ARBORETA AND BOTANIC GARDENS ON
THE PACIFIC COAST

(The following notations come as a result of a recent trip down
the coast visiting various botanical organizations.)

At Long Beach, Washington, are located the cranberry laboratories of Washington State College. Established in 1923, they have accomplished much pioneering work in cranberry culture for the benefit of that industry throughout the Pacific Northwest.

Although we have no ambitions to enter any commercial field of this type it must be recognized that we are faced with certain definite problems in the development of our bog areas that are not unlike those of the cranberry grower. Starting with a bog that was extremely wet (in fact so much water stood on it at certain seasons of the year that transportation was effected by boats) the Long Beach men have created a condition whereby they can control the water supply to a marked degree. By the construction of adequate drains and dikes; by adding a layer of sand two to four inches deep; and by controlling cat-tails, sedges, and grasses by spraying with an efficient herbicide, their area has been entirely changed in both appearance and accessibility. At the same time those ecological conditions which are essential for successful cultivation of the desirable bog species have been maintained.

So far as these observations relate to our own situation it should be pointed out that only a comparatively small area will need such treatment. Specifically, we shall confine these measures to that part of the lowland which has been designed as a bog meadow by Olmsted. Once the luxuriant stand of cat-tails is eliminated and the water level lowered to provide better planting conditions we can begin to accumulate and set out the collection of interesting plants which will ultimately occupy the meadow. Here, as elsewhere in the arboretum, particular emphasis will be placed on the woody species.

The University of California at Berkeley has operated a very interesting botanic garden for a number of years. It is approximately 60 acres in extent and has been placed under the immediate supervision of Mr. J. C. Brydon. Mr. Brydon is a very alert and personable young man with a thorough English training in ornamental horticulture.

As is the case with the majority of arboreta and botanic gardens, the one at Berkeley is concentrating on a relatively few large plant groups. At present the most extensive and imposing collection comprises the cacti and succulents. These are, of course, plants which have adapted themselves to conditions of little water and extreme heat and one finds among them representatives of several families other than the Cactaceae. The Crasulaceae, the family to which Sedum and Sempervivum belong, is a most important one. The Asclepiadaceae, Composite and Euphorbiaceae also have numerous members that have apparently evolved under conditions of extreme drought and have taken on various characters which the majority of people associate with the cacti only. All in all there are more than 1,700 species and varieties in the Berkeley planting.

Mr. Brydon also has an excellent collection of rhododendrons species started. To those who are familiar with the very dry, hot summer conditions in the Berkeley hills this will be appreciated as a tribute to the skill of the botanic garden men. The rhododendron group is concentrated in a narrow valley which is effectively shaded and protected by evergreen oaks. Here may be seen some excellent plant specimens. The two most outstanding were Rhododendron Griersonianum and R. Fragrantissima: both were in full bloom on June 18 and both are most attractive and effective species, deserving of much wider use. The latter one, as the name suggests, is a most fragrant type, and, because of its fragrance, may provide an important means of developing this character in garden rhododendrons. The former, R. Griersonianum, is one of the outstanding red flowered species and has many qualities which mark it a superior garden type. The habit of growth is pleasantly loose, in contrast to the crowded bunchedness of so many of the hybrids. The flowers are odorless but very large in size and of a color not to be found among other species. It is bright red, to be sure, but not overly brilliant. The red is definitely grayed but not enough to give an undesirable, muddy effect. The trusses are few-flowered but each individual bloom is broad and expanded so that the shrub gives a pleasing effect of fullness when in bloom. The species has been extensively used in breeding for the late-flowering character which it displays.
Rose and lily species comprise two other groups which receive concerted attention at Berkeley; the rose garden is effectively designed and occupies a prominent place.

The Santa Barbara Botanic Garden, formerly known as the Blaksley Botanic Garden, demonstrates effectively some of the striking things that can be accomplished through the use of native plant materials. With its prime function the maintenance of "a living exhibit of those native California plants which have ornamental value" it is actually accomplishing things which will be much more than state-wide in their ultimate effects. The young director, Mr. Maunsell Van Rensselaer, among other things is striving to popularize the Ceanothus species for garden use. California is rich in these species and those gardeners whose experience with the genus has been confined to the French hybrids of C. Americanus background would do well to watch for new types coming from Mr. Van Rensselaer's work. From the ornamental standpoint the genus is an amazing and a promising one. Foliage characters are especially interesting. Many of the forms will be fine additions to any garden even if they produced no flowers. The bright evergreen leaves are of variable size, depending upon the species and are beautifully and variously veined and toothed. It is hoped that from Mr. Van Rensselaer's work there will come a number of hardy types which will display the valuable ornamental qualities inherent in so many of the California species. It is indeed encouraging to know that is one of the objectives of the Ceanothus project now being conducted at Santa Barbara.

The Santa Barbara Botanic Garden has a very interesting history. It enters around a very old dam which supplied water for one of the picturesque missions in the vicinity. Mrs. Anna Blaksley Bliss purchased the site and 30 acres surrounding it with two ideas in mind; she wished to preserve the old dam from the encroachments of civilization and also provide an area on which could be grown a wide variety of native California plants. The cactus collection has always been an important one: the massiveness of many of the older specimens is particularly impressive.

The development of an efficient botanic garden or arboretum entails much more than the mere procuring of plant species and arranging them in proper positions on a given area. To anyone who is in doubt on this point a visit to the Rancho Santa Ana Botanic Garden at Anaheim, California, is recommended. There one will encounter a most efficient organization under the direction of Mrs. Susanna B. Bryant and Dr. Carl B. Wolf.

This garden comprises about 200 acres of land lying on the lower slopes of the Santa Ana Mountains. The area was set aside by Mrs. Bryant as a part of her extensive ranch for the purpose of displaying the native flora of California. It is adequately financed and gives every appearance of a most promising future. A beautiful administration building, occupying a prominent plateau, contains spacious offices, chambers for seed storage and ample herbarium and library space. A separate building houses an attractive auditorium for meetings of botanical and garden club groups. The whole of the area is piped for water and good roads and trails intersect it thoroughly. Much extensive planting has been done and the growth of many of the trees is quite amazing until one recalls that the growing season is exceedingly long and that ample water is available.

The botanist, Dr. Wolf, has chosen the genus Cupressus for special study. He has brought together about nine of the species in one planting which contains some 1,300 individual trees, now well developed and of sufficient size to appreciate their horticultural attributes. Both botanically and horticulturally the genus is most interesting. The nomenclature is not well founded and one of Dr. Wolf's aims is to straighten it out, if that is possible. The isolation of superior horticultural strains from each species should be relatively easy by resorting to some vegetative system of reproduction, such as by cuttings or grafting. This is made possible because of the variation within a species which is apparent even to the most casual observer. Some individuals possess desirable ornamental traits: these should be made available for landscape purposes through vegetative propagation. Dr. Wolf ultimately expects to isolate these strains which possess better growth habits, as well as disease resistance, and make them more generally available. The development of disease-resistant types is of major importance since it is the conclusion of botanical specialists that the prominent and widespread Monterey cypress is doomed to ultimate extinction in cultivation because of increasing infection by a fungous disease. Such a situation is lamentable, to be sure, and the only hope rests in the production of resistant strains of Monterey cypress itself or in the discovery and use of other resistant species. It is hoped that these results will follow Dr. Wolf's studies.

**ARBORETUM HOST TO DISTINGUISHED GUESTS DURING SUMMER**

The arboretum has been very fortunate to have been able to entertain some prominent visitors during the past month. Mr. Robert Pyle, of the Conard-Pyle Company at West Grove, Pennsylvania, spent a pleasant afternoon with us in early July. He is, of course, primarily interested in roses and viewed the arboretum from the standpoint of an eventual rose garden development. The natural amphitheater adjoining Madison Street, which was selected by the Olmsted firm as the best site for the rose planting, was examined and discussed in great detail. It has been stated by numerous rosarians in this vicinity that the area was not well-suited for the garden because it is rather low-lying and enclosed on three sides by high banks and higher vegetation. Mr. Pyle scoffed at such fears, asserting that infestations of mildew and black spot would not be appreciably greater in this area, particularly if air-drainage is not hampered by dense tree and shrub plantings along the valley to the north.

After examining Rhododendron Glen and Azalea Way, and approving heartily of what had been done and what was projected there, Mr. Pyle suggested increased work with rose species and varieties until an outstanding planting is consummated. He pointed out that the rose will give effects much longer during the season, an important fact when considering summer effects, and that the Puget Sound country is admirably adapted to rose culture. He intimated that some cooperation could be had through his offices and it is well known that individual members of the Seattle Rose Society are more than willing to supply material for such a project.
A name that has long been associated with American horticulture and with Arnold Arboretum is that of Alfred Rehder. Mr. and Mrs. Rehder came to the Northwest in early July for the express purpose of visiting the arboretum. They spent four pleasant days in this vicinity examining plant materials in a number of Seattle gardens and were very much impressed by the many plant forms which grow luxuriantly here but which are unable to support conditions at Jamaica Plain. In his discussion of arboretum plans Mr. Rehder pointed out the importance of arranging plantings to conform as nearly as possible to the environmental conditions under which the given species occur in nature. The importance of this line of thought is gradually impressing itself upon the majority of horticulturists: the creation or selection of sites which include proper growing conditions for desirable plant entities actually supersedes paper planning.

Dr. and Mrs. Victor Ries of Ohio State University spent a day with us. Dr. Ries is extension professor of floriculture at that Middle Western institution and has long been a popular author and lecturer. He has made a special study of lily species and varieties and some of his remarks are of great interest. As most gardeners know, certain Lilium species are severely infested with a virus disease: it is difficult to find clean stock in the commercial field. Dr. Ries insists that great care should be taken in choosing a reliable nursery firm and that the importation of Japanese stock should be avoided in so far as possible. He further explains that the ideal situation is to propagate entirely from seeds, thus obviating the need of bringing in any bulbs at all. The virus disease is apparently not soil borne. It is not carried over in the soil but is transmitted from one plant to another by leaf hoppers or similar insects with the piercing-sucking type of mouth parts. Hence to eliminate the disease from the garden it is necessary to remove each diseased plant as it appears. The ideal arrangement would be to limit propagation to seeds alone and to be sufficiently removed from infected stock in other gardens so that the transmitting insects would be excluded. If the virus disease continues its virulent attacks it is entirely possible that the whole lily picture will become changed, at least from the gardener's standpoint. The need for developing disease-resistant races is becoming increasingly evident.

In 1932, at the suggestion of Mr. W. Ray Hastings of Atlanta, Georgia, the American Seed Trade Association formally established the All-America trial grounds for annual flowers. In late June at the Bogard Seed Ranch near Lompoc, California, we had the pleasure of meeting Mr. Hastings and of talking with him about the success of the trial ground idea which he had inaugurated. It developed that he was planning to come to Seattle later for the purpose of trying to locate one of the test gardens. There is no such project in the Northwest and the All-America seed committee is anxious that we be represented.

Accordingly, it pleased us immensely to welcome Mr. Hastings and his family to Seattle in mid-July and to assure him of the desire of the arboretum to serve gardeners of the Northwest by growing the All-America trials. Mr. Hastings was immensely impressed with our facilities and, though no definite decision has been made as yet, it is entirely possible that we may have one of the sixteen trial areas in the United States.

The trial garden idea is gradually gaining prominence. With the great numbers of new flowers being offered to the trade each year it is essential that some plan of sifting out the good from the poor be followed. It was with this in mind that trial grounds were established in the summer of 1933. To say that they have served their purpose well is to put it mildly. Each year some 100 to 250 novelties are tested and from them are selected about twelve of the best to receive the various awards and to become publicized through the garden magazines. Thus is the matter of selection simplified markedly for the amateur.

At the moment a similar plan is being developed whereby test gardens will be established for roses. The next step will be the inclusion of herbaceous perennials, possibly particular groups or genera at first. The idea is becoming firmly entrenched, to say the least, and it is well for us to do all in our power to further it.

Mr. A. H. Bennett of Victoria visited us recently in Mr. E. L. Rehder's company. Both of these gentlemen are ardent rock garden fans and it was only natural that the conversation should develop along the lines of alpine plants. Some of Mr. Bennett's observations are definitely worth discussion. Among other things he stressed the importance of emulating conditions in natural habitats when attempting to grow alpines. Too often gardeners lose sight of some of the important reasons underlying the use of rocks in rockeries. The creation of a pleasing naturalistic appearance is the most obvious purpose, but there is a much more basic and fundamental reason that is not so apparent. A rock, properly placed, brings about many important changes in its immediate vicinity and, were they not for these changes, many alpine plants could not be expected to become thoroughly established. Lift one of the rocks in any garden, press a hand to the soil upon which it rested and you can immediately appreciate the significance of the altered environment. The soil is cool and moist. The sun's rays have been intercepted and reflected by the rock surface, thus maintaining soil temperature at a lower level. The upward movement of water through the soil by capillarity is checked by the lower face of the stone; the evaporation rate is materially lowered compared with soil surfaces exposed to full sun. Thus the roots of alpines planted in close proximity to rocks are able to extend far back under them where conditions are more amenable for luxuriant development. The rock, therefore, becomes much more than a mere garden decoration; it becomes in reality a vital force, a definite necessity, for the plant's subsequent growth.

There are other ways in which the rock may alter environment for the better. Very often it can effect desirable chemical changes. This is particularly true of limestone rocks for plants which require more than the usual amount of calcium, as well as an alkaline reaction in the soil. The weak carbonic acid solutions which are characteristically found in the soil tend to break down limestone fragments more or less readily, thus increasing the availability of calcium to plant life and making it available for neutralizing reactions in the soil.

Thus well-laid rocks become much more than inanimate decorations in the garden; they contribute immeasurably to the success by helping to create conditions which simulate the environment to which the plant has become adapted in nature. It is with great pleasure that we encounter men like Mr. Bennett who have a definite appreciation for the importance of maintaining naturalistic environments when bringing plants in to our gardens. Plants are notably versatile, to be sure, but it is well not to tax them beyond their limits if it can be avoided.