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A brief history of the Graduate Studies Program at The New York Botanical Garden

DAVID L. LENTZ AND MARLENE BELLENGI

Lentz, D. L. and M. Bellengi (The New York Botanical Garden, Bronx, NY, U.S.A.). A brief history of the Graduate Studies Program at The New York Botanical Garden. *Brittonia* 48:404–412. 1996.—The New York Botanical Garden initiated its Graduate Studies Program through a cooperative agreement with Columbia University in 1896. This arrangement continued until the late 1960s, when the Biology Department at Columbia chose to emphasize laboratory-related research and discontinued its organismal programs. At that time a new partnership was formed with what was to become Lehman College of the City University of New York—a program that has continued through the present. Since the inception of its Graduate Studies Program 100 years ago, the Garden has provided sponsorship, guidance, and resources to help more than 200 students receive graduate degrees. In recent years the Garden has expanded its graduate program to include four additional university affiliates: the Department of Biology at New York University, the Institute of Systematic Botany at Cornell University, the School of Forestry and Environmental Studies at Yale University, and, in a new agreement with an old partner, the Center for Environmental Research and Conservation at Columbia University.

From its conceptual beginnings, being modeled after Kew Gardens with its affiliated universities, The New York Botanical Garden was designed by its founders to be a seat of higher learning and a place where students could receive advanced training in botany. Nathaniel Lord Britton, a professor of botany at Columbia University before becoming the first Director of the Garden, was himself an academician. Columbia University (Columbia College until 1895) was one of the largest donors to the initial subscription that brought the Garden into being. In addition to supplying financial backing, the University also transferred its entire collection of herbarium specimens to NYBG's new herbarium and their botanical and horticultural literature holdings to the Garden library. Along with these valuable transfers went the bulk of their graduate program in botany. A formal agreement to this effect was signed between the Garden and Columbia, and the first classes in the joint program commenced in 1896. With the completion of the Museum Building in 1899, many of the Columbia classes were moved to the Garden (Britton, 1915). The program was an immediate success, and by 1900 there were eight graduate students at the Garden. The agreement with Columbia allowed students to register and/or take classes at either institution. It also per-

mitted students to select a mentor from either institution to guide their graduate research. The Garden quickly amassed an impressive staff that included not only Dr. Britton and his wife, Elizabeth G. Britton, an accomplished botanist in her own right, but also D. T. MacDougal, L. M. Underwood, C. C. Curtis, M. A. Howe, P. A. Rydberg, G. V. Nash, J. K. Small, F. E. Lloyd, and E. S. Burgess.

From its robust origin, the collaboration with Columbia University continued as a strong graduate program through the administrations of Drs. E. D. Merrill, M. A. Howe, H. A. Gleason, W. W. Robbins, and W. C. Steere. During this period, students affiliated with Fordham University also attended classes at the Garden and conducted their research in the Museum Building. From the earliest times, it was recognized that, while the study of North American plants was important, the tropics, especially the American tropics, offered even greater opportunities for new floral discoveries. Students often accompanied the small legion of botanists that ventured into the hinterlands of North America as well as tropical regions to help uncover the secrets of biological diversity in this hemisphere and elsewhere across the globe.

Since the graduate program was initiated in 1896, more than 200 students have completed

their graduate research at the Garden. Because most of the early students were from the United States (with a few from Europe, Canada, and Asia), research projects in the early days tended to focus on North America. As the program grew and developed with time, the student body and regions of botanical interest took on a more international focus. A quick perusal of Table I reveals a long list of botanists who received their training at the Garden and went on to make significant contributions in their chosen fields of study. Space limitations prohibit the mentioning of each of the many notable figures, so we shall limit the discussion to a few of the early graduates who made an impact on botany through their research and leadership.

One of the earliest graduates of the program, Joseph Kirkwood, who received his doctorate in 1903, began his career studying the comparative embryology of the Cucurbitaceae. During World War I, his skills as an economic botanist were called upon in the effort to produce rubber from guayule (*Parthenium argentatum* A. Gray) when rubber supplies from the East Indies were threatened. After the war he joined the faculty at the University of Montana and helped to develop the botany program there.

Roland M. Harper, a graduate of the class of 1905, completed a dissertation on the phytogeography of the coastal plain of eastern North America. After graduation, he became interested in the flora of the southeastern United States and worked for the Geological Surveys of Alabama, Florida, and Georgia, his native state. He was a prodigious collector, and to this day his specimens are prized collections at the university herbaria in those three states. Furthermore, his collections were the basis for his *Forests of Alabama* and essential to the compilation of subsequent works on the southeastern flora. In 1911 he returned to Columbia University and eventually became the Torrey Professor of Botany and departmental chairman (Hansell, 1957).

A year after Roland Harper graduated, Henry A. Gleason completed his dissertation on the systematics of the genus *Trillium*. His interests later broadened to include studies of the Asteraceae and the Melastomataceae, mostly from specimens collected in the United States but also from Mexico and the West Indies. His first job was at the University of Illinois at Champaign-Urbana, but later he assumed a faculty position at the University of Michigan. Following his ac-

ademic sojourn in the Midwest, he returned to New York and joined the curatorial staff at The New York Botanical Garden, eventually becoming Head Curator and even serving one year as Acting Director. He is perhaps best remembered for his revision of the *New Britton and Brown Illustrated Flora* and for his fruitful collaboration with Arthur Cronquist on the *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*.

In 1908, Gertrude Simmons Burlingham was the first woman to receive a Ph.D. from the program. A model of fortitude and dedication and an ardent mycologist, her treatments of *Lactarius* and *Russula* (Agaricaceae) were carefully prepared and extraordinarily detailed. A devoted teacher, she instructed biology classes at East District High School in Brooklyn. Even though she loved teaching and possessed a doctorate, she never obtained a university faculty position, undoubtedly because at that time few universities hired women. Nevertheless, during all vacations and in the summers she would collect mushrooms or conduct research at the Garden. Her numerous publications attest to her commitment to scientific research and form part of her intellectual legacy. A further legacy is the endowed fellowship she created just before her death, now known as the Burlingham Fellowship, for mycology students at the Garden.

Homer D. House, who graduated the same year as Gertrude Burlingham, studied the Convolvulaceae of North America. After leaving the Garden, he taught at the State University of New York at Albany and in 1942 became the State Botanist of New York, a position he held for several years.

The renowned fern taxonomist Ralph C. Benedict graduated from the Garden's program in 1911. Among his works were revisions of *Antrophytum*, *Ceratopteris*, and *Nephrolepis*. From his position on the faculty at Brooklyn College, he continued his research and collected from all corners of North America and the West Indies. He was one of the organizers of the American Fern Society, served as President from 1952 to 1955, and was on the editorial board of the *American Fern Journal* for 50 years (Allison, 1966).

Le Roy Abrams graduated in 1910 and spent most of his life studying the flora of the western United States, particularly southern California. After receiving his doctorate, he became an as-

(text continued on p. 411)

TABLE I
THE NEW YORK BOTANICAL GARDEN GRADUATE STUDIES PROGRAM ALUMNI

University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
Columbia, 1899–1900	Banta-Columba, May (M.A.)	USA	Secondary teaching
Columbia, 1899–1900	Eaton, Elon Howard (M.S.)	USA	Botany, ecology, and forestry
Columbia, 1899–1900	Griffiths, David (Ph.D.)	USA	Taxonomy of <i>Bouteloua</i> and related grama grasses
Columbia, 1899–1900	Hazen, Tracy Elliot (Ph.D.)	USA	Ulothricaceae, Chaetophoraceae, and Haemodoraceae
Columbia, 1899–1900	Hewins, Nellie Priscilla (M.A.)	USA	High school biology
Columbia, 1899–1900	Kellicott, William Erskine (Ph.D.)	USA	<i>Allium</i> root anatomy
Columbia, 1899–1900	Rea, Paul Marshall (M.A.)	USA	The history of botanical science
Columbia, 1899–1900	Torrey, John Cutler (Ph.D.)	USA	Medicine, pathology
Columbia, 1899–1901	Harlow, Sarah Havens (M.A.)	USA	Botanical libraries
Columbia, 1901–1902	Hanks, Lenda Tracy (M.A.)	USA	High school biology
Columbia, 1901–1902	Locke, Emily (M.A.)	USA	Spermatophyte embryology
Columbia, 1901–1902	Rand, Edith E. (M.A.)	USA	Botany of North America
Columbia, 1899–1902	Rennert, Rosina J. Irving (M.A.)	USA	Plant anatomy and physiology
Columbia, 1902–1903	Broadhurst, Jean (M.A.)	USA	Morphology
Columbia, 1902–1903	Dufour, Alice (M.A.)	USA	Sociology, botany
Columbia, 1902–1903	Gaines, Elizabeth Venable (M.A.)	USA	Sanitary biology
Columbia, 1902–1903	Grout, Leon Everett (M.S.)	USA	Agriculture
Columbia, 1899–1903	Kirkwood, Joseph Edward (Ph.D.)	USA	The comparative embryology of the Cucurbitaceae
Columbia, 1902–1903	Leavenworth, George (M.A.)	USA	Forestry
Columbia, 1902–1903	Lord, Mary (M.A.)	USA	Fertilization in <i>Lupinus hirsutus</i>
Columbia, 1902–1903	Steeter, Stella G. (M.A.)	USA	Plant physiology
Columbia, 1902–1904	Brackett, Mary Morrell (M.A.)	USA	Plant morphology and physiology
Columbia, 1903–1904	Clark, Anna May (M.A.)	USA	Biology, botany, and nature study
Columbia, 1902–1904	Shimer, Hervey Woodburn (Ph.D.)	USA	Geology, paleobotany, paleontology
Columbia, 1899–1905	Cardiff, Ira Dietrich (Ph.D.)	USA	Karyokinesis (morphology, cytology)
Columbia, 1899–1905	Gordon, Clarence E. (Ph.D.)	USA	Zoology, geology, paleobotany
Columbia, 1899–1905	Gruenberg, Benjamin (Ph.D.)	USA	Plant evolution, physiology of nutrition
Columbia, 1899–1905	Harper, Roland McMillan (Ph.D.)	USA	Eastern North American coastal plain phytogeography
Columbia, 1904–1905	Mathewson, Chester A. (Ph.D.)	USA	<i>Houstonia caerulea</i> anatomy
Columbia, 1904–1905	Stockard, Charles Rupert (Ph.D.)	USA	Cytology of <i>Vicia faba</i>
Columbia, 1903–1905	Yatsu, Naohide (Ph.D.)	Japan	Cytology, embryology
Columbia, 1905–1906	Gleason, Henry Allan (Ph.D.)	USA	<i>Trillium</i> systematics
Columbia, 1904–1906	Knox Alice Adelaide (M.A.)	USA	Plant morphology and physiology
Columbia, 1905–1906	Palliser, Helen L. (M.A.)	USA	Mycology
Columbia, 1903–1906	Robinson, Charles Budd (Ph.D.)	Canada	The Chareae of North America
Columbia, 1901–1907	Kupfer, Elsie M. (Ph.D.)	Germany	Plant physiology
Columbia, 1906–1908	Anderson, Mary Perle (M.A.)	USA	Ferns of Japan
Columbia, 1906–1908	Brandenburg, Ellen Klapp (M.A.)	USA	Botany, mycology
Columbia, 1905–1908	Burlingham, Gertrude Simmons (Ph.D.)	USA	Taxonomy of Agaricaceae, plant physiology
Columbia, 1905–1908	Darling, Chester Arthur (Ph.D.)	USA	Cytology, plant physiology
Columbia, 1905–1908	House, Homer Doliver (Ph.D.)	USA	North American species of the genus <i>Ipomoea</i>
Columbia, 1906–1908	Robinson, Winfred Josephine (Ph.D.)	USA	Pteridophytes of Hawaii
Columbia, 1905–1910	Abrams, Le Roy (Ph.D.)	USA	Phytogeography of southern California
Columbia, 1909–1910	Barrett, Mary Franklin (M.A.)	USA	Taxonomy of fungi
Columbia, 1905–1910	Clark, Ernest Dunbar (Ph.D.)	USA	The plant oxidases
Columbia, 1909–1910	Middleton, Florence (M.A.)	USA	Botany, morphology of <i>Saponaria</i>
Columbia, 1909–1910	Picard, Maurice (M.A.)	USA	Hibiscus cytology
Columbia, 1906–1910	Rose, Anton Richard (Ph.D.)	USA	Biological chemistry and its relation to animal nutrition

TABLE I
CONTINUED

University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
Columbia, 1906–1910	Schwarze, Carl Alois (Ph.D.)	USA	Parasitic fungi of New Jersey
Columbia, 1909–1910	Topp, Emily Philippina (M.A.)	USA	Variation in <i>Miscanthus</i>
Columbia, 1908–1911	Benedict, Ralph Curtis (Ph.D.)	USA	Pteridophyte taxonomy, especially <i>Nephrolepis</i>
Columbia, 1907–1911	Hare, Raleigh Frederick (Ph.D.)	USA	Carbohydrates of the prickly pear and its fruits
Columbia, 1907–1911	Kern, Frank Dunn (Ph.D.)	USA	Taxonomic study of the genus <i>Gymnosporangium</i>
Columbia, 1910–1911	Liebovitz, Sidney (M.A.)	USA	Phytochemistry
Columbia, 1911–1912	Bristol, Warren E. (M.A.)	USA	Key to the starches of the drug plants
Columbia, 1908–1912	Dodge, Bernard Ogilvie (Ph.D.)	USA	Morphology and taxonomy of <i>Ascobolaceae</i>
Columbia, 1911–1912	Stout, Arlow Burdette (Ph.D.)	USA	Flowering behavior of <i>Persea</i> , <i>Hemerocallis</i> , and <i>Coleus</i>
Columbia, 1911–1912	Tang, Young-Lee (M.A.)	China	
Columbia, 1911–1912	Womack, Mary-Douglas (M.A.)	USA	Bacteriology, phytopathology, mycology
Columbia, 1912–1913	Burr, Freeman Foster (M.A.)	USA	Geology, general botany
Columbia, 1909–1913	Fraser, Allen Cameron (Ph.D.)	USA	Genetics of <i>Avena</i>
Columbia, 1910–1913	Fromme, Fred Denton (Ph.D.)	USA	Morphology and cytology of <i>Uredineae</i>
Columbia, 1912–1913	Jud, Friedolina (M.A.)	USA	Study of silicified wood from the western United States
Columbia, 1910–1913	Mook, Charles (Ph.D.)	USA	Paleobotany
Columbia, 1912–1913	Reid, Katherine Willess (M.A.)	USA	Variation in <i>Abutilon</i>
Columbia, 1912–1913	Umancen, Lillian A. Tenopyr (M.A.)	USA	Relation of the cell shape to organ shape
Columbia, 1912–1914	Kelly, James P. (M.A.)	USA	Ferns and flowering plants of Pennsylvania
Columbia, 1914–1915	Kennerly, Martha Mason (M.A.)	USA	Effect of road treatments on plant growth
Columbia, 1914–1915	Muller, Theodore (M.A.)	Germany	Fiber plants of the Philippines
Columbia, 1914–1915	Stewart, Eleanor Grace (M.A.)	USA	Cytology of cacti
Columbia, 1914–1915	Stowell, Willard Allen (M.A.)	USA	Genetics, cytology
Columbia, 1912–1916	Altenburg, Edgar (Ph.D.)	USA	Linkage in <i>Primula sinensis</i>
Columbia, 1915–1916	Darrow, Isabelle C. (M.A.)	USA	Genetics, cytology
Columbia, 1915–1916	Graff, Paul W. (M.A.)	USA	Anatomy of <i>Erythronium americanum</i>
Columbia, 1915–1916	Stevenson, Florence Berman (M.A.)	USA	
Columbia, 1914–1916	Stewart, Ralph R. (Ph.D.)	USA	Flora of Pakistan and Tibet
Columbia, 1916–1917	Coker, Dorothy (M.A.)	USA	Revision of <i>Encalypta</i>
Columbia, 1916–1917	Hazen, Elizabeth (M.A.)	USA	Laboratory identification of pathogenic fungi
Columbia, 1915–1917	Taistra, Sophie Amy (M.A.)	Austria	Genetics, cytology
Columbia, 1914–1918	Adams, James Fowler (Ph.D.)	USA	Developmental biology of conifer rusts
Columbia, 1914–1920	Nishimura, Makota (Ph.D.)	Japan	Algae
Columbia, 1915–1920	Raines, Morris Abel (Ph.D.)	USA	Rust diseases of higher plants
Columbia, 1915–1920	Rank, Frederick V. (Ph.D.)	USA	Shrubs and woody vines of Vermont
Columbia, 1916–1920	Thomas, Harvey Earl (Ph.D.)	USA	Phytopathology of apples and tobacco
Columbia, 1919–1921	Findlay, Hugh (M.A.)	Scotland	
Columbia, 1920–1921	Hastings, George T. (M.A.)	USA	Trees of Santa Monica, California
Columbia, 1916–1924	Orton, Clayton Roberts (Ph.D.)	USA	Seed-borne diseases, genus <i>Phyllachora</i>
Columbia, 1923–1925	Cover, Louise (M.A.)	USA	Plant breeding and propagation
Columbia, 1924–1925	Degener, Otto (M.A.)	Germany	Ferns and flowering plants of Hawaii

TABLE I
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University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
Columbia, 1920-1925	Moore, Clarence E. (Ph.D.)	USA	Plant morphology
Columbia, 1921-1926	Ballard, Charles William (Ph.D.)	USA	Structural variations in <i>Erythroxy-</i> <i>lon</i> leaves
Columbia, 1925-1926	Jacot, Arthur P. (M.A.)	USA	Botany of North America
Columbia, 1925-1926	Janiger, Oscar (M.A.)	USA	Botany of North America
Columbia, 1921-1926	Stauffer, John (Ph.D.)	USA	Chemical engineering
Columbia, 1924-1926	Wodehouse, Roger Philip (Ph.D.)	USA	Phylogenetic value of pollen grains
Columbia, 1926-1927	Krauss, Gertrude H. (M.A.)	USA	Teaching of natural sciences
Columbia, 1926-1928	Godlatte, Amelia R. (Ph.D.)	USA	Botany of North America
Columbia, 1915-1928	Nixon, Ernst Leland (Ph.D.)	USA	The effects of <i>Bacillus amylovo-</i> <i>rus</i> on its host
Columbia, 1925-1928	Schreiner, Ernst J. (Ph.D.)	USA	Guatemalan <i>Cinchona</i>
Columbia, 1925-1928	Wittrock, Gus (M.A.)	USA	Fruit trees and ornamentals
Columbia, 1926-1930	Bowers, Clement G. (Ph.D.)	USA	Rhododendron taxonomy
Columbia, 1928-1931	Bonisteel, William J. (Ph.D.)	USA	Plant breeding
Columbia, 1928-1932	Barrows, Florence L. (Ph.D.)	USA	Propagation of <i>Lycopodium</i> spores
Columbia, 1931-1932	Valasquez, Josefa (M.A.)	Puerto Rico	Mycology
Columbia, 1928-1933	Keur, John Yak (Ph.D.)	Holland	Viral diseases in the <i>Abutilon</i>
Columbia, 1926-1933	Smith, Albert C. (Ph.D.)	USA	Hippocrateaceae, Myristicaceae, and Degeneriaceae
Columbia, 1931-1934	Aronescu, Alicia (Ph.D.)	Rumania	Spore germination in <i>Diplocarpon</i>
Columbia, 1929-1934	Moldenke, Harold N. (Ph.D.)	USA	A monograph of the genus <i>Aegi-</i> <i>phila</i>
Columbia, 1929-1935	Fulling, Edmund H. (Ph.D.)	USA	Gymnosperm systematics
Columbia, 1929-1936	Core, Earl S. (Ph.D.)	USA	Flora of the Erie Islands
Columbia, 1937-1939	Whaley, W. Gordon (Ph.D.)	USA	<i>Taraxacum</i> systematics
Columbia, 1937-1940	Chandler, Florence Clyde (Ph.D.)	USA	Microsporogenesis of <i>Hemerocal-</i> <i>lis fulva</i>
Columbia, 1938-1940	Kavanagh, Frederick (Ph.D.)	USA	Analytic microbiology
Fordham, 1938-1941	Dwyer, John Duncan (Ph.D.)	USA	American species of the Luxem- burgiaceae (Ochnaceae)
Columbia, 1940-1942	Zajdel, Adam M. (M.A.)	USA	A study of the North American beech
Columbia, 1938-1943	Hanson, Anne M. (Ph.D.)	USA	Developmental and cytological study of Chytridiaceae
Columbia, 1943-1944	Hulbary, Robert Louis (Ph.D.)	USA	Morphology of <i>Elodea</i> and <i>Ailan-</i> <i>thus</i>
Columbia, 1937-1944	Metzner, Jerome (Ph.D.)	USA	Morphological and cytological study of <i>Volvox</i>
Columbia, 1946-1947	Birdsey, Monroe R. (M.A.)	USA	Cultivated aroids
Columbia, 1942-1947	Hervey, Annette (Ph.D.)	USA	Basidiomycetes antibacterial ac- tivity
Fordham, 1942-1947	Sullivan, Thomas D. (Ph.D.)	USA	Somatic chromosomes of pedi- greed hybrid petunias
Columbia, 1943-1948	Ajello, Libero (Ph.D.)	USA	Cytology and nutrition of <i>Poly-</i> <i>chytrium aggregatum</i>
Columbia, 1944-1949	Yousef, Hassan (Ph.D.)	Egypt	Metabolites of Hymenomycetes
Columbia, 1944-1950	Vishnlac, Helen Simpson (Ph.D.)	USA	
Columbia, 1951-1952	Bjornsson, Ida P. (M.A.)	Denmark	
Columbia, 1948-1952	Cowan, Richard S. (Ph.D.)	USA	Revision of the genus <i>Macrolob-</i> <i>ium</i> (Leguminosae)
Columbia, 1949-1952	Wurdack, John J. (Ph.D.)	USA	Revision of <i>Brachyotum</i> (Melas- tomataceae)
Columbia, 1949-1953	Bogin, Clifford (Ph.D.)	USA	Revision of the genus <i>Sagittaria</i> (Alismataceae)
Fordham, 1950-1953	Joseph, T. C. (Ph.D.)	USA	Fungal and bacterial inhibition of crown rot
Columbia, 1952-1954	Aristeguieta, Leandro (M.A.)	Venezuela	Ornamental trees of Venezuela

TABLE I
CONTINUED

University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
Columbia, 1954–1955	Ehrle, Elwood B. (M.A.)	USA	The bryoflora of the Genesee County, New York
Columbia, 1953–1955	Pérez, Elena (M.A.)	Puerto Rico	Flora of Puerto Rico
Columbia, 1952–1958	Bunting, George (Ph.D.)	USA	A revision of the genus <i>Spathiphyllum</i> (Araceae)
Columbia, 1951–1958	Eiten, George (Ph.D.)	USA	Regional variation of <i>Oxalis</i> section <i>Corniculatae</i>
Columbia, 1957–1960	Andrews, Lucia M. (M.A.)	USA	Bronxville gardens
Columbia, 1957–1960	Barkley, Theodore Mitchell (Ph.D.)	USA	A revision of <i>Senecio aureus</i> and allied species
Fordham, 1957–1961	Manos-Hodge, Georgia Evangeline (Ph.D.)	USA	Tip growth of <i>Pisum sativum</i>
Columbia, 1960–1964	Kuwahara, Yukinobu (Ph.D.)	Japan	Neotropical Metzgeriaceae
Fordham, 1963–1965	Schulz, Patricia (M.S.)	USA	Germination of <i>Phacelia tanacetifolia</i>
Columbia, 1961–1966	Canham, Susan Carey (Ph.D.)	USA	Taxonomy and morphology of <i>Hypocrea citrina</i>
Columbia, 1964–1966	Carroll, Eileen Shofield (M.A.)	USA	Petiole anatomy of the Guttiferae and related families
Columbia, 1963–1966	Heyman, Arthur (Ph.D.)	USA	Peasant agriculture in the Guyana Highlands
Columbia, 1964–1966	Knight, Frank (M.A.)	USA	Ecology
Columbia, 1964–1966	LaFrance, Charles (M.A.)	USA	
Columbia, 1965–1967	Jones, Gayle C. (M.A.)	USA	Flora of Santo Domingo
Columbia, 1963–1967	Long, Sharon (M.A.)	USA	Salt marsh ecology
Columbia, 1966–1967	Robichaud, Beryl (M.A.)	USA	Plant communities and vegetation of New Jersey
Columbia, 1966–1968	Achuff, Peter (M.A.)	USA	
Columbia, 1964–1968	Grear, John W. (Ph.D.)	USA	Revision of <i>Eriosema</i> (Leguminosae)
Columbia, 1962–1968	Holmgren, Noel H. (Ph.D.)	USA	A taxonomic revision of the <i>Castilleja viscidula</i> group
Columbia, 1962–1968	Johnson, Hyrum B. (Ph.D.)	USA	Pubescence as a structural feature of vegetation
Columbia, 1951–1968	Kopp, Lucille Blum (Ph.D.)	USA	Revision of the genus <i>Persea</i> (Lauraceae)
Columbia, 1962–1968	Whittier, Henry O. (Ph.D.)	USA	Mosses of the Society Islands
CUNY, 1967–1968	Wile, Lenore May (Ph.D., 1981, Fordham)	USA	The biology, control, and utilization of genus <i>Salvinia</i>
Columbia, 1964–1969	Smith, Gary Lane (Ph.D.)	USA	Conspectus of the genera of Polytichaceae (Bryophyta)
CUNY, 1968–1969	Whiffin, Trevor (Ph.D., University of Texas)	USA	Australian flora
Columbia, 1966–1970	Gentry, Johnnie Lee (Ph.D.)	USA	Revision of <i>Hackelia</i> (Boraginaceae)
Columbia, 1967–1971	Doyle, Anna Frances (Ph.D.)	Ireland	Chemosystematics of <i>Nectria</i> (Ascomycetes, Hypocreales)
Columbia, 1967–1971	Liew, Fah Seong (Ph.D.)	Malaysia	Vascular plants, especially pteridophytes
Columbia, 1966–1971	Samuels, Gary J. (Ph.D.)	USA	Taxonomy of <i>Nectriopsis</i> (Hypocreales)
CUNY, 1967–1972	Agostini, Getulio (Ph.D.)	Venezuela	<i>Cybianthus</i> section <i>Conomorpha</i> (Myrsinaceae)
CUNY, 1966–1972	Forero, Enrique (Ph.D.)	Colombia	Systematics of Connaraceae and Fabaceae
Columbia, 1968–1973	Votava, Frank Victor (Ph.D.)	USA	Revision of genus <i>Thouinia</i> (Sapindaceae)
CUNY, 1968–1974	Fay, John J. (Ph.D.)	USA	Revision of <i>Perymenium</i> (Asterales–Heliantheae)
CUNY, 1971–1975	Hill, Steven R. (M.A.)	USA	Revision of <i>Malvastrum</i> (Malvaceae)

TABLE I
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University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
CUNY, 1971–1975	Kirkbride, Joseph H. (Ph.D.)	USA	A revision of genus <i>Declieuxia</i> (Rubiaceae)
CUNY, 1971–1975	Lleras, Eduardo (Ph.D.)	Colombia	Preliminary monograph of Trigon- iaceae
CUNY, 1971–1975	Marttala, Vernon (Ph.D.)	USA	Study of <i>Romanzoffia</i> (Primulace- ae)
Columbia, 1964–1975	Smith, Sharon (Ph.D.)	USA	Ecology of the alpine area in the Adirondack Mountains
CUNY, 1975–1976	Lekagul, Thep (M.A.)	Thailand	Genera of the Fagaceae
CUNY, 1971–1977	Becker, Kenneth (Ph.D.)	USA	Comparison of angiosperm classi- fication systems
CUNY, 1973–1977	García, Cristina Kirkbride (M.A.)	Colombia	Review of the neotropical <i>Isertia</i> (Rubiaceae)
CUNY, 1976–1979	Coradin, Lidio (M.A.)	Brazil	Chemotaxonomic study of <i>Parinari</i>
CUNY, 1976–1980	Carpenter, Steven E. (Ph.D.)	USA	Revision of <i>Crocicreas</i> (Discomy- cetes, Helotiales)
CUNY, 1975–1981	Delendick, Thomas Joseph (Ph.D.)	USA	Systematic review of the Acera- ceae
CUNY, 1978–1982	Balslev, Henrik (Ph.D.)	Denmark	Systematic monograph of the neo- tropical Juncaceae
CUNY, 1977–1982	Lumer, Cecile (Ph.D.)	USA	Pollination of <i>Blakea</i> and <i>Topo- bea</i> (Melastomataceae)
CUNY, 1978–1983	Atehortúa, Lucía (Ph.D.)	Colombia	<i>Elaphoglossum spodium</i> complex (Elaphoglossaceae)
CUNY, 1980–1983	Boom, Brian M. (Ph.D.)	USA	Systematics of Isertieae (Rubi- aceae)
CUNY, 1978–1983	Ertter, Barbara (Ph.D.)	USA	<i>Juncus triformis</i> complex (Junca- ceae)
CUNY, 1981–1984	Clemants, Steven Earl (Ph.D.)	USA	Revision of genus <i>Befaria</i> (Erica- ceae)
CUNY, 1981–1984	Jayasuriya, Anthony H. M. (Ph.D.)	Sri Lanka	Revision of genus <i>Dioscorea</i> (Dioscoreaceae)
CUNY, 1969–1984	Kay Lou Ellen (Ph.D.)	USA	Isoperoxidases in epidermal ex- plants of tobacco
CUNY, 1976–1984	Keel, Shirley Heiu-chun Kuo (Ph.D.)	China	Revision of genus <i>Salpichroa</i> (Solanaceae)
CUNY, 1980–1984	Yost, Susan (Ph.D.)	USA	Habitat partitioning in <i>Viola soro- ria</i> and <i>V. fimbriatula</i>
CUNY, 1982–1986	Callejas, Ricardo (Ph.D.)	Colombia	Revision of <i>Piper</i> subgenus <i>Ot- tonia</i> (Piperaceae)
CUNY, 1982–1986	Pipoly, John (Ph.D.)	USA	Revision of genus <i>Cybianthus</i> (Myrsinaceae)
CUNY, 1982–1987	Brako, Lois (Ph.D.)	USA	The lichen genus <i>Phyllopsora</i> (Bacidiaceae)
CUNY, 1979–1987	Daly, Douglas C. (Ph.D.)	USA	Taxonomic revision of <i>Protium</i>
CUNY, 1982–1987	Henderson, Andrew (Ph.D.)	England	Systematic studies in the Iriartei- nae (Palmae; Arecoideae)
CUNY, 1985–1987	Mena V., Patricio (M.A.)	Ecuador	Revision of <i>Arcytophyllum</i> (Rubi- aceae, Hedyotidae)
CUNY, 1982–1987	Sastre-De Jesús, Inéz (Ph.D.)	Puerto Rico	Neotropical Neckeraceae and Thamnobryaceae
CUNY, 1984–1988	Churchill, Steven P. (Ph.D.)	USA	Revision of <i>Lepidopilum</i> (Calli- costaceae)
CUNY, 1984–1988	King, Steven R. (Ph.D.)	USA	Economic botany of the Andean tuber crop complex
CUNY, 1983–1989	Acevedo-Rodríguez, Pedro (Ph.D.)	Puerto Rico	<i>Serjania</i> section <i>Platyococcus</i> (Sapindaceae) systematics
CUNY, 1985–1990	Frame, Dawn (Ph.D.)	USA	Revision of <i>Schoenocaulon</i> (Lili- aceae–Melanthieae).

TABLE I
CONTINUED

University, dates of attendance	Name (degree)	Country of origin	Area(s) of interest
CUNY, 1986–1990	Nanakorn, Weerachai (Ph.D.)	Thailand	Cytology and anatomy of Thailand grass species
CUNY, 1986–1990	Tsou, Chih-Hua (Ph.D.)	Taiwan	Embryology of Lecythidaceae
CUNY, 1985–1991	Beck, Hans T. (Ph.D.)	USA	Taxonomy and economic botany of <i>Paullinia</i>
CUNY, 1985–1991	Lamont, Eric (Ph.D.)	USA	<i>Eupatorium</i> section <i>Verticillata</i> (Asteraceae) taxonomy
CUNY, 1987–1991	Lowen, Rosalind (Ph.D.)	USA	The genera <i>Nectriella</i> and <i>Pro-nectria</i>
CUNY, 1986–1991	Williams, David E. (Ph.D.)	USA	Genetic diversity of <i>Arachis</i>
CUNY, 1988–1992	Kawasaki, Marfa-Lucía (Ph.D.)	Brazil	Systematics of <i>Erismia</i> (Vochysiaceae)
CUNY, 1988–1992	Nagai, Ikue (Hasegawa) (Ph.D.)	Japan	Molecular systematics of Cimicifugeae (Ranunculaceae)
CUNY, 1987–1992	Rodríguez, Katia F. (Ph.D.)	Brazil	Endophytic fungi in <i>Euterpe oleracea</i>
CUNY, 1988–1992	Shen, Chung-Fu (Ph.D.)	China	Monograph of genus <i>Fagus</i> (Fagaceae)
CUNY, 1987–1993	Franco, Ana Esperanza (Ph.D.)	Colombia	Genus <i>Lepiota</i> in Colombia
CUNY, 1986–1993	Kisseadoo, Samuel (Ph.D.)	Ghana	Ecology of Bobiri Forest, Ghana
CUNY, 1990–1994	Morton, Cynthia M. (Ph.D.)	USA	Pollen and wood morphology of the Ebenaceae
CUNY, 1989–1995	Arbelaez, Alba (M.S.)	Colombia	Ferns of Colombia
CUNY, 1988–1995	Valdespino Quintero, Iván (Ph.D.)	Panama	Revision of <i>Selaginella</i> subgenus <i>Heterostachys</i>

sistant curator at the U.S. National Museum in the Smithsonian Institution. One year later, he accepted a faculty position at Stanford University and remained there until his retirement. During the course of his active scientific life, he wrote numerous floristic treatments for California and revisions of the genus *Penstemon* for the southwestern United States.

Bernard O. Dodge, a noted mycologist, completed his doctoral studies in 1912. His research focused on the taxonomy and morphology of the Ascobolaceae. After graduation he served for many years as pathologist at the U.S. Department of Agriculture's Bureau of Plant Industry, where he continued his research and long record of publication.

Otto Degener received a master's degree from the Garden's program in 1925. His botanical interests focused on the ferns and flowering plants of the South Pacific. He worked as a naturalist for the Hawaii National Park and later joined the faculty at the University of Hawaii. Even though his work was interrupted by fighting during World War II, he managed to complete *Flora Hawaiiensis*, a monumental achievement.

Albert C. Smith, another NYBG graduate in-

terested in the South Pacific flora, graduated in 1933. His studies covered a wide range of taxa including the Eleocarpaceae, Combretaceae, Piperaceae, Myristicaceae, and Degeneriaceae (named after Otto Degener). Smith worked at the Arnold Arboretum of Harvard University for 13 years prior to employment by the Botany Department of the U.S. National Museum, Smithsonian Institution.

Harold N. Moldenke, the well-known Verbenaceae specialist, graduated in 1934. An avid collector, his specimens arrived at the NYBG Herbarium from all parts of the Western Hemisphere. His topics of study also included the systematics and economic botany of the Eriocaulaceae. In 1933 he founded the botanical journal *Phytologia*. After two decades of serving on the curatorial staff at the Garden, Moldenke became Director of the Trailside Nature and Science Center in Mountainside, New Jersey, where he pursued his interest in public education and the publication of popular plant guides. In 1967, he left Trailside to become a biology professor at William Patterson State College in New Jersey.

Edmund H. Fulling, class of 1935, focused his

studies on gymnosperm anatomy and taxonomy. As an economic botanist and NYBG curator, he wrote on such topics as wood products and paper making. He was quite active in publication management and he founded and served as the first editor of *Economic Botany*. Today, the Society for Economic Botany has an Edmund H. Fulling Award for best student paper presented at the annual meeting. He was also a founder of *The Botanical Review*, and upon his passing he left an endowment to support the journal. Since the time of Edmund Fulling, many fine botanists have emerged from the NYBG Graduate Studies Program, their careers forming part of the Garden's lasting contribution to botany.

Despite the achievements of its botanical graduates, the administration of Columbia University decided in the late 1960s to reduce its commitment to organismal studies and focus its biological efforts on laboratory-oriented research. As part of this new focus, Columbia discontinued the joint program in botany with the Garden. In the wake of this disappointing development, a new program was forged in 1968 with the cooperation of a branch of Hunter College, later renamed Lehman College, of the City University of New York (CUNY). The agreement was drafted with the help of Bassett Maguire, Howard Irwin, and Arthur Cronquist from NYBG and Leonard Leaf, Mary J. Kingkade, Norman R. Eaton, and Jack Valdovinos from CUNY. The new program differed from the old in that courses would be offered through Lehman College with CUNY as the degree-granting institution. Today, the association with CUNY continues to be one of the most active of the Garden's joint programs.

In recent years the Garden has sought to broaden the scope of its Graduate Studies Program by developing new partnerships with other universities. To take advantage of the excellent faculty in systematics and the resources of the Bailey Hortorium, the Garden entered into an agreement in 1992 with the Institute of Systematic Botany at Cornell University. This is a small but vital program that attracts students of the highest caliber. Because of a desire to strengthen the curriculum in molecular biology, the Garden established an affiliation with the Department of Biology at New York University in 1993. With

the help of a grant from the National Science Foundation, this program has grown rapidly and has attracted students of outstanding ability who will be trained as molecular biologists with significant field experience. Following a decade of fruitful collaboration, Garden officials signed a formal agreement with Yale University in 1995. The program, affiliated with the School of Forestry and Environmental Studies, focuses on agroforestry, forest ecology, and silviculture in the tropics. This course of study holds great promise because of the urgent need for tropical forest studies in threatened ecosystems where biodiversity is greatest. And finally, as the pendulum swings back again, a new program with the Center for Environmental Research and Conservation (CERC) of Columbia University has been initiated. The strengths of this program are a new emphasis on conservation, a diverse Biology Department, and a vibrant Anthropology Department at Columbia. Such a combination provides avenues for studies that focus on plant-human interactions and mechanisms for future conservation of resources. All of these programs have been modeled after the design established during the original agreement between the Garden and Columbia University: students can register concurrently at their selected university and at the Garden, and they complete their research using the facilities of their respective universities and the Garden's resources, including the outstanding collections of the Garden's library and herbarium. Thus is the Garden at the nucleus of an exciting group of programs designed to meet the multifarious challenges of botanical research for today and for the coming millennium.

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