



Annual Report 1945-1946

TO THE PRESIDENT OF THE UNIVERSITY:

SIR,

Normally the institution has been operated within the limits of its annual income. During the war, when the labor staff was reduced and certain desirable equipment could not be acquired, the departmental balance was fortunately increased. On July 1, 1935 it amounted to \$16,058.19 and ten years later it had been increased to \$40,507.06. The year just closed was exceptional in that there was an actual overdraft or deficit of \$12,108.29, which was charged to this reasonably ample departmental balance. There were several causes for this overdraft including two blanket increases in labor rates and a ten percent increase in salaries of all individuals, other than laborers, receiving \$3,000 per year or less. No budgetary provisions for these increases had been made in advance. It was further imperative that the depleted labor staff be increased when the war closed because of the deplorable condition of many of the plantings due to the lack of care during the war years.

There was further an unavoidable delay in the settlement of the Marian Roby Case estate. Thus it was that the maintenance costs of the Weston real estate that came to the Arboretum as a part of the Case bequest was assumed April 1, 1945 and had to be continued as a charge against the regular Arboretum income for the entire year 1945-1946. With certain increases in capital this situation is now being adjusted.

The endowment of the institution was increased during the year by a total of \$365,137.07, very largely from the Case bequest, much of which was received late in the year. Toward the end of the year the William H. Judd Memorial Fund was established through certain voluntary gifts and now amounts to approximately \$3,000. Still to be received is a final balance of the Marian Roby Case bequest and all of the Catherine Balch bequest mentioned last year. For all purposes the restricted and unrestricted extra-budgetary gifts for immediate expenditure were \$15,679.

There were few staff changes. The institution suffered a very severe loss on May 23 in the sudden and unexpected death of [William H. Judd](#), who served as a staff member for 33 years and who was in charge of plant propagation and of the accession and distribution records. Dr. C. E. Kobuski after three years in the military service reported for duty in August 1946. In May through arrangements made by the new chairmen, Mrs. Beatrix Farrand was added to the staff, on a retainer basis, as consulting landscape gardener. [Dr. H. M. Raup](#) was promoted from an assistant to an associate professorship and under the reorganization plan he has been designated as Director of the Harvard Forest.

The situation in reference to graduate students remained about as it was during the war years. With the close of the war the number of inquiries radically increased. The present prospects are for a distinctly increased number of graduate students in 1946-47 who wish to specialize in the general field covered by the Arboretum. [The Bailey report](#) submitted during the year was officially approved by action of the Corporation March 1, 1946, and as the plan goes into effect it will apparently have a far reaching influence on the future program of the Arnold Arboretum, particularly in reference to the relationship of its staff members to Harvard University through the Department of Biology. In general it should greatly strengthen advanced instruction in botany through a closer association of staff members of nine separately endowed botanical units, of which the Arnold Arboretum is one, with the staff of the Department of Biology of Harvard University.

A survey of maintenance costs was made during the year to see if certain savings might not be made were all buildings services turned over to the Maintenance Department of Harvard University. However, the estimates submitted showed an increased cost of several thousand dollars, and so no change was made. The institution is indebted to a group of lady members of the Board of Overseers Committee to Visit the Arnold Arboretum, all personal friends of the first director of the institution, for their initiative in having prepared a special memorial to Dr. Sargent. This took the form of a beautifully designed and executed bronze plaque, 30 by **21 2** inches, which was installed May 12, 1946, on the right hand pillar of the Jamaica Plain gate. The inscription reads:

CHARLES SPRAGUE SARGENT
1841-1927
ARNOLD PROFESSOR OF BOTANY
IN HARVARD UNIVERSITY
FIRST DIRECTOR OF
THE ARNOLD ARBORETUM
1872-1927
THE ARNOLD ARBORETUM, HIS CREATION,
IS A LIVING AND ENDURING MEMORIAL.

We are under very special obligations to Mr. William P. Long, Chairman of the Boston Park Department, for his continued interest in the Arboretum and its problems, as evidenced by the entire renovation of the road surfaces in May by the [Park Department](#). Very extensive repairs were made as needed and the entire road, except that in the Peters Hill section, was re-tarred.

The attractiveness of the grounds decreased during the war years due to circumstances beyond our control, chiefly labor shortages and our inability to acquire needed equipment. Some of the plantings actually approached a deplorable condition. There has been some criticism of the condition of the plantings, but this has come largely from individuals who maintain no estates and who hence were not in a position to judge fairly. To remedy this situation we have not only been able to reinstate our former employees who had been drafted for military service, but actually have increased the labor staff by securing the services of three ex-service men and an experienced tree specialist. Extra labor was also added for the summer months. With this additional labor we can, even within the present open season, go far in repairing the ravages due to neglect of plantings, damage by snow and ice, and that by storm and fire. As a simple example, over fifty truckloads of dead or superfluous stems and branches were removed from the lilac collection alone, and several other collections have been dealt with proportionally. With the constantly increasing labor costs we are forced to utilize mechanical equipment more and more in order to reduce hand labor. Thus through the rearrangement of the very large shrub collection, permitting the use of mechanical equipment, the actual maintenance cost has been reduced to one-fifth of what it was when all operations depended on hand labor. With the installation of a simple daily record we can now determine the number of man-days involved for 34 labor classifications.

The town of Weston, seeking a site for a new elementary school, studied three possible tracts, two of them on land already owned by the Arnold Arboretum and another on adjacent land. Since it seemed possible that the more desirable tract, from our standpoint, might be taken under the right of eminent domain, the University offered about forty-one acres, including the buildings thereon, to the town for a very modest sum. This was from the Louisa W. Case gift of 1942, and the arrangement was made with her full knowledge and consent. Through an agreement made with the Department of Landscape Architecture, Graduate School of Design, Harvard University, that unit has been granted the use of several acres on the Marian Roby Case estate for the possible development of demonstration plantings, but with no financial responsibility on the part of the Arnold Arboretum. The use of the land, which is not adapted to anything we may wish to do in Weston on behalf of the Arboretum, was granted to the Landscape Architecture Department as a courtesy.

During the year 59 living plants, 72 lots of cuttings and scions, and 25 packages of seeds were received from various sources in the United States and a few packages of seeds from foreign countries. To various institutions and individuals in the United States and Canada 261 living plants were distributed as well as 163 lots of cuttings and scions and 60 packages of seeds were sent to institutions abroad.

Perhaps as one result of reductions of controls during the war years, it is becoming increasingly evident that vandalism in the Arboretum is approaching an all-time high. One evidence of this is the extraordinary number of grass fires during the drier parts of the spring and fall seasons. In one recent season we experienced more than seventy fires. During the last year when the spring and fall seasons were fortunately not so dry, there were about forty fires.

In about one-third of the cases the situation was so serious that the service of the fire department was required.

It is manifest that these fires are deliberately set by irresponsible boys. At times when the fire danger is acute the entire maintenance force is so distributed that the men can act as guards, but this naturally reduces labor efficiency and increases costs. Losses in ornamental plantings that it took many decades to develop have been very serious, most of the magnificent collection of dwarf evergreens now being a thing of the past. In the past season the juniper collection was seriously damaged. We have done all that was possible to reduce this seasonal fire hazard, but the problem is not yet solved. What is needed is uniformed guards, and two or more should be added as soon as circumstances permit. The situation is indeed so serious that it should be taken care of before any other positions are created on the institutional staff.

The work in plant breedings has been largely confined to the ornamental crab apples, cherries, forsythias, and lilacs, and some of the new hybrids have flowered for the first time. Rootstock investigations are being continued as well as cytogenetic studies of certain bigeneric hybrids in which *Sorbus* was one of the parents.

Professor Bailey and his co-workers, in continuation of their investigations of the comparative morphology of the dicotyledonous families, concentrated on an intensive investigation of the foliar morphology of *Illicium*. This work was carried on in cooperation with Dr. A. C. Smith as to the taxonomic phases of the subject. The accumulated morphological evidence indicates that this genus belongs in an independent family closely related to the Schisandraceae. It indicates no close relationships to either the Magnoliaceae (*sensu stricto*) or the Winteraceae. While *Illicium*, as a genus, is sharply characterized by a number of salient, relatively stable, diagnostic, and phylogenetically significant structures, the problem of differentiative taxonomic entities within the genus is a difficult one, the morphological boundaries between species commonly being vague and indefinite.

The total number of specimens mounted during the year was 13,248, but 11,933 were transferred to the Gray Herbarium, the number of sheets in the herbarium now being 631,452. Although accessions during the war years have necessarily been below normal, a greater influx of material is to be expected in the near future. Certain institutions in China and other parts of the Old World have been accumulating substantial amounts of material on behalf of the Arboretum, and shipment of this may be expected as soon as transportation conditions permit.

During the fiscal year the Arboretum received approximately 54,999 specimens by gift, for identification, by subsidized exploration, purchase, exchange, and through field work of staff members. The largest single acquisitions were 25,533 Argentine specimens received from the Instituto Miguel Lillo, Tucuman, in exchange, and about 5,000 specimens from the same institution received on a subsidy basis. A geographical breakdown of incoming material shows the following: South and Central America, 46,463; United States and Mexico, 3157; West Indies,

1,112; Canada, 984; Pacific Islands, 1,285; Australia, 255; Europe, Africa, and Asia, 1,061; miscellaneous (mostly cultivated), 682.

The Arboretum sent to other institutions a total of 29,558 specimens; as usual in recent years the bulk of this material was transferred to other departments of Harvard University as inter-institutional transfers, as follows: to the Gray Herbarium 23,467 specimens (17 for identification, 12,107 mounted specimens transferred, 10,588 unmounted specimens transferred, and 755 mounted illustrations transferred); to the Ames Orchid Herbarium at the Botanical Museum 439 specimens (81 for identification, 90 specimens and 268 mounted illustrations transferred); and to the Farlow Herbarium 327.

In addition to carrying on the usual amount of routine work, staff members continued their special researches. Professor Rehder brought to completion the major project which has occupied him in recent years, namely the preparation of a *Bibliography of Cultivated Trees and Shrubs*. This extensive work is now in press, and its appearance will be welcomed by the numerous individuals who make frequent use of Prof. Rehder's *Manual of Cultivated Trees and Shrubs*, of which the Bibliography will be in some respects a supplement. Dr. Smith, continuing his collaborative studies of the Ranales with Prof. Bailey and Dr. Nast, worked on the genera *Illicium*, *Schisandra*, and *Kadsura*. In order to make possible a projected exploration of the Fiji Islands, Dr. Smith applied for and was awarded a John Simon Guggenheim Memorial Fellowship, for use in 1947. He also received a grant from the Penrose Fund of the American Philosophical Society, for application toward the same project. Dr. Smith plans to leave in February, 1947, to spend about nine months in Fiji in continuation of his fieldwork undertaken there in 1933-1934, with the intention of obtaining sufficient material to make feasible the preparation of a modern descriptive Flora of Fiji.

Dr. I. M. Johnston continued his collaboration with the Chemical Warfare Service in relation to the San Jose Project. From December, 1945, to February, 1946, on army orders, he made his third trip to San Jose Island, Gulf of Panama. As a result of his association with this project he had exceptional opportunities for the study of tropical vegetation and for assembling reference material. This detailed report will appear in *Sargentia*.

[Dr. H. M. Raup](#) devoted most of his time to the completion of two papers, one published, one in press, the former being his phytogeographic consideration of the Athabaska-Great Slave Lake region, published in our Journal in 1946, and the latter his Botany of Southwestern Mackenzie, which is now in press as a number of *Sargentia*. Dr. Kobuski, after an absence of three years in military service, returned to his position at the Arboretum in August; resuming his work on the family Theaceae, he is undertaking a revision of the genus *Adinandra*.

[Mr. Palmer](#) completed his revision of the genus *Crataegus* in the northeastern United States and adjacent Canada, and he is continuing his investigations of the taxonomy of hybrid oaks. Dr. Allen after completing her manuscript covering the *Lauraceae* of Panama for inclusion in Woodson & Schery's Flora of that country, has begun assembling material and data for a

study of the South American representatives of the *Lauraceae*. Dr. Perry continued her studies of Papuasian plants, with special reference to the large collections of the Richard Archbold Expeditions; she also prepared for publication translations of several scientific articles originally published in Dutch.

Dr. Croizat continued his studies of the *Euphorbiaceae*, particularly of tropical America, while devoting much time to identifications of cultivated material. My own activities, in the limited time that was available because of the pressure of administrative work, have been devoted largely to bibliographic matters and to identifying and reporting on various collections from the Old World tropics.

In the bibliographic field much attention has been given to the basic *Index Botanicorum* project, about seven thousand sheets having been added to the file during the year. The services of numerous new collaborators have been secured, notably in Finland, France, the Netherlands, Sweden, and Switzerland. For the first time since work on the *Index Botanicorum* project was initiated in 1942 it was possible for Dr. Verdoorn to assign to it personal funds. His present rate of expenditure is about twice the amount of the modest subsidy provided by the Arnold Arboretum.

Other important bibliographical projects include [Prof. Alfred Rehder's Bibliography of Cultivated Trees and Shrubs](#), the printing contract having been consummated in May. It will probably take the better part of a year to see this major work through the press. The long continued work on the *Index Rafinesquianus* is practically finished, remaining to be completed being only the introduction, and this is well-advanced. The Bartram project mentioned in my last report was finished and published, while the Eaton manuscript was completed and is now being printed.

Because of the expressed desire of officials of the Smithsonian Institution, work was reinitiated on a thorough revision of my *Polynesian Botanical Bibliography 1773-1935*, which was published in 1937, bringing it up to date and increasing the author-entries from about 2,600 to approximately 3,900. This covers the entire Pacific basin from Juan Fernandez and Hawaii to the Marianas, Caroline, and Palau Islands, and southward to New Caledonia. The revision was completed during the year and this extensive contribution is now in press as one of the official publications of the Smithsonian Institution under the title: --A Botanical Bibliography of the Islands of the Pacific.

Because of its remarkable library facilities the Arnold Arboretum has been strong in the bibliographic field, as witnessed by the [Bradley Bibliography](#) (1911-1918), the *Bibliography of the Botany of Eastern Asia* (1938), and its comprehensive [library catalogue](#) (1914-1923). It is fitting that extensive work in this field be accomplished here where it is possible to gain access to most of the published literature, even including numerous exceedingly rare volumes. It may be argued that such intensive work does not benefit the individual or the institution to any great degree, but this is actually a false argument. Good bibliographic work can be done in only

a relatively few centers in the world, and this happens to be one of them. It should not be forgotten that the published output in the bibliographic field is very widely used by productive botanists and by librarians all over the world, and that service rendered in this special field is very greatly appreciated elsewhere. In this sense the Arnold Arboretum is a world institution, not merely a local or national one.

Because of the very successful outcome of the lithoprint facsimile reproduction of the very rare "*Sylva Telluriana*" and "*Autikon Botanikon*" of Rafinesque in 1943, it was decided to extend this service more particularly for the benefit of the younger botanical research institutions in the United States and elsewhere. It is now practically impossible to acquire copies of certain basic works, and even when they are rarely offered the asking price is exorbitant. The newly reproduced works, all issued in 1946, are Rafinesque's "*Flora Telluriana*" (1836-1838), about 450 pages, "*New Flora and Botany of North America*" (1836-1838), about 404 pages, "*Atlantic Journal*" (1832-1833), 212 pages, Blume's "*Catalogus*," 112 pages, Gronovius' "*Flora Virginica*" (1739), 206 pages, ed. 2 (1762), 176 pages, and Walter's "*Flora Caroliniana*" (1788), 252 pages.

It may legitimately be pointed out that here is a field in which older institutions with very ample library facilities can be of distinct service to more recently established ones. Of one of the above titles the only known copy in all of the botanical libraries of North America is the one on the shelves of the Arnold Arboretum library; because of the nature of the work it ought to be available in the libraries of all institutions where botanical research is prosecuted. It may further be pointed out that in another case where the lithoprint reproduction can be had for the very modest price of \$3.00, a dealer has recently demanded \$375.00 for a copy of the rare original; and it is a curious fact that the modern reproduction is not only easier to consult, but is actually clearer than is the rare original.

The cost of reproducing all of these lithoprint reproductions has been covered by private funds supplied by the director, but the institution receives the credit, for each bears the Arnold Arboretum imprint. There are so many rare volumes that are in relatively great demand, and the asking prices are so exorbitant that they are quite beyond the financial limitation of the average botanist, or, for that matter, the average botanical institution, that any institution that might elect to exploit this field could not only reimburse itself for the expenditures involved, but could actually make it a source of revenue, where additional income is needed.

Two hundred and ninety bound volumes were added to the library and 147 pamphlets were catalogued, bringing the totals to 46,131 and 13,753 respectively. Five hundred and seventy author and subject cards were filed in the main catalogue. Inter-library loans were many and varied, the total number handled, including incoming and outgoing loans, reaching the impressive figure of 686, the number increasing year by year. Our own borrowings are very largely limited to other Harvard libraries, it being only occasionally that we have to go outside of the Boston area for a needed book. This service is one that is very greatly appreciated by staff-members of other institutions where the library facilities are much more limited than is

the case here. This is another field where the institution can be of very great service to others in actual loans of needed volumes, or in having microfilm or Photostat reproductions made where the high value or extreme rarity of a volume renders its loan undesirable. During the year many orders for microfilm and photostat work were filled, in some cases covering entire volumes.

Much attention has been given to the matter of reinitiating our exchanges of technical publications with foreign institutions in former enemy or enemy-occupied countries. Contacts have been reestablished so far with forty institutions in eleven countries. It is interesting to note that in each case, each institution had reserved a set of its technical publications to be sent in exchange for ours, immediately this became possible following the close of hostilities.

It is realized that we shall have difficulties in filling the lacunae in certain sets of technical periodicals due to the loss of reserve stocks of current issues in certain publishing centers, such as Berlin, Leipzig, Tokyo, and other cities devastated by war. Doubtless in some cases we shall have to be content with microfilm or photostat records. However, every effort will be made to complete the files in the case of essential publications.

The acquisition by the Arboretum of a complete microfilm record of the Linnaean Herbarium was mentioned in previous annual reports. A complete set of 5 by 7 prints has now been made from this microfilm. Each print is mounted on a stiff card measuring 7/2 by 93 inches, occupying about half of the card. On the other half is a printed label bearing such pertinent information as the name of the plant in the Linnaean Herbarium, the number under which it is described in Mr. S. Savage's "*A Catalogue of the Linnaean Herbarium*" (1945), etc. There is ample room on each card for annotations pertaining to the proper modern name of the species, original place of description, references to critical discussions, etc. Each mounted photograph may be removed from the files for examination and comparison with specimens. Such a collection will increase in value as it is used, as annotations by competent authorities are added to the cards. The total number of entities is 14,207, but on about 462 cards there are two or even three photographs, due to the fact that certain specimens were photographed more than once to show details, important annotations, etc. The collection, therefore, contains approximately 14,669 photographs.

As usual four numbers of the *Journal* were published; these included 16 papers by 12 authors. No numbers of *Sargentia* were published, but one issue, containing an account of the botany of southwestern Mackenzie by [Dr. Raup](#), is in press, and the manuscripts of one or two additional numbers are well advanced. The usual numbers of *Arnoldia*, our bulletin of popular information, a service that is highly considered in both professional and amateur horticultural circles, were published. Two major works by staff-members are now in press. The first of these, [Prof. Rehder's](#) *Bibliography of Cultivated Trees and Shrubs*, is an extensive work giving the synonymy and full bibliography of all the entities in his much consulted *Manual of Cultivated Trees and Shrubs*. The other is the second part of [Mrs. McKelvey's](#) Treatment of the genus *Yucca*, which will complement the first part, published in 1938. About 80 technical and popular

articles were published by staff-members during the year in various botanical and horticultural serials.

It has been my privilege and honor to have directed the destinies of the Arnold Arboretum for slightly more than a decade. In 1947 it will attain its seventy-fifth year. Much has been accomplished in the period covered; much more will be accomplished in the years to come. This will, however, be my last annual report, as I resigned the directorate in in June, retaining only my professorial title until I become emeritus in June, 1948.

E. D. MERRILL, Director