

1949

## What an Academy Can Do to Promote the Conservation of Natural Resources

J. M. Aikman

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### Recommended Citation

Aikman, J. M. (1949) "What an Academy Can Do to Promote the Conservation of Natural Resources," *Proceedings of the Iowa Academy of Science*: Vol. 56: No. 1 , Article 5.

Available at: <https://scholarworks.uni.edu/pias/vol56/iss1/5>

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of the water resources of the state was selected as the field of special study and concentrated effort during the coming year. A special committee was appointed for this purpose.

The request is made for an allocation of fifty dollars (\$50) from the funds of the academy for the current expenses of the committee.

Respectfully submitted,

H. S. Doty

Ada Hayden

G. O. Hendrickson

H. G. Hershey

C. R. Keyes

G. B. MacDonald

F. H. Mendell

E. B. Speaker

F. F. Riecken

J. M. Aikman, *Chairman*

*Coordinating committee*

L. C. Crawford

L. A. Knowler

G. D. Lovell

R. A. Nelson

L. A. Underkoffler

## **What An Academy Can Do to Promote the 'Conservation of Natural Resources' \***

By J. M. AIKMAN

Modern man is not a builder. On the contrary he is an exploiter. He depends on natural resources, directly or with minor adaptation and modification, for his material needs. Likewise, he draws upon natural resources for thousands of things in which he takes special delight: things he sees, hears, smells, tastes, touches and feels. All of these natural resources are being cut down, torn down, shot down, burned, plowed up, washed away, blown away, and generally wasted and destroyed.

Conservation of natural resources is inconsistent with utilization or use by man. If we use them we no longer have them in the same condition or quantity as before. "We cannot eat our cake and have it." Man's utilization of natural resources is proceeding at an accelerated rate which seems likely to continue. What, then, might we mean at this stage by conservation of natural resources? Whatever this definition is today, it must be subject to change with time.

The definition of Sear's in his "History of Conservation in Ohio," as well as what he considers to be the broad factors involved in the total depletion of our natural resources, may well be used. "Conservation means prudent and skillful use of resources to obtain the

\* Presented before the Academy Conference of the American Association for the Advancement of Science, September 17, 1948, Washington, D. C.

maximum good for the longest possible time. The factors involved: (1) quantity and quality of resources, (2) population, and (3) pattern of living."

However, Sear's statement that ideally conservation produces a permanently balanced relation between a human group and its environment, becomes year by year less likely of fulfillment. This is especially true in view of the greatly accelerated rate of utilization of resources and the steadily increasing rate of population increase. The situation from the standpoint of coming generations is not promising. From now on, more than ever before, man must practice thrift in the prudent use of natural resources and strive for temporary balance on a sliding scale.

Among the states there is a wide variation in the quantity and quality of resources and the rate of their utilization. The time element has been an important factor. Those states in which settlement took place late enough for man to have learned something of relative capabilities of land and the value of other natural resources have remaining today a larger proportion of their resources. It is very unfortunate that in general, the states with the greatest quantity of the more readily exhaustible resources were settled first when economy of resources was not a factor.

*What can an academy do to promote the conservation of natural resources of the state?* It can do little or much depending on several factors.

Why most academies make such small contributions to the conservation of natural resources in the states is attributable in a large part to the inherent nature of academies of science. They are composed chiefly of persons who segregate themselves in exclusive pursuit of their own scientific research or other academic interests. Too few of them maintain social contacts with workers in other vocational pursuits, write for the press, except relating to their own research, take time to discuss public problems with their official legislative representatives, or even with their neighbors.

Their deliberative sessions and legislative procedures, such as committee work, reports and resolutions are formulated with considerable precision but make little impression on the general public because they are published only in the annual proceedings which usually are not available to or read by the public. Meanwhile the public is busy adorning the countryside with advertising signs, polluting the streams, setting fire to the forests through negligence, cultivating up and down hill, making paths which become gullies, and rendering the roadsides hideous and free of wildlife by spraying

trees and decorative native plants in a frantic effort to control weeds and pests.

Another factor which contributes to academies doing little in promoting conservation is that the active conservation agencies in most states are under state or federal control and a non-political agency such as an academy has little influence in formulating policies and building programs, partly because of their reluctance to exert public influence. This condition could be changed if the conservation agencies in the states would request assistance from the academies. To my knowledge, no conservation agency in a state has ever attempted to harness the latent power of the academy of science. Under present regulations it may not be possible to do this but it should be possible and highly advantageous to change the rules. It seems at present that the initiative must be taken by the academies. This should be recognized and done in lieu of their more reserved conduct in the past.

In contrast to the little which has been accomplished by academies in conserving resources, the potentialities have usually been considered to be great. Probably in no group at the state level, organized for other purposes than strictly those of conservation, is there so large a proportion of conservation-minded individuals with vision and understanding of what constitutes a broadly unified conservation policy and program as in the academy. In most academies over a period of years, a few of these members have become recognized as active conservationists. In the main the promotion of conservation accredited to academies has been accomplished by these few men working more or less independently. It is the responsibility of academies not only to recognize the large proportion of conservationists in their ranks but to put them to work to organize the entire academy as a working unit in this very important task of conserving the natural resources of the state.

My own conviction that much can be accomplished by an academy in promoting the conservation of natural resources is shared by my co-workers on the conservation committee of the Iowa Academy of Science and we believe is gradually becoming the opinion of the rank and file of the academy. Since the basis of this conviction and of our present concept of the problem and its solution is our own situation in Iowa, our discussion is necessarily limited there-to but it doubtless parallels conditions found in several other states.

According to Swisher's review of the history of the Iowa Academy of Science, "One of the outstanding interests of the academy and one of the fields in which it had a great deal of influence even

in the early years was in the matter of conservation of natural resources of the state." One's first impression upon reading this is that this stream of influence has been constant since the origin of the academy in 1875. An examination of the proceedings and other sources of information indicates that on the contrary this influence has been only intermittent.

The influence in conservation of natural resources which the academy has had from time to time is tied up very closely with the names of three great Iowa conservationists: McBride, Pammel and Shimek. However, many of the activities in the establishment of parks and preserves were carried on independently by these men in connection with the Iowa Park and Forestry Association (1901-1917), later the Iowa Conservation Association, in coordination with the Iowa General Assembly.

In 1918 Dr. T. H. McBride was largely responsible for the adoption of a resolution petitioning the twenty-sixth General Assembly to take some action toward the preservation of our lakes and to maintain some of the original conditions of the state and another to the Congress of the U. S., calling to its attention the necessity of further legislation looking to the preservation and rational use of the remaining forests of our country.

The first conservation committee of the academy was not appointed until 1915. In 1919 Dr. L. H. Pammel made the first report of the committee of one, dealing with an interview he had with the governor, George W. Clark, concerning the appointment of a conservation board. Two years later the State Board of Conservation was established by the Thirty-seventh General Assembly to have the care of newly authorized public parks. Our excellent state park system is an outgrowth of this early beginning.

In 1920 the conservation committee, made up of W. H. Davis, B. Shimek, H. E. Jaques, G. B. MacDonald and G. A. Chaney, in their report recommended that immediate action be taken by the academy for the preservation of streams and lakes, endorsed the policy of plant and game preserves in rough lands along streams, advocated changes in the law relative to hunting and fishing seasons and the passage of a law providing for the preservation of Indian mounds. This comprehensive report could have been the basis of an adequate conservation program but there is no evidence that any action was taken by the academy other than the usual adoption of the report and its publication in the proceedings.

The present organization of the Iowa Academy follows closely the plan outlined by J. C. Gilman in his address on "The organiza-

tion of an academy" before this conference in 1939. His aim was the molding of the academy into a working unit. The present conservation committee was appointed in 1941 and reappointed in 1947.

Reorganization of the committee in 1941 was made on the basis of fields of special interest so that consideration could be given to the conservation of all of the natural resources of the state by specialists in the several fields. Those selected were: a soils genesis and classification specialist; the state soil conservationist; the state water supply geologist; a wildlife specialist; a fisheries specialist; the director of the state archeological survey; a state park enthusiast; an outstanding student of the prairie, originally the predominant vegetation of the state; the state forester and an ecologist as chairman.

The committee went on record in its first report in 1942 to accept three responsibilities in order: (1) To study, organize and present information on the present status of conservation in Iowa; (2) to recommend to the academy actions to be taken in the conservation of the natural resources of the state; (3) to assist the academy in formulating a constructive, coordinated conservation policy and program.

During the first two years the committee made a study of conservation activities in the state and presented a report as nearly complete in each of the different fields of conservation as time and space would permit. This 60-page report was published in the proceedings of the academy for 1944 under the title, "Present status and outlook of conservation in Iowa: State parks and preserves; Birds and mammals; Fisheries; Antiquities; Water supply; Forests; Soil and water conservation."

Specific recommendations to the academy as the basis for a unified program were presented in the third year. All fields of conservation were covered in these recommendations which were adopted by the academy and published in the 1945 proceedings. A report was made the next year of progress in each field of conservation including further suggestions and recommendations to the academy.

Herein lies the most difficult and important task of the committee and of the academy; converting the recommended program of the conservation committee into a coordinated action program for the academy. The committee is taking the lead in this conversion but unless the academy does the converting (in reality builds and promotes its own program) the final result will be a conservation committee program with little or no academy interest or action.

In 1946, 1947 and 1948, the conservation committee gave special attention to conversion procedures. Programs were presented in the general annual meetings of the academy to acquaint the members with the activities of the committee and with the specifications of a broadly unified conservation program for the state. Within the committee we were attempting to coordinate the various phases of a unified program through committee members representing agencies responsible for specific conservation programs in the state: the state conservation commission, the state geological survey, the state archeological survey, the state forests and the U. S. soil conservation service. These members, although not serving on the committee in an official capacity, have been able to affect a high degree of coordination among the fields of conservation which they represent.

A method has been used to good advantage by the committee not only in promoting conservation in the different fields but in attaining coordination among the fields. This is the project method. The first project developed by the committee was for the preservation of remnants of Iowa prairie. Since that time, 1944, projects have been developed or are in the process of development in seven other fields of conservation. The value of this method is readily apparent. The need of the particular conservation project as well as the chief objectives and definite procedures are clarified. Other advantages arise from the fact that the necessity of cooperation among members of the committee with other academy committees and with federal and state conservation agencies become obvious and that this cooperation is easily affected. Our experience has proved this to be a very effective method of accomplishing results.

An abridged outline of our preservation of prairie project will suffice to illustrate the method and its operation.

*Project of the Iowa Academy of Science.*

*Name:* Preservation of Iowa Prairie.

*Personnel and Organization:*

To be sponsored by the conservation committee in conjunction with the committee on biological survey and the legislative committee of the academy.

The conservation committee may invite other organizations to cooperate. (All agencies, organizations and committees active in the state that have an interest in the preservation of prairie have been included.)

*Reasons for Action:*

1. The need of prairie preserves for scientific, historic and aesthetic reasons.

2. Iowa has few scientific preserves—no prairie preserves. No protected field laboratories exist where research may be carried on with native prairie biota.
3. Cooperative surveys show that many prairie tracts listed in 1933 have been absorbed by agricultural pursuits. The imminent destruction of the prairie in Iowa will terminate research on this climatically best adapted native vegetation and thereby jeopardize the utilization of this source of basic scientific information in our modern economy.
4. The prosperity of Iowa agriculture is attributable in no small part to the fertile soils developed by the prairie. Determination of the relation of soils, climate, plants and animals of the original prairie to present-day use and misuse of land will contribute much to present agricultural and general living conditions.

*Objectives:*

To secure under state protection representative areas of virgin prairie to serve as natural preserves of native plants, animals and original soil profiles; to afford historic examples of the original Iowa landscape and to provide protected, undisturbed laboratories for scientific research.

Character of grassland required.

1. Climatic—northern and central prairie types, eastern and western Iowa variations.
2. Edaphic.  
 Parent material—soil associations derived from major glacial drifts and interglacial loess deposits.  
 Topographic variations—broad, flat plains of drift areas, the more rolling drift surfaces, broken and unbroken loess areas, prairie ridges in forested areas, well-drained alluvial plains and sand dune areas.

*Procedure:*

1. To locate existing tracts of prairie and obtain data on location, ownership, history and climatic and edaphic classification.
2. To select representative tracts in climatic and edaphic areas; to prepare a brief for each recommended tract.
3. To recommend mode of acquisition: (at present three have been authorized) (1) By state conservation commission under 25 year plan; (2) From special appropriations of the legislature with approval and assistance of the conservation commission; (3) With a special fund sponsored and administered by the academy.

In developing its first and subsequent projects, the conservation committee has worked as a unit with the member in the particular field of the project taking the lead. There is a closer cooperative relationship among some of the fields than among others. A cursory analysis of the prairie project for example discloses that in its development and execution Dr. Hayden required the assistance of several specialists, within and outside the committee, in the genesis,



classification and conservation of soils and in water, wild-life and general ecological relationships to mention only a few.

As the working outlines are completed for the several projects, the relations among them become apparent and their coordination into a unified program may be accomplished. Resources problems cannot be solved piecemeal. Care must be taken that the objectives of our projects do not conflict with or duplicate those of state and federal agencies but on the contrary supplement, support and generally unify them. This we believe is being accomplished by maintaining the committee as a close-knit organization of members from both groups.

The active cooperation of the executive, legislative and biological survey committees of the academy is essential to the success of a broadly unified conservation program. Since the academy is not a law-making body, it is imperative that the closest possible relationship exist between the academy and the law-making body of the state. It is obvious that our projects must be well conceived, formulated and executed, be coordinated into a well unified conservation program and be fully publicized, to gain the attention and wholehearted support of those who make the laws. This latter point (publicity) is highly imperative in this and any other organized academy endeavor.

A few years ago it became apparent to the conservation committee that its outlook was, to a large degree, that of a professional conservation group and that an advisory or coordinating committee representing other sciences in the academy should be added. The new sciences represented were: Chemistry, Engineering, Mathematics, Physics, and Psychology. This adjunct committee has been of even more assistance than was anticipated in a realistic evaluation of the projects and of the coordinated program. Through its efforts, procedures are being devised to obtain more information on the interest and potential activity of individuals and groups of the academy in separate fields of conservation to use as a basis of assignment of activities and responsibilities.

In several states beginnings have been made in formulating broadly unified conservation policies and programs. Most of the states have one or more of the requisite elements of such unified policies and programs: a planning board, a conservation commission, a natural resources board, a water supply board, a biological survey, a soil conservation districts law and others. In none of the states are all of these elements and agencies coordinated to a degree deemed desirable and necessary by the most far-sighted conserva-

tionists in the state. This task of coordination, in my opinion, is the responsibility of the organized scientists in the states: the academies. They should not and in fact cannot escape this responsibility.

## **Report of the Committee on High School Relations**

At the sixtieth meeting of the Iowa Academy of Science held at Parsons College a year ago, your committee on High School Relations made two requests: first, that it be permitted to divide itself into two subcommittees, one to deal with the Junior Academy of Science, and the second to conduct the Iowa Science Talent Search; second, that the committee be authorized to solicit funds and establish scholarships for the Science Talent Search which scholarships might be named for a donor as the scholarships in the National Science Talent Search are named Westinghouse Science Scholarships. Both requests were granted. John C. W. Bliese and D. C. Stroud constituted the first subcommittee and Herman Brandt, E. R. Becker, F. E. Brown, Grant Gale, Stanley Harris, J. V. McKelvey and J. I. Routh were the second subcommittee. The report of the subcommittee on Junior Academy of Science of Iowa is written by John C. W. Bliese.

## **Report of the Sub-Committee on the Junior Academy of the High School Relations Committee**

The 1948 annual convention of the Junior Academy of Science of Iowa was held at Fairfield, Iowa, April 16 and 17, in conjunction with the annual convention of the Iowa Academy of Science. The Junior Academy met at the Fairfield High School.

A rather complete report of the 1948 convention, including lists of officers, results of the judging of exhibits and of essays, and the honor roll for the Second Iowa Science Talent Search appears in the 1948 Proceedings of the Iowa Academy of Science. It might be added that the following people, all from Cornell College, Mount Vernon, served as judges for the Essay Project: Dr. F. G. Brooks, Professor of Biology; Dr. J. B. Culbertson, Professor of Chemistry; and Mrs. Lois Henderson, Assistant Professor of English.

The Executive Council of the Junior Academy was completed during the year by the appointment of Harold Yeoman, Marion, to the post of Junior Director of Essays.