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## Reports - State Parks and Preserves; Birds and Mammals; Fisheries; Antiquities; Forests; Soil and Water Conservation; Water Supply

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## STATE PARKS AND PRESERVES

ADA HAYDEN AND H. S. DOTY

Project: Iowa Academy of Science  
Name: Conservation of Iowa Prairie  
Personnel and Organization:

This project shall be sponsored by the Conservation Committee of the Iowa Academy of Science in conjunction with the Committee on Biological Survey and the Legislative Committee of the Academy.

The Conservation Committee of the Academy may invite other organizations to co-operate, such as the Iowa Geological Survey, the I. S. C. chapter of the American Society of Agronomy, the Lakeside Laboratory, S. U. I., the Iowa Wildlife Research Unit, the Soil Conservation Service, the Herbaceous Garden of I. S. C., the State Historical Society, the Iowa Prairie Sub-Committee and the contact Committee of Local Representatives of the Ecological Society, the Iowa Horticultural Society, and other interested organizations.

### Reasons for Action:

1. The need of scientific preserves for historic, scientific and sentimental reasons.
2. Iowa has few scientific preserves—no prairie preserves. No protected field laboratories exist in Iowa where undisturbed researches may be carried on with native biota.
3. Surveys based on data of the State Conservation Commission 1933, the Conservation officers, a report of County Extension Directors, and observations made by persons engaged in Ecological research show that a considerable number of tracts listed in 1933 have rapidly been absorbed by agricultural pursuits. The imminent destruction of the prairie will terminate researches on its climatically best adapted native vegetation and therefore jeopardize the acquisition of basic scientific information.
4. The prosperity of Iowa agriculture is attributable in no small part to the rich soil produced by the prairie. Research on soils, climate, plants and animals of the original prairie, in relation to present-day use and misuse of the 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 a natural preserve for native animals and plants and original soil profiles. To afford historic examples of the original plant cover. To provide undisturbed but scientifically

protected preserves where scientific research may be carried on.

Character of Grassland Required:

1. Climatic—northern, central, and southern prairie types.
2. Soil associations derived from the major glacial drifts and interglacial loess deposits.
3. Various topographic types should be represented:
  - a. The broad flat plains which characterized the Wisconsin and Iowan drift areas and a part of the un-eroded Kansas drift area such as may be observed in Osceola County and southward.
  - b. The more rolling drift surfaces such as are presented by the greater part of the Kansas area and the more or less distinct moraines bordering the Wisconsin and Iowan areas.
  - c. The very rough loess ridges which border the Missouri valley and which present the most extreme xerophytic conditions in Iowa.
  - d. The well-drained alluvial plains such as are shown at their best along the Missouri, but which are more or less well developed all along the larger streams.
  - e. The prairie ridges which appear in all the forested rougher parts of the state, but are most striking in the more heavily timbered eastern parts where they have been known as "oak openings" because the surrounding forest, consisting largely of oaks, encroached upon them.
  - f. The sand-dune areas. These are usually considered distinct from the prairie but a comparison of the floras shows that they differ but little. (Classification of B. Shimek).

Procedure:

1. To locate tracts of prairie and obtain such data as legal description, owner, record of topography, soil type, biota, points of historic significance, and photographs.
2. To make selections of one or more areas (where numbers permit) from a geographic district in order of preference. Prepare a brief for each area including descriptive data and reasons for preservation accompanied by photographs.
3. The consideration of suitable resolutions to be sent state or national legislative bodies relative to aid in conservation of prairie and conference with organizations within the state which might promote conservation such as Federated Garden Clubs, D. A. R., State Historical Society, County Conservation Clubs.

Kinds of Preserves Needed:

1. Large tracts suitable for prairie preserves. Size: quarter-section, half-section or larger. Several sections might be selected along a prairie river such as the Little Sioux. Some large

areas of native prairie occur in this vicinity. They are also recommended by the National Soil Science Association for soil type preservation.

2. Wayside parks. Small areas of a few acres in size would serve as wild flower preserves.
3. Prairie along highways, roadsides and railroads should be preserved, and protected.

Care of Prairie Preserves:

Larger areas should be fenced and jurisdiction indicated. Such areas should be "unimproved". They are essentially scientific preserves.

Budget:

1. Postage for essential correspondence.....\$20.00
2. Travel expense of members of the Academy to inspect recommended prairie sites..... 60.00
3. Expense relative to formulating illustrated recommendations of areas to be preserved..... 20.00

**BIRDS AND MAMMALS**

GEORGE O. HENDRICKSON

In two recent articles the writer (1944a, 1944b) summarized recent progress in Iowa bird and mammal conservation. Now he wishes to point out certain needs to be met in order that the accomplishments may be maintained and additional progress made in fulfillment of the Iowa 25-year Conservation Plan.

A first great need in conservation is greater interest in local conservation. Every member of the Academy should be a member of a local Conservation Club. During 1944, more than 200 local conservation clubs were functioning in the State and their membership increased over that of 1943 although their activities were restricted. In the soon-to-come reconstruction period conservation projects will be numerous and well-supported financially. Local clubs will need a larger membership and a leaven of scientifically trained members will be needed badly.

The local clubs often are affiliated with or are local chapters of state and national organizations such as the State and National Wildlife Federation, the Coordinated Conservation Council, and the Izaak Walton League, which is especially strong at present. Through these state and national organizations local chapters are appraised from time to time of needs in conservation activities and legislation. Local chapters may then acquaint their legislative representatives with the needs in conservation legislation and through them sponsor effective laws. In these educational, legislative, planning and action programs more scientifically trained local leaders are sorely

needed in local conservation activities. As local leaders Academy members trained in the scientific approach to problems and accustomed to reaching solutions based on facts will be helpful, though they may not be at present well-acquainted with recent conservation ideas.

Local clubs work closely with the State Conservation Officers in their counties. These officers are instructed by the State Conservation Commission to assist in the organization and development of local conservation groups. To the local groups the officers point out conservation needs and with them carry out programs of improvement. The planting of pheasant and quail seedstock in depleted areas is done by local conservation clubs who receive stock from the State Conservation Commission through the local Conservation Officers. Previous to any planting the officer and club members take an inventory of the environment and present seedstock and come to an agreement as to whether or not stocking is needed. Also, the Conservation Commission is authorized to match money in limited amounts with local Conservation Clubs in other local improvements for fish and wildlife. Thus, through an orderly, business-like method based on scientific procedure and fact-finding, conservation goes ahead in the locality.

Dr. Ira N. Gabrielson, Chief, U. S. Fish and Wildlife Service, and Iowa born, reared and educated, has this to say about local conservation clubs. "The greatest need is for an alert, intelligent conservation group in every community. Each group should challenge every project that will radically alter vegetative and water conditions in its section. Much needless damage may be averted if, in drainage projects, the construction of huge dams, the establishment of industries that increase pollution, the erection of new levees pushed closer to the river centers, or in great land-selling programs, those who promote the "developments" are forced to give consideration to all the probable results before the work is undertaken, and to render an accounting before the bar of public opinion. Vigilance in these respects will always be necessary. There will ever be grasping hands eager to despoil our basic resources, and there must be strong and resolute conservation forces to oppose and control the spoilers."

Local clubs are very helpful in the selection of prospective wildlife production areas. So far in the purchases wooded areas and marsh lands have exceeded prairie tracts. Now the Commission desires assistance with finding, selecting and developing prairie areas as wildlife production areas, which will be left in native vegetation and will in effect be prairie preserves as well.

Prairie areas will be helpful to song and game birds. If the grass is harvested for hay late in summer, after nesting is over, the prairie areas may be locally of considerable value in seasons when results of early nesting on adjacent farms are poor. Then, depending on its location in the state, the late prairie grass may be utilized by re-nesting pheasants or bob-whites. This will not measurably help a

low seedstock when there is not a surplus for shooting, such as existed in 1936-38 in many counties.

In the unfavorable nesting years it will be helpful to have data on nesting success of grass and ground-nesting birds such as upland plover, dickcissel, meadowlark, horned lark, and bobolink that nest in prairie areas. For in unfavorable years with low game bird seedstocks and poor reproduction game bird nests are few, hard to find and the same is true of the broods. Then, the game bird reproduction data are few and difficult to gather. These few game bird data will be more meaningful when supported by general grass and ground bird nesting data.

Prairie areas with marshes may attract blue-winged teal and mallards for nesting. These few locally reared ducks will tend to decoy other early birds drifting into the state from the north, and thus improve early local shooting. There is much well-founded opinion to the effect that over a period of years the majority of Iowa duck hunters fare well with an early waterfowl season which utilizes so-called "local", (regionally reared) "puddle" (anatine) ducks.

In three parts of the state—northwest, northeast, southeast—prairie chickens nest more or less irregularly. These nesting prairie chickens occasionally occur on areas of 10 or more adjoining sections of farmland on which three-fourths of the land is in hay and permanent pasture. Prairie preserves within those areas should be helpful to prairie chickens. Because of the nature of the soil and poor drainage those areas will very probably continue as predominantly beef or dairy pasture areas for many years, although largely in private ownership. Better pasture usage in those areas, which is coming, will tend to encourage prairie chickens. Thus, we may sustain a remnant of the prairie chicken in the state.

The time may come when nutritional diseases will be evident in farm game, such as rickets in cottontails arising from impoverished soil. Then it will be helpful to have native prairie grass areas on which to obtain normal rabbits to yield bones as comparative standards with which to detect diseased samples. (Cottontails are predominantly natural grass eaters.) From such comparisons, aided by plant and soil analyses, recommendations can be formulated.

Other factors than diseases tend to depress populations of some forms of wild animals. On prairie preserves plant environmental conditions are less disturbed from year to year than on tilled fields. Species tolerance, individual animal tolerance and territorial responses could be studied over a period of years and the stabilized native areas to yield information in relation to climatic changes. This information is needed but difficult to obtain under rotation farming conditions.

On native prairie areas normal rodent populations should occur. And with them one may expect normal predator numbers. Much investigation needs to be done on predator-prey relationships, particularly to learn the conditions under which the balance tips one

way or the other—toward higher numbers of prey or predators. These scattered undisturbed prairie areas may yield information enabling wildlife technicians to detect changes in fox, badger and other fur-bearing predator populations more quickly than at present.

We read much about how numerous wildlife was before white man arrived and it is customary for some conservation enthusiasts to hark back to those days. Yet no one has good figures on which to base his tirades against Conservation Commissions who are urged to restore the various forms of wildlife to aboriginal abundance. What was this abundance in song birds? General wildlife population studies on native prairie and timber areas sponsored by Conservation Commissions would yield factual data for their own protection and for the general good of wildlife management. Prairie preserves will supply data that may serve as measuring sticks for wildlife populations. We can tell, then, more nearly than now when we have accomplished restoration.

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### FISHERIES

EVERETT B. SPEAKER

The Iowa Academy of Science should recognize that the fishes of the state should be handled as crops, and that our lakes and streams, as do our arable lands, possess variable capacities for production of high protein foods. In order to utilize the products of the waters of the state to their fullest capacities, a fundamental knowledge of the factors that control production is needed.

In the fishery section of The Iowa Twenty-five Year Conservation Plan, certain restoration measures were set forth, and in conclusion it was said that, "It is wholly possible to conserve and even to increase the fish supply of Iowa, in the very face of an expanding population and of an increasing drain on this resource."

Men of science, individually and collectively, have given freely of their time in researches dealing with farm products, but until recently little effort has been directed toward improvement of the fishery resources of the state. Fortunately, accomplishments in soil conservation, forestry, management of farm crops, etc., aid in increasing fish populations since these practices stabilize water levels and ultimately improve the habitat for fish.

In addition to these over-all land use practices beneficial to the fish fauna, fundamental basic research is needed on specific problems of management. These include such items as habitat and life history studies, effectiveness of artificial stocking, spawning age and size of the common game and non-game food fishes, effect of coarse fish removal on game fish and aquatic plants, parasites and fish diseases, ratio of anglers catch to fish population, and others. Many of these problems have been or are in the process of being studied elsewhere, but they must also be investigated here since each body of water is individually different in many respects.

Several suggested research problems are listed here. Some have been partially studied by the Iowa Fisheries Research Unit, and a number have been drawn up as tentative subjects for investigation after the present war.

1. An investigation of the effectiveness of fry and fingerling fish stocking of Iowa lakes.
2. An appraisal of the effects of coarse fish removal on desiderate game fish populations, rate of growth, and condition.
3. Relationship and importance of aquatic plants to fish life.
4. Growth rate and food studies of certain carnivorous and herbivorous fishes including:
 

a. Walleyed pike	g. Bluegill
b. White bass	h. Black crappie
c. Yellow bass	j. Channel catfish
d. Yellow perch	k. Buffalofish
e. Smallmouth bass	l. Carp
f. Largemouth bass	m. Freshwater sheepshead
	n. Carpsuckers
5. A study of parasites and diseases of Iowa fishes.
6. Age and size at sexual maturity of the more important game and non-game food fishes.
7. An investigation of the percentage of the fish population harvested by anglers in type waters.
8. An investigation of the most suitable species of fish to be used in stocking farm ponds and artificial lakes in Iowa.
9. A study of Iowa stream fish migrations, with an appraisal of fishway trapping as a method of control of stream populations of coarse fish.
10. Role of fresh water mussels in the biological balance of Iowa streams.
11. An appraisal of the value of dredging lakes to improve them for fish life.
12. An appraisal of the importance of artificial fertilizer in increasing the production of fish in small Iowa lakes.

13. A study of the rate of siltation in natural and artificial lakes, with special reference to its effect on fish life.
14. Effect of stream pollution on fish populations and migrations.

Scientific answers to these and many other questions are needed for refinement of management techniques and would aid materially in re-codification of present laws governing the utilization of this important resource. The Iowa Academy of Science, as an organization and through its individual members, can be of invaluable assistance in solving the many problems relative to the establishment of an adequate fisheries program for the state. The interest, understanding and cooperation of the members of the Academy in the research program and the subsequent re-codification of present laws are solicited.

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### ANTIQUITIES

CHARLES R. KEYES

Of the four classes of antiquities in Iowa, the cliff caverns occupied by prehistoric man are not, as a rule, subject to destruction and the ancient village sites do not ordinarily lose their essential characteristics through private ownership, cultivation and use. The habitation sites have little appeal to the average man as preserves or public monuments.

There are, however, several Indian mounds which should be preserved. Of the many thousand mounds originally found in Iowa, all have been destroyed by continuous cultivation except about 20 groups which have come down to the present either in perfect condition or at least well enough preserved to permit accurate and complete restoration. Five of these groups lie in the area at the mouth of the Yellow river in Allamakee and Clayton counties. Most of this area has already been acquired by the State for transfer to the Federal government as a National Monument. Five other groups are now owned by the State within the boundaries of State Parks or as reservations. This leaves some ten mound groups still in private ownership that should pass under State control in order to preserve the last remnants of those antiquities that are certain to be prized more and more highly as time passes. A brief statement concerning these groups follows.

1. Des Moines county. The Malchow Mound Group, a compact group of 53 conical (round-based) and oval mounds on the bluff top overlooking the Mississippi river flood plain, 12 miles north of Burlington, 1 mile north of Kingston. Some of the mounds have diameters of 75 feet and a height of 6 or 7 feet.
2. Clinton county. Clancy Lake Mound Group, on a spur of the Mississippi bluffs, 2½ miles north of Clinton; a group of 21 mounds, conical and short linears.

3. Hardin county. Caldwell Mound Group, 12 mounds, 1 conical and 11 linears, on south bluff of the Iowa river, 8 miles north of Eldora, 12 miles S.E. of Iowa Falls; the linears from 20' x 66' x 2 ½' to 20' x 118' x 3 ½'; the conical 40' x 4 ½'.
4. Linn county. Burge Mound Group, 19 conical mounds on an isolated hill on north bank of the Cedar river, 3 miles S.W. of Mt. Vernon; rather small mounds, such as are frequently found along the interior streams of Iowa; 15' to 40' in diameter and 1' to 3' in height.
5. Louisa county. Two large, well preserved mounds of the Toolesboro group, on a high bluff overlooking the Mississippi flood plain, the remnants of a group of six, four of which proved to be of Hopewell-culture origin when excavated by the Davenport Academy of Science during the seventies of the last century; the two mounds remaining are 70' x 70' x 6' and 80' x 80' x 8'.
6. Marion county. Red Rock Mound Group, 5 conical mounds, ea. 55' x 55' x 3' on a bluff above the Red Rock Ledges of the Des Moines river, 8 miles north of Knoxville. The site is of historic interest on account of an important treaty with the Sauk and Fox Indians in 1843 and the location of the quarry from which came the stone furnished by the State of Iowa for the Washington Monument. About twenty acres are needed to preserve the site fully.
7. Webster county. Brushy Creek Mound Group, 48 mounds, 9 conicals and 39 linears, on a bluff overlooking the Des Moines river, 6 miles E. of Lehigh; the conicals are of average size, the linears average about 100 feet in length, 14 feet wide and 1'-2' high.
8. Webster county. Eslick Mound Group, 14 mounds, 3 conicals, 40'-47' in diameter and 3' high; and 11 linears averaging 137' long, 16' wide, and 1 ½' high; 3 miles S. E. of Lehigh.
9. Webster county. Lehigh Mound Group, 5 conical and short linears, or oval, mounds, lying on a high bluff overlooking the Des Moines river, just above the town of Lehigh; two of the mounds are about 50' x 50' in diameter and 5' high.
10. Webster county. Wickwire Mound Group, 19 mounds, 10 conical and 9 linear, on bluff top N. of Des Moines river, 4 miles E. of Lehigh; the conical mounds average about 40' in diameter and 3 ½' high; the linears average about 100' long, 16' wide, and 1' high.

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## FORESTS

G. B. MACDONALD

A more complete forestry program in Iowa will be of direct bene-

fit to the State by preventing the destruction of the soil, helping to restore its fertility, increasing farm income, helping to stabilize community development, aiding in conserving and developing wildlife, assisting in protecting and developing water and recreational resources and tending toward better social and economics standards especially in the poorer soil areas of the State. The following recommendations are made with the aim of stimulating thought and action toward the formulaton of an adequate forestry program for the state. The interest and cooperation of the Academy and of its individual members are solicited.

#### Private Forestry:

1. A comprehensive farm forestry program is one of the first essentials for the proper development of Iowa's forest resources. Such a program should involve 200,000 or more farm land operators in the state.
2. The farm areas which are not suited to intensive cultivation should be put into production of forage or timber crops.
3. Educational and action programs should be undertaken in securing protection of the woodlands of the State against destruction from grazing and surface fires. This action is necessary for a long-time satisfactory forestry program.
4. Organized educational work and actual field assistance should be made available for woodlot owners to assist them in proper woodlot management methods and marketing procedures for products of the woodlots. This program should be carried out jointly between the Iowa Agricultural Extension Service and the Iowa Conservation Commission.
5. A much more comprehensive reforestation program is needed for the best development of Iowa's potential timber lands. This might well be accomplished through an enlargement of the cooperative program between the state and the federal government for the growing and distribution of seedling tree stock for reforestation, erosion control, game cover planting and watershed protection.
6. Facilities should be made available through commercial nurserymen, or state or federal tree nurseries for the planting of windbreaks or shelter-belts on all farms where the protection of the home buildings, gardens, orchards and barn lots is needed.

#### State Forestry Programs:

1. A greatly expanded forestry extension program should be provided for meeting the educational needs in forestry in the state. This might properly be accomplished by adding several

Assistant Extension Foresters to supplement the work of the present Extension Forester.

2. In order to point the way toward better development of the forest resources of the state, a greatly expanded research program is needed in Iowa. This might properly be provided for under the Forestry Section of the State Agricultural Experiment Station.
3. In order to provide actual needed assistance to the thousands of timberland owners in the state, a more comprehensive forestry organization is needed under the Iowa Conservation Commission. This program should be developed under the State Forester of the Lands and Waters Division of the Conservation Commission with the assistance of five or six District Foresters. Each District Forester should be assisted by a sufficient number of County Foresters to provide adequately for action programs in each of the respective districts.
4. More adequate state funds should be provided through the channels of the Iowa Conservation Commission to provide for cooperative conservation programs which are now active or which may later be undertaken with the federal government.
5. In order to provide for a satisfactory adjustment of land use in the state, a comprehensive land classification program should be undertaken. This might properly be developed through such agencies as the Iowa Conservation Commission, State Agricultural Experiment Station, Soil Conservation Service and others. Such a program would serve as a basis for determining the best use of land resources in the state.
6. The state should make available funds for acquiring as Satte Forests potential timber lands which can not be kept in a productive condition by private initiative because of financial or other handicaps.

#### Federal Programs:

1. Cooperative work in forestry is now available through the U. S. Forest Service in connection with the production and distribution of forest trees. This work is now made available under the Clarke-McNary and Norris-Doxey Acts. During the next two years the cooperative program should be extended to include Iowa in the cooperative forest fire protective program.
2. In order to supplement the present National Forest areas in Southeastern Iowa, the acquisition of additional areas by the federal government should be encouraged, especially if the state is not in a position to acquire privately owned non-productive timber lands.

## SOIL AND WATER CONSERVATION

F. H. MENDELL AND J. M. AIKMAN

The Iowa Academy of Science as an organization and its individual members, through their interest and cooperation, can be of invaluable assistance in the development of an adequate soil and water conservation program for Iowa. In this brief list of recommendations, suggestions are made of several ways in which this can be accomplished. The list does not, by any means, exhaust the possibilities. Additional suggestions are solicited. It is recommended:

1. That members of the Academy take advantage of all opportunities to talk with farmers who have adopted a program of conservation on the land to observe how the fields are laid out and how various practices, such as contouring, terraces, farm ponds, and many others are helping to control erosion and maintain productivity.
2. That every member of the Academy be encouraged to become better acquainted with the program in a typical soil conservation district, and observe the ways in which he and his organization can contribute more to the work the district commissioners have outlined. (Copies of district programs and work plans are available in the office of the Iowa Agricultural Extension Service and the State office of the Soil Conservation Service at Ames, in the office of the Secretary of the State Soil Conservation Committee in the State Department of Agriculture at Des Moines, and the soil conservation district office).
3. That the Academy, through its standing committees, foster a program of education in the schools and of adult education to increase general interest, understanding and support of the soil and water conservation program.
4. That members of the Academy be encouraged to acquaint the personnel of the Soil Conservation Service and of cooperative agencies in the state with any publications or suggestions that they think will be helpful in the research or operations activities of the state conservation program. This contact can be made direct or through the state office of the Soil Conservation Service at Ames.
5. That the members of the Academy be encouraged to inform farmers and others of the provisions of the State Soil Conservation Districts Law, in those counties where the organization of a soil conservation district would be desirable.
6. That the Academy provide a section for those interested in soil and water conservation. An expansion of the present Geology section to include soils, crops and the conservation of soil and water would seem to offer possibilities.

## WATER SUPPLY

H. GARLAND HERSHEY

In formulating recommendations for the Iowa Academy of Science and its members concerning the future development of surface and ground-water supply, it is desirable to emphasize that the judicious use of natural resources, of which water forms an important unit, is a vital factor in the continued progress of agriculture, industry and commerce in Iowa.

The population of Iowa in 1846 was about 10,000 people; in 1945 it was in excess of 2,500,000, a proportional increase of approximately 1:250. Water use and water problems have multiplied in even greater proportion than the increase in population.

In the consideration and development of water supply and fields inseparably allied with it, major deficiencies in the Iowa statutes are becoming increasingly apparent. The Constitution of Iowa largely ignores the public interest in the matter of water resources, especially pertaining to a most important source of supply—ground water. Subsequent legislation concerning subsurface supplies is almost non-existent. Jurisdiction and legal enactments are incomplete and somewhat confused for surface water resources in relation to modern needs. Drainage law is being critically examined as conflicting interests focus attention on the need for better coordination and correlation of objectives throughout the State.

In regard to ground water it is apropos to consider legislation aimed at sound conservation practices governing the drilling, construction and abandonment of wells and the use to which the wells are put. The desirability of protective measures for underground waters has been recognized for many years. The need for more prudent and objective utilization has recently become intensified chiefly because of the "mushroom" increase in the use of ground water for air conditioning in the last ten years, the indiscriminate and unrestricted use of wells for drainage purposes and the continued abandonment, without plugging, of contaminated wells.

Legislation pertaining to surface water, like that for ground water, has not kept abreast of our development in industry, agriculture and other functions based on adequate water supply. Beneficial results can undoubtedly be obtained by legal enactments designed to reserve this resource on an equitable basis for its most efficient use.

Conservation and water use projects being considered require a correlation of viewpoints and effort before rather than after construction has started and preferably even prior to the completion of engineering plans. Proper development of the resources of the State must necessarily be conducted so as to provide the maximum benefit to the community at large without causing undue damage to any particular interest. For example, flood control, stream pollution and drainage projects whether surface or subsurface should

be designed with full consideration and evaluation of their effects upon water supply for industry, human consumption, and agriculture, and upon fish and other aquatic life. A sound conservation and water supply policy must assign fair and proper priorities to all interests in the natural resources field. In order that due consideration may be given to all interests it is essential that a mechanism for full and free interchange of information, data and facts particularly in relation to Federal agencies, should be provided in the State.

At present there is no one agency or body that could carry out a well-rounded and progressive program of water use in all of its ramifications through related and overlapping fields. State agencies have been cooperating amicably in their respective fields but the need for closer integration of the results of their work on related problems is becoming widely recognized. This need might be fulfilled by a correlating agency. With some duly constituted State agency, Iowa can better use, protect, and preserve the natural resources upon which the future prosperity of an intelligent husbandry must depend. Such an agency could not only serve as an authoritative council on legislative matters concerning water resources but could fill the function of a board of reference and liaison in the broader aspect of our relations with Federal agencies in many ways, as for example, when proposals such as the Missouri Valley Authority, the Red Rock Dam, the Coralville Reservoir and similar projects are under consideration in Iowa.

In regard to such situations the Congress has recognized the joint character of State and Federal interests in the United States. Likewise the legislatures of several midwestern states including Illinois, Indiana and Kansas have already created State referral agencies by reason of certain provisions of Public Law 534 of the 78th Congress as approved December 22, 1944, quotations from which are given in part as follows:

"Investigations which form the basis of any such plans, proposals, or reports shall be conducted in such a manner as to give to the affected State or States, during the course of the investigations, information developed by the investigations and also opportunity for consultation regarding plans and proposals, and, to the extent deemed practicable by the Chief of Engineers, opportunity to cooperate in the investigations.

"The relations of the Chief of Engineers with any State under this paragraph (a) shall be with the Governor of the State or such official or agency of the State as the Governor may designate.

"Each report submitting any such plans or proposals to the Congress shall set out therein, among other things, the relationship between the plans for construction and operation of the proposed works and the plans, if any, submitted by the affected States . . . .

"The Chief of Engineers shall transmit a copy of his proposed report to each affected State, and, in case the plans or proposals covered by the report are concerned with the use or control of waters which rise in whole or in part west of the ninety-seventh meridian, to the Secretary of the Interior. Within ninety days from the date of receipt of said proposed report, the written views and recommendations of each affected State and of the Secretary of the Interior may be submitted to the Chief of Engineers. The Secretary of War shall transmit to the Congress, with such comments and recommendations as he deems appropriate, the proposed report together with the submitted views and recommendations of affected States and of the Secretary of the Interior. The Secretary of War may prepare and make said transmittal any time following said ninety-day period. The letter of transmittal and its attachments shall be printed as a House or Senate document."

It is suggested, therefore, that the Iowa Academy of Science recommend that the 62nd General Assembly of Iowa give serious consideration to the creation of a Natural Resources Council or similar State body for the purpose of further correlating the activities of the various State agencies and of providing for effective liaison and clearance with other agencies, both local and Federal, in the matters involving natural resources problems.

No attempt will be made here to cover in detail the duties, responsibilities and powers of the proposed Natural Resources Council for Iowa, but it seems desirable to outline some of them more fully than was done in the foregoing discussion. For instance, the Council should consist of representatives of State agencies now having jurisdiction in connection with water supply or use, conservation and such others as the legislature may deem advisable in the public interest. There is no thought nor intention implied to disturb the work, functions or authority of existing agencies, particularly in regard to the collection, interpretation and reporting of basic data and policies relating to these duties. Rather the aim is to extend the utility of these agencies to the State through the proposed council and to design the functions of the Council so they will be appropriately integrated with the present duties of existing State agencies.

The Natural Resources Council or representatives of agencies and others concerned with conservation and water use problems in Iowa should be authorized, for example to: (1) call on existing agencies and interested parties for all possible technical data and reports, and for their cooperation and assistance in making needed surveys and studies in their respective fields, (2) assemble and consolidate essential information regarding the conservation and water supply programs of the several State departments and other agencies, (3) review any basic policies, programs, or projects proposed to be undertaken by local, State or Federal agencies affecting the interests of the State in natural resources, (4) correlate the

activities of the several State and local agencies and cooperate directly with them in maintaining liaison with all other agencies, especially those of the Federal government, engaged in the investigation and development of natural resources, (5) formulate, on the basis of the available and assembled information or the proposals reviewed, such proposed laws, legislative reports, recommendations, and policies as will insure a comprehensive and effective State conservation and water use program.

The thought of a Natural Resources Council for Iowa is not new. A similar proposal was made by Governor Hickenlooper's Post-War Rehabilitation Commission. Related recommendations, which have been drawn upon in this discussion, are being considered by the Conservation and Water Use Committees of the Iowa Engineering Society. Governor Blue of Iowa has declared that there is a need for adequate water control in Iowa.

The foregoing remarks may serve as recommendations to the Iowa Academy of Science regarding the conservation of our water supply. The thoughts expressed are those of the writer and do not necessarily represent the opinion of all of the members of the Academy Committee on Conservation.

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