

## The Iowa Academy of Science

In 1873 Asa Gray, addressing the American Academy for the Advancement of Science which met at Dubuque, made a stirring appeal for a deeper appreciation of the beauties of nature. He admonished scientists especially to "consider the lilies how they grow". Samuel Calvin heard the appeal. Thomas H. Macbride had journeyed sixty-five miles to attend the meeting. This trio — Gray, an old man and a great scientist, Calvin and Macbride, young men full of hope and aspiration — met for the first time, and the influence of that meeting radiates through the years.

The Iowa Academy of Science was founded and has developed largely under the influence and inspiration of these men. Organized in 1875 with thirteen members and reorganized twelve years later by an equally small number of men, the Iowa Academy grew until in 1919 it was accorded a place of first rank among the State Academies of Science in America. It has numbered among its members the most eminent Iowa scientists, and has been the forum for the discussion of the most advanced scientific thought.

The first meeting of the Academy was at the State University of Iowa in August, 1875. The purpose of the Academy as set forth in the Constitution was



"the promotion of Science, more particularly that pertaining to the State of Iowa". Membership in the organization was limited to thirty persons who "have done good scientific work". Provision was made for the Association to meet at least twice a year—in the spring at Iowa City and in the fall at some place to be designated.

Among the founders of the first Academy of Science were men of outstanding prominence in the early development of science in Iowa—C. E. Bessey, Samuel Calvin, Gustavus Hinrichs, and J. E. Todd. Mr. Bessey was elected president. Indeed, he was the only man who served the first Academy as president, being reëlected annually until 1884. In addition to the charter members, F. M. Witter, Charles Wachsmuth, and Thomas H. Macbride were among those who joined the Academy at a very early date. Dr. Macbride, who joined in 1879, still retains his membership after more than fifty years.

The papers presented at meetings of the Academy, even in those early days, were of a wide variety and full of interest. In discussing "Paleozoic Crinoids" in 1877, Charles Wachsmuth referred to the vicinity around Burlington as "the El Dorado of the world" for the study of such fossils. Dr. Wachsmuth, who had resided at Burlington for eighteen years, had collected more than four hundred specimens and was well qualified to speak authoritatively concerning them. Professor Calvin commented upon the paper, and "warmly congratu-



lated" the Academy on the possession of a member who could prepare such an able essay.

Several papers were in the field of historical geology. G. C. Carpenter discussed the "Origin of the Iowa Prairie Soil", in which he refuted the statement that Iowa soil is unfit for the growth of forests. The absence of forest trees was explained by the theory that "too short a time has intervened since the withdrawal of fresh-water lakes", and by the closeness of the turf which prevented germination of tree seeds.

In appearing before the Academy, scientists have usually confined their discussion to a consideration of past and present conditions. Occasionally, however, one has entered the field of prophesy and attempted to predict what future scientific development might reveal. In 1876 Gustavus Hinrichs read a paper dealing with "Changes of Climate in Iowa". Meteorological observations, he said, showed that the summers in Iowa had been growing steadily warmer and the winters colder. He observed that if these changes continued at the same rate during the next seventy-five years the summers would become like those of Louisiana, and the winters like those of Duluth. During the half century since then, however, weather reports indicate that climatic conditions have not changed enough to be noticeable.

During the early eighties interest in the Academy waned and meetings became less and less frequent. The constitution provided that members of the



Academy who absented themselves from meetings for a period of two years should thereby forfeit their membership. By 1884 practically all of the members had become inactive and the Academy ceased to exist. Three years later, however, interest was revived. A circular letter was issued by persons interested, a meeting was held at the Kirkwood House in Des Moines, and a new Academy very similar to the former one was organized. Samuel Calvin, Thomas H. Macbride, J. E. Todd, and F. M. Witter, who had been members of the first Academy, became charter members of the second.

Herbert Osborn, the first president of the new Academy, in discussing its organization, said: "We find the field broad and the work in waiting great. We find our numbers small and frequently broken into by removals of our members to more remunerative or attractive fields of labor. We find much that might discourage but we look with profit to what has been here accomplished under conditions possibly more discouraging than ours."

The growth of the new Academy during the first decade of its existence was very slow. In the first year only four names were added to the membership roll, while the second year produced a gain of seven. All members of the Academy at first were of the same type and designated as "fellows". In 1894, however, provision was made for associate and corresponding members. Any resident of Iowa engaged directly in scientific work was eligible to



membership as a fellow. Residents of Iowa, interested in science but not engaged in scientific work, might become associates; persons residing outside of the State might become corresponding members.

The marked increase in the number and variety of papers presented before the Academy gave evidence of interest in the organization. At the first meeting twelve papers were read, the abstracts of nine of which were printed. At each succeeding annual meeting the number increased. During the period from 1887 to 1900 some three hundred and fifty papers were presented by more than eighty different men. Among the contributors were anthropologists, archeologists, botanists, chemists, geologists, physicists, and zoologists — each working for the advancement of science in his particular field.

The attention of the Academy was early directed to the natural resources of the State, not only in one but in many fields. In discussing the subject of underground water and the possibilities of obtaining artesian wells, R. Ellsworth Call in 1891 expressed the belief that four-fifths of the State possessed artesian conditions. He stated, however, that in the southwestern and south central parts of the State it would probably not pay to drill for artesian water.

The possibility of developing oil wells in Iowa was likewise a subject of frequent discussion. In 1892 the view was expressed that gas and oil are widely distributed throughout the State, but that



the geologic structure is such that these products can not be made available in any large quantities.

In 1891 Charles Rollin Keyes presented a paper on "Aluminum in Iowa", in which he called attention to the fact that Iowa possesses clay that will yield more aluminum per bushel than can be obtained in any other locality in the west, and probably in the United States. He expressed the view that when this industry "shall have become thoroughly established, the gold fields of California, of Australia, of indeed the whole world will sink into insignificance as compared with the wealth coming from that source." In more recent years it has become apparent that although aluminum in abundance might indeed be produced from Iowa clay, it is more readily accessible in other States, thus rendering the Iowa supply of less relative value than was formerly estimated.

One of the prevailing interests of the Academy and one of the fields in which it had a great deal of influence even in those early years was in the preservation of the natural conditions of the State. This interest has been due in a large measure to the efforts of Thomas H. Macbride who has been a constant devotee of such endeavor. In 1896 two resolutions were adopted by the Academy. One petitioned the Twenty-sixth General Assembly of Iowa to take some action toward the preservation and protection of our lakes to maintain some of the original conditions of the State. The other was pre-



sented to Congress, calling attention to the necessity of conserving the natural forests.

In the same year Dr. Macbride presented to the Academy two papers dealing with the conservation of the woodlands of Iowa. The first of these was a plea for the establishment of county parks which he considered essential for the promotion of public health and happiness, for proper education, and for the preservation of the beauty and grandeur of primeval nature. He also read a paper on "Forest Distribution in Iowa", in which he showed that loess was the natural soil for forests, and he strongly advocated that our remaining forests should be left undisturbed.

In 1897, Dr. Macbride carried the argument for the preservation of Iowa's woodlands still further. He saw in the Academy an opportunity to promote his program of public interest and education, feeling as he did that the people would act immediately if the situation were clearly understood. He therefore urged the members of the Academy to investigate the natural conditions of the State, and to stimulate in the local communities a deeper interest in the primeval. These addresses are the germs of the wide-spread conservation movement and the development of State parks, thirty-six of which have now been established in Iowa.

The geological aspect of conservation likewise received due attention by members of the Academy. James H. Lees, in discussing this subject, said,



"Iowa is usually considered as primarily a prairie state, one whose chief aesthetic attraction lies in the satisfaction that accompanies the outlook over wide spreading grain field or level plain streaking away beyond the farthest ken". That this estimate is in general true and accurate, he admitted, but "the most attractive region of the state is 'The Switzerland of Iowa', with its "picturesque hills and deep cut valleys". Mr. Lees referred to a number of the beautiful geological formations — Columnar Cliffs, Devil's Den, Castle Rock, Pilot Knob, and other places of interest — which, if conserved, would "increase the feeling of pride with which every Iowan regards his state".

During the decade of the nineties several papers were presented to the Academy dealing with practical problems of interest to the farmers and the horticulturalists of the State. Perhaps the most active member of the Academy in connection with these problems was L. H. Pammel. In 1889 Professor Pammel read a paper on "Some Fungous Diseases of Fruit Trees in Iowa" and another dealing with "A Cherry Disease". In 1891 he presented a paper on "Corn Smut", the following year one on "The Relation of Frost to Certain Plants", and in 1894 another on "Diseases of Plants at Ames". In 1899 the same author presented the subject of "Powdery Mildew of the Apple", and the following year he discussed "The Thistles of Iowa, with Notes on a Few Other Species".



Problems of a more technical or academic nature have likewise frequently been considered. These have usually been for the benefit of those specializing in particular fields, but the Academy, interested as it is in all phases of scientific research and development, has afforded an ideal forum in which to present theoretical as well as practical problems. Dr. Shimek read a paper on "A Theory of the Loess" and another on "Is the Loess of Aqueous Origin?" These two papers set out evidence that the loess of the Mississippi Valley is of eolian (wind) origin, and not aqueous as was generally assumed. The second of these papers became the center of a symposium on the loess, in which representatives of the United States Geological Survey and the State Geological Surveys of Minnesota, South Dakota, and Iowa took part. This symposium was the turning point in the history of this much discussed problem, and the eolian origin is now generally accepted.

The study of science for its cultural effect, for the satisfaction which it affords, and for its theoretical as well as its practical value was emphasized by Dr. Macbride when, as president of the Academy, he asserted that "science is nothing if not beneficent. Her object is, and ever has been, the discovery and promulgation of natural truth, and the knowledge of truth is always practical. Not less valuable, therefore, even from a practical standpoint, are those researches which may seem today



to have no direct bearing on man's physical well being. Theory in science, as elsewhere, often precedes practice, and pure science lays evermore the foundation for invention."

Following 1894, it became the custom to publish the annual address of the retiring president in the *Proceedings* of the Academy. In his presidential address in 1895 H. W. Norris spoke of the rapid advance in scientific thought. "We live", he said, "in a period that sees wonderful attainments in science and art, so that in theory and practice many think the *summum bonum* has been reached. It is preëminently the age of science and the application of scientific methods to all phases of human activity." He continued by saying that while there were many skilled surgeons, there were also many quacks; while the scientific spirit predominated, superstition still held wide sway. Accordingly, he pleaded for a hastening of the day "when empiricism and its twin brother dogmatism will yield the field to the scientific spirit".

Under the title "Botany in Its Relation to Good Citizenship", Bohumil Shimek, in 1904, made an interesting presidential address. "No scientific branch", he said, "is more intimately connected with our everyday lives than botany. To plants we owe, directly or indirectly, practically all our food, and much of the shelter and protection which we enjoy. Agriculture, horticulture, and countless industries owe their existence to plants, and are based



on scientific botanical principles. To plants we are also indebted for the comfort and beauty of our surroundings, and in every relation and activity of life, from the cradle to the grave, we have more or less to do with them. These relations involve not only personal profit and private interests, but common weal and public welfare as well. It follows that a knowledge of plants—a knowledge of botany—will the better enable us to derive the greatest benefit from this close relation. It will enable us to perpetuate and utilize that which is useful, and to protect ourselves against that which is harmful. It will convince us that we must concern ourselves not only with immediate profit, but with future consequences.”

In an address on “American Science”, Nicholas Knight in 1921 expressed the view that Egypt, Greece, Rome, France, England, and Germany had each in turn been looked upon as the center of the world’s intellectual life. Since the war America stands in the forefront and, in the development of science in America, Iowa scientists and the Academy of Science have “an important mission to perform. We delight to think of it as an organization making its contribution to knowledge, encouraging its members to build up the waste places in Iowa science, and doing our part in every possible relation”. In conclusion he said, “Our number of specially trained should increase, and the work we do should be sufficient in quantity and of that high quality that



will give us a good standing among other learned societies. We have our own part in making our nation a world power in the field of productive scholarship."

It has been said that the "spirit of pure science has many times been expressed in the unselfish sacrifice of some great man's life". This being true the Iowa Academy of Science, through the service and influence of its members, has played an important part in the development of scientific thought. Indeed, if one were to call the roll of the men who have contributed most to the study and advancement of science in Iowa—Samuel Calvin, Thomas H. Macbride, Charles C. Nutting, L. H. Pammel, Bohumil Shimek, W. H. Norton, and all the rest of that long list of distinguished scientists—he would find that without exception they were interested and active members of the Academy. He would find, moreover, that each has rendered "unselfish sacrifice", for the welfare of the Academy and for the advancement of scientific thought. The Iowa Academy of Science stands to-day as a testimony of this unselfish service, and as a beacon light pointing the way to still further advancement.

J. A. SWISHER