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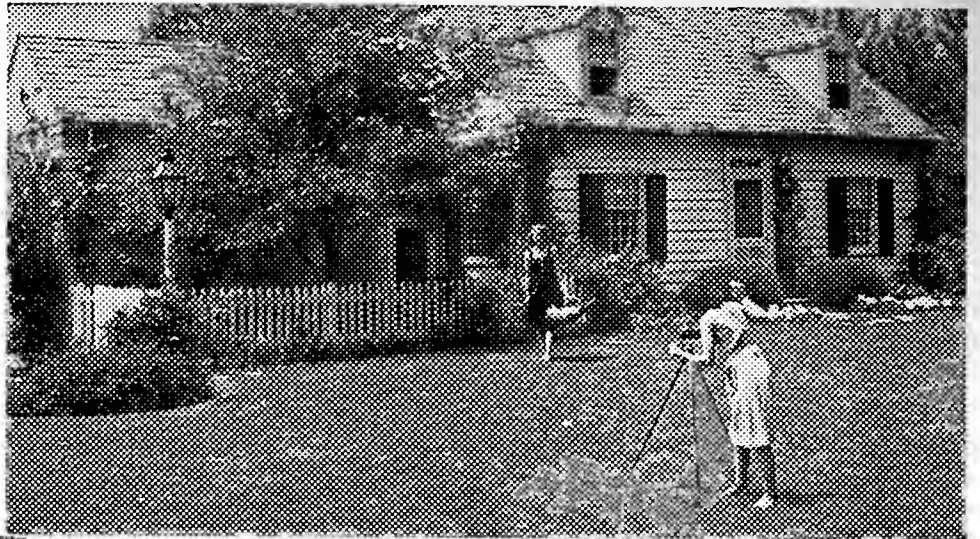
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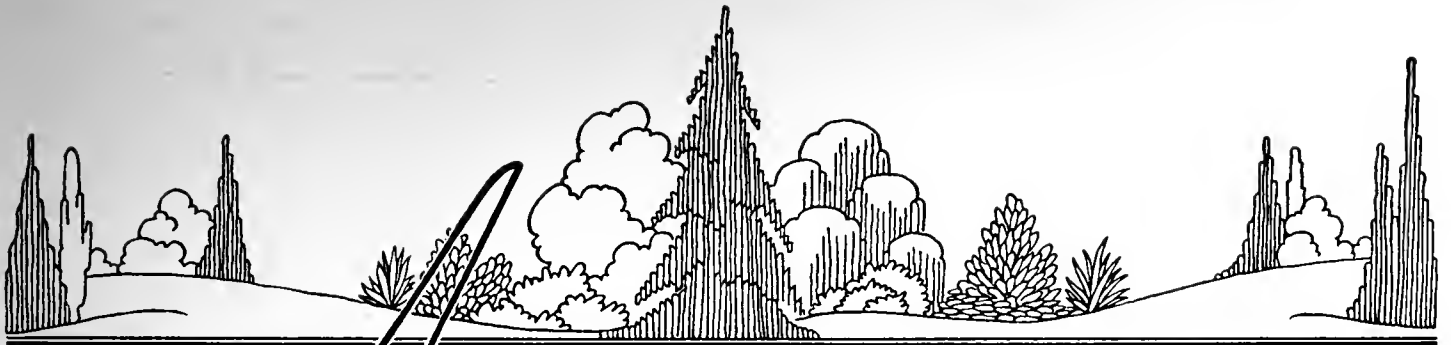
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The Arboretum Bulletin

VOLUME XIV

SPRING, 1951

NUMBER 1

The Arboretum in the Winter

B. O. MULLIGAN

UP TO the present date (February 7) the winter of 1950-51 has been remarkable for its very mild quality. Except for the week beginning January 27, when a cold north-east wind brought the temperature down rapidly and kept it at or near freezing for five or six days (lowest 13° and 15° F.) with no snow cover, the chief climatic feature of the period October 1, 1950 to January 31 this year has been the rainfall.

During these four months, 25.76 inches of rain fell in the Seattle area, November being the wettest month with 7.53 inches. This was an excess of 7.35 inches above the normal precipitation, each month being considerably wetter than average, and coupled with very slight frosts and often warmer weather than usual produced an exceptionally advanced state of growth in those shrubs which are expected to flower early in the year. A week before Christmas, for example, the following were in bloom in the Arboretum: *Camellia Sasanqua*, and one of the new English hybrids of *C. saluenensis*; *Erica carnea* "King George," and a white form of *E. darleyensis*; *Helleborus corsicus*; *Hamamelis mollis*; *Prunus subhirtella* var. *autumnalis*; *Rhododendron mucronulatum*; *Viburnum fragrans* and *V. Tinus*, while *Chimonanthus praecox* and *Camellia japonica nobilissima* came out a few days later.

The cold spell at the end of January naturally affected some of our more tender evergreens, young *Eucalyptus* and *Cornus capitata* for example, and even some precocious buds on the tree peonies, but damage is slight compared with that a year ago.

Operations

During October the west side of the Boulevard immediately north of the E. Lynn Street bridge was considerably improved in appearance by filling and grading it down from curb to grass level, laying a band of turf 4-5 feet wide for about 400 feet to the end of Calhoun Street, finally sowing the lower strip of soil with grass seed. The necessary turf was obtained from the approach to the new Historical Society excavation and building to the north of the Boulevard.

At the end of December most of the preliminary work was accomplished for the same type of improvement along the opposite side of the Boulevard slightly northwards, where a pre-war line of sprinkler heads had first to be excavated, then lengthened, before any filling could be done. When this is completed in early spring it will be possible to mow and keep these two strips in much better condition than formerly. Similar improvements will later have to be continued south along the Boulevard for almost the whole length of the Arboretum, whenever time and labor permit.



The annual task of raking up and removing fallen leaves was this season accomplished much more speedily through the use of our new tractor-operated rake, and completed early in December. Many beds of rhododendrons and some of azaleas and other shrubs in various parts of the Arboretum have been well mulched with this material, to which a nitrogenous fertilizer will be added in March or April.

Some necessary weeding was achieved during the fall which will save time in the busy spring season: in the Rose species area, around the parking lot just north of the Boulevard bridge, in Loderi Valley, and on the south bank of Rhododendron Glen. In December the mass of snowberry plants was pulled out by tractor from beside the northeast corner of the Madison Street parking lot, and two large patches of bramble roots dug out of the same bank beside the Boulevard. During January the west side of the Upper Road near the cottage was cleared of seedling brooms and alders, and a crew started removing these and other unwanted young shrubs and trees, including quantities of wild cherry (*Prunus emarginata* var. *mollis*) and hazelnut (*Corylus californica*) which had grown up during the past five years from the east side of the Boulevard south of the rock garden. This process was continued to the bed of *Azalea Schlippenbachii* at the south end of Azalea Way, where the mass of overgrown shrubs in the background is in the process of being removed.

Along the southeast boundary of the Arboretum on 31st Avenue N. the hedge of *Laurus tinus* has been pruned for the first time in at least five years, greatly to its benefit and the improvement of the street. Many of the Japanese cherries along Azalea Way have also had much surplus wood removed, especially from trees of the weeping form of *Prunus subhirtella*.

A new bed for shrubby peonies has been prepared on the bank slightly north of the present plantings by the Upper Road, to take

some young plants this spring and more next autumn and in 1952. Other new beds for rhododendron and azalea species and hybrids have been made and planted in Loderi Valley and southwards along the west side of the service road behind the magnolias.

Crushed rock has been bought and spread in the north parking lot by the Boulevard, in the yard by the offices, at the upper approach to Rhododendron Glen and elsewhere, whilst time has been occupied in particularly wet weather in making long concrete blocks to surround proposed new parking areas. In Woodland Garden a new branching trail has been made on the north bank and the old one greatly improved.

A southerly gale on January 15 brought down or snapped off about ten native evergreen trees throughout the Arboretum, only one of which seriously damaged a Japanese cherry in its fall. The tree removal crew is now very adept at transferring these casualties to other spheres of usefulness, either as logs around parking areas or into firewood.

Plantings

Commenced early in October and continued with few intervals until mid-January, generally under very favorable conditions.

FOSTER'S ISLAND. Ten more species of pines added, twenty-two plants in all, including the Bishop, Sugar, and Coulter's pine, all from California. Five species of birch, totalling thirteen plants, amongst them the North American yellow birch, the western *B. fontinalis* and the large-leaved *B. Maximowicziana* from Japan.

In the PINETUM were placed five species of true cypress, twenty-five plants altogether, including a variety of *C. arizonica* collected in northeast Mexico in 1948, and the Californian *C. nevadensis* and *C. Sargentii*. A new planting of eight named forms of the native *Juniperus scopulorum* was made, to show the variously colored selections now available, with five other species in addition, whilst on the bank facing the Boulevard six plants of the remarkable *Metasequoia* tree from W. China are now growing.

Considerable increases have been made to

—Photo by E. F. Marten



Weeping Willow at North End of Azalea Way

the ERICACEAE collections. In a bed by the Upper Road just north of Rhododendron Glen we planted ten kinds of true heathers (*Erica*) in which seven species were represented, and three forms of Ling (*Calluna*), 150 plants in all. Amongst them a collection of seven of the hybrid lilies raised by Miss Preston at Ottawa some years ago, to give color and interest in summer before the heathers bloom, and in the same bed some two dozen seedling plants of the interesting bigeneric hybrid *Gaulthetia wisleyensis*, first noted in England more than twenty years ago.

Lower down the slope, just north of the Garrett memorial planting, a collection of nine *Gaultheria* species now borders the *Kalmia* and *Pieris* bed. This includes natives of Japan, China, the Himalaya, and New Zealand, all low-growing evergreens, numbering 183 in all.

RHODODENDRON GLEN. Here some rearrangement of rhododendron species into their proper series has been carried out, especially of the *Triflorum* and *Thomsonii* series, with some additions to the *Fortunei* group. So far, thirty-seven species totalling 148 plants have been placed; more are likely to be added in early spring. Six plants of the brilliant Chilean fire-bush (*Embothrium*) are now grouped among the rhododendrons and camellias near the head of the Glen on the south bank.

LODERI VALLEY. A group of four varieties of the beautiful *Rhododendron Loderi* now forms a centerpiece on the south side of the valley, accompanied by a young plant of the rose-pink Himalayan tree, *Magnolia Campbellii*. Around these are temporarily sited a number of young rhododendron plants of the *Falconeri* series, with larger permanent plants of the same type well spaced out in the rear. Higher up the bank to the southwest is a planting of azaleas of the Kurume type, and farther south behind the Magnolia Collection a considerable rhododendron group composed chiefly of hybrids of *R. Fortunei*, now of flowering size. On the north side of the valley several beds have been made and planted with azalea species—*atlantica*, *arborescens*, *rosea*—with *Rhododendron canadense* and

several low-growing evergreen Japanese forms. With these and other earlier planting arrangements this attractive site now begins to take some shape, although it will necessarily be several years before the plants are large enough to make much display.

In the OAK area at the north end of the Arboretum groups of four *Thuja occidentalis* varieties and of four *Chamaecyparis* have been planted, three of each variety. These were a gift from the Board of Park Commissioners of Vancouver, B. C., in exchange for fifty rhododendrons and a selection of other shrubs from this Arboretum. Here also we have added forty plants of sixteen kinds of named hybrid rhododendrons to those set out in February, 1950.

Amongst other plantings have been additions to the crab-apple collection in the Winkenwerder memorial area, comprising twenty-three plants of thirteen species or hybrids, some of them recent products from the Arnold Arboretum. In the low area northwest of the end of Roanoke Street ten *Cotoneaster* species have been placed in groups, usually of three to six plants, with some allied plants of the family *Rosaceae*—*Amelanchier*, *Crataegus*, *Exochorda*, and *Prunus*. The initial planting of a new collection of *Vacciniums* was made in November in the area south of the magnolias, fifty-seven of five species.

Acquisitions

(a) Seeds

The greater part of those received during this period have come from gardens or arboreta visited during my trip to Great Britain last summer—some privately owned, as those of Mr. H. A. Moore in N. Ireland, Mr. N. G. Hadden and Mr. E. B. Anderson in Somerset, England; others of such well-known institutions as the Montreal Botanical Garden, the Royal Horticultural Society's Gardens in Surrey, England, and the arboretum of the Boyce Thompson Institute at Yonkers, New York. From all of these, and others, have come welcome and valuable seeds of new or unusual shrubs or trees, some of which have already germinated here. Three other note-

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Huntington College Botanical Garden and Arboretum

FRED A. LOEW*

ON a gently sloping tract of about three acres lying just north of the Administration building of Huntington College, Huntington, Indiana, is located the Botanical Garden authorized by the College Board of Trustees in 1935. Adjacent to this tract and extending to the west, east and south is a natural woodland of about 40 acres, the topography of which is partly a broad creek bottom into which extends a number of steep-sided ravines. This tract is the arboretum section of the Huntington College Botanical Garden and Arboretum.

This section is naturally planted with American, Slippery and Rock Elms, five species of Oaks, three of Hickory, two of Ash, four of Maples, and other species less numerous; a total of 36 species of native and naturally planted trees of sufficient maturity for study by botany students. In addition to the trees there are 32 species of native and naturally planted shrubs including Black Haw, Arrowwood, Leather Wood, Spice Bush, Wahoo, Choke Cherry, Redbud, two species of wild grapes, Bittersweet, Pawpaw, Flowering Crab, Prickly Ash, Virginia Creeper and others less numerous. There are about 200 species of herbaceous plants.

Through the entire arboretum section there are about two miles of trails kept open for the unobstructed use of classes in botany, nature study and zoology, and for those who wish to take quiet strolls through a naturally wooded tract.

The Botanical Garden section is laid out in plats which vary in width from five to ten feet, mostly more or less curved. Between these plats are three-foot grass paths.

The soil is a naturally drained clay loam. However, the grass section is a broad ravine bottom to the north of the main part of the garden and is a more or less alluvial type of soil rather moist and lightly shaded at times during the day.

The broad-leaf plant section is in the open except where partially shaded by shrubs which were brought into the garden. To this tract were added mostly herbaceous perennials and shrubs; some trees were planted around the margins.

There are now in the garden and arboretum 86 species of trees, of which 22 species are conifers, 117 species of shrubs and 389 herbaceous species. Most of these were brought from various parts of Indiana and Michigan. In the garden report made in December, 1948, were listed 96 families, 306 genera and 592 species of which the Compositae family is the most numerous, having 27 genera with 70 species, most of which are native of Indiana. The most numerous genus in the family is *Helianthus*, sunflower, with 12 species. The next is *Solidago*, goldenrod, with 9 species. The next largest family is *Rosaceae*, with 18 genera and 51 species. The Grass family is represented by 27 genera with 36 species. The *Labiatae*, Mint, family is well represented with 12 genera and 24 species. Other families are represented by lesser numbers.

Huntington College Botanical Garden and Arboretum were founded for several specific purposes. Without naming them in order of their importance, one purpose is to bring together in accessible positions many plants that are never seen by a large majority of people, so that they can easily be observed without the necessity of going into almost inaccessible places to find them. Another purpose is to conserve species of plants that are vanishing from localities by the clearing of land for agricultural uses or by the spread of cities and towns. A botanical garden demonstrates the adaptability or lack of adaptability of plants when taken into a changed habitat, and supplies close at hand much material for class work in botany, zoology and nature study. It also provides some plants in bloom every month of the year from March to November and gives opportunity to observe the individ-

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*The seventeenth in our series of articles on important arboreta and botanic gardens, written by its Director, Mr. Fred A. Loew.

Spring Flower Show in May

S. L. SAVIDGE*

GREATER SEATTLE, INC., in association with the University of Washington Arboretum Foundation, is sponsoring a mammoth Spring Flower Show during the first week of May. The dates are Wednesday, May 2, through Sunday, May 6; the show to be held in the Edmundson Athletic Pavilion, University of Washington.

The pavilion will be transformed for five days into a floral wonderland with many types of spring flowers and spring-flowering shrubs. This is probably the first time in the history of Seattle when a combined flower show will be presented featuring rhododendrons, orchids, tulips, daffodils, azaleas, hyacinths, camellias and scores of other flowers.

Decorative effects featuring forest scenes, waterfalls, pools, orchid jungles and huge floral baskets are contemplated. There will be erected in the pavilion a limited number of floral fantasies patterned after Mother Goose legends, such as a Peter Rabbit set, the Old Lady Who Lived in a Shoe, an Old Dutch Windmill, featuring hundreds of tulips. In addition several spectacular flower sets are planned to be arranged for display by various garden clubs of King County and neighboring cities.

In order to make this big Flower Show a success, the cooperation of all nurserymen, garden clubs and flower growers is earnestly solicited. Advance notice has been sent out to growers urging them to make preliminary arrangements so that certain early-blooming flowers and bulbs can be held back for the show, or later flowering shrubs advanced for planting so they will be available for placement in the Flower Show.

The U. of W. Edmundson Pavilion is ideal for a flower show, since it provides an abundance of space for exhibits and floral sets, and also provides seating capacity for 5000 people.

The main ground floor of the pavilion can quickly be converted into an all-dirt floor (by removing basketball floor), and since the pavilion is provided free of charge by the University of Washington, all flower exhibitors are in turn granted free space. Other advantages of the pavilion are that there is an abundance of water, electricity for lighting effects, and huge double doors at both east and west side of the structure provide easy access for trucks to haul in forest trees or other bulky loads.

The entire show is being underwritten by Greater Seattle, Inc., and I believe Seattle flower lovers are fortunate in securing this high-class organization to handle the promotion which in itself will insure an attendance, in my opinion, of far in excess of 50,000 people—not counting perhaps an additional 25,000 school children who will get in free of charge. Mr. George Gunn, Jr., president of Greater Seattle, Inc., and Mr. Walter A. Van Camp, managing director, are both enthusiastic about the possibilities of this Flower Show in that it will set a pattern for future annual Seattle Flower Shows, and especially this year, as it provides an opening celebration for the Seattle 1951-1952 Centennial.

Another valuable assistance in staging this 1951 Flower Show is the cooperation so generously offered by the Superintendent of City Parks, Mr. Paul Brown. Mr. Brown was the driving force who put together the quarter of a million dollars Aqua Follies Stadium at the west end of Green Lake last summer, in less than 100 days, and hauled in all the evergreens and background forestry effects.

Individuals, growers, nurserymen and flower clubs interested in participating in the show may write Spring Flower Show, Greater Seattle, Inc., 1102 Northern Life Tower, or phone direct to Walter Van Camp, ELiot 7100.

*Mr. S. L. Savidge is Chairman and the "driving force" behind what we anticipate to be "Seattle's Greatest Flower Show".

Poisons Among Woody Plants of the Garden

H. W. YOUNGKEN, JR.*

FROM time to time, many garden enthusiasts have become alarmed following accounts which appear in the press or in literature from other sources regarding a case of poisoning from a plant. On numerous occasions, the physician's phone will ring as an excited mother seeks advice on what to do after Johnny has been found eating merrily of the bright red berries of a firethorn, kin-kinnick, *Daphne Mezereum*, or some other garden plant. Plants are frequently handled without regard for any harmful effects which they might produce, and when suddenly a skin irritation or dermatitis results upon contact, or a child becomes ill from eating berries, gardeners then become alarmed. Fortunately, only a relatively few perennials of the garden have severely poisonous constituents. The question is, of course, which woody plants are poisonous and which are not.

The physical response of the human body to plant poisons is not always an adverse one. Many of these harmful poisons can be thrown off by the body with only slight inconveniences. On the other hand, some can be severe enough to be fatal. Poisons, such as contact poisons which affect the skin and body membranes, are at times extremely irritating to some persons but harmless to others. This situation is commonly explained on the basis of sensitivities which some people have to the slightest trace of foreign proteins, oils, acids or other similar plant constituents. However, if eaten in a sufficient quantity, a plant poison will invariably harm almost everyone. But in this case, the poison can usually be more satisfactorily identified, and its manner of poisonous action understood. Our knowledge of poisonous plants which affect the body when eaten is more complete, and frequently physicians can treat such poisonings more ade-

quately than they can treat contact plant poisonings such as those producing allergies. One important reason for the fact that persons react differently to a contact type of poison plant is this factor of sensitivity. How often it is that substances which have no known toxin may cause skin rashes in persons who have inherent sensitivities of one kind or another!

Fortunately, only a few ornamental plants of the Pacific Northwest are poisonous on contact. The garden sumac (*Rhus*) and the *Daphne* are so consistently poisonous upon contact that one can say, "Always be careful when handling these plants." Most other common woody ornamentals which react with the skin in this way affect fewer individuals. Of course, ornamental sumacs such as *Rhus glabra* and *Rhus typhina* are not generally regarded as severely poisonous, in the same sense as poison oak (*Rhus diversiloba*), poison ivy (*Rhus toxicodendron*), or the Japanese varnish tree (*Rhus verniciflua*). But they are closely related botanically, and occasionally dermatitis cases have been reported among persons who appear sensitive to them. We hesitate to discourage gardeners from cultivating these garden sumacs, for they are of particular fancy to those in the Pacific Northwest who delight in showy autumn colors of reds and yellows, such as are generally not abundant in our flora. But some persons have been poisoned by handling them. If skin reactions do not appear within a week following contact with sumac stems or berries, a person can be reasonably certain of not being sensitive to them. Although the precise constituent which causes the dermatitis is not definitely known, it is thought to be present in oily resins which are produced in all portions of the plant.

The bark of *Daphne Mezereum* and certain other ornamental species of *Daphne*, such as *D. Gnidium*, *D. Laureola*, and the rock garden *Daphne Cneorum*, have been known since

*Readers of the Bulletin have been requesting such an article as is here offered—from firsthand knowledge of the topic, by Dr. H. W. Youngken, Jr., Associate Professor of Pharmacognosy and Director of the Drug Garden, University of Washington.

ancient times for their irritant effects when in contact with the skin. In fact, ointment preparations of this bark were at one time prepared and used in countries of southern Europe for their irritant and vesicant effects on the skin, an unusual practice which is not continued in ethical medicine today. Persons who experience skin inflammations from *Daphne* usually note blisters and inflammation about two to four days following contact with the plant. The irritant effects are attributed to certain acids, for example, mezereic acid, which are formed in greatest quantities in the fresh bark. A bitter glycoside principle, daphnin, is present also in the leaves and berries of *Daphne Mezereum*, and consequently the bright red berries of the plant may be severely poisonous to children who eat them. As a matter of fact, some fatal poisonings have been reported. Fortunately, the irritant and bitter nature of the poisonous constituents formed by the plant frequently cause vomiting very soon after the berries have been eaten, and more severe irritation of the stomach and intestines can thus be averted.

We do not know of any similar poisonous effect caused by *Daphne odora*, a related evergreen species and widely cultivated by gardeners in the Pacific Northwest. However, the small, early-blooming, yellow-flowered leatherwoods, *Dirca occidentalis* and *D. palustris*, which have occasionally been cultivated in gardens and which are botanically related to *Daphne*, have similar poisonous properties and have been known to cause marked dermatitis effects.

Other woody ornamental plants which are known to have produced skin inflammation and occasionally blistering include the common English ivy (*Hedera Helix*), the osage-orange (*Maclura pomifera*), arborvitae (*Thuja occidentalis*) and some *Juniperus* species, for example, *J. virginiana*. These plants do not cause such effects among all individuals. The hedge plant, osage-orange, is not as common a garden perennial in the Pacific Northwest as it is east and south of Washington State. However, it has been recently introduced into some gardens. It belongs to the mulberry

family (*Moraceae*) and, as typical of other plants of the group, its leaves, stems and fruits contain a large quantity of a milky juice or latex. The composition of this juice has not been completely determined, but it is known to be the cause of dermatitis among some persons who have come in contact with it. Other mulberry species which possess the latex have likewise caused skin irritations of one degree or another.

The well-known evergreen woody climber English ivy should not in any sense be compared in degree of poisoning with poison ivy or poison oak. Nevertheless, cases of dermatitis have been reported from time to time among gardeners who have exposed various parts of their body to leaves of this vine. This has been especially true when contact has been made with older leaves and branches of the plant. The black or yellow berries of ivy contain poisonous glycosidic principles in addition to an irritating resin and so, when eaten, can be harmful.

The leaves and fruit of most cedars, junipers, pines, firs, yews and similar evergreens are generally not notorious for producing skin inflammations or other dermatitis effects. Probably the red cedar, *Juniperus virginiana*, and the handsome yew, *Taxus baccata*, are the only conifers which have been definitely held responsible for poisonings on contact. As is typical for most plants of this group, their oils and balsams contain very small quantities of phenolic compounds (cousins of the highly irritating chemical carbolic acid), some of which irritate the skin. The constituents of both the red cedar, *Juniperus virginiana*, and the English yew, *Taxus baccata*, are also poisonous if portions of the leaves and fruits of these evergreens are eaten.

Poisonous effects have been reported among children who have eaten leaves and berries of other junipers and yews, including the American, Japanese and Irish yews. The poisonous properties of the juniper and, for that matter, of cedars, resides in their aromatic oils. Several chemical substances, among which are those collectively called terpenes and phenols, occur in various quantities in the oil, and when

sufficient number of leaves and fruit are ingested, severely irritating effects in the stomach may result.

Poisonings caused by plants are infinitely more numerous when their parts are eaten. In this case such poisonings can be more severe than those of the contact type. Herbaceous plants are probably more responsible for harmful effects than are woody plants, especially attractive berries or other types of fruit.

The poisonous chemical compounds which plants produce are as variable as those produced in a large chemical factory. For plants, in reality, are chemical factories. Therefore, the types of poisoning that might be experienced by eating portions of ornamental plants can be caused by several different kinds of chemical constituents, including those already mentioned.

Among the woody plants which bear attractive berries, *Daphne*, sumac, English yew and English ivy have been mentioned. Besides containing irritating oils, berries from these plants contain complex compounds, in many cases called glycosides or alkaloids, which can cause violent poisoning. Fortunately, such berries produce a marked amount of vomiting first, because of their irritation of the stomach. A child will probably vomit forth the toxins before it is necessary to resort to an emetic or other form of treatment.

Among other woody plants which bear attractive berries or berry-like fruits containing poisonous principles are those of *Ilex* (holly), *Arctostaphylos* (bearberry, kinnikinnick), *Kalmia*, *Rhamnus* (Buckthorn), *Andromeda*, *Viburnum*, *Berberis* (Oregon grape), ornamental *Prunus*, *Juniperus*, *Cotoneaster*, *Euonymus* (Burning brush), *Celastrus*, *Symphoricarpos* (snowberry) and some of the *Callicarpa* species. All of these have, from time to time, been reported responsible for poisonings.

The scarlet and yellow berries of the American and European holly contain irritating acids which can produce vomiting and purgation. It has been said that from ten to twelve berries will produce rather violent effects. Bearberry, or kinnikinnick, contains a number

of irritating phenolic compounds and a glycoside, arbutin. These irritate the intestinal tract. Generally, the urinary bladder is also irritated and excessive urination follows. This is a mild form of poisoning and does not persist excessively. But it can be alarming. The leaves of the plant are more reactive than the berries. The black berries of various Buckthorns, *Rhamnus* species, are also purgative in action; in fact, *Rhamnus cathartica* derives its name from this fact. The cathartic principles found in these berries, also in twig and bark portions, are somewhat irritating to the gastro-intestinal tract. They frequently cause vomiting.

Various kalmias and andromedas contain poisonous principles much like those of the bearberry (*Ericaceae*). In addition to containing arbutin, the leaves and capsular fruits (the latter resemble berries and hence have been frequently called berries) contain one of the most poisonous toxins found in ornamental plants, namely andromedotoxin. *Kalmia latifolia* (American laurel) and *Kalmia angustifolia* (Sheep laurel) have caused death among some cattle. *Andromeda* species, such as *Andromeda Polifolia* and *Oxydendrum* (*Andromeda*) *arboreum* (sorrel tree) usually contain more of this toxin than the kalmias. Some of the rhododendrons, *Rhododendron ponticum* in particular, have also been shown to form andromedotoxin in their leaves. This toxin when ingested has serious effects on the nervous system, causing profuse salivation, a staggering gait, paralysis of the body extremities, and eventually death. One of the lyonias, a plant which is closely related to the above species and which contains andromedotoxin, has been named "Staggerbush," because of the effects that it has on cattle. This is not a common ornamental. Rhododendrons do not bear attractive fruits, but the leaves of two other rhododendrons in addition to *Rhododendron ponticum*, *R. maximum*, and *R. chrysanthum*, have been reported to contain andromedotoxin and a heart poison which is similar to the heart-stimulating glycosides of *Digitalis*. No such principles have been reported in

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Mountain Flowers in Olympic National Park

GUNNAR FAGERLUND*

Since the mountain ranges and valleys of the Western United States, especially in their higher regions, are the home of so many splendid trees and lovely and fascinating plants which are seen and known by only a comparatively small number of persons who annually make pilgrimage up the access roads and trails between June and October, the Editorial Board decided late in 1950 to commence a series of illustrated articles on the plant life of some of the most notable or worthy areas. That which follows, on the Olympic National Park in Western Washington, is the first of what we hope will be a series covering the region at least from Southern British Columbia to Northern California, and dealing especially with the country surrounding the larger peaks. In the summer we shall have an account of the flowers of Mt. Rainier, also in Washington, and others will follow thereafter.

THE northern and eastern parts of the Olympic Mountains have flower meadows of superb beauty and exceptional botanical interest. Most people pass them by, not knowing they exist; or suspecting, balk at climbing the trails or mountain roads that lead up through the forest toward the deep blue sky. From the forest below the most watchful eye can catch but a glimpse through a valley of the snowy mountains beyond. Seeing the Olympics requires being on them.

Actually the forest reaches only two-thirds of the way up. And the Olympics are not high as Western mountains go. However, a climb means a vertical lift of a mile or more, starting near sea level. Whatever the cost of a hike in sweat and weariness or in imaginary peril or a trip by car on the winding mountain road, it is a small price to pay for the enduring pleasure you will know. So pack your lunch and be on your way to the Olympic high country—a land of ridges, rocks and snow, where flowers bloom and the air is spiced with alpine fragrance.

Upward travel is northward travel, vege-

tatively speaking. The corresponding speed is amazingly fast. Hiking, your speed is about 500 miles per hour and by car on the Hurricane road it may be 2500 miles per hour. A mountain compresses several different climates, each with appropriate vegetation, into a few miles. The climate at the foot of a mountain is unlike that at the summit and the plants in the two places are of different kinds. Between the base and the summit, depending on the height of the mountain, there may be other zones of vegetation. Plant geographers have studied the arrangement of life zones on mountains and have found them to correspond to life zones from the equator toward the poles. Altitude has the same effect on life as latitude. Every 100 feet in elevation is equivalent to about 60 miles north. So you move upward through different climates and vegetation zones. Lowermost here is the transition zone of forest trees, conifers and broadleaf, that you know so well from daily contact. Next above is the Canadian Zone, also forest, but not well defined in the Olympics. Above that is the Hudsonian Zone and there your interest quickens. The air is cooler, the sky bluer, and the trees smaller. Alaska yellow-cedar, mountain hemlock, Western white pine, Pacific silver fir and alpine fir dominate the forest here. Soon the forest begins to thin and meadows fill the spaces between groups of trees. Farther on up the trees are shorter and shorter, and at the uppermost fringe of tree growth, where the wind over a shoulder holds them close to the ground, they are also deformed. This is the *krumholz*.

From a ridgetop you behold the mountain landscape. The botanist, L. F. Henderson, viewing it from a mountain top on a summer evening in 1890, was deeply impressed with its beauty. "Canyon mingled with canyon, peak rose above peak, ridge succeeded ridge, until they culminated in Old Olympus far to the northwest; snow west, north and south; the fast-descending sun bringing out the gor-

*In opening our series on "Plant Life in Our Mountain Areas," no better pen could portray the beauty of the flora of the Olympic National Park than its Park Naturalist, Mr. Gunnar Fagerlund.

geous colorings of pale blue, lavender, purple, ash, pink and gold. Add to this the delightful warmth of a summer sun in these altitudes—the awful stillness—and one can form some slight idea of the reasons that compelled us to gaze and be silent.”

From a line running north and south through Mount Olympus the ridges descend westward and merge with the coastal plain. Most of this western half is below timberline and consequently lacks extensive meadowland. However, the ridges east of this line, being higher, have considerable meadowland in the neighborhood of timberline and large tracts of open ridgetop country above it.

Glaciers and permanent snow fields are numerous, individually small, but collectively they cover an area of about 30 square miles, most of it on the upper flanks of Mount Olympus. These are mere remnants of a much icier past to which the shape of the land will testify. Numerous lakes lie in basins that were scooped out by the same glaciers that carved theatre-shaped valley heads. Slopes sweep upward from these basins with increasing steepness and in some places end in serrated rock ridges and pinnacles. Olympic glaciers are the lowest in the continental United States. They head at elevations at which they end in the Cascades. The heaviest snowfall in the country and cloudy skies, shielding it from the sun, account for this. Mount Olympus and other front-rank mountains facing the ocean take the lion's share of moisture. Consequently the northeastern ridges and peaks are dry by comparison.

From your ridgetop view-point you can readily see that this upper country contains a variety of flower habitats. You look a thousand feet below where the forest first yields space to smaller plants. There are meadows knee-high in grass and sedge with a medley of floral color and an unsurpassed richness of species. From a single spot down there you can count two dozen species and with searching the number may be more than a hundred. Many of them are the same species as found in the subarctic tundra of Canada. In depressions watered by tiny streams you find, in

early summer, marshmarigold, white globe-flower and buttercup and the lusty foliage of false hellebore preparing for later blooming. Monkeyflower, *Pedicularis*, and *Habernaria* prefer moist situations, too, but show their blooms somewhat later. These are but a few. Spring flowers appear later on northside slopes where meltwater from lingering snow banks makes a marsh in the basins below.

Your eyes move up to where the forest and meadow meet in uneven, sinuate pattern, following in and out with the ridges and valleys. Thousands of acres of parklike country extend for sixty miles across the park from Mount Constance to Happy Lake Ridge. These are the real flower fields where the flowers grow in multitudes, though of fewer species than in the lower meadows. There is a progression of blooming everywhere that starts as soon as snow melting exposes earth to the warming sun. Lambstongue fawnlily, impatient with winter, does not always wait, but pushes its yellow corolla up through the snow. Mostly, flowers appear first where the snow melts first, perhaps where winter winds blew it thin, leaving less for the sun to wear through. The



The Columbia lily grows vigorous on Hurricane Ridge.

lambstongue fawnlilies, avalanche fawnlilies and buttercups get their blooming done while the earth is good and wet. Cinquefoil and other low flowers come along soon after and just ahead of taller plants that make shade on the ground.

A visit to Hurricane Ridge during the second half of July would probably be the most rewarding from the flower standpoint. Avalanche fawnlilies spread white blankets over open meadow and among bleached wood at timberline. Subalpine lupine, paintedcup, Columbia lily, larkspur, American bistort, arnica and many others in colorful profusion cover acre after acre.

Some plants prefer rocks, or seem to. Perhaps they are excluded from more hospitable places by aggressive species. Here you find smooth *Douglasia* and *Penstemon*, both hugging rocky ledges with their feet anchored in clefts where moisture stays. If you know what to look for you may find some endemics in places like that, Piper's bellflower and Flett's violet especially. There are twenty species of endemic plants in the Olympics, all mountain plants. The glaciers, that formerly were much more extensive, did not cover the ridges and mountain peaks completely. It appears that a few of the plants that grew in the Olympic Mountains before the big ice were able to weather the long cold spell and today are found on the same ridges and peaks; relicts from pre-glacier time. None of them are trees and only two are shrubs. All the rest are herbaceous. One, *Arabis olympica*, has so far been found only on Mount Olympus and Mount Angeles. You may find several of these survivors from antiquity if you go exploring around Mount Angeles. Mount Angeles is a botanist's paradise. Reputedly 750 species of vascular plants have been found on its rocks and in its meadows and that just about represents all the species known to occur in Olympic National Park.

The arctic-alpine zone is the region above tree line. It corresponds to the arctic meadows of Northern Canada and many of the flowers which you find in this zone in the Olympics also grow in Siberia, Alaska and Northern

Canada. There are fewer species and, of course, plants are unable to grow thickly on the rock and talus slopes. Mount Angeles, which is easily accessible by trail from Hurricane Ridge, offers excellent botanizing for hardy alpine plants. There are no annuals among them—the growing season is too short. In addition to the rock plants already mentioned you should look for Webster's groundsel, Olympic dandelion, Henderson's rockmat, all endemics. Alpine willowweed, Larsen's *Gilia*, silky *Phacelia*, alpine goldenrod, Tolmie's *Penstemon* and several *Saxifrages*, plus others too numerous to mention, may reward your searching.

Between the lush meadows and the rock peaks are hillsides where the rock has weathered into chips but can hardly be said to have rotted into soil. You will find in places of that kind entire slopes with showy cushions and carpets of spreading phlox and among them rosettes of Lyall's lupine. Of course there are other plants, but these are more conspicuous.

The flora of the Olympics is not unlike that of the Cascade Mountains although each has species not found in the other. If you are familiar with the mountain flowers there you will feel reasonably at home here. If you come from east of the Cascades you will find a few familiar plants. In fact, more than a score of species common to the hot, arid slopes of Eastern Washington and Oregon grow in prairie-like meadows at several places near timberline in the northeastern part of the Olympics. Common yarrow, tapertip onion, nodding onion, woolly *Eriophyllum*, barestem *Lomatium* and wormleaf stonecrop, and many others, form a strange mixture of lowland and mountain flowers.

Snow is vital to the mountain flowers. It provides most of the moisture for their growth. It also determines the length of the growing season. Spring flowers are earliest where the snow melts first, and latest where the snow melts last. Where it does not melt at all there



Big Meadow on Hurricane Ridge may be reached by car in less than two hours from Pt. Angeles. Mount Carrie is in the background.

is no growing season at all for vascular plants. There are spots where it melts but stays too late, leaving too little of summer for plants to start and complete a season's growth. The middle of July is not too late for some spring flowers, though. Flowers of spring and fall and of the months between are blooming then according to the progress of the season in the different habitats. You will see the finest flower displays the second half of July, but a trip to Hurricane Ridge is worth-while whenever it is possible to get there. The existing road usually is open by July 1, earlier in years of light snow.

There was a time when the mountain flowers and the sod and rock they grow in were dug up and brought down the mountain in truckloads for artificial gardens. Fortunately that is no longer done. The central mass of the Olympic Mountains is in Olympic National Park. With the meadows, forests, wildlife, glaciers and all wild nature, of whatever kind,

these mountains comprise one of the great outdoor museums of our country. National parks have been set aside for the special purpose of providing inspiration, education and recreation to all people for all time.

COMMON NAMES

Listed in the Order They Appear in the Text

Alaska yellowcedar	<i>Chamaecyparis nootkensis</i> (D. Don) Spach
Mountain hemlock	<i>Tsuga Mertensiana</i> (Bong.) Carr.
Western white pine	<i>Pinus monticola</i> Dougl.
Pacific silver fir	<i>Abies amabilis</i> (Dougl.) Forb.
Alpine fir	<i>Abies lasiocarpa</i> (Hook.) Nutt.
Marshmarigold	<i>Caltha biflora</i> DC.
White globeflower	<i>Trollius albiflorus</i> (Gray) Rydb.
Buttercup	<i>Ranunculus</i> sp.
False hellebore	<i>Veratrum Eschscholtzii</i> Gray
Monkeyflower	<i>Mimulus Tilingi</i> Regel
Pedicularis	<i>Pedicularis</i> sp.
Habenaria	<i>Habenaria saccata</i> Greene
Lambstongue fawnlily	<i>Erythronium grandiflorum</i> var. <i>pallidum</i> St. John

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Douglas of the Fir: 1798-1834

ELIZABETH H. HANLEY AND ANNIE CALHOUN*

IN A BOOK bearing this title published by Harvard University Press (1947), Athelstan George Harvey, the author, brings new light upon the life and achievements of David Douglas, the man from whom the Douglas "Fir" takes its name.

David Douglas was born in Scone, Perthshire, Scotland, in the year 1798. His father was a stonemason, a good craftsman and a friend of William Beattie, head gardener of Scone Castle, through whom young David secured employment as an apprentice gardener at the castle.

In school he was an inattentive scholar but an avid reader of adventure and nature stories. "Robinson Crusoe" and "Sinbad the Sailor" were favorites of his. In his later life his experiences were as fabulous as fiction.

In the open country David was a different fellow. Here he was keenly observant, interested in flower, tree, bird, beast and insect, possessing an avid curiosity in natural phenomena. These qualities brought him the commendation of William Beattie, who encouraged him to read books from Beattie's own bookshelf and from the Scone library.

Ambition to get ahead prompted young David to attend school in Perth for a year. At the age of eighteen he entered the service of Alexander Stewart, head gardener at Valley Field, the estate of Sir Robert Preston. Sir Robert's collection of exotic plants was famous and his botanical library outstanding. Soon young Douglas was given free access to this library. In his spare time he read incessantly.

After two years at Valley Field he was recommended for a position at the Glasgow Botanic Gardens. At that time these gardens were the most noted of their kind in Scotland. Here he attracted the attention of the brilliant Dr. William J. Hooker, head botanist of Glasgow University. Dr. Hooker was then engaged in the publication of his "Flora Scotia". Young

Douglas assisted Dr. Hooker in preparation of material for this publication. During this close association a warm personal friendship was formed which lasted throughout their lives. It was Dr. Hooker who from that time shaped the life and ambitions of his devoted pupil.

When Mr. Joseph Sabine, secretary of the Horticultural Society, asked Dr. Hooker to suggest a suitable person to be sent by the Society on a botanical expedition to North America, we are told, "Dr. Hooker unhesitatingly named David Douglas."

It takes little imagination to picture the excitement of young Douglas at the news. Dr. Hooker must have been equally intrigued with the idea of the expedition. Douglas was of course familiar with the material brought back by Archibald Menzies from the voyage with Vancouver. It is logical to assume that Dr. Hooker consulted with Menzies personally and Douglas was well briefed as to what he might find.

David Douglas sailed on a Hudson's Bay Co. ship, the "William and Anne," Captain Hanwell commanding, from Gravesend on June 26, 1823. When David boarded the ship, great was his pleasure to find that John Scouler, a former classmate and also a pupil of Dr. Hooker, had signed on as a doctor to the expedition. These two young men had a fabulous trip out. It took eight months and fourteen days to make the Columbia River—and another six weeks before they could enter the river. It was a time of great gales and a "thousand times worse than weather around the Horn," according to Douglas. The voyage out, while long, was not tedious; stops were made at Madeira, Rio de Janeiro, the Galapagos Islands. The greatest excitement of all was Juan Fernandez, the island made famous by Defoe as the locale of "Robinson Crusoe."

It is related that young Douglas immediately spied three trees as they landed from the ship on American soil not far from old

*The next in our series of "Early Plant Explorers of the Pacific Northwest" by Mrs. E. B. Hanley, member of the Editorial Board, and Miss Annie Calhoun of Seattle.

Fort George: "a hemlock, a balsam, and a fir."

Menzies had sent twig specimens of this tree but it was Douglas who sent the seeds and cones. From the seeds were grown the first of these trees seen in Britain. Aylmer Bourke Lambert, in his "Description of Genus Pinus," published in 1803, calls it "Pinus Taxifolia." It is now properly known as *Pseudotsuga taxifolia*, but to the lumber trade, Red Fir or Oregon Pine.

Young Douglas and Scouler had collected so much new and important horticultural material that their time on shipboard going home was wholly occupied in preserving and cataloguing it. Captain Hanwell helped the young men in the care and preservation of their collections.

So successful was the expedition that David Douglas was again sent out to the Columbia region by the Horticultural Society. He sailed from England on July 25, 1824, under the protection of the Hudson's Bay Company. His headquarters were at Fort Vancouver, where Dr. McLaughlin was the factor in charge. They were old acquaintances, the Doctor having hospitably received him on his first visit and aided him and Scouler on the earlier expedition. Although the unsettled international boundary caused tension and "incidents", David Douglas roamed the country without bodily harm from Indians or tough adventurers, who were drifting into it. The Indians, at first hostile to his curiosity about tribal ways, became friendly and in their turn very curious about Douglas and all he did.

In reading the diary of David Douglas which, incidentally, was not published until 1914, you share with him the wonder, the awe, the hardship of his adventure and the glow of satisfaction when some great new tree or unusual flower was discovered. The musk-scented *Mimulus* was one of his finds. It has no scent today, a mystery to botanists still unsolved. The finding of the sugar pine was an adventure in itself. About where Oregon City now stands was a sort of gathering place for Indian barter. Douglas was watching some Indians and noticed that a chieftain took some seeds

from a pouch and ate them with relish. This interested Douglas and, as he could now converse fairly well in jargon, he asked the name of the seed, "What sort of a tree, from whence it came, and where it grew?" The chief called the seed "Nalete", told Douglas it grew on a huge tree where the fog lived in the mountains in the Umpqua country. After many false clues, Douglas found the Umpqua region where the great trees grew and secured some seeds and cones, which he carried safely back with him. In his "Journal" he relates that he would have gathered more but the cones were too high to reach, and when he tried to shoot some down he attracted the attention of a band of unfriendly Indians who might have caused him real trouble if he had shown fear of them. As it was, he was happy to get away safely with the seeds he had already gathered.

While hunting for sugar pine he found the myrtle or *Umbellularia californica*, as it is known to botanists. This tree is fast vanishing from its native habitat and garden clubs are to be commended on preserving groves of it where threatened with destruction by logging. Douglas describes the myrtle thus: "This splendid evergreen tree will prove, I hope, a most valuable addition to the garden and perhaps be found useful in medicine and perfume." It is greatly prized now for its beautiful wood but its use in medicine and for perfume has not been utilized, at least commercially.

David Douglas roamed our forests, navigated our rivers by canoe, climbed the lower levels of many of our mountains and knew the country almost as well as the trappers and the Indians. The Indians now accepted him as the "grass man", King George's Chief "Big Medicine". Had he been an ordinary treasure-seeker he could have exploited gold-bearing sands he found in the Okanogan country. This was not the treasure he sought. He records that he did pick up enough gold to make a seal charm for his watch. There his interest ended. It was the same in California. He observed small particles of gold in the soil around plants he collected. The gold was incidental, the plant was a treasure. But the gold

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John Scouler, Adventurer and Explorer

MRS. O. B. THORGRIMSON*

IN the early years of the nineteenth century there existed in England and continental Europe a group of brilliant men interested in different phases of the natural sciences, including botany, more particularly as it related to the study of medicine. These men were well known to one another and had the pleasure of interchange of ideas. Among the English were two friends, Sir Joseph Banks and William Jackson Hooker. The former equipped the "Endeavour" and accompanied Cook's first expedition in 1768-71 and was instrumental in bringing to England many beautiful and interesting plants from China.

Wm. J. Hooker was an ardent botanist, author, lecturer and teacher. He later, as Sir William Hooker, became the organizer and director of Kew Gardens, which grew under his care from a pleasure garden of eleven acres to two hundred and seventy acres.

As a teacher and lecturer in the University of Glasgow, his dynamic personality drew many enthusiastic young men, interested in botany and all other natural sciences, into his classes. Thus, when the Hudson's Bay Company made requests for doctors for their far-away posts, or forts, as they were called, Hooker had the opportunity to choose from among his students those most adapted to this hazardous life, as well as those most sincerely interested in discovering new and different forms of plant and animal life. The young men chosen were mostly graduate doctors in their early twenties who were thrilled with the prospect of adventure and the hope of making new and important discoveries in all branches of natural sciences.

In July, 1824, the Hudson's Bay sailing ship, "William and Anne," left London for the Columbia River by the way of Madeira, Rio, and the Galapagos Islands. Upon the recommendation of Dr. Hooker, John Scouler

was given the appointment of surgeon and naturalist for this voyage. He had just returned from study at the Jardin des Plantes in Paris, where he had gone at the completion of his medical course at the University of Glasgow. That he hailed this opportunity with enthusiasm is found in his journal.

"Attracted to the study of medicine and its kindred sciences, I eagerly embraced the opportunity, which unexpectedly presented itself, of investigating the natural history of the Northwest Coast of America . . . While in London I received much useful information from Mr. Menzies and Dr. Richardson and the inspection of their specimens enabled me to form some idea of American botany and of the best manner of collecting and preserving the various subjects of natural history, in the remote countries I was about to visit . . . In the prospect of a long voyage, I deem myself particularly fortunate in the company of Mr. Douglas, who was employed by the Horticultural Society in similar pursuits. In him, I enjoyed the society of an old friend and a zealous botanical associate."

That David Douglas was equally delighted to have Dr. Scouler as a companion is evidenced by the following quotation taken from his journal: "To beguile the monotony attending long voyages, I held myself fortunate in having a companion in Dr. Scouler of Glasgow, a man skilled in several and devotedly attached to all branches of natural history, a pupil of Dr. Hooker, by whom he was powerfully recommended to the Hudson's Bay Co. as surgeon of the vessel, in order that he might have the opportunity of prosecuting his favorite pursuit." It is pleasant to note that this friendship continued until Douglas' untimely death.

After a voyage of nearly nine months, the "William and Anne" arrived at the mouth of the Columbia, April, 1825, and immediately the two naturalists began their collections.

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*Since John Scouler was a companion of David Douglas it was thought appropriate to include this informative article by Mrs. Thorgrimson in the same issue.

Introduction of the Chestnut (*Castanea*) Into Our Pacific Northwest

THEO. H. SCHEFFER*

WE MAY include, in the scope of this review, Washington and Oregon, originally one territory and infiltrated with home-seeking humanity over the old Oregon Trail. Many brought with them seeds and fruits from home lands for propagation, though "Johnny Chestnut-seed" propagandists were few. Most pioneer nurserymen felt their way gradually into commercial production of English walnuts and filberts, now grown successfully here on a large scale. In fact, I know of but one nurseryman who went all out for a time on chestnuts—the European varieties. But so far as I can learn, there has been no serious attempt anywhere at commercial orchards.

However, we find chestnut plantings today fairly common, in northern Oregon and the Willamette Valley—about pioneer homesteads, in parks and along drives and country roads. Some of these are of the race and lineage of the chestnut that sheltered the village blacksmith, supplied his neighbor with posts and split-rails for his zigzag fences, and whatever it took to tan the leather for his shoes—the native American sweet chestnut, *Castanea dentata*—thus salvaged from the blight which has practically swept this species from the land of its one-time usefulness.

Chestnut culture here has naturally stemmed from the European species (*Castanea sativa*) supplied by the nurserymen. Horticultural varieties of this chestnut have long been cultivated for food production in the Mediterranean countries—Spain, Italy, and the contiguous provinces of Asia Minor and Northern Africa. These nuts are considerably larger than the American sweet chestnut, but none of them are so sweet as our native chestnut. It is the chestnuts originating or grown in Europe that we usually find on the market stalls, or dispensed, hot and piping at the seams, from the Italian fruit vendor's cart. Of

such production has been the chestnut stock commonly grown by the nurseryman and catalogued for sale.

There are some who brought here with them, for sentimental reasons largely, nuts or seedlings of the native chestnut from the Appalachian country. In more recent years such bringing-in has been quarantined, if indeed planting stock could be secured at all from the East. For the Asiatic blight (*Endothia parasitica*), a canker which eats at the cambium of the under-bark has laid waste the native chestnut stand from New England to Georgia. And chestnut stock of any kind originating in the eastern part of our country has been subject to quarantine growing in government testing grounds before it could be introduced to the Pacific Coast. For the American sweet chestnut and the European species are alike susceptible to the blight.

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Chestnut twig (hybrid) showing staminate catkins and, above, four pistillate flowers.



*Mr. Theo. H. Scheffer, always a welcome contributor, is Collaborator, U. S. Biological Survey, U. S. Dept. of the Interior, at Puyallup, Wash.

The Species of Lilac

MRS. F. B. EYLAR*

THE species lilacs are handsome shrubs or small trees confined principally to Asia. All are continental except two, *Syringa japonica* and *S. velutina*. None are found in the New World. Twenty-eight species are now recognized with perhaps half a dozen of them still not in cultivation.

In central and southeastern Europe are found *S. Josikaea* and *S. vulgaris* (our common lilac). *S. Josikaea*, the Hungarian lilac, was discovered by Baroness von Josika on her estate in Transylvania and brought to the attention of horticulturists in 1830. Later it was found to be native to several other southeastern countries of Europe. It grows into a large, well-rounded bush clothed with dark green leaves, rather small, blunt and deeply veined. Every terminal growth from the ground up is covered with small clusters of rich violet flowers. A very handsome specimen when given plenty of room, coming into bloom just as the *vulgaris* varieties are waning. *S. vulgaris* appears to have two distinct forms. The one known to most of us as the common Lilac goes back centuries with the exact date unknown, but it was taken from Constantinople, probably to Vienna, about 1563, and in 1629 both the white and lilac-colored forms were cultivated in England. About 1841 the other form was reported from west Roumania and subsequently found on the mountains in Bulgaria. In 1905 Mons. Maurice de Vilmorin received seeds collected from the wild plants in Bulgaria which he divided with the Arnold Arboretum, where the plants from these seeds are still growing. Similar in most respects to the first form but blooms are sparser and much inferior. Principally a collector's item on account of the historical significance. *S. vulgaris* has some five or six varieties varying in shades of lilac to white. A tall, rangy plant,

very slow coming into bloom and superseded by its handsome varieties.

S. emodi and *S. afghanica* occur on the Himalaya, the latter being little known and found in the arid slopes and valleys of Afghanistan. E. H. Wilson states that it so resembles the entire leaved Persian lilac that it might be a natural condition of it, with thicker leaves induced by the drier conditions. *S. emodi* is more widely distributed along the mountain range and is a woodland plant enjoying cool forest glades and margins of woodland streams. The western world first learned of it in 1831 through the East India traders. It is a late bloomer, making rather an upright shrub with light bark oddly streaked with white. The leaves are large and long, of rather pale green, the flowers a greenish-white with conspicuous yellow anthers borne on upright leafy shoots in dense stubby clusters. Not as pleasing as many other species.

In central and western China, lilacs are found frequently by the sides of streams, in thickets and woodlands, always in regions where they enjoy an abundance of moisture. Under such conditions *S. Julianae*, introduced with *S. reflexa* in 1901, occurs on the mountains of Hupeh and eastern Szechuan. Farther west, *S. Komarowi* and *S. tomentella* are locally quite common shrubs and delight in upland thickets. *S. Komarowi*, introduced in 1910, resembles *S. reflexa* and enjoys the same woodland moisture. It has the brightest pink flowers of all lilacs, closely packed into a rather stubby truss, slightly pendulous but not as drooping as *S. reflexa*. Some authorities feel it might possibly be an extreme form of the latter. It is a late bloomer. *S. Julianae* is a dainty little bush with small leaves on rather twiggy branches. The tiny little buds open into two-toned stars, darker on the outside. An exquisite spray of flowers not at all like most lilacs. Not as easy a grower as some of the other species but one of the loveliest. *S. reflexa* is a sturdy, medium-size bush with

*The Editors are delighted to have induced Mrs. F. B. Eylar of the well-known Eylar Gardens, Renton, Washington, to contribute to the Bulletin, bringing us this interesting discussion of lilac species.

large, heavily veined leaves, coral pink flowers rather crowded into a drooping or nodding panicle. A white-flowered form was found in 1940 which has much lighter green leaves such as are found in many white-flowered shrubs. Not as showy as the coral pink one but the two forms are handsome specimens worthy of a choice spot in any garden. *S. tomentella* is a narrow-based bush spread out into a broad shrub, covered with large trusses of rosy lilac flowers formed on the many branchlets.

On the uplands around Sungpanting, a dry region, *S. Sweginzowii* occurs but is not common; it was discovered about 1894 and introduced by E. H. Wilson. Coming from the Tibetan borderlands it is very hardy. An improved form was introduced in 1915 by V. Lemoine. *S. Sweginzowii* is an extremely late bloomer and to me one of the loveliest of all lilac species. A dainty open bush with small leaves and large frothy sprays of very pale blush-white, tiny star-like flowers on reddish stems, giving the effect of a lovely soft pink. A rarely beautiful plant.

The Yunnan species, *S. pinetorum*, *Wardii*, and *rugulosa* enjoy the rather arid conditions of the above species, while *S. yunnanensis* is a woodland plant. It somewhat resembles *S. Sweginzowii* but is less attractive. The flowers are darker, of a pale rosy purple, and the shrub is more slender and graceful.

In southwestern Kansu and the arid valleys of northwestern Szechuan, *S. Potanini* has its home. Discovered in 1893 by Potanin and introduced into cultivation by E. H. Wilson in 1905.

S. microphylla is widely distributed in the Chinese province of Shensi, in adjacent Kansu and Honan, apparently keeping to the valley of the Yellow River. Wm. Purdom sent seeds to Messrs. Veitch in 1910, from whom Arnold Arboretum received plants in 1913. *S. microphylla* and *S. Potanini* are quite similar, both being very twiggy small bushes, rather remindful of a *Spiraea* in growth habit. The twiggy terminals are completely covered over the entire bushes with tiny bright pink flowers. The buds are quite rose-red and it appears as

a red flowering bush in that stage. *S. microphylla* is the darker of the two. They have very little of the lilac hue in their flowers and are noticeably bright pink when in full bloom. The large, well-filled sprays make fine cutting material as they keep well when cut. It is not uncommon to have scattered repeat bloom in the fall. They have a rich, spicy fragrance and are prime favorites with all garden visitors.

S. pubescens is a native of the mountains beyond Peking. Seeds were collected by Dr. Bretschneider and sent to Jardin des Plantes in Paris in 1880. It is a small shrub with foamy clusters of fragrant flowers in a lilac-pink shade that cover the bush. Derives its name from the hairy under-surface of the leaves.

S. Meyeri was found in a Chinese garden at Peking about 1908 by F. N. Meyer and has not been reported in a wild state. It bears a profusion of dainty pale violet blossoms in short, stubby clusters; a broad, low-growing shrub with small leaves.

S. villosa is the oldest known of the Chinese lilacs, having been found about the middle of the eighteenth century by Pere d'Incarville in the mountains west of Peking, but was not introduced until about 1882 when seeds were sent to Arnold Arboretum. It makes a tall, vigorous bush blooming very late in the season after the *S. vulgaris* varieties. It is heavily clothed in long, very large leaves, heavily veined. It is completely covered with long terminal sprays in a soft lilac-rose. A handsome bold shrub, requiring plenty of room.

S. persica, the so-called Persian lilac, is a long-time favorite in Asia. For two centuries or more it was assumed to be a native of Persia and not until 1915 was the true home made known, the mountain slopes of southeastern Kansu. One or two great highways traversed the region which the ancients used to journey across the heart of Asia and it is assumed that the Persian lilac was carried over these highways from Kansu to the flower-loving people of Persia. It is now naturalized on the hillsides in Persia but no

(Continued on Page 38)

Pruning Roses

BRYAN TAYLOR*

THE pruning of roses is a controversial subject mainly because the art is not fully understood. The first question to be answered is why do we prune roses? In all pruning there are only three reasons for it:

1. As a surgical operation to improve the health; e.g., the removal of branches which are rubbing or crowding the center.
2. To improve the line; e.g., the pruning of the weak side of a tree to balance up with the strong side.
3. To improve the quality of the flowers; e.g., the annual cutting back of roses.

In effect, we are trying to improve on nature's pruning. If we study a wild rose or an unpruned garden one, we will see that in the first year the strong new growth flowers well, in the second year new strong shoots break out at the base or part way up the old stems and slowly but surely starve the older ones. This is a slow and wasteful method as the new shoots are apt to be cut off from light and air by the mass of old and dying shoots. So, by following our three rules, we speed up nature's method; it is done in two distinct operations:

1. Thinning, carried out in early winter after the second frost, when the plants are dormant.
2. Pruning, carried out in late March (except for climbers).

The thinning operation is to cut out all dead, twiggy and soft growth; to take out any branches which are growing inwards or rubbing. This is merely following our Rule No. 1 and leaves the plant ready for the March pruning.

The actual pruning is done when we are reasonably certain that there will be no more hard frosts; that time in our area is usually about March 15.

*Mr. Bryan Taylor's "Pruning Rules" have been a boon to so many garden club enthusiasts, before whom he has lectured, that we determined to have it in print for all gardeners' files.

The ideal shape that the bush or tree rose should have after pruning is that of a vase, with an open center and the branches spread out equally round it. This allows the sun and air to get at all parts of the plant and helps to keep down diseases and pests.

The first spring after planting, and this applies to old roses that have been transplanted as well as to newly planted roses, all are cut back to three or four eyes (about three inches) from the base. This seems drastic, but we must remember that they have lost a great deal of root in being moved and the remaining roots cannot possibly re-establish themselves and take care of the top growth that was left. Climbers and ramblers should be cut back to two to three feet or sound wood.

In the second and subsequent years we must consider the problem more carefully. Remember that this pruning is actually the carry-out of our Rules No. 2 and 3 and to these we must add one more—"The harder we cut, the stronger the resulting growth"—provided, of course, that the plant is in good health.

It is impossible to lay down a hard and fast rule that all, say "Peace" roses, are to be pruned at a certain height. If you plant six "Peace" roses they may all be different in vigor; and so the only way to prune is to be guided by the actual growth of the rose.

Thus we base our pruning guide on the individual plant and on our last rule. For all bush roses, tree roses, Floribundas and Polyanthas our "Rule of Thumb" is:

Weak growth (pencil size) cut back 3 to 4 inches to an outside bud.

Medium (forefinger size) cut back to 6 to 7 inches to an outside bud.

Strong (thumb size) cut back to 12 to 15 inches to an outside bud.

This guide is for garden decoration and for roses for cutting. For specimen blooms or for exhibition purposes, we cut back twice as hard as shown on the table.

Floribundas grown as a hedge we merely thin and cut back to two buds or eyes below where the blooms were borne last year.

The pruning cut is important and should be made one-fourth inch above the bud and sloping so that excess moisture will drain off. They must be cut to an outside bud, or, in the case of a very spreading bush, to an upward pointing bud. In the hard winters, such as 1949-1950, the pruning cut must be made right back to sound wood, even if it means cutting to the base. In mild winters the cut must be made to a dormant bud; the soft top growth is useless and should be cut away.

The climbing roses set us another problem in their second and subsequent year. Remember the first year that we planted them we cut them back to two to three feet or to sound wood in March. The following summer the new growth starts at the base and in July we cut back all the old wood to ground level and leave only the new canes. In their second year there is no pruning done until they have bloomed and then we divide them into two classes:

1. Once blooming, such as Paul's Scarlet.
2. Ever blooming, such as Gold Rush.

The once blooming type we prune immediately after flowering, in July, and then we take out down to ground level the older canes that are not needed.

With the ever blooming we harden our hearts and take out the older canes in early September—we may lose a little bloom but it does help the new growth to ripen and be hardy enough to stand the frosts.

The important point about the climbers is that we plant them to fulfill a purpose—it may be to cover a fence or a trellis—whatever it is, we must decide how many canes are needed to do the job. If we require eight, then there is no need to take out any till there are enough to cover the area allotted to them.

In early March we cut back all the lateral or side branches, on the old wood, to two or three buds (approximately 2 inches); these are the shoots which produced last year's flowers on the climbers.

The last problem is the treatment of the

various rose species. Most of them are happiest when left alone, with very little pampering, either in fertilizing or pruning. Thin them out in November and cut the remaining shoots back to sound wood in early March.

Moss Roses—Thin out the old wood in December. Cut back the rest of the canes to 24 to 30 inches in early March and shorten all side branches back to four or five buds.

Rugosa. Cut back in February, to about four feet, all strong canes and remove all weak or dead wood. An alternative method is to cut all shoots back to 12 inches. They then flower a little later, but much more freely, and produce much better seed pods in the autumn.

Hybrid Chinas. Prune in early March. They make fine bushy pillars and all sound shoots should be cut back to 5 or 6 feet, laterals shortened to three or four buds on three-year-old wood.

"Austrian" Briars (*Rosa foetida (lutea)*). Prune in March. Best grown as bushes 5 to 6 feet high. We have to look two years ahead for bloom so leave all strong ones and two-year shoots and cut back the laterals on three- and four-year wood to five or six buds. Grow them away from other roses as they are extremely liable to Black Spot.

Sweet Briars. Should be cut back to four feet in early March and all old and bare shoots removed. Penzance Briars are more vigorous and should be cut back to 7 to 9 feet. Beware of Black Spot.

Rosa Moyesii. Allow it to grow as it wishes. Cut out dead wood in February. It only blooms on the laterals, so leave them alone.

The most important point in all pruning is to do it yourself. It is the only way to learn—so put down this article, take up your pruning shears (sharp, I hope), sally forth into your rose garden and do your best. Then in June when the roses are a riot of color and excel any previous efforts, you will forget the scratched hands and arms and will realize that with a little care and thought you can escape Dean Hole's warning:

"Ah me, what perils do environ

The man who meddles with cold iron."

The Arboretum Bulletin

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To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears and previously established \$2 memberships more than thirty days in arrears will be dropped and THE BULLETIN will be discontinued.

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Notes and Comment

The John J. Tyler Arboretum at Lima, Pa., is planting a most ingenious garden. On a system of terraces the plants are arranged in narrow beds variously raised off the ground so that all of them may be easily touched and their fragrance smelled. Special hand guides and Braille labels are provided so that any person, handed a Braille plan, may explore the garden alone. Thus, a most unique *Garden for the Blind*.

Dr. J. C. Birkeland, recently appointed head of the Department of Horticulture at the University of Illinois, announces that contracts have been let for the first greenhouse unit of the University's new Northern Illinois Horticultural Field Station adjacent to the Morton Arboretum.

Originally conceived as a Drug Plant Experiment Station, the project has since been enlarged to include a complete Horticultural Field Station equipped to serve both pharmacy and horticulture. The board of trustees of the University has also approved a building request for \$570,000 to provide necessary laboratory, class and lecture room facilities for the same site. Funds for the building will be asked at the next meeting of the Illinois legislature.

Prof. C. Frank Brockman of the College of Forestry at the University of Washington, and a member of the editorial board of the BULLETIN, has recently been elected vice-chairman of the Society of American Foresters, Division of Forest Recreation. Prof. Brockman, eminent in the field of forest recreation, spent many years with the National Parks service prior to joining the staff of the University.

Early in March, Dr. Harold R. Fletcher will take over his duties as the newly appointed director of the Royal Horticultural Society's Gardens at Wisley, England. Dr. Fletcher has had a distinguished career as a botanist and has been for some years on the staff of the Royal Botanic Garden, Edinburgh.

He replaces Mr. John Gilmour who resigned recently to become director of the Cambridge Botanic Garden, and who has been director of the Gardens at Wisley since 1946.

✓

Cold Weather Elsewhere . . . (extracts from a letter received from E. L. Kammerer, arboriculturist at Morton Arboretum, Lisle, Ill.) "There has been a continuous snow covering on the ground since late November and to date we have experienced sub-zero temperatures on 24 days. The lowest readings recorded were on December 27 (-30°), on January 27 (-27°) and this morning, February 3, 1951, -23° . Any plants of doubtful hardiness which survive this cold will automatically be moved to the dependable category."

✓ ✓ ✓

For the information of members who may wish to refer to them—we print the list of magazines and bulletins received by the Arboretum and a part of the Arboretum Library.

Monthly

Arborist's News
 Arnoldia
 Gardening Illustrated
 Green Thumb, The
 Missouri Botanical Gardens Bulletin
 New York Botanical Garden Journal
 Northwest Gardens
 Park Maintenance
 Parks and Recreation
 Reef Point Gardens Bulletin, Bar Harbor, Maine
 Royal Horticultural Society, Journal of the

Bi-Monthly

Trees

Quarterly

Alpine Garden Society Bulletin
 American Rhododendron Society Bulletin
 California Horticultural Society, Journal of the
 Cornell Plantations, The
 Garden Journal, The
 Curtis' Botanical Magazine
 Hemlock Arboretum at "Far Country"
 Landscape Architecture

Morris Arboretum Bulletin
 National Horticultural Magazine
 Plants and Gardens

Twice Monthly

American Nurseryman

Weekly

The Gardeners' Chronicle

✓ ✓ ✓

Mountain Flowers in Olympic National Park

(Continued from Page 13)

Avalanche fawnlily	<i>Erythronium montanum</i> Wats.
Cinquefoil	<i>Potentilla</i> sp.
Subalpine lupine	<i>Lupinus subalpinus</i> Piper & Robins
Paintedcup	<i>Castilleja angustifolia</i> Nutt. var. <i>abbreviata</i> Fern.
Magenta paintedcup	<i>Castilleja oreopola</i> Greenm.
Columbia lily	<i>Lilium columbianum</i> Hans.
Larkspur	<i>Delphinium glareosum</i> Greene
Larkspur	<i>Delphinium glaucum</i> Wats
American bistort	<i>Polygonum bistortoides</i> Pursh.
Arnica	<i>Arnica</i> sp.
Smooth Douglasia	<i>Douglasia laevigata</i> Gray
Penstemon	<i>Penstemon</i> sp.
Piper's bellflower	<i>Campanula Piperi</i> Howell
Flett's violet	<i>Viola Flettii</i> Piper
Webster's groundsel	<i>Senecio Websteri</i> Greenm.
Olympic dandelion	<i>Taraxacum olympicum</i> Jones
Henderson's rockmat	<i>Spiraea Hendersoni</i> (Canby) Piper
Alpine willowweed	<i>Epilobium alpinum</i> L.
Larsen's Gilia	<i>Gilia Larseni</i> Gray.
Silky Phacelia	<i>Phacelia sericea</i> (Graham) Gray
Alpine goldenrod	<i>Solidago algida</i> Piper
Tolmie's Penstemon	<i>Penstemon Tolmiei</i> Hook.
Spreading phlox	<i>Phlox diffusa</i> Benth.
Lyall's lupine	<i>Lupinus Lyallii</i> Gray
Common yarrow	<i>Achillea Millefolium</i> var. <i>lanulosa</i> (Nutt.) Piper
Tapertip onion	<i>Allium acuminatum</i> Hook.
Nodding onion	<i>Allium cernuum</i> Roth.
Wooly Eriophyllum	<i>Eriophyllum lanatum</i> (Pursh.) Forbes
Barestem Lomatium	<i>Lomatium nudicaule</i> (Pursh.) C. & R.
Wormleaf stonecup	<i>Sedum stenopetalum</i> Pursh.

Book Reviews

Lilies of the World, by H. Drysdale Woodcock and William T. Stearn. London, England—Country Life Limited. New York, N. Y.—Charles Scribner's Sons. Price \$8.50.

THIS important volume reached me some time during the past summer—probably one of the first copies to come to this country. It has ever since occupied the place of honor on my desk, for I find myself turning to it for all the historical, botanical and horticultural information about lilies that I need in writing about them, in lecturing and in growing them. "Lilies of the World" is, of course, a revised edition of the earlier "Lilies, Their Culture and Management," first published in 1935. It is significant that in the 15 years since that book appeared so much has happened in the world of lilies that a mere revision, another edition, did not suffice. A completely new book had to be written and we, its readers, can be duly grateful.

Lilies are beginning to take their rightful place among the ornamental garden plants. They have long occupied a place of honor in our religion and in the symbolism of our daily life and language. To sum up all that is known about them, to do so critically and without mistakes, is difficult. Even more difficult it must have been for the authors to mold all their information and hide their erudition in the easy flow of language which, without glossing over the scientific facts of the life of our lilies, yet breathes life into the subject and makes it palatable to even the less specialized gardeners.

That I am delighted with the book is, I suppose, all too plain from the foregoing. Why I am so taken with it is no less difficult to perceive. For one thing, the fact that we now have in one volume, not too large to handle, all pertinent information, botanically and typographically correct, is a boon to all gardeners. For another, to those of us lily fanciers who like their hobby to be taken seriously, here is a volume that does it justice. It cannot be compared with that famous and most rare "Monograph of the Genus *Lilium*" by Elwes, a copy of which is on its way to me. Nor can it compare with some of the other lily books in my library in the quality of the illustrations. The lack of color, no doubt due to the austerity program in Great Britain, is to be deplored. Where this book excels, apart from all other points mentioned, is in the love that its authors must feel for their subject. No one who did not love the lily and its history, throughout the ages, throughout the writings of men, could have performed the Herculean task of bringing the material together.

If criticism there must be, it might be stated that the list of new varieties is by no means complete. Apparently, the book was a long time "aborning" and the earlier chapters must have been closed off long before the last ones were finished. Such omissions, however, can and undoubtedly will be easily corrected in subsequent issues. The new varieties are covered in the excellent Yearbook of the Royal Horticultural Society of England and those of the North American Lily Society. These Yearbooks, to-

gether with "Lilies of the World," form a body of literature that should be in the hands of all serious gardeners who love their lilies and who like to study them. To the commercial grower I say without hesitation that this book is indispensable—librarians of our Pacific Coast towns where lilies are grown as a hobby or as a business please take note.

JAN DE GRAAFF

Camellias and Magnolias: Report of Conference Held by The Royal Horticultural Society, April 4-5, 1950, published by the Royal Horticultural Society, Vincent Square, London, S. W. 1. \$3.00 postpaid.

THIS 134-page volume will interest all gardeners who grow or want to grow good camellias and magnolias. England is ahead of this country in the cultivation of the finest magnolias. Such species as *M. Sargentiana robusta*, *M. mollicomata*, *M. Dawsoniana*, and *M. Sprengeri diva* have apparently been grown in England for a number of years as shown in the photographs of large, profusely blooming trees of these species. *M. Campbellii* has bloomed in Golden Gate Park in San Francisco for a number of years and possibly in a few other gardens in the Pacific coastal area. I believe that it is the only magnolia blooming in this country that can compare in beauty, size and floriferousness with the four species just mentioned. It is hoped that those who have hesitated acquiring *M. Campbellii* because they dislike the prospect of waiting up to twenty years for it to bloom, will try to obtain *M. mollicomata*, which is equally beautiful and substantially similar in appearance. According to this report *M. mollicomata* blooms ten years from grafting.

The parentage of *M. Veitchii* is cleared up: pollen from *M. Campbellii* was used to pollinate flowers of *M. denudata*.

The cultural directions given for magnolias are excellent. The importance of their placement is emphasized. Moving a large magnolia is at best a risky process and several grow to a height of over fifty feet.

The papers on camellias indicate that the British growers are ahead of us in the development of camellias, except as to *C. japonica*. They brought in from China a number of years ago several camellia species and by hybridizing have produced such wonderful garden plants as *C. Williamsii*, *C. "Cornish Snow"*, *C. "Salutation"*, *C. "Mary Christian"* and other hybrids all resulting from the crossing of camellia species. It is to be hoped that many keen camellia growers in this country will accept this challenge and embark upon this fascinating field of hybridization rather than attempting to originate, name and market additional varieties in the already overcrowded *C. japonica* field.

While one would not be inclined to disagree with the statement that there are already too many named sorts of the latter it is hardly correct to state that in the multitude of *C. japonica* varieties there is a sameness in the habit of growth, size and season of flower, size

and color of leaves. In the southern states and in California, *C. japonica* varieties bloom from September to April and there is infinite variety in the size and form of the flower.

The floral qualities of *C. Sasanqua* in its many beautiful varieties that have been imported into this country from Japan are not apparently known in England. The type grown in England is described as having a ragged-looking white flower.

The methods of vegetative propagation of camellias by grafting are barely mentioned. Apparently the British growers feel that cuttings offer the best means of propagation. While this is a subject upon which there may be a difference of views, I think most growers in this country and a majority of the collectors will prefer camellias that have been grafted on at least three-year-old understock. The possibility of suckers from the stock has been mentioned as an objection to propagation by grafting. In the writer's experience no trouble has ever developed in this respect.

An interesting article on *C. reticulata* by a Chinese botanist indicates that we have not as yet seen the possibilities of this species in our gardens. The article describes eighteen distinct garden varieties which have been grown in western China for many years. The semi-double flowered garden form known in this country will probably retain its place since it perhaps is the most beautiful or at any rate the largest flowered camellia, but these Chinese garden varieties of *C. reticulata*, some of which are illustrated in color, will be a welcome addition to gardens where the winters are sufficiently mild to grow them outside.

The book contains fifty-five excellent illustrations, eight of which are in natural color. A bibliography of old and modern books on camellias is included.

This report is well worth reading. It will inspire readers to a more frequent and discriminating use of these two spectacular flowering subjects. It tells how to properly grow them so that they will share with rhododendrons the glory of the spring in the garden.

DONALD G. GRAHAM

The Second Fuchsia Book, published by the American Fuchsia Society. Price \$1.25. May be obtained locally from Mrs. K. M. Millman, Secretary, Puget Sound Fuchsia Society, 18024 29th Ave. N.E., Seattle 55, Washington.

"THE SECOND FUCHSIA BOOK," published by the American Fuchsia Society, is one of those books that you don't just "thumb through." You take one look at it and you want to start right in growing fuchsias and wondering how long it will be before some of the new things they talk about (especially the very large double whites) will be on the market.

This book was written to augment and supplement the first book which was published in 1944, with different and more advanced articles. The book consists of a collection of articles by our well-known fuchsia hybridizers. Of particular interest to us here in the Northwest is

the article, "Wintering Fuchsias in the Pacific Northwest" in which the author, Mrs. Phil Brady of Portland, explains the various methods of storing fuchsias.

Other articles of interest to us are "Insect Control in the Fuchsia Garden," by John Paul Edwards; "Growing Fuchsias from Seed," by Victor Reiter, Jr., and "Seasonal Tasks in the Fuchsia Garden," by Clement F. Schnabel. Horace M. Turet says in his article that during the past ten years many superior fuchsias have been introduced and much excellent breeding stock has become available. He says that from a crop of approximately 450 seedlings possibly 15 seedlings are selected for further trial the following year.

For those interested in how we get new introductions there is a splendid article entitled "1950—The Threshold Year." The author, Victor Reiter, Jr., feels that we are on "The Threshold" of really great all-whites. He shows with diagrams the crosses made so far toward the development of white fuchsias. Until now "Flying Cloud," introduced in 1949, is the first near-white that really is a good bloomer and a good grower. It is the first patented fuchsia.

The interest in fuchsia growing has increased because of their great adaptability. There are fuchsias for the formal or informal garden; for full sun, for shade or semi-shade. They are plants with an exceptionally long blooming period and one that requires comparatively little care. Fuchsias come in nearly every color of the color wheel and some of the color combinations are truly "out of this world."

Every fuchsia lover should read this book.

MRS. BURT LEE

✓ ✓ ✓

Tulipomania, by Wilfred Blunt. Penguin Books, Ltd., England.

THIS very slight book, a mere thirty small pages of text and sixteen delightful color plates, might well exemplify the old saying that in matters of art a large boon can come in a small package. For all gardeners who love the tulip and who are interested in that strange phenomenon, the 'tulip craze' in seventeenth century Holland, the low price of 3 shillings should not be an obstacle. Once bought, they will find that the only way to hold on to the book and to keep enthusiastic friends from carrying it away in a thirst for beauty and knowledge is either to chain it to the library table or, as I have done, to buy more copies.

JAN DE GRAAFF

Most of the books reviewed in this section are in the Library at the Arboretum. Members of the Foundation may refer to them there at any time. Orders for those not easily obtained may also be placed through the Arboretum.

✓ ✓ ✓

Anyone interested in obtaining Bailey's Standard Cyclopedia of Horticulture, 1935 Edition, 3 Volumes, in excellent condition, may inquire about same at the Foundation office, MInor 4510.

ARBORETUM NOTEBOOK

This department is published for correspondence and pertinent comments by experienced growers on interesting plants and their culture. We solicit your questions but space limitation necessitates the publishing of only such answers as we deem of general interest.

THIS has been a winter for wanderings in the garden. To be sure, one may need a raincoat and galoshes but the damp, earthy smells and the odors of rosemary, lavender and santolina, when touched, far surpass the discomforts of rain. This is the time to notice leaf forms. The evergreens *Pieris*: *P. japonica*, *P. taiwanensis*, *P. formosa* and *P. Forresti*, the rhododendrons, the *Elaeagnus* leaves with their different greens and yellows and silver linings, the *Stranvaesias*, the *Daphne* and *Arbutus Unedo*. The hybrid rhododendron leaves with undaunted courage cluster around the flower buds and the dwarf species *R. impeditum* and *R. fastigiatum*, show purples and pinks in their tiny gray leaves when examined closely. *Daphne Laureola* is one of the cheeriest winter shrubs, never downcast by weather, clear green leaves with blossoms now in bloom; not showy but interesting. This mid-January *Prunus subhirtella* var. *autumnalis*, is, of course, in full bloom, looking like an exquisite, pale pink veil tossed among the fir trees. There are fat, purplish-red buds on the *Prunus Pissardi* ready to open on the first sunny day; brown bud-buttons along the ends of all the bare branches of the Paulownia tree and there are little hard tassels on the birches. The bark of the aspen tree is almost silver, making a background for the long, gray catkins of *Garrya elliptica*. Now the design of the garden may be considered before it is obscured by full foliage. One can see if there is a good reason for this turn or that. One of the greatest satisfactions in going through the garden in winter is the lack of need for apologies or regrets. No one thinks of saying, "If you had only been here last week when so-and-so was in bloom," or, "I'm sorry, you are a bit too soon to see beautiful so-and-so." There are only the quiet delights that are by-passed later in the spring when the more obvious prima-donnas are at the front of the stage. This rainy season has its compensations.

Some little-used plants for shady gardens or north sides of houses.

Corydalis

Dicentra

Pulmonaria

Anchusa myosotidiflora

Omphalodes, especially *O. cappadocica*

Vancouveria

Synthyris

Hardy cyclamen

Two inexpensive and altogether charming and responsive rhododendrons are *R. racemosum* and *R. ciliatum*. Several shrubs of each grouped with *R. ciliatum* in front make a pleasing planting for the year around. *R. racemosum* eventually reaches three or four feet high and *R. ciliatum* grows straggly unless kept down

with a thick growth. A carpet of *Aubrietas* and hybrids of *Primula Juliae* adds considerably to the picture. Incidentally, both of these rhododendrons grow easily from seeds.

1 1 1

B. Y. Morrison on Experiment and Experience

Dear Gardener:

You know, as well as I, that this is the time of year when the nurserymen and seedsmen are sending you their catalogues, written with every degree of persuasiveness to lure you into purchasing. I am as susceptible as any of you, for it has been my practice for many years to make some purchases each year of plants that I have never grown, in fact have never seen. Out of these practiced experiments have come both successes and failures, as well as some disillusionments. But I should never think or even wish that I had not bought the plants. Quite aside from the workings of natural curiosity and the sense of duty that reminded me annually that I should know more at first hand, there has been a personal unrest, which I am reluctant to admit as a desire for a fuller experience of beauty but which I am sure is that and nothing else. . . . In reading your catalogues then, this year, when there is so much talk of retrenching, of salvage, of necessity, never lose sight of the fact that in life there is always a necessity also for the attainment of an equilibrium between the forces that control "things" and the forces that activate them and give them life. Choose for yourself, not because I suggest it, or some committee of "experts" tells you what is "best," something new that you will grow this year. Grow it, grow it as well as you possibly can and through the year. Learn it by heart in every phase of its being. Let it be the "new wonder" of the year for you. There are always such, no matter how old and tried a gardener

you may be. It may turn out to be something that is a minor beauty, or it may be the long-awaited revelation. It does not matter; each has something for you.

Extract from a mimeographed letter to members of the American Horticultural Society, Inc., January 27, 1951, from Mr. B. Y. Morrison, editor of the National Horticultural Magazine.

1 1 1

List of Plant Names

(Continued from Winter, 1950, Issue)

Cortusa	after Cortusus, professor of botany at Padua	<i>croceus</i>	saffron-colored
<i>cortusoides</i>	Cortusa-like	<i>crocosmaeflorus</i>	Crocoshia-flowered
<i>coruscans</i>	vibrating, glittering	Crocoshia	Gr. order of saffron
Corydalis	Gr. lark, spur of flower resembles a lark's spur	Crocus	Gr. name for saffron
<i>corylifolius</i>	Corylus-leaved	Crossandra	Gr. fringed anthers
Corylopsis	foliage resembling hazel (<i>Corylus</i>)	Crotalaria	Gr. rattle, from rattling seeds in pod
Corylus	ancient Gr. name	<i>cruciatus</i>	cross-like
<i>corymbifera</i>	corymb-bearing	<i>crucifera</i>	cross-bearing
<i>corymbosus</i>	corymbose	<i>cruentus</i>	bloody
<i>corynocalyx</i>	club-like calyx	<i>crustatus</i>	encrusted
Corynocarpus	Gr. club-fruit, referring to shape	Cryptanthus	Gr. hidden flower
<i>cosmophyllus</i>	Cosmos-leaved	Cryptogramma	Gr. concealed line
Cosmos	Gr. meaning ornament or beautiful thing	Cryptolepis	Gr. hidden scale
<i>costatus</i>	ribbed	Cryptomeria	Gr. hidden part. Meaning doubtful
<i>cotinifolius</i>	Cotinus-leaved	Cryptostegia	Gr. concealed, referring to hidden crown in corolla
Cotinus	ancient name of tree with red wood	<i>crystallinus</i>	crystalline
Cotoneaster	cotoneum, quince, and aster, similar	<i>cucullatus</i>	hooded
Cotula	Gr. small cup	<i>cucumerinus</i>	cucumber-like
Cotyledon	name used by Pliny, meaning a cavity	Cucumis	old Latin name
Cowania	after James Cowan, an English merchant	Cucurbita	classical name
Crambe	old Gr. substantive	<i>cultorum</i>	of cultivators or gardeners
<i>crassicaulis</i>	thick stemmed	<i>cultriformis</i>	shaped like broad knife
<i>crassifolius</i>	thick leaved	<i>cuneatus</i>	wedge-shaped
<i>crassipes</i>	thick footed or stalked	<i>cuneifolius</i>	wedge-leaved
Crassula	Lat. thickish	Cunninghamia	after J. Cunningham, botanical collector
<i>crassus</i>	thick, fleshy	Cuphea	Gr. curved
<i>crataegifolius</i>	Crataegus-leaved	<i>cupreatus</i>	coppery
Crataegus	ancient Gr. name meaning strength	<i>cupressoides</i>	cypress-like
<i>crebus</i>	close, frequent	Cupressus	ancient Latin name
<i>crenatus</i>	crenate, scalloped	<i>cupreus</i>	copper-colored
<i>crenulatus</i>	somewhat scalloped	<i>curassavicus</i>	of Curacao
<i>crepidatus</i>	slipperd	Curculigo	Lat. weevil, referring to beak of ovary
Crepis	Gr. sandal. Application obscure	<i>curvatus</i>	curved
<i>crepitans</i>	crackling, rustling	<i>curtus</i>	shortened
Crescentia	after Crescenzi, 13th century Italian writer	<i>curvifolius</i>	leaves curled
<i>cretaceus</i>	pertaining to chalk	<i>cuscutaeformis</i>	Cuscuta-like
<i>creticus</i>	of Crete	<i>cuspidatus</i>	with a sharp point
<i>crinitus</i>	with long hair	<i>cuspidifolius</i>	leaves cuspidate
Crinum	Gr. name for lily	<i>cyananthus</i>	blue flowered
<i>crispatus</i>	crisped, curled	<i>cyaneus</i>	blue
<i>cristatus</i>	cristate, crested	<i>cyanocarpus</i>	blue-fruited
<i>crithmifolius</i>	Crithmum-leaved	<i>cyanophyllus</i>	blue-leaved
Crithmum	Gr. for Barley, resemblance to seed	Cyanotis	Gr. referring to blue petals
<i>crocatu</i>	saffron-yellow	Cyathea	Gr. a cup
		Cycas	Gr. name for palm tree
		Cyclamen	Gr. classical name
		<i>cyclamineus</i>	Cyclamen-like
		Cyclanthera	Gr. anthers in a circle
		Cyclanthus	flowers in a circle
		<i>cyclocarpus</i>	fruit rolled up circularly
		<i>cyclops</i>	gigantic, cyclopean
		<i>cylindraceus</i>	cylindrical
		<i>cylindrostachyus</i>	cylindrical-spiked
		Cymbidium	Gr. boat, referring to shape of lip
		<i>cymbiformis</i>	boat-shaped
		Cymbopogon	Gr. cup and beard
		<i>cymosus</i>	bearing cymes
		<i>cynanchicus</i>	Cynanchum-like
		Cynanchum	Gr. dog strangle
		Cynara	involucre spines resemble dog's tooth
		<i>cynaroides</i>	Cynara-like
		Cynodon	Gr. dog-tooth
		Cynoglossum	Gr. hound tongue
		Cynosurus	Gr. dog tail
		Cyperus	ancient Gr. name

Arboretum in the Winter

(Continued from Page 4)

worthy accessions are a further gift of seeds of his new rhododendron hybrid crosses from Mr. Lester Brandt of Tacoma, the first exchange with the Botanic Garden at Adelaide, S. Australia, and a collection sent from a private garden at Gisborne, in the North Island of New Zealand. The annual seed exchange list has been sent out to 180 co-operating institutions or individuals, and contained 290 as compared with 170 items in 1949.

(b) *Plants*

Here also we have steadily added to our previous collections—by donations, by exchange, and by purchase. In the first group are included a further seventeen distinct young holly plants from the Washington State Conservation Society, eventually destined for Holly Grove; thirty-nine plants of shrubby peonies imported from Japan by the Juanita Graham Unit of the Amateur Chrysanthemum Society; the four plants of *Rhododendron Loderi* and a *Magnolia Campbellii* already mentioned, from the Tacoma Garden Club, as a memorial to the late Mrs. A. S. Black; five colored varieties of broom (*Cytisus scoparius*) given by Arboretum Unit No. 33, the nucleus of a fresh planting; plants of hollies and *Vaccinium* species from New York Botanical Garden; both plants and scions of some unusually interesting shrubs and trees from the arboretum of the Boyce Thompson Institute; cuttings of twelve forms of *Erica cinerea* from Mr. A. Dome of Medina, Washington; scions of five rare magnolias from Mr. D. G. Graham of Seattle, and several plants also from the same garden, with other equally acceptable gifts.

Amongst exchanges, that with the Parks Board of Vancouver, B. C., has already been noted. We were able to send cuttings of nine of our hardiest camellias to Dr. P. W. Zimmerman at the Boyce Thompson Institute, scions and seeds to the Morton Arboretum in Illinois, and seeds to several of our generous correspondents in Great Britain and New Zealand.

Recent purchases have included a small consignment of *Nothofagus* species and other rare plants by air from England. During 1950 some \$720.00 has been expended on plants.

(c) *Books*

A gift of \$250.00 by the Arboretum Foundation allowed me to purchase in England nine early volumes of the "Botanical Register" (1816-1828), four of Reichenbach's "Flora Germanica" (1844-1855), Paxton's "Flower Garden", Vol. I (1850-51), and J. G. Millais' "Rhododendrons", 1st series (1917), all finely illustrated and valuable works, besides other more recent and smaller books. Other additions to our library include John Lindley's "Monographia Rosarum (1830), "Addisonia", Vols. XXI and XXII (1939-1946), "Natural History of Trees", by D. C. Peattie (1950), "Twenty Years of Seed Research", by Lela V. Barton (1948), and "Lilies of the World", by Woodcock and Stearn (1950). During 1950 we expended \$148.31 on books, apart from donations.

(d) *Other Gifts*

The highly successful Institute of Modern Living, organized by the Ways and Means Committee of the Arboretum Foundation and held on the University Campus in October, brought us the outstanding amount of the year, \$2,850.00, which will be utilized for the paving of the area around the offices, so badly needed for several years.

The West Seattle Garden Club gave a further \$150.00 for Woodland Garden in December, making a total for the year of \$710.00. From Seattle Garden Club we received a useful assortment of equipment and materials formerly used at flower shows, which may again be utilized in the same way.

Meetings and Lectures

A selection of slides of the Arboretum and its plants have been shown by Mr. Hansen or myself to the following groups:

- Burlington Garden Club
- Men's Garden Club of Seattle
- Yarrow Point Garden Club
- Hillcrest Garden Club
- Sunset View Garden Club

Mountview Garden Club
West Seattle Garden Club
Women's University Club

Staff

Mr. Hansen, Assistant Director, made a horticultural tour during October and visited fourteen arboreta, parks and botanic gardens in Ohio, Indiana, Missouri, Wisconsin, etc. Dr. W. R. Naumann, who had been in charge of recording, labeling and seed collecting, left at the end of that month to become Supervisor of the Drug Garden, College of Pharmacy, University of Washington. Mr. A. J. Howe has been appointed in his place. One other man left after three and a half years' service to learn the art of furniture-making.

Miscellaneous

The Anna T. Milburn memorial, in the form of a circular stone lookout with benches and a drinking fountain on the eastern side of Azalea Way, has now been completed except for the memorial tablet. For this most worthy addition to the amenities of the Arboretum we owe an especial debt to the Milburn brothers

who made its completion possible.

The old and dilapidated barn and store-rooms belonging to the Park Board have now been removed from the vicinity of the Madison Street playfield, newly constructed buildings on 29th Ave. N. now taking their place.

The broad ground plan for the *Saxifragaceae* area, including *Philadelphus*, *Deutzia*, *Ribes* and *Hydrangea*, immediately south of the nursery and facing the magnolias, has been completed by Mr. Hansen, who is now working out the detailed plan for planting this spring.

Most of the smaller mechanical equipment in the form of power mowers, cultivators and saw have been stripped down in our own workshop, thoroughly overhauled and parts replaced where necessary by the foreman, Earl Brown, and equipment operator, John Ross, a system which saves both time and expense and keeps these machines in sound condition.

In 1950, 791 inquiries were answered by telephone, 47 organized parties visited and were shown 'round the Arboretum, and 24 lectures were given.

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Douglas of the Fir

(Continued from Page 15)

created great excitement in England when the plants were unpacked.

When Douglas returned to England he was acclaimed by the various scientific and horticultural societies and treated as a celebrity. This he enjoyed for awhile, but the trammels of convention irked him. The confinement of walls and taboos of the society of his day stifled his imagination and he found it almost impossible to settle down to sort, classify and duly catalogue the enormous amount of material he had sent home. To his great disappointment much of it had been allowed to deteriorate. Soon he wanted to go back to the Columbia region and complete the exploration of country still unknown. Dr. Hooker again came to rescue Douglas from the doldrums, since he, more than any other, understood the genius of Douglas, and it was he who finally persuaded the Hudson's Bay Company that Douglas was the very man to secure scientific data badly needed by the company in the Columbia region. By a prodigious effort, studying eighteen hours a day and guided by Hooker, Douglas was qualified at the end of three months to handle the necessary scientific instruments and record their findings. All the way on the voyage out, Douglas worked with sextant and compass and computed logarithms under the ship captain's directions, who himself is said to have declared Douglas "thoroughly competent". From all the evidence to be had, Douglas did a satisfactory job for the Hudson's Bay Company and completed his horticultural discovery survey. After this was

done, Douglas went down to the California country, of which he had heard so much. He landed in San Francisco in 1831. He was there for a period of nineteen months and his explorations were wide and thorough. We are told, "He was the first botanist to remain for an extensive period and the first to leave written descriptions of his gleanings." California was a botanist's paradise in those days, and Douglas by this time was an experienced collector of skilled resourcefulness. Seeds of the parents of many of the well-known flowers of today's gardens were sent back to Britain, there to be hybridized and come back with added beauty.

Sixty new plants were discovered in this region, also hundreds of mosses, seaweeds, distinct species of plants and one, *Garrya elliptica*, which represented a new natural order. To Douglas himself, we are told, *Salvia carnososa*, the gray ball sage, was the most interesting plant. The pines, always of great interest to him, revealed new types. He sent back seeds and cones from the big-coned pine, now known as *Pinus Coulteri*, seeds and cones from the Monterey pine, *Pinus radiata*, and the Digger pine, *Pinus Sabiniana*. It was known as the "Digger pine" because of the fact that the nuts served as food for the Digger Indians. They also chewed the gum exuded by the tree. The bristle-cone fir he named *Pinus venusta*, but it is now known as *Abies venusta*.

Ships sailing from California were uncertain in those days. Douglas wished to return to the Columbia region to complete some unfinished business, but found a ship going to the Sandwich Islands and took passage from the

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Islands back to the Columbia. As was to be expected, Douglas, like all other botanists, found the flora of the Islands fascinating in its diversity and he longed to explore at greater length. He formed many friendships and was respected, not only as a scientific botanist, but as a deeply religious man who saw in all nature the handiwork of the Creator.

Very little is known of the life and experiences of Douglas during the last eighteen months spent in the Columbia region. We hear of him appearing here and there accompanied by his little dog, Billy. This shaggy little terrier was his constant companion, faithful and understanding in all ways. It was with faithful Billy that Douglas landed in the Sandwich Islands on January 2, 1834. They were en route home at last. Great preparations were being made in England to receive David Douglas with all the honors he so richly deserved. He had sent back to England from America more than one hundred and fifty new species of plants, collections of animals, birds, mosses, seaweeds, and minutiae; mapped and explored thousands of miles of the Northwest country and opened the minds of the British to vast possibilities ahead for development of the region. Abruptly and without warning the career of David Douglas ended on the slopes of Moana Loa, the great volcano of the Islands. He was ascending the mountain, accompanied to the end by his little dog. As usual Douglas carried a bag to collect specimens and some scientific instruments. He was last seen alive by his missionary friends going happily as a boy on a holiday. A few hours later an Islander reported finding him gored to death by a

vicious bull in a cattle pit used to trap the half-wild animals. Billy, the faithful little terrier, true to his trust, was still guarding the belongings of his master.

There are many surmises regarding the death of David Douglas. It seemed a cruel and untimely end to a man who had been so loyal in friendship and so true to the ideals of a real botanist.

The preserved specimens of his botanical collections are divided between the British Museum in South Kensington, London, the Lindley Herbarium at Cambridge, the Hookerian and Bentham collections at Kew.

David Douglas is buried in the Islands which so excited his interest. A group of the trees which bear his name serves as a memorial there, but as biographers have said, "The true memorial of David Douglas is in the gardens of all of us." "If life be measured by achievement, rather than by time, the life cup of David Douglas was filled."

✓ ✓ ✓

David Douglas

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Poisons Among Woody Plants of the Garden

(Continued from Page 9)

other rhododendrons. But there is nothing particularly attractive for children in eating leaves of these plants, at least as compared with attractive berries of others. Hence poisonings from rhododendrons are rather rare. It might be pointed out again that the poisonous constituents of kalmias, andromedas and rhododendrons are only experienced when parts of these plants have been eaten.

Viburnums are attractive woody shrubs found in several gardens. Some of these produce attractive bluish-black fruits (*Viburnum prunifolium*), others bear light red berry-like fruits (*V. Opulus* and *V. Lantana*). The oils formed in many viburnums possess irritant and sedative principles which may affect the intestinal tract. These are formed in greatest quantities in the bark portions, but some occur in the fruit and seeds. Poisoning from eating viburnum berries is not severe, and unless a large number are ingested, the sedative effects

are insignificant. Irritant acids, however, may cause stomach inflammation if only a few berries are consumed.

The Oregon grape, *Berberis*, or *Mahonia* species, has caused some concern, because many persons make jellies and drinks from the bluish grape-like fruits of these plants. Young shoots and leaves are occasionally chewed by children. The mature leaves and stems of Oregon grape have been definitely shown to contain several poisonous principles. In fact, one of these, an alkaloid known as berberine, has been used as a drug in bygone times, as have also the root and stem portions of the plant. The fact is that berberine in sufficient quantities affects the body in several ways, such as causing a depression of the heart and respiration functions, and producing some bronchial congestion. But it has not been shown to occur in the pulpy fruit portions of the plant in enough quantity to poison an individual. Then, too, during the preparation of these berries for table use, the seeds, which also contain some berberine and intensely bitter constituents, are generally separated. The fruits are frequently cooked and it is known that heat will destroy the berberine. Oregon grape berries should, nevertheless, not be eaten without cooking them or separating seeds. Certainly the berberine constituents could be expected to be present in all portions of the plant, and if one ingested enough raw fruits, poisoning might well follow.

Fruits and branches of various ornamental *Prunus* species, for example, the wild black cherry, *Prunus serotina*, and the choke cherry, *Prunus virginiana*, contain some hydrocyanic acid, especially during the late summer and autumn periods. This is a toxic substance and is formed in greater amounts as portions of the plant become moistened, such as when they are eaten. A glycoside and enzyme exist in the cells of the plant in such a way that when sufficient moisture is present, the enzyme attacks the glycoside and causes the poisonous hydrocyanic acid (prussic acid) to be formed. One can smell this powerful poison if young stems of the plant are cut or torn and slightly moistened. Frequently young stems will give

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forth the odor when cut and examined during the spring of the year. Violent poisoning can result if hydrocyanic acid is consumed. Fortunately, most *Prunus* species such as cherries, plums, peaches and apricots do not have this poison. But the fruits of some other *Prunus* species contain enough to cause stomach upset and even death. One should be cautious in eating any ornamental *Prunus* fruits which have the least odor of hydrocyanic acid. To be absolutely certain of this, a simple test is to moisten the fruit or stems with saliva and smell for prussic or hydrocyanic acid.

The berries and leaves of most garden junipers contain volatile oils which have irritating principles. These constituents are similar in many respects to those previously mentioned for the red cedar, *Juniper virginiana*, and *Taxus* species. The berries of *Juniperus communis* are similarly irritating if eaten. The leaves of the cedars, especially the *Thuja* species, are also intensively harmful if enough oil in them is ingested. This oil contains two related compounds, Thujone and fenchone, which have been shown to stimulate the heart and cause convulsions in animals. Furthermore, other constituents in cedar and *Thuja* leaves are sufficiently irritating to cause intestinal inflammation and stomach cramps.

There have not been many reports on poisonings following the ingestion of the bright berries of *Cotoneaster* or *Pyracantha* (firethorn). These rosaceous ornamentals yield many attractive red to bright scarlet or orange berries and are grown in most ornamental gardens of the Pacific Northwest. The *Cotoneaster* genus was investigated at Kew Gardens, England, several years ago and some species were apparently found to possess hydrocyanic acid. But certainly the incidence of this has not been at all widespread among the genus and it might be expected to occur in very insignificant amounts even in those cotoneasters studied. Of course, these plants and the *Pyracantha* belong to the same family of plants (Rosaceae) as do the hydrocyanic acid-producing *Prunus*. Hence, it is reasonable to suspect that this poison can be found among the cotoneasters and firethorns and, therefore,

precautionary measures should be observed to keep children from eating their berries.

Euonymus (Burning bush, Strawberry-bush, etc.) and *Celastrus* (bittersweet) are woody perennial shrubs which bear brilliant colored fruits and showy leaves. *Euonymus radicans* is frequently grown in gardens in much the same fashion as the firethorn, or *Pyracantha*. These genera are noted for the poisonous nature of certain constituents found in some of their species. The bark of *Euonymus americanus* or Burning bush, and *E. atropurpurea* or Wahoo bark, were at one time used as powerful purgative and heart stimulant drugs. They are not commonly so used today. The active constituents are also present in leaves and fruits of these plants and in notable amounts. One of these principles, a bitter, odorless chemical known as euonymin, has also been found in the bark, leaves and fruit of the bittersweet, *Celastrus scandens*. Hence, the attractive orange-colored capsular fruit of *Celastrus* species can be severely poisonous, if many of these are eaten. The symptoms of poisoning caused by *Euonymus* and *Celastrus*

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are slow in onset, but soon violent nausea and cold sweats will suddenly occur and a person will be very sick.

Although reports of poisonings from eating fruits or other portions of the snowberry or coralberry (*Symphoricarpos orbiculatus*) and of some Asiatic and European *Callicarpa* species have been reported, these are not numerous. At any rate, the constituents found in plants of these species and closely related species are highly irritating and persons should certainly not eat their berry-like fruits. Intense nausea and poisonings have been reported from ingesting leaves and fruit of *Callicarpa americana*.

Woody perennial species and varieties closely related to those mentioned have been suspected to produce poisonings, and, although no definite reports are available substantiating the actual fact, it is probably best for mothers to warn children not to eat any plant berries of unknown virtues.

When poisoning is suspected in a child or adult, a physician should be called and, if possible, the name of the plant given to him. In the absence of immediate medical care, probably the general measure of first aid that can be practiced if the poison has been eaten is to cause immediate vomiting. There are many convenient methods for doing this, such as by administering one-half to one teaspoonful of table mustard or alum in a tumblerful of water, or drinking copious amounts of warm water, or even by tickling the throat with the index finger. Syrup of Ipecac can often be obtained from a pharmacist and a teaspoonful of this will cause vomiting in most children in about one to four hours. In any event, medical advice should be obtained. With the vast knowledge of dermatitis treatments which doctors can now make use of, it is a wise practice for those who suddenly find that the skin is sensitive to a poison by contact with a garden plant to consult the physician without delay. There are, of course, a large number of ointments and lotion preparations available in pharmacies which can be used. For example, zinc oxide ointment, calamine lotion, Whitefield's ointment, calmitol, Desenex, anti-

histamine ointments, etc. Pharmacists generally recognize that some of these are better than others for specific types of skin inflammations and prefer that physicians prescribe them. Several of these contain well-proven ingredients for correctly diagnosed types of dermatitis. Many of the so-called "antihistamine" tablets and elixirs are now being prescribed for internal use in cases of severe sensitivities. These, of course, must be administered under a physician's advice. When so used, marvelous benefits are usually derived.

And thus it is, nature has endowed us with many beauties among our woody perennials. But hidden among these is an occasional poison which, if one is unfortunate enough to encounter, will cause rather marked unpleasant effects. True it is, also, that some of these same poisons are found among herbaceous plants of the garden. Although the latter group is not described here, nevertheless, they present similar problems.

1 1 1

John Scouler, Adventurer and Explorer

(Continued from Page 16)

Scouler in his journal notes, "The first we collected on North American continent was the charming *Gaultheria Shallon* (Salal) in excellent condition." He spoke of meeting Indians, chiefly women and children who were gathering the young shoots of *Equisetum arvense* (horsetail) "which were used as food as we use asparagus and has a similar taste." He also mentions the abundance of *Camassia esculenta* (Camas), the bulbs of which formed so important a part of the Indian's food. He tells of finding *Hookera*. "None of the plants I ever met on the Northwest Coast gave me greater pleasure than *Hookera* (*Brodiaea*). I found beautiful specimens of the charming little plant, with its constant attendant *Hypnum splendens* growing by the margins of a shady rivulet among a brush wood composed of *Menziesia ferruginea* (fool's huckleberry)."

The remainder of the month of April was spent at Ft. George and, as it rained every day, their botanical excursions were limited. Until the last of May, they spent their time

between Ft. Vancouver and Ft. George making extensive collections.

Scouler then left Douglas for a trip up the Washington coast to Nootka on a company's trading vessel. On July 7, the vessel started back and arrived at the Columbia September 7, 1825. During this trip Scouler visited every bay and inlet where possible; birds, fish and every form of life were collected and examined. Indeed it is said, "While he was the first physician to leave medical records, most of his journal is given to observations of natural history." An amusing story is told of a scientific effort that almost ended disastrously for him. He robbed an Indian burial place of three flattened skulls and was forced to seek refuge on board the ship when the Indians sought to punish him.

Speaking of this trip up the coast, he mentions that lichens and mosses were so plentiful he could find forty different species in an hour. He also mentions the abundance of saxifrage and mimulus on the rocky banks of bays and rivers. Returning to Ft. Vancouver he again met with Douglas, who relates that when he had the pleasure to find Dr. Scouler returned from his northern voyage "he was so delighted, as was I, to hear of his success and he to be informed of my movements, that we sat and talked of our respective journeys until the sun rising over the noble river apprised us that a new day had begun, and sent us off to seek a few hours of repose."

For the next fifteen days they made excursions and examined specimens. Among the many plants they found and listed, here are a few of the most cherished and beloved of our wildlings: *Cornus canadensis*, *Calyptro borealis*, *Corallorhiza innata*, *Linnaea borealis*, *Adiantum pedatum*, *Ribes sanguineum*, *Mahonia (Berberis) nervosa* and *M. Aquifolium*.

Late in October, 1825, the "William and Anne" left for England with a cargo of furs. As Scouler had accepted the appointment as surgeon to the boat, he must of necessity leave also. He made one more voyage to other parts of the world and then settled in Glasgow to the practice of medicine. That his real interest lay in the natural sciences is

apparent in his acceptance of the professorship of geology, mineralogy and natural history in the University of Glasgow. Later he was appointed professor of mineralogy, geology, zoology and botany to the Royal Dublin Society, a post he held until his retirement.

The following is a partial list of plants named in honor of Dr. John Scouler:

Salix Scouleriana (Barr.) — the common willow of this section. Found both in dry uplands and marshes. An immensely variable species especially as to foliage.

Penstemon Scouleri (Doug. & Gray)—A handsome shrublet suitable for rock gardens. Flowers tubular, lilac-purple. Found from British Columbia to Idaho and northern California.

Silene Scouleri (Hook.) Scouler's catchfly. Perennial—small member of the pink family. Dry locations. Flowers in June.

Allocarya Scouleri (Hook. & Arn.)—Scorpion grass. Forgetmenot-like flowers, blooms May and June.

Hypericum Scouleri (Hook.)—Scouler's St. John's Wort. Flowers in cymes, orange-yellow with black dotted margins. Wet locations. Not widely distributed.

Campanula Scouleri (Hook.) — Scouler's bluebell—six to ten inches tall. Flowers light blue in drooping racemes. Found in dry open woods. June and July.

Scoulerite is a mineral named in his honor.

↑ ↑ ↑

Mr. Carl Starker, of Jennings Lodge, Oregon, will be the featured speaker at the May 28th meeting of Snoqualmie District of the Washington State Federation of Garden Clubs to be held at the Metropolitan Theatre. Morning subject, at 11:00 a.m., "Planting for Picking"; afternoon at 1:30 p.m., "How to Arrange What You Have Picked." The public is invited.

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Introduction of the Chestnut (Castanea) Into Our Pacific Northwest

(Continued from Page 17)

The blight originally came as a sneak attack on the wild, in the Appalachians, and though we threw into the fight against it everything of science we had, the checks were "too little and too late." Nor even now does the future for the native chestnut promise much in the range of the scourge. Bravely the stricken tree sprouts from the root, as is the wont of its kind; but sooner or later it blights again, as did the parent stock.

There have been two or three sporadic occurrences of the chestnut blight in the Pacific Northwest, in the years before proper surveillance was maintained. But prompt measures of eradication were undertaken in each case, and recent reports of competent forest pathologists indicate that the blight has not recurred. Even so, if the American sweet chestnut is to survive as a species it will probably be in plantings on the Pacific Coast, and approved native stock may be obtained here from early introductions. Just where in valley or on slope of our coast the species will thrive best and mature its brown nuts needs further observation. At present survey the more median zones of coastal Oregon and Northern California offer the greater promise, for the growing season of some years in the Puget Sound country seems too short for maturing the nuts.

In time we shall have Asiatic chestnuts in this country that will be immune to the blight,

or be able to throw off an infection and thrive in spite of the attack. Such promise is now held by a Chinese species, *Castanea mollissima*. This pronouncement is from the very recent circular and bulletin release of the U. S. Bureau of Plant Industry, and from letters at hand on the subject. We quote, in part: "Although this Bureau has done quite a lot of breeding work, particularly in hybridizing various species, no hybrid tree has yet been found which is as resistant to the chestnut blight disease as are the best trees of the pure Chinese species."

The Chinese chestnut varies considerably in native types and perhaps also in horticultural varieties. The most suitable of these types for nut production in the home garden or landscape may be propagated by seedlings. Experimental grafting is yet of uncertain promise. There are timber types and nut-production types to choose from, though perhaps only the Forest Service would be interested in the former. The nuts themselves vary much in size with the type—some as small as the American sweet chestnut, the average from two to four times this size, and others too large, as I should say, to be appreciated. These have appeared on our markets within the past year or two. We gather from a report of the U. S. Plant Industry Station, in Maryland, that "In texture and palatability the kernel of the Chinese chestnut is not excelled by any other true chestnut." We wouldn't know, but the flavor of this oriental species will needs go far to out-sweet the American sweet chestnut.

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others interested, may want to test the merits of these new developments in chestnut culture, just as we yearn to prove the worth of new creations pictured in the garden-seed catalogues. Cooperation of the horticulturally inclined will be needed to test out one or more of the several varieties, for soils, seasons, productivity. So far field experimentation has been confined largely to the southeastern parts of our country, from which we get a general deduction that the Chinese chestnut will do well wherever the peach will thrive—at least. For the larger plantings of the Bureau have been in Maryland and farther south. “A good rule to follow is to plant on sites where peaches or apples would ordinarily be grown.”

In home plantings it will be well to remember that the Chinese chestnut is largely self-sterile, and that two or more seedlings or varieties will be needed for good pollination. Commercial production will naturally wait on the test introductions, though a few such, on a small scale, have already proven profitable. The nut-bearing types of this chestnut, if handled properly, top out from a single trunk very much like an apple tree and will be of similar size. They come into good bearing at eight or ten years of age.

It may be somewhat difficult at this stage of the new chestnut culture to get the proper seedlings and varieties, but it will be well worth the try. From a circular released by the Bureau of Plant Industry, 1950, we quote: “At the present time there are four horticultural varieties that are suggested for trial plantings. These are Abundance, Kuling, Meiling and Nanking. All except Abundance were selected by the Bureau and are known to be well-suited for culture in the South. Their suitabilities for northern conditions have not been fully determined as yet.”

Abundance (quotation above) is indicated in an article of the *National Horticultural Magazine*, April 1947, as being first catalogued in 1941 by Carroll D. Bush, a nurseryman at Eagle Creek, Oregon. Whether stock of this variety is now being distributed there may probably be known by addressing this nursery. Circular information on source of seedling

stock and general cultural methods may be obtained by writing the U. S. Bureau of Plant Industry at Beltsville, Maryland. Information might also be gathered by addressing the department's Plant Introduction Gardens, at Indio, California, or the Oregon State Department of Agriculture, at Salem, Oregon. So far as I have been able to learn, no introduction allotments of these Chinese chestnut varieties have been made to Washington.

1 1 1

Huntington College Botanical Garden and Arboretum

(Continued from Page 5)

ual variations of different species. A botanical garden supplies an opportunity for those who wish to casually observe many plants growing, blooming and fruiting, without the necessity of traveling long distances to find them.

At the head of the garden is a large grass plat provided with a well-built outdoor grill and tables shaded most of the day, a suitable place and pleasant setting for groups to serve lunches with the garden in the background.

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The Species Lilac

(Continued from Page 19)

botanist has found it there in the wild state. In 1602 the cut-leaved form was known to be in cultivation in gardens in Venice. In 1672 the two forms were separated and given different names. The Persian lilac makes a dense, medium-sized bush of a twiggy nature. Each terminal is covered with rosy lilac sprays and makes a feathery mass of color. There is a lilac-white but no pure white form. *S. persica* var. *laciniata* has distinct, feathery cut leaves adding much to its beauty.

S. oblata, the most widely distributed of the true lilacs in north China, is found from the province of Shensi and northern Hupeh eastward to Korea. The plant which bears the name *oblata* was brought in 1856 from a garden in Shanghai to England by Robert Fortune. Its exact counterpart has not been found in the wild state, but its slightly different variety, *Giraldii*, was discovered in 1891 in the province of Shensi and brought into cultivation before 1903. Lemoine does

not consider this a variety of *S. oblata* but probably a geographical variation of *S. vulgaris* as it does not resemble *S. oblata* and is undistinguishable from *S. vulgaris*. The white-flowered form, *alba*, or *affinis*, has been in cultivation in Peking gardens for ages. Seeds were sent to the Jardin des Plantes in 1880 and the plants flowered in 1891. A third variety, *dilatata*, is found in central Korea, which was introduced into cultivation in 1917 through seeds sent by E. H. Wilson to the Arnold Arboretum. Two very local species, *S. Fauriei* and *S. buxifolia*, are not known in cultivation. *S. oblata* and its varieties are the only species bearing flowers similar to *S. vulgaris*. The variety *dilatata* blooms very early, with small, upright, very open clusters of blush pink flowers and before the blossoms fade the beautiful coppery leaves unfold. A charming shrub, but we have found it too early to be frostproof, as it has lost most of the blooms and new growth each year, but perhaps a more sheltered location might be more to its liking.

S. Wolffi is a fairly common plant in the woodlands and forest glades of central and north Korea, and probably occurs in the adjacent forests of Manchuria. It is a hardy late bloomer, bearing lilac-purple blossoms in profusion. The clusters are long and slender on the terminals. The extra-long corolla gives an appearance of myriads of tiny trumpets.

The province of Mupin and the adjacent forested region is the home of the anomalous *S. pinnatifolia*, introduced in 1904 by E. H. Wilson. A beautiful shrub with pinnate foliage on a larger scale than that of *S. persica* var. *laciniata*. The clusters of flowers are snow-white with conspicuous yellow anthers. A very early bloomer.

A few species are widely distributed but a great many are very local. The most widely distributed are the tree lilacs, *S. amurensis* and *S. pekinensis*. The former is the first tree lilac introduced into cultivation. It was found by two Russian travelers in 1855 and was sent to St. Petersburg; it is native throughout the greater part of the Korean peninsula, adjacent Manchuria and the regions

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bordering the Amur River to the north. It reappears in the mountains of Japan in the variety *japonica*. It is abundant in Hokkaido, where trees up to forty-five feet tall are not uncommon. Seeds of this variety were sent to the Massachusetts Agriculture College and Arnold Arboretum in 1876.

S. pekinensis, the third tree lilac, grows wild on the mountains in the vicinity of Peking and westward to the Kansu-Tibetan borderland. They may be grown as trees but more usually are very large shrubs, and are the latest of all lilacs to bloom. They all have creamy white flowers in large foamy sprays or clusters remindful of our native spiraea but not such a deep cream. Their flower clusters are quite different in formation but all have the tiny privet-like blossom. They are considered the most distinctive group of lilac species, of the section *Ligustrina*, distinguished by the very short corolla tubes.

S. velutina is remarkable as being the only true lilac found outside of continental areas; as the lilac is so widely spread in the Orient

it is remarkable that no true lilac grows wild in Japan. It was discovered in the Korean mountains by V. L. Komarov in 1897. A slender, upright growing shrub producing a shower of pale lilac-colored blossoms, resembling *S. microphylla* but more upright.

The early species have recently been crossed bringing out some very lovely early hybrids. The same has been done with some of the late blooming species, and these resultant hybrids are some of the most beautiful plants we have in our garden. As this article deals with the species only, I must forego the temptation and leave you to speculate and investigate this intriguing subject.

1 1 1

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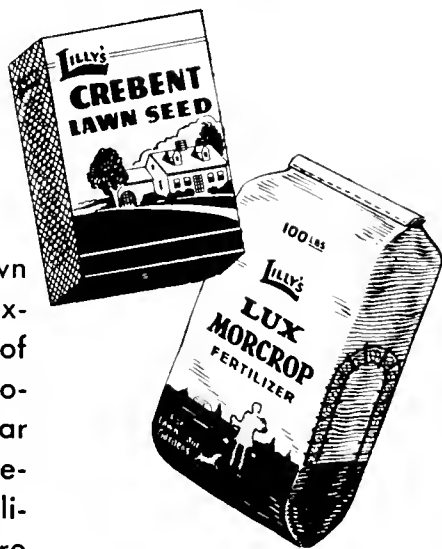


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