

# Proceedings of the Iowa Academy of Science

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Volume 82 | Number 1 Part 1

Article 3

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1975

## The Iowa Academy of Science: 1875-1975

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### Recommended Citation

Hanson, Robert W. (1975) "The Iowa Academy of Science: 1875-1975," *Proceedings of the Iowa Academy of Science*, 82(1 pt. 1), 2-32.

Available at: <https://scholarworks.uni.edu/pias/vol82/iss0/3>

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## The Iowa Academy of Science: 1875-1975

ROBERT W. HANSON\*

## THE FIRST IOWA ACADEMY OF SCIENCE

In tracing the beginnings of the Iowa Academy of Science, Jacob Swisher acknowledged in 1930 (1) that the meeting of the American Association for the Advancement of Science in Dubuque in 1872 probably had much to do with the formation of the first Iowa Academy in 1875. The Dubuque meeting was the first meeting of the AAAS west of the Mississippi River, and it was at that meeting that many of the charter members of the first Academy began to develop a closer association with one another. An excursion across Iowa following the AAAS meeting touched various points of scientific interest and led to a better understanding of the materials of Iowa available for scientific study. The group of about 40 included several state geologists, botanists, and others interested in natural history; the excursion was probably a significant event in the early development of scientific research in the state. A number of Iowans joined the AAAS at the Dubuque meeting in 1872, including C. E. Bessey, of Ames, Asa Horr and T. M. Irish of Dubuque, J. C. Arthur of Charles City, and W. C. Preston of Iowa City. Samuel Calvin and Thomas H. Macbride also attended the meeting. Most of these men were involved in the formation of the first Iowa Academy of Science three years later.

According to another charter member, Dr. D. S. Fairchild, writing in the 1924 *Proceedings of the IAS*, C. E. Bessey was the prime mover in forming the first Iowa Academy of Science. Bessey was appointed professor of botany at the Iowa Agricultural College in Ames in 1871, not long after his graduation from Michigan Agricultural College. Fairchild described his own acquaintance with Bessey and explained how Bessey longed for contacts with other men of science and the university spirit that he found so lacking in his position at Ames (2):

Ames was but a small country village, and the college had really but little to offer. There was no college spirit; the village and the surrounding country were busy in securing homes and the name Agricultural College did not very clearly define the College as an institution of learning; indeed, for many years there was a dispute as to whether the College was or should be an agricultural station, or an educational institution for the benefit of the agricultural classes.

Professor Bessey was a man of great energy and had an ambition to make a real college and if the institution could not be brought to the status of an institution of learning, to avail himself of the first opportunity to secure an appointment in a college with recognized position or with a hope for the future.

In 1873 I became a member of the College family as

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College physician, and was intimately associated with all the College activities, and six years later became a member of the faculty. In 1872-73 Professor Bessey lived in the main College building. In his room we had many conversations as to the future of the College and he showed me his laboratory equipment, which consisted of one microscope, a Zentmeyer, and a few homemade slides. It was not strange that the Professor should feel that the laboratory work in botany was a long way off. It was two or three years later that he began to think about bringing the men of scientific thought together, thus forming an Iowa Academy of Science.

It was finally arranged that he would write to a number of science teachers in the University, and I should write to a number of physicians of scientific turn of mind, to meet at Iowa City to form an Academy of Science. We were more successful than we expected. I corresponded with Dr. W. D. Middleton of Davenport, Professor of Physiology at the State University, Iowa City; Dr. Elmer F. Clapp of Iowa City, Professor of Anatomy at the State University; Dr. P. J. Farnsworth of Clinton, Professor of Materia Medica and Therapeutics at the State University and Dr. A. G. Field of Des Moines. Professor Bessey wrote to Professors Hinrichs, Calvin, Macbride and Nutter, and Professor Macomber of Iowa Agricultural College, Ames. All these gentlemen, including myself, met at Iowa City at the date agreed upon, and with a two days' session, organized the Iowa Academy of Science. On our return home Professors Bessey and Macomber, Dr. Field and myself filed Articles of Incorporation.

According to a pamphlet published by John P. Irish in 1880, the following men were present at the organizational meeting in Iowa City on August 27, 1875: C. E. Bessey of Ames, Dr. D. S. Fairchild of Ames, Dr. E. F. Clapp of Iowa City, Dr. W. D. Middleton of Davenport, Dr. A. G. Field of Des Moines, Professor Gustavus Hinrichs of Iowa City, and Professor J. K. Macomber of Ames. These men and the following, who were not present but who had previously expressed their approval of the proposed organization, became the charter members of the original Iowa Academy of Science: Professor S. Calvin of Iowa City, Dr. Asa Horr of Dubuque, Dr. C. C. Perry of Davenport, Dr. P. J. Farnsworth of Clinton, and Professor J. E. Todd of Tabor. "On motion, provisional officers were elected as follows: C. E. Bessey, President; W. D. Middleton, Vice-President; W. C. Preston, Secretary and Treasurer."

On June 23, 1876, the members of the Academy met in Iowa City for their "first annual meeting," having also met in Des Moines on January 25, 1876, to approve articles of incorporation and a plan for a constitution that were to be adopted on June 23. A motion was passed at that time to the effect that any member of the Academy who was absent or did not contribute a paper for two years would be dropped from the membership roll. This motion proved to be the

downfall of the first Academy. The small group met on October 6, 1876; Iowa City, May 3-4, 1877; September 26, 1877; May 23-24, 1878; October 18, 1878; and October 9-10, 1879. At the business session on October 10, 1879, "by unanimous vote the Secretary was ordered to strike from the list of Fellows the names of all persons who failed to comply with the rule adopted June 23, 1876." Although the Academy met in 1880, in 1882, and probably in 1884, no published record of meetings of the original Iowa Academy of Science beyond 1880 exists, according to Swisher. However, in 1887 steps were taken to reorganize the Iowa Academy of Science. Its relationship to the original Academy was clearly explained in a "Note on the Origin and Objects of the Academy" in Part 2 of the *Proceedings* for 1890 and 1891 (4):

The present Academy is the lineal descendant of an organization of the same name organized in 1875, but which from failure to hold any meeting after 1884 died by the lapse of its membership, a clause in the constitution providing that members failing to attend a meeting or present a paper during two consecutive years should be dropped from the membership.

Under the circumstances it seemed best to the organizers of the new Academy, nearly all of whom had been members of the old organization, to organize under a new constitution, but with special effort to secure the cooperation of such of the members of the old society as were still within the State. This was so far accomplished that at present as will be seen by examining the list of members that nearly every member of the old Academy now in the State is working in the present organization.

The aims and purposes of the two organizations are stated in almost identical terms in their respective constitutions and look to the encouragement of scientific work, especially in the State of Iowa.

Swisher identified four men who participated in the work of reorganization—Samuel Calvin, T. H. Macbride, J. E. Todd, and F. M. Witter—as members of the original Academy prior to 1880. Others who were involved in the reorganization were L. W. Andrews, Herbert Osborn, R. E. Call, B. D. Halsted, and H. W. Parker.

These historical facts persuaded the Academy's Board of Directors in 1971 that the year 1975 would be designated as the 100th anniversary of the founding of the Iowa Academy of Science, even though the 25th and 50th anniversaries were based on the date of reorganization, 1887.

#### THE PRE-DEPRESSION YEARS

The influence of the early members of the Academy was felt for many years, but by 1920 many of them had either died or moved from the state. Charles E. Bessey died in the spring of 1915 at the age of seventy, having been thirty years old at the time of the organization of the original Academy in 1875.

L. H. Pammel, in the year 1912, wrote an article, "Charter Members of the Iowa Academy of Science" (5) (referring to the 1887 reorganization), as part of the observance of the 25th anniversary of the founding of the "new" Iowa Academy of Science. Samuel Calvin's death occurred April 17,

1911. H. W. Parker died in 1904. Charles Wachsmuth, who was vice president of the "old" Iowa Academy of Science in 1875 and a charter member of the "new" Academy in 1887, died on February 7, 1896. Reverend W. H. Barris died on June 10, 1901. F. M. Witter passed away on October 29, 1909. Most of the other charter members had moved from the state or were no longer active in the Academy, with the exception of Thomas H. Macbride, whom Pammel described as "the nestor of botanical instruction in Iowa if not of the whole range of subjects usually taught under the head of Natural History," and Launcelot Andrews, then president of Andrews Chemical Works in Davenport. Pammel said of Andrews, "Among the older chemists in the state no one did more for chemistry in the Academy than Dr. Andrews, who attended many of its meetings and presented papers which embodied the results of his investigations carried on at the University [of Iowa]."

Herbert Osborn, the first president of the "new" Academy and a member of the "old" Academy, had moved to Ohio and was active in the Ohio Academy of Science. At the 25th anniversary meeting in 1912, Osborn presented a special Anniversary Address, Iowa Academy of Science (6), in which he reviewed the state academy movement in general and argued for the logical function of a state academy to "constitute a useful advisory body for the legislative bodies in dealing with the problems requiring scientific attention, but, in addition to this, the many problems that relate themselves naturally within state boundaries or can best be associated with public state enterprises, surveys, etc." He recalled "with much pleasure" the meetings he attended in the years 1876 to 1884 and expressed regret that the earlier Academy had to be abandoned, referring to "unfortunate disagreement" between some of the members, several sincere efforts to rejuvenate it, and the conclusion that the only course left was to organize on a new basis. As first president of the reorganized Academy in 1887, Osborn had stated a somewhat simpler objective: "In the founding of this Society we have recognized the existence of problems in our State demanding scientific investigation. We have recognized, too, the well-known principle of advantage in organized effort, the added stimulus and benefit accruing to associated work. We find the field broad and the work in waiting great" (7).

In 1923 Gustavus Detlef Hinrichs, a Danish immigrant and a member and organizer of the original Iowa Academy of Science (1875), died at the age of 87 after more than 60 productive years as a teacher and scientist. He presented the first paper before the Academy on January 25, 1876, dealing with "Changes of Climate in Iowa." The meeting was held in the office of Dr. A. G. Field in Des Moines, with Dr. W. D. Middleton, Dr. D. S. Fairchild, Dr. Field, Dr. Hinrichs, and Dr. P. J. Farnsworth present. In subsequent years his papers dealt heavily with weather, especially storms. He organized the Weather Service, which was to be the first state weather and crop service in this country. Twenty-five of his active years were spent as an instructor in physical science at Iowa State University when it first opened. In later years he administered the medical school of St. Louis University. Charles Keyes wrote in memoriam of Hinrichs, "He was the brainiest personage that perhaps ever trod our prairie soil. While he was going about in our midst without our ever realizing anything of his gigantic mental stature and although in this country he was usually so coldly received, because so generally misunderstood, he was received with loud applaudits everywhere throughout intellectual Europe and was showered with

highest encomiums from the learned societies of the Old World." According to Keyes "the complete bibliography of his works constitutes perhaps the most imposing array of recherché accomplishments ever produced in this country" (8). Keyes compiled such a bibliography for the 1924 *Proceedings* (9).

Another charter member of the first Iowa Academy of Science, Dr. Archelaus G. Field, a physician, died in 1924. Although he was not a member of the reorganized Academy, special tribute was paid him in the *Proceedings* of 1924 (10). It was in his office that the first annual meeting of the original Academy was held on January 25, 1876. A more detailed biographical sketch of Dr. Field appears in the *Journal of the Iowa Medical Society*, 12:103, written by Dr. D. S. Fairchild. Fairchild acknowledged that the medical men who were early members of the Academy became so absorbed in professional matters that they ceased to be active workers in the organization, and that most of the contributions were made by the professors of the educational institutions.

Prior to 1894 all Academy members were of equal rank and were designated "fellows." In the historical note that accompanies the constitution of the reorganized Academy, the editor states that "The Academy wishes to be understood as fostering only original investigations, and only such as are capable of work of this sort are knowingly admitted to Fellowship" (11). The revised constitution of 1894 provided for associate members and corresponding fellows, in addition to those elected to fellowship. Any Iowa resident interested in the progress of science, even though not engaged in original research, could become an associate member (12). This definition has prevailed to the present but with some modification in privileges, particularly in 1970 when associates were given voting privileges along with fellows.

Swisher's history constitutes an adequate review of the content of the *Proceedings* through Volume XXXV (1928), and provides a record of the growth in membership during the first three decades of the twentieth century, along with extracts from some of the presidential addresses delivered at the annual meetings. He also points out how the number and variety of papers presented before the Academy increased markedly during the first thirteen years from 1887 to 1900 (13):

At the first meeting twelve papers were presented, and the abstracts of nine were printed. At each succeeding annual meeting the number of papers increased. For the period from 1887 to 1900 some three hundred and fifty papers were presented by about eighty different men. Among the contributors were anthropologists, archaeologists, biologists, botanists, chemists, geologists, physicists, and zoologists—each working for the advancement of science in his particular field.

This diversity has continued and expanded throughout the Academy's history, but the concern of the Academy for the state's natural resources was evident from the first annual meeting of the reorganized society.

The first Iowa Geological Survey was authorized by a bill passed in the Iowa Legislature (then meeting in Iowa City) in 1855. The report of the first three years' work was published in 1858 and covered mostly eastern Iowa. No provision was made for continuing the work until the Eleventh General Assembly in 1866 passed a bill for the reorganization of the Survey for the purpose of dealing with western

Iowa. Additional appropriations continued the Survey through January, 1870, and in that year the printing of a two-volume State Geological Report was authorized. Twenty years went by without further work with state support, and at the first annual meeting of the reorganized Academy, reference was made to the work that could be accomplished by means of a geological survey. In 1892 such a survey was established by the Legislature in accordance with plans formulated by members of the Academy; it has continued to the present (14). Also in 1892 the Iowa Geological Board was established, and the president of the Iowa Academy of Science was named as a member of the board along with the Governor as Chairman, the State Auditor, the president of Iowa State University and the president of The University of Iowa (15). The Board meets periodically to review policies of the Survey and to appoint the State Geologist.

The first State Geologist and organizer of the Iowa Geological Survey in 1892, Samuel Calvin, was paid special tribute in the year 1912 when a special Academy committee was formed to see that a portrait of Calvin be made and placed in the Historical Building in Des Moines. T. H. Macbride, L. H. Pammel, and M. F. Arey, all past presidents, made up the committee. The portrait was finally completed in 1919 by a Professor Cumming and was accepted by E. R. Harlan, curator of the Historical Department of Iowa, at the annual meeting of the Academy at Iowa City, April 24, 1920 (16). Thomas H. Macbride was with his family in California at the time, so he sent his remarks to be read. Among his recollections of Samuel Calvin before the Survey, Macbride described the nature of work in the field in those days (17):

Here is no place for history or biographic details, did one dare indulge it; but may I so far abuse my privilege, and your patience as to tell how fifty years ago, and for many continuous years thereafter I saw a man go forth; in an open wagon, sometimes borrowed, more often hired, sometimes his own, traversing the roadless, bridgeless prairies of northern Iowa; enduring the heat of the August suns, chilled by the damps of night, shelterless, tortured by mosquitoes, drenched by wild thunderstorms that made terrible the midnight hours; breakfasting at dawn and toiling until his campfire burned beneath the evening star. From Lansing to Clarinda, from Dubuque to Mason City, to Winterset, to Ottumwa; athwart the State, across the State, around the State he moved; climbing all rocky heights of nature's carving, pondering the talus of every open quarry, every wall of crumbling rock or sliding shale, wading the creekbeds and tracing the banks of larger streams, away from home for weeks together;—I knew such a man; in such fashion, and not otherwise did he win the rich experience and world-wisdom presently brought in such overflowing measure to the service of the State of Iowa!

Samuel Calvin was president of the Academy in 1908-1909 and died in the year 1911.

Other evidence of the early Academy's concern for conservation of Iowa's natural resources and its influence in this area is cited by Swisher (18):

In 1896 two resolutions were adopted by the Academy—one petitioning the Twenty-sixth General Assembly to take some action toward the preservation of our lakes

to maintain some of the original conditions of the State. The other was presented to the Congress of the United States, calling to its attention the necessity of further legislation looking to the preservation and rational use of the remaining forests of the country.

Much of the Academy's early interest in conservation was due to the efforts of Dr. T. H. Macbride, whose addresses to the Academy in the late 1800's had much to do with the conservation movement evident to Swisher in 1930 when he wrote the first history of the Academy.

Swisher's review of the contents of the papers presented to the Academy during its first 35 years provides much perspective about the contributions that the Academy made to scientific knowledge important to the state of Iowa during those years. Many of the papers were of a very practical nature, dealing with problems of interest to farmers and horticulturists, such as those by L. H. Pammel dealing with plant pathology. References to work going on in the colleges were surprisingly few in spite of the fact that most members of the Academy were connected with Iowa colleges and universities. Papers dealing with problems of a more academic or less practical nature appeared early, however, and even though many of them were of interest primarily to specialists, the Academy provided an ideal forum because of its breadth of interest in the academic as well as the practical.

In the decade 1900-1910 the research interests of the Academy membership were broadened to include the application of scientific knowledge to problems of health and sanitation. About 1900, members of the Academy became interested in a comprehensive survey of Iowa's water supply. The interest has continued to the present, the most recent evidence culminating in a symposium on Iowa's water resources held in 1969 and published as a monograph in 1970 (19).

The need for pure food legislation was the subject of a special Academy committee in 1900. Its work was instrumental in promoting legislation that was finally passed in 1906. (20).

An increasing number of papers dealing with the work of the colleges and universities represented in the membership is noted by Swisher as evidence of the Academy's ever-widening scope during the early 1900's (21), and the large number of papers of the "technical or academic type" continued to occupy considerable space in the *Proceedings*.

In 1914, L. S. Ross, secretary, proposed that the Academy meet in sections to better serve the interests of the members (22), but the program did not appear to be divided in this manner until 1916, although in 1915 the Iowa section of the American Chemical Society held its meeting in conjunction with the Academy. Members of the Mathematics Association of America met on April 28, 1916, at Drake University during the Academy meeting, to form an Iowa section which has continued to the present as the Mathematics Section of the Academy. In 1917 part of the annual program of papers was divided into three sections—biology and botany; geology; and mathematics, physics, and chemistry.

The effects of the years of World War I do not stand out conspicuously in the *Proceedings*, but the secretary's reports reflect the feelings of the times to some extent. Preparedness was on the mind of James H. Lees, secretary of the Academy, as he concluded his report that year with these words (23):

This is the day of preparedness. Every people in the forefront of civilization is issuing the call to its citizenship to prepare, whether it be to advance to the attack against the high cost of living—or the cost of high living, as the case may be—or to ward off the encroachments of a foreign foe. In such a time of stress the men and women of science must not and will not be found wanting. Whether the call comes to us to serve in the laboratory or on some more strenuous field it is for us each one to do our bit—to appropriate a popular phrase—to advance the cause of democracy and of the ideal social order in every way that lies within our power. The world is making demands upon science on a scale which is entirely unprecedented in history. Undoubtedly as strenuous demands will be made for the amelioration and the improving of the conditions of human existence as are now being made for the aid of science in destroying human life. Here, too, the devotees of research must not be found wanting. This call too must find us proven men and women of action, prepared still to measure up to the need and to the responsibility which our opportunities have put upon us. You who now are and who are to be the leaders in intellectual and social progress will not shirk the duty which your country expects you to fulfill.

Lees expressed these feelings again in 1918 (24):

The Academy is to be congratulated that at this time, When so much stress and anxiety is weighing on all hearts and minds, so great interest is manifested in the progress and advancement of scientific achievement. Our program is a little shorter this year than last, it is true, but this is of itself a matter for felicitation and pride, for it indicates how many of our members are occupied with the public good in the widest fields and how much of our energy is being devoted toward making the world "a decent place to live in." We are proud of the work which our fellow members are doing in their service for their country and ours and we rejoice that their scientific attainments and training are of such value in a time of so great need. The scientific fraternity can always be depended upon to do its utmost in patriotic service, unstintingly and unreservedly.

In 1919 the Academy met in Cedar Falls and the sectioning process continued, this time involving sections of zoology, botany, geology, and physics.

That same year the American Association for the Advancement of Science, in existence since 1848, was urging scientific societies throughout the nation to affiliate with the AAAS to unify "the scientific forces of America for improved opportunities for their work and better appreciation of their efforts" (25). Secretary Lees proposed that the Iowa Academy of Science affiliate with AAAS for the mutual benefit of both parties. The affiliation was consummated in 1920 (26).

By 1920 the Academy was flourishing and a leader among state academies of science so far as membership was concerned. A study which had been published in *Science*, December 5, 1919, referred to by Secretary Lees in his report of 1920 (27), showed that the Iowa Academy ranked first both in membership and in publications and that all of the sciences of the day were well represented. In a total mem-

bership of 350, one hundred were not classified, and the balance consisted of sixty botanists, thirty chemists, forty geologists, eighteen mathematicians, twelve physicians, thirty physicists, and sixty zoologists. The year before Secretary Lees had expressed the need for a change in the editorial staff (the secretary had edited the *Proceedings* from the start) because, as he put it (28), "The Academy has grown to such proportions and the number of papers presented annually for publication has become so large that the task of editing the *Proceedings* and preparing them for the printer has become a very arduous one for the volunteer editor, so to speak, and particularly, perhaps, for one who has an increasingly large amount of similar work to do in his regular capacity" (in connection with the Iowa Geological Survey). In the same report he more or less suggested that the editor/secretary and the treasurer (a separate office) should be paid, probably by the state, since "our *Proceedings* are in a way public and official documents, since the State provides for their publication . . ." The Committee on the Secretary's Report did recommend an increase in the secretary's honorarium from twenty-five to fifty dollars per year and that all expenses be paid for both the secretary and the treasurer, but they recognized "that such labor must for the present continue to be a labor of love." (The state began financing the publication of the *Proceedings* in 1892 as an appendix to the reports of the State Horticultural Society. The following year the General Assembly adopted an act (29) providing for the separate publication of the reports.)

The *Proceedings* for 1921 is the first to list the chairmen of sections, the sections being Botany, Chemistry, Geology, Mathematics, Physics, and Zoology. Psychology, though not listed as a section, was included in the papers of earlier meetings, and in the 1920's the field of experimental psychology became one of increasing interest in the Academy. In 1920 Dr. C. E. Seashore and a number of his assistants presented a symposium entitled "Some Results of Current Research in the Psychological Laboratory of the State University of Iowa" (30). (C. E. Seashore was Academy president in 1926-27.)

The continued growth in membership resulted in a call for the recognition in the constitution of the sectional organization of the Academy in 1921. The revised constitution and bylaws adopted in 1921 (31) included all amendments adopted since 1903. The new bylaws were appended to provide for representation on the Council of the AAAS and the organization by sections. The latter allowed the sections to be "organized as sections of their national societies" and section presidents to be *ex officio* members of the Academy's Executive Committee.

Just before the 1920 meeting in Iowa City, the 38th General Assembly had enacted a law abolishing the office of state printer and providing for printing by contract with price limits pegged to those specified under the old system. But prices had gone up drastically during the war and the state was forced to stop printing under the new law until the 39th General Assembly created a printing board. In the meantime the *Proceedings* went unpublished, much to the chagrin of the Academy's secretary, J. H. Lees (32). When the new printing board, made up of the Attorney General, the State Auditor, and the Secretary of State, finally approved the printing of Volumes XXVIII and XXIX, a limit of 400 pages per volume was imposed, creating serious editorial problems due to the large number of papers presented (103 in 1922, compared with 59 in 1914, and a change in membership from 260 in 1914 to 340 in 1922) (33). These prob-

lems were also experienced by the Iowa Geological Survey, and Lees admitted that "with the work of the Academy added to the work of the Geological Survey it [was] not within the limits of his time or strength to read the copy and then the proofs as quickly as he would like to. So long as the Academy must choose a secretary from those of its members who are already busy with other work the outlook for more prompt publication does not seem very hopeful."

When the Academy met in Ames on May 2 and 3, 1924, James H. Lees, the secretary for the past ten years, was unable to be present because of an illness of several months, and his report was read by P. S. Helmick, secretary *pro tem*. Helmick became the secretary that year and continued in office until 1929, when he was succeeded by J. C. Gilman. By 1925 the membership had exceeded 500, and one of Helmick's first recommendations was that the Academy establish the office of editor to relieve the secretary of part of his burden. He hoped that with such action "we would have an Editorial Board which could not fail to publish the *Proceedings* on time" (34). Willis DeRyke was elected editor in 1925 and served until August, 1926, when he resigned and the executive committee appointed G. H. Coleman. Coleman was elected editor in 1927 and served until 1930, with the exception of the year 1928-29 when James H. Lees took over while Coleman was in Europe (35). By 1928 the membership was just over 600, an increase of twenty percent in three years.

Swisher compiled data concerning the number of papers presented to the Academy and published in the *Proceedings* during the years 1921-1928, counting all the 1,174 papers presented, of which 736 were published in the *Proceedings* and 438 were not (some were published elsewhere, particularly in the field of mathematics). Chemistry led the list with 204 papers. Botany was second with 202 papers; physics was third with 182, followed by geology with 162, zoology with 141, mathematics with 98 (only five of which appeared in the *Proceedings*), psychology with 83, bacteriology with 82, and only two in archaeology. The remaining 18 were unclassified (36).

Bacteriology appeared as a section in the year 1924-25 and psychology was listed as a section for the first time in that same year. The bylaws were accordingly revised in 1927, along with a change to make the editor an officer of the Academy. As the first editor who was not also the secretary, Willis DeRyke reported in 1926 that "I now freely realize the large amount of work that is necessary to produce one of our publications and am really surprised that our Secretary has previously been able to take care of his duties and handle the work of editing the volume" (37).

State academies of science had an informal association with the AAAS prior to 1919, when a revision of the AAAS constitution gave academies the right of representation on the AAAS Council; they were known as "affiliated academies." Iowa was first included among the academies so affiliated in 1921, at which time there were nineteen. However, no special report of the Academy's representative to the AAAS appeared until 1925, but in 1924 a motion was passed at the general meeting that the Iowa Academy in cooperation with the proper authorities in Des Moines invite the American Association for the Advancement of Science to hold a meeting in Des Moines in December, 1925. President Pammel appointed G. W. Stewart chairman of a special committee with members selected from each of the institutions in the state. Kansas City was the site selected by the AAAS for the 1925

meeting, but D. W. Morehouse, the Academy's AAAS representative, negotiated successfully for a Des Moines meeting in 1929.

At the Philadelphia meeting of the AAAS in 1926, a committee of academy representatives (Iowa not included) met with the AAAS president, L. H. Bailey, and permanent secretary B. E. Livingston to plan for an organization of state academies. The minutes of the organization's first annual meeting in 1927 are a record of the beginning of the future Academy Conference. Eleven representatives (including D. W. Morehouse of the Iowa Academy of Science) were present, out of nineteen affiliated academies, and agreed to organize primarily for the purpose of having an annual round-table discussion of the academy movement. At a meeting of the affiliated academies of science at the 1927 AAAS convention in Nashville, Tennessee, the following resolution was passed (38):

Resolved that it would be desirable at the time and place of the annual meeting of the AAAS to hold annually a conference of representatives of the State Academies of Science and that the Council of the Association be requested to authorize such a conference.

Two days later the AAAS Council adopted a resolution favoring such a conference and instructed the Executive Committee of the AAAS to make the arrangements. Thus the Academy Conference was formed and has continued to this day, although the name was changed to Association of Academies of Science in 1972. The annual conferences have covered a wide variety of topics and the number of affiliated academies has grown to 41. This affiliation has had many obvious effects in the direction taken by the Iowa Academy of Science during its history.

In 1925 the state academies of science were receiving a grant of fifty cents for each academy member who was also an AAAS member, with no strings attached. (At that time Iowa Academy dues were only \$1 per year.) In addition, the usual \$5 entrance fee was waived for academy members who joined the AAAS. The Executive Committee set up the Academy Research Fund consisting of the AAAS refunds, and the first grant (\$200) was made to D. W. Morehouse of Drake University in 1927 for research on the nature of a ring nebula in Cygnus (39). (Morehouse, incidentally, was the Academy's AAAS representative.) President Seashore requested him to attempt to get an appropriation from the state Legislature to help defray the expense of the planned 1929 meeting of the AAAS in Des Moines. Morehouse was successful in persuading the budget director to include \$2,000 in the state budget for 1929 for this purpose. The legislative branch of the Biological Survey Committee had the same year secured a \$6,000 appropriation to be used by the Iowa Geological Survey for biological work for the biennium, even though the committee had been unsuccessful in its request for \$2,000 per year just two years before (40).

These financial successes, along with the establishment of the research grant fund, prompted Secretary Helmick in 1928 to recommend the establishment of an Academy endowment fund similar to the one administered by the Virginia Academy of Science. This was one of the first evidences of the communication that was developing among the various state academies by way of their contacts through the AAAS. Helmick was able to pursue the matter further the following year by administering a questionnaire to the 22 academies affiliated

with AAAS, to determine the sources of their financial support. As a result of the findings of that study, the Executive Committee of the Iowa Academy moved in 1930 to set aside as the nucleus of an endowment fund a certain amount from the treasury and set up a special committee to consider means of increasing the fund to support research activities in the state of Iowa. In 1931, \$1,000 was allocated to the new endowment fund, but the Depression was soon to take its toll.

#### THE ACADEMY IN THE 1930's

In 1932 Secretary Gilman reported that the year had been a trying one and that the Academy had suffered due to bank failures in Iowa City. Even the AAAS research grant refunds had been temporarily discontinued. The special Committee on the Endowment Fund reported that they felt it would be unwise to undertake an active campaign to increase the fund due to the prevailing economic conditions. The membership total had moved downward that year, too—from 814 in 1930-31 to 764 in 1931-32. The downward trend was not reversed until 1945.

Financial problems continued into 1933, when Secretary Gilman reported (41):

The past year has been one of financial stress for all of us and the Academy has not escaped its share. We started the year with a treasury depleted by bank failures, and this year after again establishing sufficient funds to carry us through, our third bank closed its doors, leaving us practically penniless, at least temporarily . . . the future seems very uncertain . . . With the loss of our funds the continuance of state support for the printing of our *Proceedings* became a second source of apprehension. A bill to eliminate this item from the expense of the State was introduced into the legislature in behalf of state economy. It passed the House but by the excellent work of our Legislative Committee, particularly its chairman, Dr. Morehouse, this bill was amended in the Senate and [support] will therefore be continued.

Gilman expressed his hope that "in the not too distant future we can free our organization from its dependence on the state for the publication of its *Proceedings* . . . to me it seems undignified and rather abasing to be at the beck and call of the politicians as we have been during the past year."

The secretary was more optimistic about the financial state of the Academy in 1934, however (42):

A year ago we had touched bottom insofar as our finances were concerned, we were considering a new constitution, our *Proceedings* had been reduced from 400 to 200 pages which caused not only the loss of half our space of publication but also re-editing the entire edition, and delaying its appearance for two years. The delay is expensive; it has caused your officers heavy embarrassment and lost the Academy many members.

Today we are financially on the road to recovery. We have recovered 30% of the funds from the Johnson County Bank, 50% from the Union-Story bank of Ames, and 80% from the First National Bank of Iowa City.

His comments about the Academy's purpose bordered on cynicism, however (43):



Before closing may I raise the question of our purpose in existing. I am asked this question many times during the year by both scientists and laymen and I never feel that I have adequately covered the point when I quote the Constitution, "To encourage scientific work in the State of Iowa." This statement needs further definition and I should welcome any suggestions from the membership as to how we may bring this objective further from the general into the specific. It is true we are working with the high schools, the biologists promise substantial contributions from the Committee on Biological Survey, but how can we perform a similar service for the physicists, the chemists, the psychologists and the mathematicians? How may we be effective in the conservation program of the State? These and other similar questions are constantly arising and I am passing them on to you in hope that, from the answers we make to them, we may formulate a general policy to guide the progress of the Academy. Unless such a general policy is formulated, we shall continue to drift, changing our course with the whim of every temporary breeze.

Joseph Gilman was not one to let the Academy rest on its laurels, but he probably failed to appreciate the changing role of the Iowa Academy, or state science academies in general, necessitated by changes in society that began to accelerate as the country moved out of the Depression. Much of the activity of the Academy during the 1930's, aside from the usual publishing of the *Proceedings* and conducting the annual convention, dealt with the encouragement of scientific talent in the high schools in response to a national need that some years earlier was not apparent. "Temporary breezes" continued to keep the Academy on an uncertain course from this point on, but the importance of the Academy as a responsive agency became more apparent as time went on.

The Depression and World War II provide obvious historical markers for a period that can be seen as an era in retrospect. The 1940's brought the Academy into another responsive phase that provides another natural historical chapter. These two periods in the Academy's history are almost coincident with the long tenure of a particular secretary.

Joseph Gilman guided the Academy through some of its most difficult years. His reports regularly reflected his continuing concern that the Academy should be doing more and often conveyed the impression that he wondered whether the Academy had a real purpose that was felt at the level of the individual member. He was personally responsible for some of the most significant undertakings of the Academy and admitted that he was probably "guilty" of allowing more and more of the responsibility for the fruition of Academy projects to reside in the secretary's office, though he did not claim credit for himself. An Academy member who worked with Gilman recently described him as an industrious but not dynamic person who did not operate on the basis of personality. Some of Gilman's own words, as they were written in his secretary's reports, indicate how his dissatisfaction with the status quo was a great driving force in his approach to Academy affairs:

[1931] Another group which we have not been able to hold are the bacteriologists, particularly those on the medical side of that field. Their defection was so great that there was no bacteriological section at this meet-

ing, yet there is certainly a large group outside of Ames who could profitably meet with us . . . The chief criticism of the membership to be met is concerned with publication, and until such time as we can stand on our own feet and can publish our *Proceedings* without state intervention this condition will be with us. Possibly it could be partially overcome by changing our *Proceedings* from an annual to a quarterly basis, although there are many objections to this latter method (44).

1932: while praising the High School Relations Committee and their work in establishing the Junior Academy of Science, he made some frank remarks about other Academy committees:

Not to criticize them so much as find out whether there may be some more effective means of helping them accomplish their objectives. My opinion is that we have not distinguished clearly enough between the standing committees which should continue their work over a period of years and hence should have a continuity of personnel, from the more temporary committees that serve a particular meeting or immediate need (45).

Gilman also raised questions about the usefulness of the *Proceedings*, referring to this as a perennial question (46).

Recently there has been some little discussion of the membership as to what value the *Proceedings* were and how they might be made more valuable as well as more effective in helping the Academy attain its objectives. It has been said that the *Proceedings* merely served as a repository for the minor papers of the professional members of the Academy and thereby rendered little service to the remainder of the membership and practically none to the public which paid the bill. There is just enough truth in the criticism to justify an opening of the question of how the matter may be remedied. Modification might proceed in either of two directions. One, change the form; two, change the content. By changing form we might look for more timely production by bringing the *Proceedings* out quarterly or even monthly . . . it is said that we are not being effective as a group on such questions as conservation, biologic surveys, stream pollution and other similar questions which are at present being fought out by other agencies. Personally, I doubt the wisdom of using our *Proceedings* for controversial purposes . . . a demand which has been growing is for service by helping to catalog and make available our present knowledge of the flora and fauna of the state. This demand will increase to cover other fields of science and will be of unquestioned value to the development of such movements as the Junior Academy. However, should the *Proceedings* be used for this purpose it would entail the reduction of space available to such papers as we are now publishing. I suggest, therefore, the separate publication of a series of memoirs in which the flora, fauna, geology or chemistry of our state would be summarized, adequately illustrated and keyed for the use of the public in the interest of the amateur.

[1933] By changing the Executive Committee from section chairmen to standing committee chairmen the



Academy secures continuity of personnel and an integration through the Executive Committee of the activities of the standing committees (47).

[1934] The first year of operation under the revised Constitution has shown marked improvement in the working machinery of the Academy, but the Executive Committee is still large for smooth functioning and we should be considering ways and means of making it a more effective body (48).

1935: Gilman again decried the quality of papers in the *Proceedings*, saying:

Many of the better papers presented at the meetings are not published. I realize that this condition has arisen from a variety of causes. The unavoidable delay was one, another which has been suggested was the limited public reached by our publication. This latter implication I wish to deny. The Iowa Academy of Science is widely known and its *Proceedings* are sought after not only by American institutions but also in Europe. I have in my files a standing order from a London book seller for each volume as it appears and I am sure you would be surprised as I was at the number of requests currently crossing the Secretary's desk asking for volumes or reprints of the articles published by us. Our exchange list covers libraries in 23 states and 13 foreign countries. Certainly a paper in our *Proceedings* is not buried and it behooves us to be constantly watchful that the quality which we think desirable is maintained.

Gilman also mentioned the rather disappointing experience of the Committee on Biological Survey. It had received a \$300 appropriation from the Academy to start the publication of a series of booklets on Iowa flora and fauna, but the money was still in the treasury. However, Gilman says, "let me say that the agitation set up by this committee has stimulated the erection in other places of machinery to do this type of service. Perhaps such stimulation without the burden of the actual work is all that the Academy should hope to accomplish" (49).

[1936] Should we be satisfied with meeting once a year and listen to papers and fraternize socially or should we look with a broader vision to use our strength to crystallize the scientific method in the state and lend our aid to the solution of the many complex problems which we all as citizens should face. Your secretary prefers this longer view. Let us therefore examine ourselves on how we are meeting these problems as an Academy. Three significant phases of civic activities that are before us today are science teaching, state planning, and conservation.

Gilman goes on to compliment the Committee on High School Relations and the excellent progress that it has made with the radio program and its popularity, the fact that it is now planning a series of college scholarships by means of which the continued interest in science of individual members of the Junior Academy can be ensured, and also its cooperation with the Science Teachers Association to maintain the cordial cooperation between the two groups. He says:

In the field of college teaching our record is not so

good. Three years ago in Davenport the sections of Botany and Zoology installed a symposium on teaching. This symposium was maintained two years and then dropped. That its discontinuance was not due to lack of interest is indicated not only from the enthusiastic reports of those attending but also from the fact that on this year's program there are 11 papers on the teaching of science distributed over the various sections. I suggest that a committee be appointed to consider the forming of a new section in this field and to look after it until it shall be self-sustaining.

In the field of state planning the appointment of Dr. A. C. Trowbridge, as chairman of the Committee on Conservation, enabled us to consolidate our position as leaders in science in relation to this extremely significant work. Dr. Trowbridge became the liaison officer between the Academy and the State Planning Board. Previously the Academy had been rather ignored and this appointment should put the Academy in position to take its rightful place in this important state project. In relation to conservation a rather anomalous situation has arisen. The State Conservation Commission recently set up an Advisory Committee of Science. Instead of turning to the Academy, which under the leadership of Dr. Pammel and Dr. Shimek took large part in the establishment of the conservation movement of the state and which presumably is the best cross-section of science in our state, this committee was formed entirely without the knowledge of the Academy. Would it not be better to act with the unified weight of our organization behind them rather than as individuals?

I am placing no blame but merely trying to point out a condition which, if we allow to become fixed, will mean the death of the organization by attrition (50).

[1937] The membership is gradually recovering from the depression and our numbers are increasing rather rapidly. Nevertheless, there are still many scientists in the state who are not numbered among our Fellows. Is there not some means by which we might gain their fellowship and they ours? I should like to make a special plea that we welcome the so-called amateur in science, particularly. If we remember the great debt science owes to this group for many fundamentals of our knowledge we would be so humble toward this group that we could not be charged, as I once was, that the Iowa Academy was only after the dollar. One of our primary functions is to see to it that these sincere and earnest investigators be given full opportunity in our ranks.

Gilman again expressed his hope that the Academy could become something broader than it was in making remarks such as the following:

While the Committee on Legislation was primarily erected with the selfish motive of protecting Academy interests and has met this responsibility excellently, are there not other more altruistic but none-the-less important functions that this group might perform? Should we not look to them for the furthering of the aims and objectives of our other activities and for the guarding of our scientific interest in general? With other groups organizing to gain selfish ends, might not the Academy, particularly in those questions whose solution must be

based on scientific investigation, lend its weight to see that such problems are properly cared for rather than allowing them to be made tools of political expediency?

To sum up, I would recommend that we realize our strength is in coordinated effort. We have appointed committees to work out our more important problems, but as yet there is too little cooperation between the constituted committees for the full effectiveness of our organization to express itself. The Conservation Committee, for example, is carrying on an excellent piece of work, but its recommendation should in turn be taken by the Legislative Committee and by them placed in such quarters that the actions of the Academy will be felt. Otherwise our efforts become mere vaporings that are lost in the clamor of a more vociferous world (51).

1938: in his report as secretary-treasurer for 1937-38, Gilman reviewed some of the accomplishments of the Academy since he took office in 1929 (52):

No year has passed in which the Secretary is unable to point with pride some major accomplishment of the organization. These accomplishments were not the achievements of the Secretary but of the membership and in most cases he was only the instrument by means of which the fact was made possible. In 1930 the Academy published its history. In 1931 the Junior Academy of Science of Iowa was set up and through the efforts of C. W. Lantz of the High School Relations Committee, it has become a vigorous organization. As an adjunct to this group the Academy also inaugurated the Junior Academy radio program by means of which weekly broadcasts on scientific subjects are made over stations WOI and WSUI. It is interesting to note that this year the AAAS is starting a similar series over the red network of the NBC. We may properly congratulate ourselves on the foresight which made us pioneers in this field. In 1932 the Committee on Finance was set up, and it has taken over the advisory functions and the business of the Academy very satisfactorily. In 1933 the Constitution was revised under the able leadership of Dr. E. J. Cable. While the work of the Academy was unified under the new arrangement there are still certain changes that need to be worked up. The chief of these is the size of the Executive Committee. 18 members are too many to get together effectively and consequently, the business of the Academy suffers. How to curtail the membership and yet have a representative group is a problem that remains to be solved. Intersectional and interinstitutional jealousies have thus far interfered with any reduction in personnel of the committee. In practice, the size of the committee causes a more serious loss to the business of the Academy than the sections or institutions gained from the insistence that all be represented in this body. In 1934 the Academy appropriated \$300 to the Committee on Biological Survey enabling them to carry out the publication of Prof. Jaques' book, "How to Know the Insects." In 1935 arrangements were completed with the library of Iowa State College to care for the exchanges which the Academy receives from its publications and the distribution of the *Proceedings* to the membership. With this arrangement the exchange list has grown and the time has come to consider the size of the edition to be printed in the future. With the growing

membership, the present edition, 1000, will soon be inadequate to supply our needs. The demand from libraries, particularly from foreign countries, has been increasing.

In 1936 the Academy celebrated its 50th anniversary in Iowa City, honoring the members who had been active for 40 years or more. This celebration was so well received that we might well consider the possibility of continuing the recognition annually.

In 1937 we established the new section on Science Teaching. This section, having interest in all the other sections, raises the problem of conflicting time of meeting. At present our meetings are already crowded with papers and it would be difficult to curtail them for the sake of this new section.

1939: Gilman again voices his concern about the function of the Academy and how it can be improved and raises questions about expansion of the Academy's role:

There are today many societies in the state that are interested in some of the phases of science in which we also are engaged. A group that immediately comes to mind are the conservation societies. We have been pioneers in this field and as such perhaps might be proper persons to approach them with the suggestion of affiliation. Expansion might be advisable in another direction. For example, the undergraduate college student or the amateur radio operators (53).

1940: Gilman mentions that the Academy had succeeded in obtaining cooperation with the Iowa State Medical Society in sponsoring a symposium program in the field of medical science. Looking ahead, he said,

Perhaps a similar program sponsored by us with the representatives of the Engineering fraternity might be envisioned in the not too distant future.

Gilman's long tenure in his office and the effects of his attitude toward his work load are expressed in this quote (54):

The Academy has a tendency to let the Secretary do it and as I grow more experienced in this office, I'm sure one of my weaknesses has been to let more and more of this responsibility relapse into the Secretary's office. This tendency is one which the membership should help the Secretary guard against.

During the last year your secretary has had the personal gratification and signal honor of election to the chairmanship of the Academy Conference of the American Association for the Advancement of Science. He fully realizes that this honor is not his only but rather the reflection of the excellence of the organization he represents in the Conference, that is, the Iowa Academy of Science. The chairman's address "The Organization of a State Academy" was well received and will be published in our *Proceedings*. The proposals made therein are the results of his experiences as your secretary and the reflection of the consensus of our whole Academy. He hereby acknowledges his indebtedness.

Three years after his resignation as secretary-treasurer, on

March 1, 1941, Gilman was elected vice-president of the Academy; he served as president in 1945-46. It was during his tenure as president and AAAS representative that the AAAS Research Grant program was established. It was also that year that the Iowa Science Talent Search was conceived. Not limiting his activity to the Academy, Gilman was a member of several professional societies and honoraries, and was influential in the affairs of the Mycological Society of America as a council member, as secretary-treasurer, as vice-president, and president. He retired from the Botany Department at Iowa State University in 1962, having served there since 1918. He passed away at Ames on December 24, 1966, following a heart attack. "The quiet wisdom, the sparkling wit, the total lack of affectation are the things for which Joseph C. Gilman will always be remembered" (55).

Until 1925 the task of editing the *Proceedings* and seeing that they were published was part of the secretary's responsibilities. In that year the editor became a regular officer. The work of the editor was obviously a source of frustration during most of the Academy's history, as indicated by the perennial apologies for the lateness of the volume's appearance and the uncertainty of the amount of state support for the printing. On more than one occasion, Secretary Gilman even raised questions about the usefulness of the *Proceedings*, but in spite of the deterrents Florence Nichols served as editor for ten years, resigning only one month after Gilman submitted his resignation in 1941. The Depression years were especially difficult for the editor because of reduced support for printing costs. A low point was apparently passed in 1935 when three volumes of the *Proceedings* (Volumes 39, 40, and 41) appeared within the year, bringing the publication up to date. More than 700 names were on the membership rolls at that time, but less than 500 were paid up, making the distribution of volumes for a three-year period a complicated clerical problem. An agreement was reached in 1935 whereby the distribution and storage was handled by the Iowa State College Library, allowing that agency to retain monies from the sale of back issues. The arrangement has continued to the present, with modifications that will be described later.

During the 1930's there was a minor flurry of activity and some optimism about the possibility of the Academy publishing pamphlets or monographs on science topics indigenous to Iowa. In 1930 the Committee on Biological Survey, which had been set up in 1923 by President L. H. Pammel at the request of the botany and zoology sections, had been successful in securing a state appropriation of \$6,000 for the use of the Iowa Geological Survey to conduct biological work, after several years of attempts to effect such legislation. Survey work on the honey plants of Iowa had been under way for many years and it now appeared that *The Honey Plants of Iowa*, the first of a series of the biological survey, would be published. The committee consisted of L. H. Pammel, chairman, H. S. Conard, H. M. Kelly, L. S. Ross, and F. A. Stromsten. In 1933 the committee submitted a list of desirable publications—semi-popular pamphlets or booklets on the various groups of animals and plants in Iowa—indicating that various members of the Academy had been nominated to write the papers (56). The committee had undoubtedly been influenced by Gilman's proposal the year before that the Academy publish separately (apart from the *Proceedings*) "a series of memoirs in which the flora, fauna, geology, or chemistry of our state would be summarized, adequately illustrated, and keyed for the use of the public in the interest of the amateur" (57).

In 1934 the committee asked for \$300 to establish a revolving fund to pay for the publication of accepted papers, the sale of which could promptly restore the fund to finance the publication of the next number without cost to the Academy. This amount was approved by the Executive Committee to establish a publication fund, but in 1935 the committee reported that it was having no success in getting manuscripts for publication by the Academy itself but was "satisfied to solicit manuscripts for publication or review" (58). The committee nevertheless continued to promote a series of pamphlets on the natural history of Iowa and had accepted for publication a manuscript on the insects of Iowa by Prof. H. E. Jaques. A booklet on ferns supposedly prepared under the plan of this committee was published by Iowa State College. The committee also reported that it was definitely working on a book on birds of Iowa and a pamphlet on mammals of Iowa.

In 1937 the Committee on Biological Survey proudly reported the publication of No. 1 of the Academy series with the aid of the \$300 grant which the Academy "held so long in readiness." The title of the publication was *How to Know the Insects*, by Professor H. E. Jaques, a fellow of the Academy, Professor of Biology at Iowa Wesleyan College, and Director of the Iowa Insect Survey in collaboration with the State University and the U.S. Department of Agriculture. According to the committee's report (59), the book had a wide sale throughout the United States, and the \$300 advance was already back in the treasury, available for another publication. The report mentioned a number of circulars, pamphlets, and publications written by members of the committee but not published by the Academy. The chairman of the committee during these years was H. S. Conard.

By 1938 over 7,000 copies of Jaques' book on insects had been distributed all over the United States. The committee then wanted to prepare a key to the flowering plants of Iowa and had no trouble receiving authorization to use the \$300 publication fund at its discretion for this purpose (60). The second Academy pamphlet of the series, *Plants of Iowa*, a book of keys for identifying the ferns and flowering plants of Iowa by Henry S. Conard of Grinnell College, was published in 1939. The \$300 publication fund was loaned to Prof. Conard to assist with publication costs. The loan was repaid in 1940, but Secretary Gilman mentioned in his report that by that time the federal absorption of conservation and biological survey work through the various alphabetical agencies had left the two Academy committees (Conservation and Biological Survey) with little to do except stand by and express their willingness to cooperate. The Committee on Biological Survey resigned in 1942 with no protest.

During the 1930's the Conservation Committee's reports were essays on the need for a comprehensive plan for the preservation of natural areas and the control of soil erosion. The committee advocated that land use plans should be worked out through the state or other public agencies. The committee had not undertaken any specific projects but exhorted the members of the Academy to exert influence individually toward "pushing forward the conservation program of the state" (61).

G. B. MacDonald chaired the Conservation Committee through 1936, when at the business meeting of the Academy in Iowa City the membership passed a motion offering to the State Conservation Commission "any aid we are able to furnish them" (62). That year a committee was appointed to "review the activities and present functions of the Academy

to determine its effectiveness both as an adjunct of the state government and in relation to the members of the Academy itself" (63). The committee was continued in 1937. When Dr. A. C. Trowbridge, State Geologist, was appointed chairman of the Committee on Conservation in 1936, Secretary Gilman viewed the appointment as a consolidation of the Academy's position in the field of state planning, because Trowbridge then became the liaison officer between the Academy and the State Planning Board. After the annual meeting of the Academy in April, 1936, in Iowa City, the Conservation Committee and representatives from twelve Iowa colleges met with representatives of the State Conservation Commission (at the request of the Commission). As a consequence of that meeting and the activities that followed, the Conservation Committee of the Academy became the Science Advisory Committee to the State Conservation Commission, by arrangement with M. L. Hutton, Director of the Conservation Commission (64). This relationship was tenuous, however, and the reports for 1938 and 1939 indicated that the Conservation Committee had not met and that the committee had not found a plan by which it or its members could take "an active part or effective part in conservation in the state" (65). The committee recommended its own termination in 1941, but the recommendation was defeated in the general business session. The committee was extensively reorganized in 1942 but the war postponed its work along with that of the Academy generally.

#### THE HIGH SCHOOL SCIENCE CLUB MOVEMENT

Another line of Academy activity during the 1930's can be traced back to the Academy Conference held in Des Moines in 1929—the high school science club movement and the Junior Academy of Science. Thirteen state academies were represented at the Academy Conference that year, and D. W. Morehouse, the Iowa Academy's representative, reported that a "very unusual" paper was presented by Louis Astell of West Chicago High School on "How State Academies May Aid Science Studies Among High School Students" (66).

Previous to the May, 1931, meeting of the Academy at Davenport High School, President H. L. Rietz had appointed a Committee on High School Science Clubs, chaired by C. W. Lantz of Iowa State Teachers College. The historical significance of this committee's report in 1931 is such that much of it is quoted here (67):

We believe that the Iowa Academy of Science should exert a greater influence upon science in the secondary schools of the state than it has in the past, consequently we feel that the organization of high school science clubs should be encouraged and stimulated and that steps should be taken to organize these clubs into the Junior Academy of Science of Iowa. This organization is to be a separate organization but sponsored and affiliated with the Iowa Academy of Science.

The American Association for the Advancement of Science through its special committee on the Place of Science in Education with Dr. Otis W. Caldwell of Columbia University as chairman, is encouraging the Junior Academy movement. At the Cleveland meeting an informal national organization was made. Dr. Caldwell was elected chairman of a committee to correlate the work

among the states in 1931. Mr. Louis A. Astell of Columbia University was elected chairman and secretary of the Committee on Extension. Mr. H. Carl Osterling of the Illinois Natural History Survey was made chairman of a Committee on Publications. An Executive Committee, consisting of Dr. Caldwell, as chairman, Mr. Astell, and the chairmen of the state organizations was formed to carry out the work for 1931. By virtue of this action the chairman of your committee is a member of this national committee. There are ten states including Iowa represented on this committee. Other states have signified their interest. For three years Illinois has had a very successful working state organization known as the Illinois Junior Academy of Science. While the movement is in a preliminary stage, it shows great possibilities of developing into a strong national movement sponsored by the Senior State Academies of Science. We might look forward to a Junior Academy of Science of Iowa as a part of a national organization. Your committee feels that the Iowa Academy of Science should have a part in this Junior Academy movement. The Iowa Academy of Science through a Junior Academy, could give valuable aid to science by stimulating interest in science clubs among high school students. Some of the aids that could be given are as follows: (1) Provide a plan of organization for clubs and issue charters to clubs. (2) By some form of publication suggest projects, suitable club programs and program material, and give high school clubs an opportunity to exchange ideas. (3) Arrange for a state meeting of the Junior Academy to be held at the place and time of the annual meeting of the Iowa Academy of Science. (4) Offer prizes for science projects carried out by high school clubs and exhibited at the annual meeting. (5) Other contests of different kinds, such as a contest for the best chapter news letter, might be carried out during the year.

We might look forward to a state meeting of a Junior Academy of Science with an attendance as large or larger than the attendance of the Senior Academy. Illinois, two months ago, reported that 140 high school students had already signed to attend the annual meeting this year. Such a meeting should be stimulating to the high school boys and girls and it certainly would be to the Senior Academy members.

This movement should be of value to the Iowa Academy of Science. (1) It would be one of the very best methods to stimulate an interest in science with the public. High School Science Clubs can create a local interest in science. We need to bring our science to the people of Iowa. (2) It would give a means by which science facts, such as those pertaining to conservation or health, could be transmitted directly to communities through the boys and girls in the high schools. Within a few years, these boys and girls will be citizens of Iowa. (3) It should encourage high school teachers of science to become members of the Iowa Academy of Science, a very desirable thing from the standpoint of the high schools as well as from our standpoint.

In order to carry out this program, we wish to recommend further: That the present committee be continued for one more year in order to organize and start the Junior Academy.

That the name of this committee be changed to the

Committee on High School Relations and that it be empowered to act on other matters relating to high school science as well as high school science clubs.

A constitution for the new Junior Academy of Science of Iowa was also presented by the committee and adopted by the membership, and chapters of the new organization were established throughout the state through the efforts of the Committee on the Junior Academy during the following year.

The AAAS and the inter-academy communication afforded by the Academy Conference had a tremendous effect in getting the junior academy movement started in Iowa and in the national growth of this movement in the years that followed.

The first annual meeting of the Junior Academy of Science of Iowa was held in 1932 at Cedar Falls on April 29 and 30. Over 216 high school students were registered and thirteen science clubs were represented, even though the actual work of the affiliation of the clubs was not started until February. Prior to that date the Academy's Committee on Junior Academy (the name had not yet been changed to High School Relations) had publicized the proposed Junior Academy through the Iowa State Teachers Association and the *Science Bulletin*, a publication of the Extension Division of Iowa State Teachers College that went to 1,500 science teachers in the state. One hundred high schools had requested information by correspondence. In spite of the lateness of organizing, thirty projects were entered in a competition for the Academy Trophy; Cedar Falls High School was the winner. The first senior councillor of the Junior Academy was Donald Pettit of Cedar Falls (68).

The growth of the Junior Academy in 1933 was hampered somewhat by the economic condition of the country. School administrators often discouraged more extracurricular activities and science teachers were generally carrying unusually heavy teaching loads, making science club work difficult. Even so, fifteen clubs had joined and 192 students attended the 1933 meeting in Cedar Rapids. In addition, four issues of the *Junior Academy Bulletin* had been distributed during the year, and, with the cooperation of Iowa State College and the State University, fifteen-minute weekly broadcasts on science subjects for high school students had been started on stations WOI and WSUI, "through the efforts of Dr. Gilman," according to C. W. Lantz's report. These radio talks, under the program title Science and Human Progress, were, of course, presented by Senior Academy members. A list of available speakers for Junior Academy chapters was also drawn up from the Academy's membership.

Secretary Gilman cited the Junior Academy radio program as one of the most significant undertakings of the Iowa Academy. The title of the program had been changed to The Usefulness of Science, and the popularity of the program was indicated by the fact that 58 requests were received each week, on the average, for mimeographed copies of the talks.

The name of the Committee on Junior Academy was changed to Committee on High School Relations in 1934 to reflect the change in its role from organizational to advisory so far as the Junior Academy, which had effected its own organization by that time, was concerned. The committee was then looking at broader problems, citing particularly the relation of the junior academies to other science club organizations such as Science Clubs of America (69). The Executive Committee voted to recommend to the AAAS that a coordination between the junior academies of the various states, including that of Iowa, be carried out with Science Clubs of

America insofar as feasible and gave the High School Relations Committee the authority to proceed at once to make such coordination possible. This concern continued through 1938, but even then no means had been provided for the organization of various state academies into a national organization. C. W. Lantz, still chairman of the High School Relations Committee, reported that 32 clubs, including three mathematics clubs, were affiliated with the Iowa Junior Academy, and that the committee felt the organization was well established (70). The Junior Academy radio program continued, but in 1935 Secretary Gilman, while complimenting the work of the High School Relations Committee, admitted that he hoped they could relieve him of the task of arranging the radio program. The committee was spending most of its time trying to arrange for scholarships to be granted to selected members of the Junior Academy through the cooperation of presidents of Iowa colleges and universities. The scholarship program never materialized even though the committee worked on the plan for a number of years.

The Junior Academy radio programs continued through the year 1939 and involved a large number of Senior Academy members who contributed their time freely without remuneration. Some members' names appear repeatedly in the schedules of the programs, for example (71): C. J. Lapp, W. A. Anderson, and W. H. Kadesch presented three programs each. The following contributed programs on two different occasions: R. L. Abbott, M. E. Barnes, E. J. Cable, P. H. Carr, H. V. Gaskill, R. W. Getchell, J. C. Gilman, C. S. Gwynne, J. J. Hinman, C. W. Lantz, W. F. Loehwing, H. E. Rath, L. P. Sherman, and T. F. Vance.

A permanent secretary was appointed for the Junior Academy by the High School Relations Committee in 1939. D. C. Stroud, then of Amos Hyatt Junior High School in Des Moines, one of the earliest schools involved in the junior academy movement, was named executive or permanent secretary. Stroud continued in this post until 1963, when Frank Starr of Waterloo took over the responsibility, having been associate executive secretary for two years.

For several years the need to find a means of bringing the national junior academy movement under one council or governing board had been before the High School Relations Committee. In 1939 it appeared that an organization called the American Institute of the City of New York was about to preempt the sponsorship of high school science clubs in the eastern states. The resulting anxiety was shortly relieved by an agreement whereby the American Institute agreed to work through the junior academies in those states where they existed. The agreement was concluded through the efforts of the academy representatives making up the Academy Conference. The latter group subsequently set up a governing board for the national interests of the junior academies (72).

When Joseph Gilman was elected chairman of the Academy Conference in 1939, most of his work during the following year was concerned with the affiliation of the Junior Academy of Science of Iowa with the American Institute (73). He presented an address to the Academy Conference entitled "The Organization of an Academy" (74), a topic about which he was eminently qualified to speak, having been secretary-treasurer of the Iowa Academy since 1929.

#### THE WAR YEARS

So far we have followed the Academy from its beginnings through World War I, the Depression, and up to the en-

trance of the United States into World War II. The 1940's began with a new secretary, a new editor, two more-or-less defunct committees (Conservation and Biological Survey), a declining membership (down to 681 from 764 in 1932), but nevertheless with many healthy signs. The Junior Academy was well established; a joint symposium with the Iowa Medical Society had been started on a regular basis as part of the annual meeting; and the financial condition of the organization was sound. The new secretary, E. R. Becker, entered the army in February, 1943, at which time Cornelius Gouwens was elected to the office and continued for the next eleven years. As in the case of Joseph Gilman, much of the credit for the continuation of the Iowa Academy during a difficult period can be attributed to the secretary.

Secretary Becker reported in 1942 that the success of the junior academy movement in the 1930's had prompted an investigation into the possibility of a collegiate academy during the preceding year. It is no surprise that the committee reported that it did not consider it advisable that efforts be made in that direction under the war conditions that prevailed. The cooperative agreement that had been made with the American Institute of New York City left the Junior Academy in a troubled state when the Institute transferred its interest in junior academies to Science Clubs of America. According to Becker, "There were certain aspects of the deal that have drawn the sharp disapproval of the members who attended the last Academy Conference in Dallas." The Academy Conference appointed a committee to investigate the relation between the junior academies and Science Clubs of America.

The bacteriologists had apparently not been involved in Academy section programs for some time and a motion made by Martin Grant at the business session in 1942 to change the Botany-Bacteriology Section to the Botany Section was passed, though only after considerable discussion (75).

Secretary Becker had occasion to refer to what he "sensed very keenly" as apathy on the part of the membership concerning Academy affairs, after only one year in office. He expressed the hope of arousing more interest by developing the Secretary's Letter into a medium of expression that would largely supplant the secretary's published report. Becker's induction into the army in February, 1943, took the matter out of his hands, however. There was no regular meeting of the Academy that spring, although the Executive Committee did meet to accept reports, such as they were.

In 1944 the Army Specialized Training Program had pre-empted most of the space on college campuses and it was necessary for the Academy to hold its spring meeting at the Montrose Hotel in Cedar Rapids. Secretary Cornelius Gouwens reported that membership was holding up to a surprising degree in spite of the war, with 637 members on the roll, saying "The Academy is holding up very well indeed in these trying days. Let us not in any way allow ourselves to lose our own individual interests in this Iowa Academy of Science" (76). The Junior Academy was alive but had only a "skeleton meeting" that year. The High School Relations Committee, chaired by F. E. Brown, reported that an agreement with Science Clubs of America was recommended since "we cannot originate or correlate a hundred science clubs in Iowa without its aid." Such an agreement was consummated later that year.

A revised constitution was adopted in 1944 and appears in the *Proceedings* for that year. Among the more significant changes were the recognition of Iowa State College Library

as the repository for the *Proceedings* and the removal of section representatives from the Executive Committee.

Another expression of the status deserved by the Academy as a contributor to the welfare of Iowa was written by J. M. Martin for the 1944 *Proceedings* in the form of an article entitled "The Iowa Academy of Science in Relation to Its Contributions to the Welfare of the Commonwealth of the State and Nation." Most of the points made in the article have already been mentioned (77).

No meeting of the Academy was held in 1945 because the Office of Defense Transportation had requested that no conventions be held as long as the need for travel restrictions existed. However, L. R. Wilson, editor of the *Proceedings*, had attended the Cleveland meeting of the AAAS as the Iowa Academy's representative just a few months before. The Academy Conference had dealt with the participation of academies in wartime programs and in educational and conservation programs. It is to the credit of the Academy that the Conservation Committee continued during the war years and, in 1944, prepared a sixty-page report of conservation activities in Iowa in each of seven fields, in accordance with the reorganization of the committee along these lines in 1942. The report, entitled "Present Status and Outlook of Conservation in Iowa," dealt with state parks and preserves, birds and mammals, fisheries, antiquities, water supply, forests, and soil and water conservation, and was reprinted by the Iowa Conservation Commission in 1945 for distribution to conservationists in the state.

The Committee on Biological Survey had been reactivated and reported that it was at work on surveys of mosses, insects, snails, and flowering plants. The 1945 report of this committee emphasized that the most urgent conservation problem at the time was conservation of Iowa prairie. J. M. Aikman, chairman, reported that "Much progress has been made, under the leadership of Dr. Ada Hayden, in studying the nature of the problems, promoting more general interest and cooperating with the Iowa Conservation Commission in determining the character of the prairie areas to be preserved" (78). The committee presented as part of its report "A Project for the Conservation of Iowa Prairie," which it designated as its chief activity in 1945. The other members of the committee were H. S. Doty, G. O. Hendrickson, Everett B. Speaker, Charles R. Keyes, H. G. Hershey, G. B. McDonald, and F. H. Mendel. (J. M. Aikman was honored in 1974 as a recipient of the Iowa Academy Award of Merit.)

Another wartime accomplishment was noted by Secretary Gouwens in his report for 1945—the publishing of the index of the first fifty volumes of the *Proceedings*, prepared by various Academy members who completed the indexing of material in their respective disciplines: Botany—R. V. Drexler; Chemistry—B. H. Peterson; Geology—Ruth M. Webster; Mathematics—Cornelius Gouwens; Physics—H. J. Plagge; Psychology—M. T. Henderson; Zoology—K. A. Stiles, Erma A. Smith, and Stella Johnson (79). No further indexing has been undertaken since.

#### THE POST-WAR YEARS

The effect of World War II on American society had a profound impact on the Iowa Academy of Science and the direction of its activities during the next two decades. These effects were reflected in the politicians' attitude toward science and are summed up well by Robert H. Kargon's editorial writings in a collection of selected addresses by the



presidents of the American Association for the Advancement of Science. In his introduction to the section entitled "The Scientists' Endless Frontier: World War II and After," Kargon makes these observations (80):

World War II was often called "The physicists' war" . . . Mobilized more effectively than ever before, and on an undreamed-of scale, the scientific community quickly assumed an imposing central position in the popular mind and in military and governmental circles. . . . The dramatic end of the war with Japan impressed the new importance of science—especially physics—into everyone's consciousness.

. . . Arthur Holly Compton's address of 1944 likewise reflects the renewed confidence and growing sense of destiny of the scientific community. . . . Compton predicted that, because science now provides the foundation for military might, "it is an absolute 'must' for a nation that would maintain its place in a warlike world that it shall keep its science in the front rank."

If the war and the Bomb made the physicist into an awesome public creature, both feared and admired, they also drew him into the public arena in a way his forebears had warned about. Vast new bureaucratic enterprises to handle government-sponsored research were created. The Atomic Energy Commission, the National Science Foundation, the National Institutes of Health, the Office of Naval Research—all were creations of the postwar period.

Science required, and got, vast sums of money for research and development. . . . Scientific leaders recognized that, unlike the period after World War I, when science's service to industry was stressed, now the United States was to operate on a footing of semipermanent war. Characteristic of the Cold War period that followed World War II were the close intellectual and financial ties among the military, the quasi-civilian Atomic Energy Commission, and the universities.

Kirtley Mather called attention to these interconnections in his 1952 address. While noting that politicians need scientists and will increasingly require their services, he stated that scientists likewise have become dependent upon public support, and "beyond doubt the scientists will be requesting increased support from the politicians in the coming years."

. . . The year 1957 was a critical one for the scientific enterprise. It was the year of Sputnik and the beginning of accelerated competition with the Soviet Union. The biggest customers of research and development, the Department of Defense and the Atomic Energy Commission, would be joined during the next decade by the National Aeronautics and Space Administration. For science, it was the start of a bout of space fever. In his December 1957 address, Paul B. Sears relayed his concern about the skewing of the scientific enterprise:

[W]e have looked upon science as an expedient rather than as a source of enlightenment. To be specific, our very proper concern with the applications of mathematics, physics, and chemistry may be clouding the fact that we need biology in general and ecology in particular to illuminate man's relation to his environment.

In a sense, this address laid bare concerns that in ten years' time would become openly critical. Behind the bigger science budgets and the demands for more scientists and increased science education lurked a deep insecurity. "We are beginning to sense," Sears claimed, "that the elaborate technology to which we are so thoroughly committed makes us peculiarly vulnerable." In an era in which security was the password to public largesse, Sears concluded that "[our] future security may depend less upon priority in exploring outer space than upon our wisdom in managing the space in which we live."

Kargon compared the pre-Sputnik and post-Sputnik political climate for science and science education in his introduction to another section of presidential addresses during the period from 1958-1965 (81):

The privileges enjoyed by the scientific-technical community before Sputnik were dwarfed by the attention paid it afterwards. . . . New institutions were created to deal with the Soviet space menace. The President's Science Advisory Committee was created, and James Killian of MIT was named the first Presidential Science Advisor. A space agency [the National Aeronautics and Space Administration (NASA)] was quickly created out of aeronautic predecessors and immediately became a major sponsor for research. . . . Not only was the Space Act of 1958 passed, but the National Defense Education Act provided new support for science and science-related education.

. . . By fiscal 1960, the total federal budget obligations for research and development reached over \$8 billion, more than \$6 billion of which came from Defense and \$425 million from NASA. By 1963, obligations soared over \$13.6 billion (Defense providing \$7.3 billion and NASA over \$3.4 billion). Expenditures on research and development reached 12.4 percent of the overall federal budget.

The increased federal funds brought increased burdens. In his presidential address of 1959, Wallace Brode underlined the necessity of a systematic approach to science policy. . . . With the federal government supporting about 85 percent of basic research, and with defense-related agencies providing the lion's share of that, serious questions were raised concerning science's independence and its future support.

. . . By 1963, money for science and technology was a considerable and noticeable drain on federal resources.

The first post-war meeting of the Academy was held at Grinnell College on April 19 and 20, 1946. Secretary Cornelius Gouwens expressed a sense of relief in his report and great satisfaction that the Academy could return to the customary two-day convention. The Junior Academy was determined to renew all pre-war activities as rapidly as possible, and the Biological Survey Committee had decided to sponsor an organized program of research on the flora of Iowa to be organized on a cooperative basis, inviting all botanical workers and institutions in the state to participate. The Conservation Committee had a large part in the general program of the meeting and in the 1946 *Proceedings*, involving for the most part the 1943-44 work of the committee in compiling a record of conservation activities in the state,



The Legislative Committee and the Resolutions Committee took special note of the two bills under consideration in the Congress that later resulted in the establishment of the National Science Foundation. A committee had been appointed the year before to deal with the certification requirements of science teachers and was instructed in 1946 to prepare a resolution recommending minimum requirements for certification. This was the beginning of greatly increased interest in science teaching, especially on the secondary level, which for so many years had not been looked upon as an appropriate Academy concern. The committee made a tentative recommendation for certification requirements in 1946 but continued the study in a more comprehensive manner in the following years (82).

The post-war impetus continued in 1947, with the Conservation Committee expanding its role, and the High School Relations Committee shifting its emphasis to science fairs and the Science Talent Search. In 1946 it was apparent that the programs of Science Service, Inc., of Washington, D.C., to which the junior academy effort in Iowa had become affiliated, were making serious inroads on the effect of the Iowa Academy of Science in the matter of high school science clubs. C. W. Lantz had shifted his Academy effort to the Committee on the Certification of Science Teachers (83).

The Biological Survey Committee did not appear to be having much response to its plan to conduct extensive research on the flora of Iowa, and the Conservation Committee, although it proposed an extensive formulation of a general conservation policy and program for Iowa, was having difficulty involving anyone outside the committee. During these years J. M. Aikman was chairman of this committee and deserves credit for the Iowa Prairie Project that was set up by the committee in 1946 to procure virgin prairie land in Iowa. The Academy granted \$100 to the committee for that purpose in 1945 and 1946 (84).

The Westinghouse Science Talent Search, conducted by Science Service, was attracting large numbers of high school students away from the junior academy effort, due to the attractive awards that Westinghouse offered. The representatives of the various state academies, meeting as the Academy Conference with AAAS in 1946, recognized the effect this was having on the local influence of the academies and proceeded to develop agreements with Science Service to conduct state science talent searches to recognize those students from each state who were runners-up in the Westinghouse competition (85). The Iowa Academy's decision to conduct such a program required that money be secured for awards, but none was secured until 1949, when Clinton Industries of Clinton, Iowa, appropriated \$2,000 to be used that year. In the meantime, the committee making the selection of students in the Iowa Science Talent Search offered to help such students if possible to receive scholarships from the colleges of their choice by writing letters of recommendation. Stimulation of science fairs by local high schools was recommended by the various Academy representatives who attended the Academy Conference at the AAAS meeting in December of 1946 and noted that club exhibits were then being made part of the Science Exhibit of the AAAS convention. It was during this period that the high school science club movement was experiencing some division between the Science Talent Search competition, the local science fair movement, and the desire to provide some means of individual recognition. The latter was provided by the creation of an essay-writing activity that lasted for several years and was part of the awards

program of the Junior Academy. F. E. Brown chaired the High School Relations Committee during the years 1942 to 1949. It was he who made the initial arrangements for the Iowa Science Talent Search in 1946. D. C. Stroud was "permanent" secretary of the Junior Academy and J. C. Gilman was the representative to the AAAS at the time. F. E. Brown chaired the Science Talent Search Committee from 1950 to 1959.

The Conservation Committee was very active in 1946-47 developing the Iowa Prairie Project and proposed, in addition, the formulation of a comprehensive conservation program by the Academy. To this end the committee asked that a special committee be appointed to work with the newly organized Conservation Committee to formulate the program. The special group was appointed to represent every section of the Academy, including the fields of chemistry, engineering, mathematics, physics, and psychology, but by 1948 no assignment of activities and responsibilities had been made. The committee reported in 1949 that a comprehensive questionnaire had been distributed to all fellows of the Academy living in Iowa to determine the degree of interest and support which could be expected of individual members for an Academy-sponsored conservation project. G. D. Lovell reported on the survey in the *Proceedings* for 1949, along with J. M. Aikman's article entitled "What an Academy Can Do to Promote the Conservation of Natural Resources" (86). In 1950 the Conservation Committee was involved in an advisory capacity with the Iowa Conservation Commission on the care and use of native prairie that had recently been purchased, and was just beginning a study of the water resources of the state. The study was still incomplete in 1951, and attempts were still being made to organize the most conservation-minded members of the Academy into groups to develop procedures for active participation in various conservation activities. Chairman J. M. Aikman reported that the State Conservation Commission had named the 199-acre tract of native prairie in Howard County which was set aside in 1945 as Iowa's first permanent prairie preserve, the Ada Hayden Prairie. Ada Hayden died in 1950 and was a long-time member of the Academy's Conservation Committee; her memorial in the 1951 *Proceedings* emphasizes "her untiring efforts" in having native prairie set aside (87).

No report of the Conservation Committee appears in the 1952 *Proceedings*, and George O. Hendrickson was appointed chairman in the absence of J. M. Aikman that year. Hendrickson served as chairman until 1960, when K. D. Carlander took over. From the time Aikman was replaced as chairman, the Conservation Committee's reports were essays on conservation activities in several areas and no longer reflected the fruition of Aikman's hopes for greater individual participation on the part of Academy members in conservation programs. The establishment of the Iowa Conservation Education Council was noted in the committee's report in 1958, however, and the Academy became a "contributing member" of the Council. In retrospect it appears that what started out to be an ambitious Academy effort in conservation failed to materialize because of lack of individual commitment on the part of Academy members generally to support a plan originated by one far-sighted committee chairman (88).

The second Iowa Science Talent Search was conducted in 1948. A brief article by F. E. Brown described the program in detail in the *Proceedings* for 1948, emphasizing the national need for developing scientific talent. Another article on science talent searches by F. E. Brown appeared in the

*Proceedings* for 1952 and constitutes a thorough review of the movement from its beginning in 1948 when the AAAS asked the cooperating academies of science in the several states to encourage large numbers of qualified students to major in science. Brown obviously felt that the high schools were not providing adequate training for capable students when he said "some have no wish to be prepared for college. These may even be a majority in some high schools, but we commit a crime against gifted, vigorous students when we deprive them of strenuous mental exercise in high school. Societies which fail to develop thinkers lose the service of their potentially great minds and remain mediocre societies" (89).

This feeling was shared by many in the scientific community and became the impetus for another Academy direction as ways were sought to improve the teaching of science in the high schools. In the late 1940's there was a flurry of committee activity dealing with the certification of high school science teachers, with C. W. Lantz chairing a special committee appointed to draw up some recommendations for improving the quality of teaching in the schools. The committee worked sporadically during 1947 and 1948, but this concern disappeared from the annual reports until 1953, when the Academy Conference discussed the role of state academies of science in the improvement of science teaching. There was a Science Teaching Section during the years 1938 to 1953, and the emphasis during those years shifted from the teaching of college science courses to the problems of teaching high school science and the preparation of teachers. The interest in high school science teaching that developed after 1946 was probably related to the scope of the Westinghouse Science Talent Search conducted by Science Service. The number of Iowa entrants who were not quite making the list of finalists drew attention to the need to conduct an Iowa Science Talent Search among the Iowans who entered the national contest. A contract with Science Service was signed in 1946 to conduct such a talent search, and in the years that followed it was necessary to form a special standing committee to evaluate the entries from Iowa that were returned from Washington. As noted previously, those were the years that the science fair movement was being pushed by Science Service and the Academy Conference. These national programs were definitely eroding the effectiveness of the Junior Academy even though the junior academy movement of the 1930's was the real beginning of concern for the talented high school student with interest in science. Interest in the quality of teaching was a logical consequence of this concern for the talented science-minded student.

In December, 1955, the Academy Conference discussed the Science Teaching Improvement Program of the AAAS and concluded that each state academy was in a unique position to act as the most representative body for all the sciences in the state in dealing with science teaching problems and the critical shortage of good high school science teachers (90). These were the years when the need to recruit more able students into scientific careers was acutely felt at all levels of government.

The following spring Harold E. Wise addressed the Iowa Academy on the AAAS Science Teaching Improvement Program (91). Wise cited several kinds of evidence that many high school science and mathematics teachers were certified to teach subjects in which they had grossly inadequate subject matter preparation, and outlined the problem of these teachers in not finding appropriate post-baccalaureate courses other than education courses for which they could earn grad-

uate credit and thereby continue to qualify for certification. The general tone of Wise's remarks was that high school science teachers generally were without the "necessary aptitudes and interests" to do effective science teaching. Scientists were exhorted to take a more active role in training teachers and recruiting the right kind of capable students into the teaching profession. Wise admitted that it might be necessary for some colleges to lower their standards and award graduate credit for what was essentially undergraduate-level work in science to encourage teachers to take such courses rather than graduate education courses. All in all the AAAS STIP program consisted of several aspects: the responsibility of scientists, emergency measures, recruitment, higher salaries, better working conditions, awards for distinguished teachers, and consultants to teachers. The institute programs for teachers funded by the National Science Foundation during the following fifteen years were largely the result of this AAAS program, which can be traced directly to the idea that the USSR was training far more scientific and engineering personnel than was the United States and that the supply of scientific manpower was going to be an important factor in the "Cold War."

Following the presentation, the Board of Directors (a new governing body under a new constitution) adopted a motion that the new president appoint a special committee to investigate what the Iowa Academy could do to aid in the improvement of science teaching. The new president, W. F. Loehwing, was directed to serve as chairman. J. C. Gilman was on the Board of Directors and undoubtedly exerted some influence in this direction, having expressed interest in this area years before. The influence of the National Science Foundation in offering funding to academies to conduct science teaching improvement projects was significant but not immediately productive of Iowa Academy sponsorship of such projects, probably because the Academy was without a full- or part-time salaried secretary to take the necessary initiative. During 1957 the Science Teaching Committee became one of the several standing committees of the Academy, and even though the National Science Foundation offered funding to the state academies in 1959, the committee itself took no initiative, being occupied with a part of the 1959 annual meeting that included three high school science teachers describing their major problems. Because of the initiative taken by T. R. Porter of The University of Iowa and Don Lewis, chairman of the Finance and Endowment Committee, funding for the first Iowa Visiting Scientists Program was received from the National Science Foundation (92). The program continued as one of the most important programs of the Academy through the 1966-67 academic year.

The membership of the Academy increased from 948 in 1950 to 2,113 in 1965, reflecting the growing numbers of college faculty in the sciences, the appeal of the Academy's programs during those years, and the merging of the Iowa Science Teachers Association with the Science Teaching Section of the Academy in 1964. The Science Teaching Section itself, in limbo for ten years, was reactivated in 1963. Interest in science teaching among Academy members has continued to the present, with about 450 individuals indicating this as an interest area. This is the interest area (or section) that can count the largest number of "members," but many Academy members select one or two of the science disciplines as section interests in addition to science teaching. The distinction between those Academy members who consider themselves members of the Iowa Science Teachers Section (the former

Iowa Science Teachers Association) and those who merely check "science teaching" as an interest area is not always clear, but there are about 300 high school science teachers who are Academy members, some of whom are not counted in Section Q, the Science Teaching Section.\*

#### THE DECADE OF TRANSFORMATION: THE 1960's

The tremendous growth in membership in the Academy during the 1960's brought many new names to the fore, and the burgeoning college enrollments and their concomitant increases in science faculty members, along with the substantial funding of science education projects by the National Science Foundation, all worked together to shift the Academy's direction in the Sixties. More than half of the current membership of the Academy joined the organization since the peak year of 1965, when there were well over 2,000 on the rolls. The large membership that developed in the early Sixties brought on many administrative complications, and the Board of Directors soon came to the conclusion that a full-time or part-time secretary was needed. The cost of printing and distributing the *Proceedings* was, as usual, a bone of contention with the Iowa State Printing Board, resulting in awkward delays and general disenchantment of the membership with the Academy's handling of publications and frustration on the part of the editor in trying to cope with both recalcitrant authors and printers who felt no direct obligation to the Academy.

The national concern about the supply of scientific manpower and the resulting focus on the teaching of science in the post-Sputnik era caused some Academy members to wonder at times whether the organization was drifting away from its historical perspective of promoting science (as opposed to better science education). This question had delayed the reinstatement of the Science Teaching Section until 1963, and throughout the rest of the decade an active science education effort carried forward by the merged Iowa Science Teachers Section (formerly Association) seemed to accentuate the division of opinion from time to time. This happened in spite of the fact that most state academies of science were undergoing the same sort of developmental growth during that period, with ample encouragement from the AAAS and the National Science Foundation.

When J. C. Gilman resigned as chairman of the Finance and Endowment Committee in 1957, he was replaced by Don Lewis of The University of Iowa. Lewis became an aggressive and at times an abrasive influence in Academy affairs in the years that followed. As chairman of that committee he inherited what was to become a promising but time-consuming task—the development of policies concerning the Parish Farm, which came into the Academy's hands in 1960. The secretary-treasurer's report for 1955, appearing in Volume 62 of the *Proceedings*, included the following (93):

Dr. Jessie A. Parish, a member of the Academy for 32 years, passed away on August 10, 1954. Her will provides that her husband will have lifetime use and control of her 240-acre farm near Reinbeck, after which the Acade-

my will have the use of the property and ultimately have full possession of it. This generous act will eventually make it possible for the Academy to carry on activities which are not now feasible due to our limited finances.

The Academy was not incorporated until May 27, 1955, following the work of a special committee on incorporation appointed by President R. W. Getchell in 1954. The incorporation move was undoubtedly prompted by the likelihood of the Parish bequest, which came to the attention of the Executive Committee by way of a note that Jessie Parish had penned on her dues statement in an earlier year inquiring whether the Academy could own property. The farm passed to the Academy when Dr. John T. Parish, widower of Jessie A. Parish, died at Reinbeck, Iowa, in 1960. Two Academy members attended the funeral services in August, and later that month a special three-member committee conferred with B. E. Hunter and Nelson Sager in Hunter's office in Reinbeck, after spending a full day familiarizing themselves with the farm's operation. Hunter was the Parish's attorney for many years; Sager was the farm tenant. Although the committee was "distressed with the ramshackle condition of the buildings," they made three major decisions: first, they decided to honor Sager's lease for the 1961-62 March-to-March rental year, which had already been signed by Dr. Parish, calling for \$15 per acre; second, they asked Hunter to represent the Academy at least during the 1961-62 rental year as "sort of a farm manager"; and third, they decided to modernize the farm house by installing a bathroom at a cost of \$1,225. Sager had pressed the committee to do so, saying he would not continue his lease otherwise and needed a modernized house for his hired man. Furthermore, the committee felt that the Academy "could not with dignity" be the landlord of such a dilapidated house. The three members of the committee were Don Lewis, Clarence Lindahl, and George Huff, president in 1960-61. Lindahl was secretary-treasurer (94).

The farm was not a significant source of income during the first several years because of the heavy expense of improving the "ramshackle" buildings and the house and the low rate of rental accepted by the Finance and Endowment Committee. A thorough review of the Parish bequest and how it was developed into a valuable asset after 1970 is the subject of another paper by H. T. Horner, Jr., appearing elsewhere in the *Proceedings*. No further details about it will be included here.

The Academy meeting at Iowa City in 1960 is an appropriate one to review to set the stage for the transitional years of the Sixties. One might say that it was during that decade that the Academy became what it is today.

When President W. C. Oelke, Jr., called the opening session to order at 11:00 a.m., April 22, 1960, about 500 persons were present in Macbride Auditorium at The University of Iowa. An invited address was presented by Frank Brown, Jr., of Northwestern University, on "Living Clocks." At the general session late in the afternoon, J. D. Woods, chairman of the Science Talent Search Committee, directed the awarding of the Clinton Foods Science Scholarships. William A. Deskin, representing the Iowa section of the American Chemical Society, presented the 1960 Iowa Science Teachers Award to Henry A. Boyce, physics and chemistry teacher at Mason City High School. The presidential address by President Oelke (95) called attention to an experimental arrangement of the Academy program that year, giving credit to Don

\* A separate history of the Iowa Academy's interest in science teaching, prepared by Robert E. Yager, appears elsewhere in the *Proceedings of the IAS*.

Lewis and Sherwood Tuttle for their insight and initiative. He observed that most members of the Academy were not conversant with the problems besetting the Academy nor the opportunities open to it. The broad object of the Academy, carried out since 1887, was quoted ("the encouragement of scientific work in the State of Iowa"), but Oelke stated that "times change and with them comes the necessity of new emphases and reoriented programs." He called for wider representation among the membership in offices and standing committees, saying, "if one looks back through the *Proceedings* one is struck by the regular reoccurrence of a relatively small number of names—those of the faithful old wheel-horses who have been pulling more than their share of the load for years. . . . If the Academy is to continue to prosper, a large number of the younger men should be brought into the committee structure."

Oelke was concerned about "others moving to satisfy a need that the Academy should be meeting"—to move further into the area of undergraduate scientific interest to counteract the effect of regional undergraduate symposia, which he considered "inimical to the longtime welfare of the Iowa Academy." He called for more encouragement of undergraduate papers, calling attention to the extensive participation in research by undergraduate students; he did not favor segregation of these papers, however. In fact, he commended the scheduling of selected papers by high school students within the section programs. (Four such papers appear in the *Proceedings* for 1960.) Oelke also mentioned the passing of Frank E. Brown in 1959, referring to him as the "sparkplug" of the Iowa Science Talent Search. (Brown served as chairman of the High School Relations Committee from 1942 to 1949 and as chairman of the Science Talent Search Committee from 1950 till his death in 1959.)

The formation of the new Conservation Section was announced, with Arnold O. Haugen appointed as chairman.

The evening general session was attended by 1,200 persons to hear a symposium on "Problems of Getting Man into Orbit and Back to Earth." The speakers were James A. Van Allen of The University of Iowa, John P. Stapp of the Wright-Patterson Air Force Base, and Edward R. Jones of McDonald Aircraft Corporation.

Saturday morning, in addition to the section meetings, three separate "public discussions" were held on the subjects of science education, research on the functioning of the human heart and its clinical applications, and present and future availability of water. Secretary Clarence Lindahl, in the minutes of the 1960 meeting, concluded that "These symposia terminated what many members termed one of the best meetings ever held by the Iowa Academy of Science (96).

The Board of Directors had met on Thursday and took several important actions: appointed Mrs. Elizabeth T. Rogers as associate editor of the *Proceedings*, with T. E. Rogers (editor since 1958); approved a trial Conservation Section; requested the Science Teaching Committee and the Committee on Preparation and Certification of Teachers to confer in order to consider the development of teacher certification requirements; appointed the immediate past president a member of the Board of Directors; commended E. M. Vaughan for preparing a guide for incoming section chairmen; thanked Don Lewis and all those who prepared and implemented the application for the National Science Foundation grant for the program of Visiting Scientists in Iowa.

Secretary-Treasurer Clarence Lindahl reported that the

membership had reached 1,510 and that the Iowa Academy was in the top three or four of the nation in membership. The dues had been raised from \$1 to \$2, and Lindahl was optimistic about the financial future of the Academy. The Iowa section of the American Chemical Society was to continue the presentation of an Iowa Science Teachers Award to an outstanding high school science teacher. The fourteen winners in the Fourteenth Iowa Science Talent Search were announced and Clinton Corn Processing Company agreed to support the program again in the following year.

During the fall of 1960, the Committee on the Preparation and Certification of Science Teachers, chaired by W. H. Bragonier, and the Science Teaching Committee, chaired by Dorothy Matala, together sponsored four regional meetings to discuss and up-date certification standards. Sixty-one people from 21 institutions participated. The results of the meetings are published in the *Proceedings* for 1961 as a set of certification requirements that list subject matter courses and nothing else, reflecting once more the general feeling that the typical high school science teacher is not sufficiently knowledgeable about the content of his courses. This report was the last of those dealing with this problem, and during the 1962-63 academic year, the Science Teaching Committee was reorganized, taking quite a different tack under the chairmanship of Robert E. Yager. The year 1962 was a low point for the Junior Academy, with only three people serving on the High School Relations Committee. Clifford McCollum served as chairman *pro tem*, with Frank Starr as assistant executive secretary and Dean Stroud as executive secretary of the Junior Academy. This was Stroud's 31st (and last) year of service in this capacity! (The following year Frank Starr became executive secretary of the Junior Academy and also the chairman of the High School Relations Committee, a position he held until 1970, when the revised constitution changed the name to Student Programs Committee.) Five newcomers to the committee were appointed in 1962—Vern Gunderson of Mason City, T. R. Porter of Iowa City, Robert E. Yager of Iowa City, David McCalley of Cedar Falls, and William Azbell of Waverly. The science fair concept which was included in the Junior Academy program for several years was discarded in 1964 as part of a general reorganization of structure, philosophy, and content of the Junior Academy's state meetings, favoring instead written and oral presentation of selected student research papers (97). The impetus for this reorganization was apparently the awarding of a grant from the National Science Foundation to support the Junior Academy Research Symposium in 1964-65, directed by R. E. Yager of The University of Iowa (98). During these years the two NSF-funded projects of the Academy were directed by Porter and Yager, members of the same department at The University of Iowa. The success of their work in science education and the growth of the science education enterprise at that university in the years that followed can be related to this connection with the Iowa Academy of Science, but as in all cases of successful Academy enterprises, it has usually been individual commitment rather than the collective commitment of the organization that spelled success.

The year 1964 was one of significant change for the Academy in another way. The Science Teaching Committee, following a complete reorganization in 1963, succeeded in getting the Science Teaching Section started again—this time bringing into the Academy the entire Iowa Science Teachers

Association. In a climate of financial soundness, rapidly increasing membership, and the "prestige" of science education (as reflected in NSF support for Academy efforts in this direction), it was not surprising that many proposals of this committee were approved in 1963 that would not have received much attention during some of the previous history of the organization. In that year the *Iowa Science Teachers Journal* was started and proudly described by the committee in 1964. The recommendations of the Science Teaching Committee in its report for 1964 include several items of historical importance (99), particularly the following: continuation and expansion of the *Iowa Science Teachers Journal* for distribution to the section only; continuing to have the Iowa Science Teachers Association headquartered in the Academy office at Ames; continuation of the Science Teaching Section (revived on a trial basis in 1964); sponsorship by the Academy of a coordinated teacher recognition program; and exploration of possible sponsorship of teacher conferences within the state, funded by NSF and other outside support. The boldness of these proposals can probably be attributed to the particular combination of individuals making up the committee (Donald Biggs, James Divelbiss, Delma Harding, Ray Haun, and Leland Wilson) and to the aggressiveness and energy of the chairman, Robert E. Yager, who was equally effective in giving the High School Relations Committee the impetus to restructure the Junior Academy.

Going back momentarily to 1962-63, we find another item of historical significance, in terms of the rapid transformation that the Academy experienced in the Sixties. In the fall of 1962, the High School Relations Committee discussed a proposal that stressed the weaknesses of the services offered to science teachers and high school students by the Iowa Academy and the Junior Academy. The proposal specifically recommended that a "field service officer" be retained by the Academy as a salaried employee to strengthen the influence of the organization throughout the state. A special meeting of the Board of Directors was called by President G. Chester Leu to consider the proposal (100). In his presidential address the following April, Leu reviewed the proposal and the Board's action:

Every year the Academy receives reports from some of the standing committees that certain things ought to be done but the usual one Board meeting a year does not allow time for a complete analysis of each proposal. This past year we tried to move a step further by holding an extra session last fall. It is the result of that meeting which I would like to present to you today.

At this meeting we reviewed some of the proposals made in recent years:

We should have an Industrial Research Institute or Center, or at least a Panel of Iowa Scientists for consultation.

We should encourage more high school teachers to become Academy members and take an active part.

We should consider a Science Teaching Section that is aimed primarily at the high school teacher.

We should encourage more participation in Science Fairs and try to standardize their operations.

We should encourage more students to enter the Science Talent Search Program.

We should assist science teachers in their laboratory problems.

We should publish a monthly or quarterly science bulletin.

We should encourage a larger number of scientists in general to take an active part in running the Academy.

We should try to communicate more with the public.

This list is almost endless and the only solution which seemed possible was to find some capable person with some extra time and who did not need a lot of money. Yes, we went on record to find a person who could do these things and even on a half-time basis if necessary to get things started.

. . . I feel sure you would like our Academy, with the third largest membership in the nation, to continue to grow in quality as well as quantity, and the permanent secretary should be necessary for this.

. . . If we go back a minute to some of our recent changes you will recall that we have added a new section on Conservation. We have established an Editorial Board to assist the Editor. We have acquired a farm which will be a fine source of revenue when it is sufficiently modernized so that we can keep most of the rent. We have a very active Visiting Scientist Program—the grant for which has been renewed for the coming year. We have a new sponsor for our Science Talent Search, the Collins Radio Company as you learned a short time ago. We have voted to hire a field worker or Executive Secretary like many of the other large Academies have done.

President Leu's address not only pinpointed the need for an executive secretary (or field worker) but reflected the optimism characteristic of the growing Academy in the early Sixties.

A part-time executive secretary was not appointed until September 1, 1967, after a long period of searching. One of the difficulties of this period was the lack of a person in the office of secretary-treasurer with sufficient time to handle the proliferating programs of the Academy in an effective way. Those who served in this office at the time deserve a great deal of commendation for the way they managed to keep the affairs together under very trying conditions. D. C. Foley of Ames served as secretary-treasurer from October, 1961,\* till 1963; George Peglar of Ames held the office until the fall of 1967, when R. W. Hanson took on the position of part-time executive secretary, transferring the central office of the Academy to the campus of the University of Northern Iowa, where it is still located. Foley and Peglar had the task of overseeing the NSF funds for the Visiting Scientist Program and the Junior Academy Research Symposium; separate sub-accounts were maintained by T. R. Porter and R. E. Yager for these two programs.

The problems created by an expanding membership and the lack of adequate administrative time were compounded by the turnover in the office of editor of the *Proceedings*, to say nothing of the growing disenchantment of the state Legislature with paying for the printing of more and more copies of the *Proceedings*. President Leu took special note of this in

\* Paul F. Romberg was elected secretary-treasurer at the 1961 business meeting but submitted his resignation at the fall meeting of the Board the same year, having moved out of the state.

his presidential address in 1963. At that particular time the Legislature was about to act on the appropriation bills, which, for the first time in about 65 years, did not include funding for the printing of the *Proceedings*. The appropriation was added later in the session, but the threat of its withdrawal put the proposal to employ a part-time executive secretary (at a proposed annual cost of \$8,000) in serious jeopardy for a while. In the editor's office, Dr. Thomas E. Rogers, current editor of the *Proceedings*, served from 1958 through 1962; his wife Elizabeth Rogers joined him as associate editor in 1960. Paul Meglitsch took over the responsibility in 1962 and edited the *Proceedings* for 1962, 1963, and 1964. Harold S. McNabb, Jr., served as acting editor in 1965, until Meglitsch resumed his editorial duties in 1966. No *Proceedings* appeared during 1966 and 1967—in 1968 three volumes were distributed late in the year. Although this was not the first delay of this kind, the membership in general became quite disenchanted with the idea of submitting papers for publication, for obvious reasons. The 1967 *Proceedings*, Volume 74, was a book of only 250 pages, compared with more than 600 in 1962 and more than 500 in 1965. The 1968 and 1969 volumes showed a 100 percent increase in size over 1967, reflecting some restoration of interest, but not to the extent shown ten years earlier.

The various editors and the Board of Directors had felt for some time that the biggest reason for the delays experienced in getting the *Proceedings* out (aside from lack of cooperation of authors and some procrastination on the part of the editor) was the tie-in with the Superintendent of Printing. This arrangement was terminated in 1970 by agreement with the Governor's office—the appropriation of \$8,000 per year included in the Governor's budget at the time was to be transferred to the office of the State Comptroller and made available to the Academy directly. This made possible a change in the format to an 8½ x 11-inch quarterly, solving, at least temporarily, many of the problems that had beset the *Proceedings* for almost eighty years.

The year 1965 was apparently the year of peak membership, with 2,113 reported on the roll, the total having increased by 249 in one year. As chairman of the High School Relations Committee and Executive Secretary of the Junior Academy, Frank Starr reported that the Junior Academy had been reorganized along the lines of the Senior Academy and was running smoothly. The Junior Academy Research Symposium, directed by R. E. Yager, had completed its first year, and there were to be more than seventy research reports by IJAS members out of a total membership of about 1,000 high school students. It was in 1965 that the first Iowa students were selected to present their papers at the American Junior Academy of Science meeting held in connection with the AAAS convention and sponsored by the Academy conference. Both students, Kevin Binns and Don Tinker, were from Roosevelt High School in Des Moines. The nineteenth Iowa Science Talent Search was conducted under a committee that had been chaired by Joe D. Woods of Drake University since 1960; the scholarship awards amounted to \$1,500, provided by Collins Radio Company for seven honorees. Woods reported on a follow-up study of Talent Search winners that indicated a high percentage of them were engaged in scientific careers.

The Iowa Visiting Scientist Program was in its fifth year and had been funded by NSF for 1965-66. (The program ran through the spring of 1967, at which time NSF discontinued support for such projects.) Many Academy members

had been involved as visiting scientists—T. R. Porter, the director of the program, reported in 1965 that 285 visits had been made to 154 schools that year (101).

The Conservation Committee had a new chairman in 1965, Arnold O. Haugen. The committee's report was again a comprehensive summary of "Conservation in Iowa—1964." The report was the essence of the committee's activity for the year.

The year 1965 was also the beginning of a broader program of high school teacher recognition. The Board of Directors acted in April, 1965 (102), to invite the American Chemical Society, the American Association of Physics Teachers, and the National Association of Biology Teachers to present their awards at the annual Academy meeting on a regular basis. At the fall Board meeting (103), Robert E. Yager, chairman of the Science Teaching Committee, informed the Board of a type of conference that had been sponsored by three other state academies for the discussion of science teaching in junior colleges, and the Board voted to permit the committee to explore the possibility of such a conference in Iowa. During the months that followed, the first Articulation Conference was organized and scheduled for the fall of 1966 in Des Moines. A new Physiology Section was created with Irving Fishman of Grinnell as the proposer and first section chairman.

The financial optimism that had prevailed because of the acquisition of the Parish Farm and the funding of the Visiting Scientist Program and the Junior Academy Research Symposium paled somewhat in 1965 because NSF was not allowing as much for indirect costs for these projects as had been anticipated. Support for the *Iowa Science Teachers Journal* was taking about \$1,000 per year, and the farm was not yielding very much under the rental agreement with Nelson Sager, which worked entirely to the tenant's advantage, not the Academy's. The dues were still \$2 per year and the Board of Directors talked of a dues increase, but did not act until the following year, when they were raised to \$5 per year. So far as the NSF grants were concerned, it has not been possible to determine what financial advantage these grants were to the Academy, due to the nature of the financial reports prepared during those years (104). The benefits to the schools of Iowa were, of course, immense, and even in 1974 questions were raised during the meeting of the Association of Academies of Science, following an address by Lovell Paige, Assistant Director for Education, National Science Foundation, about the rationale for discontinuing support for such activities as the Visiting Scientist Program, when it was generally felt that it was one of the most beneficial science education programs ever funded by NSF.

In April, 1965, the Board of Directors dealt decisively with the dues question and approved a constitutional amendment raising the dues from \$2 to \$5, in keeping with several other decisions that would require additional income. The expansion of the *Iowa Science Teachers Journal* to serve the entire membership rather than the Iowa Science Teachers Section exclusively was budgeted at \$1,800, and the Teacher Recognition Program was a \$400 item. The decision to finally take definite steps to employ a part-time executive secretary was recognized as one requiring confidence in the financial condition of the Academy, based in part on the 150 percent dues increase and the likelihood of negotiating a more favorable rent for the farm. Leland Johnson of Drake University was president of the Academy in 1965-66.

The First Articulation Conference for Two-Year and Four-



Year Colleges, held in Des Moines in September, 1966, brought together many members of the Academy who had not had a good opportunity before to discuss course content in relatively small groups with common disciplinary interests. The new two-year area community colleges organized in the mid-Sixties found many junior college teachers in a more prestigious setting than they had enjoyed before, and the opportunity provided by the Academy to bring them into contact with their counterparts in the four-year colleges filled a distinct need at the time. The conference exposed many problems of articulation between two-year and four-year schools, and the need to communicate was apparent to the participants. The Science Teaching Committee had originally viewed this type of activity as the basis for a regular fall meeting of the Academy, but the second conference, held in Waterloo in the fall of 1967, proved to be somewhat anticlimactic, with very little of a substantial nature coming out of the conference. Both conferences had been self-supporting but not productive of specific guidelines for reducing the problems of advising transfer students. Nevertheless a third conference was held in Fort Dodge in the fall of 1968; this time the conference participants developed a resolution that virtually took the articulation effort out of the Academy's hands. The resolution was that "the Iowa State Department of Public Instruction, the Association of Iowa Private Colleges and Universities, the Board of Regents, the Association of Iowa College Presidents, the Iowa Association of College Admission Counselors, and the Coordination Council for Higher Education severally and collectively support the formation of and activities of articulation committees in agriculture, business, education, engineering and technology, home economics, the humanities, life sciences, mathematical sciences, physical sciences, and social and behavioral sciences" (105). With no particular mechanism established to make such a plan work, the concept of articulation activity in the Academy faded away by 1970. The Academy members involved in the planning and execution of these three conferences were: 1966—Robert E. Yager and Leland Johnson; 1967—Clifford McCollum and David L. Fagle; and 1968—Cameron Christensen and Chalmer Roy.

Looking back to 1967 again, we find the preliminary action of the Board of Directors that eventually led to a major constitutional revision that was adopted in 1970. One important reason for this move was the growing impression that the Board of Directors was a self-perpetuating body and that its make-up was not allowing for fuller participation of the Academy membership in the Academy's governance. At the time and for many previous years, the Board consisted of the officers and the chairmen of the standing committees (Science Teaching, Conservation, Science Talent Search, High School Relations, Finance and Endowment, and Membership), none of the chairmen being elected. Willard Poppy, chairman of the Membership Committee, reported a membership total of 2,025 in 1967, including 569 fellows, the only category eligible to vote or hold office. With almost three-fourths of the membership "on the outside," so to speak, and with the many new members who came in during the first half of the decade, it is understandable that the lateness of the *Proceedings*, lack of continuity in the organization of section programs, and the lack of a permanent secretary, all combined to produce a deterioration in the quality of the annual meeting from an obvious high point in 1960 at Iowa City. In response to this deterioration, the Board moved to have President Leland Johnson organize in 1966 an *ad*

*hoc* Committee on Programs and Projects, chaired by Earl Canfield of Drake. Canfield reported for the committee by letter of October 2, 1967, to President Martin Grant (106) indicating that the need for improvement was urgent if the Academy expected more members to turn out for the annual meeting. Canfield cited the need for "revitalized" section programs, saying that "most of us are regularly distressed with the raft of trivial papers presented and published by the Academy. This is a real thorn. What are the meetings for?" The committee also recommended deletion of the program in science education on the grounds that it detracted from the image of the meetings and the *Proceedings* "because it was not actually science." Canfield said in his letter that so far as science education was concerned, "[he] could see the tail wagging the dog in recent years." The committee recommended fewer individual papers and more panel discussions on topics of current interest; the establishment of sections in engineering, clinical chemistry, and clinical biology so as to include more of the applied sciences; and scientific and/or commercial exhibits by and for active members; and questioned whether the dues were adequate to support the kind of activities the Academy should be involved in. The committee met again on April 19, 1968, at Waverly, and reiterated the position taken in Canfield's letter, adding another recommendation that a constitution revision committee be appointed. (A motion to that effect had been passed by the Board the year before.) A constitution revision committee met during the fall Board meeting on October 26, 1968, and reported to the Board later in the day that it had made several preliminary recommendations. The committee consisted of T. E. Rogers, Lester Earls, and Richard Bovbjerg (107). By the time of the spring meeting of the Board in 1969, a revised constitution was presented for consideration but failed to be approved by the Board after lengthy discussion. The revision task was referred to a new committee for further work, especially on standing committee structure and the make-up of the Board of Directors. The task was completed in the ensuing months and a new constitution and by-laws were adopted in 1970, bringing about an extensive reorganization of the Academy that provides another historical marker.

It had come to the attention of the Finance and Endowment Committee that the net income from the Parish Farm was far out of line with the value of the land in 1968, and steps were taken during the summer to have the property appraised. The possibility of selling the farm and investing the proceeds was tempting in the light of a fairly healthy national economy, but an investigation into the legal requirements of the bequest revealed that the Academy was obliged to retain ownership of the farm for at least 75 years. Consideration of selling did nevertheless underscore the fact that the three-year lease arrangement was working entirely to the advantage of the tenant, not the Academy, and the new secretary-treasurer, H. T. Horner, Jr., and the new executive secretary began looking into a drastic change in the management of the farm. Horner's paper on the Parish Farm describes in some detail the events that followed (108).

For the first time in the Academy's history the Board's attention was turned to the problem of ecological disturbances (as opposed to traditional conservation matters) when David Hampton of Wartburg College requested a hearing at the fall meeting of the Board in 1968. He outlined a number of national concerns to which he felt the Academy should lend support in Iowa and recommended that a special committee



be formed to consider the formation of a "commission for public education in science" for Iowa. President Kenneth Carlander appointed a Committee on Public Education Concerning Ecological Disturbances, with Hampton as chairman, and in April, 1969, the committee reported to the Board that it had developed five major objectives, the first of which was to provide information about state and nationwide ecological disturbances. Other suggestions included industry-sponsored symposia, tape and filmstrip production, and TV inserts. These ambitious objectives were acknowledged with some complacency by the Board, recognizing them as desirable but difficult to achieve in the absence of a formal, subsidized program. The committee was continued on an *ad hoc* basis for another year, but during the next few months the chairman submitted his resignation, apparently having decided that the objectives were unattainable under the existing circumstances. No one was appointed to replace him and the committee ceased to function (109). Its effect was genuine, nonetheless, as reflected in the new constitution and bylaws of 1970, which set up a new Social Implications Committee as one of the standing committees.

The Conservation Committee reports of the late 1960's continued to be a running account of "conservation in Iowa," and under the chairmanship of Arnold O. Haugen these reports became valuable historical records of conservation facts as they pertained to soil conservation, wildlife, natural areas, and recreation. Arnold Haugen was a strong voice for conservation during the years he was on the Board of Directors as a standing committee chairman. In 1969, for example, he spoke strongly against any thought of selling the Parish Farm even if it were legally permissible. Instead, he suggested devoting five percent of the land for natural prairie planting experiments, using funding from other sources if need be.

In the area of high school student activity, the late 1960's saw interest in the Science Talent Search and in the Junior Academy dropping off year by year. The Iowa Science Talent Search was becoming less and less connected with the Academy in the minds of the student participants, and its relationship to the Junior Academy Research Symposium was not always apparent even to students who became involved in both. The scholarship support provided by Collins Radio Company and Clinton Corn Processing Company from 1950 to 1970 understandably was handled by the donors as a company project rather than as support of an Academy activity. The Junior Academy Research Symposium was truly identified with the Iowa Academy of Science even though the funding was from the National Science Foundation.

R. E. Yager's aggressive direction of this activity brought many Academy scientists into direct contact with high school students as scientist-advisers of student research projects, whereas the Science Talent Search was not effective in bringing high school students into direct contact with Academy scientists. The Talent Search was conceived as a post-World War II program to increase the nation's supply of scientific and technical manpower, and in the late 1960's it had more than fulfilled that objective. The peak year for Iowa entries in the Westinghouse Science Talent Search (these were automatically considered entrants in the Iowa Search) was 1958, when 98 high school students participated. More than 50 had completed entries each year prior to 1958, but after the peak the number dropped to only 18 in 1968. Special mention should be made again of the Academy members who served for so many years as chairmen of the Science Talent Search Committee—F. E. Brown, from 1949 to 1959; Joe D. Woods,

from 1960 to 1966; Charles Allegre, from 1967 to 1970—and the two Iowa industries that supported the Iowa Science Talent Search with scholarship funds—Clinton Corn Processing Company from 1950 to 1962, and Collins Radio Company from 1963 to 1970.

The Academy's support of the science fair concept pushed by Science Service was somewhat short-lived. In 1964 the High School Relations Committee discarded the exhibit format in favor of written research papers and even invited student winners in other science organizations to present papers at the Junior Academy's annual convention. That year the Science Teaching Committee worked closely with the High School Relations Committee to develop the Junior Academy Research Symposium, gaining National Science Foundation support for the idea. Support was continued at a generous level through the spring of 1968 but was reduced drastically the following three years and finally discontinued. The number of students participating in research activities was dropping toward the end of the 1960's, not only in Iowa but all over the country, and the need for broader appeal to high school students was apparent if the Junior Academy was to survive as an identifiable organization of student members. Frank Starr's leadership as executive secretary of the Junior Academy was effective in broadening the scope of activities in science available to high school students under IJAS sponsorship, but by the end of the decade the high school science club movement, which had begun in the 1930's and flourished for almost 30 years, had just about run its course (110).

The report of the Science Teaching Committee in 1969 reviewed the more recent accomplishments of that committee, anticipating the possible dissolution of the committee under the new constitution and bylaws, saying that "The committee has enjoyed pioneering certain projects but has not been anxious to begin new ventures which might be aborted as the committee ceases to exist." The final paragraph of the report (written by R. E. Yager, chairman) said, "Although the Committee has not asked to be dissolved, it is obvious that such action will be taken if the Board and the membership accept the recommendations of the Constitutional Revision Committee. The Committee is concerned that there has been no communication between members of the Committee and the Constitutional Revision Committee" (111). Yager was, incidentally, a member of the Constitutional Revision Committee. (The Conservation Committee was also abolished by the revised constitution and bylaws so as not to have a standing committee representing one of the section interests, and it was for a similar reason that the Science Teaching Committee was written out of the bylaws, since one of the primary objectives in the revision was to improve Academy governance and to broaden the representation.)

The review of the Science Teaching Committee's accomplishments constitutes an impressive list of Academy involvements in the improvement of science teaching, but the need was expressed for greater concern about improving the quality of college teaching. Among the accomplishments listed were the establishment of a thriving Science Teaching Section (organized from the pre-existing Iowa Science Teachers Association), support and assistance to the Iowa Junior Academy of Science through successful efforts to obtain funding from the National Science Foundation to operate the yearly Science Symposium for talented junior scientists, the conception and continued publication of the *Iowa Science Teachers Journal*, assistance with the Visiting Scientist Program when it was sponsored by the National Science Foundation and

with efforts to keep the program going afterward, the organization and coordination of the Teacher Recognition Program of the Academy, and the organization and administration of the first Articulation Conference between two-year and four-year colleges in 1966. The personal energy and influence of the committee's chairman, Robert E. Yager, is unmistakable throughout all of these activities in the 1960's.

The events that led up to the appointment of a part-time executive secretary in the fall of 1967 deserve some additional detail. The 1962 proposal of the High School Relations Committee to employ a "field service officer" has already been mentioned, along with President Leu's review of the Board's action in the spring of 1963. The threat of the withdrawal of state support for the *Proceedings* put the matter on the shelf during 1964, along with any other new financial commitments. A dues increase from \$2 to \$5 was under consideration for two years (1964 and 1965) but not enacted until 1966. The income from the Parish Farm was catching up by then, and the prospect of more income encouraged the Board of Directors to instruct the incoming president to draw up criteria for the position of executive secretary. On October 18, 1966, President John Chellevoid named a special committee to investigate the possibility of finding someone to serve full-time or part-time. The committee included Lester Earls, Leland Johnson, and Robert E. Yager, the latter to act as chairman. Two days later Yager wrote to the other members of the committee to establish a meeting for preliminary planning. By February 4, 1967, the committee had developed the concept of a position carrying the rank of Assistant Professor of Science Education at The University of Iowa, with half-time to be devoted to the position of executive secretary of the Iowa Academy of Science. A letter from President Chellevoid to Secretary-Treasurer George Peglar on the same date (112) instructed him to get the approval of the entire Board on the direction the committee had moved and then to get the Board's authorization to implement the plan as described. Copies of the letter went to all officers and directors; approval of the plan was forthcoming and Yager reported for the committee at the spring meeting of the Academy in 1967 that several candidates were under consideration. Prior to that report a letter, dated April 1, 1967, from President Chellevoid to Dean Howard Jones of the College of Education of The University of Iowa, outlined an agreement whereby the Academy accepted the invitation of The University of Iowa to locate the offices of the Iowa Academy of Science on the Iowa City campus (113). Under the agreement the Academy was to pay The University of Iowa \$10,500 each July 1 for a three-year period to support the Academy's share of the position and \$1,500 for half-time clerical help. An offer was made to the leading candidate, but by April 29 he had apparently taken a position elsewhere, leaving the committee with no active candidates. A letter from Yager to all Board members dated May 5, 1967 (114), indicated that seven applicants had been considered and that six of them had been lost to other positions while waiting for a response from the front-runner. Another letter from Yager to Peglar on the same date (115) indicated that his list of applicants had been exhausted because the one preferred candidate had declined to accept the position. Yager said, "I do feel that I have put about all of the time, effort and blood into this job that I can even begin to justify."

Yager's comment to Peglar was a reflection of the degree

of consternation of some Academy members about seeking an executive secretary at all, or one who was to be a science educator rather than a research-oriented scientist. As early as March 5, 1967, Yager wanted to take a "more passive role" in the deliberations because the committee's work seemed to be "causing more ill feelings than anything else" (116). Secretary Peglar, after hearing that all candidates for the new position had been lost, wrote to President Martin Grant (May 9, 1967) emphasizing that he still intended to be relieved of his office by September 1, 1967, saying, "Perhaps one of the gentlemen who envision both jobs, that is, Secretary-Treasurer and Executive Secretary, as requiring one research scientist, unpaid, could share the committee or volunteer his services for four years" (117).

Yager wrote again to Peglar on May 17, 1967, outlining the actions that the selection committee had taken during the recent months and making reference to a possibility that Dr. Robert W. Hanson of the State College of Iowa at Cedar Falls might be an appropriate person if arrangements could be made. The suggestion had come from Clifford McCollum of SCI, according to Yager (118). After several weeks of exploration of the possible ways that his work load could be modified in 1967-68 to accommodate the Academy work, Hanson met with the Board of Directors at Iowa State University on August 5 to be interviewed. The Board formally extended the offer of appointment to Hanson on August 12, having adjusted it to a 25 percent overload assignment on a temporary basis, by agreement with Hanson and J. W. Maucker, president of the University of Northern Iowa. (The name was changed from State College of Iowa July 1, 1967.)

The central office of the Academy was moved to Cedar Falls on September 15, 1967. At that time the new executive secretary was also directing the Academic Year Institute for high school science and mathematics teachers at UNI and was teaching a graduate seminar and a special graduate chemistry course for the institute participants.

The second Articulation Conference for science teachers in two-year and four-year colleges was scheduled in Waterloo on October 13 and 14. The new executive secretary was introduced at that meeting. At the April, 1968, meeting of the Academy, George Peglar gave his final report, having consented to serve as secretary-treasurer till that time. Referring to the employment of a part-time executive secretary, Peglar said jokingly that the move was "comparable to the Emancipation Proclamation" so far as relieving the secretary-treasurer was concerned.

One of the first new tasks assigned to the executive secretary was the issuance of a regular Academy newsletter in place of the secretary's Annual Letter. The first *IAS Bulletin* was distributed in November, 1967, and this newsletter has continued on a regular basis during the months of September, November, January, March, and May ever since. The advent of the newsletter made it possible to discontinue the use of the *Proceedings* for the official reports of the Academy, making all of the space available for scientific papers. Since 1967 the official committee reports of the Academy have appeared as a separate publication called the *Annual Report and Membership Directory or Committee Reports and Membership List*.

Another necessary task was a complete up-dating of the membership roster. It was found in doing this that in all likelihood the membership figures reported in excess of 1,900 during the mid-Sixties were based on erroneous counts that

included many individuals who should have been dropped for non-payment of dues. Exact membership counts are simply not available for some of those years.

Responsibility for coordinating the plans for the annual meeting was also turned over to the new executive, and most of the plans for the section meetings were funneled through the central office. Coordination of the work of all committees and preparation for Board of Directors meetings was channeled through the central office in Cedar Falls, and there was an unmistakable improvement in communications because of this and the regular issuance of a newsletter. Assistance with the planning for Junior Academy activities also became a concern of the executive secretary.

The cost of a part-time executive secretary became a problem almost immediately; it was aggravated by the reduction in state support for printing the *Proceedings* and a general inflationary trend that continued and accelerated late in the 1960's.

In 1969 the Board of Directors voted to renegotiate the executive secretary's position with the UNI administration in hopes that at least part of the time the executive secretary spent on Academy affairs could be recognized as a legitimate part of his assigned work load. As a result of a conference involving UNI President J. W. Maucker; Vice-President William Lang; Clifford McCollum, Dean of the College of Natural Sciences at UNI; Academy President T. E. Rogers; and R. W. Hanson, it was agreed that Hanson would be released from 25 percent of his regular 47-week assignment without any requirement that the Academy reimburse the university. This contribution of staff time gradually shrank to 25 percent of the academic year and then to half-time for one semester, but it is clear that the removal of the reimbursement obligation by the UNI administration helped the Academy through a period of dropping assets.

The Iowa Academy of Science was able to close the decade on a note of optimism and with the prospect of financial soundness. The constitution and bylaws revision promised fuller membership participation in the conduct of the Academy's affairs, and the release of the printing of the *Proceedings* from the Superintendent of Printing offered the prospect of greater independence to develop the publication in a different way and on schedule. Year-to-year continuity had been achieved by establishing the office of part-time permanent secretary.

#### THE REORGANIZED ACADEMY OF THE 1970's

Although the effect of the changing national climate for science is not conspicuous in the activities and reports of the Academy in the late 1960's and early 1970's, the organization was not immune to the many problems that became more visible after 1965. Various critics of science and technology became quite vocal as the Vietnam War moved into high gear, and ecological problems drew more fire from some social critics. By 1970 the employment prospects of new Ph.D.'s were anything but favorable. The young people who had been persuaded to enter scientific professions just a few years earlier were having trouble finding jobs. Federal support for science education and research dropped by about 25 percent during the last five years of the 1960's, and widespread concern for the future of federal support for science reached a peak in 1973 as the President's Science Advisory Committee and the post of Presidential Science Advisor were

eliminated. These facts are reviewed and summarized by R. H. Kargon in his collection of AAAS presidential addresses (119). He observed that "Even the success of the Apollo moon landing in 1969 did little to stem the new mood of pessimism among scientists . . . the criticisms seemed, for the first time since the Depression, to wound."

The attitude of some conservative Iowa state legislators toward the Academy and toward higher education generally was affected by growing national disillusionment with the ability of science and education to solve human problems. Certain vocal legislators chose to hold the *Proceedings* of the Academy up to ridicule, citing one or two non-representative articles to support their argument that the state had no reason to pay for the printing of such material. In 1970 the General Assembly passed a bill that made it no longer obligatory for the state to publish the *Proceedings* after July 1, 1970, and for the first time since before the turn of the century the Academy was completely without direct state support for one of the most important functions of the organization.

In retrospect this particular turn of events may have been a blessing in disguise. It forced the Board of Directors of the Academy to feel more independent and more responsible for making the organization self-supporting. It called attention to the need for more control over the quality of Academy publications and the need for improved services to the membership—an improved annual meeting and shorter publication delays. Editor Paul Meglitsch stayed on to see the *Proceedings* through the changeover from an annual to a quarterly format in 1971. The centralization of the planning of the annual meeting in the office of the executive secretary had increased interest in it and the attendance grew. The Finance Committee—more particularly, Treasurer H. T. Horner, Jr.—was responsible for making the Parish Farm a well-managed source of income. The revised governance structure of the Academy was functioning well under the new constitution and bylaws.

Prior to 1970 the Board of Directors had consisted of the chairmen of six standing committees and five officers, including the editor. The officers were normally elected more-or-less as a matter of course at the annual business meeting by the fifty or so fellows present (associates did not have voting privileges), having been nominated by a committee appointed by the president. The other directors were appointed by the president as chairmen of standing committees and usually served for indefinite terms. The participation of the Academy membership in the governance of the organization was virtually non-existent in this arrangement, which Joseph Gilman advocated for so many years to improve continuity in the running of the Academy. By 1969 a greater need was felt to involve the membership in Academy affairs, and the revised constitution of 1970 brought about a complete reorganization whose main objective was to give the entire membership a voice in the election of the Board of Directors and to stipulate that the chairmen of standing committees be excluded from the Board. The only standing committees that were continued were the Membership Committee and the Finance Committee. Six new standing committees were formed—the Annual Meeting Committee, the Elections Committee, the Publications Committee, the Recognition and Awards Committee, the Social Implications Committee, and the Student Programs Committee. Those that were abolished were the Science Teaching Committee, the Conservation Committee, the High School Relations Committee, and the

Science Talent Search Committee. Replacing the chairmen of the standing committees on the Board of Directors were six directors elected by the entire membership to three-year terms. The change in committee structure was, with the exception of the abolition of the Conservation and Science Teaching committees, a redistribution of existing Academy activities and concerns. The areas of concern represented by the two exceptions mentioned were felt to be adequately covered by existing sections of the same name. Associates were given full voting privileges for the first time.

The constitution revision did not affect the organization by sections, however, nor were the existing sections identified by name. Provisions were made in the bylaws for the formation of new sections or the dissolution of existing sections. New sections added to those that existed in 1967 include Anthropology, Engineering, Cell Biology, Economics, and Chemical Education. An Undergraduate Section was created in 1973 to accommodate presentations by undergraduates in all subject areas of the Academy which chose not to schedule their papers in the regular sections. The addition of these new sections to the eleven that existed in 1967 is the best evidence of the faith of the scientific community in the future of the Academy, even though the total number on the membership rolls dropped from about 2,000 in 1965 to about 1,360 in 1974, returning the total to the level of the late 1950's when the dues were still only one dollar per year. Attendance at the annual meeting has been increasing rather than decreasing, and the circulation of the *Proceedings* has been maintained at about 575 subscribers, including 425 who exchange periodicals with Iowa State University. Membership figures alone are not valid indicators of the vigor and effectiveness of the Academy.

Thomas E. Rogers returned to his post as editor of the *Proceedings* in 1972, after an absence of ten years. Editorial policy was changed, reducing the number of section editors to improve the flow of manuscripts in the "pipeline." Articles of a general interest nature and papers not presented at the annual meeting were submissible at any time, and the quarterly publication began to appear on a regular basis with only minor delays. The loss of state support for the printing of the *Proceedings* lasted only during the 1971-73 biennium, during which an unanticipated surplus in the state treasury made it possible for Executive Secretary Hanson to promote successfully the passage of a special appropriation bill to support Academy publications for the 1973-75 biennium. Combined with unprecedented income from the Parish Farm in 1973-74, this state support helped the Academy to arrive at a condition of financial stability during a time when inflation was causing many to look to the future with apprehension. Not so in the Academy of 1974—the forthcoming centennial observance and its vigorous planning stimulated pride in its past accomplishments and in its potential for the future.

When the Academy met on April 24 and 25, 1970, however, it was not an occasion for celebrating the good fortune of the organization. At the last minute the whole meeting, originally scheduled for Grinnell College, had been moved to Wartburg College in Waverly. A Teamster's Union strike of physical plant personnel at Grinnell College had made the last-minute switch necessary, and when Executive Secretary Hanson announced to the Board of Directors at the start of their meeting on April 23 that Paul Ehrlich had just canceled his scheduled appearance, a sense of despair filled the Board. The Board had also met on April 4 to consider problems of getting the 1970 *Proceedings* printed, due to events

in the state Legislature during January and February that repealed the part of the *Code of Iowa* that obligated the state to print the *Proceedings* at all. Hanson had made some contacts in the statehouse during the winter to get assurance that the 1969 *Proceedings* would be printed after the Board met the previous October and heard Editor Meglitsch report that the State Superintendent of Printing had announced that he had no intention of advertising for bids on printing the volume.

The general financial condition of the Academy was a matter of grave concern at the fall, 1969, meeting of the Board, and the need for getting the constitution revision ready in time for consideration at the annual meeting in 1970 resulted in the subsequent appointment of a committee that completed its work late in February. The constitution and bylaws were distributed by mail to all fellows; the tellers reported that 200 votes were received assenting to the change, with four dissenting. At the business session on April 24, 1970, another sixteen votes were cast favoring the change, and President T. E. Rogers declared the revised constitution and bylaws of 1970 in effect at that moment. Appropriate amendments to the articles of incorporation were passed unanimously by the members present, and then President Rogers pointed out the recommendation of the Board of Directors (under the 1970 bylaws) for a 100 percent dues increase in all categories except corporate memberships. The recommendation was passed unanimously, and the budget that was then adopted for the 1970-71 fiscal year showed an anticipated increase in dues income from about \$7,500 the year before to \$14,000.

The assets of the Academy available for operating expenses had dropped to only \$698 by April 1, 1970. The dues increase was the only way of getting through the 1970-71 fiscal year even though the printing of the 1970 *Proceedings* was still covered by state funds. A paperback volume was put out that year to keep its costs within the \$8,000 available. Nevertheless, support for the *Iowa Science Teachers Journal* was held at \$2,500 for the year (120).

In the fall of 1970 the Board of Directors met at Cornell College in Mount Vernon, with President Herbert Hendriks presiding. As a member of the Iowa Geological Board, Hendriks had suggested to Governor Robert Ray that the Academy sponsor a conference on the environment, following Board action in the preceding spring to seek funding for two environmental symposia as part of a broader plan to involve the Academy in providing scientific advice to state government. Hendriks introduced Samuel Tuthill, State Geologist, to describe plans for the Governor's Conference on Environmental Systems that was to be held in December in Des Moines. The program had been developed on short notice by Tuthill and Hendriks; the Governor invited members of the Senate and the House, chairmen and directors of agencies concerned with environmental quality, etc., with about 150 expected in attendance, including researchers and scientist-educators from the Academy. Even though this conference was suggested by the Iowa Academy of Science, the Academy was not ever credited openly for having initiated the planning.

President Hendriks appointed a special committee concerning state government-Academy cooperation that year. The committee reported at the April 22, 1971, Board meeting that it had met with several legislators on two occasions during the winter and had developed some specific proposals for conducting seminars for legislators both before and during each legislative session, using Academy consultants. The am-

bitious proposal called for the establishment of an office in Des Moines, for ready access of the Legislature, and for funding from the National Science Foundation in the amount of \$100,000 for a period of five years. The incentive for this committee's work originated with the Association of Academies of Science (the former Academy Conference of the AAAS), which had received encouragement from NSF that funds would be made available to state academies by way of the Association of Academies for carrying out projects involving advice to state governments. The Board accepted the report and recommendations of the special committee, which was chaired by Donald Biggs of Iowa State University. The recommendations of the committee have historical interest even though they did not materialize. The committee ceased to function, no proposal was written, and NSF funding was soon to be unavailable for such projects (121).

The Publications Committee met the day before the fall, 1970, meeting of the Board of Directors and made several important recommendations concerning the *Proceedings*: that the *Proceedings* go to a quarterly format in 1971 in an 8½ x 11 inch size and that each issue contain an interdisciplinary mix of articles. The requirement was withdrawn that a paper need be presented at the annual meeting for consideration. The next day Warren Kuhn and John Galejs of the Iowa State University Library met with the Board to report on the cost of distributing the *Proceedings* and inquire into the possibility of the ISU Library paying for all volumes used for exchange purposes. Kuhn provided detailed information concerning these costs and the information was used at a joint meeting of the Publications Committee and the Board on April 3, 1971, to establish a price of \$4 for each exchange volume purchased by the ISU Library. At that same meeting the regular subscription price of the quarterly *Proceedings* was set at \$8 per volume. The reduced price to the ISU Library was negotiated in consideration of the provision of storage space there for surplus back issues and the sale of them through the exchange librarian. This arrangement has continued to the present and works to the mutual advantage of the Academy and the ISU Library.

Editor Meglitsch reported to the Board on April 22, 1971, at Loras College in Dubuque that four 56-page issues of the *Proceedings* could be printed each year with a budget of \$10,000 if reprints for authors were not included. Page charges for the publication of papers by non-members were proposed, and with the arrangements made with the ISU Library, it appeared that the Academy was going to be able to manage the publication of the *Proceedings* on a self-supporting basis. By combining numbers 1 and 2 and numbers 3 and 4 in two issues the first year, it was possible to make the transition to the quarterly format at even lower cost than anticipated.

It was necessary that year to cut back on the relatively high level of support for the *Iowa Science Teachers Journal* and to assess the interest of the membership in this publication. Since that time, as a result of the limited response received to a survey of the membership, the *Journal* has been distributed only to the Science Teaching Section, other Academy members who request it, and to all high school libraries.

A major expense was eliminated from the budget when UNI agreed not to require reimbursement for the "released time" that was recognized as part of Hanson's work load. This reimbursement in the first two years of having a part-time executive officer had cost the Academy about \$4,500 the

first year and more than \$5,000 the second year. In the third year of the executive secretary's tenure, the UNI administration recognized 25 percent of Hanson's load as "released" for Academy work. It is impossible to compute the cost of this to UNI because of the vague definition of academic assignments in terms of time required. Regardless of the effect of this change on UNI's salary resources, the relief felt by the Board of Directors in not having to "buy" 25 percent of Hanson's time from UNI could be measured in very tangible dollars. The feeling on the part of the UNI administration was, and continues to be, that provision of some staff time and the office space for the Academy is a legitimate use of the university's resources and that the arrangement is of mutual benefit to the university and the Academy.

All of these economies—some of them planned, others fortuitous—combined to bring the Academy through the two years that the state of Iowa did not provide support for the printing of the *Proceedings*, during a period when National Science Foundation support for Junior Academy projects was reduced to zero. But the successful planning by the Finance Committee to derive more income from the Parish Farm deserves a good share of the credit.

As of March 1, 1971, the management of the Parish Farm was placed under the Hertz Farm Management Service of Nevada, Iowa, after several months of careful planning to terminate the services of B. E. Hunter, attorney, and the three-year lease of Nelson Sager, tenant. The committee's objective was the development of a long-range plan to remedy some of the damage done to the soil during the early years of Academy ownership while at the same time doubling income from the farm. The chairman of the Finance Committee (the treasurer, as stipulated in the 1970 bylaws), Harry T. Horner, Jr., of Iowa State University, took hold of the problem immediately upon becoming chairman in 1970 and has continued to the present as the prime mover in making the Parish Farm an example of a profitable farming operation using sound environmental conservation practices. Horner did not run for treasurer in 1973 but has continued to the present on a special *ad hoc* Parish Farm Committee which was formed the year that he was replaced as treasurer by Paul E. Rider. Since that time the Finance Committee has had relatively little to do with the Parish Farm (122).

The Student Programs Committee replaced the High School Relations Committee in 1970. The first chairman of this new committee, Daryl Smith of the University of Northern Iowa, has continued to the present. Under his guidance, and with the encouragement of the executive secretary and the help of Robert E. Yager, a sweeping change was made in the structure of the Iowa Junior Academy of Science. The committee met formally for the first time in May, 1971, to consider the impact of the loss of NSF support, the withdrawal of the Collins Radio scholarships for the Iowa Science Talent Search, and the general decline of student interest in research. The general idea was to use the Junior Academy in the future as an "umbrella" for many different kinds of youth activities in science and to get away from having the Junior Academy convene with the Senior Academy (123). By the spring of 1972, the committee had begun to implement an umbrella model involving regional meetings, entries in the Westinghouse Science Talent Search, entries in the Iowa Science, Engineering, and Humanities Symposium, the Senior Academy sessions in April (at which selected Junior Academy papers would be presented), the UNI Science Symposium, and finally, the American Junior Academy of Science meeting

with the AAAS. Frank Starr continued as state director of the Iowa Junior Academy of Science until 1973, when he became director of Junior Academy field programs, and Edward Pizzini of the Science Education Center of The University of Iowa became acting state director. Pizzini was a newcomer to the Academy, but the committee felt that in his position at The University of Iowa he was uniquely qualified to stimulate the development of the new coordinated plan of student programs under the IJAS umbrella. A new feature of the student programs activity of the Academy was the involvement of elementary and junior high school students and teachers, especially in the field programs under Frank Starr's development throughout the year at different points in the state. The inclusion under the IJAS umbrella of several existing activities for students sponsored by The University of Iowa rounded out a schedule of activities and opportunities of great variety and broad appeal. The Iowa Science and Humanities Symposium replaced the former IJAS Research Symposium as the culminating activity of the year; research papers presented there became candidates for selection for presentation at the Senior Academy section meetings or for the national and international Science and Humanities Symposia sponsored by the U.S. Army. The one science activity not included in the Academy's student programs umbrella as yet is the regional science fair. The old Junior Academy had dropped the science fair concept in favor of the research paper format in the early 1960's when the Science Teaching Committee assisted the High School Relations Committee in restructuring the Junior Academy as a parallel of the Senior Academy. In 1974 the Iowa Junior Academy of Science is no longer such a parallel of its parent organization. It no longer has an identity as an organization of individual members; it has no officers and no constitution. In spite of this, bringing together many varied student activities in science has resulted in identifying students who become involved in them, and the achievement of the objectives of the Junior Academy, as stated in the Academy's bylaws, "discovering and fostering ability and interest in science among high school students," may be enhanced.

The Social Implications Committee was established in response to the growing concern for the environmental consequences of science and technology. The first chairman of this committee was Kenneth D. Carlander, a long-time conservationist and past-president of the Academy (1968-69). He reported for the committee in 1972 that soil conservation had been selected by the new committee as one of Iowa's most critical environmental problems, considering not only the loss of the resource but also the effects of siltation in streams and lakes. A subcommittee was appointed consisting of two state representatives (D. M. Cochran and Dale Thieden), two leaders of conservation action groups (Mrs. L. Everett and R. T. Russell), an economist (W. E. Spellman), an engineer (Mervin Dougal), two soil scientists (W. T. Moon and William Shrader), and, as chairman, Roger Q. Landers, a plant ecologist from ISU. The report that came from the deliberations of this subcommittee was summarized by Dr. Landers at the annual business session of the Academy on April 28, 1972, at The University of Iowa and later published in the *Proceedings* (Vol. 79, No. 2).

As a continuation of the study of the soil erosion problem, the committee suggested a symposium on soil erosion to be held in the fall of 1973. The idea did not materialize, however, and as the personnel of the committee changed during the next two years, many ideas for promoting public under-

standing of the social implications of science were studied seriously. One of this committee's recommendations resulted in a new feature in the annual meeting program in 1974—a panel discussion of the scientist's role in public decision-making. Representatives of the news media, a manufacturing industry, a power company, and Kevin Shea, editor of *Environment* magazine, discussed the need for the scientific community to speak to the public in language they could understand. Grant Price of the Black Hawk Broadcasting Company was especially outspoken about the failure of scientists to communicate effectively with the public. The second chairman of the committee, Kenneth Christiansen of Grinnell College, served until 1974, when he was replaced by Paul Joslin of Drake University (124).

In the summer of 1973, at the request of the Parish Farm Committee (R. Q. Landers, H. T. Horner, Jr., and B. L. Clausen), the Board of Directors authorized the purchase of a used modular classroom from the inventory of the bankrupt Hilton Homes in Guttenberg, Iowa, resulting in the expenditure of almost \$5,000 by the time it was moved and assembled at the Parish Farm near Reinbeck. The details of contracting for construction of the foundation, electrical wiring, and assembly on the foundation were left in the hands of Executive Secretary Hanson. The decision to install the building at the Parish Farm was made by mail canvass of the Board of Directors and was not approved unanimously under the time limit that was imposed by the seller. The project did evoke differences of opinion at the fall Board meeting that year, and questions continue to be raised about the wisdom of the commitment that was made to provide an "all-purpose building" there as part of the long-range plan to develop the farm as an environmental model and as an "outdoor classroom."

The Recognition and Awards Committee took over the Teacher Recognition Program, formerly coordinated by the Science Teaching Committee, along with all recognition programs of the Academy other than those for high school students. New recognition programs were suggested by the Board of Directors in the fall of 1970, such as environmental awards to an educator, a scientist, or an industry. It was also suggested that excellence in teaching awards be expanded to include undergraduate and graduate education. By the 1972 annual meeting, the committee had developed a proposal for a flexible recognition program based on criteria making all people, businesses, organizations, and boards within Iowa eligible, provided such parties have "through their meritorious actions contributed towards the betterment of the community or state or . . . contributed towards the betterment of the scientific profession." The awards were designated as the IAS Awards of Merit. After a faltering start, the award program took hold in 1974, with four awards presented. In 1973 the first people to be recognized under the new program were Henry Gilman and R. E. Buchanan. Gilman was present to receive the award at Grinnell College on April 27, 1973, but R. E. Buchanan died between the time of his nomination and that date. President A. O. Haugen delivered the citation to his family some time later. In 1974, at Upper Iowa College in Fayette, F. H. Spedding and James A. Van Allen were present to receive their awards. The award for J. M. Aikman was received by Roger Q. Landers, Aikman's successor at ISU, in Aikman's absence. Eugene Bovee received the award for Theodore Jahn. The framed citations were presented by President R. E. Yager.

At that same meeting in 1974 the bylaws were amended to broaden the charge of the Recognition and Awards Com-



mittee and to separate from its jurisdiction the AAAS Research Grants Program, which was assigned to a separate committee. The charge to the Recognition and Awards Committee is a simple statement acknowledging one of the objectives of the Academy as stated in the constitution:

The objectives of the Iowa Academy of Science shall be the promotion of interest in the sciences, in scientific research, improvement of instruction in the sciences, the dissemination of scientific knowledge, and the recognition of high achievement in attaining these objectives in the State of Iowa.

In the winter of 1974-75, the Iowa Academy of Science is once more financially sound and moving ahead with stability and strength of purpose. New names appear on the roster of all committees and the Board of Directors every year and approximately 100 people are involved in some leadership role. More than one-third of the membership attends the annual meeting, and the *Proceedings* are appearing on a regular schedule. The *Iowa Science Teachers Journal* is again appearing as an attractive quarterly, and the *IAS Bulletin*, an attractive newsletter, keeps the membership informed of all Academy activities. The centennial observance promises to be one of the major professional meetings for the scientific community in Iowa in 1975. An official emblem has been created for the Academy for the first time in its history. There seems to be little doubt that the Academy is ready for the future.

SOME FIRST-PERSON RETROSPECTION

As the author of this centennial history of the Academy I have "lived" for several months with the names of scientific men of Iowa whose stature grew as I learned more about them. What I have reported here is what came to me out of the pages of the faded volumes of the *Proceedings*. As my reading brought me closer to the year 1963, the year I came to Iowa from Minnesota, I found the written records not only less illuminating but less fascinating, in the sense that we seem to have forgotten how to record the accomplishments of the Academy in graceful prose that reflects the personalities of the individuals involved. Perhaps it is only separation in time that makes the difference; personal acquaintance with the times and with the context in which people operate may somehow cloud one's perception of what the written record conveys about the individuals involved.

As a relative newcomer to the Iowa Academy of Science who suddenly late in 1967 found himself in the midst of all

its varied activities, I look back on these past seven years and feel almost apologetic for thinking that I could know enough about the Academy's purposes and its heritage to do a competent job of coordinating its many programs. I feel very much a part of the Academy of the 1970's, but that is not the Academy of the post-war period nor was the Academy then the Academy of the Depression years. The history shows that the Academy was and still is ever-changing, responding to the "whims of every temporary breeze" mentioned by J. C. Gilman in 1934. The older Academy had a greater degree of constancy during decades of time than the modern Academy, which is characterized by rapid turnover of individuals on committees and the Board of Directors and by a membership half of which has joined the Academy since 1965, only nine years ago. The Academy has very nearly lost contact with its antiquity. Another history written fifty years from now would probably find an accelerated rate of change from this point on.

The Academy became a responsive sample of the scientific community after World War II, and, though at times it seems to have drifted without a course, committed individuals helped to steer it back. Some presidents stand out as pilots for the Academy, but secretaries and committee chairmen are the more conspicuous leaders that have given the Academy direction through the years. I have tried to identify those individuals that stand out in the records available to me. No doubt a more thorough examination of the archives would identify others that I have failed to mention. Others are writing centennial histories about the important developments within the disciplines represented in the Academy; no doubt those writings will serve to point to individuals that should be acknowledged. For the record I have compiled a table of all officers of the Academy since 1875, along with the record of enrollment.

My purpose has not been to write a review of the scientific content of the *Proceedings* nor of the programs of the annual meetings. Others will do that. The record is there in published form as an important resource for the state of Iowa, paid for to a large extent with public funds.

We have reason to be proud of this Academy. It can be compared favorably with any other state academy of science with much greater financial resources. Iowa has produced outstanding scientists in every discipline, and the quality of personal commitment that characterizes them is to be found among the members of the Iowa Academy of Science.

It has been fulfilling to me to write this history and I am honored to have had the privilege.

Robert W. Hanson  
Cedar Falls, Iowa  
November 15, 1974

OFFICERS AND MEMBERSHIP OF THE IOWA ACADEMY OF SCIENCE, 1875-1974

THE FIRST IOWA ACADEMY OF SCIENCES

Date	President	Secretary-Treasurer	Membership
1875-76	Charles E. Bessey	W. C. Preston	
1876-77	Charles E. Bessey	W. C. Preston	
1877-78	Charles E. Bessey	Samuel Calvin	
1878-79	Charles E. Bessey	Samuel Calvin	
1879-80	Charles E. Bessey	Samuel Calvin	
1880-81	Charles E. Bessey	C. M. Hobby	
1881-82	Unknown	Unknown	
1882-83	Unknown	Unknown	
1883-84	Unknown	Unknown	



## THE REORGANIZED ACADEMY OF 1887

<i>Date</i>	<i>President</i>	<i>Secretary-Treasurer</i>	<i>Membership</i>		
1887-88	Herbert Osborn	R. Ellsworth Call	6		
1888-89	J. E. Todd	R. Ellsworth Call	10		
1889-90	F. M. Witter	R. Ellsworth Call	17		
1890-91	C. C. Nutting	R. Ellsworth Call	43		
1891-92	C. C. Nutting	Herbert Osborn	70		
1893	L. H. Pammel	Herbert Osborn	89		
1894	L. W. Andrews	Herbert Osborn	101		
1895	H. W. Norris	Herbert Osborn	110		
1896	T. P. Hall	Herbert Osborn	131		
1897	W. S. Franklin	Herbert Osborn	143		
1897-98	T. H. Macbride	Herbert Osborn	146		
1899	W. S. Hendrixon	H. Foster Bain	154		
		<i>Secretary</i>	<i>Treasurer</i>		
1900	W. H. Norton	S. W. Beyer	J. B. Weems	163	
1901	A. A. Veblen	S. W. Beyer	J. B. Weems	179	
1902	H. E. Summers	A. C. Leonard	B. Shimek	159	
1903	Bruce Fink	A. G. Leonard	H. W. Norris	159	
1904	B. Shimek	T. E. Savage	H. E. Summers		
1905	M. F. Arey	T. E. Savage	H. E. Summers	188	
1906	C. O. Bates	L. S. Ross	H. E. Summers	212	
1907	John L. Tilton	L. S. Ross	H. E. Summers	202	
1908	Samuel Calvin	L. S. Ross	H. E. Summers	222	
1909	Frank Almy	L. S. Ross	George F. Kay	234	
1910	G. L. House	L. S. Ross	George F. Kay	199	
1911	L. Begeman	L. S. Ross	George F. Kay	228	
1912	A. A. Bennett	L. S. Ross	George F. Kay	271	
1913	C. N. Kinney	L. S. Ross	George F. Kay	245	
1914	H. S. Conard	J. H. Lees	A. O. Thomas	280	
1915	H. M. Kelly	J. H. Lees	A. O. Thomas	273	
1916	G. W. Stewart	J. H. Lees	A. O. Thomas	276	
1917	L. W. Ross	J. H. Lees	A. O. Thomas	319	
1918	S. W. Beyer	J. H. Lees	A. O. Thomas	350	
1919	T. C. Stephens	J. H. Lees	A. O. Thomas	348	
1920	Nicholas Knight	J. H. Lees	A. O. Thomas	314	
1921	D. W. Morehouse	J. H. Lees	A. O. Thomas	364	
1922	R. B. Wylie	J. H. Lees	A. O. Thomas	375	
1923	L. H. Pammel	J. H. Lees	A. O. Thomas	444	
1924	O. H. Smith	P. S. Helmick	A. O. Thomas	521	
			<i>Editor</i>		
1925	R. I. Cratty	P. S. Helmick	A. O. Thomas	Willis DeRyke	472
1926	C. E. Seashore	P. S. Helmick	A. O. Thomas	G. H. Coleman	525
1927	L. D. Weld	P. S. Helmick	A. O. Thomas	G. H. Coleman	557
1928-29	George F. Kay	P. S. Helmick	A. O. Thomas	James H. Lees	603
1929-30	L. B. Spinney	J. C. Gilman	A. O. Thomas	G. H. Coleman	612
1930-31	H. L. Rietz	J. C. Gilman	A. O. Thomas	G. H. Coleman	814
1931-32	James H. Lees	J. C. Gilman	W. F. Loehwing	Florence Nichols	764
		<i>Secretary-Treasurer</i>	<i>Editor</i>		
1932-33	H. E. Jaques	J. C. Gilman	Florence Nichols		
1933-34	E. J. Cable	J. C. Gilman	Florence Nichols		715
1934-35	E. W. Bartow	J. C. Gilman	Florence Nichols		608
1935-36	R. E. Buchanan	J. C. Gilman	Florence Nichols		665
1936-37	L. P. Sherman	J. C. Gilman	Florence Nichols		
1937-38	A. C. Trowbridge	J. C. Gilman	Florence Nichols		601
1938-39	J. N. Martin	J. C. Gilman	Florence Nichols		634
1939-40	R. B. McClenon	J. C. Gilman	Florence Nichols		733
1940-41	Charles Carter	J. C. Gilman	L. R. Wilson		681
1941-42	Roy Nelson	E. R. Becker	L. R. Wilson		681
1942-43	C. W. Lantz	Cornelius Gouwens	L. R. Wilson		669
1943-44	E. R. Smith	Cornelius Gouwens	L. R. Wilson		637
1944-45	Ben H. Peterson	Cornelius Gouwens	L. R. Wilson		644
1945-46	J. C. Gilman	Cornelius Gouwens	L. R. Wilson		641
1946-47	J. H. Bodine	Cornelius Gouwens	L. R. Wilson		684
1947-48	J. Allen Baker	Cornelius Gouwens	F. G. Brooks		789
1948-49	William Kadesch	Cornelius Gouwens	F. G. Brooks		863
1949-50	J. B. Culbertson	Cornelius Gouwens	F. G. Brooks		948
1950-51	P. S. Helmick	Cornelius Gouwens	F. G. Brooks		1,161
1951-52	F. E. Brown	Cornelius Gouwens	F. G. Brooks		1,183
1952-53	A. R. Lauer	Cornelius Gouwens	F. G. Brooks		1,212

HISTORY OF THE ACADEMY

Date	President	Secretary-Treasurer	Editor	Membership
1953-54	H. G. Hershey	Cornelius Gouwens	F. G. Brooks	1,202
1954-55	R. W. Getchell	J. S. Laffoon	F. G. Brooks	1,326
1955-56	U. A. Hauber	J. S. Laffoon	David Mobberley	1,310
1956-57	W. F. Loehwing	J. S. Laffoon	David Mobberley	1,376
1957-58	J. J. L. Hinrichsen	J. S. Laffoon	T. E. Rogers	1,400
1958-59	Elmer Hertel	Clarence Lindahl	T. E. Rogers	1,456
1959-60	W. C. Oelke, Jr.	Clarence Lindahl	T. E. Rogers	1,510
1960-61	George C. Huff	Clarence Lindahl	T. E. Rogers	1,560
1961-62	Robert L. Hulbary	D. C. Foley	T. E. Rogers	1,775
1962-63	G. Chester Leu	D. C. Foley	Paul Meglitsch	1,888
1963-64	J. W. Kercheval	G. W. Peglar	Paul Meglitsch	2,074
1964-65	Lester T. Earls	G. W. Peglar	(acting H. S. McNabb)	2,113
1965-66	Leland Johnson	G. W. Peglar	H. S. McNabb, Jr.	
1966-67	John Chellevoid	G. W. Peglar	Paul Meglitsch	2,025

Date	President	Executive Secretary	Treasurer	Editor	Membership
1967-68	Martin Grant	Robert W. Hanson	H. T. Horner, Jr.	P. Meglitsch	1,830
1968-69	Kenneth Carlander	Robert W. Hanson	H. T. Horner, Jr.	P. Meglitsch	1,894
1969-70	T. E. Rogers	Robert W. Hanson	H. T. Horner, Jr.	P. Meglitsch	1,584
1970-71	Herbert Hendriks	Robert W. Hanson	H. T. Horner, Jr.	P. Meglitsch	1,638
1971-72	Stanley Wawzonek	Robert W. Hanson	H. T. Horner, Jr.	P. Meglitsch	1,708
1972-73	A. O. Haugen	Robert W. Hanson	H. T. Horner, Jr.	T. E. Rogers	1,453
1973-74	R. E. Yager	Robert W. Hanson	P. E. Rider	T. E. Rogers	1,419
1974-75	George Knudson	Robert W. Hanson	P. E. Rider	T. E. Rogers	1,357

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