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THE DIRECTOR'S REPORT

RANCHO SANTA ANA BOTANIC GARDEN

1966

The year 1966 ended on a somber note with the death of Mrs. Richard Y. Dakin, a member of the Board of Trustees who, with seven members of her family, died in the crash of a private plane near La Paz, Baja California, in late December. Mrs. Dakin, daughter of Susanna Bixby Bryant, founder of the Rancho Santa Ana Botanic Garden, had been a staunch and loyal supporter of the garden and its many activities. She will be sadly missed by all those who had the privilege of knowing her.

Perhaps the most significant development during the year was the combining of the Pomona College and Rancho Santa Ana Botanic Garden herbaria into one unified collection housed entirely in modern steel cases. The combined collection now totals about one-half million specimens and continues to grow at an appreciable rate. The Youth Education Program completed its first full year of operation and the response to it has been most gratifying. During this period nearly five thousand young people had an opportunity to learn about Nature firsthand and their enthusiasm and appreciation was evidenced by the many letters received by Mrs. Coffeen.

The number of visitors to the garden this past year, as recorded by theturnstile, was 57,541, an increase of 37% over the previous year. This increase is in keeping with gains made in recent years when the attendance has gone up about 33% per year.

ADMINISTRATION:

During the past year there were no staff changes or new appointments. In April, Dr. Lenz attended the Fifth World Orchid Conference held at Long Beach and participated in the scientific sessions. In August, Drs. Munz, Thorne and Lenz attended the annual meeting of the American Institute of Biological Sciences at the University of Maryland, College Park. Dr. Lenz also participated in the meetings of the Seventeenth International Horticultural Congress held at the University of Maryland in conjunction with the meetings of the American Institute of Biological Sciences.

At the annual dinner of the Botanical Society of America, Dr. Munz was presented with the Henry A. Gleason award of merit by the New York Botanical Garden for his treatment of the *North American Onagraceae* published in 1965. The publication of this work culminated 42 years' study of the family by Dr. Munz. Before returning to Claremont, he and Mrs. Munz visited the Smithsonian In-

stitution, Washington, D.C., and Cornell and Harvard Universities. During the year, Dr. Grant was elected Vice President of the Society for the Study of Evolution. Dr. Thorne served as President of the Southern California Botanists and was elected a member of the Council of that organization, as well as continuing as a member of the Council of the American Society of Plant Taxonomists. He served as chairman of the latter Society's committee to study the feasibility of a flora of North America, and he continues to act as chairman of the Advisory Council and *ex officio* member of the steering committee for this project. Dr. Lenz was appointed to the Committee for the International Plant Records Compilation Center of the American Association of Botanic Gardens and Arboretums. As past President of the Mycological Society of America, Dr. Benjamin continued to serve on the Council during 1966.

Dr. Carlquist spent four months during the summer and early autumn in the Hawaiian Islands, visiting both the main islands and the Leeward Hawaiian chain. During this time he collected materials and photographs for a book dealing with the natural history of the Islands. In October, Dr. Benson attended, as an invited guest, the Centennial Celebration of the Peabody Museum, Yale University, and the dedication of the Klein Biology Tower. Mr. Everett continued as chairman of the Los Angeles Beautiful Highway Planting Committee and as a member of the Los Angeles Beautiful Horticultural Advisory Committee.

WEATHER:

Rainfall for the season was 19.74 inches and it is the first time since the 1957-1958 season that it has exceeded the seasonal average of 17.29.

Rainfall Report—Monthly Totals (July 1-June 30)

Month	1964-1965	1965-1966	Average Monthly Rainfall
July	0.00	0.16	0.01
August	0.00	0.00	0.05
September	0.02	0.70	0.25
October	0.35	0.00	0.66
November	2.34	11.17	1.39
December	1.86	4.36	2.90
January	1.08	0.84	3.43
February	0.61	1.68	3.63
March	2.86	0.67	2.72
April	5.89	0.05	1.69
May	0.05	0.11	0.45
June	0.10	0.00	0.11
Total	15.16	19.74	17.29

Unfortunately, the distribution pattern was erratic. Rainfall was considerably above normal early in the season, and considerably below normal after December. November, with 11.17 inches of rain, was 9.78 inches above normal, and the month

was the wettest on record. Spring rains are very important for the full development of the California flora; this past season, however, only 0.83 inches of rain were recorded between March and June with the result that many plants failed to bloom or to set seed. The new season is starting with heavy rains similar to those of 1965-66. In January we lost several pines, cypresses and ceanothi because of strong Santa Ana winds, and in December three pines and a ceanothus fell during a windy rain storm.

The highest temperature for the year was 100°F recorded on September 16. The lowest temperature was 28°F recorded on February 3 and March 3 and 4. This compares with a high of 100°F and a low of 28°F for last year. In 1966, we experienced 41 days with temperatures above 90°F, one each in March and April, two in June, eight in July, 17 in August, nine in September, two in October and one in November. During the previous year there were 35 days above 90°F. The lowest relative humidity for the year was 6% on April 5.

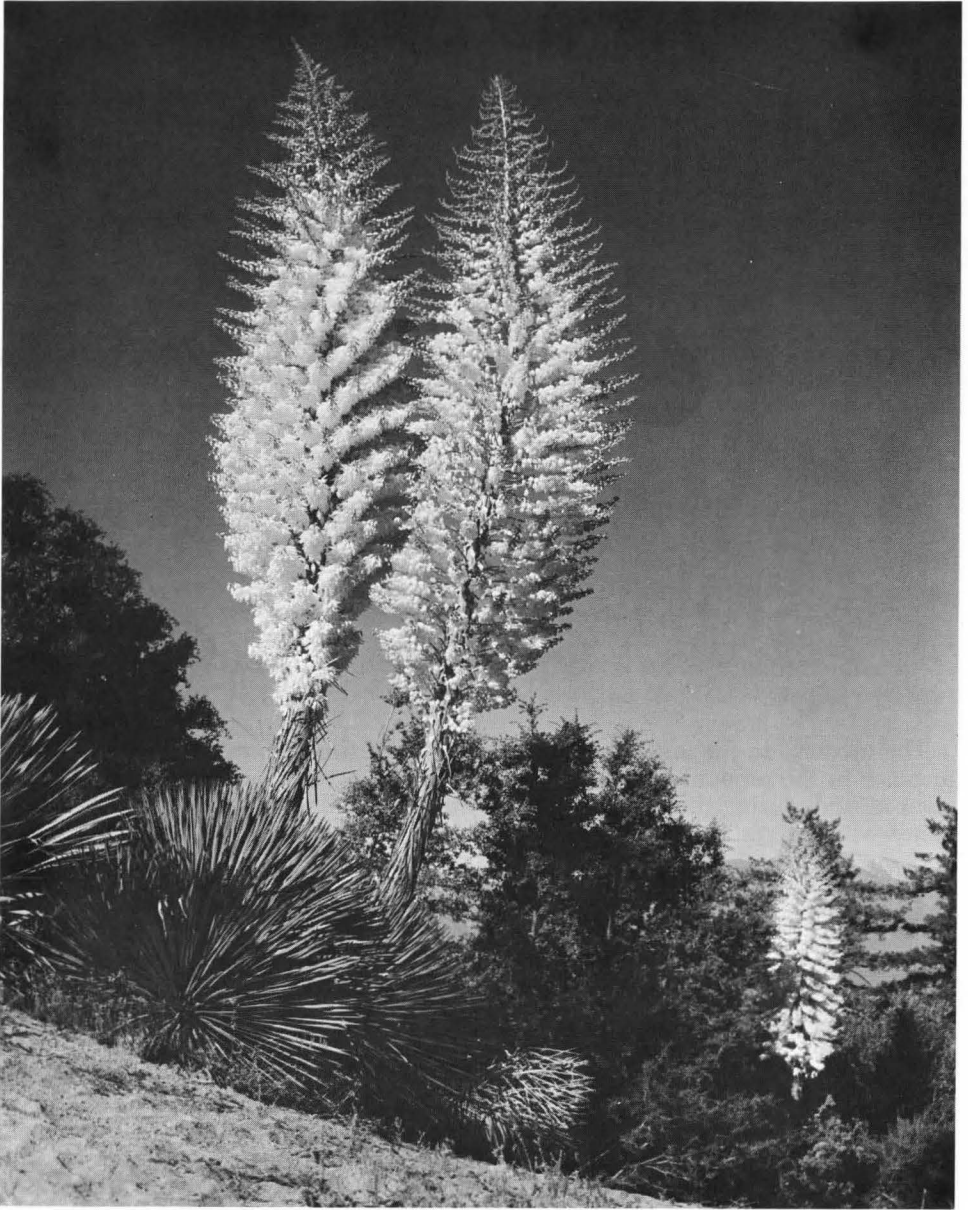
Amounts of water used during the past five years

Year	Water Used (cubic feet)	Rainfall for Calendar Year (inches)
1962	1,955,500	16.10
1963	1,382,700	6.09
1964	1,452,800	12.80
1965	1,287,700	26.98
1966	3,558,600	16.30

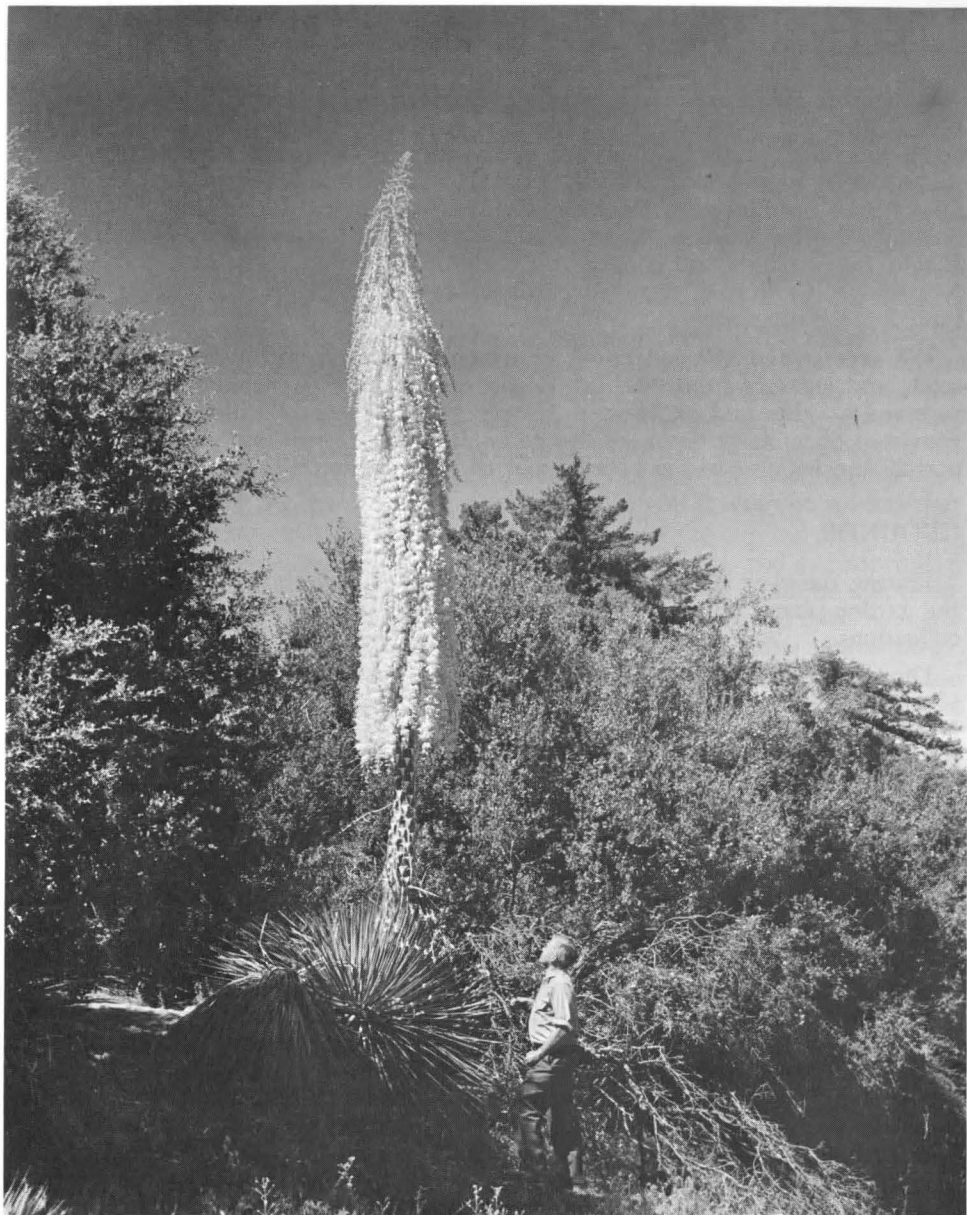
The increase in the amount of water used is attributable to two factors: actual increase in the amount of water required by the plants due to the lack of sufficient rainfall during the early months of the year; and installation of a new water meter which gives a more accurate measure.

SEEDS AND PLANTS:

In 1966, 730 packets of seed were distributed; 633 went to institutions in 25 foreign countries, the remainder to institutions within the United States. In addition, special distributions of large quantities of seed went to universities and institutions as follows: Stanford University, Palo Alto, California, 1 packet of *Geraea viscida* for chromosome count; United States Naval Radiological Defense Laboratories, San Francisco, California, 5 packets of *Astragalus* species for research; Dr. Frits Went, University of Nevada, Reno, 25 packets of desert plant seeds for studies on distribution of seed by desert rats in the lower deserts; University of California, Riverside, 12 packets of annuals for phytohormone studies; University of California, Los Angeles, 2 pounds of *Simmondsia chinensis* for ecological studies; California Polytechnic Institute, Pomona, 66 packets of seed for starting a botanic garden of native plants; Theodore Payne Memorial Garden, Hermosa Beach, California, 6 packets of seed; Bista Institute of Technology and



Yucca whipplei, one of California's most beautiful and striking plants. It occurs on dry, often stony, slopes between 1,000 and 4,000 feet elevation in southern California and northern Baja California. Photograph by J. O. Hickox.



A rare and unusual form of *Yucca whipplei* with the inflorescence having pendant branches.
Photograph by J. O. Hickox.

Science, Pilani, Rajasthan, India, 3 packets of *Ephedra* for cytological studies. *Baccharis pilularis*, 'Twin Peaks #2' was sent to the following: Norton Air Force Base, Victorville, California; New Mexico Institute of Mining and Technology, Alamogordo; Wheat's Nursery, Phoenix, Arizona; Harry Roberts Nursery, Guerneville, California; and Carman's Nursery, San Jose, California. Others receiving seeds or plants were: Dr. Geisman, University of California, Los Angeles, *Artemisia* species for chemical analysis; Dr. H. C. Lagerstedt, Oregon State University, Corvallis, 4 specimens of *Berberis* 'Golden Abundance' for testing; Rancho Los Alamitos Native Garden, Long Beach, California, formerly the Fred H. Bixby Estate, many plants and cuttings plus consultation. San Fernando State College, Northridge, California, received cuttings, seeds and plants for starting their botanical teaching garden.

We accessioned 260 collections of which 48 were from the field, and 51 were seeds and cuttings from established garden collections. The remaining 161 were received as gifts and exchanges. A large percentage of the material brought in consisted of seeds or corms of the genus *Brodiaea* (*sensu lato*). Five new genera and 20 species new to the botanic garden were included in our accessions.

GROUNDS:

During the year, 9,489 plants and about 3,500 bulbs and corms were added to the garden plantings, including representatives of a number of species new to our collections.

Diseases and insect pests were at least as numerous as during the previous year and their control required considerable time and effort on the part of the Horticulturist. The insect causing serious damage to many of our annual seedlings during October and November of the past two years has been identified as the vegetable weevil, *Listroderes costiroctris*. Malaphene-D at 3 pints per 100 gallons of water gave satisfactory control. However, in the presence of smog serious damage occurred on most of the seedlings. DDT and Sevin have been recommended as safer substitutes.

For the first time a satisfactory control of the ceanothus stem gall moth, *Periploca ceanothiella*, was obtained. This was accomplished through a program designed to prevent infestation rather than to control the larvae within the host. The plants were sprayed with Cygon 267 at the rate of 4½ pints per 100 gallons of water during the first few days of August, September and October. Irrigation was withheld until the plants were showing distress symptoms and then only light applications were made in order to keep at a minimum the production of soft new growth which is very susceptible to attack by the insects. The relatively new insecticide Zectran at 4½ pints per 100 gallons of water was used for the first time as a general purpose insecticide. Control of *Psylla* on *Fremontodendron* in March was fair but results on aphids were poor. For the first time there was a heavy reinfestation of psyllids in August which necessitated a second application of insecticide. Malaphene-D was used with good results.

Control of aphids on species of *Lonicera* has always been a problem, because the aphids within the rolled leaves are protected from contact insecticides. In 1966

the systemic Meta-Systox-R was used with excellent results. The manzanita leaf gall aphid, *Tamalia cowenii*, was satisfactorily controlled with the systemic Cygon applied at 2½ pints per 100 gallons of water. Since it has a residual effect of about six weeks, only one application per season is required. Meta-Systox-R gives equally good results. During the spring, spider mites were numerous on irises, strawberries and *Baccharis pilularis*. One application of Kelthane gave satisfactory control.

The loss of young *Lithocarpus densiflorus* and *Pinus radiata* in the plant community area has been attributed to *Sclerotium bataticola*, an organism active in moist soils at high temperatures, i.e., over 80°F. It is the first time this pathogen has been isolated from these species.

Many cypresses, especially *Cupressus bakeri* ssp. *mathewsii* and *C. forbesii* have been seriously attacked by the coryneum canker, *Coryneum cardinale*. In March all susceptible species were sprayed with a Bordeaux mixture at 4 pounds per 100 gallons of water. Unfortunately, fungicides are effective only in preventing the spread of this disease and cannot eradicate it once it gains entrance to its host. It is interesting that this is the first time that *C. bakeri* has been attacked by the coryneum canker. At the old site in Santa Ana Canyon it was one species that appeared to be highly resistant to this disease.

Snails and slugs have continued to be a threat to seedlings, and are controlled only by frequent applications of granular meta-aldehyde baits. Rabbits and especially birds, however, pose the greatest threat to our annuals. Blood meal has only limited use as a rabbit repellent; only cages and nettings are effective against birds.

In March and April we experienced what appeared to be heavy smog damage to *Clarkia amoena* ssp. *whitneyi*, *Lupinus arboreus*, *Eriogonum parvifolium* and *Spergularia macrotheca* seedlings, with many of the latter being killed while still in the greenhouse. Moderate injury was observed on *Clarkia concinna*, *Lupinus densiflorus*, *L. subvexus*, *Oenothera bistorta* var. *veitchiana*, and *Stylomecon heterophyllum*.

The pre-emergence herbicide Simazine was again used successfully in most of our plant community area. It was applied at the rate of 1¼ pounds per acre in conjunction with, or as a substitute for, weed oil. Simazine was also used, very successfully in the cactus garden. Most weeds have been practically eliminated in areas where Simazine has been used for two or more consecutive years. The post-emergence herbicide, Ortho-Diquat, controlled annual weeds on the mesa, in the desert garden and on the sand dunes.

During the year, 160 cubic yards of compost were made and used successfully in improving soil fertility and structure.

New equipment purchased during the year included a Wayne Brush Chipper for shredding trimmings and dead plant material preparatory to composting. The old Howard Rotovator was replaced with a new and more powerful model of the same make.

FIELD WORK:

What promised to be a very fine season for field work turned out to be one of the worst in recent years. This was due to the abnormal distribution of the rains.

November, with over eleven inches, gave the plants an opportunity to start growth early, but for many of them normal development was prevented because of the shortage of rain during the period between January and July when only 3.35 inches were received, compared with an average of 12.03 inches of rainfall.

Dr. Thorne made twelve trips to various areas in the southern portion of the state, including three to Santa Catalina Island in connection with his flora of the island which will be published in 1967. Dr. Grant made five field trips to the California deserts during the spring, and in May collected in the South Coast Ranges. In July, he worked in the North Coast Ranges and on Mt. Lassen. Dr. Benjamin continued his mycological collecting principally in the desert and mountain regions of southern California; in May he and Dr. Lenz made an extensive trip to northwestern California. Dr. Lenz also collected in the Tehachapi and Greenhorn Mountains gathering materials and data for his study of the *Brodiaea* complex. Dr. Carlquist spent four months in the Hawaiian Islands collecting material for a book on the natural history of the islands. He also accompanied Dr. Thorne on one trip to Santa Catalina Island. Dr. Benson carried on field work in Arizona and New Mexico in connection with his study of the cacti.

THE SCIENTIFIC COLLECTIONS:

As a result of a National Science Foundation grant to Pomona College, as recorded in the annual report for 1965, work started in February to integrate the Rancho Santa Ana Botanic Garden and Pomona College herbaria. Three appointments were made by Pomona College to further this work. Mrs. Patricia Wilder, graduate of Pomona College with a master's degree in botany from Claremont Graduate School was appointed Herbarium Botanist. Two botanical assistants also were appointed: Rosemarie McDonnell (Mrs. John), a graduate in botany from Pomona College; and Mary Frances Hamilton of Tucson, Arizona, a graduate of the University of Arizona. During the first month, Pomona's old wooden herbarium cases were exchanged for new steel cabinets, and additional steel cabinets were added to the Rancho Santa Ana Botanic Garden herbarium; in all, 240 new cabinets were installed. The specimens of the two herbaria were integrated alphabetically by families and genera, which made it possible for the herbarium to begin functioning immediately as a single unit. Following this major task, the Curator and the Herbarium Botanist began working through the collection family by family combining sheets of both institutions into the same covers. Duplicate sheets were removed for exchange. The assistants repaired damaged specimens and typed data on new covers to replace those in poor condition. Many hundreds of sheets from the Henry J. Ramsey collection and other miscellaneous collections donated to the Pomona College Herbarium have been mounted and are being integrated into the herbarium.

During the year, 5,457 Pomona College and Rancho Santa Ana Botanic Garden sheets were sent on loan to 17 institutions in 29 shipments; 2,746 sheets in 13 loans were returned to us from 8 institutions; and 68 sheets were returned by us to 4 institutions. Six loans totalling 279 sheets of Pomona College specimens were also returned to us.

Despite considerable disruption and turmoil in the herbarium, other herbarium

activities, except shipment of exchange specimens, were carried on with little interruption. During the year, 4,737 Rancho Santa Ana Botanic Garden sheets of vascular plants were mounted and inserted. This brings the botanic garden herbarium to about 185,000 sheets. We received, on an exchange basis, 3,212 sheets from 14 herbaria. A large shipment of accumulated duplicates is planned for 1967. More than 5,000 sheets of vascular plants were received as gifts from 25 individuals or institutions, at least 2,000 sheets were received for determination from 6 sources, and nearly 3,600 sheets were collected by members of the staff. Dr. Thorne presented to the herbarium 3,000 sheets of tropical Australian plants collected by him in 1959-1960. Over 2,000 herbarium specimens of central and southern California and Arizona plants were donated by Mrs. Wilder to the Botany Department of Chaffey Junior College in Alta Loma to assist that institution in building up a teaching collection.

Of the 4,737 processed sheets, more than 2,300 were from California, 772 from other western states, 611 from Mexico and other tropical American countries, 536 from southeastern states, 338 from Australia and other Pacific islands, 114 from southeastern Asia, and 66 from Europe.

The Curator, in furthering the integration of the two herbaria, rearranged the sheets of most of the pteridophytous and monocotyledonous families and many of the dicotyledonous families, including most of the Asteraceae. Within the species covers, the California specimens are arranged alphabetically by counties and the non-California North American specimens are arranged geographically by states and provinces from Southwest to Northeast.

The mycological collections were increased by almost 100 new isolates during the year. These represent isolations made by Dr. Benjamin and gifts from other mycologists, both in this country and abroad. Included is one new type. Routine maintenance of the culture collection required transfer of about 1,200 isolates to fresh media during the year. Approximately 200 slide mounts were added to the Laboulbeniales collection.

LIBRARY:

The year has been one of continued growth and improved organization for the library. The number of serials currently received has reached 466. This includes five titles obtained through new exchange agreements. There were 1,517 individual issues of periodicals received. Fifty-nine bound periodical volumes were added to the collection in addition to 13 deposited by the Claremont Colleges. An inventory was taken of the entire serial collection to record lacunae, and current periodical shelves were completely relabeled.

There were 196 new books acquired as well as 100 deposited by the Claremont Colleges. One hundred and twenty-one books and serials were catalogued. In addition, 301 reprints were added to the reprint collection.

All microfiche holdings have now been transferred to containers and properly labeled and shelved. The transfer of oversized books to the new "Folio" section has been completed. Dummies were placed in the general shelves to represent all oversized books moved as well as all books in the rare book room. During the

year, an inventory was taken of the rare book room and a listing made of books kept in closed cabinets. The serial catalog was interfiled with the general catalog to simplify the location of material. Finally, an inventory was taken of the general book collection for the first time in several years. Distributions 249-251 of the Gray Herbarium Card Index and 23 and 24 of the Index Nominum Generi-corum have been received and have been filed in part.

RESEARCH ACTIVITIES:

Dr. Benjamin continued his monographic studies of Mucorales, especially the genus *Piptocephalis*. To date, approximately 250 line drawings representing 20 species of this genus have been prepared. In addition, a study of the species of *Laboulbenia* (Laboulbeniales) parasitic on semiaquatic Hemiptera was readied for publication.

Dr. Benson's chief research activity was preparation of a book to be entitled, *The Cacti of the United States and Canada*. The manuscript was brought essentially to completion except for the introduction. The illustrations are nearly finished, but subject to selection and preparation of legends. Distribution maps are in preparation. The manuscript for the third edition of *The Cacti of Arizona* was completed in 1966.

Dr. Carlquist's studies on wood anatomy of Compositae were completed with the preparation and publication in *Aliso* of two papers: one analyzed woods in the tribes Anthemideae, Ambrosieae, Arctotideae, and Calenduleae; the other summarized data given in the twelve papers of the series, and offered comments on the relationships between ecology and wood anatomy. Other work on wood anatomy carried out during the year included preparation of wood sections and analysis of wood anatomy in the families Lobeliaceae and Goodeniaceae.

A study on the comparative anatomy of the tree lettuces of the Juan Fernandez Islands, *Dendroseris*, was completed by Dr. Carlquist. This study, which continues his program of anatomical studies of selected insular genera, will appear in *Brittonia*. Other studies on comparative anatomy in progress deal with the tribe Lopezieae of the family Onagraceae. Exceptionally good materials of this tribe, native to Mexico, have been provided by Dr. Peter Raven.

Dr. Carlquist's book *Island Life* is being complemented by a series of scientific papers which bear the title, "The biota of long-distance dispersal." During 1966, three papers in this series appeared. Other contributions to this series are now in preparation.

Dr. Grant's study of hummingbird pollination (with Karen Grant) made excellent progress during 1966. They are obtaining data from field observations in various areas of California, and are also gathering evidence to show that hummingbirds have been an important factor in the evolution of many western American plant groups.

One of Dr. Grant's hybridization experiments in *Gilia* which has been under way for many years was designed originally to test the hypothesis that a new plant species, intersterile with both parental species, but fertile itself, could arise by hybridization. This experiment came to a successful conclusion in the spring of

1966. A new fertile species emerged from the hybrid progeny of *Gilia malior* x *G. modocensis*, two kinds of annual gilias from the Mojave Desert.

A long-term selection experiment in *Gilia* has yielded evidence pointing to the important conclusion that genes for growth and vigor are located on the so-called rearranged chromosome segments, that is, on chromosome segments which differ structurally between species.

Dr. Lenz continued his study of certain members of the Allieae and at the present time has nearly 500 cultures growing in the greenhouse representing members of ten genera, but excluding *Allium*. At the present time, major emphasis is being placed on cytological relationships and interspecific hybridization. Significant accessions made during the year were corms of a number of undescribed species of *Milla* and *Bessera tenuiflora*, the latter, a potentially desirable horticultural acquisition has, so far as is known, never before been in cultivation.

Dr. Munz spent a very busy year working on the Asian and African species of *Delphinium* and at the end of the year had completed a paper on the African species which will appear in an early number of the *Journal of the Arnold Arboretum*. A second paper on the Asian species of *Consolida*, the so-called "Larkspur" of which 40 are recognized, will appear in a later issue of the same journal. Work was continued on the Asian species of *Delphinium*, a group which contains about 250 species. When finished — the work is now about one-half completed — it also will be published in the *Journal of the Arnold Arboretum*.

In addition, Dr. Munz identified about 2,000 plants, most of which were added to the botanic garden herbarium. These included extensive collections in California by Clare Hardham, Gilbert Muth, Louis Ziegler and others, as well as Arizona and farther eastern material collected by D. Demaree. Some South American Onagraceae were also studied.

Dr. Thorne has completed field work for his survey of the flora of Santa Catalina Island and is well along in his survey of the flora of the San Gabriel Mountains. Specimens of critical species were studied at the Jepson Herbarium and the University of California Herbarium at Berkeley; at the herbarium of the California Academy of Science, San Francisco; and the National Herbarium, Washington, D. C. Numerous kodachromes of California plants and plant communities in different parts of the state have been obtained in a continuing study of the California plant communities. Dr. Thorne has largely rewritten his manuscript for his angiosperm phylogeny book, and has sent copies of his system of angiosperm classification to various botanists in this country and abroad for use in floras and university courses.

GRADUATION INSTRUCTION:

As in the past, the botanic garden continued to participate in the graduate program in botany at the Claremont Graduate School, a cooperative undertaking of the Graduate School, Pomona College and the Rancho Santa Ana Botanic Garden. During the year, Robert Rutherford completed the requirements for the Ph.D. and in September accepted an appointment at Kent State University, Ohio. His thesis was a study of the angiospermous parasite, *Pilostyles thurberi*. James

Henrickson, a member of the faculty at Los Angeles State College, is completing the final parts of his thesis, a study of the Ocotillo family, Fouquieriaceae. Professor Homer Metcalf of Montana State University, Bozeman, spent the spring semester at Claremont working on his Ph.D. thesis, a study of the *Iris missouriensis* complex. He hopes to have it finished within the near future. Graduate students enrolling for the first time at Claremont were Ted Mortenson, who is completing his M. S. T. degree at the University of Montana, Missoula; Chris Davidson from Whitman College, Walla Walla, Washington; and John Adams, Pomona. Returning students include Mark Parratt, Ruth Wilson and Bryce Christman.

YOUTH EDUCATIONAL PROGRAM:

The enthusiastic response to the Youth Education Program during its first year has been most gratifying. Of the 4,823 young visitors, approximately one-third were youth group members, the others school students. Classes from Apple Valley came the greatest distance and the orthopedic classes from Redlands were the most heart warming.

The general purpose of the conducted tours (one young man titled his, "From the manzanita to the poison oak") is to help young people become aware of sights, sounds, scents and activity in nature as they experience them while taking a leisurely tour through a part of the garden. Attention is called briefly to demonstrations of: natural communities, plant adaptation, how plants and animals assist each other, pond life, pollination, a food chain under the large oaks and natural balances. Teachers are encouraged to come to the garden before bringing their classes in order to familiarize themselves with the program so that their later visit with their students will provide as great an enrichment to their current unit of study as possible. A lending library of resource material has been developed which now includes popular booklets, charts and sets of 35mm slides. We also are developing mimeographed information sheets which include a bibliography for teachers and individual students who are motivated to do independent study. Our present slide sets deal with Nature, Early Uses of Native Plants, Wildflowers and Conifer Reproduction; demand follows this same order.

Boy Scouts, Jay Shipway and Larry Campbell, of Upland, as a service contribution to the garden, recently prepared an accurately scaled map of the plant community section. The boys have located on the map, by common and scientific name, the plant indicators of the Coastal Sage Scrub, Southern Chaparral and Yellow Pine Plant Communities. They worked under the direction of Mr. Everett and were aided by the father of one of the boys who is an engineer. As time and volunteers become available, this project will be extended to all our plant communities. It now is broadening the educational usability for the interested layman of this section of the garden.

Children participating in the tours are invited to return with their parents on weekends. Our increased attendance would seem to indicate that many are doing so.

Garden slides have been greatly augmented by donations to the Youth Education Program. These are acknowledged elsewhere.

PUBLIC SERVICE:

The public service activities at the botanic garden continue to increase, and, at times, requests for identification of plant specimens and general horticultural information seriously interfere with other activities of members of the staff. Since we commenced the program several years ago of placing more information plaques and plant labels on the grounds, the number of requests for guided tours



Dr. Lenz and Mr. Everett examining plant community map prepared by Boy Scouts, Jay Shipway and Larry Campbell.

has diminished. We intend to continue to emphasize the self educational aspects of the garden, thus providing more time for staff members to pursue their own research programs. Mrs. Coffeen, in addition to directing the Youth Education Program, has been able to handle many public relation aspects of the garden that in the past required time of one of the professional botanists. During the year, Mr. Everett spent considerable time as a consultant to members of the state highway department and various city parks. He also was a consultant on the restoration of the Native Plant Garden at the old Rancho Los Alamitos house in Long Beach. In addition, he assembled 500 recent propagation records for use by the International Plant Records Compilation Center at Oak Ridge, Tennessee. The Rancho Santa Ana Botanic Garden is participating in the pilot project spon-

sored by the American Association of Botanic Gardens and Arboretums to determine the feasibility of maintaining a central file of plant records of all botanic gardens and arboreta. Mr. Everett also completely reorganized the kodachrome slide collection and removed old and discolored slides.

Dr. Benjamin continued to serve on the Council of the Mycological Society of America. He also identified a number of fungi which were sent in for determination. In March Dr. Grant presented a lecture at Pomona College on Block Inheritance in Plant Species. In collaboration with Karen Grant, he prepared the script for an educational film for high schools in the Biological Sciences Curriculum Studies. He also served on the Selection Committee for the National Medal of Science.

Dr. Thorne served in various capacities on the committees examining the feasibility of producing a flora of North America. He continues his interest in the project as chairman of the Advisory Council and *ex officio* member of the Steering Committee for the flora of North America project. He also spent considerable time identifying plant material either brought or sent to the garden for determination.

Dr. Munz continues to spend considerable time identifying plants, particularly Onagraceae. He also acted as an advisor to the Arnold Arboretum in connection with matters concerning the Harvard collections. Dr. Lenz continues to serve as chairman of the Coordinating Committee in Botany and as a member of the Graduate Courses and Degrees Committee and the Committee on Admission Policies and Fellowships of the Graduate School. He is also a member of the International Orchid Commission on Classification, Nomenclature and Registration and participated in the deliberations of that group at their meetings during the Fifth World Orchid Conference held in Long Beach in April. He also served as publications consultant to the American Orchid Society.

All members of the staff continue to serve as reviewers of manuscripts submitted for publication, evaluate National Science Foundation proposals and serve on editorial boards of professional publications.

PUBLICATIONS:

The second number of Volume 6 of the garden's journal, *Aliso*, edited by Dr. Benjamin, appeared on May 20, 1966, after being considerably delayed due to problems with the printers. The issue, containing 100 pages, included in addition to contributions by staff members which are listed below, an article by Dr. David B. Dunn et al., on the California *Lupinus concinnus*-*L. sparsiflorus* complex.

PUBLISHED WRITINGS OF THE BOTANIC GARDEN STAFF:

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Carlquist, S. 1966. Wood anatomy of Anthemideae, Ambrosieae, Calenduleae, and Arctotideae (Compositae). *Aliso* 6(2): 1-23.

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- . 1966. Phenetic and Phylogenetic Classification. Edited by V. H. Heywood and J. McNeill. *Bul. Torrey Bot. Club* 93: 280-281. (Review).
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GIFTS AND GRANTS:

- Alexopoulos, Dr. C. J., University of Texas, Austin. 1 fungus culture.
- Balazuc, Dr. J., 2 rue des Messiers, Argenteuil S.-O., France. 2 insect collections bearing Laboulbeniales.
- Balls, Mr. E. K., Carmel Highlands. Seed and 33 herbarium specimens.
- Barnett, Dr. H. L., West Virginia University, Morgantown. 21 fungus cultures.
- California State College, Fullerton. 3 plants of *Bursera microphylla* (a long-sought addition).
- California, University of, Davis. Cuttings and corms.
- California, University of, Los Angeles. 3 packets of seed, 2 plants of a yellow *Beloperone californica* and 3 plants of an albino *Mimulus (Diplacus)*.
- Carlquist, Dr. S., Claremont Graduate School. 31 herbarium specimens.

Carmen's Nursery, San Jose. Cash gift.

Christman, Mr. Bryce, Rancho Santa Ana Botanic Garden, Claremont. 25 herbarium specimens.

Condit, Dr. Ira J., Riverside. 27 herbarium specimens.

Demaree, Dr. Delzie, Dallas, Texas. 1,107 herbarium specimens.

Dempster, Dr. Lauramay, University of California, Berkeley. 37 microscope slides.

D. S. I. R., Christchurch, New Zealand. 2 herbarium specimens.

Everett, Mr. Percy C., Rancho Santa Ana Botanic Garden, Claremont. 245 kodachrome slides.

Felger, Dr. R. S., University of Colorado, Boulder. 2 herbarium specimens.

Frampton, Mr. Robert C., Claremont. 1 collection of seed.

Gaw, Dr. and Mrs. E. A., Glen Allen. Cash gift.

Goos, Dr. Roger D., American Type Culture Collection, Rockville, Maryland. 1 fungus culture.

Grant, Mrs. Karen, Claremont. 3 books.

Grant, Dr. Verne, Rancho Santa Ana Botanic Garden, Claremont. 6 books and slides.

Green, Mr. Peter, Arnold Arboretum, Harvard University, Cambridge, Massachusetts. 5 herbarium specimens.

Hall, Mr. Brower, Fort Lauderdale, Florida. Cash gift.

Hardham, Mrs. Clare, Paso Robles. 314 herbarium specimens.

Henrickson, Mr. James, Rancho Santa Ana Botanic Garden, Claremont. ca. 400 herbarium specimens.

Lenz, Dr. Lee W., Rancho Santa Ana Botanic Garden, Claremont. 2 books and 41 periodical volumes.

Maekawa, Dr. F., University of Tokyo, Tokyo, Japan. 3 herbarium specimens.

Massey, Mr. Jimmy, Rancho Santa Ana Botanic Garden, Claremont. ca. 150 herbarium specimens.

Mehrotra, Dr. B. S., University of Allahabad, India. 4 fungus cultures.

Melrose Gardens, Stockton. *Brodiaea stellaris* corms.

Mertz, Mr. James A., Upland. Cash gift.

Metcalf, Mr. Homer, Bozeman, Montana. 53 herbarium specimens.

Moran, Dr. Reid, San Diego Natural History Museum, San Diego. Corms of *Brodiaea lugens*.

Mukerji, Dr. K. G., University of Delhi, India. 4 fungus cultures.

Muth, Mr. Gilbert, Angwin. ca. 275 herbarium specimens.

Munz, Dr. Philip A., Rancho Santa Ana Botanic Garden, Claremont. 7 books and 97 kodachrome slides.

Neher, Dr. R. T., La Verne College, La Verne. 57 mounted herbarium specimens.

Norland, Mrs. E. C., San Diego. 1 plant of *Lobelia dumonii* var. *serrata* and 1 seed collection.

Norris, Dr. R. A., Tall Timbers Research Station, Tallahassee, Florida. 157 herbarium specimens.

Olmsted, Mr. John, Riverside. 75 herbarium specimens and kodachrome slides.

Pratt, Mr. Robert, Riverside. Kodachrome slides.

Rao, Dr. A. N., University of Singapore, Singapore, Malaya. 101 herbarium specimens.

Raven, Dr. Peter, Stanford University, Stanford. Seeds, seedlings and corms and 365 herbarium specimens.

Roberts, H. K. Nursery, Guerneville. Cash gift.

Roos, Dr. J. C., Loma Linda. 5 collections of seeds.

Rose, Dr. Lewis S., San Francisco. 193 herbarium specimens.

Rutherford, Mr. Robert, Rancho Santa Ana Botanic Garden, Claremont. 19 herbarium specimens and 1 book.

Santa Barbara Botanic Garden, Santa Barbara. 4 collections of acorns.

- Santa Catalina Island Co., Avalon. 5 collections of acorns of *Quercus tomentella*.
- Sarbhoy, Dr. A. K., Commonwealth Mycological Institute, Kew, England. 1 fungus culture.
- Scripps College, Claremont. 1 book.
- Shipway, Mr. George, Upland. Kodachrome slides.
- Stephen, Dr. R. C., University of Hong Kong. 1 fungus culture.
- Stephens, Mr. Trow, Glendora. 8 collections of plants.
- Steyskal, Dr. George, U. S. Department of Agriculture, Washington, D.C. 2 insect collections bearing Laboulbeniales.
- Thompson, Dr. H., University of California, Los Angeles, and P. H. Raven, Stanford University, Stanford. 103 herbarium specimens.
- Thorne, Dr. R. F., Rancho Santa Ana Botanic Garden, Claremont. 3,000 herbarium specimens and 4 books.
- Tiffany, Dr. Lois H., Iowa State University, Ames. 2 fungus cultures.
- Tillett, Dr. S., Occidental College, Los Angeles. 131 herbarium specimens.
- Twisselmann, Mr. E. C., Cholame. 197 herbarium specimens.
- United States Department of Agriculture, Fresno. Sprouted seeds of *Styrax officinalis* var. *californica*.
- United States Forest Service, Institute of Forest Genetics, Placerville. 4 lots of F₁ hybrid pines and 2 lots of seeds of *Pinus balfouriana*.
- Vargas, Dr. C., Cuzco, Peru. 9 herbarium specimens.
- Vincent, Mrs. Billy, Claremont. Kodachrome slides.
- Weiler, Dr. John, Fresno State College, Fresno. 21 herbarium specimens.
- Wiens, Dr. Del, University of Utah, Salt Lake City. 9 herbarium specimens.
- Wilder, Mrs. Patricia, Pomona College. Kodachrome slides and 87 herbarium specimens.
- Ziegler, Mr. L., San Jacinto. 15 herbarium specimens.

RANCHO SANTA ANA BOTANIC GARDEN

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*Deceased

**Resigned June, 1966

RANCHO SANTA ANA BOTANIC GARDEN

Dedication of Garden Foundation to the Board of Trustees for the Rancho Santa Ana Botanic Garden of the Native Plants of California:

“The Nature, Object and Purpose of the Institution hereby Founded and to be Maintained Hereunder:

“Its Nature: A botanic garden of the native plants of California, herbarium and botanical library, containing living and/or preserved specimens of trees, plants and flowers native to California, and literature relating thereto.

“Its Object: The preservation and improvement of the property now transferred and such property as may hereafter be transferred to the Trustees for those who not only wish to enjoy, but to study, assembled in one accessible locality, native California plants; and for the advancement of science and education with reference to plant life indigenous to the State of California.

“Its Purpose: (a) An institution founded primarily for scientific research in the field of local botany.

(b) To preserve the native California flora, try to replenish the depleted supply of some of the rarest plants which are rapidly being exterminated, and bring together in a comparatively small area as complete a collection of the rich store of native California plants as can be grown in this southern section of the state, thereby promoting the general welfare of the people of the state by providing the means for encouraging and carrying on the above mentioned activities in said state and by doing such other things as may be necessary and desirable to carry out the objects thereof.”