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OF

JOHN MERLE COULTER

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BY

WILLIAM TRELEASE

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*John M. Coulter*

## JOHN MERLE COULTER

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BY WILLIAM TRELEASE

Heredity and environment both contributed to making John Coulter what he became. He was born at Ningpo, in China, where his parents were engaged in religious missionary work. Widowed when he was only two years old, his mother returned to her earlier home in Hanover, Indiana, where her two sons—for his younger brother, Stanley, also had been born in Ningpo—grew up tutored and precepted by a cultured mother and stimulated by attractive and refining surroundings.

Among American botanists who have achieved distinction he falls on the transition line between those to whom preparation for earning a livelihood lay apart from training in botany as a vocation, and those to whom such training is professional. Liberally rather than specially educated, he had found himself in the field of his life work before obtaining the doctorate in philosophy, which is considered the open sesame to preferment in academic circles today though it was all but unknown among American botanists when his work began. His own scholarship was stamped with the academic approval of Hanover College, which gave him the bachelor's degree in 1870 and the master's degree in 1873, and of the University of Indiana, from which he won the degree of doctor of philosophy in 1882 and received the honorary doctorate of laws in 1920.

Coulter was richly endowed by nature for a successful career as an educator. An impressively large and comely man, he demonstrated early his unusual talent for clear analysis and clean-cut presentation of subject-matter, which, though normally free from polemics and personal criticism, neatly disposed of contradictory opinions and left in the minds of his hearers that sense of finality dear to the student hearer; and his was the rare faculty of holding the reins of the teacher with that combined firmness and gentleness which guides without any sense of compulsion, so that from the earliest to the latest those

of his students who survive him hold him in affectionate as well as reverential memory.

One of the most evasive as well as most significant points in every successful life is that at which a life-passion appears. This turning point in John Coulter's case came in his senior year at Hanover College, when—as Mrs. Coulter has written charmingly—a young man came to the campus to teach the natural sciences, Professor E. Thomson Nelson, who “had a lively interest in hunting down the flowers about the lovely surrounding hills. John was his almost constant companion, and, as he seemed to be equally interested in everything he studied, became for the time being a ‘botany fiend’”: to this localized first interest, it may be remembered, he returned frequently in later years. Those of us who knew him in later life were aware that he limped slightly in walking. Through his college life this impediment, resulting from a very serious wound in one knee, seems to have been far greater, and his field activities are the more noteworthy because at this time he was compelled to use crutches and was neither strong nor with that evidence of sturdy health familiar to those who knew him later.

To Dr. Frank H. Bradley, Nelson's predecessor at Hanover, and at that time his preceptor in geology, is credited the start toward health and fame in Coulter's life. Bradley was appointed by Hayden when the United States Geological Survey was organized in 1872 and he gave Coulter an opportunity to go into the field with him as an assistant in geology—an outing that returned him to the haunts of men permanently reconstituted.

Well schooled, he had begun his teaching career, immediately after graduation, in a girl's school at Logansport, Indiana, associated with his mother, where he taught Latin nominally, with incidental inclusion of “Greek or any study that needed a teacher.” Knowing his educational environment, it is easy to see how easy the transition was from the Latinist to the geologist. The conversion of the geologist into the botanist is as clearly forecast in the same knowledge—given only the opportunity.

Some of those who have heard Coulter lecture on his early western experiences have heard him explain, whimsically, that this opportunity came through his inability to play cards.

The story is that whatever tasks he may have performed as a geologist-assistant on the Survey, he could not refrain from collecting the odd plants—very unlike those of the Mississippi Valley—that he found in this “Far West.” When the daytime activities of the organizing field party were ended, Coulter found his evening diversion in giving to plants picked up here and there through the day that affectionate looking-over that every real botanist knows to be the prime reason for putting them in press. One evening when he was thus trifling with his specimens while his companions were engaged in the more generally interesting pastime of a social game, a voice from over his shoulder inquired what sort of a game of solitaire *that* was. This was early in the season, at Ogden, Utah, and the voice belonged to Hayden, who had dropped in unannounced, and who had the good sense to harness in an unrepresented field the enthusiast that fate had played into his hands, even though he could not cripple the geological side of the Survey by relieving him from the work for which his original appointment was made.

The immediate result of the opportunity this gave Coulter may be read in the published results of his work on the Hayden survey; a “Synopsis of the Flora of Colorado,” prepared in collaboration with Professor T. C. Porter (1874), and a report on the botany of Montana, Idaho, Wyoming and Utah (1875).

For Coulter, himself, the opportunity meant much more than this, and its fruits were far-reaching. Critical study of a flora very different from that of the Eastern States necessarily brought the young botanist into correspondence and personal relations with the eminent botanists of the day, whose friendly aid continued so long as they lived.

Out of the Colorado synopsis grew a formal “Manual of the Botany of the Rocky Mountain Region” (1885), modeled—like Chapman’s “Manual for the Southern States”—largely after Asa Gray’s masterly “Manual for the Northeastern States”; and this Rocky Mountain manual was brought more nearly to

completeness in editorial cooperation with Aven Nelson a quarter century later.

The welcome accorded this Rocky Mountain manual, with its short diagnostic descriptions which included, as Coulter once phrased it when speaking of another book of the kind, "enough but not too much"—seems to have inspired the idea of putting into similar form an account of the plants of the Mississippi Valley and of the plains, in large part omitted from his own work, from its often revised prototype—Gray's manual, and from the already antiquated southern manual of Chapman for which demand had become so slight as seemingly to warrant only inadequate supplements instead of a thorough revision.

The scope of such a work fell too close to the natural limits of both of these books, and Coulter was drawn into consultation with publishers and author concerning an extended and modernized edition of Professor Gray's manual, in the preparation of which Coulter should cooperate and bear the brunt of the labor. Incorporation of the South proved quite too large an undertaking for a handbook of the approved size and cost; but within their own parallels it had been virtually decided that the Rocky Mountain and eastern floras should be brought together by a westward extension of range for the new edition of Gray's manual. Professor Gray's death ended the original plan but a less critical revision on much the same geographic lines was undertaken and carried through by Sereno Watson and Coulter with a methodical promptness which possibly would not have been possible if Dr. Gray had lived. The significance of this statement perhaps will appear to those who have used successively the last of the editions of this manual prepared by its author, the revision within strict limitations of size by Watson and Coulter, and the latest and very different edition, by Robinson and Fernald, which followed in due time. Quite apart from obvious new discoveries in even the well explored East, formal segregations in what had passed for species were claiming recognition, and Eichler's views on classification were affecting the sequencing of plant families.

It was here that Coulter entered upon a second evolutionary stage as a systematist—that of the monographer; for when the revision of the eastern manual was under discussion he had progressed far in a critical analysis of the North American Hypericaceae; and a comparable study of our Umbelliferae, in conjunction with his most productive student in the systematic field, J. N. Rose, was well under way before the new manual had been brought to a conclusion. In the same line of study, and similarity as a guiding senior author, Coulter successively worked our Cornaceae, Amaranthaceae and part of the Cactaceae, recurring from time to time to each group as new discoveries or interpretations prompted; and in conjunction with Rose he was tempted into a further investigation of leaf anatomy as a taxonomic and diagnostic guide in certain Coniferae for which Engelmann had somewhat more than broken the way.

Coulter's talent for seizing and epitomizing succinctly the high points of specific characters, which Asa Gray's writings had made a second nature with him as with many others, brought to him a number of Central American plant groups represented in the collections made or stimulated by Captain John Donnell Smith; and his study (1889) of an extensive Texan collection led him even to prepare a preliminary "flora" of Western Texas (1891-1892), in a way probably giving form to his wish to see the floras of East and West brought workably together.

Monographic or "floristic" work necessarily implies the accumulation of a considerable amount of herbarium material without which, indeed, it lacks permanent verifiable value. During that part of his life in which such work engrossed much of his attention, Coulter did not escape the impulse and need of forming an herbarium, the major part of which, following the several removals of a lifetime, is housed now in the Field Museum in Chicago.

While browsing in the floristic field into which he had strayed rather than been guided, Coulter seems to have experienced the enthusiastic pleasure of every young amateur, in the true sense of the word. New "finds," interesting plants, and lists contributory to a final accounting for the higher plants of

Indiana and the western mountains, comprise the usual topics of his publications; here and there a reaction of the teacher on laboratory methods, crystals or some physiological subject, a few observations on teratological deformations, and one note on dichogamy—the only evident effect of that vitalizing interest in field observation that Darwin's beautiful studies were making known in the seventies and eighties of his century.

Perhaps the most venturesome act of a life prolonged well beyond the three-score-years-and-ten, was Coulter's establishment of a journal for the publication of this sort of casually interesting observations, to which for a time he was the chief contributor but into the columns of which others gradually entered and which long before his death had assumed a dignity and acquired an importance which must have been a source of growing delight to him as the years wore on.

The decade preceding the monographic stage of his activity did not pass by without an occasional glimpse into the significance of things which in themselves were scarcely more than interesting; for example, the distinction between the great groups of Monocotyledons and Dicotyledons (1879), the development of a flower (1883), the question of floral "adhesions" as the older morphologists had regarded them (1885), pollen "spores" (a new expression in those days), and the development of the fruit of Umbelliferae (1887). The trend of his activities in this period are nowhere more clearly indicated than in the publication in 1886 of a "Handbook of Plant Dissection" of which he was a joint author, and in which, as in much of his later work, the influence is evident of Strasburger, Sachs' great successor as a leader.

It was at this stage of his evolution that, in preparing a vice-presidential address for the American Association for the Advancement of Science, he outlined his views on the future of that field of botany which to the end he regarded as his own, "systematic" botany. As he saw it then, and evidently continued to see it, three indispensable coordinated units enter into this field, "equally important and equally honorable"; collection and description of the kinds of plants which make up the vege-



tation of the earth; a study of their life histories (the branch of morphology into which he was entering); and the construction of a truly natural system of classifying them.

The ten years following Coulter's resumption of active botanical teaching, at the University of Chicago, in the prime of an experienced and reflective middle age, for he was then 45, were those of his most important professional career.

In this period, realizing the fundamental taxonomic importance of ontogenetic morphology, his original publications are concerned with such topics as chalazogamy, fertilization, heterospory, gametophytes, and embryogeny. This, and the next decade and a half is the period in which appeared the "Morphology" textbooks of Coulter and his talented pupil and associate, Chamberlain, a series covering comprehensively and with various revisions both great groups of the Spermatophytes—in no small way a summation of the individual researches of the many men whose pride and joy it is to have the dissertations in their candidacy for the doctorate marked with his signature.

Coulter's place as an American teacher of botany falls in that time when he aligned himself with two men, somewhat his seniors, Beal and Bessey, in popularizing in this country the "new botany" (as one of them called it) that the masterly text book of Sachs had presented so alluringly. Of the three, he stands out preeminently as a productive investigator; with them he shares the distinction of having trained excellent workers as well as teachers; and no colleague in the United States has approved as teacher the credentials of so many recipients of the philosophy doctorate, which stamps—if it means anything—the trained workman in productive scholarship.

An admirable lecturer, from time to time he crystallized in printed form the clean-cut impressions that constituted the charm of his oral presentation before a class, and his readable texts reflect concisely and clearly the knowledge of their day in the fields that they cover.

For Coulter, environment and attendant opportunity changed, especially in the latter respect and for the better with the years. For five years, beginning with 1874, he was Professor of Natural

Sciences in Hanover College; for a dozen years following, he was Professor of Biology in Wabash College. Neither of these excellent but small colleges was largely equipped with library or laboratory facilities for more than rudimentary work, nor did either pay salaries permitting private expenditure for professional purposes beyond very narrow limits; but both were ideally located in an attractive country and in very humanly livable small communities. It was here that Coulter developed as a systematist; and it was during this period that he appears to have made the largest number of directly personal observations on nature.

As too often happens with versatile and presentable men, this period of rather broadly conceived professorships was followed by five years of administrative work; as President and at the same time Professor of Botany at the University of Indiana for two years, and as President of Lake Forest University for three years. It is greatly to his credit that he found time from executive duties during these years to do much of his best monographic work.

Like the great geologist, Chamberlin, Coulter very gladly relinquished the dignity and burdens of a presidency to head a department in the newly organized University of Chicago, and he continued in this capacity from 1896 until 1925, when, almost at the age of 74, he retired from active teaching though not from professional activity, for his remaining years were spent as Dean and chief scientific advisor of the Boyce Thompson Institute for Plant Research at Yonkers, an establishment in the inception of which he had exerted large influence and as the active head of which he had placed one of his most capable graduates. It is at once a characteristic and a tribute to the success and judgment of Coulter, that for the school of botany which he created in Chicago, as for this latest fruit of his talent, he did not find it necessary to turn to others than his own former students when filling botanical positions.

As editor of the *Botanical Gazette* for half a century, Coulter was called on to appreciate and to chronicle the passing of many botanists of eminence. These biographic and bibliographic

notices were usually sympathetic and always to the point and well phrased. Quite apart from textbooks and the papers and books embodying the results of his own studies and those of his students and colleagues, for he liberally used the discoveries made by sharp eyes in what would otherwise have been perfunctory and scientifically fruitless advanced classwork—Coulter spoke often and wrote voluminously, on a large range of educational and humanitarian subjects. Among these, in his later years, organic evolution stood well to the fore; and the solid support afforded by all knowledge of nature to rational religion was never far from his mind and precept.

No account of John Coulter's personality and activities would be at all balanced if it stopped short with the recital of his influence and personal achievements in the science to which his life was nominally devoted. Though he seems not to have taken hold, in a conspicuous way, of civic movements for material betterment of the communities in which he lived, he was an active worker, and often a leader, from start to finish in movements for their human uplift.

Though never a seeker after such connections, Coulter was counted as an honored and helpful member of various organizations connected with his scientific activities, as, for example, the American Association of University Professors, the Indiana, Illinois and Chicago Academies of Science, the Botanical Society of America, and the American Association for the Advancement of Science, over each of which he presided in due course. He was elected to the National Academy of Sciences in 1909.

In no botanical association did he enjoy greater affection than in his religious fellowships. Seeing nature and its mysteries and wonders through the eyes and with the understanding of a naturalist, he saw the Author of nature through the eyes and with the faith of a Christian. For many years he led a young men's class in his church every Sunday morning when it was physically possible for him to meet with his class—and as he handled his affairs few obstacles arose that kept him from this which he regarded as the greatest of the week's privileges and duties; and his religious influence on the campus was very great.

The name of John Merle Coulter is commemorated in two genera of flowering plants, *Coulterella*, Vasey and Rose, and *Coulterophytum*, Robinson; and it cannot be forgotten at the University of Chicago so long as the Coulter Research Fellowship in his chosen field endures, for one of the last joys of his life was that of knowing that funds had been raised and accepted for the permanent endowment of such a fellowship.

Coulter is likely to be remembered long as a botanist, longer as a teacher of botany, and longest as a kindly, friendly, good and honest man of the highest ideals and possessed of the talent for inoculating others with them; but he is and will be held in most loving memory by those who knew him in his family life and to whom he was the spirit and personification of home.

The accompanying list of Coulter's publications is from the pen of his long-time associate and friend, Professor J. C. Arthur, of Purdue University.

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