the best keeping Potato I am acquainted with. With me it is a large yielder and one of the best Potatoes for family use. It was introduced some years ago by the late firm of B. K. Bliss & Sons, of New York, having originated with Mr. Rand of Vermont —M. B. Faxon.

1,375. **New Nasturtiums.** There is a new variety called Comedian. I think W. Atlee Burpee of Philadelphia introduced it. The foliage changes from dark green to a pale yellow and vice versa at various stages of its growth, hence, I suppose the name. As a flower it is of but little value.—M.B.F.

1,376. **Gladiolus.** Keep the bulbs in a cool dry place where there will be no danger of frost. If room is available it is well to spread them thinly on shutters or the floor.—M. B. F.

1,378. **Lawn Seeding.** If the season is moist or you have facilities for watering thoroughly, sow in the fall; if not, early in spring. Special mixtures for shady locations, if obtained of responsible seedsmen are what they are represented to be. Certain grasses will succeed well in shade while others do much better in a dry location and full heat of the sun.—M. B. Faxon.

1,383. **Latest Strawberry.** Glendale and Kentucky are among the latest good berries. It is impossible to say which particular variety is the very latest, much depends upon circumstances. M. B. F.

1,389. **Wintering Celery.** Your best way if you have only a small quantity is to set it out, so to speak, in clear sand in a dark cellar. Just cover the roots firmly enough to hold the stalks upright. —M. B. Faxon.

1,390. **Manure for Orchard.** It makes but little difference ordinarily whether it is to applied in spring or autumn. Depend upon it the trees will feel a benefit when ever it is put on. M. B. Faxon.

1,407. **Soot for Flowers.** Both wood and coal soot are used as manure, and if applied cautiously often show very fine effects. Coal soot is probably richer in ammonia than wood soot, but the chief constituent of either is finely divided carbon.

1,349. **Marianna and Abundance Plums.** The Marianna, although introduced under high claims but a few years ago, has since shown its absolute worthlessness. Fruit is smaller than Wild Goose, neither earlier nor better in quality, and as a shy bearer might rank next to the Blackman which is said to be absolutely barren. The Abundance is a very promising sort of Japanese Plums, and may be obtained from reliable eastern nurserymen under its other name "Botan."

1,361. **Propagation of Gooseberries.** They can be propagated by cuttings in the same way as Currants, but they do not make quite so rapid growth nor are as certain to root. The cuttings should be made in fall, tied in bundles and buried in sand in the cellar, to be planted out in nursery rows in spring. To propagate by layering, soil is drawn up to the plants in early summer, high enough to cover the lower part of the young wood, which is thus induced to emit roots, or the young growth may be laid down and covered with soil, so that only the tips are left exposed. The layers are then planted out in nursery row, for a year or two, until they have become strong plants, and are ready to planting out to fruit.

1,301. **Destroying Weeds in Lawn.** Get an ordinary "medicine dropper" with a little sulphuric acid, and drop a small quantity on the heart of every weed. This is simple, clean, and efficient. No "puller" wanted.—R. A. B., *Munson.*

1,322. **Pea Weevil.** Buhach powder shaken up with the seed will lay the weevils out.—R. A. B., *Munson.*

1,436. **Pruning Peach Trees.** This should not be done until the leaves have fallen; otherwise the proper ripening of the wood will be retarded or prevented rather than hastened. There is nothing you can do now, so far as we know, to hasten the hardening of the wood, except letting it alone. The proper precautions in this direction should have been taken in early spring. Stimulate early growth by applications of quickly available manure, high grade fertilizers, nitrate of soda, etc., in early spring, and give good culture until August. After that cease cultivation. This treatment will give you early and thrifty growth, thorough ripening of the wood, and immunity from winter kill.—P. G.

1,433. **Blackberry Rust.** We know of but one method of treatment. Tear out and burn up every affected cane as soon as noticed.—P. G.

The Oleander—Its Cultivation and Varieties.

CHAS. E. PARNELL, QUEENS CO., N. Y.

The several varieties of the Oleander, or to be speaking more correctly, Nerium Oleander, form, when taken together, a very beautiful genus of greenhouse shrubs belonging to the Natural Order Apocynaceæ, and may be described as being evergreen greenhouse shrubs of erect growth attaining a height of from five to fifteen feet, having lanceolate thick leathery leaves, and producing their large, very showy, various colored single or double flowers in large clusters during the early spring and summer months. When well grown the Oleanders are very useful, pretty, ornamental plants, and until of late the genus has been much neglected, but within the past few years the French florists have bestowed considerable attention on the genus, and have given us quite a number of new varieties that differ widely from the older sorts in size, form, and color of their flowers. The original species is a native of Palestine, from whence it was introduced in 1569, and it is said that it can be found growing freely and in great abundance in various parts of the south of Europe near water courses. In Palestine it is always to be found wherever water courses invite its thirsty roots.

Whether grown in the greenhouse, window, garden or flower border, the Oleander is a deservedly popular plant on account of the ease with which it can be grown, and the great variety in the color of its flowers. When grown as a pot plant, it should be given a compost composed of two parts well rotted sods, one part well decayed manure, with a fair sprinkling of bone dust. In potting, give them sufficient pot room, and see that they are well drained.

About the first of May the plants, if small, can be planted out in the flower border for the summer. They should be taken up and potted about the middle of September, and brought inside before cold weather sets in. Large specimens in pots or tubs can also be placed outside, giving them a sunny situation. They will require close attention to keep them properly supplied with water.

When brought inside they should be placed in the coolest part of the greenhouse, and only given enough moisture to prevent them from becoming absolutely dry until spring, when they can be started into growth by giving them more moisture and a higher temperature. Or they can be wintered over by placing them in a light frost-proof cellar and giving but little water, until they are brought outside. Propagation is effected by cuttings of the half ripened wood, and the young plants will flower the second season if planted out in a deep, well enriched border and liberally treated.

Unfortunately the Oleander is very subject to the white scale, and on this account the leaves and stems should be frequently washed with water in which whale oil soap has been dissolved in the proportion of two ounces to the gallon.

There are some fifty or more named varieties of the Oleander in cultivation, of which the following are the most desirable: *Atropurpureum plenum*, very large double flowers of a rich dark purple; *cardinale*, rich purple vermillion, lighted towards the center; *fluvum duplex*, large double yellow; *gloriosum*, brilliant cherry crimson, large and double; *luteo*, single yellow, free flowering; *Lillian Henderson*, double white, full petalled, rose-like in form. This is the best white variety; *Madoni grandiflora*, pure white, semi-double; *Mad. Chas. Ballet*, cherry carmine, fringed throat, large and double; *purpureum simplex*, bright purple, very distinct; *Professor Planchen*, rich plum, bordered with rose, and striped with

yellow; *Rosea splendens*, double rose; *Shaw's seedling*, single violet.

It must be remembered that the flowers of the double varieties on small plants will most frequently be semi-double and of indistinct colors.

What is in a Name?

PROF. J. L. BUDD, AGRICULTURAL COLLEGE, IOWA.

When the mail came this morning with the ever welcome POPULAR GARDENING, I had just come in with hands full of shrub blossoms which suggested the above heading. In receiving plants, shrubs or trees, with the same botanical name from widely separated parts of our own country, or from foreign countries, we find marked variations in leaf, bud, habit, etc., and above all in ability to endure a given climate.

As familiar instances the Box Elder of the south eastern states is as tender here as a Persian Peach, and it differs from our form, which is hardy enough to grow on the Red River of the North, in leaf, habit, texture of wood, flower and seed; yet botanically they are Negundo aceroides. In like manner the Silver Spruce (*Picea pungens*) of the west slopes of the Rocky Mountains is nearly as tender as a weed with us, and differs in many respects from the iron-clad form found east of the range.

Investigation will show the same variability of plant and hardiness of every American tree or shrub widely distributed over our continent. This fact is noted at this time to show that we may receive hardy or tender plants from Europe or Asia under the same name.

A few examples now before me may have some interest:

JOSIKA LILAC. A few years ago we secured four plants of Lilac from Rochester New York, marked *Syringa Josikæa*. In our climate they sunburned in summer and were frozen back in winter, and were denounced as failures.

Hence when in Russia in the summer of 1882 we were surprised to find tree-like specimens of the Josika Lilac loaded with great trusses of rich purple blossoms in a climate where the American Yellow Locust froze down each winter to the earth to come up again like a perennial weed.

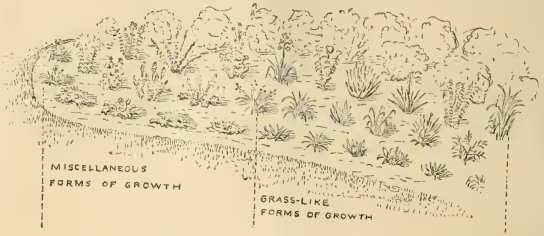
But we now find it wholly different from the Josika Lilac, said to have come from Transylvania. In addition to its being utterly defiant to the heat, cold and drought of our recent test seasons, it has larger, thicker and more wrinkled foliage, is a much larger and stronger grower, its flower trusses are larger and more numerous, its color is a much handsomer purple, and above all the flowers are so fragrant that a vase of them will fill a house with perfume, yet it is plain to see that it is a variety of the same race and botanically it must have the same specific name.

LIGUSTRUM VULGARE. The common Privet of west Europe fails to endure the summer's heat or winter's cold of a large portion of the prairie states north of the 40th parallel, yet the Ligustrum vulgare from near Warsaw in Poland we find hardy on the 42nd parallel, and that received from central Russia under the same name we find hardy up to the 44th parallel, and to differ in leaf, bud, flower, habit and fruit from the common form far more than does the Catalpa bignonoides of the east and south and the Catalpa speciosa of the west.

BETULA ALBA. As received from France and Germany, the European White Birch fails to endure our summer heat and drouth. Every tree on our grounds has lost its top during our recent dry period. Yet eight years ago we set a few one year old plants of Betula alba from East Europe in Blue Grass sod on dry uplaud where the native Red Elm shows dead branches as the result of the three year's drought we have experienced. Now they are thirty feet in height, almost as straight as the Lombardy Poplar, and models of health and beauty.

QUERCUS PEDUNCULATA. Any of the varieties of the British Oaks of the Robur section fail to endure the climate of the western states. Yet our trees grown from Acorns marked *Quercus pedunculata* from central Russia are models of health and have made more rapid growth than any native Oaks of the same age we ever grew.

Without giving farther examples I will say that our grounds forcibly teach the lesson that botanical names mean nothing in the great work of correcting nature's faulty distribution of the economic plants. Years ago we failed to grow the Tamarix, the Purple Fringe, the Daphne, the European Horse Chestnut, the European Linden, and dozens of other shrubs and trees from west Europe, Japan or South China. Yet now we have iron-clad forms—often of the same names—from interior Europe and Asia.



ARRANGING HARDY PLANTS IN THE GARDEN.

THE COMPLETE GARDEN.*

XXVIX.

BY A WELL-KNOWN HORTICULTURIST.

(*Continued from page 270.*)

HARDY HERBACEOUS PLANTS FOR THE FLOWER GARDEN.

For embellishing material additional to the trees and shrubs referred to in previous chapters, the manager of a Complete Garden will make no mistake if he depends largely on the ornamental hardy herbaceous plants. This class might be introduced as the perennial ornamental plants of the temperate zones and their improved varieties. Sometimes they are called "Old-fashioned Flowers," because they are the flowers that were almost exclusively used in gardens previous to twenty years ago.

It was at about the period named when the craze for scarlet Geraniums, and other brilliant tender bedding plants to be used for lawn adornment came in, and for a time threatened to supplant the older favorites. But this new class of flowers brought from the greenhouses were found to be incomparably more costly while they lacked the beauty and immense variety of the hardy plants, not to say that thier season was nearly three months shorter, namely outside the frost season. The tender class satisfied people of long purses for a time, but in recent years a reaction against them has set in, both in England and in America, and now the friends of the hardy flowers find more interest awakened for their favorites than ever before. Their culture is now rapidly increasing to the delight of all true plant lovers.

With a good selection of hardy flowers the garden may be gay with bloom continually from snow to snow, and affording besides some of the most beautiful known forms of plant habit and leaf growth. The plants are adapted for every soil and situation. A most desirable quality is that once planted they live from year to year increasing in size. Nothing can have a greater charm to the lover of nature, than the sight of the hardy perennials bursting the earth in the early springtime, a reminder that the new season is awake. It is a sight that thrills alike the hearts of childhood and of old age.

The writer desiring to do all in his power to increase the culture of the hardy flowers has carefully prepared a classification of them, partly descriptive, to intelligently guide those who are not familiar with the large assortment now at the command of planters. With the lists which follow before the planter he should have no difficulty in making a selection, however, large, that should prove entirely satisfactory. The leading growers of hardy flowers in this country are H. Myers, Passaic, New Jersey; Pitcher & Manda, Short Hills, New Jersey; Ellwanger & Barry, Rochester, New York; Benjamin Elliot, Pittsburgh, Pa. The plants are inexpensive.

ARRANGEMENT. The arrangement of hardy flowers in borders is very simple. A general point to be observed is to keep the lower growers in the fore ground and grading according to height from here back. Regard should be had to so placing the flowers of the different seasons throughout the border that no part will ever be entirely without plenty of flowers. Another excellent feature for hardy borders is to group the plants which possess similarity of habit somewhat by themselves as suggested in the annexed engraving, thus: grass-like growths somewhat together, kinds with ornamental foliage together, etc. By this means one introduces system into the arrangement, and this is a charm in any kind of gardening.

CLASSIFIED LISTS OF HARDY FLOWERS.

Key to a Selection: Note the Letters preceding each kind.

For a Superior Collection of { 25 kinds for border choose *A*. / 50 " " add *B*. / 75 " " " *C*.

For the next best kinds choose *D*.
For the uncultivated Wild Garden choose *e*.
For attractive foliage choose *f*.
For Grass-like growths choose *g*.
For a Rockery choose *h*.
For a boggy soil choose *i*.
For kinds that will succeed in the shade choose *j*.
For kinds suitable for clumps on the lawn choose *k*.

NOTE.—*The season given will vary within the time named according to location.*

CLASS 1. **Usually less than one foot in height**

	Name.	Color.	Season.
C	Adonis vernalis	*yellow*	April, May
D h	Ajuga (*Bugle*) alpina var.	*blue, etc.*	May, June
h	Alyssum argenteum	*yellow*	May, later
D	Anemore pulsatilla (*Pasque flower*)	*purple*	April, May
D	nemorosa (*Wood Anemore*)	*pale blue*	Mar., May
D	nemorosa fl pl (*Double Wood A.*)	.	Mar., May
C h	Arabis (*Wall Cress*) in var.	*white*	Mar., June
h	Arenaria aculeata	*white*	April, May
j	Asperula odorata (*Woodruff*)	*white*	May, July
C h	Aubretia deltoidea var.	*blue*	April, June
D	Bellis (*Daisy*) perennis	*white, red*	May, Aug.

D g Bulbocodium (*Spring Meadow Saffron*) vernum.....*purple*.....Mar.,April
D Callirhoe involucrata (*Crimson Mallow*).....June,Sept.
i Caltha (*Marsh Marigold*) palustris.....*yellow*.....Apr., June
B Campanula in var. carpatica.....*blue, white*..June,Sept. pumilia.....*blue, white*..June, Aug.
h Cerastium (*Mouse ear*) var.....*white*.....May, July
D g Chinodoxa (*Glory of the Snow*)Lucilæ.*sky blue,white*.Apr.,May
C Colchicum (*Autumn Crocus*) autumnale single and double.*purple,white*.Aug.,Oct.
B g Convallaria *Lily of the Valley*.....*white*.....May, June
i j Cornus Canadensis...*white*..... June
A g Crocus vernus(*Dutch*) in various colors.....Mar., May sativus (*Saffron*)..*purple*..... Oct.
h Crucianella (*Crosswort*) in var.... .....*rose*.....June, Aug.
i Cypripediums (*Lady Slipper Orchids*).....May, July
A Dianthus (*Maiden Pink*) deltoides....*pink, white*.June, Sept.
g plumarius (*Garden Pink*).....*pink, white*... June
g Draba (*Whitlow Grass*) in var.....*yellow*... ....Mar., May
D Epimedium (*Barrenwort*) alpinum....*yellow*..... May macranthum.....*whitish* ..... May
C Erauthis hyemalis (*Winter Aconite*)..*yellow*.....Mar.,April
D Erythronium (*Dog's-tooth Violet*).....*yellow*..... April
B g Galanthus(*Snowdrop*)*white*.....Mar.,April
D Gentian (*Narrow-leaved Gentian*) angustifolia.....*deep blue*....Oct., Nov.
C j Helleborus (*Christmas Rose*) nigre.....*white*... ....Dec., Mar.
B j Hepatica (*Liverwort*) triloba..... .....*blue, etc*.... April double.....*blue, etc*..... April
B Iberis (*Perennial Candytuft*) in var.....*white*.....April, May
D f Lamium (*Archangle*).*white, purple* May
D g Leucojum vernum...*white, green*.. March
j Linnæa (*Twin flower*) borealis.....*flesh*.....June, July
h Lysimachia (*Moneywort*) nummularia.*yellow*.....May, June

A TALL SUNFLOWER—*Helianthus orgyalis.*

C g Muscaria botryoides (*Grape Hyacinths*).*blue*.....April, May alba..... ....*white*..... ..April, May comosum(*Feathered Hyacinth*).....*blue*.....May, June
D j Myosotis (*Forget-me-not*).....*blue, white*..April, June
D g Ornithogalum (*Star of Bethlahem*) umbellatum.....*white*.....May, June
h Oxalis (*Wood Sorrel*) violacea.....*Violet*.. ....May, June
A Phlox (*Moss Pink*) subulata.....*rose, white*...April, May other creeping sorts..... .....April, June
B Primula (*Polyanthus*) elatior in var.....*lilac, crimson, yellow, etc*...April, May nivalis .....*white*.. ..... May vulgaris.....*white, purple, sulphur, etc*..April, May
B Pulmonaria (*Lungwort*) maculata.... .....*blue*..... May
h Ranunculus montanus.*yellow*.....April, May
B f Sanguinaria (*Bloodroot*) canadensis... *white*.....April, May
C f Saxifraga cordifolia var.....*rose*.....April, June
B g Scilla (*Squills*) in var.*blue, white*..May, June
h Sedum(*Dwarf*)in var.*yellow, white, rose*.....June, Oct.
D h Silene (*Sea Pink*) maritima.....*white*... ...June, Aug.
h Pennsylvanica (*Wild Pink*).....*pink*.....April, May
D g Sisyrinchium Bermudianum (*Blue-eye grass*).....*blue*... .....June, Sept.
D grandiflorum.....*deep purple*.April, May
f Thalictrum minus var. adiantifolium.. .. ..May, June
D h Thymus aureus (*Golden Thyme*).....*purple*.....June, July micans..... June
e Tiarella cordifolia....*white*.....May, June
h Tunica saxifraga.....*pink*.....July, Sept.
i Veronica alpine Speedwell..... .....*pale blue*.. July
D h Vinca minor in var. (*Periwinkle*).....*blue, white*...April, May
B e Viola in var (*Violets*).*blue, white, yellow*.....April, June

(To be Continued.)

Strawberries: Planting and After Culture.

M. B. FAXON, SUFFOLK CO., MASS.

This month thousands of new Strawberry patches will be put out in home gardens, and with proper care may be relied upon to give a moderate crop next season. The statement made by many over-zealous advertisers, who promise a full crop next spring if their pot plants are set, should be taken with a grain of allowance. For, it must be remembered that a plant, even if all the roots are intact, receives a great shock to its growing powers, for the time being, whenever it is moved, and I have yet to see any autumn-planted bed produce even approximately a full crop the next spring.

I have tried potted plants at different times and from various sources, and candidly I do not believe they are worth the extra cost. Nearly all growers use a mixture in potting which if not clay is of such a nature that when the plant is "thumped" and shipped to such a distance as to become dry, the ball of earth becomes about as hard as a cobble stone. It is, of course, worse than nonsense to put out the plant in such a condition. So one is obliged to soak out the ball in order to release the roots, and after this is done what better is the plant than a good layer rooted in the ordinary way, and carefully taken up? Certainly if mellow earth was used and the plants could be shipped in the pots or packed so as to keep the earth intact there might be advantages.

A few years ago some one, (I think it was the late E. P. Roe) offered plants rooted in smaller boxes, a cheap article was used for the purpose so they could be shipped with the plants. I bought a few and they did splendidly, but the plan must have proved too expensive for no other grower has taken it up. The paper pots would hardly be durable enough. Some one ought to invent a package for the purpose.

VARIETIES. The number of new varieties offered each year is bewildering. If each new introduction of the past ten years had been a trifle of an improvement over its predecessors, we should have come in possession of the perfect Strawberry long ago. These newcomers must, however, be received and tried as they appear, for this is the only way to make any advances or improvements. I am often asked to recommend two or three varieties for the home garden but I don't always mention the same ones as there are several of each class in which there is but little if any choice. The Crescent is a good early berry; so is the Downing. The two should be planted together anyway as the former is pistillate. Sharpless, Belmont, Cumberland, and Bubach are as good as there is, and if I were asked to take my pick I hardly know which it would be. The Jewell I certainly ought to mention as it is one of our best berries, a large cropper, good size, shape and flavor.

CARE IN PLANTING. Next to good plants success hinges upon proper care in setting, indeed, I might say that this is the chief point of importance, as the best of plants carelessly put down will not give satisfactory results. The secret of the whole matter is to avoid getting the crown below its original depth, and to press the soil firmly about the roots. Unless the ground be very wet, it will do no harm to walk along on each side of the row close to the plants which will accomplish the purpose in a thorough manner. The first winter is the hardest experience that a newly set bed usually has to go through, as the soil is mellow and the frost can more easily throw the young plants out of the ground. To avoid this, a mulch should be applied right after the first severe cold spell. For this purpose nothing that I have ever tried is as good as evergreen boughs, as they are so light as not to smother the plants and will hold the snow admirably. Salt marsh hay is perhaps next best. Rye or other straw is also good, or for that matter anything of a similar character. But never use sawdust even as a summer mulch. Its nature is cold and sour and will breed ants and other insects by the million. Shavings are not desirable either, though better than sawdust. If Pine or other boughs are used as a winter covering, it is best to use straw or something similar in the spring to keep the berries out of the sand and hold the moisture.

Landscape Gardening in High-Colored Foliage.

[*Paper by Wm. McMillan, Superintendent of the Buffalo Parks, before the American Society of Florists.*]

Landscape gardening is a subject that embraces a very wide field, only a small corner of which is occupied by the florist; an ornamental landscape is not merely a composition of choice trees, shrubs, grass and flowers, but includes as well every inorganic element of nature embodied in the scene. The 'lay of the land'—to use a familiar phrase—is in a double sense the groundwork of the composition. This includes every form or feature which the earth's surface presents to us, from the flat plain to the beetling cliff, every variety of hill and vale, ridge or dell, bare rock, sterile sand, or rich soil; and also water, flowing or still, of whatever volume, large or small. Even the atmosphere must be included as a part of every landscape, for the scene varies with every variation of sunshine or shade, dim haze or clear sky, still air or stirring breeze. The lights and shades of a landscape painting are carefully studied, and whatever is appreciated in the copy is surely of greater value in the original.

In the embellishment then of any grounds of sufficient extent to have a distinctive landscape character, the gardener must take into account all the impressive and attractive natural elements of the place. The general aim of his work will be to make a harmonious combination with the dominant characteristics which nature has already stamped upon the site. He will seek a

fuller or richer developmeut of the essential leading features, simply softening what is hard, clothing what is bare, filling out what is meager, and enriching what is beautiful, all in harmony with the original type. He will thus avoid all novel conceits, all conspicuous eccentricities, all incongruous intrusions, and be guided by his understanding of the laws of nature as enacted by the ruling Divinity of the scene, and his sympathy with them.

I lay special stress on this fundamental principle, because it seems to be so commonly overlooked or ignored in ordinary landscape gardening. In fact the very opposite rule is followed in much work that is done, and the result receives much popular approval. It is a common thing to value the decorative work on any given site in general proportion to the degree in which it is obviously artificial, new or peculiar. This untortunate fashion seems to pervade every brauch of landscape work. Instead of the artificial being subordinated to the natural, it is made specially prominent, and in some cases it even becomes the 'be all and end all' of the scene. For instance drives and walks are made unnecessarily broad, or sinuous or prominent, or intrude where not needed. A sharp terrace is formed mainly to display its bold lines, or a channel is dug for an artificial runnel, to give occasion for introducing a bridge. Summer houses, arbors, rockeries, pools, fountain basins, and jets (usually dry), clumps of trees and shrubs, or beds of flowers and foliage plants, are stuck around promiscuously in conspicous sites, without any fitting relation to the natural conditions of the landscape.

A common phase of the same taste is shown in the popularity of the class of plants which propagators call 'sports.' This includes that numerous list which pads out the pages of most catalogues, the endless varieties with the leaves abnormally shaped or colored, or with a drooping or contorted or dwarfed habit of growth. Nearly all the plants of this class are less hardy and vigorous and healthy than the normal type. It is probable that their peculiarities in color or habit are due to some unhealthy condition of the sap or defect in the channels of circulation. But in spite of this relatively weak growth, sickly color or deformed shape they are all popular favorites. The paler and feebler and more distorted the growth, the more they are liked and petted and pampered. A few of the best of this class may be sparingly planted as foils or specimens or curiosities merely, but never in proportions to rival those of the true type of each species. For general use the natural color and shape are more pleasing and satifactory, not only because more vigorous and durable, but also because they are in accord with the true order of nature, while the others are not. Nature in fact disowns her 'freaks' of this sort by the general sterility of such offspriug. Their reproduction depends wholly on artificial propagations. It were better to let them all die a natural death than to treat them as if they were nature's finest productions. Her sanction to their continued existence is given only when the seed if produced at all is true to the parent.

The variation of plants under domesticatiou is no doubt a part of the true economy of nature. When the offspring is equally healthy, hardy and comely as the parent or type, the propagation of the new forms may be desirable. But why should we rescue from their natural fate of extinction so many variations that have defective vitality or some constitutional deformity. For example, most of our so-called 'weeping' trees are of this class. In the Weeping Willow, White Birch and others, where the young twigs are long and slender, the pendant spray is natural and pleasing to the eye. But where the downward growth is apparently due to some constitutional kink, as in the Weeping Ash or Mountain Ash, the general aspect of the tree gives a painful impression that it is making a prolonged effort to recover from some crushing accident. A similar unpleasant feeling is aroused at seeing the healthy green, so natural to all foliage in the growing state, becoming blanched with white, jaundiced with yellow or livid with purple. It is fortunate that plants, notwithstanding much cruel treatment by cultivators never become subject to a 'fit of the blues.' If by some violent medication or heroic surgery our 'professors of plant propagation' could produce blue leaves their triumph would be complete, and the new color in foliage would at once lead all the rest in popular favor.

The prevalent fashion of using plants with leaves of unnatural hues is most strongly shown in the rapid rise and wide extension of this practice for decorative work in gardens and lawns. 'Carpet bedding' and 'ribbon gardening' have become an important branch of the gardener's work, and even of the florists. The trade of the commercial florist in foliage plants is probably greater than in plants grown for the flower garden. Though this is a society of florists, it is quite probable that their interest in landscape gardening is due more to this class of foliage plauts than to old-fashioned garden flowers. The proper fitting and furnishing of the flower garden or rather the new foliage garden and its relation to adjacent grounds are therefore to you the most important parts of my subject.

What then are the ruling principles which should govern in the decorative work of a garden? In this as in all othcr things there can be no absolute standard of taste. Persoual preferences will vary as the early associations and later education of each individual may vary. But good taste has certain recognized canons by which it may in a general way be judged. There are some fundamental principles accepted by the common consent of the community because in accordance with common sense. On strictly private estates where chiefly the eye of the owner is to be gratified he may ride to his heart's content any hobby that may please him. But in places exposed largely to the public eye as in ordinary villa grounds, suburban gardens, and public parks, it is well to have some respect for long established usage, and conform more or less to the general customs of the time and place. Novel ideas will be introduced modestly and not generally adopted till they have stood the test of the fullest criticism. This means more than the ready applause of the populace which daring novelty is sure to elicit; more than the hotbed stimulus of a fleeting fashion, however popular for a time. Some of these leading principles which should guide the landscape gardcner may here be briefly stated.

Flowers and showy foliage being professedly used for ornament should of course occupy the choicest site of the home grounds. The work being necessarily formal and artificial, there will be no incongruity in the close proximity of rigid lines; and the dwelling house may be as near as well best suit the general convenience in the use and enjoyment of the garden. The nature and extent of the collection will of course vary with the taste and means of the owner. The finer the design, and the greater the variety of plants the better, so long as there is ample room for all in fitting proportiou to the intrinsic merit of each kind, and to the general plan of the whole garden. It is well not to make any ambitious or pretentious display unless it can be easily and willingly kept in perfect order at all times. The immediate setting or surrounding of the garden should be in keeping with the central design. It is poor taste to make a gaudy show of fine flowers or bright foliage if adjacent grounds are seedy and weedy. It is equally bad taste to intrude such plants iu formal masses into outlying portions of the grounds mainly devoted to other uses. Even on the ordinary lawn the quiet repose of the green sward may be disturbed by some garish mass of high colors. The discord is equally great when formal beds of like character are scattered along the lawn border amid irregular groups of shrubbery. This incongruity lasts the year round, for after the tender exotics die or are removed, the bald plots look equally foreign to turf and copice. A lawn is one thing, a flower garden another. Grass has recently supplanted gravel in the garden, thanks to the lawn mower. But only in city lots can the plants be properly in such relative proportions to the turf as to convey the idea of both garden and lawn.

In furnishing the flower garden the selection of plauts has radically changed with the introduction of 'carpet bedding.' Old fashioned flowers are now at a discount, and in fact all kinds of flowers unless the color be intense, or strongly variegated or blotched. Delicate tints and shadings or fine perfume are of little account. What is wanted is color only, and color that will strike the eye a long way off, and even then it must be set in large masses to have the much desired dazzling effect. Quantity, brilliancy, oddity, novelty, are the chief attractions. The individual plant is nothing, the effect in mass or in combination is everything. In foliage plants high color, strong contrast, and fanciful figures in design receive the most favor. The individuals are ruthlessly snubbed and pinched to hide the true character of the plant and show forth the art of the planter.

(To be Continued.)

New York Market Quotations, Showing Tendencies.

	Week ending Aug. 21.	Week ending Aug. 7.
Apples—Gravenstein, per bbl...	2 25@2 75	2 00@2 25
Astrachan, per bbl...	.....	1 75@2 25
Alexander, per bbl...	2 50@3 00	2 00@2 50
Fippin, per bbl...	1 75@2 50	1 50@2 25
Peaches—Ga., per 3-to-bu. box...	.....	75@1 25
Md. and Del. per crate...	75@1 25	60@1 50
Jersey, per basket...	30@1 50	35@1 00
Grapes, Del. Southern, per lb...	8@ 12	5@ 10
Concord, Southern, per lb...	4@ 6	.....
Champ & Ives, South'n, p.lb.	2@ 3	2@ 5
Up-river Champion, per lb...	4@ 5	.....
Up-river Delaware, per lb...	16@ 20	.....
Pears Ga., Le Conte, per bbl....	2 00@4 00	2 00@4
Bell, per bbl...	.....	2 50@3
Bartlett, per bbl...	1 75@3 00	2 00@3
Clapp's Favorite, per bbl....	2 00@3 00	2 50@3
Cooking, per bbl...	1 50@2 00	1 50@
Plums—Egg, per bbl...	3 50@4 50	.....
Green Gage, per bbl...	3 50@4 50	.....
Lombard, per bbl...	2 50@3 00	.....
Common, per bbl...	2 00@2 50	.....
Huckleberries—Jersey, qt...	4@ 5	5@ 8
Mt., per qt...	4@ 5	8@ 9
Watermelons, per 100...	18 00@28 00	7 00@18 00
Muskmelons, Southern, per bbl.	.....	5@3 50
New Jersey, per bbl...	50@1 50	1 00—2 00
Harkensack, per bbl...	2 00@2 50	.....
Apples—Evap't'd, pr. to fancy..	5¾@6 00	5¾@ 6
Evap't'd, common...	4½@ 5¾	4½@ 5½
Evaporated N. C., sliced...	3 @ 3¾	3 @ 3½
Evap. State, quarters, 1888...	3 @ 4	3 @ 3½
Evap. Ohio and Mich., qrs...	3¼@ 4¼	3 @ 4
Evap. Chopped, per lb...	2¾@ 3¼	2½@ 3
Evap. cores and skins...	1½@ 2	1½@ 2
Peaches—Del., evap't'd, peeled '88	11@ 15	11 @ 15
Del., evap't'd, unpeeled '88..	6 @ 6½	5 @ 6
North Carolina, peeled fancy	.....	8
Southern, unpeeled...	.....	4 @ 5
Ga. peeled, 1889...	12@ 14	.....
Ga. unpeeled, 1889...	7@ 8	.....
Raspberries—evap't'd '89...	@ 20	.....
Sun-dried 1889...	.....	.....
Cherries—Evap., per lb...	10@ 11½	10@11½
Huckleberries—Evap..	.....	.....
Plums—Evap., State...	.....	6@
South Damson, per lb....	.....	5@ 5½
Blackberries—1888, Evap...	3 @ 4	3 @ 4
Potatoes—L. I., bulk per bbl....	1 75@2 00	1 50@2 00
Southern...	.....	1 50@1 75
Jersey, per bbl...	1 25@1 75	.....
Sweet Potatoes, Va., per bbl.	3 00@3 75	3 00 4 00
Cabbage—L. I., per 100...	1 50@2 00	1 50@2 00
Egg Plant, Jersey, per bbl...	2 00@3 00	3 00@4 00
Corn, per 100...	75@1 50	75@1 25
Cucumbers, Long Island, per 100.	75@1 00	40@ 50
Pickles, per 1,000...	1 25@1 50	.....
Lima Beans, per bag...	1 50@1 75	1 50@2 25
Onions—Egyptian, 2 0-lb. bag...	.....	1 75@2 00
State Yellows, per bbl...	1 50@	1 75@2 00
Western, per bbl...	50@1 25	1 50@1 75
Squash—Long Island, per bbl ..	75@1 00	75@1 50
Tomatoes—Jersey, per crate....	35@ 50	20@ 50
Turnips—Jersey, Russian, p. bbl.	@ 75	@ 75

END OF VOL. IV.