

# Henry Hurd Rusby: The father of economic botany at the New York Botanical Garden

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Williams, David E.<sup>1</sup> and Susan M. Fraser (New York Botanical Garden, Bronx, NY 10458-5126). Henry Hurd Rusby: The father of economic botany at the New York Botanical Garden. *Brittonia* 44: 273–279. 1992.—Henry Hurd Rusby (1855–1940) is one of the outstanding personalities in the history of the New York Botanical Garden (NYBG). He played a significant role, not only in the founding of NYBG in 1891, but also in establishing a strong precedent of research and exploration in the field of economic botany at the new institution. As a result of Rusby's influence and activity, the study of useful plants formed an important part of NYBG's original mandate, an institutional commitment that was rejuvenated nearly a century later, with the formation of the Institute of Economic Botany. An indefatigable researcher both in the field and in the herbarium, Rusby left behind a voluminous corpus of published work in systematic and economic botany that is a legacy for modern botanists and pharmacologists.

**Key words:** Henry Hurd Rusby, economic botany, plant exploration.

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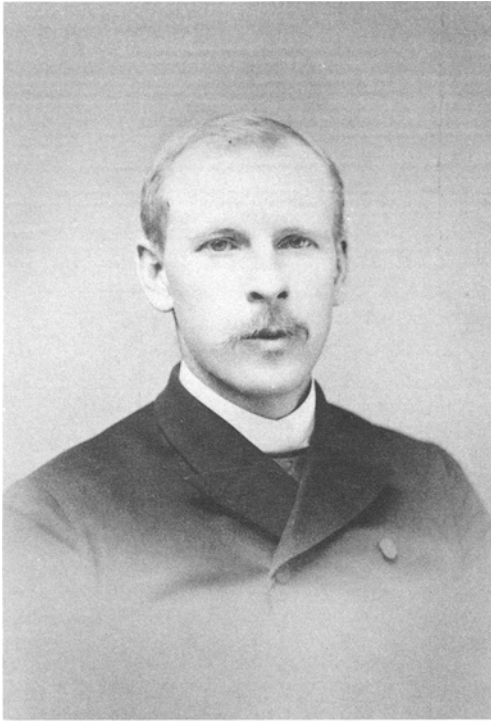
Henry Hurd Rusby (1855–1940) (Fig. 1) was influential in promoting the study of economic botany at the New York Botanical Garden throughout its first half century of existence. A dedicated, energetic, and prolific worker, Rusby set a vigorous precedent for research on useful plants.

As a youth growing up in New Jersey, Rusby began to demonstrate the passionate interest in plants that was to characterize his long professional career. At age 21 his personal herbarium was of sufficient size and quality to win him first prize at the Centennial Exposition in Philadelphia in 1876. About that time he became acquainted with Dr. George Thurber, then president of the Torrey Botanical Club and long-time professor of botany at the College of Pharmacy of the City of New York. Probably as a result of Dr. Thurber's influence, Rusby joined the Torrey Botanical Club and began studying medicine at the Medical College of New York University. In 1880, while still a medical student, he spent 18 months collecting

plants in Texas and New Mexico as an agent for the Smithsonian Institution. He returned to the Southwest in 1883 to study the medicinal flora of Arizona for the pharmaceutical house of Parke, Davis & Co., to whom he sold his herbarium to pay the expenses of his medical education. Rusby graduated in 1884 with the degree of Doctor of Medicine (Anonymous, 1914).

Evidently Rusby's experience in the North American Southwest gave him a taste for adventure (Rusby, 1933). Soon after graduating from medical school, and on only three days notice, Rusby embarked in 1885 on a trip to South America in search of medicinal plants for Parke, Davis & Co. He returned two years later after having explored some of the more remote regions of Colombia, Ecuador, Peru, Chile, Bolivia and Brazil, and having traversed from west to east the South American continent at its widest point (Moldenke, 1942). The trip was his first of six botanical expeditions to Latin America (Table I), and firmly established Rusby's reputation as an intrepid plant explorer and drug hunter (Fig. 2). By 1914, Rusby had collected about 45,000 botanical

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*H. H. Rusby*

FIG. 1. Henry Hurd Rusby, 1855–1940. NYBG Library Archive.

specimens representing some 4000 species, 20 percent of which were new to science (Anonymous, 1914). Most of the type specimens are deposited in the NYBG herbarium (Bonisteel, 1941).

Although educated as a physician, Rusby chose to forego the practice of medicine in

TABLE I  
RUSBY'S BOTANICAL EXPLORATIONS IN LATIN  
AMERICA<sup>a</sup>

1885–1887	Colombia, Ecuador, Peru, Chile, Bolivia, Brazil
1893	Venezuela
1896	Venezuela (lower Orinoco Valley)
1908–1910	Mexico (rubber forests)
1917	Colombia (quinine forests)
1921–1922	Bolivia, Brazil (Mulford Biological Exploration)

<sup>a</sup> Adapted from Moldenke, 1942.

favor of his earlier interest in plants. In 1889 he was made Professor of Botany and Materia Medica at the College of Pharmacy at Columbia University where he subsequently served 26 years as Dean of the Faculty until his retirement in 1930, and thereafter as Dean Emeritus until his death (Moldenke, 1942). Additionally, he held various other administrative, advisory, and teaching positions, and was the recipient of numerous awards and honors during his long life.

Early in 1888, shortly after returning from his first trip to South America, Rusby became outspoken about the dearth of adequate facilities in the United States for the study of useful plants. He admonished the federal government to establish a suitable botanical garden and herbarium at a national level, stressing their importance for the scientific, agricultural, and economic progress of the nation (The Daily Times, 1888).

Rusby's association with NYBG began even before the Garden was formally established. He became a member of the Torrey Botanical Club in 1879, through which he came into contact with Nathaniel Lord Britton (Bonisteel, 1941). Rusby was so impressed by Britton on their first meeting that "the silent allegiance that day formed was never broken" (Rusby, 1934: 109). The establishment of a botanical garden for New York City had been a goal of the Torrey Botanical Club for over a decade. When the New York State Legislature granted permission to the city to extend its park system north of the Harlem River, the club began to pursue this goal in earnest. In 1888 a botanic garden committee of eight distinguished club members, including Britton and Rusby, was formed. Britton was then curator of the Columbia College herbarium, and Rusby a professor at the New York College of Pharmacy (Commercial Advertiser, 1889; The Sun, 1889).

By 1891 the selection and acquisition of the Bronx Park site had been finalized and the New York Botanical Garden was legally established, with H. H. Rusby and N. L. Britton listed amongst the numerous incorporators (Britton, 1896). At the time of in-



FIG. 2. H. H. Rusby in Amazonia ca 1886. NYBG Library Archive.

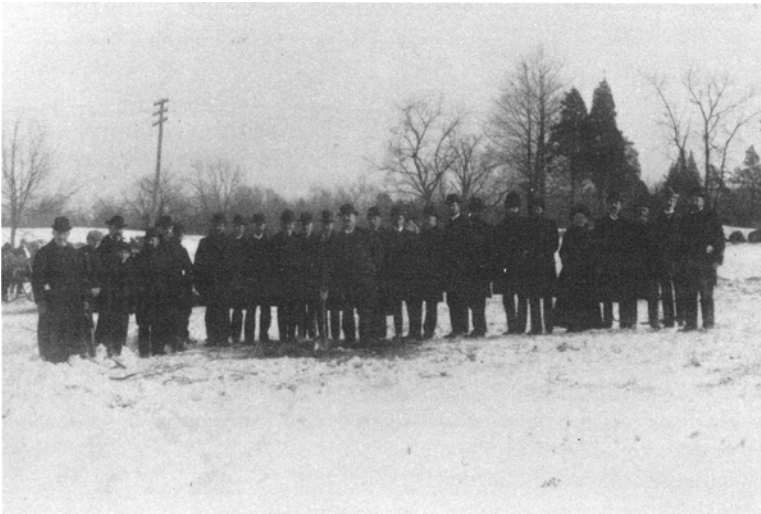


FIG. 3. Groundbreaking for the New York Botanical Garden Conservatory, January 1898, showing G. Nash (seventh from left), H. H. Rusby (ninth from left), New York Parks Commissioner A. Moebus (fourteenth from left, with shovel), F. M. Hexamer (fifteenth from left), Lord and Burnham Co. representative Lincoln Pierson (sixteenth from left), Board of Managers member C. F. Cox (eighteenth from left), L. M. Underwood (nineteenth from left), N. L. Britton (twenty-first from left), A. M. Vail (twenty-second from left), and Board of Managers member W. G. Thompson (twenty-third from left). NYBG Library Archive.

corporation, NYBG existed only on paper and Rusby assumed an active role promoting economic botany in the planning and implementation of the botanical garden, museum, and conservatory (Fig. 3). Rusby's early influence is evident in a letter, dated 4 Jan 1896, written to his friend N. L. Britton, the Secretary of NYBG:

"As you are at present engaged in formulating plans for the arrangement of the Garden, I take the liberty of directing your attention to a certain feature of the economic department for which, in my opinion, ample provision should be made in the initial plans. I refer to the investigation and estimation of the value of new vegetable substances and products proposed for introduction to commerce. There is at the present time no place in America where suitable provision for this work is made, although the Division of Botany of the U.S. Department of Agriculture has recently made a beginning in this direction. There are weighty and to me conclusive reasons for believing that certain forms of this work can be better carried on at an institution like the New York Botanical Garden than at a Government institution. When at Kew I did considerable [sic] toward investigating the relations of the Kew Garden toward this class of work and satisfied myself that it was for economic purposes that that Garden had been chiefly established and maintained and that it was due to its economic usefulness that much of its success has been attained."

In 1896 an agreement with Columbia University was signed whereby the Columbia College Herbarium and Botanical Library was to be deposited at NYBG, and certain reciprocal privileges would be granted to the staff and students of the two institutions (Britton, 1896). On 11 Aug of the same year, Britton wrote a letter to Rusby inviting him to investigate the possibility of the New York College of Pharmacy (where Rusby was professor) entering into a similar agreement. The arrangement "would amount to the College of Pharmacy depositing with the Garden, subject to recall, such portions of its Museum as are not directly needed in its work; the Garden to open to qualified students of the College of Pharmacy courses of instruction, and to supply you with floral material for your work, in so far as practicable."

The acquisition of the College of Pharmacy's drug museum was the first step to-

wards the creation of the much larger collection that would eventually constitute the Museum of Economic Botany of the New York Botanical Garden. Seeking to formalize his association with the Garden in order to more effectively promote economic botany there, Rusby sent the following letter, dated 27 Dec 1897, to Dr. Britton, then the Director of NYBG:

"In accordance with our recent conversation, I have pleasure in hereby offering my services, in an honorary capacity, as Curator of the Economic Museum of the Garden for one year, without salary, undertaking to expend any money which can be spared for the purpose to the best advantage in accumulating a nucleus for the museum."

On 26 Jan 1898, Rusby was appointed Honorary Curator of the Economic Collections, a post he held until his death. In addition to his regular duties at the College of Pharmacy, Rusby immediately began to build the economic collection, finding ways to acquire diverse, high quality, and properly identified specimens, with as little expense to the Garden as possible. In a letter to Britton dated 23 Mar 1898, Rusby presented the following proposal for obtaining exchange material in which he outlined the importance of herbarium vouchers for "commercial" specimens:

"A careful consideration of the sources of supply of material for the Economic Museum indicates that we must rely upon the method of exchange for securing a large portion of it. We have at the present time no material which can be utilized for exchange purposes and it is necessary that some definite plan should be adopted for procuring the same.

It is my idea that we should devote the present season to accumulating considerable supplies of such exchange material as can be collected, at small cost in our immediate vicinity. This material can be collected in such a way as to be made very desirable by other institutions, namely by fixing its authenticity beyond question. The impression is very general among scientific people that much of the work of investigation that has been done in the past is unreliable, because the material worked upon has been obtained from commercial sources. This has created a strong demand for perfectly authentic material. I believe therefore that if we collect sets of the material in our vicinity, — barks, roots, &c., accompanied by herbarium specimens taken from the same plant, the herbarium specimen and the commercial specimen to bear the same number and to refer

to each other, we should find it highly acceptable to the institutions with which we might exchange."

The Economic Museum, under Rusby's leadership, grew in size and comprehensiveness. Opened to the public in 1899 (Rusby, 1906), the exhibit eventually occupied the entire main floor of the sumptuous new Museum Building, where 210 glass cases contained nearly 10,000 articles arranged according to their uses (Rusby, 1921) (Fig. 4). The exhibits were painstakingly assembled and arranged to reflect not only the botanical origin of the items on display, but also to illustrate "all varieties and forms, the distinctive characters of which are natural, including thus all cultivated forms of fruits and vegetables, as well as wild products and many manufactured articles" (Rusby, 1900: 116). Rusby intended the Economic Museum's guidebook to be "a compendium on economic botany" (Woodward, 1941: 43). In the introduction to his guidebook, Rusby (1921: 2) emphasized the botanical authentication of the articles on display:

"The special characteristics of our Museum are correct nomenclature, this method being followed throughout, and positive authentication of the articles exhibited. We possess, it is true, a large amount of material from commercial sources, which, although gathered with every possible precaution as to authenticity, presents no *prima facie* evidence as to its botanical origin. The more valuable portions of our exhibits are those which have been taken from the growing plants by special collectors, in connection with herbarium material displaying flowers, fruits, leaves, etc., which is suitably preserved in our own herbarium, with cross references from one collection to the other. In the pursuit of this object and in the extent to which it has been carried, our collections are probably unique."

Even after he had retired as Dean of the College of Pharmacy (1930), Rusby continued working at the Garden by annotating herbarium sheets with cross-references to specimens in the Economic Museum (Woodward, 1941). His insistence on proper identification of economic specimens was exemplary, and set the standard for future economic botanists. Today, the voucher herbarium specimen is considered to be an indispensable part of any rigorously con-

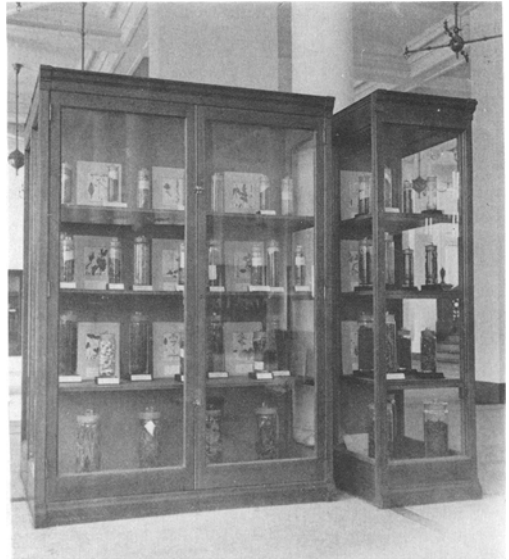


FIG. 4. Some of the 210 display cases in the Economic Museum of the New York Botanical Garden, 1900. NYBG Library Archive.

ducted study of an economically or culturally significant plant or plant part (Bye, 1986).

As an economic botanist, Rusby was also ahead of his time regarding ethical considerations of intellectual property rights. It was his belief that drugs made available for the healing of mankind should be of benefit to all and not for the profit of any one man (Woodward, 1941). One example of this conviction is related in an article about him that appeared in *The Druggists Circular* (Anonymous, 1914: 45):

"It was on this [1885-1887] trip that cocillana [*Guarea rusbyi* (Britt.) Rusby, (Meliaceae)] was discovered, among many other useful medicinal plants. Had the Doctor been so minded he doubtless could have made a fortune by exploiting those remedies, but he refused to do anything not in accord with medical ethics. To show how punctilious he was about this, it may be stated that he entered into an arrangement with Parke, Davis & Co. under which he was to receive a royalty on the sales of certain drugs discovered by him. He did not recognize the impropriety of this arrangement, as he later termed it, until the royalties began to increase rapidly. As soon as he did, he voluntarily terminated the arrangement."

Rusby's neotropical explorations (Table I), particularly in the Amazon region, set the precedent for the systematic and eco-

conomic botany that has characterized subsequent research at NYBG. The phenomenal productivity of his trips was due to his endurance and resourcefulness as an explorer who, before the advent of the airplane and outboard motor, penetrated regions that even today are reached only with extreme difficulty. Rusby returned with a remarkably large number of species new to science and valuable to industry and medicine.

In 1921, when Rusby was 65 years old, he embarked upon his last field trip to South America as the Director of the ambitious Mulford Biological Exploration of the Amazon Valley. Touted as "the most perfectly equipped [expedition] that has ever started to explore South America" (MacCreagh, 1926), the trip retraced much of the same route as Rusby's first trip to the Amazon in the 1880s. Rusby was accompanied this time by Orland E. White, who was then a curator at the Brooklyn Botanic Garden. During the course of the expedition they were joined by a young Bolivian botany student, Martín Cárdenas (White, 1922). Cárdenas was profoundly influenced by his interactions with Rusby and White (Cárdenas, 1973). He went on to become Bolivia's foremost botanist and wrote a comprehensive manual of the economic plants of his country (Cárdenas, 1969).

On Rusby's last trip, however, the rigors of jungle travel proved too great for the aging explorer, and ill health forced him to withdraw from the expedition before its completion (Rusby, 1922). An entertaining but facetious account of the Mulford Biological Exploration, entitled *White Waters and Black*, was published by the expedition's quartermaster, Gordon MacCreagh (1926), portraying the trip's Director in a less-than-flattering light. Partially in an effort to repair the damage inflicted by MacCreagh, Rusby subsequently penned a popular narrative he called *Jungle Memories*, describing his adventures as an energetic young man exploring in Bolivia in 1885–1887, more than three decades before the Mulford trip (Rusby, 1933).

The aforementioned popular accounts aside, the scientific results of Rusby's explorations remain as testimony to his in-

disputable contribution to botany, pharmacy, and to the NYBG. The results of his botanical research appeared as a constant stream of botanical publications, largely in NYBG and Torrey Botanical Club journals, where he described hundreds of new taxa. Dozens of his articles dealing with the utilization and chemical properties of useful plants appeared in pharmaceutical periodicals such as *The Druggists Bulletin* and the *Journal of the American Pharmaceutical Association*. The majority of Rusby's publications are held in the NYBG Library's general collection and archives, and thousands of his plant collections, including numerous type specimens, enrich the NYBG herbarium (Stafleu & Cowan, 1983).

Rusby died on November 18, 1940 at the age of 85. His passing was followed by a hiatus in interest in economic botany at NYBG. As systematic research grew in importance, the Museum was eventually dismantled to make room for the burgeoning herbarium. The Economic Museum, largely the product of Rusby's impetus, now lies in storage at NYBG. The specimens await restoration, curation, and a suitable location for display, by now having historical as well as scientific value.

In 1980 an international conference entitled "Future Directions for Botanical Gardens and Arboreta," was held at NYBG to discuss the nature of the work of the Garden and that of botanical science in general. A major conclusion arrived at during the conference was that botanical institutions such as NYBG should be allocating more of their efforts to research concerned with resolving crucial human issues (Balick, 1986). As a result of this discussion, the Institute of Economic Botany (IEB) was created in 1981 and, under the leadership of its founding director, Ghilleen T. Prance, it assumed an active role in the study of little known, underexploited, or potentially important food, fuel, and drug plants (IEB, 1986).

Now beginning its second decade, the IEB has revived the important connection between basic and applied botanical research at NYBG. IEB staff members and students focus their efforts on collecting and identifying useful tropical plants, gathering infor-

mation on their local uses through field work, as well as studying ways to conserve biological diversity through natural resource management, habitat preservation, and germplasm collection (Balick, 1991).

Today, the IEB has taken up the work begun at NYBG by Rusby 100 years ago, and is preparing to carry it forward into the next century. Rusby's legacy lives on as NYBG botanists continue to search the tropics for useful plants in an ongoing effort to satisfy the needs, and resolve some of the ills, of the ever-growing human community. His vigorous precedent of exploration, scientific rigor, publication, and education is ample reason for recognizing Henry Hurd Rusby as the Father of Economic Botany at the New York Botanical Garden.

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