The Giants of Zoology: Jordan, Eigenmann and Payne

Frank N. Young
Department of Biology, Indiana University
Bloomington, Indiana 47405

For over half a century, from 1885, when botany and geology were separated until 1948, zoology at Indiana University had only three teacher-leaders. The departmental organization of the curriculum which is still largely intact was introduced in 1885 when David Starr Jordan became president. After a period of experimentation with a divisional organization of the life sciences, zoology and botany reunited and joined microbiology to form a biology department. Carl Eigenmann followed Jordan as leader of the zoology department, and was succeeded in 1927 by Fernandus Payne. These three brought zoology at Indiana University to national if not international preeminence. During the period from 1885 to 1948, the number of zoologists multiplied from one to eleven, and the courses diversified to cover all phases of the modern study of animals. In the meantime, the umlaut had disappeared from zoology.

Carl H. Eigenmann (1863-1927) was born in Germany, but came to Indiana in 1880 and was educated at Indiana University and Harvard. In 1891 he was called back to Indiana University to assume the professorship of zoology vacated by Jordan's move to Stanford University. He later served many years as dean of the graduate school. Eigenmann, like Jordan, was a life-long student of freshwater fish. He published more than 200 papers on fish and other vertebrates during his lifetime. At Indiana University he initiated the modern period of zoology. At the time of his death, in 1927, the zoology faculty included: Will Scott, Fernandus Payne, and Alfred C. Kinsey. Under Eigenmann's direction zoology and graduate studies flourished during the early years of the 20th Century. He was president of the Indiana Academy of Science in 1899.

Eigenmann was succeeded as chairman of zoology by Fernandus Payne (1881-1977). Payne came to Indiana University as a student in 1902, and later completed graduate work with E.B. Wilson at Columbia University. Under his administration zoology and the graduate school flourished, and at the time of his retirement from departmental administration in 1948, the department of zoology included on its staff H.J. Muller (Nobel Laureate), T.M. Sonneborn, W.E. Ricker, A.C. Kinsey, T.W. Torrey, W.R. Breneman, Louis A. Krumholz (1909-1980), Shelby Gerking, W.J. van Wagtendonk, and Sears Crowell. Robert L. Kroc and Lamont C. Cole were also associated with zoology at Indiana University during Payne's tenure as chairman. Payne also served during his chairmanship of zoology as dean of the graduate school. He was president of the Indiana Academy of Science in 1932. In several discussions Payne told me that he considered the Indiana Academy especially important in encouraging the growth of science in Indiana.

David Starr Jordan (1851-1931) was the first leader of a department of zoology at the same time he was president of the University. He was appointed professor of natural sciences in the university in 1879, but immediately went on a year-long study of the fishes of the west coast. Jordan was a man of great charisma. On his return he soon made himself known as a progressive and intellectual professor. He immediately began teaching courses in several areas of natural history, but it must have seemed to him to be a vacation after his experience at Lombard University in Galesburg, Illinois. There, in 1872, he taught classes in zoology, botany, geology, minerology, chemistry, physics, political economy, Paley's "Evidences of Christianity", and incidentally German and Spanish. He also had charge of the weekly "literary exercises" which consisted of oratory and the reading of essays. For good measure, he says (1922:

105) he also had a Sunday school class to teach, and pitched for the school baseball team against Galesburg rival Knox College. Jordan was instrumental in several changes in the educational system even before becoming president, including the elective system and the major professor. When he became president in 1891 he quickly put into effect other changes including the departmental arrangement.

Jordan's educational innovations were not entirely unique. He was strongly influenced by two men in his development as a scientist and an educator. The first of these was Louis Agassiz (1807-1873), the Swiss born scientist who revolutionized the teaching of biology and geology in America. Jordan greatly admired Agassiz, and their association at Penikese Island, the predecessor of Woods Hole biological station, was important in forming many of Jordan's views on science and education. Fortunately, he did not adopt Agassiz' attitude toward the then new theory of evolution, but admired Agassiz' stress upon thoroughness in investigation and direct contact with nature. "Study nature not books!" was Agassiz great adage.

The second great influence in Jordan's early development came through Andrew Dickson White (1832-1918), the first president of Cornell University. White's cardinal principles of education according to Burns (1953) were almost identical with those which Jordan put into effect at Indiana University and later at Stanford. These were 1) the complete separation of education from sectarian influences; 2) an equal place for the natural sciences and technical arts alongside the humanities; 3) equal rank for modern and classical languages and literature; 4) the substitution of free choice of courses for the old "cast iron: curriculum; 5) the treatment of university students as adults and responsible members of a community of scholars.

It is difficult to find anything new to say about David Starr Jordan. He was the author of 1,818 essays, poems, scientific papers, books, and articles including a two volume autobiography "The Days of a Man," running over 1600 pages. Alice N. Hays' bibliography of Jordan's writing (1952) published by Stanford University Press attempts to include everything he wrote and all the multiple publications of some articles. Jordan's "Manual of the Vertebrates of the Northern United States . . ." went through 13 editions, the last published in 1929. His "Fishes of North and Middle America" with Barton W. Everman (1853-1932) a former student, is a classic work on fishes.

Jordan was an incredibly productive writer of scientific and socially oriented essays and articles. He ignored the dictum, "Do something supremely well" (James W. Norman, 1884-1969), and tried to do every thing supremely well. It is therefore not surprising that in some areas even his great intellect failed. There was at the time, indeed, not enough factual evidence concerning the nature of man for his social theories to have any firm foundation.

Jordan's life was in many ways an idyll through a wonderful world of beauty and grace. His accounts of experiences with the trout in our western mountains scintillate with his excitement and pleasure. His long collecting trips in which he covered nearly every fish bearing stream in Japan, California, the Yellowstone, and elsewhere read like the accounts of William Bartram, a century earlier, describing The virgin Florida.

His life, however, was not untouched by tragedy. He lost his first wife in 1885 after ten years of marriage, and later two of his beloved children. His childhood was shadowed by the death of a much admired older brother who enlisted in the Union Army at the start of the Civil War and who died shortly afterwards of "army fever."

Jordan was an early supporter of Charles Darwin's theory of evolution. Sometime shortly before 1909, Henry Fairfield Osborn (1857-1935) made the statement that "No American university could have produced a Darwin." Jordan took an opposite view

and in his presidential address to the Association for the Advancement of Science (AAAS) in 1910 he challenged the statement. He pointed out that the three prerequisites of a Darwin were as fully available in American as in Europe. He held that prerequisites were first the human material, second the contact with nature, and third an inspiring teacher. The first Jordan said was a matter of inheritance not nature, and was equally present in the American stock as elsewhere. The second prerequisite was even more abundantly present in America where contact with nature was inevitable, and the third element of an inspiring teacher was surprisingly well represented in American colleges and universities.

In fact, he pointed out, Darwin himself had written that at Edinburgh he had listened to lectures on geology so incredibly dull that he made a resolve never to read a book on the subject—a resolve which he fortunately later abandoned. Jordan said, "Once secure the fortunate combination of germ plasm, the necessary Darwin stuff, and the rest is easy for America affords an exuberance of nature, and always a choice of Henslows as companions and interpreters" (1922; 103-104).

Edmund McNall Burns in his biography of Jordan (1953:226) writes: "In the realm of social theory Jordan's contributions were also of no minor significance. He was one of a comparatively few Americans in the last quarter of the nineteenth century who rejected Social Darwinism in favor of the contention that altruism is as fundamental a part of human nature as egoism. So strongly convinced was he of the truth of this that he wondered if the principle of love was not the master key of the universe. He did not mean by this, however, that nobility of purpose alone could make an act good. The test of mortality was to be found in consequences, not in intentions. He anticipated John Dewey in attempting to ground the whole subject of ethics on an empirical or scientific basis, and he prefigured the work of a large number of therapists of physic disorders in emphasizing purposeful and helpful activity as an antidote to pessimism and unhappiness.

"In common with that of all mortals the intellectual life of David Starr Jordan had imperfections. He tried to encompass too many fields—to be not only a prophet of peace and democracy but a scientist, an educator, a political economist, an eugenist, and a philosopher of religion and ethics. Only an Aristotle or a Leonardo da Vinci could have succeeded with so much. It seems obvious that this striving for universality led him into such errors as the acceptance of Aryanism and the assumption that Anglo-Saxons embodied virtues which most other peoples could never hope to attain. It is no extenuation to say that racial myths were included in the intellectual baggage of nearly every American in his time. By the end of the nineteenth century at least two authorities—Franz Boas and William Z. Ripley—had made cogent criticisms of the prevailing assumptions of ethnic superiority.

"Yet, with full allowance for his deficiencies, the Stanford educator remains as one of the most fertile and inspiring geniuses of his age. In view of the applicability of many of his teachings to problems of the present, he can be justly considered as a prophet not merely for his own day but for our times as well."

As a scientist, educator, and social reformer Jordan was, indeed, a giant in the earth. As a pacifist he gave many inspired lectures on the harm and horror of war. As a social reformer he was less successful partly because of the inadequacy of the knowledge of his time. His thinking in regard to the genetic basis of such traits as honesty, integrity, and morality were reflections of the general beliefs of his days. Despite his admiration for the northern European, the chosen people, to form the great societies of the earth, he rejected the concept of the Teutonic superman. Let us conclude by saying, he was a man of his age, even as we are people of our own.

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