

## The Development of the Science Departments at Indiana University

ERNEST E. CAMPAIGNE, Indiana University<sup>1</sup>

The growth of science at Indiana University was marked by a gestation period of about sixty years, followed by a brief active period of about twenty years during which some dozen science departments were born. This was followed by a quiescent time of about fifty years, while these departments reached maturity. Finally during the last ten years or so, a new period of growth activity is apparent, which involves realignment of faculty members and a fusion of departments.

A State Seminary for Indiana was chartered in 1820, and opened its doors to Bloomington students in 1824. By act of the legislature in 1828, the seminary became Indiana College, and in 1829 Professor John H. Harney was appointed to the Chair of Mathematics, Natural and Mechanical Philosophy, and Chemistry. Thus the sciences began at Indiana. Professor Harney offered courses in what would now be astronomy, biology, geology, mathematics and physics. The first building to have a laboratory room was completed in 1836.

When Harney resigned in 1832, the Science Chair was taken by Professor E. N. Elliott, and he in turn resigned in 1837, to be replaced by Professor Theophilus A. Wylie, a cousin of President Andrew Wylie.

T. A. Wylie spent forty-eight years at Indiana, not including the years 1854-1855 when he held the Chair of Natural History at Miami University. At one time or another, he taught nearly all of the science offerings at Indiana College. He also served as Librarian, Superintendent of Grounds, and on two occasions as Interim President of the University. During the period 1864-1867, he was listed as Professor of Greek and Latin. His course offerings in Natural History included Physiology, Hydrostatics, Mathematics, Optics, Mechanics, and Astronomy. Theophilus Wylie retired as Emeritus Professor of Physics in 1886, and it is quite clear that he had a strong influence on the development of the sciences at Indiana.

In 1838, Indiana College became Indiana University, with authority to grant degrees in Law and Medicine, and in 1840 a new building devoted solely to Natural Philosophy and Chemistry, with lecture room, laboratory, and museum space, was opened. Professor Wylie was in charge, and emphasis was shifted toward premedical training. Following the return of T. A. Wylie from Miami in 1855, two notable additions to the Natural History area were made, which were destined to have a great influence on the sciences. The first was Daniel Kirkwood, appointed in 1856. He concentrated chiefly in the area of Mathematics and Astronomy. The names Kirkwood Hall, Kirkwood Observatory, and

---

<sup>1</sup>I am indebted to several faculty members, especially Professors Paul Weatherwax, Botany, Frank Edmondson, Astronomy, and Harry G. Day, Chemistry, for useful information and encouragement in the preparation of this report.

Kirkwood Avenue give some indication of his ultimate influence on the university and the community. The second notable appointment was that of Richard Owen, who took over the Chair of Natural Philosophy in 1864. Apparently T. A. Wylie was moved to the Chair of Greek and Latin to make room for this distinguished scientist, if one can read between the lines.

Richard Owen was the son of Robert Owen of New Harmony, and perhaps the most distinguished of the four Owen brothers. He was a Doctor of Medicine, ex-army officer, having served with distinction in both the Mexican and Civil Wars, a well-known explorer, and held the post of State Geologist. He was invited to join the faculty at Indiana University earlier, but the War Between the States intervened. The catalog of 1864 notes that Owen had an extensive collection of minerals, fossils and zoological specimens, which were displayed in the museum. Following his appointment at I. U., he continued his main interests in geology, making surveys in the southwestern United States and South America. He taught courses in most of the sciences, along with Kirkwood, but emphasized mineralogy and geology. He also taught German, French, and Spanish on request.

The first real division of responsibility in the sciences occurred in 1867. Professor T. A. Wylie returned to the Chair of Natural Philosophy, and Owen was named Professor of Natural Science and Chemistry. Wylie's principal responsibilities, with the help of Kirkwood, were in physics, mathematics, and astronomy, while Owen taught geology and chemistry, and listed courses under the titles "Botany" and "Zoology" in the catalog (1869).

The year 1874 saw another major advance in the sciences, with the opening of a three-story "Science Hall" which housed the Owen cabinet of minerals, as well as a museum of zoological specimens, a science library, and laboratories for chemistry and physics. At this time Thomas C. Van Nüys, M.D., was appointed Professor of Chemistry, the first full-time professor of a single science. Thus 1874 marks the separation of "Chemistry" from the Natural Sciences.

In 1880, David Starr Jordan, another scientific giant of that era, arrived on campus. He had been appointed to replace Owen, who had recently retired, as Professor of Natural History. With an assistant, Gilbert, he taught assorted courses in geology, botany and anatomy, (with occasional modern languages). His principal interests, however, were in zoology, particularly fish, and he expanded the museum extensively in this direction. The science divisions at this time, besides Jordan and Gilbert in Natural History, were Wylie and Kirkwood in Natural Philosophy, and Van Nüys in Chemistry. The first M.S. degree was awarded in 1882 to S. B. Wylie, an assistant to Van Nüys in Chemistry.

The major changes, which occurred in the sciences at Indiana in the next twenty years, probably began with the disaster which befell the University in the summer of 1883. The new Science Hall, including library, museums, apparatus, and personal papers of Wylie, Kirkwood, Van Nüys, Jordan and others, was totally destroyed by fire. However,

this only precipitated a needed change, that of the development of a newer and larger campus in "Dunns Woods," on the eastern edge of Bloomington. The first buildings, occupied in 1885, were both devoted to science, and are both still standing. Wylie Hall housed the divisions of Natural Philosophy under Wylie, and Chemistry under Van Nüys, while Owen Hall housed Natural History under Jordan. The difficulties of reestablishing the libraries, museums and laboratories of these sciences are the subject of another history, but that this was done in so short a time is a real tribute to these professors.

The year 1885 also is a landmark in the history of the Science Departments at Indiana University because it was in that year that David Starr Jordan became President of the University. One of his first acts as President was to divide Natural History into two parts, retaining the Chair of Biology for himself, and appointing John C. Branner as Professor of Natural History. In this same year the Indiana Academy of Science was founded, with Jordan as its first President.

President Jordan was the leader of the educational revolution which resulted in the introduction of the European "Major" system of instruction, in which a student was required to concentrate on a major subject after two years of general university studies. This system was adopted at Indiana University in 1886, one year after Jordan became president, and required the supervision of major departments. Jordan immediately began this proliferation and by 1904 at least ten science departments had been created.

The retirement of Theophilus Wylie in 1886 provided the opportunity to create a Physics Department, with J. P. Naylor as Head. Benjamin Snow became the Head of this department in 1891, and in 1897 Arthur Foley took over the department as head, a position he retained until 1938. From 1938 to 1964 Allan C. G. Mitchell was Head of Physics, and since 1965, Professor Lawrence M. Langer has been Chairman.

Chemistry, which had been nearest to a science department since 1874, was officially designated as a department with Van Nüys as Head in 1886. Robert E. Lyons joined this department in 1889 as Assistant Professor, and became Head in 1895, a position he retained until 1938. H. T. Briscoe, later Dean of Faculties, joined the department in 1922, and became Head in 1938. Ralph Shriner was called from Illinois to be the Head of Chemistry in 1941, and Frank Mathers, who joined the faculty in 1903, was Acting Head, 1946-47. Frank T. Gucker, Jr. was then called from Northwestern University to Chair the Department in 1947, and when he became Dean of Arts and Sciences in 1951, Harry G. Day, who had joined the department in 1940, became Chairman. A five-year rotating chairmanship was established with the appointment of V. J. Shiner, Jr. in 1962, followed by Riley Schaeffer in 1967. Chemistry also established a first on campus, with the dedication of a new building devoted exclusively to one science in 1931.

The year 1886 also saw the creation of a Department of Astronomy and Mathematics, headed by Joseph Swain, another well memorialized name in Bloomington, since he became President of the University in

1893. Robert J. Aley headed this department from 1891 to 1900. The two departments were separated in 1900, with John A. Miller as Head of Astronomy, and Aley as Head of Mathematics. W. A. Cogshall succeeded Miller as Head of Astronomy in 1907, and remained until he retired in 1944. Since then, Frank Edmondson, the present Head, has been in charge. The mathematics department is noted for a number of distinguished mathematicians, such as Davisson, Hanna, and Rothrock, and more recently Hlavaty, to name only a few. In 1912, the first Ph.D. in mathematics awarded in the state went to Cora B. Hennel, later an outstanding member of the department.

By 1888 the Biology Department, headed by President Jordan, was proving to be administratively cumbersome, and two new departments, Zoology, headed by Jordan, and Botany were created. Carl Eigenmann was appointed to the Zoology faculty at this time and in 1891 he became Head of the department, a position he retained until 1925. Eigenmann was a world-famous ichthyologist and was also the first Dean of the Graduate School, a post created in 1908. Eigenmann had the ability to recognize good people, as the appointment of W. J. Moenkhaus (Curator of the Zoology museum in 1893), Fernandus Payne (Assistant Professor, 1909) and Alfred C. Kinsey (instructor, 1920) showed. Fernandus Payne followed Eigenmann as Head of Zoology and Dean of the Graduate School from 1925-1948, when T. W. Torrey became Department Chairman, to be followed by W. R. Breneman in 1965. The Jordan Hall of Biology was occupied in 1955.

Douglas Campbell was the first Head of Botany, but he followed David Starr Jordan to Stanford in 1891, when D. M. Mottier became Head, and held this post until 1937, a period of forty-six years. Botany was strengthened by the appointment of J. M. Coulter, of Wabash College, to the Presidency of Indiana University in 1891. Coulter was an outstanding botanist, and a former president of the academy (1887). Paul Weatherwax, Acting Head 1937-1938, joined the department in 1915 and only recently retired (1959). Ralph Cleland became Head of the Department in 1938, retiring in 1963, and was then followed by Marcus Rhodes, who came to the position from the University of Illinois.

In 1884 William Lowe Bryan was appointed to the Faculty of Natural History, a department still headed by Jordan. J. C. Branner continued as Head of this department from 1885, but in 1890 the department was divided into Psychology, with W. L. Bryan as Head, and Geology and Geography, with Branner as Head. William Lowe Bryan became President of the University in 1902, but remained responsible for Psychology. E. R. Cumings became Head of the Geology and Geography Department in 1902 and remained as Head until 1942. In 1918 the eminent Geologist C. A. Malott joined the staff, and in 1919 the well-known geographer S. S. Visher came to Indiana as a member of this department.

Shortly after the appointment of Bryan as president, the Graduate School was created. Another departmental fragmentation occurred in 1904, when Zoology was divided into Anatomy, Physiology, under W. J. Moenkhaus, and Zoology, under Eigenmann. With this division, relative

quiet descended on campus, and few new science departments were created in the next 40 years. President William Lowe Bryan's administration (1902-1937) was marked by small turnover in departments or departmental administrations. There were about eleven science departments in 1905, Anatomy, Astronomy, Botany, Chemistry, Geology, Mathematics, Pathology and Bacteriology, Physics, Physiology, Psychology, and Zoology. Among these W. A. Cogshall was Head of Astronomy, (1907-1944); D. M. Mottier was head of Botany, (1891-1937); Robert E. Lyons was Head of Chemistry, (1895-1939); E. R. Cumings was Head of Geology, (1902-1942); Arthur Foley was head of Physics, (1897-1938); W. J. Moenkhaus was Head of Physiology, (1904-1941); and Zoology had the distinction of having had two Heads, Eigenmann, (1891-1925) and Payne, (1925-1948). It should be noted that both of these men were Deans of the Graduate School during their tenure as Heads of the Zoology department. The watchword of the Bryan Administration may well have been "stability."

Immediately after the second world war new departments began to proliferate again. In 1946, Anthropology, which had been taught as part of the Zoology Department with the appointment of George Neumann in 1943, became a separate department. Bacteriology was originally taught by Lyons in the Chemistry Department (1896-1905), but in 1905 a Department of Pathology and Bacteriology was created as part of the Medical School. In 1940 L. S. McClung joined the Botany faculty and was responsible for bacteriology there until 1946, when a separate department, with McClung as Head, was organized. This department became Microbiology, Chaired by Professor Howard Gest, in 1965. The year 1946 also saw the division of Geology and Geography. Following the retirement of E. R. Cumings from the headship in 1942, C. A. Malott had been active head of Geology and Geography, 1942-1945, when Charles F. Deiss was appointed chairman. The following year Otis P. Starkey was appointed chairman of the newly created Geography Department, and Deiss continued in Geology until 1959. John B. Patton, the present Chairman of Geology, was appointed in 1959. Following Starkey's retirement from the chair of Geography in 1956, it has been chaired by J. F. Hart (acting, 1956-'57), George H. T. Kimball (1957-'62), Norman Pounds (1962-'65) and since then by D. C. Bennett.

While some departmental splintering continues, the trend of the sixties seems to realignment. The sciences have so far separated, since the days when a man studied Natural Philosophy, that some of the scientists in certain departments have become lonesome for others who can speak their "language." Some of the chemists find themselves more at home with certain physicists, and a special program in Chemical Physics was established (1963). The biochemists found themselves isolated in different departments, and banded together as a special "committee" with members from chemistry, several of the biological sciences, and the Medical School. It is noteworthy that eighty years after the Department of Biology was created, the year 1965 saw the several separate departments—Anatomy, Botany, Microbiology, Physi-

ogy and Zoology—banded together again as the Division of Biological Sciences, with Frank Putnam, a well-known biochemist, as director.

The 1967-1968 Graduate Catalog at Indiana lists twenty-eight science departments, divisions, or programs. These include Astrophysics, Biochemistry, Chemical Physics, History and Philosophy of Science, Earth Sciences, Mathematical Physics, Medical Genetics, and Physiological Optics. These are all interdisciplinary. Possible programs such as Chemical Mathematics and Pharmacological Chemistry are under discussion. As faculty members of individual departments have found themselves further and further removed from each other in interests and scientific language, they have become closer and closer to members of other departments. The resulting dialogs have led to a desire to formalize these mutual interests without actually leaving the basic departments—hence the creation of interdisciplinary “area” programs.

At Indiana University, the nineteen-sixties appear to be an era of ferment in science organization and administration similar to that of the eighteen-eighties and nineties. It is certain that interesting reorganization will occur. It is hoped that those responsible will keep accurate records for future historians.

#### Literature Sources

1. LYONS, R. E. 1931. The History of Chemistry at Indiana University. *Indiana University News Letter*, Vol. XIX, No. 3.
2. MCCLUNG, L. S. 1944. History of Bacteriology at Indiana University. *Proc. Indiana Acad. Science* 53:59-61.
3. TORREY, T. W. 1949. Zoology and Its Makers at Indiana University. *Bios.* 20:67-99.
4. VISHER, S. S. 1951. *Indiana Scientists*. Indiana Academy of Science, Indianapolis.

