

ARBORETUM BULLETIN

MARCH, 1942

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The Arboretum Bulletin



VOL. V. No. 3

SEATTLE, WASHINGTON

MARCH, 1942

Editor.....DR. JOHN H. HANLEY

Advertising Manager.....MRS. JESSE C. JOHNSON

Address all communications to Arboretum Foundation
5532 White Building, Seattle, Washington

The Enlarged Bulletin

The Arboretum Foundation decided last fall to increase the size of its BULLETIN for the March and September issues. Immediately following Pearl Harbor there arose some grave doubts as to the feasibility of continuing with the plan. Largely at the insistence of Mr. Donald G. Graham, your Foundation president, it was carried through. We offer herewith our first product with the hope that it may meet with your approval.

1 1 1

Among Our Contributors

Mr. W. H. Warren is Superintendent of Parks at Victoria, B. C., where they have, for a number of years, made detailed studies of flowering trees for ornamental purposes.

1

An intelligent, energetic young man, Mr. Noble Hoggson, has brought a lot of original ideas into Northwest landscape architecture.

1

Mr. William H. Henderson of Fresno, California, is the well-known breeder of hibiscus varieties.

1

Mrs. Donald G. Graham, who writes on camellias, is chairman of the Membership Committee for the Arboretum Foundation. In conjunction with the very special garden developed by her husband, she has made a particular study of camellias and is recognized as one of our local authorities.

Rev. Earl William Benbow is a former president of the Seattle Rose Society and has been affiliated with that organization for 12 years.

1

Mr. Arthur Dome is the recognized source of really valuable information on heathers.

1

Mrs. L. N. Roberson is a very prominent member of the Western Unit of the American Rock Garden Society and, along with her husband, operates one of our best nurseries.

1

Mr. Harold T. Abbott is Assistant Superintendent of Parks at Spokane, Washington, and his wide and varied experiences with the plants of that region make this article particularly worthwhile.

1

Mr. Theodore Albert is specializing in the genus *Daphne* at his nursery near Olympia.

1

The Northwest is an ideal country in which to grow primroses and Mrs. Ida (Walter) Schibig is far and away the leading amateur primrose specialist.

1

Mrs. George T. Williams has made a special effort to gather together and flower a tremendous number of chrysanthemum varieties, as is evidenced from her article.

1

Mr. Carol Wieting is one of our assistants at the University of Washington Arboretum greenhouses.

Arboretum Membership

By MRS. DONALD G. GRAHAM

ALREADY our Arboretum has been rated by experts as ranking third among the arboreta of the United States. The position of the Arboretum as a scientific station is now recognized, and it has many friends not only in the state of Washington but throughout the United States who believe in its value. This widespread interest is shown through our membership records. Growing from a membership of 315 in 1938, there are to date 1,319 members of the Arboretum Foundation. Of this number there are approximately 285 members from 82 towns and cities in the state of Washington outside of Seattle, and 25 memberships from 11 other states—California, Oregon, Arizona, Illinois, Pennsylvania, Minnesota, New Jersey, Iowa, District of Columbia, Massachusetts and Missouri.

There are now 76 garden clubs from 40 towns and cities in the State of Washington which have memberships in the Arboretum Foundation.

Extremely gratifying have been the five new memberships at \$50 each which have been received within the last few months and the 12 new memberships at \$100. The 12 \$100 "corporate" memberships were taken out both by individuals and by business firms.

Many times within the last few weeks the question has been raised as to whether interest in the Arboretum will continue with Red Cross and defense work being uppermost in people's minds. It is significant to note that during December, with war declared and the distractions of Christmas, the names of 25 new members were added to our files. During the past month of February, 32 new memberships were received. But we need more and more new members.

We are told that all during the World War of 1914-18, the English people did not overlook or alter their program in the care and upkeep of their world famous arboretum—Kew Gardens—founded in 1759. It is also interesting to note that, at the present time, the regular fortnightly flower shows of the Royal Horticultural Society, staged in London, have gone on with but a single interruption which occurred during the height of the bombing there in September, 1940.

Mr. Wake McLellan of San Francisco makes the following comment: "In England where the problem is a thousandfold greater than it is in our country or ever will be here, they have found that flowers play an important part in keeping up the morale of the people as well as showing real affection, which is so appreciated and necessary at times like this."

Memberships are most valuable in the continued progress of this Arboretum of the Northwest. We look for the continued support of our old members and hope for many more new members. W.P.A. work has been withdrawn from the Arboretum area and additional funds are now needed for the development, as well as for the maintenance, of that area. Memberships are the most dependable source of income. These memberships have various classifications—\$2.00, \$5.00, \$10.00, \$25.00, \$50.00, and \$100.00, and business firms, partnerships and corporations are eligible as well as individuals. It is the hope that all Arboretum Foundation members will at this time give special support and aid in increasing the memberships of the Foundation.

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I hereby apply for membership in the Arboretum Foundation and remittance for same is enclosed to cover dues for the next succeeding 12 months.

Name

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All memberships are non-assessable.

Flowering Cherries

By W. H. WARREN

Superintendent of Parks, Victoria, B. C.

THE FOLLOWING notes on flowering cherries have been accumulated during an intensive study over the last ten years by the Parks Department in Victoria, B. C., in its endeavor to find suitable flowering trees to substitute for forest trees on city boulevards. The latter have been a source of expense and trouble for many years. The uninterrupted service of sewers, drains and public utilities on streets naturally takes first place over the use of trees. Since street trees are used here more for ornamentation than for shade, Victoria is using varieties which cause least trouble to public services and provide the greatest ornamental value in flower, fruit and foliage. About 1000 flowering trees were planted on boulevards in Victoria in 1941.

The coastal section of the Northwest is as congenial, climatically, to the growing of ornamental material indigenous to the temperate zone, as any other place on the continent. We have not scratched the surface yet in accumulating and testing the potential value of the vast quantity of material available. The services of the University of Washington Arboretum in this respect should in time be a tremendous boon to horticulture on both sides of the line. For instance Rehder lists about 300 kinds of crabapples, hawthorns and mountain ash in his "Manual of Cultivated Trees and Shrubs," not to mention the dozens of lesser known named varieties of ornamental crabapples which have originated in Canada and in the United States in recent years. There are in addition several hundred species and varieties of flowering cherries, exclusive of flowering plums, apricots, almonds and peaches. Doubtless there are many worthless varieties and differentiations scarcely worthy of varietal names, yet notwithstanding there are many fine varieties quite unknown to us that deserve a trial.

In studying flowering cherries the experience of the following authorities has been very helpful: Mr. Collingwood Ingram, foremost British authority, whose articles have appeared periodically in the Royal Horticultural Society's Journal, "Gardeners' Chron-

icle and Gardening Illustrated"; Paul B. Russell, assistant botanist, Bureau of Plant Industry, author of the excellent U.S.D.A. Circular No. 313, published in 1934, "The Oriental Flowering Cherries"; Mr. W. B. Clarke, Clarke's Nursery, San Jose, California, one of the most informed authorities in the United States; the late A. E. Wohlert, Wohlert's Nurseries, Narberth, Pa., and K. Wada, a very progressive Japanese nurseryman, who visited Seattle a few years ago.

For a detailed description of varieties, see the above bulletin. The following notes are intended only to supplement the bulletin. The large-growing, single-flowering cherries appear to be longer lived and generally more suitable for streets. The most promising of these are: Higan or Equinox cherry (*Prunus subhirtella*) and its many varietal forms and closely related species, Yoshino (*P. yedoensis*), Sargent's cherry (*P. Sargentii*) and the cut-leafed or Pygmy cherry (*P. incisa*). It must be noted that there is still much confusion in varietal names in America, Europe and in Japan.

The Higan or Equinox Group

Prunus subhirtella. This cherry varies tremendously in habit of form and flower. Flowers are usually small and fleeting, often injured by late spring frosts. The variety Beni-higan has small pink flowers and is described as tall and upright to 60 feet high. Shiro-higan, similar in growth, is a form with white flowers up to 1½ inches in diameter, a good specimen of which grows behind the museum in Volunteer Park. The ordinary Higan is a broad tree up to 25 feet high, floriferous in the older trees, but sometimes with scant bloom in the younger stages. It is to be noted that Rehder makes no such distinction between the tall type and the smaller, broad type. There are two forms of the Shidare or weeping Higan, namely, the pyramidal and the mushroom type. Beni-shidare or Park Weeping exemplifies the first. It was propagated from a pink flowered weeper growing in Golden Gate Park. New branches keep rising from the crown so that the tree gradually gains height. Ito-Shidare, the thread-branched weeper, also known as Eureka Weeping, is the common mushroom type. The following notes were recorded in Victoria: The variety Sendaica, said to be

the best weeping form by Wada, proved to be disappointing. It was quite variable, probably having been grown from seed. Wada claims it is grown for its habit rather than the flowers, having thread-like, pendulous branches in age. Western taste may not coincide with Japanese aesthetic values in this respect. In addition there is a double pink weeping Higan. One grows near the entrance to the Conservatory in Volunteer Park, Seattle. Rehder and Clarke call it Yae-Shidare Higan. Ingram introduced it to England as Sendai-ito-Zakura, and it was at his instigation that the Yokohama Nursery propagated it, calling it Totsu-zakura. The double subhirtellas are all superior to the singles in ornamental value. *Prunus subhirtella autumnalis*, Jugatsu-zakura or October Bloomer, is a double pink cherry which makes a wide crown. It usually starts to bloom in October or November and continues intermittently during frost-free weather until April. Under our winter conditions the flowers may be injured by frost but not so the buds, which continue to open successively as soon as the weather again becomes favorable. In providing winter color in the garden this tree has high value particularly in sheltered positions. The largest tree in Great Britain is 21 feet high and 36 feet through the crown. Most promising of all subhirtellas are the double, upright forms. As particulars of these varieties appear to be lacking in American literature, the following detailed notes may be of some value:

Prunus subhirtella Fukubana (Makino) or Momijigari. Under our conditions, the flowers are red in the bud like *Malus floribunda*, opening a rosy pink, finally fading to pale pink. Petals number 12 to 21 and are three to four-sixteenths inches wide, *i. e.*, narrower than in Atsumori. They are also more sharply cleft at the tips than the latter and somewhat twisted, giving the blossom a frilled or fluted appearance. The flowers, $\frac{3}{8}$ to $1\frac{1}{8}$ inches wide, are usually borne in clusters of three, but sometimes two or four; pistils one or two; leafy bracts on peduncles up to $\frac{1}{2}$ inch long. The calyx and stems first appear reddish and the leaves are bronze when young; it flowers later than all other Higan cherries and is a most profuse bloomer, even on very young trees. The tree grows vigor-

ously and the foliage colors well in the fall. Like other subhirtellas it does best when fall planted and seems to resent late spring planting. This may be due to its susceptibility to twig blight (brown rot fungus).

Regarding the nomenclature, which is somewhat confused, Ingram wrote me in 1938: "Clarke's Momijigari is the same plant as the one I received an Award of Merit for under the name *P. subhirtella rosea plena* in 1935. Since then I have learned that it has been described by Makino in the Bot. Mag. of Tokyo, 1908, as *P. subhirtella* Fukubana, so this must be regarded as its correct name. It was Fukubana that I praised in my R.H.S. paper (see "Flowering Trees and Shrubs"—R.H.S. 1938; also colored plate in Gardeners' Chronicle, Nov. 3, 1934)." To illustrate the confused nomenclature, Wada sells it under the name of *Prunus subhirtella ascendens pendula rubra flore plena*. He states by letter that it is the same as Fukubana. He also called it *P. subhirtella fl. rubro pleno*. Notcott, an English nurseryman, calls it *P. subhirtella flore plena*, and says it is pretty and distinct, quite unlike other forms of subhirtella cherries. The branches are wreathed in cerise pink buds opening to double or semi-double, clear, bright pink flowers. It is one of the really pink cherries likely to become a great favorite when better known. It should be in every collection. Marchant, another English nurseryman, claims it is strong growing, making a head 10 feet to 20 feet wide, according to the soil. The then weeping branches are a lovely sight in March and April with clusters of flowers like tiny double roses, vivid crimson in bud opening to deep carmine red.

Regarding its habit, since we obtained stock from Wada, his description of it led us to believe it was a true Shidare higan or weeping type, but from Marchant's description and our observation it is upright in habit until maturity when the tips of the branches take on a pendulous habit. We note also it occasionally has semi-pendulous sucker growth on young trees. It is quite rare in cultivation.

To sum up, we like it because of its long blooming period, which is characteristic of all double cherries, its attractive pink flowers, strong growth and autumn foliage.

The double higan described by Wada as Atsumori or *Prunus subhirtella ascendens rosea flore plena* is, so far as I know, sold only by him and is unknown in Britain and the United States. It is slower in growth than Fukubana, upright in habit with larger, paler flowers which vary from 1 inch to $1\frac{3}{8}$ inches wide, red in the bud, opening to an apple-blossom pink shade, fading to pale pink or almost white. Old blooms have purplish calyces and filaments. They are borne in clusters of two to four, usually three, and each has 14 to 21 petals. Pedicels $1\frac{1}{2}$ inches; peduncle short, up to $\frac{1}{4}$ -inch, usually nearly sessile; leaves small, unfolding clear green. The petals are $\frac{1}{4}$ to $\frac{3}{8}$ inch broad with two or three round lobes at the tips. The flowers appear flat with an open center, a shade deeper pink than Jugatsu. The leaves do not color much in the fall. It is equally as floriferous as Fukubana. The blossoms of both Atsumori and Fukubana seem to be more susceptible to late frosts than the species.

We have experienced some difficulty propagating higan cherries and it is probable that they do best grafted on seedlings of the same species. Pendulous varieties will be found difficult to grow as standards in young stages and require careful staking. When top grafted they may get one-sided which may be obviated by using two scions in a cleft graft.

Yoshino and Its Varieties

Yoshino or *Prunus yedoensis* is sometimes called Joshino in Britain. This is a vigorous growing, early, single flowering cherry making a large tree in a very short time. It grows well on *P. avium* stock and the autumn color is good. For a detailed description see the U.S.D.A. bulletin by Russell, who claims it will come true from seed though we find young trees to be so variable in habit and flower that it is wise to propagate vegetatively. On good soils it makes long growth which should be thinned out, properly spaced, and tipped back regularly to make lateral growth, otherwise it is apt soon to grow out of hand making lanky growth with few laterals, like the sweet cherry. We note that the long flowering stems of Yoshino give it a lovely light effect when in full bloom.

Yoshino is considered to be a hybrid between the *Prunus serrulata*, from which most of the double forms of Japanese flowering

cherries have come, and *Prunus subhirtella*. There are a number of variations and hybrids of Yoshino, some of which might be worthy of trial.

Akebono or Daybreak is a pink flowered form of Yoshino. Clarke says it is one of the most beautiful varieties, grows well, makes a good sized tree and blooms freely before leafing out. Specimens in Victoria, obtained from both Clarke and the Yokohama Nursery, lack vigor. Growth is slow and poor so far. It may be that it prefers a warmer climate although Wohlerst in Pennsylvania says that it is similar in habit to Yoshino with larger flowers of a deeper pink shade. We note it is free blooming like Yoshino but the floral effect is bunchy because of the short $\frac{1}{4}$ -inch flower cluster stalks.

The variety *perpendens*, sometimes called *pendula*, grows straight into the ground and does not impress us favorably. Ingram says the flowers are smaller than the species and it is not so beautiful as the original tree. *Praecox* is a variety supposed to be three weeks earlier than the type, according to Wada. Ours make a very late semi-pendulous growth. The trees were as green at Christmas, 1941, as in midsummer and we find those which make such growth do not give good floral displays in the spring. The wood is apt to be injured too easily by winter weather. *Pandora*, a double form of English origin, is a cross between Yoshino and *P. subhirtella*. Grown by Waterer of Bagshot, England, it received an Award of Merit from the R.H.S. The flowers are short stalked, rosy blush, single and of medium size.

Shojo, described by Wada as a double form of Yoshino, is classified as a varietal form of *Taizan-fukun* by Ingram in the R.H.S. Journal, 1935.

Taizan-fukun, a hybrid supposed to be of similar origin to Yoshino, is very useful for avenue planting. Several specimens grow on the road to Mr. Butchard's Gardens in Victoria. The young foliage emerges a brown shade and fall color is good. The tree assumes a vigorous upright habit with a head probably 12 feet wide. The following are condensed notes from various authorities: It is a magnificent ornamental, best described as a fragrant double form of the well-known *Amanagawa* but with more branches, giving

it a fuller appearance. Ingram reports it to have a semi-fastigiate habit with clusters of very double, pale pink flowers with pubescent pedicels and foliage as in *P. Sieboldi*; foliage is rather narrow and small, golden bronze when young; the bark is somewhat rough, sometimes peeling on young trees. Clarke says it is particularly valuable where space is limited; the flowers are rather small, but freely produced.

The Cut-leaved Types

Fuji-zakura, Fuji or cut-leaved cherry, *Prunus incisa*. This tree is also known as the Pygmy cherry because it is a favorite among the Japanese for dwarfing purposes. It resembles *P. subhirtella* but has a bushy habit. It is said to develop fast, trees trained as standards growing 10 feet to 15 feet in five years. It may make a small, elegant tree 20 to 30 feet high though more often it is a thickly branched bush 6 to 18 feet. It is extremely free flowering though the flowers are small, like those of *subhirtella*, and rather fleeting. The buds, calyx and flower stalks are red and the red calyx is extremely persistent giving a wine color to the center of old flowers. Little mention is made of the excellent autumn foliage in literature. Altogether we like this cherry very much. Ingram has this to say of it: "It has many virtues. It is completely hardy, very floriferous and has neat birch-like foliage with deeply cut, double serrations. *Incisa* is useful for hedges, tolerant of shade and will stand heavy pruning. A sturdy, stocky little tree, whether in sunshine or in shade, it is always happy and cheerful. Nothing seems to daunt its determination to flower and each spring it completely clothes itself in snowy blossoms. At a distance the flowers often appear pink due to the red cupula and calyx merging with the white petals creating a soft pink effect."

The variety *viridi-calyx* has a green calyx, hence the floral effect is snow white. Growth is vigorous and upright. Fall color very good. Rehder calls it *Yamadei*. *Serrata* is a variety with less deeply serrate leaves which Ingram says is so indistinguishable from the type as not to justify a varietal name. There are several hybrids of *incisa* produced by Ingram. *Umineka* (Seagull) A.M., R.H.S., 1928, is crossed with *P. speciosa*. Extremely

(Continued on Page Thirty)

"Fate, Incorporated—Landscape Architect"

By NOBLE HOGGSON

"A YE TANK ve get a bulldozer now," said Oleson, as he scribbled on a board with a pencil stub. Our contractor had already cut our Tudor castle down to a suburban hillside cottage, but the thought of this snorting monster, trampling our treasured ferns at fortunes per hour, terrified us. No sooner said than done, however, for in a couple of days our "view lot," with its precious madrona, two dogwoods and scattered small firs, was a mass of devastation. A yawning hole, seeming far too large for our tiny house, occupied most of the lot including one of the dogwoods. A stupendous pile of gravel and chunks of clay covered the lower hillside and dribbled rocks onto the street below. Our elderberries, wild spirea and hazel were pushed flat by the avalanche while our poor ferns, Oregon grape and groundcover lay forever buried.

Finally our foundation was completed and quickly the house took shape. A load of lumber was dumped squarely on our lone huckleberry and the concrete truck took a lower branch and two square feet of tender bark off the madrona. However, the house continued to go up as did the piles of board ends, shingles, broken brick, plaster chunks and empty paint cans. One day without warning the monster returned and, in less time than it takes to tell it, shoved all the trash (and what little topsoil we had fought to save) into the gaping canyon beside the foundations. Still it was a great relief to be able to again walk on fairly level ground even though a sea of mud, and we now had high hopes of getting settled before Christmas.

That turned out to be a rosy dream indeed, but after "unavoidable" delays and inexcusable extras we finally moved in. The painters weren't quite through, and one morning while in my shower, I was shocked by someone starting to take off the bathroom door for a minor repair. But dust and wet paint or not, we were at last in our own home. Of course the mud tracked in by the children didn't do our new rugs any good and our nice hardwood floor began to show premature sand scratches near the doors. A lawn in the spring would fix that all right, but meanwhile the

winter rains were cutting great canyons and ravines in our "game lawn" bank. We were afraid the city would complain of the growing dune of silt on the lower street, so we looked up a rock man. His price seemed staggering after our recent extras but something had to be done. The completed rockery wasn't as artistic as we had expected, but those great empty spaces between the rocks (plant pockets he called them!) would look better when filled with a mass of bloom—we hoped. Due to the condition of the soil he had to use more "batter" than he had planned, but it wasn't 'til the following summer that we discovered that the additional batter made our only level lawn just five feet too narrow for the badminton court we had always wanted.

The winter rains settled the dirt around the foundations, pulling the drains loose from the downspout, flooding the cellar, and leaving a long depression across our front "lawn" where the water pipe trench had been. We discovered also that the rubbish in the backfill is no fit soil in which to plant the cute little evergreens which we bought one Saturday at a hardware store. Moreover a small piece of shingle is one awful thing to try to dig through, and there were lots of them. Years later we discovered another mistake when we had to cut a tunnel through those "cute little evergreens" to be able to reach, if not see, the front door.

Next spring, just after we had put in our lawn—not too good a job, but fair for amateurs—a friend sent his sprinkler man over, and his arguments were so convincing that we allowed him to crisscross our tender new lawn with trenches. Now at last we could sip our drinks at ease while the lawns watered themselves. We could not have had this luxury if the job had been as expensive as the other sprinkler man had claimed. But later in the summer, when we showed our man the brown, dry triangles between the heads of the sprinklers which impudently protruded inches above each green oasis, he said it wasn't his fault as we really didn't have sufficient pressure! I suppose he was right.

During a hot week in May I returned one evening to find our still rather barren "rockery" studded by tired little plants. "They are

our State Flower" claimed my wife proudly. "A man drove up in a truck and offered the entire load at a terrific bargain. Of course they looked a lot smaller after they were unloaded, but he offered to plant them himself, and he was such a nice man." A surprising number of them lived, but we never saw the man again.

The madrona slowly died, not so much from the scar on its trunk, as we learned from a radio authority, as from the fact that our badminton—I mean our mumblety-peg lawn—had been filled three feet over its roots. Anyway, the expense of taking out the stump seemed definitely worthwhile, as the house was originally placed so the madrona stood right in the way of our end living room window, and our view had existed only from the upstairs bathroom. Other shrubs we put in didn't do so well and the stores claimed they starved to death and refused to replace them.

All in all, we saved quite a bit on our original house and grounds although we had hoped Mother Nature would do a bit more to heal our wounds, than the bracken and thistles she planted. We never did get a satisfactory place to dry clothes and we were a bit ashamed of our garbage cans when our privet got leggy. It seemed we had spent a great deal on fertilizer for the lawns as well as manure and peat moss for the flower beds. Sometimes I wondered if the place had been as cheap as we figured, and thought I would some day go over our gardening bills for the years since we moved in. I was afraid we would have rather a rude shock.

The shock, however, came in an entirely different form. Last week-end we visited the Johnsons who built shortly after we did. They proudly displayed a most amazing colored plan, done by a man they called a landscape architect. It showed the lot and everything on it. A little screened service yard for the clothes line, garbage cans and kitchen herb garden was tucked around behind the kitchen porch. A game lawn (full size) was provided with a simple brick grill in the corner, and a tiny little flower garden with stepping stones and a rose arbor lay on the sunny side of the living room wing. Every tree and shrub was named and located exactly, so that no matter when it was planted, even years later, it

(Continued on Page Thirty-Two)

New Hibiscus

By WILLIAM H. HENDERSON

THE GENUS *Hibiscus* contains approximately 150 species widely distributed throughout the world, in Africa, Asia and North America. It is allied to *Gossypium* (cotton), *Abutilon* (flowering maple) and *Althaea* (hollyhock). The seed pods of *Hibiscus esculentum* (okra) and the fleshy calyces of *H. sabdariffa* are valuable for food purposes.

The genus offers great possibilities to the plant breeder mainly because it includes species that are so resistant to cold that they are grown with ease throughout most of the United States. They are affected by no serious diseases and are peculiarly free from insect attacks.

Some 16 years ago the writer became interested in hybridizing various species with the thought in mind to increase the size of flowers, range of colors and general hardiness. Work was started with the following species: *H. militaris*, which grows to a height of six feet and produces three-inch flowers of white or pale rose; *H. Moscheutos*, growing to a height of five feet with four- to five-inch flowers of light rose; *H. coccineus*, five feet tall with large five- or six-inch flowers of bright rose red. These species are all herbaceous perennials.

After a period of five years, during which time approximately eight thousand hybrid seedlings were grown and tested, eight named varieties were introduced. These include Fresno, a variety with eight-inch flowers of richest, satin pink set off with a burgundy-red center; Mammoth White, a variety producing ten-inch flowers of pure white, faintly striped with pale rose and having a dark red eye; Radiation, with nine-inch blooms, flesh pink in color with rose stripes and a dark red center; Crimson Wonder, with its ten-inch cerise-red bloom, self-colored; Giant White, with a deep red center setting off the broad, pure white, eight-inch flower; Raven, deep, rich maroon, self-colored flowers seven inches in diameter; Clown, which produces an eight-inch bloom with a deep red center and a white ground color and with each petal heavily blotched at the tip with cerise rose; and Satan, producing seven-inch flowers of

rose red which most nearly approach the red of the tropical *Hibiscus Rosa-sinensis*.

Several new varieties have since been introduced and the work of improvement is still being carried on. These new hybrids are among the most easily grown of all perennials and require only sufficient space in which to develop. For best results good drainage is essential as well as a location in full sun. It is not uncommon for a plant to produce several hundred flowers in the first season of its bloom.

All the varieties are propagated by root division somewhat similar to the division of dahlias. They may be planted from November until the middle of March. First year plants usually start to bloom in early July and continue until October. The following seasons will produce blossoms three weeks earlier.

The hibiscus varieties delight in a well-drained, rich soil and should have plenty of water after they have made about 18 inches of growth. Each fall after blooming they should be pruned to within three inches of the ground. The clumps increase in size each year and, unless they are being used for hedges, they should be spaced at least four feet apart. They are useful as flowering shrubs or for the rear of the perennial border where four- to six-foot, bushy plants are needed.

One of the most interesting experiments recently made was the crossing of these large-flowered hybrids with the species *H. mutabilis*, a tree-like form which gets up to 15 feet and produces three-inch, white flowers from September until frost. The leaves on this type are large and maple-like in outline. In the first generation resulting from these crosses the following results were noted: plants bearing large flowers of rich, carmine-red, six inches in diameter, with individual petals three inches wide; other types with large, cerise-pink flowers; specimens which produce pure white blooms; a lengthening of the blooming season by at least two months.

Other experiments involving new species are under way. Some of these include crosses with *Althaea*, with the yellow-flowered *Hibiscus Manihot* and with the beautiful, popular tropical form *H. Rosa-sinensis*. Tests are also

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Camellias

By MRS. DONALD G. GRAHAM

THE subject of camellias—often times called the “Rose of Japan”—is a comprehensive one, since there are many recognized and accepted species as well as hundreds of plant and bloom varieties. This aristocrat of horticulture, whose history extends back almost two centuries, has within the last 12 or 15 years regained a lot of its old prestige here in the United States. Hundreds of large specimens, purchased from old gardens in the South, have been transplanted onto estates in other parts of our country, especially in the South. As much as \$2,000 has been paid for individual plants, while \$500 to \$1,000 is not an unusually high price for a large, well-shaped specimen of good variety. Another manifestation of renewed interest in these beautiful flowering plants is the number of camellia shows held in the South within the last few years and which thousands have attended. California, too, has had consecutive camellia shows, the attendance increasing from 300 the first year to well over 12,000 some eight years later.

This renewal of interest can well be understood when we see the exquisite beauty of the flower. It is difficult to find any word other than “perfection” to describe it with its certain stiffness—its frigid elegance.

This plant was first made known to the Western world in 1682 by Kaempfer—one of the first great botanical explorers—after he saw them as great and lofty trees growing in the open mountain forests of Japan. In its native country, the single form of the common camellia was abundant in the woods, thriving in the shade of other trees—growing slowly but often reaching 40 feet in height, with a trunk as thick as a man’s body clothed with a perfectly smooth, gray, thin bark. And though those trees were rarely without flowers, they were in full bloom in April. These wild flowers seldom opened flat but were more or less cup shaped and perhaps for this reason were less valued for their beauty than for their fruit, which was gathered in October and pressed for its oil, which was in great local demand. It is said that the oil obtained from the seeds of *C. Japonica* was used by the Japanese women for dressing their hair. The fruit is the size of a small,

hard apple, a bright, shining, green color and ribbed like a tomato. When ripe the rind splits open, showing brown seeds which look like coffee beans.

How long before 1682 these shrubs had been growing in the gardens of the wealthy natives we can only guess, but we do know that by the year 1739 they were being grown in the English gardens of Lord Petri. In its native land this plant was known by the name “Tsubakki.” It was in England that it was given the name camellia, named after George Joseph Kamel or Camellus, a Moravian Jesuit priest, who, upon his return home from his mission in the Philippine Islands, introduced several of these plants into Europe, having secured them at a Chinese port. Lord Petri was supposed to have bought two of these plants. Many years following this the sailing ships of the old East India Co. continued to bring choice varieties from Oriental gardens to England. Gradually, they appeared in Belgium, France, Germany and Italy, where horticultural experts of each country proceeded in course of time to produce from the original strains of white, red, pink, single flowered sorts, the hosts of marvelously beautiful doubles, semi-doubles, peony and rose-type flowers in all manner of rich reds, pinks, streaked and variegated colors through to the purest white. Very few double flowering camellias were brought from the Orient.

After the first double flowered camellia was obtained, those with single flowers unfortunately fell out of favor and came to be used mainly as stocks on which other varieties were grafted and it is only of recent years that a renewed taste for them has arisen. Many authorities felt it was a mistake to adopt the double flower to the exclusion of the single kind, as they doubted the double flower an improvement. In fact, the single camellias are more beautiful in their coloring and their varied depth of flower surface.

By 1860 there were more than 1,000 horticultural varieties and many publications were being offered with beautiful colored prints of the flower.

After the pioneer work in England, that of Italy comes next in importance. The first camellia tree there was planted at the Palace of Caserta. From this tree at Caserta seeds were sent to Florence to the garden of Count

Bourtoutlin. From 1830 to 1860 many growers were at work and together raised more new varieties than any other European country.

These varieties passed quickly into the hands of Belgian nurserymen. It was Belgium that imported a variety which was later named after Doncklaar, director of the Royal Gardens of Gand. This variety was called *Doncklaarii* and *Doncklaarii Elegans*. Belgium, owing to the skill of her propagators, will be remembered mainly as the principal distributor of the camellia.

The leading enthusiast in France was Abbe Berlese, who in 1819 raised 100 plants from seed from the above mentioned famous tree at Caserta, Italy. It was in France the camellia scored its greatest social success. The Beau Brummel of the day made all his public appearances with a camellia in his button-hole.

The first record of a camellia planted in the United States is a single red variety which was planted at Charleston in 1804.

At first camellias were treated as greenhouse plants. In Victorian days, they were grown in conservatories. One such house in Hatfield, England, no less than 300 feet long, was at one time entirely devoted to camellias. It was said by one writer that the greenhouse has done us few worse wrongs than by spreading the idea that the camellia is a tender shrub. Its culture was so common in pots that little thought was given to it out of doors—yet it is hardier than many of our common evergreen shrubs. They have the advantage of standing a great deal of shade and drought. They produce a succession of bloom, so if frost should kill one lot of flowers, another set replaces it. In their wild home in the forests of Japan, they are said to grow only where they are provided with perfect natural drainage and the overhead protection of large sheltering trees.

Location

Plant camellias on the north or east side of the house or near protecting trees where they will have a position of filtered sunshine and protection from short snaps of late frost and cold winds. When planted on the east side of the house, care must still be taken that the early morning sun following a night frost does not burn the buds and new growth.

For ordinary gardens, places that are sheltered by either walls, trees or tall shrubs, if possible, should be chosen for camellias. They must never be planted in an exposed place.

Soil and Drainage

The most suitable soil for camellias shows no alkali but enough coarse sand to allow good drainage. Any soil in which rhododendrons thrive will produce good camellias. Given this congenial soil, good drainage and shelter from winds and shade from excessive sunshine, the plants will not fail to thrive and give every satisfaction. These three factors are important, but camellias also like a good diet and quickly respond to an animal top dressing of rich farmyard manure about February. Lime and bone meal should be avoided at all times. When planted in soil that has been undisturbed for a long time, the ground should be trenched to a depth of 1½ to 2 feet. If the soil is stiff or clayey, then put a sufficient layer of rocks or other porous material in the trench to assure good drainage.

Watering

Although they do not require an excessive amount of water, they must always be provided with an even and constant supply. Failure to observe this precaution will result in their dropping buds and sometimes leaves. Best results are from careful and regular use of water in spring and early summer followed by a rest period throughout July and August with a gradual increase of water again in the fall. A great deal of water will be needed at blooming time. After hot, dry days the sprinkling of foliage in late afternoon or evening is a good practice.

Pruning

No systematic pruning is required beyond what may be necessary to correct an ill-formed or ill-balanced shape, and this pruning, if necessary, should be done immediately after the flowering time is over. Flowers should be cut sparingly when plants are small and then only with very short stems. Never break blossoms off the plant. Dead blooms should be picked off to keep the plant from going to seed.

Insects

Camellias are singularly free from serious attack by insect enemies, and they suffer from

but few diseases. Some kinds of scale insects will infest them and thrips are occasionally troublesome. Scale may be readily destroyed by spraying with oil emulsions and thrips by a nicotine sulphate solution and soap. If attention is given to drainage, there will be few diseases or disorders to worry about.

Propagating

Camellias are commonly grown from seeds, cuttings and occasionally by grafting or layering.

Seeds

They may be planted in any good soil in a cold frame to which acid woods mold or peat has been added—work a 3- or 4-inch layer of this peat into the top soil of the frame to an 8- or 10-inch depth. The frame gives an opportunity for partially shading the young plants and for protecting them in the winter. Water carefully. A mulch of leaves, an inch or two thick, is very helpful in preserving even moisture in the soil. Seeds sown in the early spring should be 6 to 16 inches in height by autumn.

Layering

This was the popular method of propagating by the Japanese in the early days. Select suitably placed branches—bend down to the ground—cover them over and leave until they root so well they can be taken away as independent plants—a growth of one year is best. The branch is pegged down so it cannot move. The tip is bent upward and tied to a stake. The best covering is peat moss which insures an even moisture.

Cuttings

This is the best way to propagate the species *Sasanqua*, and the most popular way to propagate all camellias. The tips of well-grown and hardened shoots or branches of the current season's growth give best results. These cuttings, made from July to November, are usually 2½ to 3½ inches long. Plunge them into clean, cool sand until calloused, which takes a month to six weeks, and when well rooted, set out into small pots in a compost of sandy loam and leaf mold or peat. Watch well that they do not become root-bound.

Grafting

This method is seldom used except by experienced specialists, then veneer grafting is

the method generally used. At the point where you decide to do the grafting, cut about half way through the wood and downward about one-half inch. Cut it out so as to leave a V or a ledge at the base. Shape the base of the scion to fit this space and make a flat surface upward along its side so that the flat surface of the scion will fit flush with the flat surface of the stock. Bind together well with thread or a fine grafting twine. Keep in a greenhouse at a temperature of 60 to 65 degrees with humid conditions and well shaded. In a few weeks gradually accustom the plants to more light and air.

Species and Varieties

In 1860 there were a thousand varieties of camellias—today there are many more—so many that it is quite confusing for the ordinary person to make a choice. Even among nurserymen there is a great deal of confusion as to the correct names. This means that if you want to be sure to get the right varieties, the wise thing to do is to buy from a recognized grower who has had many years of experience.

There are a number of species, but the best known kind is *C. Japonica*. There are some 1,500 hybrids of this species alone, many of which originated in Kew Gardens—the famous arboretum of England. It is the species most generally planted and has been known to grow to a height of 40 feet. So freely are the flower buds produced, it is advisable to disbud if larger flowers are desired. The leaves are shiny and very dark green. The best varieties of this species are: *Chandleri Elegans*, double pink variety; *Doncklaarii*, a deep crimson semi-double with white marblings; *Latifolia*, large deep red; *Magnoliaeflora*, semi-double, flesh pink; *Alba Plena*, full double flower, clear crystal white; *Lady Humes Blush*, double white, flaked with delicate pink; *Lady Clare*, perhaps the finest of them all, with large, semi-double pink flowers.

An interesting sidelight on this species *Japonica* is that it was regarded with superstitious awe by the Japanese warriors in the early days. To them the red color represented blood and the flower, fallen from the plant, suggested a human head severed from its body; to these warriors it symbolized their

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"He Who Plants a Rose Plants Beauty—"

By EARL WILLIAM BENBOW
Secretary, Seattle Rose Society

WHEN the first white men visited the Puget Sound country, the native Rosa nutkana or Nootka rose extended its hospitality and vied with the wealth of the forests in promises of futures to be realized by them. Little did the pioneers dream that our ideal climate with neither extremes, a long growing season and abundant humidity would offer to this native's relatives the opportunity to flourish perfectly in a rose paradise. Now to our Charmed Land have come tramping the rose relatives of all the wide world to extend the blossom time from early May through the last of October leaving little more to be desired by the rose-wise gardener. Eventually to our Arboretum will come some day all the roses of the world and find here a haven for their finest achievement.

Rose culture is rooted in our native passion for beauty. Dean Hole once wrote: "He who would have beautiful roses in his garden must first of all have beautiful roses in his heart." This urge for beauty finds its expression in the willingness of men to dig and plant, hope and trust, adore and share the glories of the queen of flowers. The rose has been the object of devoted cultivation by rich and poor for centuries. Beside the humble English cottage or in the magnificent rose gardens of the Empress Josephine, human kind has worshipped the rose as the acme of beauty. It is one flower by which all others are judged. Because of its adaptability, wide variety of beauty, color and perfume, its range from low bush to tallest climber, the rose offers the gardener a wealth of material that has kept pace with progress.

The ease of growing roses in our favored Northwest should be stressed until every doorway has its full quota and every avenue and street is filled with its beauty. Too often the rose has suffered from its friends. In their eagerness to forward it, they have prescribed for every possible enemy that may befall the plant. But like humans, the average rose plant if given a chance to be well born, that is, of healthy stock when propagated and sanely planted in any good soil, will survive the seasons and provide satisfactory reasons

for existence. And like most people the rose will round out its normal span of life with the minimum of grief. For these reasons we should wed our Lady Rosa with the wide combination of favorable factors under which we live and the result will be that it will achieve here that outstanding reputation for perfection which is well deserved.

Time of Planting and Fertilization

In the Puget Sound country, fall planting in November and early December is normally preferred with February and March next in order. By all odds, the two-year-old budded plants, field-grown with a well-balanced top and root system, are the best insurance toward success. Pruning should be reserved for the second week in March to avoid the late frosts; stems should be painted with some tree paint to seal the cut ends. Moderate, not too severe, pruning down to live wood and to an outside bud, leaving three or four good canes, will give a maximum of bloom. Roses deserve all the advantages we can supply them, such as planting in full sunshine, soil enriched with humus and manures and plenty of water in the growing season. One can fertilize satisfactorily either by applications of fresh cow manure on the surface right after pruning (supplemented with a handful of phosphate and another of potash for each plant, all watered into, and eventually spaded into, the top soil) or by a judicious use of commercial, chemical fertilizing agents. Newly planted roses should not be fertilized their first year. Like a medicine, it does not follow that if a little is good, a great deal will be much better. Wisdom is justified of her children and in the nature of results it is wisest to be careful of overfeeding the rose plant with chemicals. Given some reasonable care in warding off the aphids and chewing insects, no plant is more generous with its lovely blooms than is the rose.

There is no rationing of roses today except for the man who buys late in the season. Let that be a warning to him who wishes a choice selection of the best plants available. One can find a rose suited to every person and to every situation, even the shady nook. Does madame adore the charm of the single roses or the perfume of the older hybrid-perpetuals or damask? Does one insist on lots of blooms or is one, perchance, willing to sacrifice quan-

tity for quality and purify his soul with the larger, exhibition type where size and form speak of heavenly things? There is a wealth of variety in the rose such as one does not find in another flower. In the great rose nurseries of America are gathered the assortment of rose species which form the background of the genus *Rosa* and these in themselves are beautiful as accents in the shrubbery border. When will we ever appreciate the species rose for its qualities of hardiness, grace, abundant bloom and winter color of fruit and twig! The hybridizer dreams of new creations that shall come from future crosses within these natives of the North temperate hemisphere and perhaps in our own Washington Arboretum we shall some day possess an adequate collection of these interesting types. One American rose firm alone offers 90 distinct varieties as available.

Near perfection can be attained with practically every rose in our Puget Sound climate with the exception of the more tender teas and those with a high count of petals. These need the heat to do their best. Our most popular rose is the hybrid tea—a combination of the blood of the older hybrid-perpetual and the monthly blooming tender tea rose from south China. For 40 years, they have kept the rose world on tip toe with the new combinations of color, form and fragrance. Many of them can be grown to exhibition form. But a new contender for popularity in the decorative classes is the newer polyantha rose—at times called floribunda. With blooms mainly single or semi-double and abundant and continuous performance, these jaunty varieties are stealing the show, their large size being such an improvement over the older polyanthas. Yet there is one class of roses that can provide the thrill in May and June which stops everybody. These are the large flowered, everblooming, climbing hybrid teas from which dozens of choice long stemmed beauties can be cut at one time; their fall crop is rewarding too. Were I to plant just one rose, it would be a climbing hybrid tea.

At a meeting of the Seattle Rose Society in the autumn of 1941, qualified rosarians listed the roses best suited for the gardens in the Puget Sound area; those which assure the gardener of maximum pleasure. Naturally

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The Heaths and Heathers

By ARTHUR P. DOME

AS THE NORTHWEST is becoming noted for its adaptability to the different varieties and species of heaths and heathers, it is of value to know more about the care of these plants and to become acquainted with the better types. It is a known fact that, with proper selection, one can have heather in bloom all the year around.

For those not acquainted with these plants, it might be well to tell of the generic differences that characterize the different types. The word "heather" is the name commonly given to all forms of *Bruckenthalia*, *Calluna*, *Erica*, *Daboecia*, *Phyllodoce* and *Cassiope*. To be specific, the "heather" is only one genus, the *Calluna*, which has one species, *vulgaris*, but many varieties. Other names for the *Calluna vulgaris* are the "Ling" as in England, or the "Scotch Heather" of Scotland. It is distinguished by scale-like leaves which are opposite and form four rows on the stem. The flowers are single, about two or three millimeters long, or double, as in the newer varieties. They are produced in mass profusion on long slender spikes. The *Erica*, which is the true "Heath," is the other important genus and contains over four hundred named species and many varieties, of which only 15 or 20 may be grown out of doors here. This genus is distinguishable by the needle-like leaves which generally vary from three to five per whorl. The flowers are larger than those of the *Calluna* and in the hardy species and many South African ones, the corolla is larger than the calyx, a feature which is reversed in the case of the *Calluna*. The flowers of the *Erica* usually appear in umbels, racemes, or psuedo-spikes and develop in abundance on the plants. The *Bruckenthalia* has just one species, *B. spiculifolia*, which has pink flowers and blooms in the spring. The *Daboecia*, sometimes called the Irish Heath, is quite common in the Northwest, though not so important. Of its three species, the most beautiful is the *D. Azorica*, a very outstanding plant. *Cassiope* and *Phyllodoce*, the heather of our mountains, are of no significant value except in a collector's garden.

Here in the Northwest we are mainly interested in how heaths can be used in our gar-

dens, although in the past they have been used for medicinal purposes, for brewing an ale, for making a yellow dye, for roofing and even for tobacco pipes. Heathers are used most effectively in rockeries where they can be easily established. In planting a rockery with heather it is better to plant out in the open, rather than in small depressions or gullies, for the heather does not like to be "cuddled." One should take into consideration the amount of moisture in the different parts of the rockery and how hard it will be to water. This should be done in order to plant the proper species of heather where it can make the best of its soil conditions. The chances are that the upper portion of the rockery is much dryer than the lower. In this case it is a good idea to plant drought resistant heaths such as *Erica cinerea* and varieties near the top and, at the bottom where the soil is moist, the species *Erica tetralix*, *E. ciliaris* and some of their allied hybrids. Hillsides are excellent places to naturalize heather. Large masses of plants make attractive drifts of color. In one of the residential parks north of Seattle there is quite a large hillside planting which is a sight one will not forget. In these kinds of plantings, one must also make note of the moisture conditions if water is not available. Dwarf and compact heathers can be used with great success as edgings or for minute formal hedges, thus doing away with the dull, old-fashioned boxwood hedges. The winter blooming *E. carnea* is very effective under deciduous azaleas and rhododendrons that are planted out in the open. They keep the root-run cool during the summer and when the branches are bare in the winter the heaths will be blooming. Most heaths and heathers may also be used as ground covers; or some may be used as windbreaks, in which case they must be planted in groups to afford mutual protection; others make good cut flowers. Where the space permits, heather plantings can be made much more attractive by placing several plants of the same variety in a group so as to give a mass effect, as one might see in the moors of the British Isles.

The heaths and heathers thrive best in full sun where they can be exposed to the elements but the less-hardy species like a more protected spot where the wind that strikes them will not be cold. Do not plant the tender

heaths in air-pockets or places where the air is not in motion during the cold seasons. Where the air is in motion there is less chance of damage from severe frosts. Planting *Ericas* and *Callunas* in damp, shady places will tend to make the plants soft and will lessen their resistance to mold and mildew. Heather can be planted under trees if the lower branches are high enough to insure sufficient sunshine. In general, the heaths and heathers will thrive in a lime-free soil, but as one becomes acquainted with individual species they will find what degree of acidity and alkalinity each will stand. Heathers like a moist, well-drained soil that can be easily aerated. A good general soil mixture is one-third sand, one-third peat and one-third well-rotted leaf mold. If your soil is very sandy, you will find that digging in some leaf mold and peat will give you a better medium. If the soil is boggy and contains a lot of peat, you will find that digging in some loam and medium-coarse sand will do a lot of good. Sometimes the soil is heavy with clay. In this case do not dig out all the clay and replace this with a more desired medium, unless you can drain it properly during the rainy seasons. Doing this will form a basin for the water in the adjoining soil to flow into, thus making the earth in the desired location sour, waterlogged and worse off than ever. Instead, just dig into this clayey soil an abundance of sand and leaf mold. For those who are not able to do this, a knowledge of what soil the different species will tolerate often comes in handy. Mr. Duane O. Crummett, superintendent of the Arboretum greenhouses, made a soil test on heather in which many different soils were tried on many different species. The results were outstanding and the data has been published in a previous number of the ARBORETUM BULLETIN. For a more general key to the soil, the following information may be helpful. If the soil is hot and sandy you can, by adding a little peat, establish the *Erica cinerea* and its varieties which are drought resistant. If the soil is very damp and peaty, you will find that *E. tetralix*, *E. ciliaris* and the hybrids of these two species will do very well. *E. arborea*, *E. lusitanica*, *E. australis* and the *Callunas* will be found to thrive in a lime-free loam. *Erica carnea*, *E. terminalis*, *E. mediterranea* and *E. vagans*

will tolerate a heavy, limey soil but will do better without it.

After people have planted heather they often wonder if they should fertilize their plants. The best way they can help is to give them a good mulching in the spring and to water well during the growing season. It is best to use well-rotted peat and leaf mold or a mixture of both when mulching. When the plants are slow in getting started, they can often be speeded up by aerating the ground and watering with a solution of ammonium sulphate and Vitamin B₁.

The pruning of *Ericas* and *Callunas* is very important because, in many cases, it is the only difference between a beautiful specimen and one that looks very bad. It is often said that you should prune these plants right after they finish blooming, which in many cases is early fall. It has been found much safer to leave the pruning of *Ericas* and *Callunas* until the spring because pruning in the fall tends to force out a lot of soft, green growth. The chances are that this growth will not have time to harden up before the frosts come and it would therefore get nipped. If all the growth is left on the tips would be killed in case of frosts and in the spring these will be cut away in the regular pruning after all danger of a heavy frost has passed.

Choosing heather now is much more interesting with the many newer varieties that are available. *Erica carnea* and its varieties bloom at an important time of the year, from late November to April, when most other plants are dormant. Springwood White is probably the most popular variety of *E. carnea*, mainly because of its bright green foliage and the abundance of white flowers that are larger than the type. A newer form is the Springwood Pink which is similar to the white variety in habit but has dainty pink flowers. Both of these plants should be planted on banks or over rocks because their prostrate habit does not enable them to show off their flowers on level ground. Another new and rare variety is Snow Queen. It has white flowers and a semi-prostrate habit, thus enabling it to be very useful on flat ground. The *E. car.* King George is quite well known in the Northwest and is the first of the species to bloom. When it first begins to flower it is a pinkish-purple and as the weather gets

colder the blooms turn darker. A few other varieties of *E. carnea* worthy of mention are: *Gracilis*, with rich pink flowers; *Ruby Glow*, a bright red, and *Vivellii*, which is unusual because of its ebony-colored foliage.

Another species that comes into bloom in the middle of winter is *Erica mediterranea* in which the different varieties grow from nine inches to six feet. The tall growing varieties, the *superba* and *maxima*, are not as popular as the low-growing forms. The two best are the *E. med. hibernica* *Brightness* and *alba*. These plants are of upright growth, reaching 24 and 9 inches, respectively. *Brightness* has rosy-lavender flowers that cover the entire plant; *alba* is just as floriferous and, of course, is white.

About the first of February the tree heaths begin to bloom (a little later if the weather is cooler) and they continue until the middle of May. The most satisfactory tree heaths are the *Erica australis* and its variety *Mr. Robert*, but more gardens have either *E. arborea* or *E. lusitanica*. *E. australis* has large, pink flowers that come in such profusion that they are often sold as cut flowers. This plant, like its variety, will grow from six to eight feet unless it gets frozen back, for it cannot stand weather colder than 15 degrees above zero. The variety *Mr. Robert* is even more floriferous than the type and its white flowers are still larger.

Erica umbellata is the heath needed to fill the gap between the time when the *Erica carnea* and *mediterranea* finish blooming and when *Erica cinerea* begins. It has a light green, feathery foliage with lavender flowers that are broader than the usual hardy varieties.

Erica cinerea and its varieties constitute one of the best single groups of spring and summer-blooming heaths. They are in bloom from late April to September and are one mass of color all during this period. They usually grow from three to twelve inches but down in Portland this past summer I saw one approximately two feet high. There are quite a few good varieties of *E. cinerea* and we'll do well to mention only a few. Probably one of the most outstanding is *Golden Drop*. This is the best golden-colored plant of either *Erica* or *Calluna*. It will grow only three

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Rock Garden Plants

By MRS. L. N. ROBERSON

A CITY as hilly as Seattle will always have rock walls and rock gardens and for these there is an amazing variety of material available. We are all familiar with the yellow alyssum, the purple aubrietia and the white arabis which do so well and flower so prolifically in even the steepest of rock walls, but we are not all aware that their season may be prolonged and the scene varied by selecting different varieties of aubrietia to give a color range from pink to red and from lavender to purple. The season of bloom can thus be stretched over a much longer period than with only one or two varieties.

Alyssum, also, has many varieties but only a few worth growing. The light form, *Alyssum saxatile citrinum*, is delightful when combined with the light colored aubrietia.

Following these very early plants the creeping phlox paints the rockery with a lavish hand. Lavender, red, light blue and white are the colors most easily obtained. One of the most pleasing of combinations is Phlox Blue Hills, a smoky blue, with Phlox Camlensis, a clear pink. A less well-known plant, *Erysimum pulchellum* or Oregon Sunshine, provides a brilliant yellow or orange companion for the red phlox if one has a desire for splashy coloring.

For later effects, the Persian candytuft in its various forms, all having pink or lavender flowers, usually looks well near the azure blue of *lithospermum*. The latter may die back in such a winter as we have just experienced, but often grows up lush and healthy from the roots if not disturbed. Cutting off the dead top should be postponed until warm weather. Another blue-flowered plant which makes a suitable companion for Persian candytuft is *Globularia cordifolia*. Its small leaves hug the ground and are surmounted by myriads of light blue balls in late spring.

Still later, the rock roses or *helianthemums* open their sheets of blossoms to the sun. Wendel's Rose is one of the loveliest of these sun-worshippers. Its gray foliage will often be completely hidden by the large shimmering pink flowers. The double red and double yellow forms make up for the smallness of

their blossoms by the showiness of the little pompon-like flowers. Another lovely color form is Brunette, whose flowers shade from apricot to orange-red and are borne in as great profusion as are any of the others. An occasional white-flowered plant among the others provides an interesting note of contrast.

Old-fashioned pinks and carnations seem out of place in a rockery because the foliage is too gross and the flower stems are too lippy, but there are dwarf forms to supersede them. One of the tiniest of these is *Dianthus neglectus*, whose small tufts of yellow-green foliage send up many two-inch stems topped by cherry red flowers in May or June. Quite a bit larger is Little Joe, a flamboyant red variety of recent origin. More pleasing to gardeners who like softer hues is *Dianthus alpinus*, whose flowers are equally large—an inch and a half in diameter—and are borne in as great profusion but which are clear pink instead of red.

We must not leave out of our discussion the dwarf iris. Even in January the lilac and white flowers of *Iris stylosum* appear, followed later by the lovely rich purple of *Iris reticulata*. In an exposed, sunny location the latter often reaches a height of only six inches but it will stretch up higher with protection. The lower ones are better suited to rockeries. The common dwarf iris, *Iris pumila*, which blooms in March or April, is constantly being hybridized so that almost any color may be had from an iris grower. In addition to the common blue or purple, one can purchase white, yellow, orange and even pink, all with poetic, mythological and, often, unpronounceable names.

Dainty *Iris cristata* merits consideration because of its sweet flowers of amethyst and gold and the elusive fragrance described by one writer as that of crab apples. Similar but with deeper violet flowers and with a heavier cresting of gold is *Iris verna*. *Iris gracilipes* also resembles these two but it lacks the golden crest and has a duller appearance. All three are deciduous but make up for their lack of winter foliage by the charm of their summer flowers. Some of the many iris species native to Oregon provide splendid rock garden material. Two of my favorites are the pure white form of *Iris*

douglasiana and the mellow gold form of *Iris innominata*. The flowers of either one rival orchids in exquisite daintiness. It is always well to remember, in buying any such plants, that there is a great variation in color and that the nurseryman should not be blamed for disappointments if you have not examined his plants when they have been in bloom.

Sloping, partially shady rockeries should never be hard to plan for we have a wealth of suitable plant material from which to choose. The dwarf rhododendrons and azaleas in themselves offer many colors of flowers, leaf forms and plant shapes. A dwarf form of *Rhododendron racemosum* bearing the number 19404 instead of a varietal name will attract anyone's attention with its clear pink flowers.

A brief description of some of the other dwarf rhododendrons might be helpful. *Hirsutum*, a native of the Alps, has hairy branches as its name implies. The cerise flowers are showy but it is a shy bloomer. *Ferrugineum* also hails from the Alps where it is called "Alpen Rosen." In its native habitat the tiny pink or carmine flowers burst into bloom seemingly overnight and hide the foliage completely, but here it is not so prolific, although many growers are still trying to find conditions that will make it perform as well as it does in its homeland.

Several of the dwarf rhododendrons have small gray leaves which seem to tuck their edges away during the winter so that they look quite forlorn but which burst into flower in early spring with every twig ending in a large cluster of blue, lavender, pink or intermediate colored flowers as the case may be. In this group are *fastigiatum*, *impeditum*, *impeanum* and others.

Among the larger flowered varieties are *Pemakoense* and *Williamsianum*. The best *Pemakoense* are pink flowered, as are the best *Williamsianum*, but the flowers of the latter are larger, often measuring two inches in diameter. Its round leathery leaves deserve commendation, also.

Rhododendron daphnoides, although classed as dwarf, sometimes attains a height of four feet. It has shiny, pointed leaves and large, rose-red flowers in July or earlier. *Rhododendron glaucum* has distinctive rose-colored

flowers which hang in loose clusters and are among the most attractive of any we know.

We must not overlook the azaleas. *Flame Creeper* and *Balsaminaeflora* are both salmon red, the former with single and the latter with double flowers, and both hold their leaves through the winter. Hybrids of *Azalea Kurume* are also popular, with *Pinkei* one of the favorites.

Hinodegiri blazes forth with red flowers in early spring and, although stiff in habit, is a great favorite for conspicuous places. *Azalea pouhkanensis* blooms a little later but is evergreen and has large, deep lavender flowers. It would be out of place in a very small rock garden but very much at home and a great addition to the picture in a medium or large sized one.

Dwarf huckleberry makes a suitable ground cover for such a planting because the texture of the leaves harmonizes with other ericaceous plants. Choice pockets may be filled with treasures such as *Shortia*, *Wintergreen* and *Trailing Arbutus*.

Less costly but equally effective for partial shade is a planting of primroses, ferns, violets and hepatica. One primula of note is a creeping one called *Juliae* which now has many hybrids. *Juliae* itself has small, claret colored flowers and small, round leaves with toothed edges but the hybrids include plants with both darker and lighter flowers and with variations in foliage and habit.

One of the choicest of the little rock ferns to be used is *Spleenwort* or *Asplenium trichomanes*, whose dainty fronds never reach more than six or eight inches in length. There are other small ferns also suitable for such a planting, that are likewise native to our state.

When planting violets it is well to choose more than one kind in order to lengthen the season as well as to have more variety of color. The old-fashioned purple ones are always favorites. Equally lovely but not so common are a white one called *The Czar*, and an old rose one called *Rosina*. All of these are fragrant and early.

It is difficult to find really blue hepaticas but even the lavender and white ones pushing up with the first hint of spring gladden the hearts of ex-easterners.

In such a short article we have only been
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A Few Outstanding Shrubs of Eastern Washington

By HAROLD T. ABBOTT

Assistant Superintendent of Parks, Spokane

IT IS a surprise to many people to learn that most of the ornamental trees and shrubs now growing in Spokane and in the neighboring towns were introduced during the lifetime of one man, Mr. John W. Duncan, the Superintendent of Spokane Parks. According to Mr. Duncan, all the ornamental shrubs in the city, at the time of his appointment to his present position, could have been gathered together in one truck.

In the 30 years Mr. Duncan has been testing new trees and shrubs for Eastern Washington climatic conditions, he has given a good deal of time also to the study of the native shrubs which might have definite landscape possibilities. Many of the native shrubs have been ignored by the gardeners of this region and it seems as if only now are the beauties of these commonplace species being appreciated. Many plantsmen are learning that, with proper care, a transplanted shrub from the nearby countryside can become one of the choicest features in a planting scheme. Gradually there is a comprehension also of the unique character of dry land gardening in Eastern Washington, a type of gardening which can produce all through the year incomparable enjoyment from color.

Of the woody plants in this region which produce flowers and fruits, the outstanding examples are shrubs. With the possible exception of one or two small trees such as the mountain ash (*Sorbus americana*) and the Pacific dogwood (*Cornus nuttalli*), the beauties of flowers, brilliant fruit, and colored twig are found among the shrubs. With proper care in digging, with the selection of small specimens, and with adequate attention after planting, most of the native shrubs will respond readily when moved from the wild to a prominent place in a city garden.

Space does not permit us to mention many of the desirable eastern Washington shrubs, but of the large group a few are worthy of our consideration. There are all reliably hardy; they are refined and distinctive, and they require very little care once they are established.

Rockspirea (*Holodiscus discolor*) is without a doubt the foremost of the native shrubs of this region. It is truly western in character and is unlike its oriental cousins, the exochordas. The large snowy panicles of tiny flowers coming in July are only the beginning of a long season of flower display. As the summer advances, the blooms change to deepening shades of buff, and with well chosen locations with foliage backgrounds, the holodiscus may become an outstanding garden asset. It has great possibilities as an unclipped hedge where there is plenty of room for development. *Holodiscus* requires a well drained soil, somewhat gravelly and loose. It does best in full sun with protection against severe winds. Heavy soil with overabundance of moisture will result in the rusting of the leaves and in smaller flower masses.

Service Berry, Shadblow or Shadbush (*Amelanchier cusickii*) is gaining for itself a real place in the affections of gardeners. In Eastern Washington, the barren slopes in spring suddenly put forth great spots of snow white blooms which can be seen from great distances. The shadblow, like the holodiscus, thrives on the rocky ledges, in soil pockets, where it can benefit from the full sun of the earlier part of the day. It likes the protection of a nearby cliff or substantial windbreak. The shadblow responds well when given plenty of room, when out from under overhanging trees, and when away from the heavy feeder roots of other shrubs. Blooming somewhat later than *A. cusickii*, but with smaller flowers, is *A. florida* or *alnifolia*. *Amelanchier* is easily transplanted but must not be allowed to dry out. Large shrubs are apt to be killed back during the first winter after planting, so it is advisable to use smaller specimens wherever possible.

As if to continue clothing the hillsides with white, the various unnamed species of *Philadelphus* precede the holodiscus by coming into bloom in June. From the wild it is possible to select many specimens, all different in particular characteristics of petals, size, habit of growth, color of foliage, or of flower fragrance. The *Lewisii* type is the most showy, although not the tallest. The individual blooms are smaller than many of the others but they have a pleasant, mild odor. Some of the taller types have racemes as

large as any *P. coronarius* variety under cultivation. These tall growing species appear to have variations in petals, in color of the canes, and in the texture of the foliage.

Eastern Washington plantmen are presented with many difficult problems of planting dry south slopes. Exposures such as these make it almost impossible to maintain in a practical manner any sort of turf stand or evergreen ground cover. However, one of the sumacs, *Rhus trilobata*, sometimes referred to as the ill-scented sumac, has demonstrated through volunteering, that it may be one solution for the south slope planting. It grows to an average height of three feet, has inconspicuous green flowers and small red fruits. The remarkable feature of this sumac is the dense dark green foliage which turns to a magnificent crimson in the fall. This low growing species is easily moved and can be successfully propagated by root cuttings. Its rather dwarf habit of growth places it among the best of the dry-land shrubs.

Of the true ground covers of this region, the evergreen kinnikinnick (*Arctostaphylos uva-ursi*) is the only one worth while. It is found in the foothills of the mountains in pine woods where there is heavy top humus and a sandy loam soil condition. While the native habitat may become very dry during the middle of the summer, there usually is a good winter cover of snow and sufficient late spring moisture to insure protection for the plants. In Spokane gardens and in those of other eastern Washington communities, it is difficult to duplicate the conditions which are favorable to the kinnikinnick. Fortunate indeed is the person who has a north slope with good drainage and yet one which has slight moisture throughout the hottest season. Kinnikinnick is not hard to transplant or to propagate by cuttings and layering, provided one has regard for the proper preparation of the new soil conditions. More attempts at the raising of *arctostaphylos* have resulted in failure due to excessive moisture content of the soil in the new location, and due to the harmful effects of winter sun than to all other causes.

Pacific Yew (*Taxus brevifolia*), while generally considered by botanists to be a tree, is more commonly treated as a shrub in Eastern Washington. Although more pendulous than

T. baccata and *T. cuspidata*, the leaves are very similar in color and shape to those of the latter. It is perfectly hardy, holds its color well in the winter and, of course, has diminutive leaves. However, because of its informal open habit of growth, it does not give promise of being a successful yew for neat, clipped, hedge plantings. It is a yew with great merit as a specimen shrub.

To a plantsman in Eastern Washington, the broadleaf evergreens of the east and west coasts are a source of keen envy; it takes a person of strong will not to be tempted to try a few rhododendrons or kalmias. But the one or two broadleaf evergreens which will do well in the Spokane area, he prizes highly and uses extensively. Of these broadleaf types, the best are without a doubt the three hollygrapes, the Oregon hollygrape (*Mahonia Aquifolium*), the creeping hollygrape (*M. repens*) and the longleaf hollygrape (*M. nervosa*).

Oregon hollygrape has proven to be the most successful of the group. In protected spots away from the full force of drying winds and away from heat reflections from buildings, it is a hardy, refined shrub. If placed on north slopes, the leaves maintain a rich, glossy green all through the winter; if placed in the sun, more of the reddish tinge will appear in the leaves. In moving the Oregon hollygrape of any size, it is often worth while to cut the shrub back to the ground, much as one would do with kalmia. This means a sacrifice of immediate effect for a year or so, but once new growth has commenced, the compensation in large dense foliage is worthwhile.

The creeping and the longleaf hollygrapes are exceedingly useful in heavily wooded naturalistic hillside plantings. They must be left alone; they resent anything that disturbs their habitat. They are not as vigorous as *Aquifolium* and they suffer during winters which are free from snow. *M. repens* and *M. nervosa* are not easy to identify when growing on mountain slopes due to the effect of the local conditions on their habits of growth. There seem to be many hybrids which have the combined characteristics of the two dwarf mahonias, such as number and width of leaflets, length of fruit clusters and the creeping

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Daphne and Its Culture

By THEODORE ALBERT

AMONG our low woody ornamentals the plants of the genus *Daphne* rank among the very best. Their foliage is handsome and their flowers are sweet scented, with a wide range of colors such as white, red, pink, purple lilac and greenish-yellow. Another great advantage is that they, as a rule, are early bloomers, some of them opening their fragrant flowers regularly in February in our climate, while others like *Daphne Blagayana* bloom as early as December and do not seem to be touched by temperatures as low as 15 degrees above zero.

The aforementioned *Daphne Blagayana* is a very low growing shrub suitable for use in the rockery or as a foreground for higher plants. The blossoms are creamy white, very fragrant and extremely persistent. The writer has had them in bloom from December until May. This variety is very partial to sunshine, the more the better. It thrives in any well-drained soil, even stiff clay, but does best in a soil which contains a liberal amount of humus and sand. The humus should not be supplied by peat, but rather by decomposed maple leaves. The flower buds are formed in the fall, so that if any pruning is necessary it should be done only right after the blooming period is over. This holds good of all other varieties of *daphne*.

Another variety for which sunshine and good drainage is a *must* is *Daphne cneorum*. Of this variety there are many strains on the market; some have very small leaves which as a rule denotes shy bloomers. This one is known as *Daphne cneorum minor* in contrast with the larger leaved variety which is known as *major*. This plant, if well grown, is one of the most ornamental in our gardens. Large healthy plants may have as many as 500 flower heads on them. A rich sandy loam seems to suit this type best; it abhors peat, so do not use it in any form.

Most of the plants of the green foliaged *Daphne cneorum* have dark pink flowers, although some of the newer strains show blooms which range from a light to apple-blossom pink in color. One strain, producing pure white flowers, is rather delicate and hard to grow. Another interesting variety is the one

with variegated foliage, the flowers of which are much darker and in some soils almost red. This form is much more open in habit of growth and mature plants must be severely cut back every two years if one wants to have a compact plant. The only time to prune *Daphne cneorum* is right after the blooming season is over in the spring. This will give the plant time to grow during the summer and one is usually rewarded with another full set of flowers in September or October. If this pruning is done every three or four years, the plants will always look compact and will not be so apt to show any dead branches or open spaces. In transplanting this *daphne* be careful that it always has a compact ball of earth around the roots. Very few of the *daphne* group can stand bare root transplanting and all of them resent it very much. To be successful with this small gem it is only necessary to avoid planting it in stiff, water-logged clay or in shady places. Formerly it was thought that the *D. cneorum* types wanted poor soil in order to reach perfection but lately good growers have discarded this idea entirely and have been planting them in rich, well-drained, sandy loam, where they will require weekly waterings and a heavy pruning every other year.

Daphne collina comes to us from Italy, the island of Crete, and Asia Minor where it grows among the rocks and cliffs of the mountainous districts. The north section of its habitat corresponds with the southern part of the habitat of *D. cneorum*. The indigenous rock of its home is mostly a form of limestone which would make the soil more alkaline than acid. Hence its dislike for peat. The home of these two varieties and their habit of growth give us another tip which must not be neglected, namely that of good drainage. It will be noticed that this point was brought up several times. It is done on purpose, so as to instill in the reader its absolute necessity.

Daphne collina grows to a height of about three feet, and its foliage and twigs are similar to *cneorum*. In full sun, although it can stand partial shade, it blooms freely in early spring and, with us, again late in fall. The flower heads are similar to *cneorum* and the blossoms are rosy purple and sweet scented.

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The Genus *Primula*

By IDA SCHIBIG

THE size of the Genus *Primula* is tremendous. It is as geographically widespread as any of the great genera of the plant world and the species challenge the stars in the firmament in number and beauty. To undertake to study the cultural needs and to grow only a partial list of the species and hybrids is an experience that one will find all absorbing and delightful.

The perky early spring flowering primroses are best known and are as riotous in coloring as a basket of Easter eggs. These are the polyanthus and acaulis types that are exceedingly well loved and deservedly so. These *Primulas*, called border primroses by the English gardeners, have done more to popularize the genus than any other group by their very essence of appeal. It is surprising to many admirers of this flower that these border primroses comprise only a portion of the entire clan, sharing with other species the section *Vernales*, which in itself is only a small part of the genus.

In recent years, particularly in the Pacific Northwest, other members of this vast plant tribe have been successfully grown, both practically and experimentally. To encompass all of them is not within the scope of this article. It is suitable, however, to present information on those kinds that have proved amenable in our Pacific Coast climate, with a resume of the generic classification in general that will offer a workable guide to cultural methods.

When contemplating the culture of primroses in a broad manner, it is first of all essential to know that the species are assembled into three general groups, namely, woodland, alpine and Asiatic (bog *Primula*). Although the species in these various categories are extremely diversified, the understanding of their relationship to one another is more apt to simplify the approach than any other way. Enlarged upon in this article are three botanical classifications that typify these cultural groups as follows:

1. *Vernales*, or woodland.
2. *Auricula*, or alpine.
3. *Candelabra*, or Asiatic.

The genus *Primula* is grouped into 34 botanical classifications or sections. Each

section has been formulated by systemizing botanical similarities of the various species. Hence, each species in a given section has similar cultural requirements. If the culture of the section to which a species belongs is known, the culture of the species is immediately understood. It can readily be assumed that this approach facilitates the study of the genus and it is also not difficult to know to which section a species belongs as the characteristics of each are quite distinct and with a little experience are soon recognizable. The *Primula* nomenclature and the various botanical classifications are easily perceived and instantly clarify the misunderstanding and misconception that sometimes surrounds this genus.

Of the 34 *Primula* sections there are about 20 in cultivation. The geographical range of the species includes North and South America, British Isles, Europe and Asia; they are found in these regions only where the climate is temperate or alpine. Because this condition is demanded by all *Primulas* our Pacific Northwest offers a natural climatic situation in which this genus can and does abound.

PRIMULA SECTIONS

Section Vernales

Species of this section are the least trouble and the best known of any group. Much has been written concerning the culture of the species in this classification which may be said without restraint to be as simple to grow as cabbages. This related group will flourish if planted in fairly rich, heavy loam, mixed with an abundance of leaf mold or other humus in a moist and partially shaded situation. Propagation either by seed or division is effective.

The nomenclature surrounding some of the species, however, is little understood and apt to be confusing. It is this section which contains the common primrose, cowslip and oxlip. *P. acaulis* or *vulgaris* is the true primrose found throughout the Northern European countryside and has a delicate yellow, wide-open corolla which terminates a comparatively short stem. *P. Sibthorpi* is a subspecies of *P. acaulis* and is its counterpart, distinguished by violet petals. *P. officinalis*, or *veris*, is the cowslip; it has a cluster of slightly drooping, buff-yellow, red and brown spotted

flowers on a tall stem, to which each individual floret is fastened by a short pedicel. It has been the combination of these three species and their numerous subspecies in the hands of skilled cultivators that has given us the beautiful polyanthus that we know today—that is, wide open flowers grouped to form an umbel on a long stem in all color gradations.

The oxlip, or *P. elatior*, is often confused with *P. officinalis*. This is a lovely, delicate woodland plant of pale yellow or pale buff and only partially open flowers on a one-sided umbel and is not believed to have any parental relationship with the polyanthus. *P. elatior* like *P. officinalis* and *acaulis* have many subspecies with only slight botanical differences.

The hybrids and variations from this group are legion. Double flowered forms are quite common and are given interesting names like Paddy, *rubra plena*; Purity, large flowered white; Pompadour, deep ruby-velvet, and Marie Crousse, a rosy lilac. Dating far back into the early days of primrose history, mutations have arisen from time to time up to our present day. The forms should be mentioned primarily because of their unusual deviation from the flower type. The hose-in-hose form, in which the calyx has developed into a corolla, is found usually in shades of red and yellow. Jacks-in-the-green are forms of either cowslip or polyanthus with enlarged, funnel-shaped calyces, colored like the petals of the corolla with the addition of green variegation. Nearly all colors are represented in this form. As fascinating as these diversified kinds are, very few have good garden constitutions, but they are valuable from a collector's viewpoint and as curiosities.

P. Juliae

From the far Caucasian Mountains, *P. Juliae* was introduced into cultivation in 1901. Until the advent of its numerous hybrids and varieties this species for many years remained in solitary glory as a popular garden plant. The type plant is entirely different in general appearance from any other in the Vernaes section. It has a close, tufted, spreading habit almost miniature in scale. Short shoots or rhizomes are produced from the central rootstock. These stolons root at the nodes and thus give a ready means of

increase. The glossy and numerous leaves are kidney shaped or rounded and are from one to two inches long on short stalks. The deep rosy-purple corolla tops a short stem that curves outwardly from the tufted leaves. This exquisite plant forms spreading carpets of green with masses of countless flowers. *P. Juliae* loves coolness and moisture but, nevertheless, is a sun lover and will luxuriate best in a sunny exposure with shade during the intense heat of the day only, and if planted in rich, moist soil, will flower in March and April and will send forth sparse bloom throughout the year.

Many years after the introduction of this fine species, experimental hybridists cross-pollinated it with *P. acaulis*, *P. officinalis*, *P. elatior* and various hybrid polyanthus. The results are startling and exciting and the variations, both in color and habit, are enormous. Some of the progeny are polyanthus in type with the refinement of *P. Juliae* predominating. Others show the *P. acaulis* characteristic of large floescence, the plant itself retaining the creeping, clustered habit. Again, the slightly drooping umbel on a tall stem of the oxlip will prevail. Much like the other species of the Vernaes section, hose-in-hose and jacks-in-the-green mutations will arise in the *P. Juliae* hybrids. The resultant progeny from first crosses are in a "state of flux"; therefore, the strain is not fixed and seeds from such plants will not come true. As a result, propagation of most varieties must be accomplished by division. Commercial growers list many *Juliae* hybrids under fanciful names that in themselves are descriptive.

Auricula Section

This section is distributed throughout the alpine ranges of Europe. As familiar as the common border auricula is in the gardens today, little is understood concerning its vast relationship with other species in the Auricula section. Although it is not necessary for the amateur to understand these affinities to grow auricula primroses, a brief summary of the section and the many variable forms will clarify and instruct the interested gardener in the various ramifications contained within this large group. For those specializing in rock gardening, this is indeed a fertile field, yet others interested in growing primroses

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Chrysanthemums

By MRS. GEORGE T. WILLIAMS

HISTORY tells us the chrysanthemum was under cultivation in China as early as 500 B. C. and replicas of this much loved flower have been found in the works of Chinese art of very early ages. China is the home of this flower and the genus chrysanthemum is a large one belonging to the Compositae (the daisy family). The particular group we know as our favorite fall flower was apparently derived from the species *C. morifolium*. Chrysanthemum shows are known to have been held in Japan about 900 A. D.

Plants from which the modern varieties have evolved were brought to Europe by the captain of a French ship returning from China in 1789. They were flowered in England in 1795. Further new varieties were imported from China and about 50 forms were known by 1826. Since 1827 European growers have practiced hybridization and have raised many new varieties from seed.

A number of new types have been secured by what we know as sporting. A plant will sometimes show a flower or a branch of flowers of a different form or color, thus reverting to some former parent plant from which the variety has been hybridized. I once had a flower half bronze and half pink on a bronze variety, the grandparent being the pink variety. Some of these sports are entirely new, however, and thus the quirks of nature often give us some lovely new specimens. These sometimes come from the root or often from a single shoot, in which case the sporting branch must be rooted and grown on.

Propagation from seed can be done easily and plants grown this way will bloom the same year often as soon as those from cuttings, provided they are started early and given some bottom heat. The group known as the Koreans can be handled this way very readily. This class has been developed here in the United States from crossing a hardy, single, mountain type from Korea with some of our varieties. The result is a very floriferous plant, producing mostly single flowers, standing erect and sturdy, and making a very showy and worthwhile type for the perennial

border as well as nice dainty flowers for cutting.

Most plants are grown from cuttings three or four inches long, rooted in sand or sand and peat in early spring. These are then planted in good soil until root growth is ample, when they are ready to be put out in their blooming location in early May. In propagating I most often use what are known as divisions or the small, rooted suckers that come up from the base of plants which have bloomed the previous year. Use just one stem or sucker which has a few new roots and cut away all the old root that connects with the mother plant. This is an easy way and I find it quite satisfactory if care is used in selecting the best specimens with new growth above the ground and several new white roots starting. Be sure to cut off all the old hard root and thus encourage the new roots just as in the cutting method. If you decide you just want to divide your clumps, make the divisions small and do not use any with the old wood growth. The only time I ever use the new growth that is produced on old wood or on last year's stems, is when there is no new growth from the root and when I am afraid of losing the variety. Cuttings of this growth soon throw flower buds and the plant tries to bloom instead of growing into a healthy specimen. If a plant is left undisturbed for several years and the clump gets too thick, cut out two-thirds of the stems before they have grown very high, leaving only the strongest ones. Common garden varieties that are often left for years in a border planting, may give quantities of bloom, to be sure, but the leaves tend to get brown and unsightly very early in the season.

In this climate, chrysanthemums need full sun to give best results. Shade tends to make a tall, leggy growth with only a few blooms. Since their chief use is as cut flowers, best results are had by planting in a cutting garden where the soil is not robbed by other perennials or shrubs. They can be used in a border if kept to the foreground in a sunny spot and if the lower growing varieties are selected. Liquid manure can be used to good advantage when so planted. Heavy soil is not to their liking. They prefer a good, sandy loam well enriched with barnyard manure and compost, the latter being better than peat

as it helps hold moisture as well as supplying food. I am inclined to think too much peat may make the soil too acid, and the need of lime may be indicated. I have used to good advantage when planting, one-fourth cup equal parts fine raw bone meal and superphosphate, per plant, well incorporated into the soil. Further feeding can be done by using liquid manure, especially if growing large specimen blooms.

I plant in rows, two feet between plants, three feet between rows. This gives space for a plant to have plenty of air and light as well as making it easy to cultivate, stake and tie. If this amount of space is not available they can be grown much closer and still have fine flowers though they are not quite so easy to care for. I use five-foot stakes at the end of each row and one between each plant, tying each plant separately, crossing the string between the plant and the stake. Tie as soon as the plant gets high enough for the wind to blow it unduly. As it grows higher the string can be slipped up or re-tied higher up on the stake. It is best always to tie securely since a good hard wind can severely damage a plant heavily loaded with buds or blooms. Use a soft, heavy string for this purpose; these will usually serve two years if kept dry after using the first season. The plants need plenty of moisture though good drainage is most important. I have followed the early advice of Mr. Jacob Umlauff, former superintendent of parks in Seattle, in watering, using overhead sprinkling during the middle of the day. This perks up the plant and gives time for drying off before the chill of evening, thus avoiding any tendency to mildew. After the buds have formed I irrigate. Light cultivating every few days helps, also. Every inducement to keep the plant growing at a good, healthy pace makes certain a profusion of lovely blooms.

The topics most discussed by growers are perhaps the stopping or pinching back of the plant and the proper bud to "take" or grow. The first is the means used to stop the plant from growing tall and not branching. Most varieties throw what is termed a break bud or an attempt by nature to stop the growth of only one stem and send out growth called laterals which appear in the leaf axils on the main stem. These in turn grow on, making

as many stems as there are leaves on the main stem. If a lot of flowers are desired, the plant is not pinched back so far, thus leaving plenty of stem space for lateral growth. If only a few specimen blooms are wanted, the plant is cut back to four or five leaves. Sometimes the two lower leaves may not produce any laterals, so do not count them. When three blooms are desired it is best to save six leaves, this making one extra for any one of the four laterals which may not produce a good growth for blooming. These laterals which now make the stems of the plant will grow on to perhaps 18 inches, when each one will develop what is known as a crown bud. Some varieties produce the largest flowers from this bud, but I seldom use it. I prefer to stop these laterals again and then more laterals appear which, in turn, grow on and in time a cluster of buds appears; these are known as terminals. In England the center bud of this group is called the second crown but we usually refer to it as a terminal bud. If a large flower is desired, all the others in the cluster are pinched out. This terminal bud gives a more intense color than a crown bud though usually not so large a flower.

If sprays are wanted, all buds can be left, or, in case a large flowered variety is to be grown for spray effect, thinning can be used. This means removing the larger center bud or two of the outer ones of the cluster. This often makes a better spaced spray and stronger stems. It is also possible to grow both crown and terminal buds on the same plant by pinching back only the topmost two or three branches or laterals. This procedure is not recommended unless one has accidentally broken off a crown bud or just wants to see what bud gives the best form and color for that certain variety.

The type most universally used by the amateur grower for a supply of cut flowers is the spray form. Any chrysanthemum can be grown as a spray but the smaller flowered ones give the most pleasing effects. These come in countless shades and types, singles, buttons, anemones, pompons, etc. The double, reflexed, small flowered varieties are the most satisfactory. One plant will produce armsful of flowers and no particular skill about bud taking is needed. Simply cut back once and

(Continued on Page Forty-Two)

Spring Garden Notes

By C. WIETING

Pruning

THE OBJECT of pruning and training climbing roses against a wall or fence is to distribute the growth and flowers uniformly over the entire area, rather than to have several feet of bare stems with a cluster of flowers at the top. The trend with many gardeners is not to encourage too great a mass of flowers but rather have them well spaced so that not too many open flowers will be touching. This calls for the sacrificing of many good looking canes on the climbing rose.

Some canes should be cut at a foot from the ground, others at three feet and still others at five feet. The new growth encouraged by this treatment will develop enough this summer to be trained properly next year. Those remaining canes should be arched away from the center of the plant. Some canes are arched at the two-foot level; others at the three-foot level, and so on every foot or so. On completion the plant should look like a large and irregular fan.

The tying should be done securely and decisively. Some arrangement should be made so that the plant will remain three or four inches away from the wall so that air can circulate about the branches. Weak tying allows the branches to thrash about in every breeze much like an aggravated dog on a leash. One can't be too gentle with the arching. It takes considerable pressure to train the branches into proper position. Don't be afraid of breaking the branches; it is their natural habit to arch and be limber. Some difficulty might come from too brusquely handling the branches of the variety *Mermaid*, which is reputedly more brittle than the others.

General pruning about the garden includes a number of other subjects and techniques. Pruning should be a process of constant vigilance through this entire season and not a mass "blitz" at the first touch of spring fever. Each garden is a problem in itself with its differing exposures, soils and fertilization programs. Identical plants in different gardens might require different treatments. A campaign plan is needed and perhaps, after a study of the problem, a pruning may not be the solution. Rearrangement of some en-

vironmental condition may bring about the desired end sooner. Fertilization or irrigation or relocation of the plant might be necessary.

The pruning program should start with the disbudding of conifers. Where conifers are used in the garden their compactness is sometimes a desirable feature. Cutting off the ends of branches or tops usually leaves a portion of stem from which no growth can arise. Plants such as pine, spruce and fir are slow to renew growth from cut ends. A better plan is to remove the central growth bud from the cluster at the ends of branches at this season. Subsequent growth will be natural in appearance and will bring about compactness of the plant. Too rapid growth in height can be easily controlled in this manner.

The work of disbudding should not end with the conifers, but should be carried on continually with other plants. On some plants and trees an occasional heavy pruning is necessary. The usual result of heavy pruning is the encouragement of numerous soft growths at the cut ends and below. If all of these are left, not only does an unnatural appearance result, but the clustered growths overcrowd each other and none function properly. Soon another major pruning job is in order. Stop a moment now as you pass that recently pruned plant. Study the growths, remove some young shoots and save those which are headed in the direction of making a desirable plant. The undesirable shoots are easily removed with a knife or rubbed off. Many hours of labor or many dollars for pruning in the future can be saved.

The old adage about pruning summer flowering shrubs in the spring and spring blossoming shrubs in the summer or after they complete their flowering season is good advice, but certainly needs modification before application to all subjects. Again each plant is almost a law unto itself. Unpruned plants will frequently live from year to year in good health and may flower abundantly. However, at times they outgrow their location, crowding out other plants, or carrying their flowers out of sight, too high to be enjoyed. Reasons such as these determine the necessity of pruning. Planted in poorer soil in a drier location an individual plant or group may need

little or no annual pruning and still flower well.

However, if shrubs need pruning these suggestions might help. The brooms get along fairly well with little pruning except for the removal of dead wood and the heading back of plants grown too top-heavy. When cutting back these plants care should be taken not to cut too heavily in the old wood. A better plan is to cut only to within a few inches of the old wood. Cutting into the older wood might mean the death of the entire limb.

Hibiscus syriacus is best pruned in early April when it should receive a heavy cutting back. This cutting back should not necessarily be an annual procedure.

Other summer flowering shrubs for early pruning would include the buddleias, ceanothus, fall hydrangea, ceratostigma, and vitex. All of these are musts, for their successful flowering depends upon the production of vigorous new shoots each year. Cut back to within five or six inches of the old wood. Most hypericums need a good heading back each year as the old seed heads and last season's foliage remain ragged looking for some time. One can be a little more indiscriminate in cutting these back as new shoots are reproduced readily near any cut end. Tamarix has both spring and fall blossoming species. When pruning them be sure each is pruned at its proper time. If you are in doubt better let the plant go unpruned for a season. The ornamental quinces are perhaps better pruned late in the fall when the flower buds can be readily seen. In this plant it will be noticed that the flowers are borne mostly in the center of the plant and little can be done to encourage the flowers more to the foreground than the removal of some of the unproductive wood. Remove some of the soft shoots that do not show buds but retain some others well spaced to elongate and form future flowers.

In some of the larger gardens species of willows and dogwoods are used for ornamental stem coloring effect in the winter months. On Salix alba varieties and Cornus stolonifera varieties this stem coloring is most pronounced on the younger shoot. A constant supply of these young shoots must be maintained at the desired level by hard pruning

during April. This frequently calls for the removal of all wood to within a foot or so of the ground.

Spraying

A discussion of spraying following a consideration of pruning might lead one to the belief that garden work is little else than one coddling job after another, and that the enjoyment of the garden is but a period after a sentence of worries. Such is not the case, however. With a careful choice of trees and shrubs and proper environmental conditions, diseases and insects are more the exception than the rule.

Insects do occur of necessity, not to feed on plants or to provide a job for the sprayer, but to be a source of food for birds or other animals. Birds are one of the natural enemies of insects and help considerably to beautify gardens in that respect. Other natural conditions such as the weather help to control insects. However, even though the insect may be controlled, its natural enemies may also be controlled by the same condition. Also a set of conditions that may discourage one pest may encourage another. Then too, pests frequently have prearranged defense positions to which they may retire, such as the egg or larval stage, when all adults are lost. When several generations are born each season, insects can adjust themselves quite readily to wide degrees of climatic changes. Heavy freezing or fairly high temperatures such as occur naturally may not destroy all stages of an insect. Hence a few pests are to be expected.

Holly is frequently affected by a leaf miner feeding between the upper and lower layers of a leaf. Brown areas on the foliage indicate the presence of this pest. The leaf miner adult, a small reddish gnat, leaves the foliage early in May and can be seen hovering about infected plants at that time. A spray of nicotine sulphate and molasses acts as a fair control if applied when the adults are detected.

Another pest which troubles the holly is a small caterpillar, binding together several leaves at the tip of a shoot. The insect then feeds on the young shoot within the protection of the bound leaves. Distortion of the new shoot results. These pests can be con-

(Continued on Page Thirty-Four)

Book Reviews

GARDENS FOR VICTORY

By JEAN-MARIE PUTNAM AND LLOYD C. COSPER
Harcourt, Brace & Co.; Feb., 1942; \$2.50

TO THE THOUSANDS of American men and women now planning vegetable gardens as part of their war effort, "Gardens for Victory," by Jean-Marie Putnam and Lloyd C. Cosper will prove indispensable. It provides the answer to almost every conceivable question about growing vegetables.

In England and the occupied countries the small home garden has been of vital importance during this war, both to the individual producer and to the national economy. While the United States is fortunate in having abundant supplies of basic farm crops, in many parts of the country the production and distribution of perishable fresh vegetables may be restricted. A home vegetable garden will be a definite contribution.

This guide to vegetable gardening covers the subject from planning and planting through cultivation and pest control to keeping and storing the produce raised. Soil conditions and fertilizer requirements for each vegetable are discussed, and the list of vegetables so discussed includes all the commonly used ones and many not so familiar. Planting schedules are suggested to provide a continuous production during the summer season.

Special attention is given the small garden where space saving is essential, one most practicable suggestion being the use of vertical rather than horizontal space. The book is replete with charts and diagrams showing arrangements and spacing which provide the maximum utilization of a small area.

For the more ambitious gardener, the construction and use of cold frames and hot beds are described in detail. For one who fears that the beauty of the garden is apt to suffer, the discussion on making a vegetable garden decorative is most reassuring.

A chapter is devoted to the vitamin content and food value of the various vegetables, others to the culinary herbs and salad plants, and one to growing in chemicals instead of soil. Garden plots for children are described and suggestions made concerning vegetables

which mature quickly enough to satisfy the impatience of youngsters.

The style of the book is exceptionally readable, informal yet simple and always to the point. It is illustrated with numerous pen and ink drawings, and an unusually complete index makes reference easy. This practical book will be an aid to all amateur gardeners, particularly beginners, in helping their victory gardens to produce continuous supplies of nutritious food, properly selected, on the smallest space, in the shortest time, for the least cost.

—JESSE C. JOHNSON.

‘ ‘ ‘

SCIENCE IN THE GARDEN

By

H. BRITTON LOGAN AND JEAN-MARIE PUTNAM
xiv+255 pps. Duell, Sloan and Pearce, Inc.
N. Y. 1941. \$2.50

Have you gardeners ever tired of reading bland, bald recommendations for handling this and that kind of plant? Or have you ever wondered why this or that thing that you have done with your plants in the garden has been a success or perhaps a failure?

And you scientists, working apart in a small theoretical field, haven't you often desired to accomplish successful research that can be immediately interpreted and used by lay people?

This book, "Science in the Garden," will prove interesting reading to both of you. In it there are presented the scientific explanations of the many techniques that have been developed in the field of gardening. Some of these techniques are very old. Others of them are absolutely new. Because it does develop these scientific explanations in a most understandable way, it is all the more important to lay gardeners. It places emphasis right where emphasis is needed and it does this in such a way that you won't want to put the book down once you have begun reading it.

Dr. F. W. Went of the California Institute of Technology, who has done such very important work in the field of plant hormones, has written the foreword. In it he makes these significant statements: "By pointing out a scientific basis for many of the chores of

the gardener, the authors have given these chores a different meaning." Not only have they given them a different meaning but they have laid particular stress upon the matter of continuing them in the proper way. Dr. Went also states: "After reading this book the intelligent gardener will have the satisfaction of realizing that many of his actions have a sound foundation and are more than mere rituals." This is most certainly true and is in itself an important reason why gardeners should make use of the information that is presented.

There are, in all, 23 chapters covering such timely topics as soils, the 12-year bed, vitamin B₁, evolution of new plants, miracle workers; colchicine and ace-naphthene, modern seed-growing practice, the miniature greenhouse, rooting cuttings, pruning, control of pests, what and how to spray, and chemical control of weeds. These are not all of them but they will serve to indicate the wide variety of subjects which are discussed and which are reduced to their scientific fundamentals by that discussion.

Typical of the real worth of some of the ideas to the gardener is the material discussed in chapter four, "The Twelve-Year Bed." Have you ever heard of planting the 10c plant in the 5c hole? Well, this problem is discussed at some length under the above heading and we will wager that if gardeners would follow the detailed discussions given for the preparation of garden beds, they would most certainly avoid most of the difficulties they encounter in growing plants.

Or let's take another chapter—the one on vitamin B₁. Are you interested in being brought up-to-date on this very new subject? Very well written, wholly interesting and containing much-needed garden information—that is our conclusion.

JOHN H. HANLEY,
University of Washington Arboretum.

1 1 1

Our tulips, which are justifiably popular at this season, have a very interesting history. They were found growing in the gardens of Turkey as early as 1554 and shortly thereafter made their appearance in Austria and Holland.

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(Continued from Page Eleven)

probable fate by decapitation. On the other hand, the Chinese appeared to have no superstitious dread of this plant; to the contrary, they greatly admired it.

It was perhaps because of this superstition that the Japanese made more use of another species, especially the *Camellia Sasanqua*. *Sasanqua* is a shrub of loose, straggling habit. Its flowers and leaves are somewhat similar and it is not quite as hardy as the japonica type. But it does have a fragrance and it comes into flower earlier in the year, often starting in November.

Then there is a third species, *Camellia reticulata*. This type was first flowered in England in 1826 and is one of the most beautiful. Its leaves are entirely different from japonica; they are quite a dull green and large. So far as the individual flowers are concerned, this is certainly the finest of them all. They are 5 to 7 inches across, sometimes even 9 inches, with wavy petals of a lovely glowing crimson-rose, beautifully folded into a semi-double form and sufficiently numerous to give fullness without being over-heavy as in some of the other types. There is only one variety of this particular species.

There are many other species of camellias; indeed, the plant which yields the well-known beverage "tea" is a species of camellia.

All have attractive flowers, but in beauty, size and color none approach the three varieties already mentioned and discussed.

1 1 1

In the early days, as stated by the botanist Parkinson, tulip bulbs, when boiled and eaten with oil and pepper, were very wholesome. Clusius, after whom the popular *Tulipa Clusiana* was named, informs us that he gave more than 100 bulbs to an apothecary at Vienna to be preserved in sugar in the same manner as the roots of ginger. In the year 1592, another apothecary tried similar experiments and found the pickled bulbs sweet and pleasant. It is also stated in Miller's *Gardeners' Dictionary* that a merchant of Antwerp had a cargo of tulip roots sent him to dispose of and, taking them for a sort of onion, ordered some to be roasted under the embers and ate them with oil and vinegar like common onions.

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(Continued from Page Six)

vigorous, flowers pink, fairly large. Asor, A.M., R.H.S., 1937, a hybrid with P. Sargentii.

Prunus Sargentii, Sargent's cherry, is rated highly in the United States and Great Britain. Rehder says it is the hardiest and most vigorous of Japanese cherries and very handsome in bloom. Undoubtedly it is one of the best for park and avenue planting and is highly recommended for this purpose by all authorities. In Great Britain it prefers a cool climate and rich, woodland soil with sharp hillside drainage. It is intolerant of hot, hungry soil, wet soil or lifeless clay. In general, experience in Victoria verifies this statement. Ingram states: "It is a very fine cherry, flowers delicate rose pink intermingled with the vivid copper red young foliage, presenting a strikingly beautiful appearance and in my opinion it is undoubtedly one of the best of its family. It is almost equally attractive in the autumn when its leaves change to varying hues of orange and crimson. I am entirely in accord with E. H. Wilson who said, 'If one kind only can be planted, it should be this.' In Britain, up to the present, it does not appear to have made such good growth on its own roots as on *P. avium*."

Trees from seed in Victoria prove fairly uniform, although variations occur in habit,

size and color of flower and degree of autumn color. We note that the redder the foliage in the spring the more likely is the tree to have deep pink flowers and good autumn color. We cannot agree with Russell that seedlings take a long time to flower. Ours all bloomed before they were five years old. They make slow growth at first, but respond to good soil. In its young stage it is shapely and easy to prune. We value it equally well for its autumn color as for its flowers. We obtained from Cheals and Son, Crawley, Sussex, the best form in Britain, according to Ingram. So far it has not proved to be as good as a specimen from Wohler's Nursery, Narberth, Pa., which probably originated at Arnold Arboretum. A good illustration of its habit appears in Arnold Arboretum Bulletin, April 23, 1937. The hybrid between *P. Sargentii* and *P. Yoshino* described as *P. Juddii* in Rehder's Manual, I do not know.

Choosing Cherry Varieties

The selection of the most attractive oriental flowering cherries from amongst the hundreds of known varieties is not an easy task. The most popular varieties are usually those with double and semi-double pink blossoms. Mr. Collingwood Ingram, probably the best authority on flowering cherries, selected the 12 best cherries as listed below.

Mr. Ingram's selection—

Best in Victoria Parks—

Single-greenish Yellow

Ukon

Single White

Jo-nioi (fragrant)

Ojochin

Tai-haku

Tai-haku, young foliage bronze

Single Pink

Choshu-hizakura, foliage bronze

Single Pink fading near white

Yoshino

Yoshino, young foliage bronze green

Double White

Kojima (Shirotae or Mt. Fuji)

Shirotae, young foliage green

Double Pink fading to white

Shirofugen

Shirofugen, young foliage brown

Shogetsu (Oku-miyako)

Shogetsu, young foliage green

Double or Semi-Double Pink

Daikoku

Daikoku, young foliage light bronze-green

Fugenzo

Fugenzo, young foliage bronze

Hokusai

Yae Kanzan, young foliage bronze

Kanzan

Prunus subhirtella var. *Fukubana*

Prunus subhirtella var. *autumnalis*

We also included 12 of those which have appeared best in Victoria. They are all vigorous growing trees. It will be noted that Ingram has selected two varieties as being the best of two lesser known groups of flowering cherries, Ukon being the best of those with greenish colored flowers and Jo-nioi being the best of the so-called fragrant varieties.

1 1 1

Woodland Garden

This tract of two acres, centered about pools and woodland stream, bids fair to become one of our most attractive areas at the Arboretum. Under the active sponsorship of the West Seattle Garden Club, the Woodland Garden, designed by the late Mr. E. A. Fabi, will feature those plants, small trees and shrubs which grow and flower best under light woodland conditions. Trilliums, lady slippers, mertensias, lilies, native evergreens and hellebores (Christmas rose) have been planted, and the West Seattle Garden Club is making available a considerable sum for the purchase of plants for the 1941-42 season.

1 1 1

The tulip which was popular in Turkish gardens during 1500 was entirely different from the popular Darwin type that is so much used today. The Turks liked the red and yellow forms with pointed petals. The Europeans have preferred the other, solid colors with square or rounded petals. The best example that we have of the very early form found originally in Turkey is the variety Keizerkroon. Keizerkroon is, however, of Dutch origin.

(Continued from Page Eight)

being made in grafting upon various rootstocks and these have indicated some rather unusual possibilities for the future. For example, it may be possible in this way to grow the beautiful yellow types in regions now considered to be too cold for them.

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(Continued from Page Seven)

would fit into the final picture. As a matter of fact, the whole place was budgeted into areas to be completed each season within their income, most of the actual work to be done by Steve himself. Needless to say, we were amazed and envious, as the Johnsons don't have any more gold to spend than we do. But we were completely flabbergasted when we heard how little they had paid the landscape architect for this plan. "And," said Alice, "he was on the job all the time during construction. He helped locate the house and supervised all the grading so the dirt wouldn't have to be moved twice. And these ideas are all ours. He only tied them together with some of his own and helped us avoid a few mistakes. It really is our very own garden."

Few mistakes indeed. If she only knew. Already their place makes ours look like the proverbial accident going somewhere to happen. And the money we have sunk into that mess. Well, if people with the Johnsons' taste can get such results, watch us. Even now, after all our work and mistakes, I feel that our new professional advice will still save us money, and with our cute house and our view lot and our good taste—just come around next year!

1 1 1

On July 7, 1941, the Work Projects Administration withdrew the aid which it had been giving toward the development of the Arboretum. This federal agency had contributed large sums of money to the work for almost five years. The principal reason for its withdrawal was due to the material rise in importance of national defense projects.

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(Continued from Page Thirteen)

the list is too limited to include all the good roses and it contains perhaps more of the exhibition type but every one of them has real merit and will justify its presence in your gardens.

Red roses: *Crimson Glory*, *Hortulannus Budde*, *Christopher Stone*, *Etoile de Holland*, *William Orr*, *McGredy's Scarlet*, *Dickson's Red*, *General MacArthur*, *Rouge Mallerin*, *Southport*, *Poinsetta*.

Pink roses: *Editor McFarland*, *Picture*, *Susan Louise*, *The Doctor*, *Queen Mary*, *Mrs. Henry Bowles*, *J. Otto Thilow*, *William Moore*, *Dame Edith Helen*, *Sterling*, *Countess Vandal*, *Mrs. Henry Morse*, *Mrs. A. R. Barraclough*, *Lydia*, *Dr. Kirk*, *Imperial Potentate*, *Shot Silk*, *Rose Berkeley*, *Eternal Youth*, *Mme. Carolina Testout*, *Eli Knabb*.

Yellow roses: *McGredy's Yellow*, *Mrs. P. S. Dupont*, *Phyllis Gold*, *Eclipse*, *Golden Dawn*, *Sir Henry Seagrave*, *Lord Lonsdale*, *Mrs. E. P. Thom*, *Golden Emblem*, *Golden Gleam*, *McGredy's Sunset*, *Joanna Hill*.

White roses: *McGredy's Ivory*, *Snowbird*, *Frau Karl Druschki*, *Kaiserin Augusta Victoria*, *Mrs. H. R. Darlington*, *Mme. Jules Bousche*, *Edith Krause*, *Mrs. Herbert Stevens*, *Clarence Goodacre*, *Barbara Robinson*.

Blends: *Mrs. Sam McGredy*, *President Hoover*, *Saturnia*, *Autumn*, *Hinrich Gaede*, *Mme. Henri Guillott*, *Mrs. G. A. Van Rossem*, *Frederico Casa*, *Signora*, *Duquessa de Penaranda*, *McGredy's Triumph*, *Girona*, *Lady Pirrie*, *Katharine Pechtold*.

Singles: *Vesuvius*, *Cecil*, *Dainty Bess*, *Dainty Maid*, *Isobel*, *Frances Ashton*, *Innocence*.

Polyanthas: *Anne Poulsen*, *Holstein*, *Betty Prior*, *Donald Prior*, *Folkstone*, *Snowbank*, *World's Fair*, *Nypols Perfection*.

Climbing roses—with fall bloom: *Cl. Hy. Teas*—*Mme. Butterfly*, *Lord Charlmont*, *Shot Silk*, *Etoile de Holland*, *Mrs. Sam McGredy*, *Sunburst*, *Talisman*, *Hoover*, *Reveil Dejonias*, *Golden Dawn*, *New Dawn*, *Harmony*.

Climbing roses with but one period of blooming yet most worth while are: *Paul's Scarlet*, *Elegance*, *Mrs. Arthur Curtis James*, *Flash*, *Mme. Gregoire Stachelin*, *Golden Emblem*, *Paul's Lemon Pillar*.

"It has been stated by many early writers that the tulip has been brought into cultivation from the southeast corner of Europe, where it is found growing wild in many parts of Turkey, Syria and on the northern confines of Arabia. It was called *Tulipa* from the resemblance of its corolla to the Eastern head-dress called 'Tulipan' or 'Turban,' and from thence our name of Tulip, as well as that of the French 'Tulipe,' the Italian 'Tulipano' and the German 'Tulpe.'"—From *Spring Flowering Bulbs*—Thayer.

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(Continued from Page Twenty-Six)

trolled by the application of a light oil emulsion in combination with nicotine sulphate in the later part of March just as the eggs are hatching.

Because this is a rhododendron country, possible pests should be considered. The rhododendron lacebug feeds on the under sides of the leaves causing a scorched appearance on the upper surface. The insect has prominent lacy wings three-quarters of an inch or so long. Control is simple with a nicotine sulphate or rotenone spray accompanied by a spreader.

Adult beetles of the root weevil will attack the foliage of many plants including rhododendrons. These beetles are occasionally present at various times in the year but are most prominent in late spring. They chew circular portions from the edges of leaves. It would be wise to apply a poison bait such as "Go West" early in April and again in early June.

Diseases of plants are best controlled by preventive measures such as pruning out the center to encourage healthier growth, general garden sanitation, controlling growth conditions, and preventive sprays. Any outward appearance that the disease might make is frequently a sign that its damage has been done and it is getting ready to move to better feeding grounds.

If your *Pyracantha* berries were not so bright as they should have been or the foliage had a smudged appearance it might be in-

fectured with apple scab. One part of lime sulphur to 40 parts water, applied as a spray, should control this.

Mildew, that greyish dust on the surface of the leaves of lilac, roses and some perennials, can best be controlled by a copper solution spray applied at intervals as the leaves develop. There are several brands of copper solution sprays available at seed stores. A ten-day or two-week interval for spraying this is essential as the preventive action of the spray residue on the foliage is most important.

Other diseases sometimes attack branches or other woody parts of the plant, gaining entrance usually through an injury or pruning cut. Evidence of the disease will be noticed in an unreasonable dying back of a branch or some part of the disease organism will show itself. Spraying is not effective against these. Once they are detected removal of the diseased portion including a portion of sound wood is essential. Part of the sound wood adjacent to the diseased portion may also be diseased. Application of a tree paint or shellac to the cut surface aids to prevent reinfection. Injuries and pruning wounds on susceptible species should always be similarly treated to prevent entrance of a disease.

Planting

The major operations of planting of trees and shrubs are almost over. However, plants can still be transplanted well into the season if the work is done by skilled men and if watering and pruning are carefully done. Some shrubs such as rhododendrons and others with a compact, fibrous root system can be moved easily at any time. Then too, some nurseries treat certain plants in a special way so they can be moved late in the spring.

If some planting is contemplated analyze the situation and its environment before the proper plants are selected. English gardeners and publications on whose fame the sun never sets, stress the location of planting as highly important in the success of any plant. Some plants want an easy living and others in general flower better and have better growth habits if they have to struggle a bit. Treatment of late planted trees and shrubs should include fairly heavy pruning in pro-



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portion to the amount of roots lost in the process. The tops of the plants should be watered frequently and some artificial shade provided for a few days. These things provided, even late spring planting can be fairly successful.

1 1 1

(Continued from Page Fifteen)

inches high and during the growing season it is the brightest golden-yellow, but when winter comes it turns a rusty red. The two best white ones are E. cin. alba and Domino, the superior one being a matter of opinion. They both have erect racemes from three to six inches long and the only difference is that the Domino has ebony-colored flower stalks and sepals, whereas in alba they are light green. E. cin. Apple Blossom has pale pink flowers and is of a semi-prostrate habit. Of the highly colored ones, E. cin. splendens and atro-sanguinea (Smith's Var.) are probably the most outstanding, the former being a glowing red and the latter an outstanding blood red. Other varieties worthy of mention are: coccinea with its carmine-red flowers, lilacina with lilac colored flowers, and atro-purpurea, a deep purple.

Erica tetralix and E. ciliaris both come into bloom around June and are somewhat similar. There are several good varieties of E. tetralix of which alba mollis and Prageri are the most outstanding. The E. tet. alba mollis has silvery-gray foliage, small waxy-white flowers and grows from six to nine inches tall. Prageri has olive-green colored foliage and grows to about six inches high. The flowers, when in bud, are a deep red but as they develop they become paler thus giving the plant a very unusual effect. In the species E. ciliaris, the two most popular are alba and Mawearna, both of which are of upright habit and will reach a height of 18 inches. The variety alba has light green foliage and large white flowers. Mawearna has a coarser growth with large, deep reddish-colored flowers. Another ciliaris worthy of mention is Mrs. C. H. Gill with bright red flowers.

Of the hardy hybrids there are only two really outstanding specimens, the E. hyb. Dawn (E. tetralix × E. ciliaris) and Winifred Whitely (E. cinerea × Call. vulg.). Dawn is especially attractive at this time of year with its coral-colored shoots. Winifred Whitely is

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similar to *E. cinerea* with star-shaped lavender flowers.

From the latter part of July through September *E. vagans* and its varieties are in bloom. The height of these plants depends on the one who prunes them. *E. vag.* Mrs. D. F. Maxwell and the St. Keverne are the most popular and best known. The former is a beautiful cerise and the latter is the only pink heath which has no trace of blue in it. The variety *alba* is, in my opinion, a better white than the newer *Lyonesse*.

Calluna vulgaris starts blooming in July and some varieties carry flowers well into November. They grow from one inch to as high as four feet and most of the plants are very floriferous if properly looked after. Perhaps the most talked of heather is the *Call. vulg.* J. H. Hamilton which is about six inches tall with numerous double pink flowers. H. E. Beale is one of the most satisfactory, making a beautiful show in the garden and yielding long spikes of pinkish lavender flowers for bouquets. Of the newest varieties there is *alba plena* with its double white flowers, *Tib* with double red flowers and Johnson's variety,

a late summer bloomer with lavender flowers. The most outstanding moss varieties are the *Foxii nana*, *Tom Thumb* and *nana compacta*.

There are many, many other beautiful varieties both new and old. In fact since I became interested in them about three and a half years ago I have collected over 200 species and named varieties including some of the interesting South African varieties, many of which must be grown under glass. If you do not know heaths and heathers get acquainted with them for they are an asset to any garden.

1 1 1

The cottage tulips originated in a very interesting way. Dutch growers, disliking the pointed petalled forms, rogued these types out of their fields while they were in the process of developing their Darwins and Breeders. Plants thus rogued were apparently disposed of either by outright gift or by sale at a cheap rate to poor people. Hence it was that a century or more later these forms were rediscovered, so to speak, in the gardens of the cottagers. The name of the type originated thus.

COMPLIMENTS

OF

KRISTOFERSON DAIRY

(Continued from Page Seventeen)

able to hint at the endless variety of plant material from which to select when making a rock garden. There is a plant for every situation and for every taste if we but make the effort to find it. Nurserymen, amateur growers, books, magazines and other periodicals are some of the sources of information which will be of help in your search for knowledge about this branch of gardening.

1 1 1

Significant plant groups on hand at the Arboretum and their sponsorship:

Chaenomeles (Japanese quince)—57 varieties. Sponsored by the City Wide Garden Club.

Camellias—174 varieties. Sponsored by Amateur Garden Club.

Ceanothus (Wild Lilac) — 15 varieties. Sponsored by Issaquah Garden Club.

Viburnum—39 varieties. Sponsored by the Seattle Chrysanthemum Society.

Magnolias—34 varieties. Sponsored by the friends of E. A. Fabi.

Maples—165 varieties. Sponsored by the Tacoma Garden Club.

Rhododendrons—400 species and varieties. Sponsored by various clubs.

Sumacs—20 varieties. Sponsored by the Kenmore Garden Club.

Heathers—120 varieties, largely from Mr. Arthur Dome.

Flowering Peaches — 16 varieties. Sponsored by the Mercer Island Garden Club.

Clematis—20 varieties. Sponsored by the Skagit Garden Club and Chuckanut District, Washington State Federation of Garden Clubs.

Lilacs—85 varieties. Sponsored by the Spokane Garden Club and the North Side Garden Club.

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(Continued from Page Twenty-Two)

for general garden purposes will also find valuable plant material. The Auricula section is divided into seven subsections, each with separate botanical similarities—yet all subsections share the characteristic of involute or incurved folding of the young leaves which makes this section easily identified. Only one other Primula section, section Verticellata, has the same habit; but with it we need not worry ourselves as it is a very limited group and rarely found in cultivation.

To briefly summarize this section of the genus Primula is difficult as it is one of the largest and contains many good species and hybrids that are worthy of description. However, only a few of the most outstanding can be touched upon in this article.

Subsection Euauricula

P. auricula

The species auricula is found on the Carpathian and Apennine Mountains in Europe. The history of the cultivation of this plant dates as far back as 1570, but, like many other types of primroses, this farina-covered and yellow-flowered original has been super-

seded by hybrids and variations and the typical plants are seldom seen in gardens today. Show and border auriculas have been derived from crosses with other species in the Auricula section, namely with *P. carniolica*, *viscosa*, and *hirsuta*, which have given rise to innumerable variations of form and color and are broadly and conveniently grouped under *P. pubescens*. The hybrids derived from these crosses are so numerous that a complete list of named varieties would be staggering and not particularly helpful as few names are standardized and choice should be governed by good form and color rather than name.

Propagation must be effected by division if it is desired to increase existing specimens. Raising plants from seed may give rise to new variations but the chance is small that more than a very few will be outstanding. The species auricula and varieties will tolerate more direct sun than any other Primula, but they will reflect their appreciation if their roots are allowed to seek a cool root run which can be afforded in the rock garden. Any well-drained, good garden loam that is

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porous, yet retentive of moisture, is about all this group requires.

Other Auricula Groups

The remaining species of the Auricula section are divided into six subsections which collectively contain the largest number of species in the Auricula section. The culture of this saxatile group is similar and requires a compost of loam, leaf mold and coarse sand. A scree bed is the ideal situation for these alpine but they will, in most cases, succeed in an open and specially prepared, well-drained situation facing west. They are not plants for the ordinary open border. As a whole they are small, jewel-like and rare and it is within this group that the rock gardener can revel. Listed are only a fraction of the species and hybrids of the various subsections, but they are exquisite and should prove interesting for those having a penchant for this type of gardening:

Species: *P. marginata*, *P. hirsuta*, *P. Wulfeniana*, *P. Allioni*, *P. viscosa*, *P. minima*.

Hybrids and varieties: *P. marginata*-var. Linda Pope; *P. hirsuta*×*P. viscosa*=*P. Berninae*; *P. minima*×*P. Wulfeniana*=*P. Desch-*

manni; *P. hirsuta*×*minima*=*P. Farsteri*, *P. Steini* and *P. Kellereri*.

Candelabra Section

The species of the Candelabra section should be far better known in our Pacific Northwest gardens. Due to the ease of culture, intrinsic beauty and unusual candelabra inflorescence, they give real promise of attaining a place in floriculture that should rightfully be theirs.

This section is grouped into a classification called Asiatic Primula and can somewhat be compared with section *Sikkimensis*. They are found growing on the Himalayan Mountains from 7,000 to 12,000 feet, on moist mountain meadows or bogs. If ample moisture in a well-drained location can be provided them they will tolerate full sun, but a semi-shady position is also to their liking. These are delightful flowers for bog planting if the situation is not stagnant and they will flourish in a good friable loam rich in leaf mold.

The last English Primula conference did not divide this section of about 30 species and subspecies into subsections, yet one not familiar with this large group might be con-

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Viburnum bitchuiense, fragrant, rare.

Viburnum Burkwoodii.

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fused by the two apparent types of species contained within this section. One type resembles *P. japonica* and the other *P. helodoxa*. Nevertheless, the systematic botanists have retained them under one main section.

The *P. japonica* type is most common. The deciduous foliage is similar to *P. acaulis* and the many blooms are arranged in tiers standing straight out from the stem. Individuals may produce many scapes, the number being in direct ratio to the health and age of the plant. The several species of the type are certainly not as refined and delicate as many *Primulas*, but when massed in naturalistic woodland plantings the group can compete with any.

The *P. helodoxa* group has evergreen foliage and the leaves are pointed and are bright glossy green. The flowers are also arranged in tiers somewhat farther apart than in the *P. japonica* group, and are funnel shaped and slightly pendant but not so large.

Apparently the two types do not cross with each other readily. The *P. helodoxa* group mates only artificially and with difficulty, whereas the *P. japonica* group is extremely prolific and is apt to vitiate surrounding spe-

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cies. In the *P. japonica* group there are many good hybrids and strains, although they can hardly be relied upon to reproduce themselves true to seed, whereas in the other group only a few crosses are recorded. *P. helodoxa* × *anisodora* = *P. anisodoxa*, having flowers of a crushed strawberry shade, is one cross that has been accomplished.

Outstanding species of the *P. helodoxa* group are:

P. helodoxa-Marsh Glory Primrose. This is the giant among the Candelabra with an average height of two to three feet and often taller. The corolla is a soft golden-yellow with calyces covered with a yellow farina. The slender stems carry the flowers at widely spaced intervals. Flowers in June and July.

P. anisodora. When the leaves of this *Primula* are crushed, an odor of aniseed is emitted; therefore the name *anisodora*. This primrose is fine for a damp situation. The flowers are a deep maroon shade with a distinct yellow eye and are carried on 18-inch stems.

P. oblanceolata, *Wilsoni* and *Poissoni*. This group is so much alike they can be



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grouped together, the cultivation, general habit, time of flowering and all shades of purple flowers being similar.

The japonica type of *Primula* has many species worth cultivation. *P. japonica* is a very robust plant and a good form is rich red in color. However, the many strains far exceed in merit the type plant.

P. Bulleyana is a fine species and when massed in a woodland setting the reddish-orange of the florets is striking.

P. Beesiana can either be good or very bad, depending on the flower color which is a plum-purple if it is good, otherwise indeterminate muddy magenta is an apt description.

P. pulverulenta is a fine species. Its greatest asset is that it is the parent of many good hybrids and strains. The original purple plant is surpassed by its numerous progeny.

Good hybrids and strains of the japonica type *Primula* are: *P. pulverulenta*, Bartley Strain; *P. pulverulenta* × *Cockburniana* = *P. Red Hugh*; *P. japonica*-Miler's Crimson; Alba; and Belvedere hybrids *P. Bulleyana* × *pulverulenta*.

1 1 1

Extensive installations of a permanent nature have been made at the Arboretum. An underground water system—approximately 23 miles of pipe—covers almost the whole of the 267 acres. Several miles of drain tile have been laid where wet, lowland areas needed drainage. Roads and trails, eight miles of them, have been constructed. A fine, compact greenhouse unit was built for propagating purposes. A nine-acre nursery with a complete overhead water system has been installed and is in full use. The service yard, the main office building and the new warehouse structure are definite assets. One and one-half miles of lagoons have been dredged to accommodate plantings of water-loving species. A stone house, now in use as a residence for an employee, was built and a series of pools or small lakes established. Approximately 1,500 tons of rock were brought in and laid after a naturalistic fashion in Rhododendron Glen, Woodland Garden and the Rock Garden area. These have been the principal construction projects completed thus far.

Pruning *Daphne Odora*

The fragrant daphne is one of our most desirable winter-blooming evergreen shrubs. It has one unfortunate habit, namely, that it tends to become leggy. We had the pleasure recently of seeing plants in one of our nurseries which had been pruned in such a way as to create a nice, bushy and more compact form. In order to accomplish this, it is only necessary to pinch out the terminal growths religiously. To be sure, the practice will tend to keep the plant lower and it will not, therefore, attain its full height in the usual number of years, but the pinching does produce more branches down near the ground level. This practice gives the compactness that is too often lacking in our old specimens.

1 1 1

Rock roses will flourish in the dry areas under Scotch pines; good varieties are *Cistus purpureus*, and *C. ladaniferus* var. *masculatus*.

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(Continued from Page Twenty-Four)

let nature take its course. Most new growers like to produce large flowers and it is a thrill to see a plant with two or three perfect eight or nine-inch blooms.

If this type of flower is grown it means all side growth on each stem must be kept pinched out, allowing only the leaves to remain. New growth and often buds will have to be removed at the axil of each leaf several times, thus keeping all the plant food to be used in growing a fine specimen flower while in the spray method the wild abandon of generous nature gives a riot of color from the increased numbers of smaller sized flowers.

A newer strain known as the Early English type, has come into general favor of late years. These begin blooming as early as June and continue until October or early November. I have grown over 100 varieties of this type and try to discard some of the least desirable sorts each year. But I still find myself with at least 50 varieties I think I must keep. Many are lovely sprays of almost every color and many are fine large varieties, some of the finest of which will not always perform the same every year and for no apparent reason. You decide to give one a toss to the compost heap but relent and give it another try and the next year it is a thing of beauty. This fickleness makes the game more interesting, I guess. Some of my favorites are:

White—Spray: Snowfall, R. A. Roots, Cranford cream. Thin or disbud: Madonna, Blanche De Poitou, Debutante.

Pink—spray: Shirley, Pride, Anthea, Sybil, Salmon Freda, Rose Precose, Litchfield Purple. Thin or disbud: Juliana, Pink Reward, Rosalinda, Silver Queen, Mrs. Philip, Leda, Sybil.

Yellow—Spray: The Ashes, Kingcup. Thin or disbud: H. Sutcliffe, George McLeod, Top Score, Hillcrest Yellow, Lizzie Jenkins, Yellow Globe.

Amber and Bronze—Spray: Copellia, Mystic Bronze, Bronze Freda, Brilliant, Wendy, Halo. Thin or disbud: Mrs. Wm. Whyte, Mary Hobbs, Antelope, Woking Bronze, Amber Utopia, Bronze Early Buttercup.

Red—Spray: Fireglo, Gladsome, Red King. Thin or disbud: Birmingham, Conqueror, Gladiator, Jim Thorpe. If this useful strain

is grown you need never see your plants caught by an early freeze before they have bloomed.

Some lovely Rayonante or quilled varieties are Patricia Grace, pink, also sports from this variety in white, yellow and buff. These bloom in late October or early November and make lovely disbudded specimens.

The pests to look out for are aphids, both green and black. Sometimes persistent spraying is necessary, particularly when the plant is young and tender. A small green worm which eats the very heart from the tip of the plant then rolls itself in a leaf, must be watched for carefully because once it gets a start it can do much damage in a short time. It is readily detected by the rolled-up leaf and can be squashed easily. Arsenate of lead can be used but I prefer to hand pick. A hopper bug sometimes stings the stem just next the bud and often causes the flower to be one-sided. These, too, can be caught early on a cool morning if you are quick.

What to do with the plants after blooming is always a question. One year, after having lost most of mine in a hard winter, I decided to put one plant of each variety in a cold frame, which is no easy task if many are grown. Perhaps because of the mild winter the plants left where they were grown were so much better in the spring than those lifted that I took the risk again and have left them

out for the past three years. But present indications point to a considerable loss and once more I vow to lift them next year. I think it wise not to weed too carefully late in the fall as any such growth helps to protect the new shoots.

Its beauty in the garden and its wonderful keeping qualities as a cut flower should make the chrysanthemum indeed the queen of autumn flowers and the crowds to be seen at the fall shows prove it to be a prime favorite with a great many people.

1 1 1

In the early part of the 16th century, a tulip "craze" swept over Holland. Single bulbs were sold on every hand for fabulous sums. It has been recorded that as much as \$3,000 was offered for one bulb and refused. For a single bulb of the variety Semper Augustus, there was offered the sum of 4,600 florins, a new carriage, 2 gray horses and a complete set of harness. At a public auction near Amsterdam in 1637, 120 bulbs were sold for 90,000 guilders (about \$41,000).

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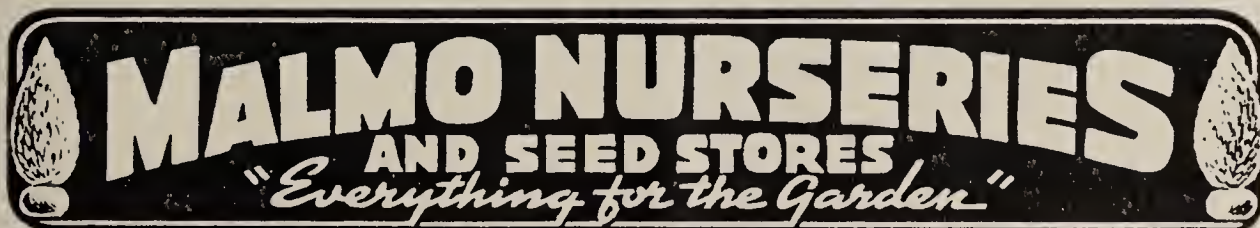
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(Continued from Page Nineteen)

and semi-erect habits of growth. The lighter green of the foliage affords an opportunity for contrasts when used in plantings with the *M. Aquifolium*.

With great possibilities, but as yet untried, are two forms of *Ceanothus*, the evergreen or sticky laurel (*Ceanothus velutinus*) and the deciduous or buckbrush (*Ceanothus sanguineus*). *Velutinus* has many features which recommend it as a shrub for cultivation. The leaves are a glossy dark green and the flowers, while not spectacular, do force us to classify it with the flowering shrubs.

Three of the elderberries are native to Eastern Washington, and they are all highly considered for mass plantings. They are *Sambucus glauca* or *caerulea*, *S. pubens* and *S. melanocarpa*. As with the eastern species these Washington natives are tall growing and require a great amount of space. *S. glauca*, with its powdery blue fruits; *S. melanocarpa* with its black clusters, and *S. pubens* with dark red fruits create an unusual show when combined in extensive mass plantings. For large scale naturalistic developments, the

sambucus is deserving of very much more consideration than heretofore.

When there is a need for brilliant color in connection with informal plantings, *Sorbus sitchensis* will prove to be a new and welcome addition. This low-growing mountain ash is closely related to *Sorbus americana* and responds to the same treatment as *americana*. During the past season, the sizes and quantities of reddish-orange fruits produced by this shrub were such that no one could have asked for greater perfection. This *Sorbus* is well suited for undergrowth planting in slightly moist situations.

Myrtle *Pachistima*, mountain lover, or mountain myrtle (*Pachistima myrsinites*), is potentially the best of the Eastern Washington broadleaf evergreens. It reaches a maximum of two and one-half feet in height when found in its shady habitat. While it is not as refined and as dense a shrub as boxwood, it can, nevertheless, be used as a dwarf edging where box would not be successful. It should be propagated, as with boxwood, by taking matured wood in the fall. New plants should be protected by a lattice or cheesecloth

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covering until they are established. Clipping in the spring must be severe in order to keep the growth under control. The bark is easily injured, and for this reason care must be taken to protect small plants from mowers or from the heavy weight of snow. In Spokane winters, *Pachistima myrsinites* does not turn rusty or become subject to burning. It is free from leaf miners and, to date, shows no tendency to harbor diseases. Because of the satisfactory results obtained thus far in the growing of this shrub, further experimentation among Eastern Washington gardeners is anticipated. And it is the hope of these growers that a truly valuable hedge shrub may reward them for their patient efforts.

1 1 1

Situated in a natural park in the heart of Seattle, the Arboretum is freely accessible to everyone. Mild winters, ample rainfall and no extremes of temperature are gifts of Nature that set the Northwest apart from most portions of the world. These conditions permit the growth of an unusually wide variety of temperate zone plants.

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During the year ending May 30, 1941, the Arboretum staff handled the following plant materials:

Plants received during year.....	11,325
Plants handled during year.....	17,809
Packages of seeds received during year	1,847

1 1 1

An inventory of the genus Rhododendron, taken at year's end, revealed the following quantities on hand at the Arboretum:

Packages of seeds	111
Seedlings in the greenhouses.....	6,100
Seedlings in the lathhouses.....	15
Seedlings and grafts in cold frames.....	2,414
Plants in the nursery.....	1,421
Plants in Rhododendron Glen and elsewhere outside	1,987

Total.....12,048

1 1 1

The University of Washington Arboretum in Seattle occupies an area of 267 acres and lies immediately to the southeast, across the Lake Washington canal, from the University's football stadium.

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(Continued from Page Twenty)

Although it is still rather rare it is well worth growing and deserves a place in every garden.

Daphne odora has long been a favorite of our gardeners. Few, if any, fail to admire a well-grown bush. It holds its foliage well during the winter and only in severe weather do the leaves show any sign of damage. Its habit of growth is also one which lends itself readily to the niche which it is to fill. Through correct and heavy pruning it can be made to produce sturdy, upright limbs and to attain a height of from three to four feet. On the other hand, where a more sprawling bush is indicated, less pruning will do the trick. There are several distinct types of odora distinguished by their habit of growth, foliage and color of blossoms. The one most commonly seen is the one with a yellow margin around the leaf. Of this again there are two sub-types, one which carries its blossoms on short spurs on the inside of the bush, thus hiding them from the world, and another type which produces blooms at the tips of the twigs, showing them boldly to everyone who cares to look. This latter type is still rather scarce but within a few years it will take the place of the older one. The form with solid green foliage has practically the same colored flowers as the one with the yellow margin. It is true that in some soils the color of the blossoms of the green leafed type is somewhat darker pink than the other but this difference is not constant. The flowers of the green type appear mostly on the tips of the branches which makes it more showy than the older kind. In habit of growth it is also more compact, the branches are stronger and they are not subject to as much breakage. The leaves are also slightly shorter and more rounded.

In Daphne odora rubra the flowers are almost purple, although the habit of growth is about the same as above. Daphne odora alba is a variety that should not be overlooked in any garden. Its habit of growth is more upright than any of the other related forms. Flowers are carried on the tips of the branches and are pure white and very fragrant. The heads are considerably larger than in the pink sorts and carry many more individual flowers. It is a striking shrub and in the near future will be the pride of many gardeners.

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Daphne laureola is an evergreen, upright bush, whose flowers are a greenish yellow hue and faintly scented. Most of the blossoms are more green than yellow, and they are found near the tips of the branches just underneath the top leaves. The fruit, when ripe, is black and mildly poisonous.

Daphne caucasica, a deciduous species which is a loose, upright grower, produces flowers early in the spring; they are white and faintly sweet scented. The fruit is black. The last two varieties have a place if one has a collection of daphne in the garden, otherwise they have little to recommend them.

Daphne mezereum is placed last on the list not because it is the least desirable but because it is the least understood. The shrub is upright and deciduous, with lilac-purple flowers which appear in great masses along the twigs before the leaves develop. They are followed by bright red berries which persist well into the summer. A single bush planted among the shrubbery seems to be entirely out of place, but used in a mass planting in the background or on a hillside

they afford a beautiful sight early in spring. It will bring color to our gardens long before other shrubs show any sign of life.

There are quite a number of other species and varieties of daphne not mentioned in this article, some because they are not hardy in our climate, and others because the writer is not sufficiently familiar with their likes and dislikes as to soil, climate, etc., to include them.

In closing permit me to make another observation which is only too often overlooked. In flowering shrubs, the same rule holds true as in fruit trees. There are individual trees in every variety which are shy bearers, which should never be used as parent trees from which to propagate since they pass on this fault to their progeny. The same holds true in daphnes and other flowering shrubs. Just because it is a *Daphne odora* is no guarantee that it will be a heavy bloomer; in order to insure this it must be propagated from a floriferous plant.

1 1 1

Begin spraying all shrubs and perennials for aphids as soon as leaves appear on spiraea.

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