

History of Science Work at Hanover College

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Scientific work at Hanover obtained its start at the very beginning of the work of the institution. Dr. Crowe came from the scientific atmosphere of Transylvania College to found Hanover, and later to become the grandfather of the Coulters, John M. and Stanley, two of the brightest stars in the scientific constellation of Hanover. James Blythe, the first president of Hanover, was formerly professor of Chemistry at Transylvania. These men brought to the College an enthusiasm for and an interest in science that has greatly influenced the work at the institution.

Since the founding of Hanover College in 1827 much emphasis has been given to the promulgation of the various sciences. Although the College was founded by the Presbyterian Church for the education of ministers for that denomination, it was recognized at the very beginning that science should form an important part of that education. Consequently we find in the curricula of the College in those early days all of the current scientific subjects.

The methods of teaching science at Hanover have changed since its founding, but always the methods have been those which were current in similar colleges if not somewhat in advance. It is recorded in former President Millis' "History of Hanover College" that that institution took the lead in several phases of the development of our present methods of teaching science. On page 213 of that book we find the following quotation: "Professor Young came after Coulter and has the distinction of introducing into Indiana the practice of teaching Chemistry by the laboratory method."

Also, Hanover is given credit by Dr. Millis of initiating the use of field trips in the study of both geology and botany. A practice which has been expanded not only at Hanover but in practically all of the first-class colleges of the country.

The teaching of science, so far as the method is concerned, seems to have gone through the following three stages: First, the text book-teacher phase, in which most of the sciences were taught by the same teacher. All of the courses were elementary in nature. A good text book for each science was selected and the material in that book plus the contributions of the teacher formed the essence of the course. Students were required to master most of the details of the subject as set forth in that text book. This method of instruction extended from the beginning of the College in 1827 until about 1869.

The second phase, for want of a better name, we will call the beginning of the modern methods of science. This period began with the coming to Hanover of Professor A. M. Bradley in 1869. Professor Bradley, fresh from the halls of Yale University, was enthused with a zeal for the teaching of science for the sake of science as he understood it. He was well trained, enthusiastic, undiplomatic, fearless and determined. Are these not the chief characteristics of the modern scientist? Professor Bradley soon found himself at odds with the Board of Trustees; and when he

refused to admit that the earth did not come into existence until about 6000 years before the birth of Christ, he was summarily dismissed after one year's service. Bradley subsequently accompanied Major Powell in his explorations of the west, notably, in the exploration of the Grand Canyon of the Colorado. As an outgrowth of this exploration, the U. S. Geological Survey came into being.

Bradley was a martyr of his science, but he remained long enough to plant not only the seeds of scientific thought at Hanover, but also to initiate the new methods for the development of that scientific work. Let us say right here that the experience of Bradley with the Trustees at Hanover is the only recorded instance of an infringement on academic freedom at Hanover in its existence of more than a century and a quarter. Had Professor Bradley been a little more diplomatic and amenable to reason, that long period of academic freedom might never have been broken. Today, as in the past, there is complete freedom of expression in science as in all other courses at Hanover.

Professor Bradley was followed at Hanover by Dr. E. Thompson Nelson, also from Yale. While quite young and inexperienced, Dr. Nelson had the vigor, resourcefulness, and zeal for science to carry forward the work of Bradley. He remained at Hanover only a few years, but during that time some of the real giants of science not only in Indiana, but also in the nation were developed. Dr. Harvey W. Wiley, the father of the U. S. Food and Drug Act, finished his formal education here. Dr. John S. Coulter, who was to lead the work in botany at the University of Chicago for so many years; Dr. Stanley Coulter, the nationally known Dean at Purdue University for almost half a century; Dr. Harvey A. Young and Dr. Glen Culbertson, who were very effective in their science work at Hanover, all graduated from Hanover during the early days of this period. Surely this was a productive period in scientific work at the College.

The methods of teaching during this period were characterized by use of a good text book in each course, contributions by the teacher in lectures and classroom, laboratory work, field trips, museum and science club work. The above was supplemented by a number of all-college lectures given by well known scientists from off the campus.

The first laboratory for the teaching of science at Hanover was in the basement of old Classic Hall. There with the crudest equipment Professor Young and his colleagues set the stage for the experimental work in college laboratories in Indiana. Their early work was recognized by the Trustees of the College who furnished them with a new building for the science department at Hanover. This new building was dedicated in 1897. It is worthy of note that three of the speakers at the dedication exercises were sons of Hanover's scientific work; Dr. Harvey Wiley, Dr. Barnes, and Dr. Stanley Coulter.

Up to about 1880 teachers of science were listed in the College catalogue as Professor of Natural Science. After that date, we find they were listed as Professor of the subject they taught. With the addition of more and more teachers of science, the number of courses offered in science increased, but nowhere do we find specialization, such as is found in the system of majors and minors now prevalent in most colleges, until about 1925.

The third and present phase of the teaching of science at Hanover began about 1925 when separate departments were set up and properly staffed for a number of different sciences. Lecture rooms, classrooms and laboratories were provided for each department. Enough courses were offered to give majors and minors in each of the sciences in the curriculum.

In 1919 the science building was destroyed by fire, but the College built a new building at once, and the work in science continued. This second building was built at a time when the funds of the College were low. It was made fireproof but was not very well adapted to the work of science. Space will not permit a detailed discussion of the inadequacies of this building, however, the writer of this paper taught physics in it for eighteen years and can assure the reader that many things were lacking.

In spite of the poor building which housed their work, the men teaching in the field upheld the reputation of the College in scientific instruction and development, as is evidenced by the large proportion and academic standing of the students who have specialized in science and have gone on to other institutions for higher degrees.

Immediately after the second World War, the College built among other structures the present science building, Goodrich Hall. This building, together with its equipment, would cost today almost one million dollars. It is well equipped for the teaching of all of the sciences. It houses the departments of Botany, Chemistry, Geology, Physics and Zoology. Full majors are now offered in each of these fields. Much should be expected in the field of science in the coming years.

Of the 600 students now enrolled at Hanover there are 1182 different registrations for science courses. This registration of two courses on the average for each of Hanover's students should indicate the emphasis on science. The majors in science comprise approximately 50% of the graduating class each year.

The science faculty during the years has numbered at least a total of 43. Seven of these served during the years when one man taught several different subjects. Outstanding in that group was Dr. S. Harrison Thomas, Professor of Natural Science, Mathematics, and Mechanical Philosophy, from 1844 to 1877.

In the second period, when the work was divided up among more teachers, and the laboratory, museum and field trips supplemented the classroom, we find at least eighteen different teachers taught science at Hanover for one or more years. In this group are recorded the best known teachers of science that Hanover can claim. Such men as Dr. John M. Coulter, Dr. Frank L. Morse, Dr. Harvey A. Young, Dr. Glenn Culbertson, and Professor Leonard Huber. In fact the names of all eighteen of these men are prominent in Hanover's science teaching.

Now during the third period of science instruction, when the work in each field became the responsibility of one or more teachers, Hanover has had at least twenty different teachers in the science faculty. This period is now in the making. We are too close to judge it properly. No one name stands out very much above that of several others. The excellent work that has been done during this period is due, in part, to the long tenure of some of its teachers. Professor Joseph L. Hyatt served as

Professor of Zoology for 24 years before retiring in 1952. Three of the other teachers, Professor Grant T. Wickwire of the geology department, Professor Ned Guthrie in chemistry, and the writer, Dr. Earl Martin in physics have each served the College over 24 years. Their combined service is 80 years and it appears that before they retire their combined service will exceed 100 years. Several others in this group have made an enviable record.

While the chief emphasis at Hanover has been on the teaching of science courses, it should not be inferred that no thought or effort is given to other aspects of science education. From the days of Bradley and Nelson on down through the years to the present, extensive research work has been carried out, papers published, and articles contributed to scientific journals. Science teachers have been regular attendants at state and national meetings and conventions. Some of them have held offices in these organizations. More than one Hanover faculty member has been president of our own Indiana Academy of Science. The Botanical Gazette was founded at Hanover. Laboratory work in science, field trips, and a geology museum all had their beginnings in Indiana at Hanover.

Looking back over a roster of the alumni of the College we find the names of many men and women in various activities who have gone out and made an enviable record in their chosen field. This is especially true in the field of science. Mention has already been made in this paper of the work of Harvey Wiley, Stanley Coulter, John Coulter and others. Let us add to this list of men developed during the first period of science teaching the name of Dr. Amos W. Butler of the class of 1877. The four scientists just mentioned were among the giants of their day who founded the Indiana Academy of Science. Each of these men afterwards becoming president of the organization, John Coulter being the second president. Many other prominent alumni of scientific note could be mentioned who were developed during the first period of Hanover's scientific work.

During the second period of scientific culture when laboratory work, field trips and the museum had been added to the curriculum, a number of outstanding scientists were trained. To name only a few:

Leonard Huber, professor at Hanover College.

Guy Campbell, nationally known geologist.

Harold Voris, prominent brain specialist of Chicago.

Archer Culbertson, chief geologist for Continental Oil Company.

Ira S. Allison, professor at Oregon State College.

Rachel Hoffstadt, professor at University of Washington.

During the third period of science teaching at Hanover when full majors were offered in various sciences, a relatively large number of the graduates have been men and women who have specialized in some field of science and have gone on to further work in their chosen field. Since these people did not graduate until after 1930, their record is just in the making. Several of them give promise of a very successful future. Only a few will be mentioned here for lack of space.

Clifford Adams, professor of Geology at Hanover College.

Clarence Boyer and Louis Huber, physicists with E. I. Dupont Co.

John Taggart, chemist with Eli Lilly Company.
Paul Suit, physicist with Lockhead Airplane Corporation.
Dwight Lindsay, professor of Biology, Georgetown University.
Phyllis Fleming, professor of Physics, Wellesley College.
Louise Plummer, professor of Chemistry, Beaver College.
Roger Williams, geo-physicist, Gulf Refining Company.
William Hill, physicist, General Electric Company.

This list might be extended considerably if space permitted. Perhaps it is sufficient to indicate that Hanover College in recent years has continued to make its contribution to the field of science. We who are teaching and working at Hanover expect this contribution to increase as time elapses because of the expanded facilities and faculty in science.

Whatever contribution that Hanover has made in the field of science is due in a large degree to the environment in which the work was done. This environment, in addition to the natural setting of the institution, has been largely due to the sympathetic and systematic efforts of the administration of the College, both to the presidents and to the boards of trustees. Throughout the years they have made it possible for the teachers of science to carry out their work unrestrained by anything that could hamper their efforts.