

A Century of Botany and Botanists at DePauw University¹

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DePauw was founded in 1837 as Indiana Asbury University. From the very beginning of the University, science was recognized as an important part of the curriculum, with Geology and Mineralogy, Mathematics, Chemistry, and Natural Philosophy or Physics appearing among the first courses of study offered. The first Professor of Mathematics and Natural Science was the Rev. Mathew Simpson who was also the University's first President. He continued to teach all of the science offered until 1841 when he was succeeded by the Rev. W. C. Larrabee who, in turn, was one year later replaced by C. G. Downey who continued to teach mathematics until 1852 when he left to become Professor of Chemistry in the new School of Medicine which was being established by Asbury at that time. Professor Larrabee was much interested in nature and introduced a number of unusual species of trees on the campus from his native state of Maine, the Orient, etc. These have mostly since disappeared.

In 1849, Dr. Joseph Tingley became Professor of Natural Science and held this position for thirty years, until 1879, when, in a general reorganization, he along with several others were dismissed. He had been made Vice-President of the University in 1860 but also continued as Professor of Natural Science.

During Tingley's tenure the University experienced intermittent periods of expansion and retraction. In 1849 a Medical School was auspiciously started in Indianapolis which, however, continued for only three years. In 1853 a Law School was inaugurated. At first, Natural Science, including Animal Physiology and Natural History, which was chiefly Zoology, represented the offerings of the biological sciences.

It was not until the college year of 1859-1860 that Botany was first given as a distinct course. Professor Tingley offered it during the third term of the sophomore year and Gray's textbook was used. He continued offering botany for one or two terms each year, with either Gray or Wood as a text. At the time, these were the principal botanical texts, although in 1877 Sach's text was also used. During this time, the course consisted of three half-hour lectures each week; certainly not extensive. Tingley was primarily interested in mathematics and in physics but, because of his courses in botany, is to be considered as the first teacher of that subject at Asbury. At the same time he offered other science courses which between 1875 and 1878 included a one-term course in zoology each year.

Dr. John M. Mansfield succeeded Tingley in 1879, and in the year 1879-1880 offered 1½ terms of botany and a half-term course in Sanitary Science, presumably reflecting the influence of the work being done by Pasteur, Koch and others in the Old World at about this time. Previous to coming to Asbury, Mansfield had traveled in Europe where he visited laboratories, and had also developed laboratories at Iowa Wesleyan University.

Considering the religious heritage of the University, it would not be surprising that the publication of Darwin's *Origin of Species* in 1859

1. Thanks are due Dr. Geo. B. Manhart, Emeritus Professor of History at DePauw, for furnishing some of the data used in this paper.

would provoke a certain amount of discussion as it certainly was the great controversial issue of that period. As early as 1850, Larrabee gave lectures on the "scientific evidences of natural and revealed religions." He vigorously opposed "new-fangled systems and notions" when inconsistent with "correctly interpreted teachings of the Bible." He claimed that the evidence was clear that the earth was created in 6 natural days 6,000 years ago. We also read in the *Asbury Review* of January 1874 that Prof. Tingley "demolished the theory of the Evolutionists, Darwin and the rest." It is noted that Gray's text was not listed for some of the years, perhaps because of his very positive stand in support of Darwin.

In 1881, Bessey's *Botany for High Schools and Colleges*, published the previous year, supplanted the Gray and Wood texts previously used. At this time the department was known as *Physics and Biology*, but the following year it was divided, with Dr. Mansfield continuing as the Professor of *Biology*. At this time he was offering one term of botany and three terms of zoology. In the catalogue for 1881 we read: "First and Second Honors were conferred on students who carried out appropriate work beyond class requirements." This represented an interesting experiment with "Honors" which continued for a number of years for good students willing to do extra work. Among the books listed as available for such additional work were: Sach's *Botany*, von Zippel's *Pflanzenfamilien*, Magnin's *Bacteria*, Wood's *Fresh Water Algae*, Harvey's *Marine Algae*, and Eaton's *Ferns of North America*, all important works of that time. We also note the following: "The freshmen study Botany the third term, with Bessey's Textbook, and with microscopes and reagents make experiments and observations on the morphology and physiology of plants. A well-written notebook, drawings, to scale in water colors, or the morphology; microscopic mountings; pressed flowers; analysis of flowers, with Wood's Check-Tablet, are some of the methods of study. The class makes large collections in the spring, and especially during vacations, to increase their knowledge and have an abundance of material in the herbarium for investigation the rest of the course." In this connection, it is interesting to recall that laboratory methods of teaching had been introduced into America between 1860 and 1870, and it is reported that the botanical department of Harvard University as late as 1865 did not own a compound microscope. It is evident, therefore, that Asbury was abreast of the times in its science teaching. The walls of the Museum at that time were filled with pressed plants, drawings in water colors, etc. of a large number of orders of plants arranged according to the Besseyan system. Fossil plants were also included. The Professor of *Biology* or of *Natural Science* from the beginning had been also the Curator of the Museum.

In 1884 the name of the institution was changed to DePauw University in honor of a prominent benefactor. That year also saw the establishment of a School of Horticulture which offered a number of courses relating to plants including, in addition to Botany as such, Vegetable Physiology, Forestry, Landscape Gardening, and Vegetable Gardening. Although started with enthusiasm, the School continued for only two years, registering 13 students the first and 29 the second. From 1883 to 1886 there was no Professor of *Biology* and no courses were offered aside from those in the School of Horticulture which apparently was taking over for the

time being the botany courses normally offered in the College of Liberal Arts.

In 1886, O. P. Jenkins, A.M., M.S., became Professor of Biology and in that year had three student assistants. He occupied this position until 1891. He offered one term of biology, one of elementary zoology and one of elementary botany, using Gray, and Arthur, Barnes & Coulter's Handbook for Plant Dissection as texts. Advanced work in botany was also offered, with diatoms, algae, fungi, and ferns listed as some of the special topics being studied. He had good equipment for his work including 34 compound microscopes. Laboratory work in science had been required from almost the beginning of the University and, beginning with Professor Tingley, had continued to occupy an increasingly prominent rôle in the curriculum. At this time DePauw required all students in the regular course of study to have two courses in Physics, Chemistry, or Biology.

Professor Jenkins left DePauw for Stanford University at the time of the founding of that University in 1891. His specialty was ichthyology and he helped Jordan and Evermann in their work. He took two of his DePauw students, F. M. McFarland and George Price, with him and both later became noted members of the Stanford faculty. Another DePauw student who had assisted Jenkins was Daniel T. McDougal who received the B.S. degree at DePauw in 1890, A.M. in 1893, and the honorary LL.D. in 1900. He later became director of the Carnegie Institution's Laboratory for Plant Physiology and was one of the so-called starred scientists in America and internationally known for his work.

In 1891 the department of biology was divided to form separate departments of Botany and Zoology. Dr. Lucien M. Underwood was appointed Professor of Botany and department head. He remained at DePauw for four years during which time he offered a strong course of study composed of one year of general botany, one on the Cryptogams, and one of Plant Physiology and Biological Problems. In 1895 he was released from his position on the plea of President John of the financial necessity of reducing faculty, and the two departments were recombined.

Underwood came to DePauw from a professorship of Biology at Syracuse University at a considerable reduction in salary because he felt he would have greater opportunities for his work in a separate department such as DePauw was offering him. Upon leaving DePauw, he became Professor of Biology in Alabama Polytechnic Institute and, in 1896, Professor of Botany at Columbia University as well as a member and Chairman of the Board of Scientific Directors of the New York Botanical Garden, which positions he retained until his death in 1907. He made extensive collections during his lifetime which are now, for the most part, in the herbarium of the New York Botanical Garden.

He was especially interested in the lower groups of plants and was the author of several noteworthy books together with about 200 scientific papers, including a number published while at DePauw. He prepared the text on the Hepaticae for the 6th edition of Gray's Manual in 1890.

He was a member of the original committee on botanical nomenclature at the A. A. A. S. meeting at Rochester in 1892, and was elected the American delegate to the Genoa Botanical Congress of the same year, and also to the International Botanical Congress at Vienna in 1905 where he pre-

sented the American viewpoints relative to the Type Concept and other debated points. He was one of the Vice-Presidents at the Congresses and took part in the decision to make 1753 the beginning date for botanical nomenclature. He served as Vice-President of the Botanical Section of the A. A. A. S. in 1894 and, together with Dr. Britton of the New York Botanical Garden, helped launch the publication of the monumental encyclopedic *North American Flora* and was one of its earlier editors. He was appointed a member of the committee which helped found the Botanical Society of America and in 1899-1900 was its President, and was also Chairman of the section on Biology of the A. A. A. S. in 1904-1905.

Considering his competence and his international reputation as a botanist, it would seem to have been a major error on the part of DePauw when it let him go and thus lost one of the most distinguished nationally as well as internationally known American scientists as a member of its faculty.

In 1894, Mel T. Cook was elected to become instructor in charge of the department. He remained at DePauw until 1904, being advanced to a professorship in 1897. He had entered the Preparatory School at DePauw in 1885 taking courses in botany under Professor Jenkins whom he held in the greatest esteem. His work was interrupted for two years after which he returned and had courses under Professor Underwood. For his senior year he transferred to Stanford where he obtained the A.B. degree in 1895. In 1904 he resigned from DePauw to go to Cuba as Chief of the Department of Plant Pathology at Santiago de las Vegas. Professor Cook was a most energetic and inspiring teacher. Among his students at DePauw who were later to distinguish themselves in the field of botany were F. W. Foxworthy, Guy M. Wilson and H. H. York. He initiated the DePauw Biological Association for the Advancement of the Study of Biology. Funds were collected which were used for student scholarships in the department and to provide outside lecturers among whom were W. A. Locy, C. H. Eigenmann, H. C. Cowles, O. W. Caldwell, Geo. T. Moore, and Amos Butler. It was during his tenure that Alfred Dickey, one of his former classmates at DePauw, set up an endowment fund for a departmental library in honor of his father, a former governor of North Dakota. This bequest amounted to \$2,500 of which \$500 was for the immediate purchase of books and the balance to remain as an endowment, the income of which was to be used for the purchase of books each year. The department is still enjoying the fruits of this bequest.

In 1904 Cook was succeeded by Dr. Howard J. Banker who remained at DePauw for 10 years during which time the department enjoyed a steady growth. Banker was a very personable man, well-liked by students and associates. He was an authority on the Hydnaceae and also in the field of Eugenics. Upon leaving DePauw he carried on eugenics research at the Eugenics Research Office of the Carnegie Institution.

The following five years saw a procession of Acting Professors of Biology. Dr. D. W. Davis served one year to be followed by Dr. H. R. Glasscock who in turn was followed by Walter N. Hess in 1917. Hess had his A.M. from Oberlin College and was completing his doctorate at Cornell University at the time of his appointment. These three men were primarily zoologists and botany was not particularly stressed. During 1918-1919

Hess was on leave for war duty and Dr. B. E. Quick served as Acting Professor. He offered a variety of botany courses including, for the first time, a semester course in bacteriology.

A. M. Johnson was an instructor during the summer sessions of 1917 and 1919. Hess returned from the army in 1919 and resumed leadership of the department.

The writer, who had the B.S. degree from Michigan State University, A.M. from the University of Nebraska and the Ph.D. from the University of Illinois, was appointed Assistant Professor of Biology in 1919 by President Gross with the understanding that Botany was to be developed coordinate with Zoology. He was promoted to Associate Professor of Biology in 1920 and to Professor of Botany the following year. New courses of botany were introduced to provide students with a general background in the subject and to prepare them for graduate study. His chief interest has been in the field of taxonomy especially with the genus *Cuscuta* and the family Piperaceae.

The department quickly expanded with the addition of two instructors and in 1923 Dr. George Gage was added as Assistant Professor of Botany. In 1924, the Department of Botany was established separate from that of Zoology but the following year President Murlin recombined them. They remained as the Department of Biology for the following four years but were again divided in 1928 and have so continued.

Dr. Gage resigned in 1927 and was succeeded by Dr. Grace Barkley who died suddenly in the spring of 1930. Dr. Winona H. Welch, a specialist in the Bryophyta, was appointed Assistant Professor succeeding Dr. Barkley. She received her A.B. degree from DePauw, the A.M. from Illinois University, and the Ph.D. from Indiana University from which institution she came to DePauw. She was promoted to Associate Professor in 1934 and to Professor of Botany in 1939. She is the author of *Mosses of Indiana* and a notable monograph on the moss family Fontinalaceae, as well as many scientific papers. Among many other recognitions, she is a past President of the American Bryological Society, and also of the Indiana Academy of Science. She assumed the headship of the department in 1956, upon the retirement of the writer, and reached retirement herself in 1961.

George Burkett, A.B., A.M., was appointed Instructor in 1930 and remained in the department for six years. In 1940 Howard Youse, who had the A.B. from DePauw and the M.S. from Oregon State College, was appointed Instructor and has continued on the staff, with the exception of war service and work on the doctorate. He was promoted to Assistant Professor in 1946, Associate Professor in 1952, Professor of Botany in 1955, and now succeeds Dr. Welch as department head. He obtained the Ph.D. from Purdue in 1951. His chief interest is in the field of Plant Physiology. When the writer, who for a number of years had been devoting a major part of his time to the teaching of the courses of bacteriology, retired, Dr. Anne M. McCarthy of Michigan State University was appointed to take over this part of the work. She remained for one semester only, whereupon Robert Fletcher, who had received his A.B. and A.M. degrees in bacteriology at DePauw and was currently employed in the Admissions Office of the University, was asked to take over this work and

has continued in this position. At present, he is carrying on work toward the Ph.D. at Purdue University and the writer, who currently holds the position of Curator of the Herbarium, is filling his place. Dr. W. P. Adams, B.S. and M.S. from the University of Georgia and Ph.D. from Harvard, comes from the State University of Florida as Assistant Professor of Botany. His field of research is taxonomy and he takes over courses vacated by the retirement of Dr. Welch.

Bacteriology has continued to be taught in the department since 1918 when it was first introduced. In 1946 the University for the first time allowed students to offer Bacteriology courses to satisfy the science requirement for graduation. In 1947 the offerings in the subject underwent considerable revision in order to permit students the opportunity of obtaining a major in it, and, at the same time, the department name was changed to that of Botany and Bacteriology. With the introduction of a Medical Technology program and a School of Nursing, increasing emphasis has been placed on this part of the departmental offerings.

Through the years, the department has been variously housed in different buildings on the campus. For many years it occupied quarters in what was then known as Middle College, a brick building originally designed as a dormitory. Upon the condemnation of that structure, the department was removed to a temporary dormitory built in 1921 where it remained until 1940 when the present John Harrison Hall of Science, which provides enlarged quarters, was completed. An adjoining greenhouse was the gift of the Eli Lilly family.

In 1939, Professor Trelease of the University of Illinois and a former professor of both Yuncker and Welch, presented his personal botanical library of hundreds of items to the department in honor of Dr. Agnes Chase, the noted agrostologist and a personal friend.

The Lilly Endowment Foundation in 1956 made a grant of \$15,000 for the purpose of improving and enlarging the herbarium and for the purchase of books in the field of taxonomy. This has greatly enhanced the efficiency of the work, and the herbarium, which has greatly increased in size in more recent years, is now completely housed in modern steel cases.

During the difficult war years, with Dr. Youse in service, and other disruptions, a number of instructors saw brief service in the department, including Joseph McMennamin, Kenneth Wagner, Emory Simmons, Charles Reimer, and, more recently Mrs. Marjorie Bumbalek and Mrs. Mabel Esten. While on leave during the year 1932-1933, the writer's courses were continued by Ethel Yuncker, his wife, as Acting Professor of Botany, and again, while on leave in 1939-1940, Dr. Welch acted as head of the department and his courses were taught by Dr. R. F. Dawson, a former DePauw graduate and now Professor at Columbia University.

Thus, with temporary lapses, botany has continued to be taught at DePauw with increasing emphasis for the past century.