PART 2

ADDRESSES AND CONTRIBUTED PAPERS

Bloomington, Indiana

October 21, 1968

The address, "Indiana's New System of Scientific Areas and Nature Preserves," was given by retiring president Dr. A. A. Lindsey at the annual dinner meeting of the Academy at the Memorial Union of Indiana University on Saturday evening, October 21, 1967. The second address, "Science: Boon or Bane?", was given by Dr. Ralph E. Cleland, Distinguished Service Professor Emeritus of Botany, Indiana University. This statement comes as an introduction to the newly-emerging work of the recently appointed Committee on Science and Society, of which Dr. Cleland was the first chairman and convenor.

Certain innovations (for the *Proceedings*) will be noted in the printing of the contributed papers read at the various Divisional meetings during the Fall Meeting. Brief abstracts are included with papers published in full. Future contributors will note the style when typing manuscripts. In addition to abstracts of papers not published in full, a few papers of a discussional or informational nature are published as "Notes." Titles of papers presented at the Fall Meeting and not represented by either abstracts or complete publication are listed by title only at the end of the abstract section in each Division.

PRESIDENTIAL ADDRESS

Indiana's New System of Scientific Areas and Nature Preserves

ALTON A. LINDSEY

Department of Biological Sciences, Purdue University

Our civilization is considered the most advanced and progressive the world has known to date. I believe it is likely to be marked historically as the most destructive, and that the major stigma of this destruction will be attached to our own generation.

We are not paying enough attention to this destruction. We are not doing much to prevent it. What will we have gained by our higher education, by our dazzling scientific conquests, if they so blind us to the basic values that we fail to protect our inheritance of life? For many men and women do not yet realize that as we destroy it we destroy ourselves.

The cost of adequate conservation is small compared to what we spend on space exploration, aviation, superhighways, electronic devices, etc., yet the natural resources we neglect offer far more to us and to our children than do all such enterprises combined.

Charles A. Lindbergh

The current "conservation explosion" was touched off, in my opinion, by Rachel Carson and the controversy over her 1962 book *Silent Spring*. Without the resulting public education on the intricacies of natural ecosystems, it would hardly have been politically possible for President Johnson to have delivered the historic message to Congress on conservation and natural beauty on February 8, 1965.

What does the term "conservation" mean today, if anything? Is the bird-watcher or the duck-hunter a true conservationist, or may both be so? Is it the Sierra Club member who opposes dam-building in the Grand Canyon, or the developer who favors it? The veteran fly-fisherman who wants a good trout stream let alone, or the "sport" who insists it be heavily stocked with big, tame hatchery fish? The recreationist who requires massive artificial developments in order to enjoy the outdoors, or the perceptive-recreationist who doesn't want them? All these diverse people consider themselves conservationists.

The position of a proposal or project on the extended continuum of "conservation" may be judged by the relative proportion of two components, exploitation *vs.* renewal. The exploitation philosophy is short-term. In its extreme form it asks two questions: "What is in it for me right away?" and "what has posterity ever done for us?"

The renewal viewpoint has, I suggest, these four bases: (1) Wise management of renewable resources grounded on the principle of perma-

nently sustained yields; (2) Non-wasteful use of non-renewable resources; (3) Consideration of recreational, scientific, educational and aesthetic objectives as well as economic; and (4) Consideration of minority rights of the perceptive-recreational users who value qualitative elements of outdoor recreational resources.

Policy Support of Preservation and Renewal

The President's Water Resources Council issued in 1962 Senate Document 97 on planning for the use and development of water and related land resources. This states: "Proper stewardship in the long-term interest of the Nation's natural bounty requires in particular instances that . . . areas of unique natural beauty, historical and scientific areas be preserved and managed primarily for the inspiration, enjoyment and education of the people."

The National Academy of Sciences—National Research Council in 1966 published a report entitled "Alternatives in Water Resource Management." This is the finest statement to be found on water resource policy, yet it has attracted little attention or application.

A regulation of March 6, 1967, issued by General Wm. Cassidy, Chief of Engineers, requires that the Engineer Corps give consideration to aesthetic and other intangible, non-economic factors in planning and carrying out the civil works program. Citing the growing interest in this nation in channeling "an increasing proportion of its material and human resources into activities which help satisfy the intellectual, emotional and aesthetic aspirations of its people," the General pointed out in this directive that the public now is "not only willing to invest a significant proportion of the national income in the preservation and enhancement of beauty, but is willing to forego increases in economic wealth when this is necessary to preserve areas of unusual natural beauty."

Henceforth the Army Engineers are to "recommend the carrying out of a potential development *only* when convinced that the sum of the prospective economic and aesthetic gains would exceed the sum of the economic and aesthetic losses." If "the potential net economic benefits do not clearly outweigh the intangible aesthetic values that would be lost, serious consideration should be given to deferring development until doubts are resolved."

It remains unclear if and when the practice in Corps district offices will catch up with Washington policy promulgations.[1]

The U.S. Supreme Court on June 5, 1967, handed down a decision of great conservation significance. In announcing the 6-2 ruling, Justice Douglas called, before power dams are authorized, for "an exploration of all issues relevant to the public interest, including . . . alternate sources of power, the public interest in preserving reaches of wild rivers and wilderness areas, the preservation of anadromous fish for

[1] This agency has continued to actively promote all the 5 midwestern projects which conservationists have opposed: Red River Gorge (Kentucky), Allerton Park (Illinois), and the Big Walnut reservoir, Burns Ditch Port and a steel company lake-landfill in Indiana. *A.A.L., Addendum, July, 1968.*

commercial and recreational purposes, and the protection of wildlife . . . We cannot assume that the Act commands the immediate construction of as many projects as possible."

Academy Participation in Conservation Affairs

From 1953 through 1955 the Indiana Academy of Science had a rather active committee on natural area preservation. Its chief accomplishment was initial promotion of the interest which eventually brought Pine Hills Natural Area into the state park system as an annex to The Shades. This committee also assembled the complex boundary descriptions of the 17 parcels which went into the 600-acre tract, and turned them over to the Nature Conservancy which purchased Pine Hills and donated it to the state in 1962.

In 1966 President Carrolle Markle reactivated this Academy work by appointing a Committee on the Preservation of Scientific Areas, with Dr. Robert Petty of Wabash College as chairman. The Academy registry of areas suggested for preservation now includes 238 tracts. The committee has also canvassed colleges and high schools on their use of "outdoor classrooms and laboratories," finding a surprisingly heavy use and intense interest in natural areas in Indiana.

Like individual scientists throughout the country, the Indiana Academy of Science has recently stepped up its participation in public affairs. It appears that the first time this academy went on record in helping toward a decision on any controversial public issue was in its 1965 resolution on the proposed Indiana Dunes National Lakeshore. The National Park Service printed our statement on the back cover of its color brochure for the Lakeshore. (The Ecological Society of America also broke precedent by endorsing the Lakeshore). A resolution was passed at the October 22, 1966, general session commending Academy members who had actively supported the proposal, and thanking members of the U.S. Congress for their support. The Academy also presented testimony at a 1966 hearing in Logansport on new water quality standards for the local watershed.

More recently, the Academy presented testimony before the Natural Resources Committee of the state legislature on the Nature Preserves bill, which later passed and was signed into law. Since its provisions are vital to the subject of my address, I shall summarize its contents.

Legislation for a System of Nature Preserves

Senate Controlled Act No. 176 was sponsored by the Indiana State Division of the Izaak Walton League and written by League member James M. Barrett III, a Fort Wayne attorney, and introduced by Senator William Christy and Representative Sam Rea. States having such a law include Illinois, Iowa, Connecticut, Wisconsin and New Jersey.

Quoting from the bill: "It is essential to the people of the State of Indiana that they retain the opportunities to maintain close contact with such living communities and environmental systems of the earth and to benefit from the scientific, aesthetic, cultural and spiritual

values they possess. It is therefore the public policy of the State of Indiana that a registry of such areas be established and maintained by the department, that such areas be acquired and preserved by the state, and that other agencies, organizations and individuals, both public and private, be encouraged to set aside such areas for the common benefit of the people of present and future generations." Section 5 states: "In furtherance of the purposes of this act, the president of the Indiana Academy of Science is hereby made an ex-officio member of the (Natural Resources) commission." I should add that no one in the Academy either sought or was called upon to approve this provision.

The bill directs the establishment of a new *Division of Nature Preserves* in the Department of Natural Resources to administer the Act. Mr. William Barnes was appointed Director of this Division and assumed his duties on February 15, 1968.

An area is to become a Nature Preserve when articles of dedication are accepted by the Natural Resources Department. "An estate, interest or right in an area may be dedicated by any state agency having jurisdiction thereof, and by any private owner thereof."

When a new highway is to be built, the path of least resistance is through the parks. To many politicians and engineers, any place having a remnant of natural vegetation is "waste land." How does this bill foresee holding, against recurrent threats of "improvement," lands that become dedicated as preserves? The bill says, "They shall not be taken for any other use except another public use after a finding by the commission of the existence of an imperative and unavoidable public necessity for such other public use, and with the approval of the governor." Before finding such necessity for other public disposition, the Natural Resources Commission must announce and hold a public hearing.

The bill includes an appropriation of $30,000 to make it possible to employ a director and to get the system started during this biennium.

What is to be the relation of Indiana nature preserves to mass recreation? Outdoor recreation has recently become politically profitable, since it attracks large grants of public tax money. But mass recreation (a right) based on natural resources, appeals to the general public much more than mass understanding (a responsibility) relating to the management and perpetuation of these resources. The same attitude is reflected in the philosophies of many public agencies. The idea that when people are recreating out of doors they are thereby fostering conservation is a delusion propagated by not a few public agencies. The familiar rabbit stew of conservation consists of one horse for recreation, one rabbit for fundamentals. (By fundamentals I do not mean just scientific or historic perceptions, but include skills in outdoor sports and living, renewal viewpoint, outdoor manners, etc.)

Whether dedicated nature preserves which remains in private ownership would be open to the public would remain at the option of the owner. State-owned nature preserves would ordinarily be publicly available for walking restricted to the maintained trails. Other "developments" that merely add water to the already thin soup of Indiana wild nature should be discouraged. Nature preserves are primarily for

educational, scientific, scenic-aesthetic, and perceptive-recreational (as opposed to mass-recreational uses). Larger and less unique and less vulnerable public lands are available for outdoor recreation as that term is commonly understood, involving fresh-air and change of scene, picnicing, physical exercise of sports and games, trophy-hunting, etc. The size of the nature preserves in the state system will probably average only about 40 acres each. If 100 such natural areas should comprise the nature preserve system eventually, they would total only about one-hundredth of one per cent of the area of our state.

The point is that preserves of outstanding scientific quality are *required* for scientific research and teaching, but that these few unique areas are not essential or suitable for the more popular forms of outdoor recreation. Education should work toward the time when public appreciation and perception of the more subtle outdoor values will assume a larger place in the outdoor recreation picture. Nature preserves, properly administered, should assist in this, not by opening up more lovely country so much as by helping to open the potentially lovely human mind. The biologist seeing the trash-littered recreation areas of today, might wish for, in our future evolution, a drastic mutation from the species Man to the human being.

The Indiana Natural Areas Survey

Last spring your speaker received a two-year grant from the Ford Foundation to support a relatively detailed survey and scientific description of actual and potential nature preserves in Indiana. The present school year is being taken for a sabbatical leave. The field work began June 1, 1967, with a team of five men. The Ford Foundation is subsidizing our preparation and publication of a book on Priorities in Natural Area Preservation in Indiana. The Foundation hopes that this will encourage similar activity in other states, supported by natural resource departments, universities, etc., hopefully to further the preservation of natural and scientific areas throughout the country.

My Purdue associates on this survey at present are: Professor Emeritus Thomas M. Bushnell (who directed the Indiana soil survey for 35 years) as soil scientist and geologist, Rev. Damian Schmelz as forest ecologist, Mr. Martin Hetherington as limnologist, and Mr. Stanley Nichols as phytosociologist, air-photo analyst and cartographer. A terrestrial zoologist will be needed during the summer of 1968.

Contrary to much public opinion, natural areas are not picnic groves, city parks, artificial reservoirs, managed commercial forests, roadside rest areas, golf courses, or hunting preserves. It is more difficult to define for practical purposes what they *are*, because in any state, areas acceptable for preservation are relative to the remaining opportunities. Rather than set up rigid criteria, it seems more practical to state an ideal in general terms, the approach to which in selecting areas should be a matter of informed judgment. Ideally, both areas representing the original widespread vegetation types and the precious special spots (as glacial relict biota) should be preserved. While examples of climatic climax should be obtained first, because disappearing rapidly, no stage in the ecological succession should be neglected in the

long run. If recurrent fires were required to maintain the type under pre-settlement conditions, as in tall-grass prairie, management by controlled burning should not be ruled out.

We are classifying natural areas, according to their primary interest and potential, under these headings:

1. Scientific
    a. Geological
    b. Aquatic Biological
    c. Terrestrial biological
2. Scenic
3. Perceptive-recreational
4. Educational

Geological areas pose special problems because many geological phenomena are of such a broad scope spatially that the best that could be done with these might be to provide an overlook point for observation, with informative signs. This tends to be true of scenic points also, most of which are not suitable as nature preserves, but are more often associated with roads.

Educational areas *may* have rather less outstanding natural quality than the other categories, but are justified for inclusion in the system by virtue of their close proximity to population centers and schools. Hence these areas may be important, now or later, as field trip destinations, school forest sites, or nature centers.

Obviously the values and uses mentioned are not mutually exclusive.

The Director and other officials of our state Natural Resources Department have indicated that in starting the nature preserves system they expect to rely heavily on the findings of our natural areas survey. Several conferences have been held to coordinate plans and pass along results to date.

The state parks, although heavily used, are relatively natural in most portions of many of them. No state park should be considered a nature preserve in its entirety; instead, we are describing the scientific aspects of the most outstanding natural parts of some of them, for areas averaging perhaps 60 acres in each of those few parks to be included. If we can get these excellent portions especially dedicated now, this may at some future time help in deterring artificial developments from encroaching there.

Operating from two station wagons and a camping trailer, the natural areas survey has to date visited 156 places, at least alleged to be natural areas. The more promising ones have been accorded more attention; as much as 5 days have been spent at some. The majority of those places suggested in older natural area inventories have fallen victim to real estate development, agricultural expansion, timber cutting, or highway or reservoir developments. About twenty areas, including several of the very finest quality and scientific interest, have been spoiled in the past decade.

Areas that are definitely being destroyed, as potential nature preserves, at this writing (or are very seriously threatened) by impoundment projects are Big Walnut Valley north of Rt. 36, Putnam

County; Hovey Lake, Posey County; upper Big Pine Creek, Warren County; and Mystery Mounds, Lake County.

Promoters and developers often remark that conservationists never compromise. Actually, the conservation community in Indiana has recently been compromising substantially in a manner not evident to the public. Our preservation organizations have private objections to several of the more than 25 large federal dam proposals in Indiana, but have had to select a very few of these on which to concentrate efforts for effective opposition. These are (1) the approximately 30 miles of the Sugar Creek Valley from Rt. 32 to the Wabash River and (2) the four-mile reach of Big Walnut Creek from Higgins Bridge south to Rt. 36. In a given reservoir proposal, a "compromise" to an intermediate level for the maximum flood pool may simply amount to a loss for all interests with no gain for either side commensurate to the loss; *i.e.*, either a maximum reservoir or total restraint at that site may make more sense than a so-called compromise that would destroy the integrity of an ecological unit. If a narrow natural valley is to be disrupted by inundation, a higher water level may be preferable to unsightly mud flats for five months each year within the former natural area.

Wing Haven, just east of Pokagon State Park in Steuben County, has a chain of lakes outstanding for beauty and aquatic vegetation communities. The resort has been sensitively protected in the past, but is threatened by probable real estate developments now. Thirty-acre Black Lake in Whitley County, still without a cottage along its wooded shores, is being sold for intensive recreational use. The finest old-growth forest in Harrison or Crawford Counties, Parkhill Woods, is falling victim to Interstate Highway 64.

Among the once outstanding forests, mostly reported on in Indiana biological literature, but now too disturbed to have special scientific interest, are Berkey Woods, Crawford Woods, Gray's Woods, Klein's Woods, Lewis Woods, Little Cypress Swamp, Nash's Woods, Oaks Woods, Post Oak Flat, and others.

The finest remaining original forests in Indiana today, the loss of any one of which would be a major tragedy, are Beckville Woods (Montgomery Co.), Donaldson's Woods of Spring Mill State Park, Hoot Woods (Owen Co.), Manlove Woods (Fayette Co.), Meltzer Woods (Shelby Co.), Pioneer Mothers Memorial Forest or Cox Woods near Paoli, Rosbrugh Woods (Kosciusko Co.), Conboy Woods (Jennings Co.), Weaver Woods (Wayne Co.), Officers Woods (Jefferson Co.), and the tamarack stand at Tamarack Bog near Mongo in Steuben Co. All but three of these are privately owned.

Two famous bogs, Pinhook Bog in LaPorte County and Cowles Bog (owned by the town Dune Acres), have been dedicated as National Scientific Landmarks by the National Park Service and marked by appropriate plaques. Cabin Creek Raised Bog, the exceptional nature of which has been made known by Butler University botanists, fully merits the same status and the proposal is now under study by the N.P.S.

Role of Public Institutions and Private Organizations

The Nature Conservancy owns the Blue Bluffs, Cedar Bluffs and Portland Arch tracts. This organization in 1961 purchased Pine Hills

and donated this outstanding preserve to the State as Pine Hills Natural Area of Shades State Park, the first state property to be designated a natural area or nature preserve.

ACRES, Inc., was founded in Allen County in 1958 and has acquired and preserved Beechwood Nature Preserve, Bender Memorial Forest, Hanging Rock (on the Wabash River near Largo), Spurgeon Preserve, Witmer Preserve, and Woodland Bog Preserve. It has stimulated the Army Engineers to preserve Wygant Woods on the Salamonie Reservoir.

Colleges and universities own and preserve many natural areas. Earlham owns John Cring Memorial Forest and Sedgwick's Rock Preserve. Huntington College has Thornhill Nature Preserve, with two ponds. Indiana University owns Bradford Woods Natural Area, Grassland Research Tract, and Lilly Woods, and operates its own Crooked Lake Biological Station. The University bought Cedar Bluffs and donated it to the Nature Conservancy. Marion College has Botany Glen near Gas City. Purdue University has the Davis Compartment 1 Nature Preserve near Farmland, and the Ross Biological Reserve near Lafayette which has been studied intensively since 1948. Wabash College has carried on a massive ecological program under AEC auspices in its Allee Memorial Forest near Annapolis since the college acquired the tract in 1957.

Northwestern University in 1963 was associated with the leveling of the best portion of the Indiana Dunes by its purchase of much sand for lake-fill to extend its Evanston, Illinois, campus lakeward.

Indiscriminate clearing of fine forest stands for new campus development at the Michigan City branch of Purdue and the Evansville branch of Indiana State universities represent missed opportunities to have gracious campuses shaded by mature oak trees.

Two remarkable preserves and conservation-education centers of more than 600 acres each, and possessing both terrestrial and aquatic interest, are not sponsored by colleges or public agencies. Mary Gray Bird Sanctuary in Fayette County is operated by the Indiana Audubon Society. Merry Lea Nature and Religious Center was recently established by Mr. and Mrs. Lee A. Rieth of Sturgis, Michigan. This property stretches between High Lake and Bear Lake in Noble County. Part of the plan is to provide lakeside laboratory facilities which can be leased for use by Indiana colleges and universities.

The Indiana Department of Natural Resources is to be commended for its purchase of Wyandotte Cave: it is hoped that this splendid tourist attraction will be added to the state park system so that the visiting public will be enabled to benefit from an appropriate geological interpretive program. The state plans to dedicate a considerable reach of the Blue River in Harrison County as a scenic "free-flowing stream." This is a fine choice for such a project. Even better would be the Sugar Creek Valley from Rt. 32 to the Wabash River. This stretch contains Pine Hills Natural Area, Shades State Park, Turkey Run State Park, Allee Memorial Forest, a Girl Scout Camp, and forested private lands. As a "wild stream," this reach of Sugar Creek has a profusion and continuity of remarkable areas from the geological, terrestrial and aquatic biological, scenic and recreational standpoints

that make it unrivalled in Indiana. Future impoundment on Sugar Creek, if any, should be restricted to the reaches upstream from Crawfordsville.