

A + AAH + AMES + ECON + FH + GH + NEBC = “HUH”: Systematic Botany at Harvard

Harvard's diverse herbaria and their associated libraries make up one of the world's greatest centers for research in systematic botany

The rich and diverse botanical collections housed in the Harvard University Herbaria building at 22 Divinity Avenue and in the adjacent Farlow Herbarium are world-renowned. Botanists working at the cutting edge of plant systematics converge from around the world to consult specimens of vascular plants, mosses, liverworts, algae, fungi, and lichens maintained in Harvard's half-dozen specialized herbaria. Designated “HUH” among systematic botanists at Harvard, the combined Harvard University Herbaria consist of the Herbarium of the Arnold Arboretum (designated “A”), the Oakes Ames Orchid Herbarium (“AMES”), the Economic Herbarium of Oakes Ames (“ECON”), the Gray Herbarium (“GH”), the Farlow Herbarium of Cryptogamic Botany (“FH”) (actually housed in an adjacent, connected building), the Gray Herbarium (“GH”), and the Herbarium of the New England Botanical Club (“NEBC”).

The Harvard University Herbaria (HUH) Building

The Harvard University Herbaria building, completed in 1954, is located at the end of Divinity Avenue in Cambridge, in the center of the Harvard complex devoted to the natural sciences. It houses the Oakes Ames Orchid Herbarium, the herbarium and library of the Gray Herbarium (formerly maintained at the “old Gray” on the Botanic Garden site on Garden Street), part of the library and herbarium of the Arnold Arboretum, and, since 1985, the Economic Botany Herbarium. The library and herbarium of the New England Botanical Club are also located in the building.

The Libraries. Comparable in depth and comprehensiveness to the collections of the Royal Botanic Gardens, Kew, and the Komarov Botanical Institute, Leningrad, the combined libraries of the Arnold Arboretum, the Gray Herbarium, the Farlow Herbarium, the Economic Botany Herbarium, and the Oakes Ames Orchid Herbarium are particularly rich in early botanical literature. These collections greatly facilitate research in systematic and evolutionary botany. All have grown from the research collections of their founder-scientists. This fact is easily sensed when one uses a volume that was originally owned and annotated by Charles Sprague Sargent, Oakes Ames, William Gilson Farlow, or Asa Gray.

The Arnold Arboretum's library now has over 90,000 books and pamphlets and some 11,000 microforms, the Gray library over 62,000 books and pamphlets and an archive collection of many thousands of items. Together, the archives of the two institutions are basic source material critical to the study of the development of evolutionary philosophy and the plant sciences in North America.

□ **The Arnold Arboretum Herbarium (A).** The Arnold Arboretum Herbarium was established by Charles Sprague Sargent in 1879, when he resigned his directorship of the Harvard Botanic Garden in order to devote full time to the Arboretum. It contains important collections from all over the globe and complements the Gray Herbarium (see below), inasmuch as it is especially rich in materials from eastern Asia, particularly China, the Philippines, western Malesia, and Papuasia. The large and important contributions of E. H. Wilson, J. F. Rock, G. Forest,

and the New Guinea collections of L. J. Brass are prominent among the Arboretum's 1,154,000 specimens housed in Cambridge. Its herbarium of cultivated plants in Jamaica Plain ("AAH") includes over 174,200 sheets and is the largest collection of its kind in the world.

To supplement its herbarium collections, the Arboretum maintains an extensive vouchered wood collection of some 30,000 specimens and 45,000 prepared microscope slides of wood, pollen, seeds, etc., and an important fruit and seed collection.

□ **The Orchid Herbarium of Oakes Ames (AMES).** The Orchid Herbarium of Oakes Ames was founded in 1899 by Professor Oakes Ames, the Harvard Botanical Museum's second director. It is the largest herbarium in the world devoted to a single family. Originally a private institution, it was intended to be a working tool to facilitate the identification of orchid species and the preparation of orchid floras. In developing his herbarium, Ames emphasized from the very beginning the accumulation of scientific information in every conceivable manner, rather than solely the storing of dried specimens. Consequently, the collection of nearly 130,000 sheets is very rich not only in type specimens, but also in records and transcripts of holotypes from institutions located throughout the world. There are also a spirit collection of 3,000 plants and flowers and 25,000 slides of dissected orchid flowers. Its specimens, drawings of floral details, color plates, paintings, and descriptions make AMES a unique and indispensable tool in taxonomy. In 1939, Ames formally presented his Orchid Herbarium, together with his orchid library, which now consists of 5,000 books and pamphlets, to the Botanical Museum. In 1957, all of the orchid specimens of the Gray Herbarium and of the Arnold Arboretum's herbarium were integrated with those of AMES for an indefinite duration.

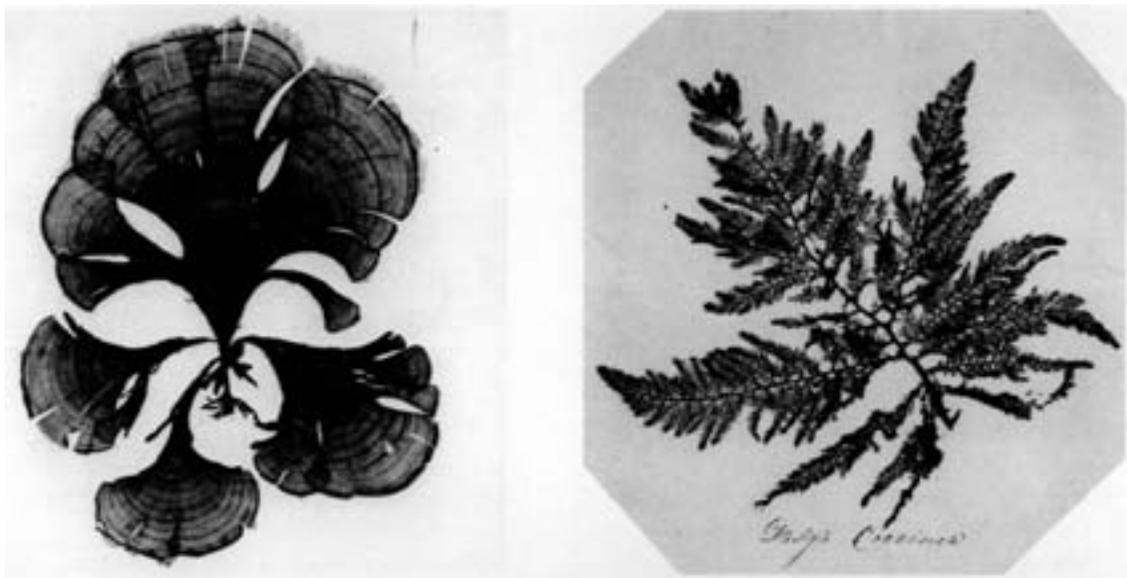
Housed in the Herbaria building, AMES

contains some 10,000 type specimens or type collections of species. One of its unique holdings is a set of life-size drawings of types, together with drawings of floral details of types of orchids described by Rudolf Schlechter, which were prepared under his personal supervision. The actual type specimens from which these were made were destroyed in Berlin during World War II. AMES is exceptionally complete in material from the Philippines, Malesia, Mexico, Central America, South America, and China.

□ **The Economic Herbarium (ECON).** The Economic Herbarium of Oakes Ames, housed until recently in the Botanical Museum, consists of 45,000 specimens of economically important plants, especially from South America, and includes extensive collections of such genera as *Zea* (maize), *Hevea* (rubber), and *Cinchona* (quinine).

□ **The Farlow Library and Herbarium (FH).** The Farlow Reference Library and Herbarium of Cryptogamic Botany is housed in the former Divinity School Library, built in 1886; it is connected to the HUH building on the west and the Biological Laboratories on the east. Stemming from the extensive herbarium and library of William Gilson Farlow, who joined the Harvard faculty in 1874 and endowed the collections at his death in 1919, the herbarium now includes 1,125,000 accessions of bryophytes, fungi, lichens, and algae; the library has holdings of over 60,000 items. Included within the collections are the M. A. Curtis collection of fungi and William Starling Sullivant's herbarium of mosses, both of which Farlow brought to Harvard. The nearly quarter of a million specimens of types and authentic specimens in FH indicate the richness and importance of the collection for systematic and evolutionary studies.

□ **The Gray Herbarium (GH).** The collections of the Gray Herbarium date from 1842, when Asa Gray was appointed Director of the Harvard Botanic Garden and Fisher Pro-



Two preserved specimens of marine algae from the Farlow Herbarium. On the left is *Padina pavonica*, a brown alga that lives in warm marine waters worldwide. On the right is *Heterosiphonia coccinea*, a yellow-green, or yellow-golden, marine alga. These are only two of the one and a quarter million specimens of mosses, algae, fungi, and lichens in the Farlow's world-renowned collections. Courtesy Farlow Library and Herbarium.

fessor of Natural History. Although systematic botanical studies were initiated in 1807, when the Botanic Garden was established by W. D. Peck, the Herbarium was established by Asa Gray and grew steadily because of his research and that of his colleagues and successors. Today, the Gray Herbarium numbers 1,823,300 specimens. The collections of the early explorers are prominent. Worldwide in scope, GH is especially rich in North American materials and includes early collections from western North America and Mexico and the types and collections of Gray, Sereno Watson, B. L. Robinson, and M. L. Fernald.

□ **Herbarium of the New England Botanical Club (NEBC).** The 250,000 specimens in the Herbarium of the New England Botanical Club were collected totally within New England by knowledgeable amateurs, Harvard professors, and others. Serving to document the flora of the region, its specimens are also a rich resource for research on rare and

endangered species. In concentrating on such a small area, NEBC makes it possible to study genetic variability from one population of a species to another.

The Botanical Museum

Although officially founded in 1888 when the University named Professor George Lincoln Goodale its first director, the collections of the Botanical Museum dated from 1858, when Asa Gray began to assemble a collection of "vegetable products, etc." that were augmented by plant materials of economic importance sent to him by his friend, William Jackson Hooker. The Economic Herbarium (ECON) is now housed in the HUH building (see above). The Botanical Museum's library has a notable collection of some 32,000 titles that has grown largely from the research collections of Oakes Ames and George Lincoln Goodale.