

## John Merle Coulter, Botanist

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It is most fitting that John Merle Coulter be honored in this symposium, for in addition to being a founding member of the Indiana Academy he served as its second president in 1887, was one of the editors of the Proceedings in 1892, president of Indiana University from 1891 to 1893, and had long associations with both Hanover College and Wabash College. During his lifetime he was one of the leading botanists in the world. His brother, Standley Coulter, should be mentioned also, for he, too, was a founding member of the Academy, served as its president in 1896, and was dean of the School of Science at Purdue from 1905 to 1926. My task of preparing this talk has been relatively simple, for Andrew Denny Rodgers wrote a biography, entitled *John Merle Coulter, Missionary in Science*, which was published by the Princeton University Press in 1944, and nearly all of the material that follows comes from it.

John Finley Crowe, the grandfather of John Merle, came to Hanover, Indiana in 1823 where he founded Hanover Academy, which was to become Hanover College in 1832. Moses Standley Coulter arrived at Hanover in 1844 and after graduation he married Caroline Crowe and went to Ningpo, China as a missionary. John Merle was born there on November 20, 1851. Two years later and before the birth of Standley, Moses Standley died, and in 1854 Caroline and her children returned to Indiana. In 1865 or 1866 John Merle enrolled at Hanover where his greatest interest was Latin. When he was a junior he studied botany with Frank H. Bradley, who was primarily a geologist. Soon thereafter, Bradley left Hanover College. The story was that he had admitted "that the geologic record indicated an origin of the earth not entirely consistent with an infallibly literal interpretation of the biblical story of creation." That was enough for the trustees of the college. He was replaced by Edward Thomas Nelson who became another influence in developing John Merle's interest in plants.

Coulter was graduated at the head of his class in 1870 with Latin still his greatest interest, and he went to teach Latin at a Presbyterian girls' school where his mother was teaching. He didn't stay long, however, for Bradley, who was now chief geologist of the United States Geological and Geographical Surveys of the Territories, asked him to serve as assistant geologist. On May 24, 1872 he found himself in Utah. The flora in the West, so different from that of Indiana, immediately fascinated him, and when his work in geology was finished for the day, he collected plants. Later he was made official botanist of the expedition, and he came into contact with Thomas Conrad Porter, a leading botanist of the time, who was also to influence his development as a systematic botanist. The result of his collecting was their publication of a *Synopsis of the Flora of Colorado* in 1874.

Coulter returned to Hanover in 1874, not as botanist or geologist but in the chair of Latin. However, in the same year he also became acting professor of natural sciences and through his own request he was transferred to that position. Coulter was now a full time botanist. His first new endeavors were devoted to the flora of Indiana, and in 1875 he established a journal, the *Botanical Bulletin*, whose name was changed to *Botanical Gazette* two years later. It is still being published at the University of Chicago, making it one of the oldest botanical journals in the country. He continued to serve as editor until the time of his death, and Coulter's editorials and papers in it through the years allowed him to have a prominent role in the development and interpretation of botany in the United States.

In July, 1879 just before Hanover had made arrangements to purchase his herbarium, Coulter announced that he had accepted a position at Wabash College. Wabash, like Hanover, was a Presbyterian school. It has been suggested that one of the reasons he left Hanover was "to aid the school financially," because the increase in the number of teachers and their salaries was putting a financial strain on the school.

Coulter's research had been entirely in systematics until this time, and in the summer of 1879 he went to Harvard for studies. He was already acquainted with Asa Gray of that institution and he had used his book as a student at Hanover. He enjoyed a lively exchange of letters with Gray through the years. Gray was without question the leader in botany in the United States, and Coulter had great respect for his opinion. That summer, however, he studied anatomy and physiology with George Lincoln Goodale. He returned to Wabash in the fall and returned to Harvard again the next year where he served as Goodale's laboratory assistant.

His interest in morphology, for which he is most famous, had already developed, and his earliest contribution in this area, "Development of Dandelion-Flower," was given at the meeting of the American Association for the Advancement of Science in 1893; he had begun very early the practice of attending scientific meetings whenever possible. His taxonomic work still continued, however. He is perhaps best known for his contributions to the Umbelliferae, the carrot family, done with his former student, Joseph Nelson Rose. In 1887 he wrote Gray, "As you know for a year now I have been eating, drinking and sleeping Umbelliferae." In the next year Coulter and Rose's "Revision of the North American Umbelliferae" appeared. Shortly afterwards came several floristic works, the second edition of the *Manual of Botany of the Rocky Mountain Region*, the sixth edition of *Gray's Manual* done with Sereno Watson and the *Flora of West Texas*, which had been commissioned by the United States Department of Agriculture. His taxonomic treatments were typical of those of that age, but he was aware that taxonomy was not static. In 1890 in a talk he stated that "the real systematic botany is to sum up and utilize the results of all other departments." The other departments, of course had little to offer at that time. Later he was to emphasize the importance of using an experimental taxonomy, but he was never to carry out such studies himself.

For his presidential address at the Indiana Academy in 1887 he spoke on "Evolution in the Plant Kingdom." His views on the subject had changed somewhat since he had given a similar address at Hanover ten years earlier. Evolution and phylogeny were to be two of his greatest interests the rest of his life.

When David Starr Jordan left Indiana University to go to Stanford in 1891, Coulter was offered the presidency. In 1884 he had received an honorary doctor of science degree from Indiana University, and in the next year they had sought him as professor of botany, but he had elected to stay at Wabash. This time, however, he accepted the offer. After Jordan had failed to persuade him to accompany him to Stanford, he was his choice to replace him.

His stay at Indiana University was all too brief, for in 1893 he accepted the presidency of Lake Forest College at Lake Forest, Illinois. The details as to why he left Indiana University so soon are not known. It could have been that he did not like delivering official addresses, entertaining legislators to ask for money, and all the administrative details that the position demanded. Lake Forest was a smaller school so perhaps he expected to find more time for botany. He was also to receive a larger salary and would be free of politics. Moreover, Lake Forest was a Presbyterian school. The herbarium which he had taken from Wabash to Indiana University went to Lake Forest with him, "cases and all."

In 1894 he also became a lecturer at the University of Chicago. Charles J. Chamberlain had come to Chicago in 1893 as a student. He had been promised that

a course in botany would be offered and none was, so he went to the president of the university and protested, threatening to go to a Chicago newspaper with the story. As a result Coulter was brought in to give lectures on Saturday mornings and about 40 students attended. In 1896 he resigned from his position at Lake Forest to accept an appointment as head professor of botany at the University of Chicago where he was to spend most of the rest of his life.

At Chicago he built a truly great department with a faculty made up of people trained at Harvard or Chicago. His first group of students at Chicago received their Ph.D.'s in 1898. The emphasis now was on physiology and ecology in addition to morphology. In 1896 Henry Chandler Cowles, accompanied by Coulter and other students, had begun to classify the vegetation of the sand dunes, and Cowles' thesis "The Ecological Relations of the Sand Dunes Flora of Northern Indiana," was one of the pioneering efforts in the new field of ecology. By 1916, 80 students had received their doctorates in botany at the University.

Taxonomy never developed at Chicago because of the lack of time and the lack of money, more and more of which was going to purchase experimental equipment. In 1907 the university's herbarium, including Coulter's own specimens, about 30,000 mounted and 14,000 unmounted sheets, was deposited at the Field Museum, and in 1932 it was made a gift to the Field Museum. At the turn of the century Coulter had largely given up taxonomic work. He had always wanted to make a more detailed study of the cacti but he realized that field work in the Southwest would be necessary and that the demands on his time would not allow it. Since his early days in Indiana and the West, he had done little field work, most of his taxonomic studies having been conducted from others' herbarium collections.

While at Chicago Coulter's reputation continued to grow, and he received many honors. Among them were election to the National Academy of Science in 1909, the presidency of both the American Association for the Advancement of Science and American Association of University Professors in 1918, and the receipt of an LL.D. from Indiana University in 1920. In addition, there were honors from foreign countries.

He was always in great demand as a lecturer, not only on research but on education, religion, and the role of botany in the public's welfare. At the celebration of the 25th Anniversary of the Indiana Academy he spoke on "Recent Progress in Botany."

He loved to write and he was most prolific. In addition to his editorials in the *Botanical Gazette* and his numerous scientific papers, he published a number of textbooks, both for colleges and high schools. To give some idea of his versatility he also published a book, *Fundamentals of Plant Breeding*, in 1914, and with his son, Merle, a *Plant Genetics* in 1918. To my way of thinking, his greatest work was the *Morphology of Gymnosperms*, co-authored with Chamberlain, and first published in 1910. It is this work in the revised edition with which I am most familiar.

The last book he wrote, *Where Evolution and Religion Meet*, written in collaboration with his son Merle was published in 1925. Coulter was a deeply religious man but he never saw science as being hostile to religion. Although a strong believer in evolution, his faith in God was never shaken. He wrote frequently on the subject. Some of the titles of his articles—"What Biology has Contributed to Religion," "The Making of Religious Citizenry through Biology," the "Religion of a Scientist," and perhaps the most famous of all, "The Proper Use of Science by the Pulpit" published in 1899, give an idea of his contributions in this area.

In 1920 Coulter met with Col. W. B. Thompson to help plan for a foundation for plant research. Coulter called upon his former student, William Crocker for aid. The eventual result of this was the founding of the Boyce Thompson Institute at Yonkers, N.Y. and Crocker became the Director in 1924. The next year Coulter retired from the University of Chicago at the age of 74 and became chief scientific adviser of the

Boyce Thompson Institute. He devoted most of his remaining days to publicizing the work of the Institute and the role of botany in the service of humanity. He died at Yonkers on December 23, 1928.