Iowa CONSERVATIONIST

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Iowa Department of Natural Resources

Iowa CONSERVATIONIST

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In This Issue

FRONT COVER: Scenic Northwest Iowa, Clay County north of Peterson. *Photo by Bruce Morrison.*

BACK COVER: Sailing at Big Creek State Park. *Photo by Ron Johnson.*

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Ron Johnson

EDITORIAL

The New DNR

By Larry J. Wilson
Department of Natural Resources Director

Change, accepted by some, resisted by others, has been the theme at the State Capitol Complex the last ten months. Beginning with Governor Branstad's September proposal to restructure state government in Iowa, through the analysis and remodeling of a consultant's report by various implementation teams, and finally ending with a reorganization bill called SF 2175, signed by the Governor on May 29, 1986, the effort was completed. It officially took effect July 1.

Seen by some as a partial cure for economic ills and improved governmental accountability, others view the reorganization effort as an exercise that will cause little if any change or improvement in state government. Most likely, the results of reorganization will fall somewhere between these two extremes. One fact about the effort is that there was near unanimity in cooperation and purpose in the Legislative and Executive branches of government while this effort was underway. The reorganization is not perfect; few believed it would be. It is not the final answer, but with a sincere and positive approach to change and improvement in how government functions, and with some fine-tuning by future legislatures, state government can become more streamlined, efficient and effective in serving its citizens.

A basic principle of reorganization is that agencies with similar functions could be consolidated into one agency and provide the same services with fewer personnel. For example, many of the support-type services provided by each agency would be consolidated into one support unit that would be larger than any one of the former agencies, but smaller in total than the total agencies combined. The number of state agencies has been reduced to 24. Some agencies were eliminated and their function placed in another agency; generally, reorganization has been a consolidation of agencies with related duties.

The new Department of Natural Resources (DNR) is a good example of agency consolidation. The Iowa Conservation Commission, the Department of Water, Air and Waste Management, the Iowa Geological Survey, and the Energy Policy Council have been combined to form the new department.

Before I fully describe the DNR, let us take a look at the history of each of the four agencies.

The Iowa Conservation Commission was created in 1935 by combining the Fish and Game Commission and the Board of Conservation. Seven commissioners were appointed by the Governor for six-year terms. The commissioners hired a director to administer the agency. The purpose of the agency was to manage and protect the state's fish, wildlife, parks and forests, and to create an manage recreation opportunities. There have been nine agency directors and numerous commissioners, the most notable being J. N. "Ding" Darling.

The Department of Water, Air and Waste Management was created in 1981 when the Department of Environmental Quality and the Natural Resources Council were combined. There were 11 commissioners appointed by the Governor, representing certain facets of the public interest to govern most of the environmental related activities within the state. The executive director of this department was appointed by the Governor. There has been only one director of this agency.

The Iowa Geological Survey was

permanently established as a public service and research agency in 1892. It was charged with the responsibility "...to make a complete survey of the natural resources of the state and all their economic and scientific aspects..." In more recent times, the Geological Survey had the responsibility to collect, manage, interpret and report geologic and hydrologic information that is relevant to Iowa's resource development and protection. It also administered rules for oil, gas and mineral exploration. The Governor appointed the state geologist who ran the agency.

The Iowa Energy Policy Council was established in 1974 in part as a response to the oil embargo and resulting energy crisis of 1973. The council was charged with developing and recommending state policy for the development, use and conservation of all energy resources in Iowa in an attempt to reduce the state's dependency on imported energy. The policies and programs to date have emphasized increased efficiency in the use of existing energy resources and the development of Iowa's native energy resources with a particular emphasis on renewable energy. The council's director was appointed by the Governor. The Energy Policy Council was eliminated in the reorganization law. The weatherization and energy assistance programs and employees were assumed by the Department of Human Rights. The energy conservation and research programs have become part of the DNR.

The total full-time equivalents (FTE's), a term which describes the number of approved positions of the agencies described above, was 974; after reorganization into the DNR, FTE's were reduced to 930. (One FTE does not necessarily denote one employee on a full- time basis; several FTE's may equate to many part-time staff employed on a seasonal basis. Summer park workers are an example.). Most of the reduction in FTE's occurred in the administrative support function of the agencies. Personnel in the operational functions were affected the least.

The DNR is headed by the director, who is appointed by the Governor. There are seven divisions in the DNR, each headed by a division administrator, each selected by the DNR director. The divisions are divided by functions into bureaus. The head of each is the bureau chief. Bureaus are divided into sections, and sections into units. The structure and titles were mandated in the reorganization law, and provide much-needed uniformity for all the agencies of state government.

The seven divisions of the DNR are: Administrative Services; Coordination and Information; Fish and Wildlife; Parks, Recreation and Preserves; Forests and Forestry; Energy and Geological Services; and Environmental Protection. The illustration shows the organization through the bureau level and the personnel who head the various divisions and bureaus.

The seven-member Iowa Conservation Commission has become the Natural Resources Commission; and

Randy Martin

Energy-efficient home design is promoted by the DNR's energy bureau.

Larry Kolczak

Monitoring air-quality is one of the responsibilities of the DNR's environmental protection division, formerly the Department of Water, Air and Waste Management.

with the exception of authority to appoint the director, has the same policy and rule- making responsibilities over the Fish and Wildlife, the Parks, Preserves and Recreation, and the Forests and Forestry divisions. Current commissioners will continue to serve their terms and can be reappointed by the Governor when their terms expire.

The Water, Air and Waste Management Commission is now the Environmental Protection Commission, and the 11 commissioners will continue to serve their terms. The reorganization law directs that the current commissioners can serve out their terms. The law also directs the Environmental Protection Commission consist of nine members. Some commissioners' terms will end in April, 1987, and at that time, the size of the commission will be reduced to nine. The responsibility of this commission will be over the Environmental Protection Division.

The DNR director is responsible for the administration of the agency and implementing the policies and rules established by the two commissions. Generally, the two commissions have, among numerous other duties, the responsibility for setting policy, adopting rules, and establishing the general direction of the divisions over which they have the authority.

The DNR central office is located on the fourth and fifth floors of the Wallace State Office Building on the Capitol Complex. There, offices have been rearranged to place the various divisions, bureaus and sections into logical work groups. One reception center on the fourth floor will assist public requests for information and those having business with the department. Very few organizational changes will be noticed in the field offices and with field personnel. Changing the name of the four agencies to the DNR will eventually mean changes in letterheads, signs and uniforms, but these will be phased in over time.

We in the DNR have taken a "first things first" approach to reorganization — putting the organization structure into place, preparing staffing plans and a new budget, making the physical moves of employees and offices, and making certain that everyone understands their duties and job responsibilities.

The reorganization staffing plan reduced the number of FTE's in the DNR by 44. Through attrition, retirement, job changes and reassignment of duties, the exact number of excess employees will be held to less than a dozen. An outplacement program has been established by the Department of Personnel, and all employees without a position in the department will be assisted in finding jobs. As attrition occurs in other state departments, those in the outplacement program have the first opportunity for filling those positions. The net effect will be fewer employees, not only in the DNR, but throughout state government.

On the DNR implementation team, I was fortunate to have top-quality people to help fine tune the Governor's consultant's report into the organization as shown in the illustration. This implementation group was one of the best, with team members representing each discipline that was to be consolidated in the new agency. They all made valuable contributions in assuring that the responsibilities of their agencies were fully considered.

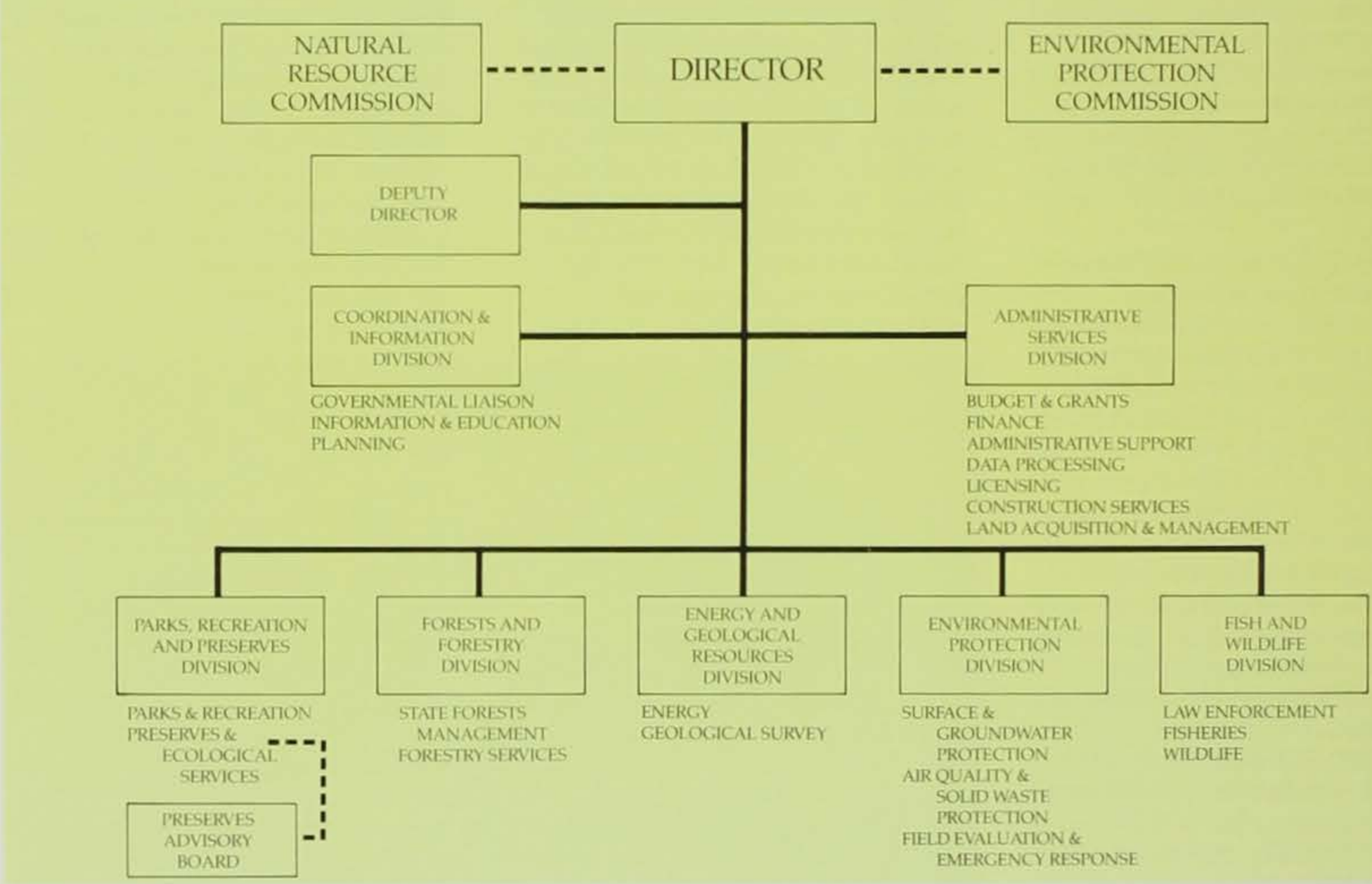
The mission of the Department of Natural Resources is to ensure the proper management and protection of Iowa's natural resources while actively encouraging public use and enjoyment of Iowa's resources in a manner consistent with sound management principles. For the most part, the historic purposes of the individual agencies which make up the DNR will be continued to meet this mission. I truly believe that all of these purposes stand a better chance of being more fully realized under our DNR than they did when we stood separately. Not only is DNR management improved in its organization, but the other agencies we work with are enjoying similar benefits.

I will solicit your support for this new department in the months and years ahead; and in difficult times, ask for your patience and understanding while we seek to further improve the agency. Conservationists, environmentalists and outdoor users have generally been solid supporters of these individual agencies. We all need your continued support and encouragement as we move into the new era of the Department of Natural Resources.

The Iowa Geological Survey, now under the DNR's, focuses on landforms such as the Loess Hills.

Ron Johnson

IOWA DEPARTMENT OF NATURAL RESOURCES



Director - *Larry Wilson*
Deputy Director - *Bob Fagerland*

Coordination and Information Division Administrator - *Jim Combs*
Information-Education Bureau Chief - *Ross Harrison*
Governmental Liaison Bureau Chief - *Mike Murphy*
Planning Bureau Chief - *Arnie Solm*

Administrative Services Division Administrator - *Stan Kuhn*
Budget and Grants Bureau Chief - *Mark Slattery*
Finance Bureau Chief - *Gene Geissinger*
Administrative Support Bureau Chief - *Sandy Adams*
Licensing Bureau Chief - *Judy Pawell*
Construction Services Bureau Chief - *Tom Albright*
Land Acquisition and Management Bureau Chief - *John Beamer*
Data Processing Bureau Chief - *Joe Vazquez*

Environmental Protection Division Administrator - *Allan Stokes*
Surface and Groundwater Protection Bureau Chief - *Darrell McAllister*
Air Quality and Solid Waste Protection Bureau Chief - *Pete Hamlin*
Field Evaluation and Emergency Response Bureau Chief - *Joe Obr*

Energy and Geological Resources Administrator - *Larry Bean*
Energy Bureau Chief - *Phil Svanoe*
Geological Survey Bureau Chief - *Don Koch*

Forests and Forestry Division Administrator - *Gene Hertel*
Forestry Services Bureau Chief - *Bill Farris*
State Forests Management Bureau Chief - *Jim Bulman*

Parks, Recreation and Preserves Administrator - *Mike Carrier*
Parks and Recreation Bureau Chief - *Doyle Adams*
Preserves and Ecological Services Bureau Chief - *Daryl Howell*

Fish and Wildlife Division Administrator - *Allen Farris*
Fisheries Bureau Chief - *Jim Mayhew*
Wildlife Bureau Chief - *Richard Bishop*
Law Enforcement Bureau Chief - *Rick McGeough*

DNR Implementation Team:

The following personnel and state agencies provided invaluable expertise and generous amounts of time to the implementation team which directed the formation of the new Iowa Department of Natural Resources:

Team Leader, *Larry Wilson*, Conservation Commission
Steve Ballou, Water, Air and Waste Management
Larry Bean, Energy Policy Council
Jim Combs, Water, Air and Waste Management
Bill Crews, Water, Air and Waste Management
Al Farris, Conservation Commission
Dennis Guffey, Energy Policy Council
Don Koch, Geological Survey
Stan Kuhn, Conservation Commission
Mike Smith, Attorney General's Office
Al Stokes, Water, Air and Waste Management
Ken Tow, Department of Soil Conservation

Crop Retirement Programs and Wildlife

By Terry Little

Wildlife thrives during good farm-program eras... suffers during poor ones.

Federal cropland diversion programs have been a part of U.S. farm policy for 50 years. Created during the Depression and Dust Bowl era in the 1930's to stimulate farm markets and stabilize rural economies, they have affected farm commodity production, soil erosion, and wildlife populations.

Under a variety of names (set aside, diverted acres, soil bank, and others), land-diversion programs have provided incentives to farmers to reduce their crop acreages through cash or in-kind payments for removing cropland from production. The effectiveness of the several programs utilized in the past 50 years in meeting these goals has been the subject of much public and media debate, the PIK program of 1983 being the latest in a series of well- criticized efforts. The inability of these programs to bolster farm economies is evident in the Midwest's recent farm crisis, and their effects on soil erosion and wildlife populations are just as profound, although less well publicized. It has recently become apparent that the USDA's farm policies and the agricultural practices they have promoted, have been the dominant factor affecting farmland wildlife populations for the last half century. A review of farm programs and their

Pheasant hunters found plenty of birds during the soil-bank years of 1956-1970.

impacts on wildlife shows how dramatic the relationship is.

Land Retirement Programs

Land retirement became a tool of federal farm policy with the passage of the Cropland Adjustment Act (CAA) of 1934, followed by the enabling legislation which created the Agricultural Stabilization and Conservation Service (ASCS) and the U.S. Soil Conservation Service (SCS) in 1936. The Depression drove farmers from the land and left exposed millions of acres of marginal farmland to the effects of wind and water erosion. The CAA resulted in retirement of 37.4 million acres in 1934 and 1935, or eight percent of the acres harvested in those years. No cover crop was required to protect the soil. The Agricultural Conservation Program (ACP), developed by the ASCS and SCS, retired an average of 21.9 million acres in 1936 to 1942, 60 percent in the cornbelt, or an average of 12 percent of the crop acreage harvested in those years. The ACP required that diverted, fallow and idle croplands be seeded with biennial or perennial legumes and grasses or their mixtures to prevent soil erosion. The ACP's greatest impact was in areas where corn was produced for sale as grain, and cattle and hog feeding were important (in Iowa, an average of 3.8 million acres were retired annually, or 18 percent of the crop acreage).

World War II and the need for all-out food production ended the ACP era, from 1943 to 1947. Just one-eighth of the previous ACP acreage was seeded, and most of this was on less-productive soil. The total acreage retired by the ACP dropped abruptly from 24.2 million acres in 1942 to 2.7 million acres in 1943.

Crop retirement programs were not revived until the end of the Korean War and the advent of a general economic recession in the early 1950's. The popularly termed soil-bank legislation passed in 1956 included two programs — the Acreage Reserve (AR) retired from 12 to 21.4 million acres annually from 1956 to 1958, but did not require seeding of retired acres; the Conservation Reserve (CR) resulted in three to ten set-aside contracts and required protective seeding. The CR idled 215.9 million acres from 1956 to 1970 with peak years of 11 to 28.7 million acres annually from 1959 to 1967. This was a substantial program, but idled just 60 percent as much land annually as the ACP of twenty years earlier.

The decline of the CR portion of the soil bank in the late 1960's ended the era of popular, long-term set asides. The Emergency Feed Grain Program (EFG) and a companion Wheat Program (WHP) were enacted in 1961 to provide annual contracts for land diversion. Because they allowed farmers to respond more quickly to annual fluctuations in markets and field conditions, EFG and WHP were popular — an average of 28.7 million acres were retired each year for thirteen years. Combined with the last years of the soil bank's CR, they idled 64.7 million acres in 1962. Unlike CR contracts, however, EFG and WHP acres were generally planted to an annual cover crop such as oats, which had to be destroyed before setting seed in mid-summer.

The last long-term retirement program enacted prior to 1986 was the Cropland Adjustment Program (CAP) in 1966. CAP provided for five- to ten-year contracts which had to be seeded to perennial cover, and provided payments for allowing public recreation (including hunting). The long-term nature of CAP contracts, and the limited appropriations to fund them, kept them from being a popular program. Just 2.4 million acres were retired annually from 1966 to 1975.

From 1974 to 1976, the Nixon administration eliminated all payments for crop diversion to encourage overseas grain sales and reduce trade deficits. Surpluses of feed grains forced reinstatement of EFG and WHP programs in 1977 and 1978, and they remained in place at low levels of enrollment (less than ten million acres) until 1983. The popular but ill-fated PIK program, which removed maximum acreage limitations, resulted in 80.6 million acres set aside in 1983. Acreages retired under various federal programs are summarized in the accompanying graph (page 10).

The cost of these land-retirement programs has been substantial, and varies by the number and kind of program in place in any given year. Since the soil bank was implemented in 1956, expenditures have varied from $272 million to $2.7 billion annually, and averaged $1.9 billion for 1961-1972. Through 1983, subsidy payments totaled nearly $35 billion. The PIK program alone cost at least $12 billion for the single year of its existence.

Impacts On Wildlife

The effects of the land retirement programs on soil and wildlife resources have been as impressive as their cost. Ring-necked pheasants are a major recreational and economic resource to the states of the cornbelt, and their fluctuations in abundance are perhaps better documented than other farmland wildlife species. For this reason, they serve as a symbol for the changing fortunes of wildlife populations in the agricultural midwest.

Many wildlife biologists and long-time pheasant hunters remember the "good old days" of pheasant numbers during the soil-bank era. Very few still remember an even greater pheasant heyday that peaked around 1940, or the period of reduced pheasant populations which occurred between these peaks.

Midwest pheasant populations increased spectacularly in the late 1930's and early 1940's. Fall pheasant populations were estimated at 300 to 1,000 per square mile in the "pheasant island" of the Upper Midwest (northern Iowa, northern and central Nebraska, eastern South Dakota, southern North Dakota, and southwestern Minnesota). Harvests of 90 to 100 roosters per square mile were reported from the better areas.

The boom was followed by an abrupt decline in the mid 1940's. The area described as the better pheasant range began shrinking by 1944, and reached its lowest point in 1946. South Dakota, which harvested 7.5 million pheasants in 1945, reported a kill of just 507,000 in 1950; Minnesota's pheasant harvest peaked at 1.7 million in 1942, but the season was closed by 1947; and Michigan's harvest dropped from 1.4 million in 1944 to 453,000 in 1947. G.I's returning from World War II found just a fraction of the pheasants they had pursued prior to going off to war.

The reasons for this dramatic

decrease were not well understood at the time; wildlife biologists were few and far between, wildlife management as a profession had been in existence for less than a decade, and little research data was available to examine for explanations. The most common reasons given were intensified land use; cold, wet springs which led to high mortality of eggs, young, and hens; heavy hunting pressure (including legal hunting of hens); general wildlife population cycles; and the decline of a newly introduced species which had temporarily overshot the carrying capacity of its environment.

With the luxury of hindsight and thirty additional years of experience, today's biologists easily see a relationship between the boom and bust cycle in pheasant numbers and changing land-use practices dictated by federal crop-retirement programs. Booming pheasant numbers of the late 1930's coincided with the establishment of millions of acres of potential pheasant habitat as a result of the ACP of 1936. Pheasant numbers increased until 1942, when ACP acres were reduced 90 percent to promote all-out food production. Pheasant populations held up for two years, but by 1944, they had begun to crash. Pheasants recovered somewhat in the late 1940's, but remained much below their peak numbers until the establishment of the Conservation Reserve portion of the soil bank in the 1950's. Pheasant numbers in the Upper Midwest promptly began a major comeback that peaked in the early 1960's when CR acres were at a maximum. As these long-term contracts expired, however, and annual set-asides became more common, pheasant numbers began a decline that was accelerated by a major blizzard in 1965, and which recent annual set-aside programs have been unable to halt.

Pheasant populations in Iowa followed a similar trend. The Iowa Conservation Commission has conducted roadside pheasant counts in late summer and fall in 33 counties in northern Iowa continuously since 1936. The number of pheasants seen per ten miles of roadside driven on standardized routes by department personnel followed trends seen throughout the pheasant range in the Midwest. Populations increased markedly in the late 1930's, declined abruptly in the war years, and did not increase strongly until the soil-bank years of the 1950's. (Note that the survey was moved from the October-September period from 1936 to 1953, to August from 1954 to 1976. This made pheasants more visible along roadsides and resulted in higher counts in the latter period, even though populations were probably no higher than the early period. Comparisons between years are valid only for years when the same survey periods were used. Even with this disclaimer, trends in populations obviously follow trends in federal land-retirement programs.)

Several factors other than just total acreages in set-aside programs have an important impact on farmland wildlife populations. The impact of the early ACP set-asides was magnified by farming practices common at the time. Prior to 1950, most Midwest farmers practiced diversified agriculture, raising hay and oats for livestock feed in addition to row crops. These diversified farms held substantial acres of nesting cover, which when supplemented with perennially seeded acres of ACP lands, resulted in vast amounts of nesting and roosting habitat for pheasants. Much of the pheasant range in the upper midwest probably had 70 to 100 acres of potential grassy nesting cover per square mile during these years. Substantial acres of oats were still planted in the 1950's, to supplement soil-bank acres. The 1930's and 1950's were also warm, dry decades which undoubtedly encouraged persistent nesting by pheasant hens.

Ken Varland

Ken Formanek

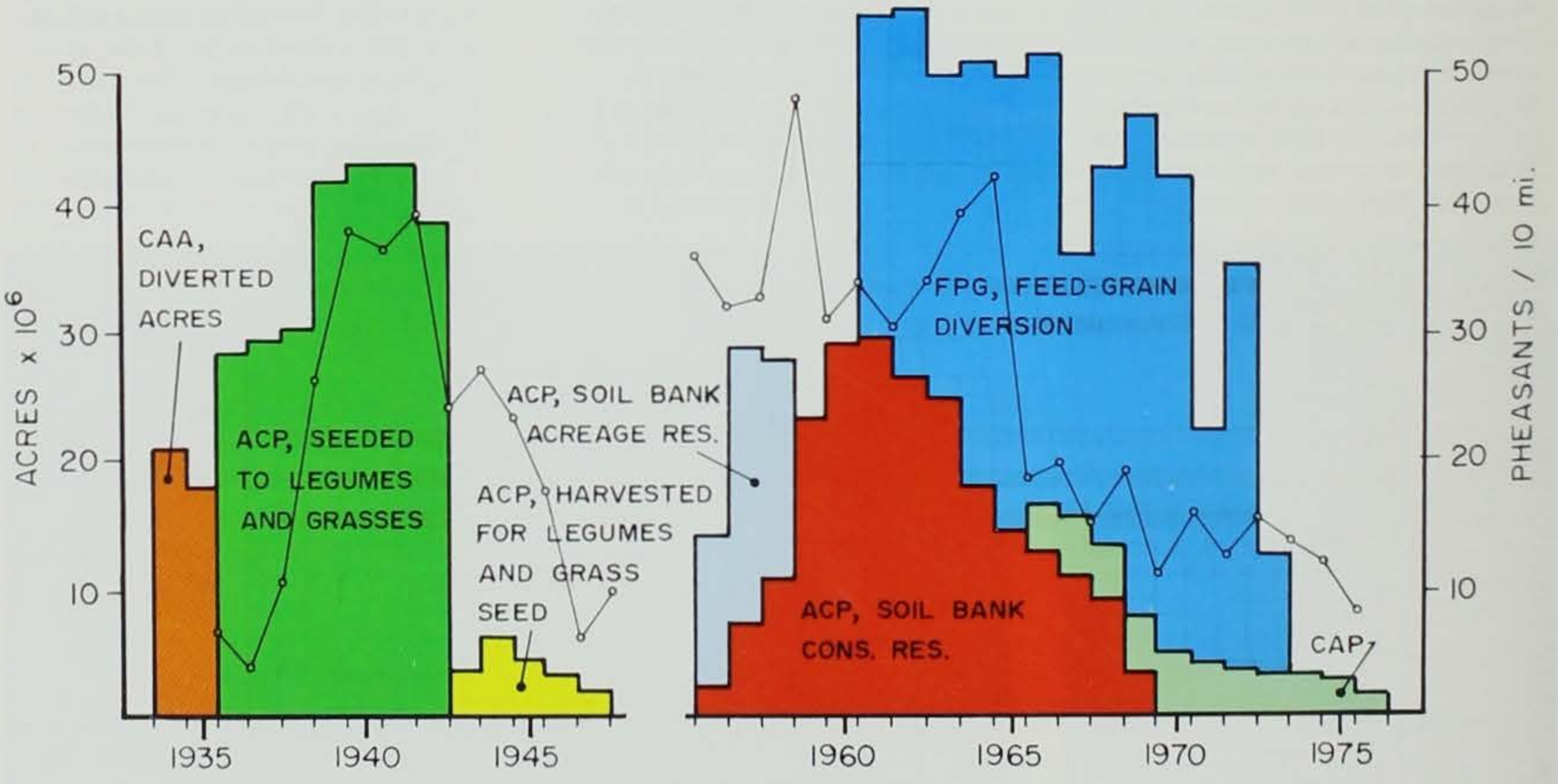
The elimination of crop diversion programs occurred during the mid-1970's, all-out production — farming up to the roadside with fewer, cleaner fencerows — was one result. A sharp decline in pheasant numbers was another.

Not only were set-aside contracts under EFG, WHP and PIK too short, but leaving them fallow or relying on an annual cover crop effectively eliminated their value as nesting habitat. Most fields diverted under these programs were not planted until May 15, and most, by ASCS rules, were cut by July 1 for weed control or to prevent seed development on cover crops. This eliminated these fields as early nesting cover, and caused destruction of most of the few late nests present when they were mowed. A survey of 86,738 annual set aside or PIK acres in 12 midwest states in 1983 indicated that just 18 percent were established in safe nesting cover. One study in Wisconsin estimated that pheasant populations increased just ten percent as a result of annual set- aside programs.

The administration of set-aside programs has also discouraged wildlife habitat development. The way the base acreage an individual was allowed to set aside was calculated actually encouraged overproduction of target commodities and destruction of wildlife habitat. The base acreage which could be set aside was determined from the number of acres previously planted — the more acres planted, the greater the amount that could be set aside (and hence revenue to the farmer). Farmers who plowed fencerow to fencerow, destroyed woodlots, plowed pastures, and tiled wetlands to produce more cropland were rewarded for their efforts by an increase in their set-aside allotments. Astute individuals then placed these marginal acres in diversion programs, and continued to produce crops on their best land. Acreages in conservation practices (ponds, terraces) were also subtracted from the farm's cropland base. Not only was wildlife habitat lost under these rules, but crop reduction goals were subverted, even though billions of dollars were spent.

The abundance of pheasants and other farmland wildlife is dependent upon a variety of factors other than just the presence of grasslands. The amount of adequate nesting, brood rearing, and wintering habitat determines the ultimate limitation to their numbers, but winter and nesting-season weather can keep this potential from being realized. In spite of short-term fluctuations in numbers caused by annual weather patterns, it is apparent that the overall abundance of pheasants in the Midwest cornbelt has been significantly impacted by federal land-retirement policies and the way they have been administered. Booming populations in the mid 1930's and 1960's were the result of long-term set asides planted to perennial grass-legume cover. Dramatic declines occurred when such programs were ended, or annual set asides were established in their place. Short-term set asides and the rules administering them have actually encouraged surplus production and the destruction of wildlife habitat.

Terry Little is the wildlife research supervisor for the department. He holds a Ph.D. from the University of Minnesota and has been in wildlife research since 1975.



CAA Cropland Adjustment Act.
ACP Agricultural Conservation Program
FPG Federal Feed-Grain Program
CAP Conservation Assistance Program

Summary of agricultural land in the United States diverted from crop production under subsidy of the Agricultural Stabilization and Conservation Service (from Edwards 1983), and pheasant populations trends in Iowa (from Farris 1977), 1934-1976.

1985 Farm Bill
Fantastic or Fiasco?

By Terry Little

In light of the information contained in the accompanying article, the Farm Security Act of 1985, or Farm Bill, seemed to promise substantial gains for wildlife. For the first time since the soil-bank era of the 1950's, recognition of the role of long-term set asides in preventing soil erosion, stabilizing farm prices, and benefitting wildlife was incorporated into a bill supported by agricultural and wildlife interests. As has been the case with other USDA farm programs, however, administrative decisions made during the implementation process significantly reduced the act's potential.

Major provisions of the bill are:

- A Conservation Reserve which would have idled 40 million acres of highly erodible land nationwide for up to ten years;
- A sodbuster provision which prohibits anyone plowing up grasslands from participating in any USDA commodity price support program, unless done so under an approved conservation plan;
- A swampbuster provision which provides the same penalties as the sodbuster provision for drainage of wetlands;
- A Conservation Easement program which would allow easements of up to 50 years for recreational access to lands owned under mortgage to the FmHA. Part of the debt would be restructured in return for the easement.

Of these, the Conservation Reserve holds the greatest immediate benefit for wildlife. Under its provisions, cropland farmed two of five years from 1980 to 1985 and eroding at three times the rate at which soil is formed (3T) would be eligible to be idled for up to ten years. Farmers would bid their acreages to be idled and per-acre payments to their county ASCS. For those bids that were accepted, permanent cover would be established on idled acres, with up to 50 percent of the cost of establishment cost-shared with the Department of Agriculture.

Allowable cover types with the greatest chance of benefitting Iowa's wildlife are:

- Introduced grasses and legumes;
- Native grasses and legumes;
- Trees;
- Wildlife habitat (mixed native grasses, trees and shrubs, and wetlands).

The benefits to wildlife are obvious. Under the 2T soil loss limit originally announced for the program, up to four million acres qualified for the conservation reserve in Iowa alone. By comparison, long-term reserves under the soil bank seeded down only 670,000 acres here. Pheasants, quail, wild turkeys, deer, and a host of nongame birds stood to benefit tremendously as a result. Iowans harvested as many as two million rooster pheasants annually in the soil-bank era, nearly twice the typical harvest of the past ten years. The Conservation Reserve would not, by itself, recreate these conditions, but would have dramatically increased the recreational potential for the Iowa sportsman.

As administrative procedures to implement the Conservation Reserve were announced, it became apparent that the full potential of the bill would not be realized. The first setback came when the original soil loss rate of 2T needed to qualify for the Conservation Reserve was raised to 3T. The next negative decision required that the average rate of soil loss for the years 1980 to 1985 be used. Farmers who seeded their steep slopes for three of these five years to preserve the soil had no soil loss when the land was seeded. This made it nearly impossible for these acres to qualify even though they may have had severe erosion problems in the years which they were cropped. Good farmers were again penalized for conscientiously protecting their soil. Conservation Reserve acres were also removed from the farmers' corn base, thus reducing price support payments on croplands (see the adjacent article for an explanation). Late in the process of developing regulations, additional legislation removed the guarantee of funding for contracts approved after 1988. (Annual appropriations would be required.) On top of these problems, the Farm Bill was passed so late in the year that USDA officials had little time to develop procedures. Answers to many key questions about the program were not available even during the first days of the initial sign-up period in March of 1986.

All of these problems, plus the uncertainty as to what level of bids would be accepted into the program, restricted farmer participation during the first sign-up. Bids were received on 287,817 acres in Iowa with amounts ranging from $5 to $500 per acre. Bid ceilings actually allowed by the USDA ranged from $65 per acre for southern Iowa to $90 per acre in northern Iowa, which eliminated most bidders. Altogether 742 bids totaling 40,951 acres at a cost of $2,750,221 were accepted, far below the first-year goal of 476,000 acres in Iowa. Most conservationists were sorely disappointed.

A second sign-up period was established in May of 1986. Response was more favorable, perhaps because some idea of bid ceilings was now available. Slightly over 1,500 bids were accepted and an additional 101,609 acres were signed into the Conservation Reserve.

What will the future hold? It is hard to predict what will happen in the remaining four years in which bids will be accepted. The goal of two million acres retired in Iowa seems out of reach at this time. The ultimate value of the program will be determined by the number of acres enrolled in ten-year set-aside contracts. Certainly the general trend in the farm economy and commodity prices will help determine the attractiveness of the Conservation Reserve to farmers and the benefits to farmland wildlife.

Conservation Update

Leopold Celebration

The Department of Natural Resources is helping sponsor the nation's first Aldo Leopold centennial celebration.

The celebration, Oct. 5-9, at Iowa State University is open to the public, and admission is free.

Aldo Leopold was born in Burlington, Iowa on Jan. 11, 1887. His early appreciation of nature developed as he fished and hunted along the Mississippi River near his home. He went on to become this century's most influential spokesman for conservation and environmental quality, founded upon what he called "the land ethic." His life reflected this ethic, his belief that "a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."

His 1933 textbook *Game Management*, is the classic in that field and *A Sand County Almanac*, published posthumously in 1949, is widely regarded as a landmark — a blend of the literary heritage of Thoreau and the scientific tradition of modern wildlife management. He was also influential in establishing the first federal wilderness area (in New Mexico), the Wilderness Society, and the Cooperative Wildlife Research Units such as the one at Iowa State's campus.

Speakers during the five-day celebration include Dr. Leopold's four children (distinguished scientists and conservationists in their own right), Leopold biographers, prominent Leopold scholars, and persons active in public life.

For information about the program, and accommodations in Ames, write or call Dr. Thomas Tanner, 141 Bessey Hall, Iowa State University, Ames, Iowa 50010; 515/924-7253.

THE ISU LEOPOLD CENTENNIAL CELEBRATION

Sunday, Oct. 5

3:00 p.m.	Film, "Aldo Leopold: His Life and Thought," followed by comments from Leopold's children. David Lendt, moderator
3:00 p.m.	Raymond F. Dasmann, "The Land Ethic in the World Scene"

Monday, Oct. 6

10:00 a.m.	Estella Leopold, paleobotany seminar
12:00 noon	Luna Leopold, geomorphology seminar
3:15 p.m.	Susan Flader, "Thinking Like A Mountain"
8:00 p.m.	The Honorable Bruce Babbitt, "The Land Ethic In One State"

Tuesday, Oct. 7

10:00 a.m.	Nina Leopold, prairie restoration seminar
12:00 noon	Carl Leopold, plant physiology seminar
3:15 p.m.	Charles Bradley, "Research at the Leopold Preserve"
8:00 p.m.	Huey Johnson, "Making the Land Ethic Work"

Wednesday, Oct. 8

10:00 a.m.	Curt Meine, seminar on Leopold and agriculture
12:00 noon	J. Baird Callicott, "The Land Ethic from a Philosopher's Viewpoint"
3:15 p.m.	Curt Meine, "The Early Years"
8:00 p.m.	Dale McCullough, "Ecology of the White-Tailed Deer — Fifty Years Later" (Errington Lecture)

Thursday, Oct. 9

12:00 noon	Craig Allin, "Leopold and Wilderness Preservation"
3:15 p.m.	Sharon Kaufman, "Built on Honor to Endure: Evolution of the Leopold Family Philosophy"
8:00 p.m.	Roderick Nash, "Widening the Circle: Ethical Extension and the New Environmentalism"

Most daytime sessions are in the Pioneer Room of the Memorial Union. Evening sessions in the Sun Room.

Book Review

Tyrrell, R.A. and E.Q. Tyrrell. 1985. Hummingbirds: Their life and behavior. Crown Publishers, Inc. New York. 212 pp. $35

Hummingbirds are often called the jewels of the bird world. This is a jewel of a book about them. It summarizes their biology and is filled with spectacular photographs.

Robert Tyrrell has photographed for National Geographic Magazine, and these photos show the same level of excellence. Many are of birds in flight. Motion is stopped completely in most pictures. Camera focus is precise, showing the finest detail of feather structure.

The text, written by Esther Tyrrell covers most of the material in a basic ornithology course. Bird anatomy and behavior, including flight, courtship, and nesting are described and illustrated with sketches and photos. The function of hummingbirds in flower pollination is covered. A bibliography of the scientific literature on hummingbirds is included.

The 16 species of hummingbirds which breed in the continental United States are represented by photos of the male, sketches of the female, and text describing both. Habitat and winter and summer range are also described.

As a popular account of hummingbirds, the book is a wonderful success. The photographs are spectacular and instructive. The text describes hummingbird biology in a thorough, easy to read manner. Anyone wanting to learn about these jewels of the bird world will enjoy this book.

— John Fleckenstein

* * *

The ruby-throated hummingbird is the only species breeding in Iowa. It breeds across the state but is more abundant in the Northeast. It is found in dense woodlands and around clearings.

Rendezvous At The Old Fort

Offering a taste of Iowa history, the Fort Atkinson Rendezvous will again be held this fall at Fort Atkinson in Northeast Iowa's Winneshiek County. The event will be held from 9:30 a.m. until 4:30 p.m. on Sat., Sept. 27. Sunday, Sept. 28 hours will be from 8:30 a.m. until 4:00 p.m.

Visitors will again enjoy watching soldiers in authentic 1840's uniforms performing military and cannon drills. They will watch buckskinners perform frontier skills and taste hearty pioneer cooking. They'll see "hawk" and knife throwing contests, blackpowder demonstrations and a skillet throw.

Crafts people will display numerous wares and skills, including blacksmithing, doll making, scrimshaw, bead work, carving, leather work, rope making, spinning and weaving.

There will be a movie shown every half hour to explain the fort's 140-year history. Artifact and historical documents from the fort can be viewed at a museum on the grounds.

Fort Atkinson is located 12 miles south of Decorah and five miles southwest of Calmar on Highway 24.

IOWA TO RECEIVE $100,000 ENERGY GRANT

Iowa is one of five states in the nation to receive a $100,000 grant for energy-related business development. The money is to be spent for buy-down of interest rates for landlords of multi-family low-income housing. The program will provide all types of energy improvements.

"This grant is significant when you consider that federal money for energy programs is diminishing. This program is an attempt to secure other funds so we can continue these programs," said Larry Bean, administrator of the energy and geological resources division of the Iowa Department of Natural Resources.

"We know energy management programs work. Federal demonstration programs show energy savings can be translated to profit for businesses providing energy efficiency improvements," Bean said.

The project is intended to secure an additional $50,000 from private and nonprofit entities for the loan interest buy-down fund. Anticipating loans to low-income landlords available at 13% but bought down to as much as 0% interest, the fund will generate approximately $500,000 in weatherization improvements during the grant period — enough money to complete 1,113 units of rental property.

The program will be supervised by the community action agencies division of the Iowa Department of Human Rights.

Classroom Corner

By Robert P. Rye

This year Iowa is celebrating Homecoming '86 — inviting former Iowans back to the state, encouraging them to stay. The Department of Natural Resources is doing the same with one of Iowa's former residents — the river otter. Over the past year and a half we have welcomed back a total of 76 otters, encouraging them to stay. The following otter trivia will help us understand more about this animal that has made its homecoming. Test your knowledge.

1. The otter is a member of the weasel family. True False
2. A population of ten otters per 20-25 miles is considered a good population. True False
3. An otter can stay submerged for 3-4 minutes before needing air. True False
4. Otters' primary food is fish. (mostly rough fish) True False
5. Of all the senses used by the otter, sight is of the greatest importance. True False
6. Otters are usually sexually mature at two years of age and produce young sometime between February and April. True False
7. The life span of a river otter in the wild is 10 years. True False
8. The tracks of the otter are three inches across and have five toes with claws and are found with the dragging trail mark. True False
9. The worst enemy of the river otter is poison digested from eating fish contaminated by toxins from agriculture and industry. True False
10. The river otter's primary decline is due to hunting. True False

Answers:

1. True 2. False (one otter) 3. True 4. True 5. False (sense of smell) 6. True 7. False (actually 15 years) 8. True 9. True 10. False (pollution and habitat destruction)

CALENDAR
August-October, 1986

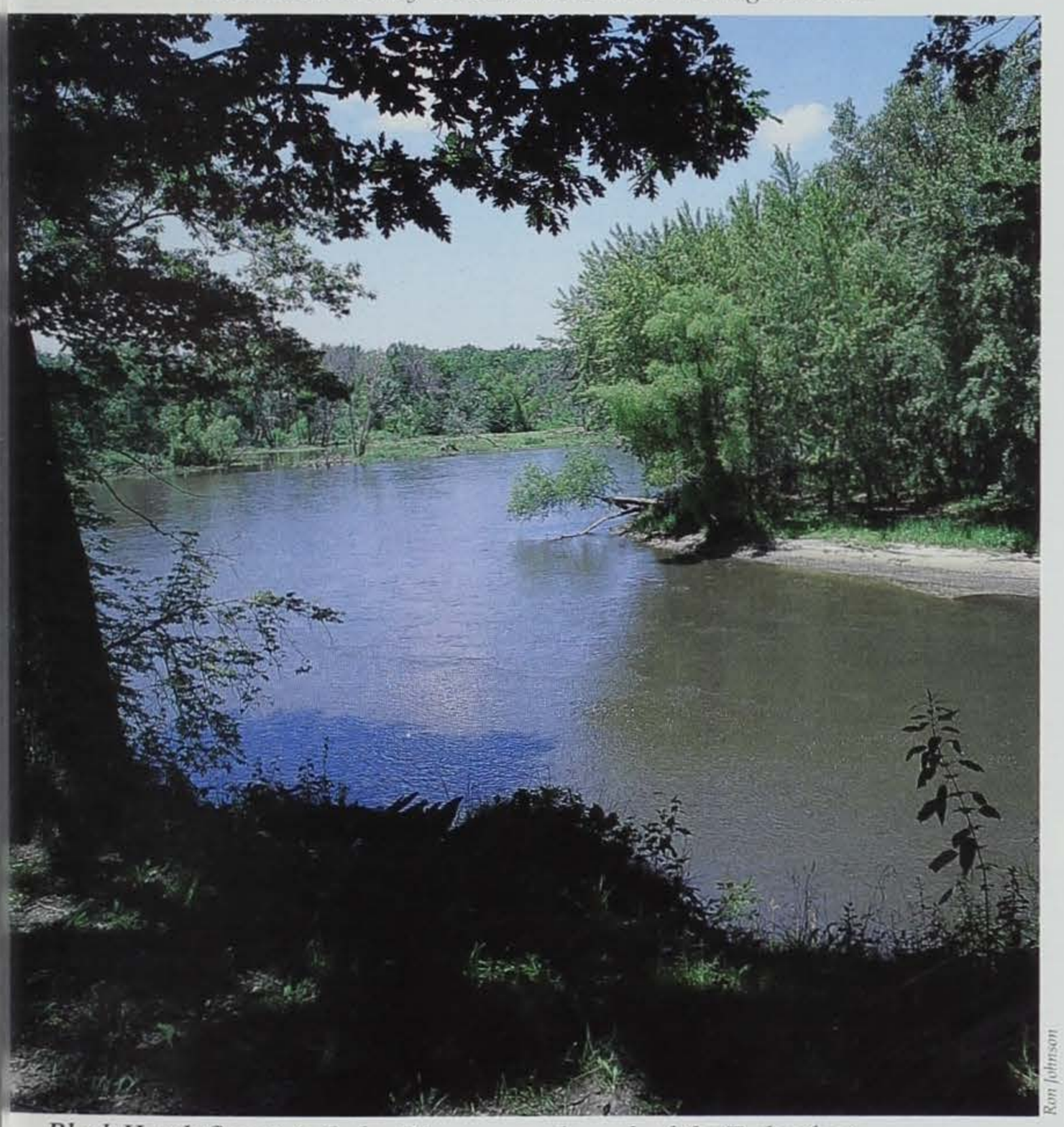
August	Free camping at Chichaqua Wildlife Area Nonelectric, 2-week limit	Polk County 515/967-2596
August-October 15	Bentonsport Craft and Antique Shops 10:00 a.m. - 5:00 p.m.	Bentonsport Riverside Park Van Buren County 319/592-3579
August 1, 8, 15 and 22	Summer Education Programs	Pioneer Park Page County 712/542-3864
August 1-31	Iowa's Woodland Heritage and Forest Communities Photo Exhibit	Kossuth County 515/295-2138
August 1-31	Iowa's Wild Places Photo Exhibit	Pocahontas County 712/335-4395
August 3, 17 and 31	Wagaman Mill Tours 2:00 - 4:30 p.m.	Lynnville Jasper County 515/792-9780
August 8-16	Canoeing Leadership Certification Course	Iowa 4-H Camping Center and Boundary Waters Canoe Area 515/294-6148
August 10 and 22	Canoe Trips	Indian Creek Nature Center Cedar Rapids 319/362-0664
August 11	Beginning Bird Identification 7:00 p.m.	Lime Creek Nature Center 515/423-5309
August 11	Meteor Watch 11:00 p.m.	Swan Lake Park Carroll County 712/792-4614
August 12	Tallgrass Prairie Workshop 8:00 a.m. - 5:00 p.m.	Lakeland AEA Building Palo Alto County 712/837-4866
August 15	Summer Stargazing 8:30 p.m.	Pilot Knob State Park Hancock County 515/582-5322
August 16	Meet A Snake	Lime Creek Nature Center 515/423-5309
August 16	Sweet Corn and Potluck Supper for Campers	McFarland Park Black Hawk County 319/277-2187
August 16	Sweet Corn Feed	McFarlane Park Black Hawk County 319/277-2187
August 17	Archery Shoot - Black Hawk Archery Club	Hickory Hills Park Black Hawk County 319/342-3350
August 17	Prairie Program	Swan Lake Park Carroll County 712/792-4614
August 17	Honey, Honey — A Look At The Honey Bee 1:00 p.m.	Mitchell County 515/732-5204
August 18-22	Nature Photography	Lakeside Laboratory Dickinson County 515/294-3522
August 19, September 18 and October 17	Walk When the Moon is Full	Clinton County 319/847-7202
August 19	Tuesday Night at the Movies plus A Moonlit Walk to the Marsh	Lake Cornelia Park Wright County 515/532-3185
August 21	Prairie Walk 7:00 p.m.	Doolittle Prairie Story County 515/232-2516
August 22-24	Nature Weekend	Lakeside Laboratory Dickinson County 515/294-3522
August 22, 23, 24	Iowa Game Fair	Black Hawk Park Black Hawk County 319/266-6813
August 22, 23, 24	Country and Old Time Music Festival	Marion County Park Knoxville 515/828-2214
August 23	Morning Bird Hike 7:00 a.m.	Thorpe Park Hancock County 515/582-5322
August 23, 30 and 31	Slide/Talk Show	Gouldsburg Park, Hawkeye Fayette County 319/425-3613
August 23-24	Open House at Motor Mill	Clayton County 319/245-1516
August 24	Mixed Best Shot Tournament $15	Briggs Wood Golf Course Hamilton County 515/832-1994
August 24	Landscaping For Wildlife 2:00 p.m.	Ambrosen Park Hancock County 515/582-5322
August 24	Dragonflies Up Close 2:00 p.m.	Hillview Recreation Area Plymouth County 712/947-4270
August 25-30	Building of a Sod House	West Bend Historical Society Grounds Palo Alto County 712/837-4866
August 26	Children's Movies	Lime Creek Nature Center 515/423-5309
August 31	Rededication of Froelich Historic Site	Clayton County 319/245-1516
September 1	Prairie History	Swan Lake Park Carroll County 712/792-4614
September 1-6	PRAIRIE HERITAGE WEEK	West Bend Historical Society Grounds Palo Alto County 712/837-4866
September 1-6	Sod House Grand Opening	West Bend Historical Society Grounds Palo Alto County 712/837-4866
September 2 and 4	Prairie Heritage Slide Show 7:30 p.m.	Akron Library Plymouth County 712/947-4270
September 5-6	4th Annual Youth Trapping Clinic	Thorpe Park Hancock-Winnebago Counties 515/582-5322
September 6	Backyard Prairie Garden Workshop 10:00 a.m.	Hillview Recreation Area Plymouth County 712/947-4270
September 6	Star Party 8:30 p.m.	McFarland Park Story County 515/232-2516
September 6-13	Clay County Fair	Spencer 712/262-2187
September 7	Prairie Tour	Prairie Smoke Wildlife Area East Unit Wright County 515/532-3185
September 7	Gun Safety for Women	Hartman Reserve Nature Center Black Hawk County 319/277-2187
September 7	Hopeville Rural Music Reunion	Hopeville Clarke County 515/342-3960
September 10	Prairie Films	Wright County 515/532-3185
Setpember 13	Prairie Visit to Reconstructed Site	Wright County 515/532-3185
September 13	Bike Ride Cedar Valley Nature Trail	McFarland Park Black Hawk County 319/277-2187
September 13	Seasons of a Woodland Hike 1:00 - 3:00 p.m.	Basswood Recreation Area Palo Alto County 712/837-4866
September 13	Monarch Tagging Day 11:00 a.m. -3:00 p.m.	Easter Lake Park, Shelter #4 Polk County 515/285-7612
September 14	Pioneer Craft Fair	Grundy County Museum 319/345-2688
September 14	Forest Ecology 2:00 p.m.	Bear Creek Trail Story County 515/232-2516
September 14	3-Man Shot Tournament $36/Team	Briggs Woods Golf Course Hamilton County 515/832-1994
September 19	Harvest Moon Walk 8:00 p.m.	Swan Lake Park Carroll County 712/792-4614
September 20	Prairie Tour	Hartman Reserve Nature Center Black Hawk County 319/277-2187
September 20	Hawk Watch 10:00 a.m.	Five Ridge Prairie Preserve Plymouth County 712/947-4270
September 20-21	Log Cabin Days Craft Festival	Historical Museum Harrison County 712/642-2114
September 20	Owl Prowl 8:15 p.m.	Chichaqua Wildlife Area Polk County 515/967-2596
September 21	7th Annual Hickory Hills Hoedown Noon - Dark	Hickory Hills Park Warren County 515/961-6169
September 21	Star Trek	New Haven Potholes Mitchell County 515/732-5204
September 21	Bzzzy Bees 2:00 p.m.	McFarland Park Story County 515/232-2516
September 27	Cinder Path Bike Ride 8:30 a.m. Osceola Courthouse 9:30 a.m. Cinder Path, Chariton	Clarke County 515/342-3960
September 27 and 28	Fort Atkinson Rendezvous	Fort Atkinson Winneshiek County 515/281-5971
September 28 and October 19	Prairie Seed Harvest 2:00 p.m.	Doolittle Prairie Story County 515/232-2516
October 1-31	Photographers' Exhibit	Jackson County Historical Society Museum Maquoketa 319/652-3783
October 3-5	Iowa Conservation Education Council Fall Workshop "The Year of the Tree"	Conservation Education Center Springbrook State Park Guthrie County 515/747-8383
October 4	4th Annual Clarence Pickard Memorial Bike Ride 8:00 a.m.	Pickard Park Warren County 515/961-6169
October 4	Prairie Seed Collection	Prairie Smoke Wildlife Area 515/532-3185
October 4-5	Artist in the Park Mural Designer	Hartman Reserve Nature Center Black Hawk County 319/277-2187
October 4-5	Forest Craft Festival	Lacey-Keosauqua State Park Van Buren County 515/281-5971
October 5	Puffball Rally Mushroom Hunt 1:30 - 4:30 p.m.	Dickson Timber Forest Preserve Carroll County 712/792-4614
October 5, 12, 19 and 26	Apple Cidering	Hartman Reserve Nature Center Black Hawk County 319/277-2187
October 5-9	Leopold Celebration	Iowa State University 515/924-7253
October 7	Timber Management Day	Hickory Hills Park LaPorte City Black Hawk County 319/342-3350
October 9-12	Food Pantry Month Donate $2 in food for 1 night of camping	Polk County Park 515/999-2559
October 10	Star Party 7:00 p.m.	McFarland Park Story County 515/232-2516
October 10-11	Fall Environmental Education Workshop	Ingham Lake Lutheran Bible Camp Palo Alto County 712/837-4866 515/295-2138
October 10-11	Fall Environmental Workshop	Camp Wyoming Clinton County 319/847-7202
October 11-12	Heritage Days Pioneer Skills and Crafts Photo Contest	Osborne Center Clayton County 319/245-1516
October 10-12	Hawk Ridge Weekend Hawk Watching at Duluth, Minnesota	Plymouth County 712/947-4270
October 12	Volksmarch 12:00 - 4:00 p.m.	Greenbelt Trail Story County 515/232-2516
October 15	Food Pantry Golf Day Donate $2 in food for 1 round of golf	Jester Park Golf Course Polk County 515/999-2559
October 18	Tree Harvest 2:00 p.m.	East Petersen Park Story County 515/232-2516
October 18	Resources Plus for Teachers	Hartman Reserve Nature Center Black Hawk County 319/277-2187
October 25	Night Prowl	Bigham Park Wright County 515/532-3185
October 25	Halloween Hikes 9:00 p.m. (reservations only)	McFarland Park Story County 515/232-2516
October 26	Winter Bird Feeding & Identification 1:30 - 3:00 p.m.	Swan Lake Park Carroll County 712/792-4614
October 26	Fire on the Prairie Slide Show 2:00 p.m.	Hillview Recreation Area Plymouth County 712/947-4270
October 30	Pumpkins Galore, Lore, and More 7:00 p.m.	Conservation Center Warren County 319/961-6169
October 31	Halloween Night Hike	Little Wall Lake Hamilton County 515/832-1994

County Conservation Board Feature

Black Hawk County

CANOEING THE TURKEYFOOT

By Jeff Knapp
Black Hawk County Conservation Board Planning Assistant



Ron Johnson

Black Hawk County's Cedar River — one branch of the Turkeyfoot.

AREA	CO. #	LOCATION	MILES:HOURS FROM PREVIOUS ACCESS	CAMP-GROUND	BOAT RAMP	NOTES
Shell Rock River						
Shell Rock dam	12	T91N R15W, 11	0:0			launch below dam
Camp Wahpaton	9	T91N R14W, 21	5.5:2			private
county road bridge	9	T91N R14W, 28	1:.5			limited access
Shell rock access	7	T90N R14W, 4	2.6:1		X	parking
Washington Union access	7	T90N R14W, 16	1.5:.6	X	X	parking
West Fork of the Cedar River						
Thunder Woman Park	7	T90N R14W, 6	0:0	X		launch by suspension bridge
Washington Union access	7	T90N R14W, 16	4.2:1.5	X	X	parking
Cedar River						
Waverly	9	T91N R14W, 2	0:0			bridge 3rd St. SE
Lions softball park	9	T91N R14W, 35	9.1:3.5		X	north edge Janesville
Washington Union access	7	T90N R14W, 16	4:1.5	X	X	parking
Black Hawk Park	7	T90N R14W, 34	3.8:1.5	X	X	Camping .5 mile south of ramp
Island Park	7	T89N R14W, 1	3.8:1.5		X	dam below bridge

The early settlers called the area around the confluence of the Cedar River, the West Fork of the Cedar River, and the Shell Rock River the "Turkeyfoot." The three rivers formed a pattern similar to a turkey's track. Since then, the rivers have changed their courses which has somewhat distorted the pattern; but the wooded valleys of the Turkeyfoot area still appeal to the canoeist.

The Cedar River, the east branch of the Turkeyfoot, is still contained within wooded valleys just south of Waverly. The bottom is sand and gravel. Near Janesville, the valley walls recede and the floodplain broadens into a quiltwork of woods, pastures and occasional fields. South of Janesville, the river meets the West Fork and Shell Rock Rivers. The Cedar becomes much larger and its swift current meanders through lowland woods and past numerous old channels and oxbow ponds. Below Black Hawk Park the current begins to slow as a dam below Island Park begins to back water up.

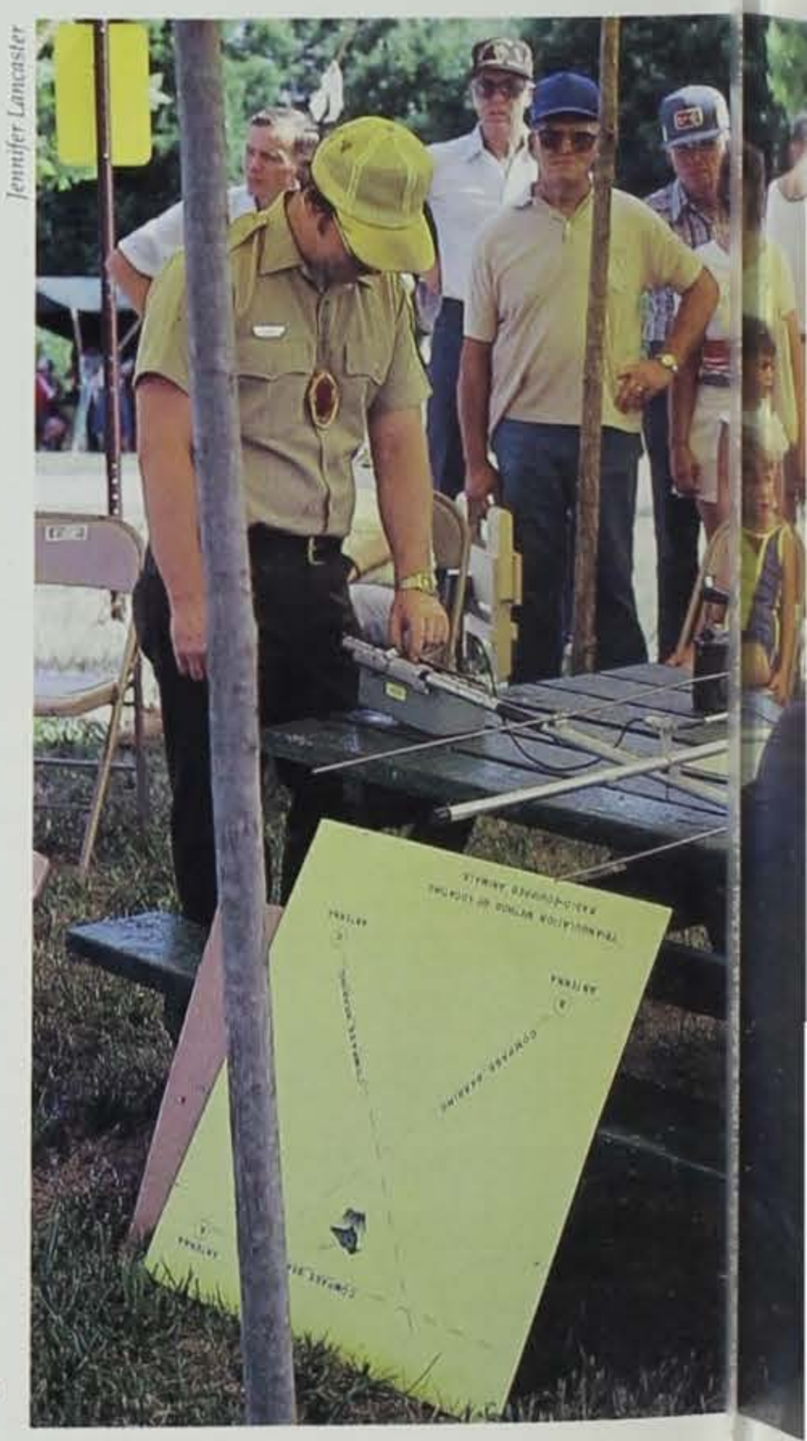
The middle finger of the Turkeyfoot, the Shell Rock River, is a small sand-bottom river with a moderately strong current. Most of the river course is through a patchwork of woods and fields. Low scenic wooded bluffs are found along the southern section of the river. Numerous sand and gravel bars provide picnic and fishing sites. The West Fork and the Shell Rock Rivers merge one-half mile above Washington Union Access, where they also join the Cedar River.

The West Fork of the Cedar River meanders in a broad, flat, wooded valley for seven miles until it reaches Thunder Woman Park near Finchford. Here the valley sides narrow and the river is confined to an ancient river course restricted by occasional wood-covered limestone bluffs. The current of the river is moderately strong. Numerous sand and gravel bars provide excellent picnicking and fishing spots. The West Fork River meets the Shell Rock River just north of Washington Union Access, completing the third branch of the Turkeyfoot.

Ron Johnson

Ron Johnson

Ron Johnson



Jennifer Lancaster

1986 Forest Craft Festival

October 4-5

The Forest Craft Festival will attract thousands of visitors again this fall. The colorful celebration will take place at Lacey-Keosauqua State Park, just south of Keosauqua in Van Buren County, Oct. 4 and 5.

Crafts people will again present their handiwork in wood for display and sale. There will be educational forestry and wildlife exhibits, as well as public participation events. Good food will be enjoyed on the grounds.

Local communities of Keosauqua, Bentonsport and Bonaparte will feature special attractions. Ample parking and a free bus to the park will be available at Keosauqua.

The enjoyment of Iowa's woodlands and wood products along with some good family fun can be had from 10 a.m. to 6 p.m. on Saturday, and from 10 a.m. to 5 p.m. on Sunday. See you there.

Ron Johnson

Ron Johnson

Ron Johnson

About 3,300 barrels of pesticide wastes had been left scattered around the bankrupt Aidex Corporation's property, near Council Bluffs. Another one million pounds of pesticides were buried in shallow trenches on the site.

Photos by Author

Superfund Cleanup Continues at Iowa's Aidex Site

A fire in 1976 destroyed part of the Aidex pesticide formulation plant, leading to the company's bankruptcy. Total cleanup of the 20 acre site is expected to cost about $8.45 million.

By Larry Kolczak

The thousands of rusted, leaking barrels of pesticide waste are now gone. The tons of loose pesticide granules no longer cover the floors of the abandoned buildings. The thousands of gallons of poisonous orange liquid have been removed from the open, concrete- lined pit. And by late this fall, environmental officials will hardly be able to recognize the Aidex hazardous waste site, which they once described as being "possibly the worst environmental threat to the state of Iowa."

State environmental officials first became aware of the problem in 1976, when a fire destroyed part of the Aidex Corporation's pesticide formulation plant, about seven miles southeast of Council Bluffs. The company's operation involved mixing the concentrated active ingredients of various pesticides with inert material to produce the commercial products that are packaged for sale to the public. The building that burned contained at least 19,000 gallons of liquid

pesticides, many of which spread around the site with the water that was used to extinguish the flames. But the fire was just part of the Aidex problem.

The company had been storing its pesticide wastes in barrels that were left stacked outside the buildings, exposed to the elements. Many of the 3,300 barrels of pesticide waste scattered around the property had rusted through, or were swelled and leaking. Also, an estimated one million pounds of insecticide had been buried in shallow trenches on the site. About 8,000 gallons of pesticide sludge had been in a second-hand underground tank, the condition of which was unknown.

All of this occurred during the period before state and federal hazardous waste regulations came into effect. Although the company continued limited operations after the fire, Aidex was cited for violations of the federal hazardous waste regulations in 1980. Efforts by the U. S. Environmental Protection Agency to get the company to clean up the site bogged down in 1981 when Aidex filed bankruptcy. A liquidation sale of the company's equipment that summer resulted in even further contamination. The buyers of two steel tanks drained their contents into an open concrete basin that was full of water. This created 34,000 gallons of pesticide-contaminated liquid. When buyers tried to remove a baghouse dust collector, it tipped over spilling so much insecticide dust that two men were hospitalized with organophosphate poisoning.

When federal and state agencies took control of the site in 1981, there were no fences around the property, and the buildings were wide open. The air had a strong chemical odor. The floor of one warehouse was covered with a several-inch-deep layer of pesticide granules, and pesticide dust was blowing in the breeze. The soil in some areas was contaminated with levels of pesticides from 500 to 1,000 times higher than the recommended application rates for cropland. Inspectors reported seeing birds that had roosted in the pesticide-laden buildings drop to the floor and die. Contaminated surface runoff flowed into a bordering drainage ditch, and there was substantial concern about chemicals seeping into the groundwater.

In all, there are at least 17 different pesticides on the site. Most of these are the highly toxic organophosphorus and organochlorine insecticides, at least three of which are known to cause cancer. The list begins with an environmental rogue's gallery of banned or restricted pesticides . . .DDT, aldrin, heptachlor, chlordane, dieldrin, toxaphene, and endrin. Other insecticides on the site include chloropyrifos, diazinon, disulfoton, ethoprop and phorate. There were also some herbicides, mainly atrazine and prometon, which although less toxic than the insecticides, are present in high concentrations.

Although none of the chemicals have yet been found in nearby drinking-water wells, pesticides have been identified in shallow observation wells within 1,000 feet of the site. Pesticide levels in some of the on-site observation wells have been up to 50 times higher than the highest level ever detected in a public water supply well in Iowa.

In October of 1981 at the request of state officials, the EPA included Aidex on a national list of 115 sites that would receive top priority for cleanup under the newly enacted Superfund law. Superfund is a federal program for cleaning up the nation's abandoned hazardous dump sites. The federal government pays for 90 percent of the cleanup, and the state picks up the remaining 10 percent. Both then try to recover the costs from the responsible party, assuming one can be found.

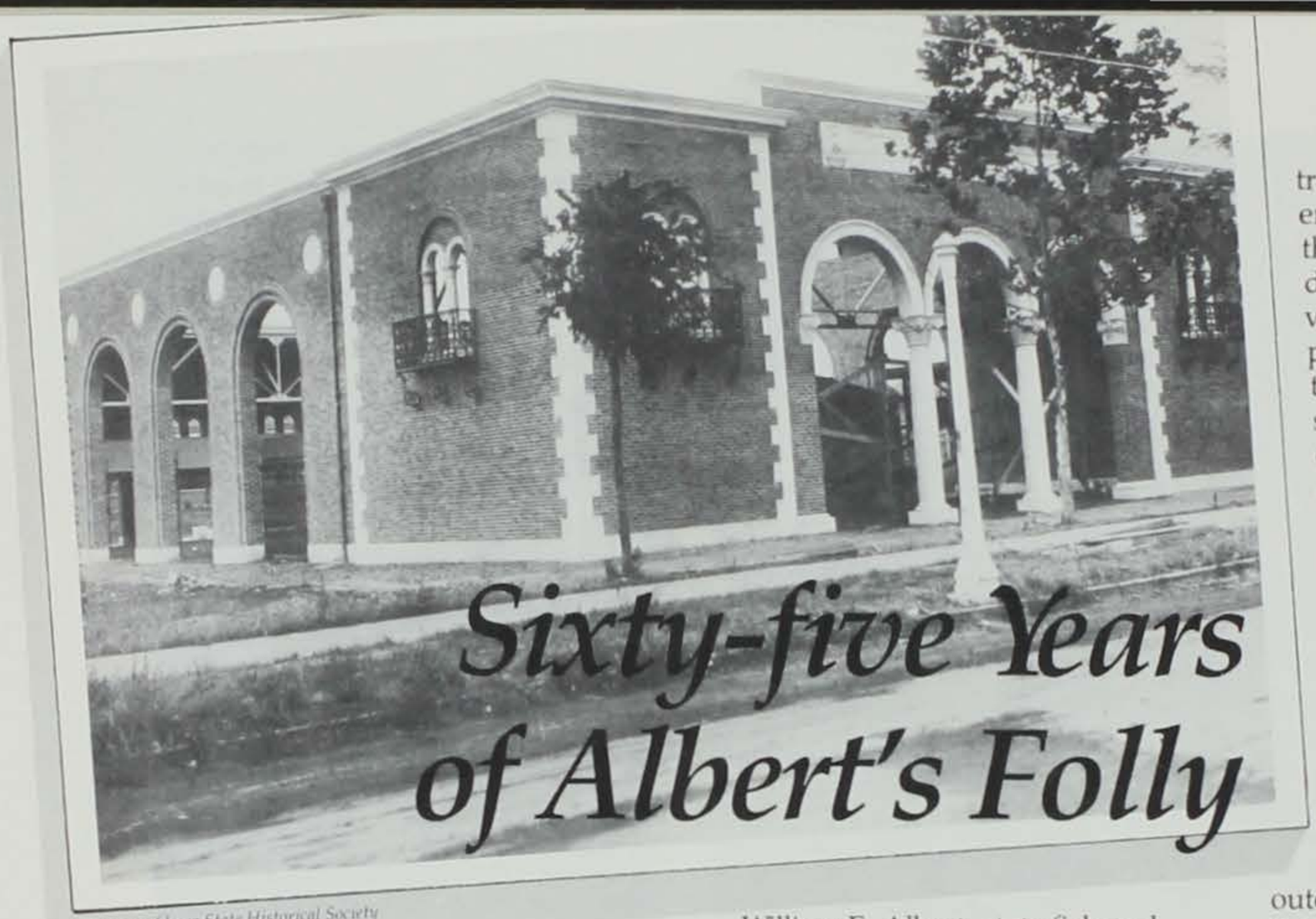
In December of 1981, the EPA erected a security fence around the 20-acre site and posted warning signs. After several administrative delays and engineering studies, the EPA brought in a contractor to conduct the initial phase of the cleanup in the summer of 1983. Dozens of workers wearing gas masks and double layers of rubberized protective clothing sweltered through 95-degree temperatures sweeping up pesticide dust, repacking leaky barrels into large salvage drums, and removing the contaminated wreckage of the building that had burned. The liquids in the open concrete basin and the underground tank were pumped into railroad tank cars and shipped to Texas for deep-well injection at an EPA-approved hazardous waste disposal site. By April of 1984, all of the drums and loose chemicals that had been on the surface of the site were properly packaged and shipped to approved disposal facilities in Texas and New Jersey.

The final stage of the cleanup began this summer, and is expected to be completed by the end of the year. This will include the removal of the roughly one million pounds of pesticides buried in shallow trenches on the site, as well as the removal of an estimated 18,300 cubic yards of comtaminated soil. This material, which amounts to roughly 1,000 trailer truck loads, is being shipped to approved hazardous waste disposal facilities out of state.

All soil will be removed that has pesticide concentrations higher than 10 parts per million, which is only slightly higher than the levels often found on cropland. All the excavated material will be replaced with clean fill, then graded and seeded with grass. The remaining buildings and warehouses will be vacuum cleaned and washed to remove residues from the walls and floors. All the cleaning water will be collected and purified prior to discharge. Even after the cleanup is completed, groundwater monitoring wells around the site will continue to be tested twice per year until officials are satisfied that no contaminants are threatening nearby drinking water supplies.

The total cost for cleaning up the Aidex site is expected to be about $8.45 million, of which the state of Iowa will have paid $845,000. Cost recovery is being pursued by state and federal agencies. Without the help of the federal Superfund program, this cleanup might never have been possible. But the Aidex site is just the beginning. There are 12 more hazardous waste sites in Iowa that are currently listed or proposed for the national priority list of sites that might need to be cleaned up under Superfund.

Larry Kolczak is an environmental specialist with the department. He is a freelance writer and has a B.S. degree in fish and wildlife biology from the University of Illinois.



Sixty-five Years of Albert's Folly

Courtesy of Iowa State Historical Society

By Tami Pavlicek

Tami Pavlicek is a student at Grand View College majoring in journalism. She is currently serving an internship with the department.

The young boy's eyes filled with wonderment as he peered into the whiskered face of a 15-pound catfish. He half giggled to himself as he watched the catfish squirm about inside the dip net. Face to face, the boy and the fish shared a moment in time.

Soon the stout old gentleman holding the net lifted it up out of the boy's reach and placed the net and fish back into the tank of water. The catfish, free from the net, disappeared into the murky water.

The old man smiled as he watched the youngster wade across the mud puddles around the fish tank. Once cleared of the mud, the boy glanced back at the old man and waved as he walked away. The boy had further exploring to do and more adventures to experience at the 1920 Iowa State Fair.

The boy's excitement over the fish exhibit at the 1920 state fair was shared by many visitors of the era. Perhaps the fair exhibit was the only means by which many came close to experiencing and learning about the wonders of our native fish and wildlife. This same sense of excitement prevails at today's busy state fair exhibit.

William E. Albert, state fish and game warden from 1919 until his death in 1932, was a staunch believer in conservation through education and approved of an exhibit at the fair. He did not, however, believe in the method being used to display the fish and wildlife.

Following the 1920 exhibit, Albert began plans to have a permanent exhibit building constructed on the state fairgrounds.

Albert's plans were severely criticized by Iowa sportsmen. He was accused of spending the revenue from the sale of hunting licenses without regard to the best interests of sportsmen. The buildings were quick to become dubbed, "Albert's Folly."

Undaunted, Albert pursued his dream of developing a permanent, high-quality educational facility at the fair, to replace the primitive and meager one that existed prior to 1921. The "aquarium" of those days consisted of several steel stock tanks in which various species of fish were held.

The August 1946 issue of the *Iowa Conservationist* explained the exhibit well: "It was a hardy soul, or at least one who brought along his overshoes, who could approach the tanks through the mud, close enough to observe their contents. The overflow from the tanks — and there was plenty — ran into a dugout mud puddle in which a flock of semi-domestic wild ducks paddled and splashed."

The early exhibits consisted of a tract of land 75 feet by 140 feet enclosed by rough fencing. Within the fence was a pond exhibit with different species of waterfowl and various game birds including prairie chickens, quail, and partridge. This, along with the steel stock tanks, was the conservation exhibit during the first two decades of this century.

The first phase of "Albert's Folly" was constructing the aquarium in 1921. It was the first attempt at the state fairgrounds to display a fish collection in a contemporary fashion. The next year the walls around the aquarium were built. Before the 1923 fair, the roof was completed on the aquarium.

From 1926 until 1929, the outer walls and roof of the familiar fish and game building were constructed.

Over the years numerous additions have been made to the outer surroundings of the conservation exhibit. The waterfowl pond and the five outside pens located on the west side of the building were added in 1956, as were the picnic and rest areas. In 1959 an otter pen was introduced.

During the history of the exhibit, various special features have been included at the fair.

The 1910 exhibit included a sizable collection of ring-necked pheasants. Since few persons in Iowa had ever seen the bird, an exhibit of 2,000 was shown to introduce the public to the "new" birds and stocking program. A similar but smaller exhibit was shown at the 1911 state fair.

Another special exhibit at the fair was the famed rock sturgeon, Oscar.

Oscar, the lake sturgeon, was first introduced to fair visitors in 1925. The giant fish, rumored to weigh in excess of 110 pounds, was an attraction for 28 years until his death on the last day of the 1953 fair. In 1947 rumors were silenced when Oscar was officially weighed — the scales tipped at a "mere" 75 pounds.

Perhaps one of the most popular was the duo of "Mac and Sammy."

George "Mac" Coon was in charge of the fish and game exhibits at the fair from 1906 until 1941. Mac, along with his partner Sammy, a buck

white-tailed deer, were the "Punch and Judy" of the state fair for many years. Their various skits performed for fair visitors created coloful memories for many. One of the best remembered of their acts was the pantomime skit in which Sammy imitated Mac in the art of tobacco chewing.

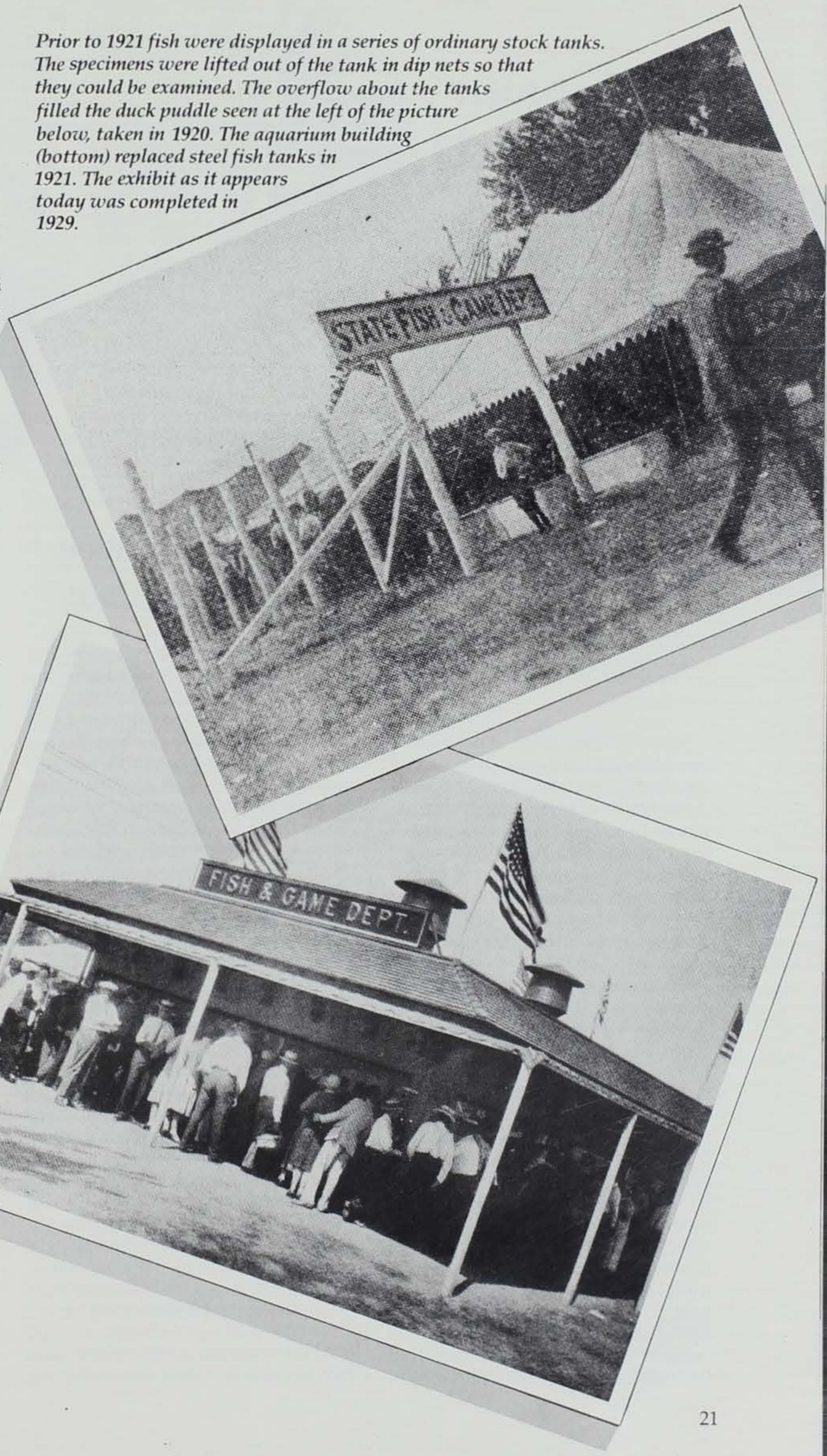
The 1941 state fair was the final curtain call for Mac and Sammy. Shortly thereafter, World War II began in Europe and the army took over the state fairgrounds, using the fish and game building for offices. In 1943, Mac passed away at the age of 80. His partner, Sammy, was soon to follow.

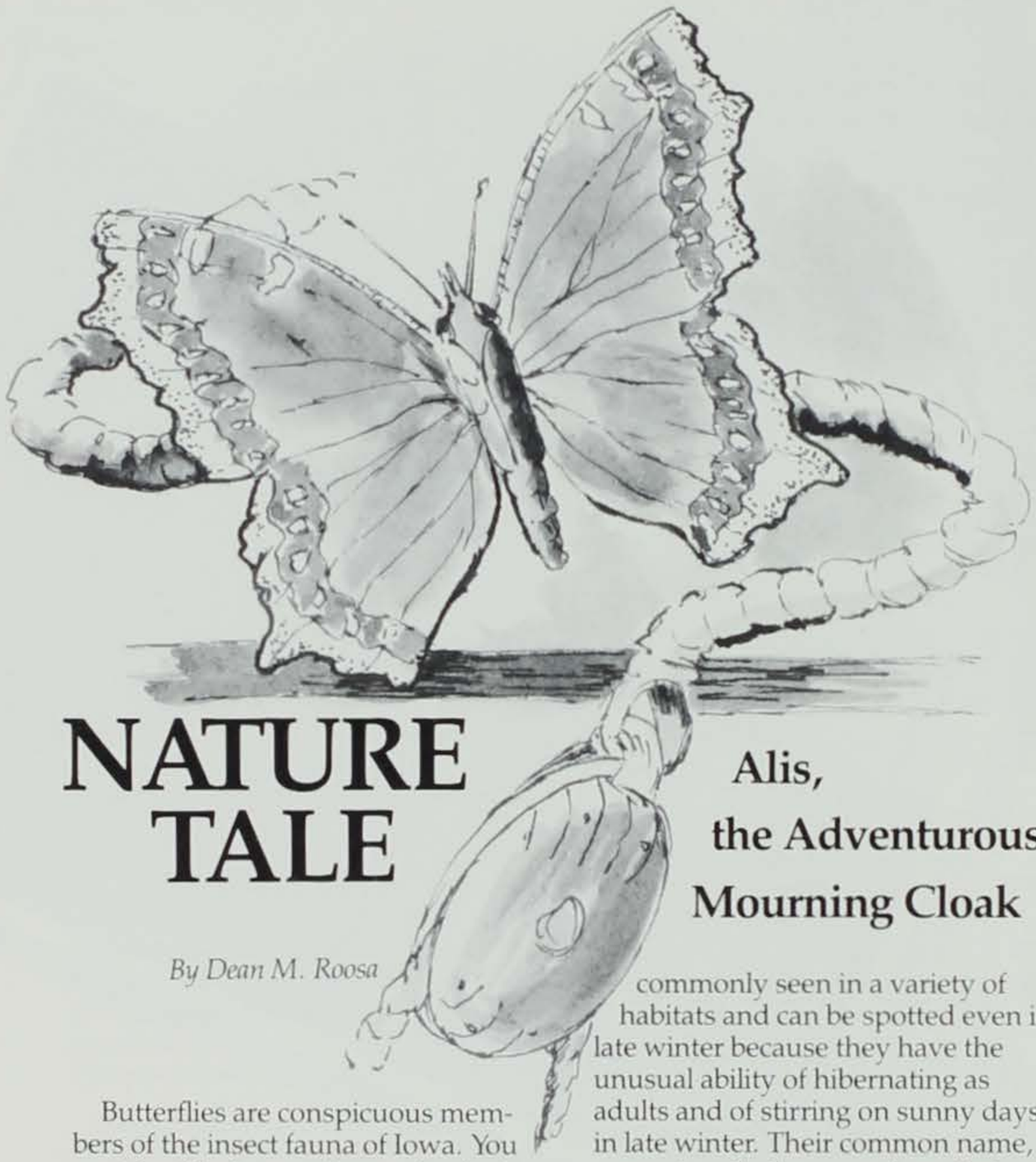
The 1986 Iowa State Fair will signify the 65th year since the beginning of "Albert's Folly." A misunderstood concept in 1920 has evolved into a popular and respected exhibit at the fair. What Bruce Stiles, former director of the Iowa Conservation Commission, said in a 1946 issue of the *Iowa Conservationist* echoed the underlying reason for William Albert's belief in a permanent exhibit: "The conservation of our wildlife is but a single segment in the great conservation movement, yet it goes hand in hand with the conservation of our soil, water, and forest. Proper land, timber, and water use form the only permanent means by which we can increase and perpetuate wildlife.

"The birds and animals and the fishes on exhibit at the State Fair serve to interest and amuse many people, but back of all this lies a deeper motive. The display is designed as a sugar-coated pill attracting the attention of the public to the end that the importance of conservation may be impressed upon the consciousness of the people, who in the end determine the rate of progress or retrogression of a state or a nation...

"Our pioneers were exploiters of our natural resources because it was expedient for them. We must be conservationists because it is expedient for us."

Prior to 1921 fish were displayed in a series of ordinary stock tanks. The specimens were lifted out of the tank in dip nets so that they could be examined. The overflow about the tanks filled the duck puddle seen at the left of the picture below, taken in 1920. The aquarium building (bottom) replaced steel fish tanks in 1921. The exhibit as it appears today was completed in 1929.





NATURE TALE

Alis, the Adventurous Mourning Cloak

By Dean M. Roosa

Butterflies are conspicuous members of the insect fauna of Iowa. You can identify them as insects by their characteristic of having three pairs of legs and a body divided into a head, thorax and abdomen. Butterflies are further divided into a special group of insects called "lepidoptera" from Greek lepido, meaning "scale" and ptera meaning "wings" because their wings are covered by rows of tiny overlapping scales, much like shingles on a roof.

Iowa is a good place to observe butterflies. The climate is not too severe, there is an abundance of plants for the larvae to eat and plentiful flowers from which the adults may extract nectar.

All butterflies begin life as an egg which hatches into a worm-like larva. As the larva grows, it sheds its skin several times until it becomes a mature caterpillar. After one last skin-shedding, the caterpillar changes into a hard-cased pupa, also called a chrysalis. It is from this chrysalis that the adult butterfly then emerges.

Mourning cloaks go by the scientific name *Nymphalis antiopa*. They are commonly seen in a variety of habitats and can be spotted even in late winter because they have the unusual ability of hibernating as adults and of stirring on sunny days in late winter. Their common name, mourning cloak, comes from their drab coloration. Mourning cloaks lay barrel-shaped eggs often in rings around twigs and hatching occurs about two or three weeks later. It is in a woodland in northern Iowa where our story begins . . .

The female mourning cloak finished laying her eggs and, as with all insects, immediately left and forgot them. This was August, and this was her second brood of the season. She had hatched late the previous year, and her scaly coat was tattered. Laying this set of eggs was her final biological triumph in perpetuating the race. The eggs had been laid on the twig of a hackberry tree at the edge of a woodland. They were immobile, going unnoticed for 14 days. The eggs turned from pale to dark; then the first tiny caterpillar emerged from an egg. This first-hatched was Alis, who voraciously began eating the hackberry leaves. The rest of the cluster of eggs hatched within the hour, and the new larvae began their lives in the old tree. Most of them stayed together, but Alis munched and crawled, crawled and munched, and then climbed to a neighboring willow tree, where she repeated the process. In about two weeks, she changed from tiny and worm-like to a full-fledged caterpillar. Her lithe body was now velvety black, sporting black bristles and a row of red spots down her back.

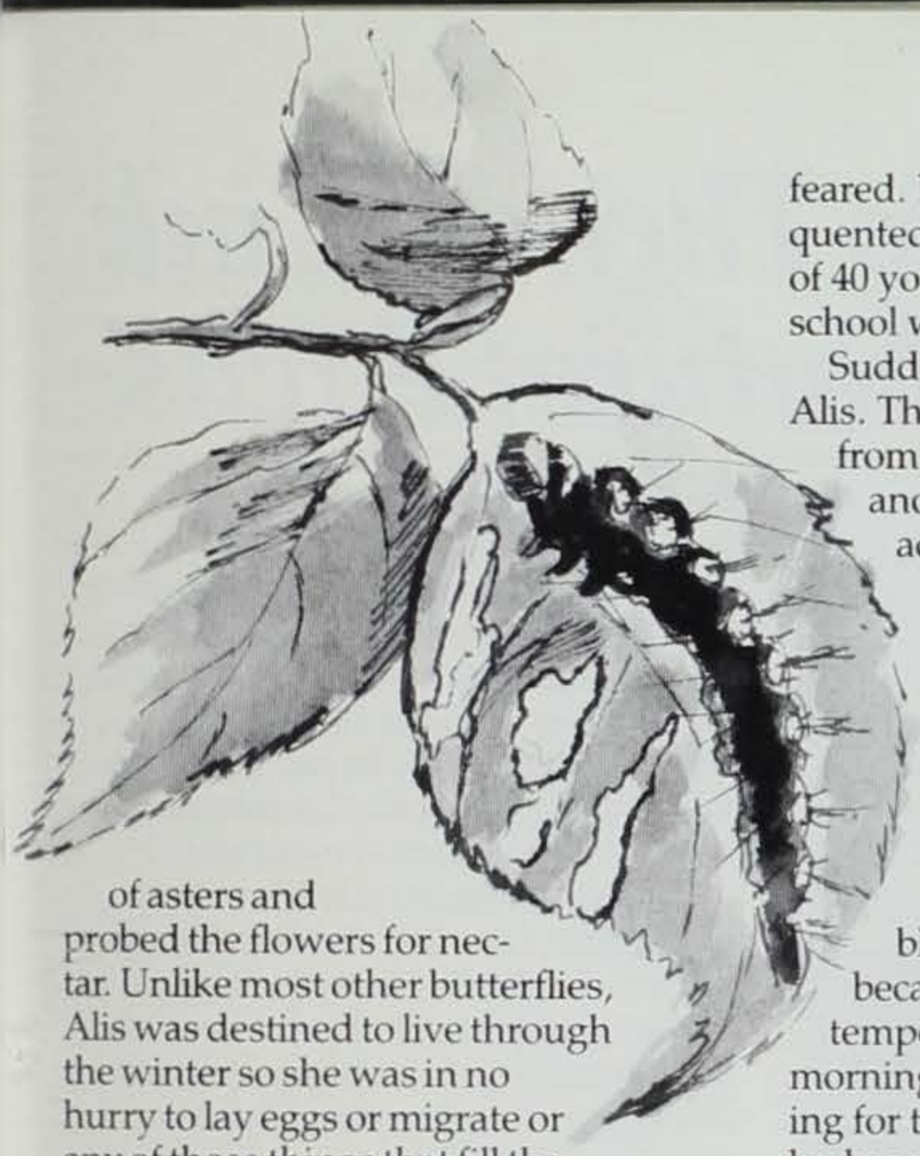
Soon, she abruptly stopped eating, dug her pinchers into a twig and hung upside down. She shed her skin and changed into a hard-cased pupa. Any outward sign of life ceased. Alis had entered the third stage in a butterfly's life. She remained snug inside her dark-colored chrysalis. The still pupa case hung head-downwards. With its spiny edge and two head-horns, the chrysalis resembled a rolled prickly leaf.

The woodland and Alis became quiet. Peace settled on the northern Iowa forest which had seen a hundred generations of mourning cloaks hatch and grow to adulthood.

Inside the hard chrysalis, however, life processes were occurring with startling speed, preparing the inhabitant for a completely new kind of existence. Fifteen days later, one of the real miracles of insect life happened. A glistening new black and yellow adult mourning cloak emerged from a split in the hard-shelled brown case. Alis hung on the outside of the case for many minutes as her wings unfurled and hardened. She proudly began to flutter her glistening new wings and soon, with a flurry of wing beats, was soaring on a gentle breeze to the open woodland. Boy! This was surely different than crawling on trees or hanging on a branch!

Not knowing why, she began to search for wave lengths of light from flowers of certain colors. She followed this spectral emission to a field

Illustrations by Betty Petersen



of asters and probed the flowers for nectar. Unlike most other butterflies, Alis was destined to live through the winter so she was in no hurry to lay eggs or migrate or any of those things that fill the lives of most insects. Alis leisurely fed and floated aloft, slowly exploring the countryside.

One bright day, she floated out over the Mississippi River and landed on the coiled rope on a barge. The deckhands gathered around to observe this rather drab but interesting hitchhiker. When the barge neared Dubuque, the thunderous horn startled Alis who flew to a prairie hillside to feed. The river bluffs acted as her home for the next two weeks and, loving adventure, she again flew to the river where she landed on the top of a houseboat heading downstream. A five-year-old boy, seeing Alis on the boat, grabbed an oar and lifted it menacingly, threatening to end Alis' young life. The boy's father grabbed the oar. The discussion that followed — a gentle explanation of the importance of butterflies and beauty in the world — stayed with the youngster forever.

Thus spared, Alis left the houseboat and again flew to the river bluff to feed. This time, she rose above the woods and was immediately attracted to an unbelieveable array of colors from a newly planted wildflower garden. She flew from flower to flower, probing with her proboscis, feeding to her fill, enjoying life.

Alis was not the only visitor to the garden. There were big swallowtails, tiny blues and colorful monarchs. There were also creatures to be feared. Bluejays and dragonflies frequented the garden, too; even a class of 40 youngsters from a nearby school was there.

Suddenly, tiny fingers grabbed Alis. Then another patient discussion from the naturalist educated another youngster and Alis, the adventurous mourning cloak, was set free. Ruffled but unhurt, Alis left the garden for the nearby woods where she felt safe.

Alis spent the night in the forest where she clung with wings folded to the bark of a tree. Being cold-blooded like all insects, Alis became very inactive when the temperature dropped. The early morning found her immobile, waiting for the sun to warm her dark body so that she could fly again. The bark-like appearance of her outer wings provided excellent camouflage and she was able to fool every predator.

Mourning cloaks are one of the *Nymphalidae* which overwinter in Iowa as adults. Therefore, as autumn progressed, Alis frequented a wooded valley, instinctively seeking out a suitable place to spend cold weather. As winter approached, Alis could be found deep within a hollow tree where she lay motionless. On warm days, especially toward spring, she would rouse and fly about in the warm sun.

One very warm late March day, she flew from the woodland toward the small town at the base of the bluffs, where she landed on a park bench by the big river. By coincidence, the young boy who started to smash Alis with an oar the previous summer was sitting nearby with his father. "Look," he cried, "there's a mourning cloak like the one that we saw last year." His father smiled as they watched Alis, now with a coat tattered and somewhat bedraggled, rise into the gentle breeze back toward her winter home. This time she would stay there until spring had really arrived. Then she would emerge to lay eggs and give rise to many more *Nymphalis antiopas* that would grace eastern Iowa woodlands, amuse deck hands and educate curious youngsters for generations to come.

Wildflower of the Month

Rattlesnake Master
(Eryngium yuccifolium)

By Dean M. Roosa

One of the most unusual and interesting plants of Iowa's prairies is rattlesnake master *Eryngium yuccifolium*. Despite its burr-like flowerheads and yucca-like leaves, it is a member of the parsley family. It is interesting because of its history as a medicinal herb, its use as an indicator of high-quality prairie, and its contribution to folklore.

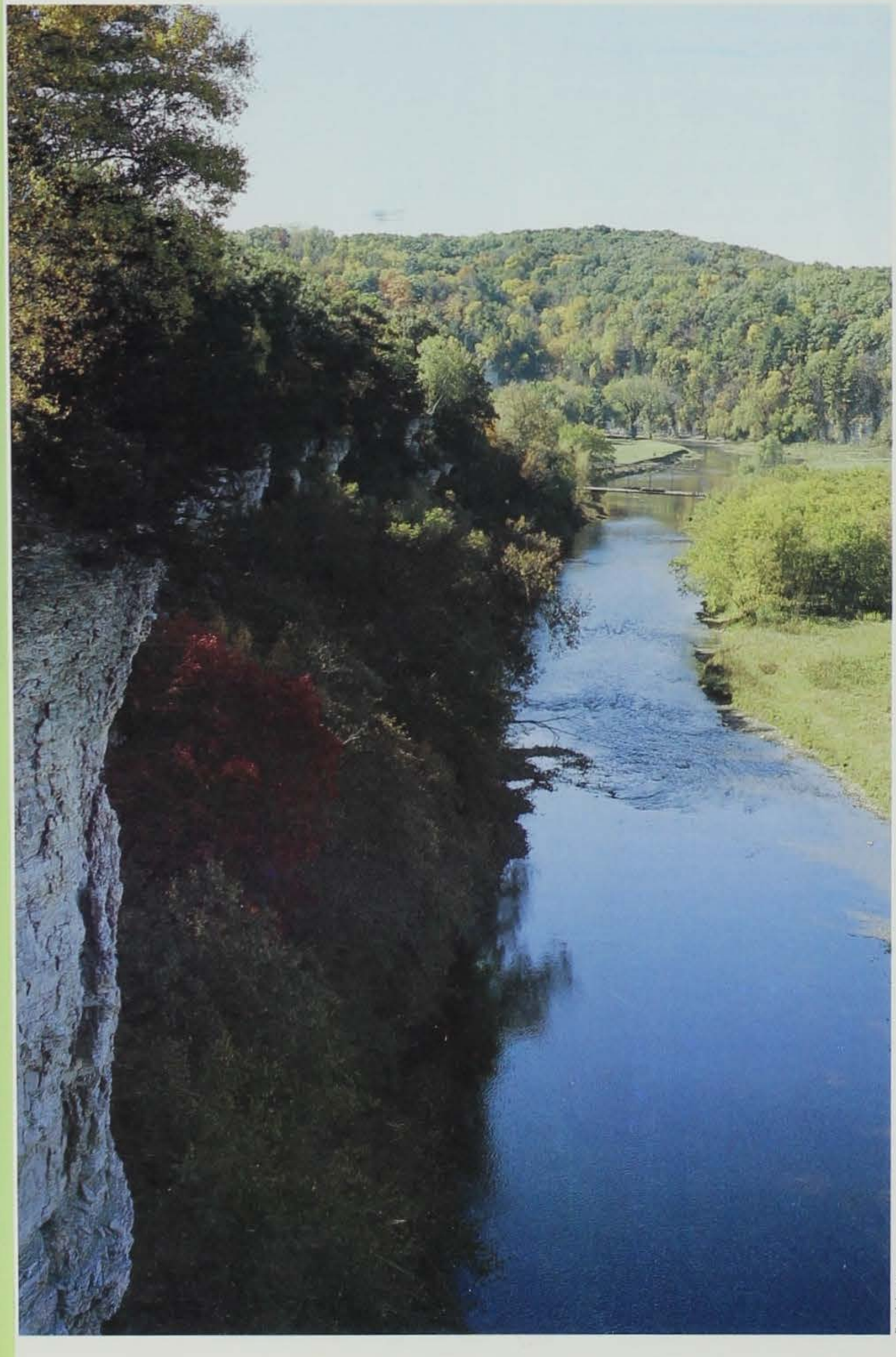
It is found statewide in mesic to moist prairies, grows from two to six feet in height, and blooms from June to September. The basal leaves are parallel-veined and may achieve a length of three feet and have weak bristles along the edges.

Rattlesnake master has been used by various native Americans as a diaphoretic, emetic, diuretic and as a treatment for bladder trouble. Ancient Greeks used plants of the same genus for medicinal purposes.

Because this plant characterizes quality prairies which characterize native Iowa, perhaps it should become an acquaintance of yours. I'll bet it grows in your county. Take time to gain a new wildflower friend.

Geologic Themes Link Iowa's Natural Areas

The Bluffton Fir Stand State Preserve on the Upper Iowa River is typical of Northeast Iowa's high relief landscape.



Ron Johnson

By Jean C. Prior

Parks, game management areas, and fish hatcheries are not uniformly distributed around the state. Nor are the state's native woodlands, prairies or wetlands. You have probably noticed they tend to be more numerous in areas where the Iowa landscape seems "out-of-the-ordinary."

Think of your favorite spot to spend time camping, fishing, hiking or bird-watching. Chances are it's a scenic spot, refreshingly different in appearance from the landscapes you live with most every day. Chances are, too, that it has some special name and that it is looked after by a branch of government. A road map can show you how to get to any of Iowa's parks, preserves or wildlife areas. Consideration of these sites from a geologic point-of-view can explain some interesting details about why these particular places are located where you find them.

The key to the distribution of the state's scenic resources, recreation areas and sites of unique natural diversity is found in the state's geological history. Those "out-of-the-ordinary" landscapes are sending out strong geological messages. The terrain may reveal layered bedrock, thick silt or sand, worn boulders, emerging springs, clay loam or sand and gravel. These earth materials have come together to form Iowa's present landscape out of past environments and events — oceans, glaciers, wind and flowing water — through eons of geologic time. The state's geologic fabric is rich with patterns of these materials and processes interwoven through space and time. The dominance of one or more of these geologic factors in any place will give a special appearance to the shape of the land. These shapes and conditions, in turn, affect slope angles, sun exposure, substrates and whether water stays or moves through. Thus, geologic factors determine the habitat of a place and the plant and animal communities which reside there.

Northeast Iowa is probably the best known part of the state in terms of natural wonders. The rugged terrain is geologically dominated by sedimentary bedrock formations of varying resistance to erosion and varying permeability to water. The result is a bold, high relief landscape with scenic vistas, abundant limestone and sandstone bluffs, narrow, deeply incised valleys with waterfalls, cave systems, springs and sinkholes adding to the geologic interest and the diversity of habitats. The mantle of much younger glacial deposits which cloaks and subdues so much of the rest of Iowa is almost completely lacking in this region. This area is sandwiched between the deep Mississippi River valley on the east, and a prominent bluff-forming rock ledge known as the "Silurian Escarpment" on the west. The long views from high on the escarpment are among the finest in the state. Good examples of the geological characteristics of this region can be seen at Yellow River State Forest, Pikes Peak State Park, Decorah Ice Cave, Turkey River Mounds, Coldwater Spring, White Pine Hollow, and Brush Creek Canyon.

North-central Iowa presents a remarkable contrast in geologic materials, events and time. Iowa's "lake district" corresponds to a region which geologists map as "the Des Moines Lobe." This region, with the city of Des Moines at its southern margin, marks that portion of Iowa most recently covered by glaciers. Between 14,000 and 12,500 years ago, a lobe of ice from the massive continental ice sheet which lay just to the north and east advanced into Iowa, paused, melted back, readvanced, diverted drainage and stagnated. Different landform features remain as examples of these glacial and related meltwater activities. Lakes, bogs, kettles, kames, eskers and moraines are all ice- contact landforms. Spirit Lake, Clear Lake, Freda Haffner Kettlehole, Ocheyedan Mount, Pilot Knob, Cayler Prairie and Stinson Prairie are sites where these glacial signatures may be seen. One of the tell-tale signs of a recently glaciated landscape is poor drainage. Not enough time has passed for a network of streams to become well established. Iowa's lakes and wetland habitats are part of this glacial legacy.

Along the western Iowa border from north of Sioux City to the Missouri state line is a narrow band of nationally significant landscapes called the "loess hills." Another relict of ice-age geological processes, these hills are composed of unusually thick deposits of loess, or wind-blown silt. This silt was swept from the adjoining Missouri Valley during low-water stages on the river which served as a major channelway for great quantities of debris released by glacial melting to the north. The loess hills represent an outstanding example of landscapes created from wind-deposited materials and from the subsequent sculpture of the loess by erosion. The result is distinctively shaped hills with intricate patterns of narrow-ridge crests, peaks, saddles, sidespurs, catsteps and ravines carved from the uniform, fine-textured loess. The dry, desert-like microclimates produced by this terrain and its materials yield some of Iowa's most interesting habitats.

Waubonsie State Park, Preparation Canyon State Park, Stone State Park and Five-Ridge Prairie, Iowa's newest state preserve, illustrate the characteristic landscapes and habitats that are linked to this particular episode of the state's glacial history.

When something different about the landscape catches your eye, you are probably pausing at the sign-post of the state's interesting geological history. These sign-posts may be parks, preserves, recreation areas or game management areas, and they can guide the interested visitor on a tour through different chapters of the state's geological history.

Understanding an area's geological background can add greatly to our awareness and appreciation of our surroundings. At the same time, from a very practical and important standpoint, understanding the evolution of these landscapes and the characteristics of their various geologic materials is vitally important to Iowa's future. Our urban dwellers build on these topographic and stratigraphic foundations. Our rural dwellers farm them. Nearly all of us rely on them for drinking water supplies, and nearly all of society's waste is disposed within them. Thus, it is essential to have reliable data and information about them. Within the new Department of Natural Resources, the Geological Survey will continue a long-standing tradition of providing information to the state and its citizens.

Jean C. Prior is senior research geologist for the department's geological survey. She earned her B.A. degree from Purdue University and an M.S. degree from the University of Illinois.

State-owned wetlands are common in the flat, north-central region geologists call the Des Moines Lobe.

Ron Johnson

WARDEN'S DIARY

WANTON WASTE

By Jerry Hoilien

You couldn't say it was an ordinary phone call. This fellow was mad! He was calling long distance. He had witnessed a pretty disgusting game violation last year, and he didn't want them getting away with it again this year! "I know you're busy and probably have lots of things to do on the duck opening, but last year those two never retrieved a single duck, and they knocked down twice their limit! I think that's despicable, and I would like to see it stopped! Can you do something?"

I explained how we were pretty well committed for the first part of the opening morning, but I would see what I could work out. (The chance of a repeat performance this year was slim.) He went on, giving me the exact location of the blind, where the other man would park the boat and lots of details and general description, but no names or boat numbers. He did know the area well and described the exact location of the blind.

My partner, Larry Moore, and I were committed for opening hours to other areas. We agreed to try to finish up early and meet up the river and check this out. Larry was waiting when I arrived, and we took the boat upriver to the described area. Needless to say, it seemed like looking for the proverbial needle in a haystack, but when we looked around the right set of rushes, there was the blind, but with no one in it.

We heard voices back down the slough and drifted towards them. There was a group of hunters standing on the bank drinking coffee. A couple of them recognized us, even with our hunting gear on, and waved us in.

"We'd like to register a complaint about a couple of hunters," one said. "Those two must have knocked down a dozen wood ducks and never took a step to retrieve any of them! They just pulled out before you pulled in. We were just getting ready to take the dogs over to see if we could find any of them, but we didn't want to get in trouble."

These hunters described in detail the actions of the two individuals. We have a regulation which requires the hunter to make a "reasonable effort" to retrieve any waterfowl he knocks down and add it to his bag. Failure to make the effort is commonly called wanton waste.

This was one of the worst cases I had worked on in a long time. These hunters were really upset.

"I'll bet they will be back this evening, Warden! Sure hope you can catch 'em. We don't need those kind!"

We spent the rest of the day in the general area and kept checking back to see if our two had returned, but no such luck. They must have run out of shells. We told our complaining hunters we would check in the morning and pulled out at dark, tired and hungry.

The alarm buzzed me awake at 4 a.m. That sound was bad enough, but the other sound, I realized, was the drumming of rain on the roof. It was pouring down in buckets. "Why this morning?" I mumbled. We couldn't see very well moving up the river. When we finally arrived at the spot, we had to wait until daylight and a let-up in the rain, but much to our surprise we could make out a head peering over the top of the

Wood duck hen.

Ken Formanek

blind. Sure enough, there was the other one off to one side in a boat. They looked exactly as described, boat motor and all. As it was the second morning, the ducks weren't so plentiful, but it wasn't long before they had a couple down, and as predicted, made absolutely no effort to retrieve either one, even though the ducks went down close to the blind.

The rain started again in earnest, and I pulled my parka hood over my cap as the rain was running down the back of my neck (the story of my life). Larry's voice came over the portable radio as he reported from the other side, "They're getting ready to leave. I think they're coming your way."

We watched them leave the area without attempting to pick up their ducks and followed them out to the channel.

"Any luck today?" I asked as they stopped at our signal.

"Nope, not a thing. Where are all the ducks anyway?"

After identifying ourselves, we told them what we had observed. They claimed to have picked up four wood ducks the day before, but when I inquired where they were, they decided they had given them away. They gave us the name of a friend of theirs. A radio call, relayed to another warden, dispatched him to that residence, and soon came back, "The subject states nobody gave him anything — in fact, he wasn't even home yesterday."

When I asked why, one replied, "I don't like duck!" I have a tough time understanding this type of violation, and I only wish there could be a fitting penalty to this wanton waste of our waterfowl. I asked how long they had been hunting in that area (thinking of the complaint about last year), and they said a couple of years.

"I think you've worn out your welcome," I said. "The other hunters around you aren't a bit happy with your type of hunting."

Sometimes this enforcement job gets awfully heavy, but I was pleased to report back to the individual, who not only saw the violation and reported it, but spent his own hard-earned money to call long distance. We need more people like that. Won't you help, too?

Heating With Wood

By John Tibben, Utilization Forester

As a result of the high cost of energy, many people have turned to wood as an alternate source of heat. Wood can offset daily fuel costs, or provide standby heat for an emergency such as a power outage.

Wood-burning stoves and fireplaces are radiant heaters. Radiant heat provides greater comfort than other sources such as heat from forced-air systems. People feel comfortable in an area heated to a relatively low temperature by radiant heat if the area heated is protected from drafts.

Wood heating is not simple, however. There's more to it than setting a thermostat and calling the service company when something breaks. The homeowner becomes the fuel company and must know what type of wood to burn and where to cut or buy it. Then, the wood must be burned efficiently.

Cutting the Wood

The best time of year to "put the wood up" varies depending on the accessibility of the cutting area and the intended burning date. Cutting should definitely be planned to take advantage of the favorable summer drying months. Fall is a pleasant time to be in the woods; however, wood cut in the fall will not burn satisfactorily the following winter because it will not have dried long enough. When drying wood, the greater the surface area exposed to the air, the more rapid the drying. Seasoning can be accelerated greatly by simply stacking fuelwood in a sunny location with good air flow.

Selecting the Proper Stove

Few people know how to select, install, operate and maintain wood-fuel heating equipment. Yet safety depends on knowing all of these things. A fireplace is nice to sit in front of and watch the fire burn, but it may have a net fuel efficiency of zero. A simple box stove is the most common and least expensive wood heater. It is also inefficient because it lacks control over the combustion air. Air-tight stoves are more sophisticated and give better control of combustion air. Thermostats on air tights can control the flow of air to increase or decrease the heat output.

Chimneys

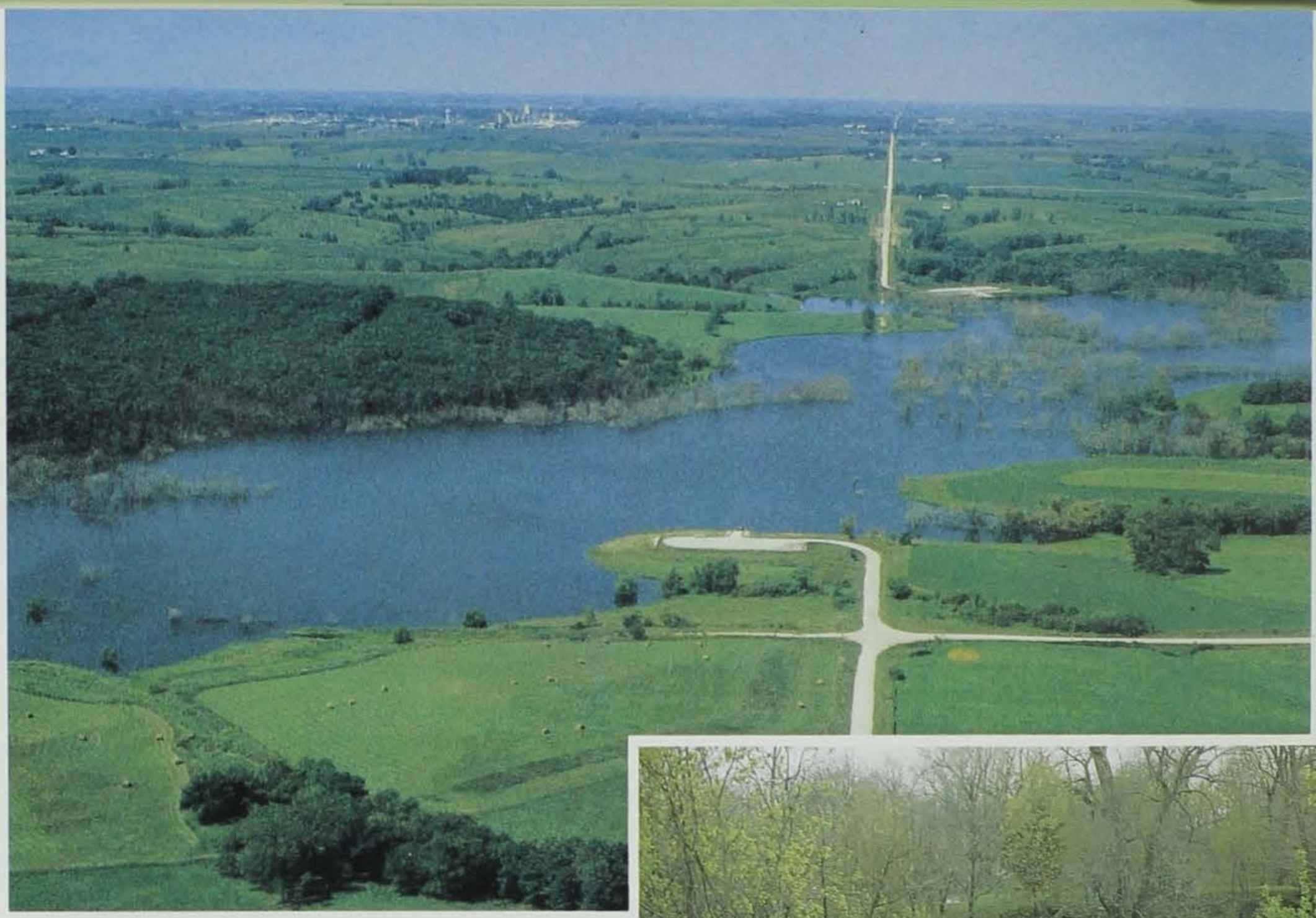
A masonry chimney with a vitrifical-fire, clay-tile flue liner is the most satisfactory chimney for wood burners. However, approved prefabricated vents and chimneys are available that do not require masonry construction. They can be supported on the house framing and will cost less than a masonry chimney.

If there is complete combustion, gases moving up the chimney should be mostly carbon dioxide and particulate matter. If the gases are warm as they leave the chimney, there should be little condensation. When wood is burned slowly, however, it produces acetic and pyroligneous acids, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. When ignited, this creosote can create an extremely hot fire in the chimney resulting in a safety hazard. A properly designed, well-built chimney used to burn dry wood, should require very little attention.

A wood-burning stove can be an efficient heat source. It makes good use of the world's oldest fuel — that renewable natural resource — wood.

Ron Johnson

Cutting wood in the summer allows the wood some drying time.



S. Green

Mike McGhee

Looking for a "New Lake" Experience

By Mike McGhee

Twelve-Mile Lake is Iowa's next fishing hotspot.

A view of Twelve Mile Creek before flooding shows timber and brush that created excellent fish habitat.

In the mood to try a new fishing spot? Twelve Mile Reservoir may just be the place. This 640-acre lake is located in southwestern Iowa, approximately four miles east of Creston. Dam completion, impoundment and fish stocking began in the fall of 1983. Before I describe the area and its fishing potential, some background information is necessary.

This lake project was a joint venture between the Soil Conservation Service (SCS) and the Creston City Waterworks. The lake is part of the Twelve Mile Creek Watershed Project. Besides flood control, the lake is a water supply for the city of Creston and surrounding rural area. Approximately 1,500 acres of land was purchased by the Creston Water Board at a cost of almost $2 million. The dam was built for $1.4 million, with the SCS and Creston splitting the costs 55 percent and 45 percent respectively. Soil conservation work in the watershed was cost-shared by the SCS and area landowners.

Where does the Iowa Department of Natural Resources fit into the picture? Initially, the Iowa Conservation Commission, now part of the DNR, was one of the sponsors of the project, but was not committed financially. However, as the land was being purchased and the dam design reached its final phases, questions

arose as to who could best develop and manage this area's recreational opportunities. The Iowa Conservation Commission was the logical choice. The city of Creston, Creston City Waterworks Board of Trustees and the Iowa Conservation Commission then entered into a 25-year management agreement to permit recreational use of the area and still protect the interests of all parties. To date, this has required a considerable amount of time and an investment of $225,000 by the Department of Natural Resources.

This lake is surrounded by 865 acres of public hunting ground. The rolling topography is a mixture of timber, cropland and grassland. The lake is 3-½ miles long with an average depth of 16 feet and a maximum depth of 43 feet. About 90 percent of the land in the watershed meets soil conservation standards (soil losses less than five tons per acre per year), and with a watershed ratio of 23 to 1 (acres of land in the lake watershed to acres of water in the lake), conditions should be ideal for excellent water quality.

Twelve Mile Reservoir is full of structure. Scattered timber and brush was left in about two-thirds of the lake bottom. Besides benefiting the angler, this saved the Creston Water Board over $150,000 in timber-clearing costs and did not harm water quality. Also, more than two miles of gravel roads were flooded, and these roadbeds are excellent fish attractors. Utilizing Dingell-Johnson cost-sharing funding, the DNR spent $41,000 placing limestone riprap in five locations. These rock piles, underwater rock reefs and rocked dropoffs were created in areas that are 8 to 25 feet below the water's surface.

The stream above the dam was treated with rotenone to remove undesirable fish species and fish stocking then began during the fall of 1983. Fish species stocked to date are: fathead minnows, bluegills, channel catfish, largemouth bass, walleyes, tiger muskies and crappies. Fish growth has been good, and during 1986 anglers are beginning to be rewarded.

During periods of runoff, fish from ponds located in the watershed were flushed into the lake and also contributed to the fish stocking effort. Adult bullheads entered this way and produced very large numbers of young. The majority of these fish are now eight inches long, with some up to 12 inches in length. Significant numbers of ten-inch largemouth bass also entered the lake during spring runoff in 1984. These bass responded by rapidly growing, and they are already producing some exciting bass fishing. Normally, it takes three years for newly stocked bass to reach 14 inches (the legal length at Twelve Mile), but since the fish had a head start, they are already up to 18 inches in length.

Bluegill fishermen are finding plenty of eight-inch fish to bring home this summer. Ninety-five thousand three-inch channel catfish that were stocked in April of 1984 averaged 12 inches in length by late summer. Adult crappies were stocked during the spring of 1985, and their young should begin interesting anglers during the spring of 1987. The walleye population is also developing, but it is still one year away from producing that 14- to 16-inch fish that begins to interest most anglers.

Twelve Mile Reservoir currently has two single-lane concrete boat ramps, with a double- lane boat ramp located near the dam being constructed this year. The lake has no outboard motor horsepower restrictions, but all boats must be operated at no-wake speeds. No camping, picnic or swimming areas were built at the lake; however, Green Valley State Park, only six miles away, has excellent facilities.

This will be a great year for you to get out and explore Twelve Mile Reservoir. The fishery is still developing, but there is plenty to interest anglers. Maps indicating locations of underwater fish structures, lake bed contours and boat ramps are now available from the Department of Natural Resources, Information and Education Bureau, Des Moines, Iowa 50319-0034. Fisheries biologists and fishermen all agree that this lake should develop into one of the top fishing spots in Iowa.

Mike McGhee is a fisheries management biologist located at Mt. Ayr. He holds a B.S. degree from Friends University and attended graduate school at Kansas State.

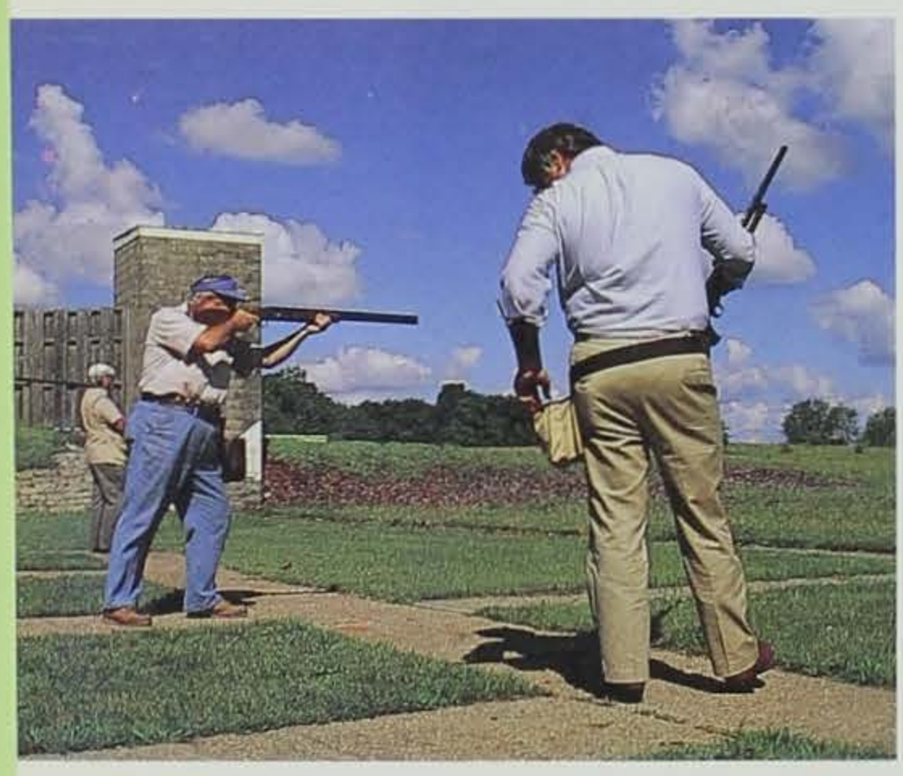
Mike McGhee

Ron Johnson

Rock piles placed on roadbeds attract fish. Twelve Mile Reservoir already produces bluegills as well as bass and bullheads.

Photos by Author

TRAP AND SKEET: How to Get Started



One trap shooter is ready for the "pull" signal while others prepare for their turns.

By Paul Kirpes

From the time the pilgrims landed at Plymouth Rock to the present, firearms have been part of the American tradition. As early pioneers began moving westward, the rifle and shotgun served beside the plow and the axe as useful tools in settling our nation.

For most of us today, shooting has become a pastime, and a very enjoyable one at that. Trap or skeet shooting can provide great sport for everyone, and can be practiced all year. The following tips and information may help interested readers get started.

First, shooting equipment is no more expensive than the equipment necessary for other sports such as golf, tennis or bowling. As in any sport, you can spend as much or as little money and time as you like. Second, trap and skeet shooters are eager to coach a beginning shooter. Thus, if you aren't experienced in recreational shooting and want to get started, just talk to someone who is, and chances are you'll get sound advice.

To locate the shotgun target facility nearest to you, look in the yellow pages of the local telephone book for "trap and skeet ranges." Sportsmen's clubs or gun clubs are a good bet. The club will be glad to hear from you and will help get you started. Don't forget your local sporting goods or hardware dealer. He can help with selecting the right equipment and is probably familiar with the shooting opportunities in your area.

If there is no trap or skeet range near you, or if you are hesitant to shoot at a range before you've gained at least a small amount of shooting skill, purchase an inexpensive hand trap and a supply of clay targets.

Trapshooting

Have you heard about the sport where nine-year-olds and 15-year-olds compete on an equal footing with adults, yet have special trophies of their own? A sport where you achieve as an individual, but which brings hours of fun and fellowship with others? The sport is trapshooting.

Trapshooting is the oldest and largest clay target sport in the world. Its tournaments field more competitors in one place at one time than any other sport on record, with up to 4,000 shooters competing in one day at the Amateur Trapshooting Association's homegrounds in Vandalia, Ohio.

Trapshooting dates back to 1793 or before, when it originated in England. By 1831, it was an established sport in the U. S. In those early days, live pigeons were used as targets; but in 1866, a glass ball was substituted, and 14 years later the "clay" pigeon and a trap to throw them were invented. While these first saucer-shaped targets were made of clay, today they're made of pitch and break more easily and reliably when hit with shotgun pellets.

Trap is the long-range, clay-target game. The gunner stands at least 16 yards behind the trap house, which is usually a concrete bunker projecting only a few feet above the ground

and which houses the mechanism used to throw the clay targets.

Five shooting lanes are located behind the trap house, spaced three yards apart. Targets are thrown at varying angles unknown to the shooter, except in the "doubles" when target paths are fixed and move away from the shooter. Five shooters participate at a time, and each shooter takes a turn in each lane. Five shots are fired from each position, and a total of 25 targets make up a "round" of trap.

When each shooter is ready, he or she calls "pull" or "mark" and the trap operator releases a clay "bird."

There are three different events a trapshooter participates in. In the first, known as the "16-yard event," the shooter fires in each lane from the 16-yard mark. In the second, the "handicap event," the shooter stands form 18 to 27 yards behind the trap house, according to ability. The last event is the hardest of all. Known as "doubles," this event features two targets thrown at the same time, but at predetermined angles.

Because trap targets are thrown at rising angles and shot at long range, the trap gun features a fairly tight choke and a high stock intended to raise the shooter's head. This lets the shooter see more barrel and makes the gun shoot slightly high. You can do a credible job of trapshooting with a field gun made for hunting, but nearly all serious competitors eventually acquire a gun designed specifically for the sport.

Skeet

Skeet is also found in ranges throughout the U. S. Skeet is a short-range, clay-target game intended to simulate field shooting at upland game. While challenging and enjoyable in its own right, it is excellent practice for the hunter.

Skeet was invented in the 1920's by the late William Hawden Foster who became the skeet editor of *Outdoor Life*. Some avid skeet shooters would argue that it is better practice for the field shot than is trapshooting. It is a faster and more spectacular game they say, and presents a greater variety of shots and angles. Because of its difficulty, a skeet target has been referred to as a "yellow-backed ego buster." It can also offer a shooter some most rewarding moments.

Skeet shooters take designated positions around a shallow semicircle and fire at targets thrown from traps located at either end of the semicircle. The trap house to the left of the gunner throws its target from a height of ten feet and is called the "high house." The trap house to the right throws its targets from a height of 3-½ feet, and is known as the "low house."

There are seven stations marked out on the semicircle, with an eighth located in the center of the line connecting the two houses. Shooters take turns shooting twice from each station — one shot each at targets thrown from both houses. They two targets ("doubles") are thrown simultaneously, one each from the two houses, with the shooter on stations one, two, six and seven. That uses up a total of 24 shells. There are 25 shells in a box, and the 25th — usually referred to as the "option" shot — is used to repeat the first target missed or is fired at the end of the round at an extra target.

Skeet offers four different events — one each for the 12, 20, 28 and .410 gauges.

Guns designed for skeet feature open chokes and must be capable of firing two shots in rapid succession. Autoloaders are highly popular, as are pumps. Stockbarreled doubles are considerably more expensive, but have a wide following among those who can afford them.

Safety

No matter when you shoot, you have the responsibility of insuring everyone's safety. Use common sense and follow the safety rules.

Safety rules are rigidly enforced at trap and skeet clubs, and you should learn the conventions practiced at each facility. Guns not actually in use on the shooting line aren't carried about, but are left racked and unloaded in a designated area until your turn comes to shoot. Also, be aware that most trap and skeet shooters reload their own ammunition to reduce costs — if you decide to do the same, your empty shotshells must not be allowed to hit the ground. If they do, they automatically (in most cases) belong to the club. Inexpensive "catchers" are commonly affixed to autoloaders and pumps.

In addition, ear protectors and hardened shooting glasses are important musts on the clay- bird line. Tinted glasses are often used to cut haze or glare, as well as protect eyesight from burnt powder or ricocheting fragments.

Nothing beats experience and first-hand knowledge gained at the range, but additional written information can be acquired by writing to the following organizations:

Amateur Trapshooting Association, P. O. Box 246, Vandalia, Ohio 45377.

National Skeet Shooting Association, 212 Linwood Building, 260 Inwood Road, Dallas, Texas 75235.

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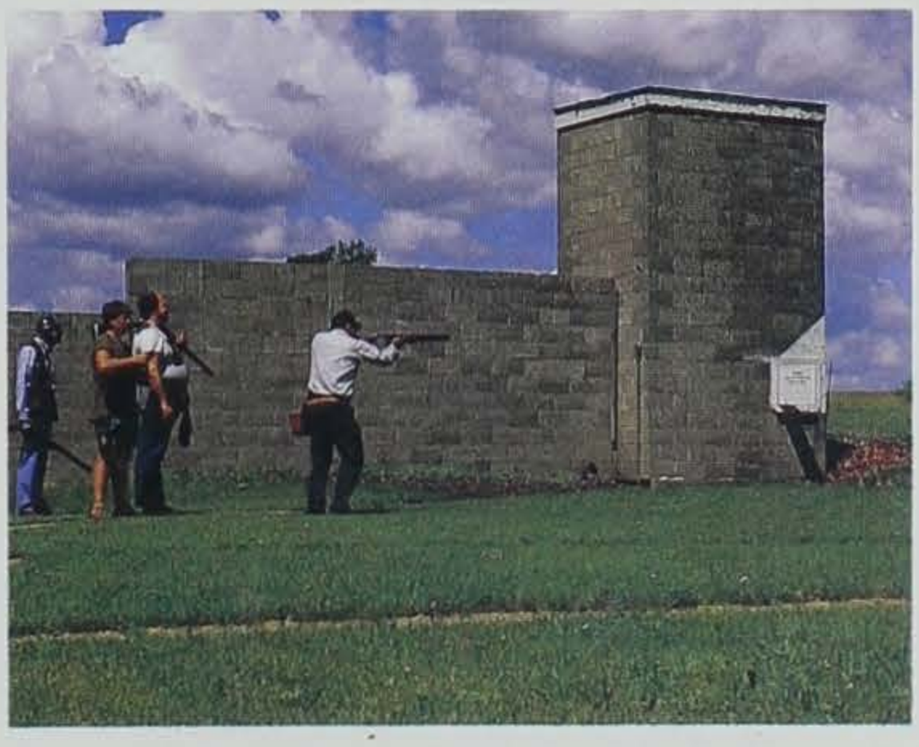

Skeet shooter takes aim at target thrown from the "high house."


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