The ARNOLD ARBORETUM of HARVARD UNIVERSITY

Annual Report 1952-1953

TO THE PROVOST OF THE UNIVERSITY:

SIR,

The renovation of the living collection of trees and shrubs included the transfer of some of the larger shrubs from the shrub collection to the Arborway bank. The construction of the Forest Hills overpass made it necessary to do some replanting near the Forest Hills gate. The trees on the north slope of Peters Hill were thinned and azaleas were planted along the Arborway wall. The Bussey bank was cleared, seeded to grass and planted with ornamental crab apples. More than 400 photographs have been added to the collections.

Mr. Howard also made about 250 Kodachrome slides and fifty 1 X 14 inch enlargements of the more interesting photographs of Arboretum trees and shrubs. These were exhibited at the National Shade Tree Conference held in Boston in August 1952. The cabinets of Ektachrome pictures were displayed at the Spring Flower Show and National Shade Tree Conference. Dr. Wyman and his associates exhibited a pruning demonstration at the Spring Flower Show of the Massachusetts Horticultural Society. This display won a first prize and the Bulkley Medal of the Garden Club of America, awarded each year to the most educational exhibit in the Show. Dr. Wyman conducted a class in plant materials at the Arboretum for students from Harvard's School of Landscape Architecture on Saturday mornings during the late winter and spring months.

About fifty people attended the field classes held each year during the flowering season. The Massachusetts Horticultural Society, many Garden clubs, and several national horticultural groups have held meetings at the Arboretum during the year. The Ground Cover demonstration plot at the Case Estate was enlarged and is now practically completed with 150 different kinds of plants. Mrs. Frances Williams provided many of the ground cover plants. The Cabot Foundation and the Bussey Institution continue to use the facilities of the Case Estates, but due to curtailments in the Department of Landscape Architecture the cooperative work with that department will be terminated in the fall of 1953.

A total of more than 4,000 scions, cuttings and young plants were sent to institutions in various parts of the world. In addition several hundred seed collections were distributed in North America and Europe. The Arboretum received nearly 3,500 lots of plant material and several hundred packets of seeds from various countries. Under the open-door policy of the

propagating department, volunteer workers recruited through the auspices of local garden clubs, agricultural schools, 4-H Clubs and handicapped veterans are learning practical plant propagation. Participating in this project were eleven garden clubs, two agricultural schools and ten veterans from the Veterans' Hospital in Jamaica Plain. The results have been most gratifying with these boys. A simple horticultural device which not only speeds up plant propagation of rooting cuttings but requires only one watering and no further attention for as long as a month, was developed by the propagator of the Arboretum. This plastic tent of polythene film and its operation is so simple any home owner can multiply plants indoors or under filtered light outdoors. This same feature could be used successfully by the professional nursery man by covering a complete bench of cuttings with cheesecloth attached to polythene film. It has attracted wide publicity.

Interesting segregates of Forsythia and Philadelphus have been obtained by growing progeny from triploid plants. These plants are extremely variable and many are unique. The Arnold Dwarf Forsythia produced about 10 years ago was recommended only as a ground cover, since it was not expected to flower. However, it did flower this year, and is an excellent variety for many purposes. The apple hybrids involving *Malus Sargenti* are most promising. Various methods have been used to produce dwarf types of the various ornamental flowering crabs. The Bechtels Crab was made to flower the second year by budding onto *M. sikkimensis* root stocks.

A small collection of dwarf ornamentals has been planted on the Bussey bank. A number of ornamental trees and shrubs were irradiated to produce mutations. The beta source was provided by the Brookhaven National Laboratory. Crosses between Catawbiense and Fortuni Rhododendron hybrids have produced several hundred progeny, most of which have flowered. These segregates vary greatly in resistance to insect pests and resistant types have been selected for propagation.

Dr. Sax taught his course in Cytology at Harvard during the fall term and supervised graduate students throughout the year. Professor Bailey spent considerable time during the last summer in the preparation of papers which were read in two symposia at the A.I.B.S. meetings held in Ithaca, September 8-10. One invitation paper, which dealt with the "Evolution of the tracheary tissue of land plants," was read in a symposium on the "Evolution of tissues and tissue systems in plants" sponsored by the Paleobotanical and General Sections of the Botanical Society of America with the Society for the Study of Evolution.

The second invitation paper, dealing with "The anatomical approach to the study of genera" was given in a symposium on "Plant Genera, Their Nature and Definition" sponsored by the American Society of Plant Taxonomists and the Systematic Section of the Botanical Society of America. Subsequently, Professor Bailey has been spending considerable time in revising some of his previous work for publication in book form. Ing. Domingo Cozzo, Guggenheim Fellow from Argentina, completed his investigations on storied structures in dicotyledonous woods and returned to Argentina early in February.

Mr. Chi Ling Chen is continuing his investigations of the Sapotaceae for the Doctorate. Miss M. P. F. Marsden is making an intensive study of the vasculature of the cotyledons, leaves and floral appendages of Clerodendron trichotomum Thunb.

Professor Bailey gave his course in Plant Morphology at Harvard during the fall term. During the year 6,570 specimens were mounted and added to the herbarium, which now contains 671,559 sheets.

A total of 17,267 specimens were sent out in exchange, 12,999 to foreign and the remainder to American herbaria. New collections received number 12,233, about two-thirds of these coming to the Arboretum from other institutions in continuation of exchange. Most of this new material represents the flora of Asia and Malaysia and constitutes very significant additions to the herbarium. The representation of this flora now available at the Arboretum is the largest in America. Among the accessions worthy of special mention are 1,777 collections of trees and shrubs of Japan, 1,125 from Asiatic parts of the USSR, 447 from Yunnan (woody plants of the McLaren collectors), 814 from the Indian-Burma frontier (collections of Kingdon Ward), 410 from Tibet and the eastern Himalaya (mostly collections of Ludlow & Sherriff), 3,150 from Malaysia, and 937 from the northwestern corner of Australia. A total of 2,484 specimens were sent out on loan, ten lots, totaling 623 specimens, to ten different American institutions, and eleven lots, totaling 1,861 specimens, to seven institutions abroad.

For use of the Arboretum staff, 1,249 specimens were borrowed; 315 sheets in eight different lots from American establishments, and 934 sheets in eight lots from five foreign institutions. During the early summer of 1952 Dr. Johnston visited herbaria at London, Kew, Oxford, Edinburgh, Leiden, Brussels, and Paris. Types and critical specimens of Asiatic Boraginaceae were studied at the herbaria visited, and herbarium problems and matters relating to inter-institutional exchange of specimens were discussed with the directors and staff. In the fall he lectured at Harvard and continued his critical study of the relations of Lithospermum.

Dr. Kobuski continued his work in Theaceae. He finished work on the genus Adinandra for Flora Malesiana and has begun work on the Asiatic members of Ternstroemia. Dr. Perry completed her study of the many previously very confused species of Papuan Macaranga. Dr. Merrill has continued work on various Malaysian and Polynesian problems, concentrating especially on a study of the status of several hundred Malaysian species proposed by William Roxburgh (1814-1844). Another wider problem that has claimed his attention is the actual significance of the first botanical collections made in the Pacific Islands, especially those of Banks and Solander and the two Forsters, Captain Cook's first and second voyages, 1769-1775.

This study of various unpublished manuscripts at the British Museum, prepared by Dr. Solander, including a Flora of Tahiti, casts much more than a shadow of doubt on the validity of various theories proposed and vigorously supported by specialists in other fields.

During the fiscal year ended June 30, 1953, there were 303 bound volumes added to the library by gift, purchase or binding; there are now 48,401 volumes on the shelves. One hundred forty pamphlets were catalogued and filed, all gifts; the pamphlet collections now stand at 15,204. Four hundred thirty-three catalogue cards were added to the main catalogue, and 2,044 cards were added to the Gray Herbarium species cards.

Interlibrary loans have been about the same as in previous years, in many cases typed descriptions, microfilms and photo static copies have saved the actual travel wear and tear on the older or rarer volumes. Four hundred photographs were added to the photograph files. The Arnold Arboretum has continued to receive financial support from its many friends, but inflation has prevented the staff replacements needed in the herbarium and in the field of plant pathology.

KARL SAX, Director