

THE Goldfinch

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Natural Resources



The Iowa History Magazine for Young People

The Mill Creek Culture

Before the coming of the Europeans, native peoples called “Indians” were present over most of North and South America. In order to survive and prosper the Indians used many different kinds of natural resources, although not in the large quantities that we do today. The Mill Creek culture of northwestern Iowa, which lived a thousand years ago, provides a good example because it has been carefully studied by **archaeologists**.

The Mill Creek people lived in villages which they often built in protected valleys along small streams. This gave them access to fresh water, fertile soil, and timber. The streams were not only used for drinking, but provided food in the form of fish, clams, and a variety of **edible** plants.

It is possible that water was diverted from the streams for irrigation as the Mill Creek people grew corn, beans, and pumpkins in the rich bottom-land soils. The gardens were probably not large. Without fertilizers they no doubt had to be abandoned every few years as the soil became depleted.

The timbered areas along streams like the Big Sioux and Little Sioux rivers were important resources because they provided game in the form of deer, elk, and squirrel, along with a variety of birds. These animals were used for food, and raw materials for tools, clothing, and containers. The bright feathers of many birds were probably

archaeologists n.—people who study ancient cultures.

edible adj.—safe to be used for food.

used for decoration on clothing and certain tools.

The forest was the source of nuts, roots, berries, and sap, that could be used for food in various seasons. Trees provided wood for fires, housing, tools, and possibly dugout canoes. Bark was used in making string and woven articles. At several villages, logs were set on end in the ground around the houses to form a protective fort, probably to help them defend themselves against another group of Indians in the area called the “Oneota.”

The Indians collected rocks from the stream beds and made tools to grind corn into flour. They also made hammers and axes by grinding stream pebbles into the desired shape by rubbing them against coarse rocks. Tools like arrowheads, scrapers, and knives were made by chipping pieces of quartz-like rocks called chert. Some chert was collected in the streambeds near the villages, but the Indians also traded with their neighbors along the Missouri River.

In addition to using products from the valleys and forests, the Mill Creek people made use of the resources of plains and

prairies. There they hunted the great herds of buffalo which they obtained for meat and hides as well as bones which were fashioned into such things as hoes, bracelets, hide-scraping tools, and gaming pieces.

Archaeologists believe the Mill Creek people were trading some of the natural resources from northwest Iowa with people living in a great city called “Cahokia” located near present-day St. Louis. In return, traders from Cahokia gave the Mill Creek people things that they could not obtain in Iowa including sea shells from the Gulf of Mexico made into beads and ornaments.

Even though the Mill Creek people lived in a world of abundant natural resources, they still had to move from time to time as they over-utilized the soil or the forests around their villages. The Mill Creek culture flourished in Iowa for over 250 years. By A.D. 1300 they moved away, probably because of pressure from their enemies along with a gradually changing climate which made farming less reliable.

—Duane C. Anderson
State Archaeologist



courtesy, Office of the State Archaeologist

A white chert spearpoint.



The forest and prairie meet in this 1890s photograph of Buena Vista County.

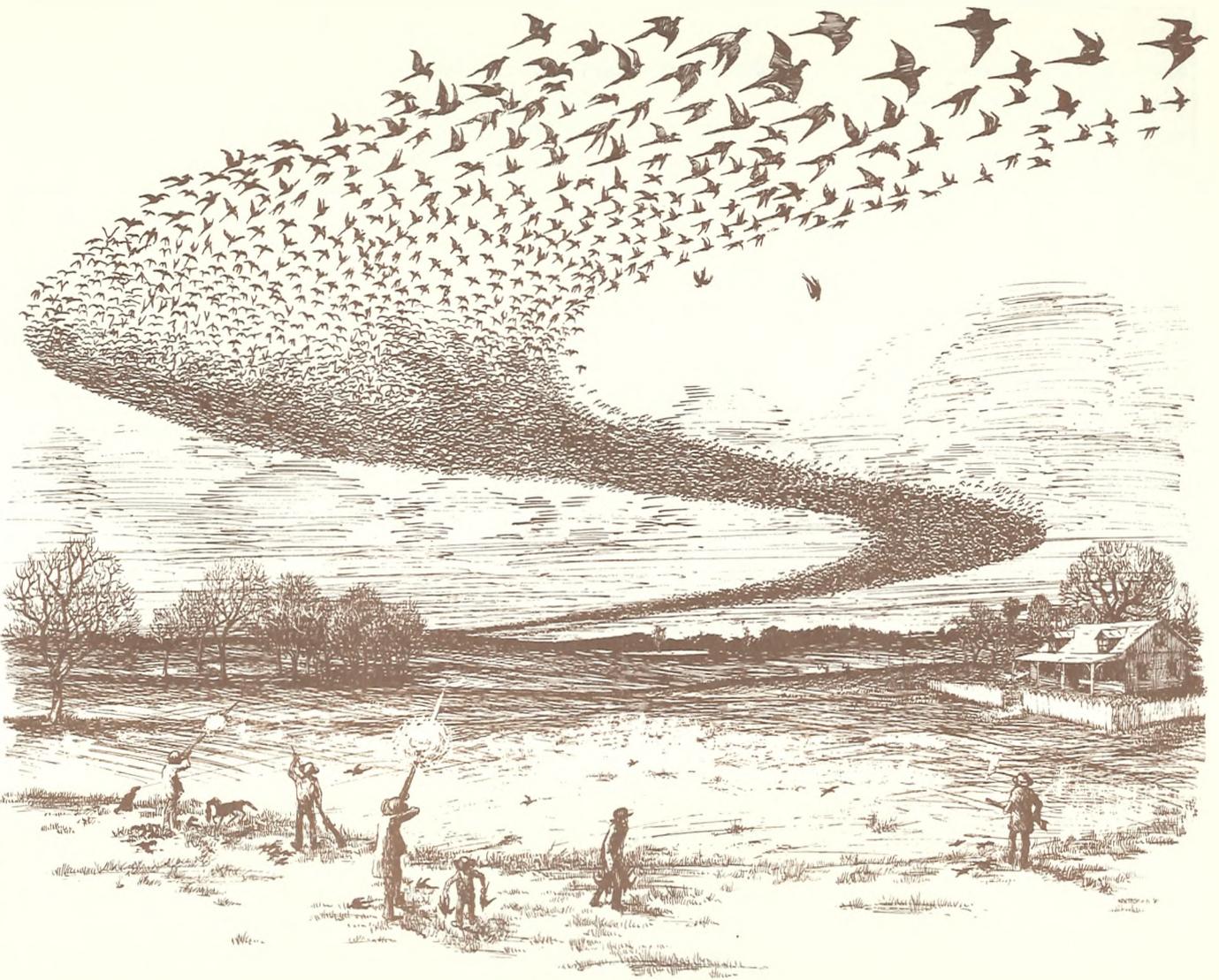
The Natural State

The land we now call Iowa looks much different than the land seen by the settlers as they crossed the Mississippi River. Fine white oak, sugar maple, and basswood trees grew in forests. Softwood trees shaded the banks of rivers and streams. Wild turkeys, ruffed grouse, and passenger pigeons lived in the prairies and forests. Deer, elk, and buffalo roamed over the land. Sweet wild strawberries grew on the prairies, and each summer ripe red cherries hung down from tree limbs heavy with fruit. Clear water flowed in streams and rivers, and in the north central region little lakes and ponds glistened in the sun. Nests of ducks lined the borders of swamps and sloughs.

Tall-grass prairie covered eighty-five percent of the land. This prairie was part of a vast grassland that formed a triangle reaching over the Upper

Midwest. Journals of early travelers tell of a "sea of waving grass" or "earth oceans." People could travel through the prairie from Oskaloosa to Des Moines without seeing a single tree. In some places the grass grew so tall even a horseback rider was hidden from view. Beneath the surface of the land lay deposits of gypsum, coal, limestone, and lead. Some of the minerals were even exposed to view. Explorers in the 1830s wrote of seeing coal along edges of stream beds.

The pioneers who came to Iowa were farming people. They came to control a country they considered wild. The settlers quickly made changes in the landscape. They cut down forests to provide wood for building, cooking food, and heating homes. They killed birds and other animals for food and for the profit made from the sale



Market hunters shooting passenger pigeons, about 1870. Illustration based on nineteenth century engravings.

—by W.W. Thomson

of pelts and meat. Farmers plowed the sod to plant crops and drained swamps to gain more land to farm. Their goal was to make a living by selling their livestock and grain. Although people from eastern farms had already seen the problems created by worn out soil and decreases in wildlife, they still acted as though there was no end to the supply of natural resources in Iowa.

Iowa became a land of successful farms and industries. People used the natural resources to create and support their way of life. Few people worried about spoiling or using up these gifts from the earth. Eventually some people began to work for the **conservation** of

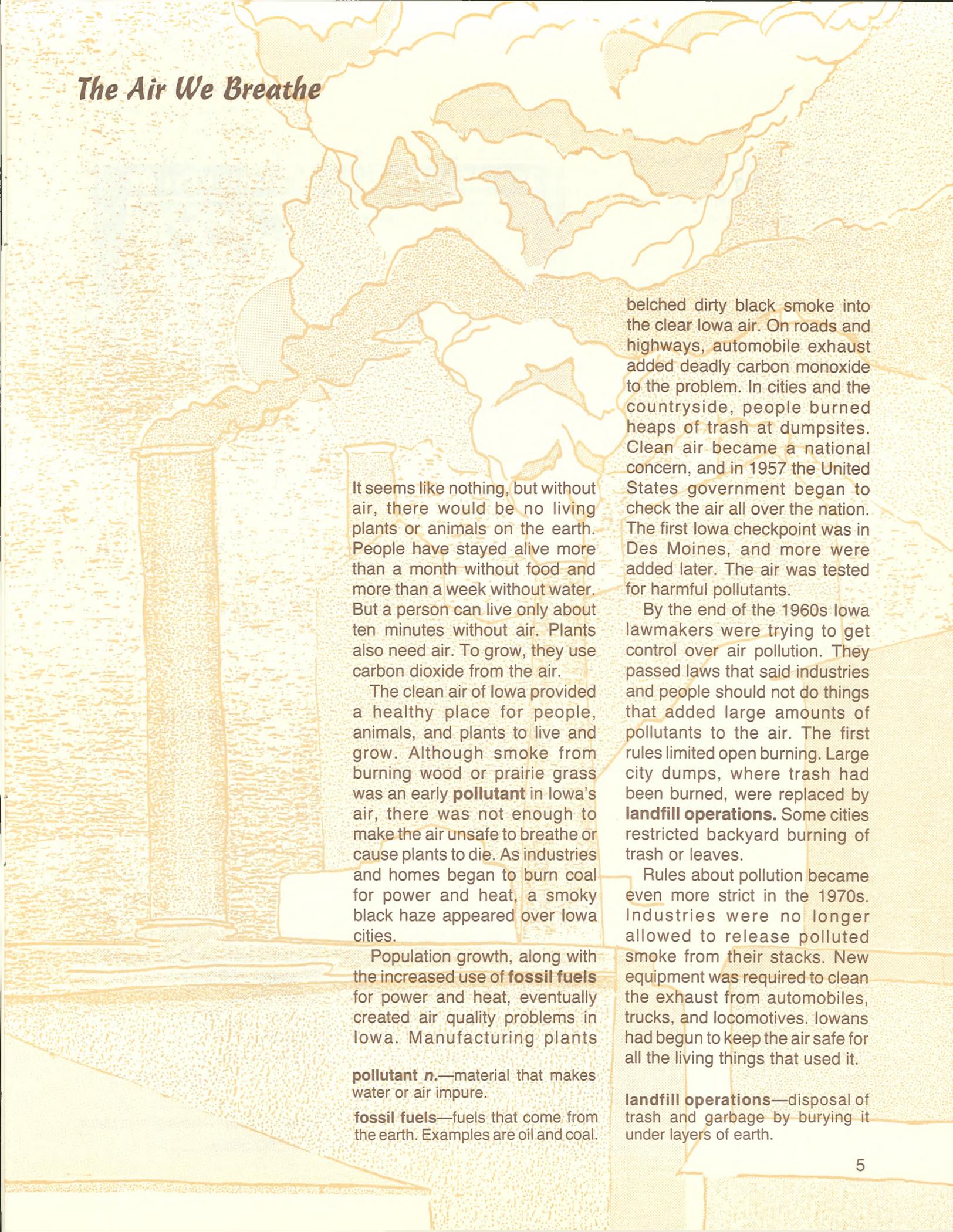
conservation n.—careful use and protection of natural resources such as soil, forest, and wild animals.

natural resources, both in Iowa and the rest of the nation.

By 1900 these conservationists gained the support of President Theodore Roosevelt. Some conservation work began in the areas of forest and wildlife preservation. In this issue of the *Goldfinch* you will learn how Iowans have used some of the state's natural resources to create the way of life they have today.

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The Air We Breathe



It seems like nothing, but without air, there would be no living plants or animals on the earth. People have stayed alive more than a month without food and more than a week without water. But a person can live only about ten minutes without air. Plants also need air. To grow, they use carbon dioxide from the air.

The clean air of Iowa provided a healthy place for people, animals, and plants to live and grow. Although smoke from burning wood or prairie grass was an early **pollutant** in Iowa's air, there was not enough to make the air unsafe to breathe or cause plants to die. As industries and homes began to burn coal for power and heat, a smoky black haze appeared over Iowa cities.

Population growth, along with the increased use of **fossil fuels** for power and heat, eventually created air quality problems in Iowa. Manufacturing plants

pollutant *n.*—material that makes water or air impure.

fossil fuels—fuels that come from the earth. Examples are oil and coal.

belched dirty black smoke into the clear Iowa air. On roads and highways, automobile exhaust added deadly carbon monoxide to the problem. In cities and the countryside, people burned heaps of trash at dumpsites. Clean air became a national concern, and in 1957 the United States government began to check the air all over the nation. The first Iowa checkpoint was in Des Moines, and more were added later. The air was tested for harmful pollutants.

By the end of the 1960s Iowa lawmakers were trying to get control over air pollution. They passed laws that said industries and people should not do things that added large amounts of pollutants to the air. The first rules limited open burning. Large city dumps, where trash had been burned, were replaced by **landfill operations**. Some cities restricted backyard burning of trash or leaves.

Rules about pollution became even more strict in the 1970s. Industries were no longer allowed to release polluted smoke from their stacks. New equipment was required to clean the exhaust from automobiles, trucks, and locomotives. Iowans had begun to keep the air safe for all the living things that used it.

landfill operations—disposal of trash and garbage by burying it under layers of earth.

Ding Darling

As a small boy Jay Norwood “Ding” Darling once shot a wood-duck in nesting season. He was punished by his Uncle John, who wanted Jay to learn that shooting ducks during the nesting season meant fewer ducks the next year. Hunting ducks in the proper season and shooting only as many as were needed for food was a better practice. This was Ding’s first lesson in conservation.

Ding was born in Norwood, Michigan in 1876, but spent most of his early years in Sioux City, Iowa. Roaming the prairie, Jay grew to love nature and appreciate wildlife. As Ding later said, “Those were the days when the **Golden Plover** came in great flocks and moved across South Dakota. From early spring until the **Prairie Chicken** sought cover in the fall along the thickets bordering the creeks and marshes, my mind has been filled with pictures which have never been erased.”

The feelings that began in Ding at an early age did not leave him when he became a famous cartoonist. Except for a brief time in New York, he lived in Iowa and worked for the *Des Moines Register*. Ding believed proper steps were not being taken to protect land and wildlife, so he used his job as a cartoonist to draw attention to the strong need for conservation.

Darling did not stop with drawing cartoons. He persuaded Iowa State College (now Iowa State University) and the Iowa Fish and Game Commission to

Golden Plover/Prairie Chicken—birds living in the prairie environment.



The first Duck Stamp, issued in 1934.

join in a research program for the conservation of wildlife. He even pledged some of his own money for the program. This team developed a twenty-five year conservation plan, one of the first long-range plans in the nation. When Ding later became Chief of the Biological Survey, he helped spread the idea of this future planning nation-wide.

After seeing Ding’s work in conservation, President Roosevelt asked him to head the Biological Survey. Ding began the work in his usual energetic way. To make sure ducks would always be plentiful, Ding enforced strict duck-hunting laws. Ding also knew more money was needed to develop programs to help wildlife survive and grow in numbers. He managed to get seventeen million dollars for “his ducks.”

Another way Ding raised funds for conservation while he was Chief was through the Duck Stamp Act. The Act, which the government passed, required

the sale of a federal stamp to every hunter of **migratory** waterfowl. Ding drew the first stamp in the series. The money from the sale of the stamps was to be used to manage wildlife refuges and to enforce hunting rules.

Ding believed the best way to encourage conservation practice was through education and the press. Although Ding already reached people through his cartoons in the newspapers, he felt the public needed to learn more about conservation so they could help, too. Ding helped form the National Wildlife Federation. This larger organization brought together many little groups to educate people. Ding served as president of the group for the first three years.

After Ding gave up the presidency of the federation, he was made its honorary president. He still wrote for the

migratory adj.—moving from place to place.

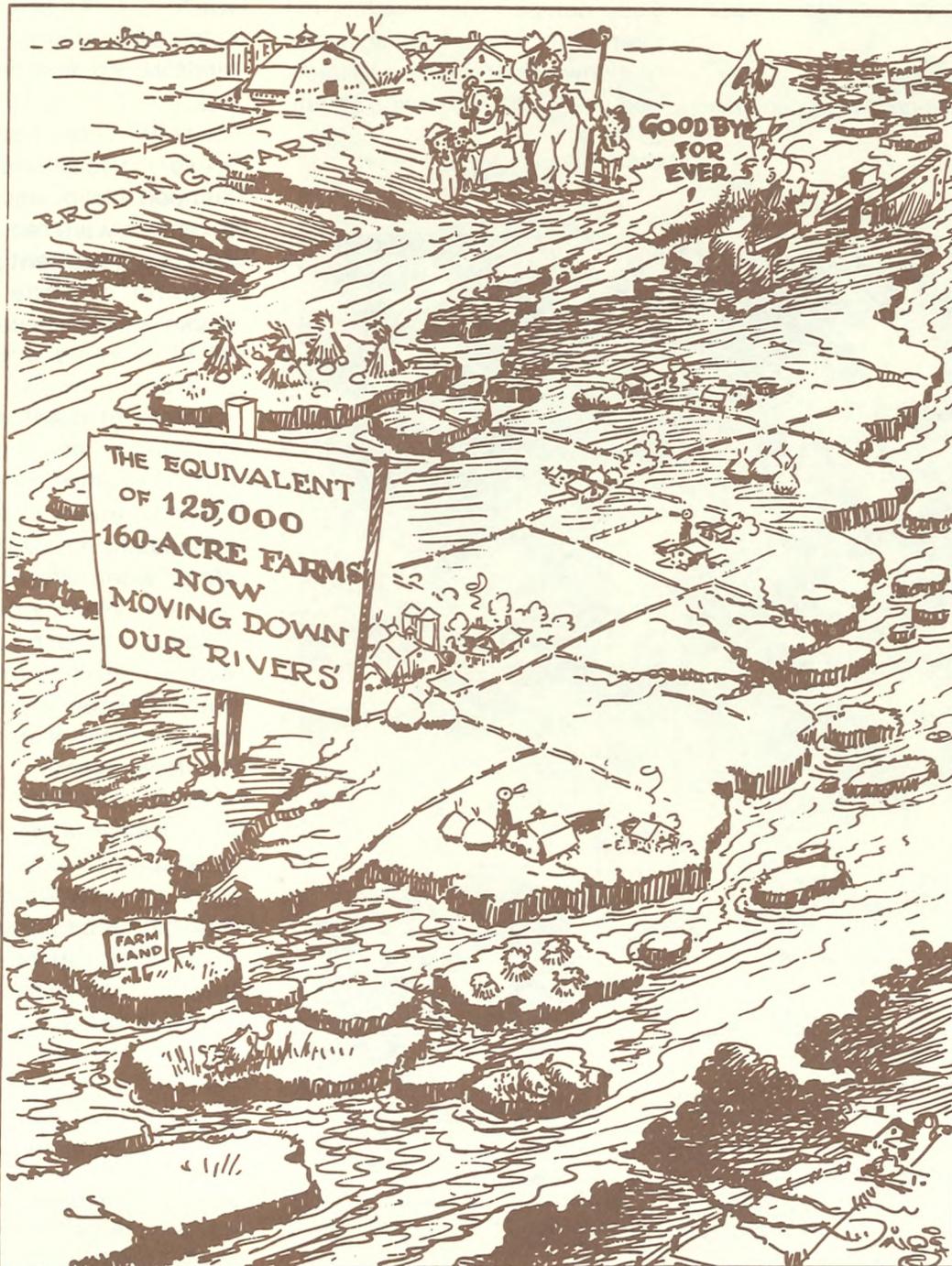
federation and sometimes even became angry when he felt the organization was working for the wrong things. In 1961 he agreed with his friend, Walt Disney, to serve as co-chairman of National Wildlife Week, which was sponsored by the federation.

After his retirement Ding continued to support plans for the conservation of land and wildlife. Using the talents he had as a cartoonist along with his love of wildlife, Ding spent his entire life bringing attention to the need for planned

conservation programs. He believed everyone could be a conservationist in their own way. Ding loved nature, and he wanted to preserve it so everyone would have a chance to enjoy it as much as he did.

—Pam Geary Beck

WHAT THAT MUD IN OUR RIVERS ADDS UP TO EACH YEAR



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Cool, Clear Water

When the pioneers settled in Iowa, they could drink water fresh from the sparkling streams. Pollution was not a problem, because nature could rid itself of a small amount of waste. The natural flowing and stirring of water mixed and **diluted** waste material, moving it into deeper areas.

diluted v.—thinned by mixing with water.

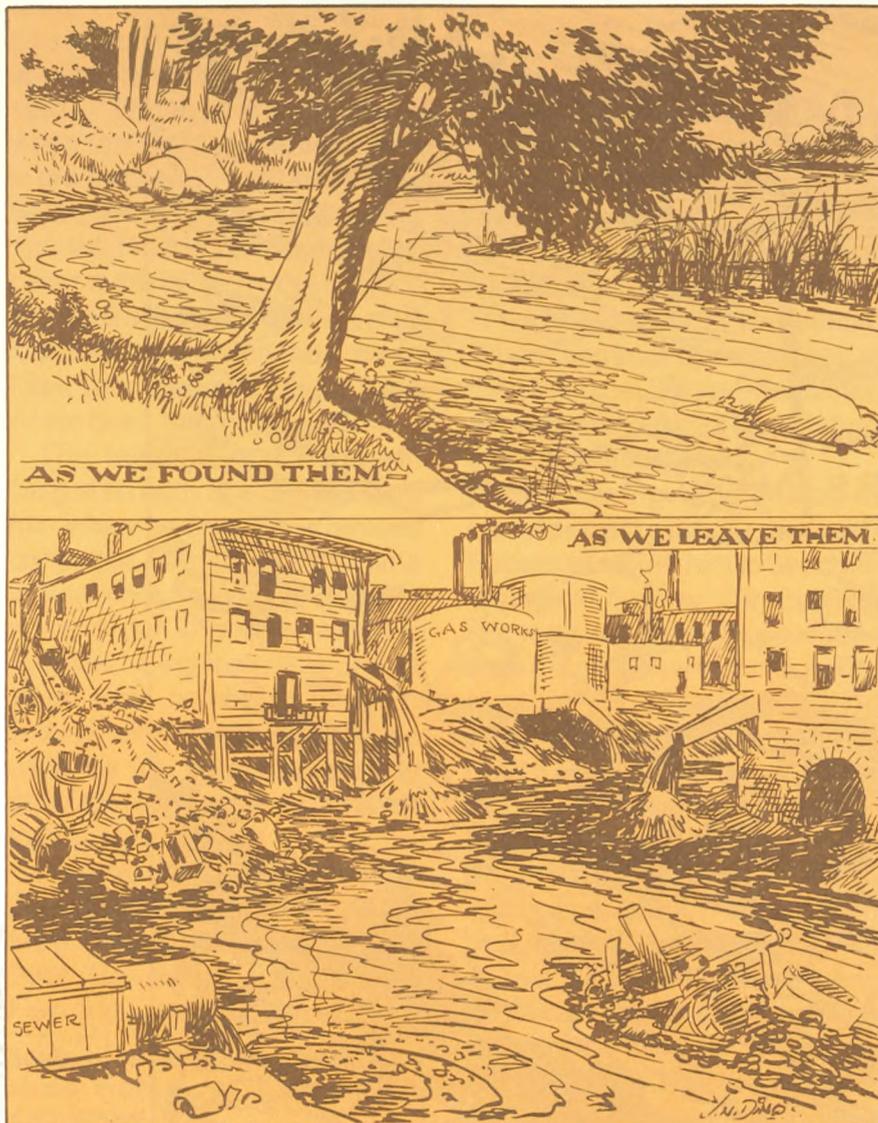
The most common method of getting rid of waste was to dump it directly into a stream. As more people came to Iowa, more sewage, garbage, and industrial wastes were dumped into rivers. In the 1800s and 1900s cities and industries began to develop. They dumped their wastes into rivers, too. There was so much raw sewage and waste in lakes and rivers, the water was unsafe to drink.

In the early 1890s fish in the Iowa River began to die. Sewage from a meat-packing plant and a starch manufacturer in the city of Marshalltown was causing the problem. When the Iowa River water level dropped, there was not enough water to dilute the waste, and the fish died.

In 1923 a law to control these kinds of pollution problems was passed. Streams and rivers were studied to learn how badly they were polluted. Cities that dumped a lot of waste into rivers and lakes were required to build **sewage treatment** plants.

Some sewage treatment plants were built even before the 1923 law, as concern over pollution grew. The first successful plant was built in Washington, Iowa in 1886. Pipes carried sewage and water waste from homes, schools, and factories to a sewage treatment plant, where the wastes were treated. When cities became larger and produced more waste, the treatment plants could not keep up with the added load. Polluted water still flowed into Iowa rivers.

Pollution from cities and industries that can be traced to a specific source is called **point-source** pollution. Pollution that cannot be linked to a direct source is called **non-point** pollution. In recent years the most serious non-point pollution has been caused by agricultural



sewage treatment—in cities, heavier solid material is removed from collected wastes. Most of the harmful organisms in the liquid wastes are destroyed. Then the liquid is discharged.

runoff. Farmers use many chemicals to fertilize their crops or to eliminate weeds and pests. Rain water washes across the soil, which contains the chemicals. As this water runs into lakes and streams, they become polluted. Because this kind of pollution happens across large areas of land, it cannot be said to come from just one source or point.

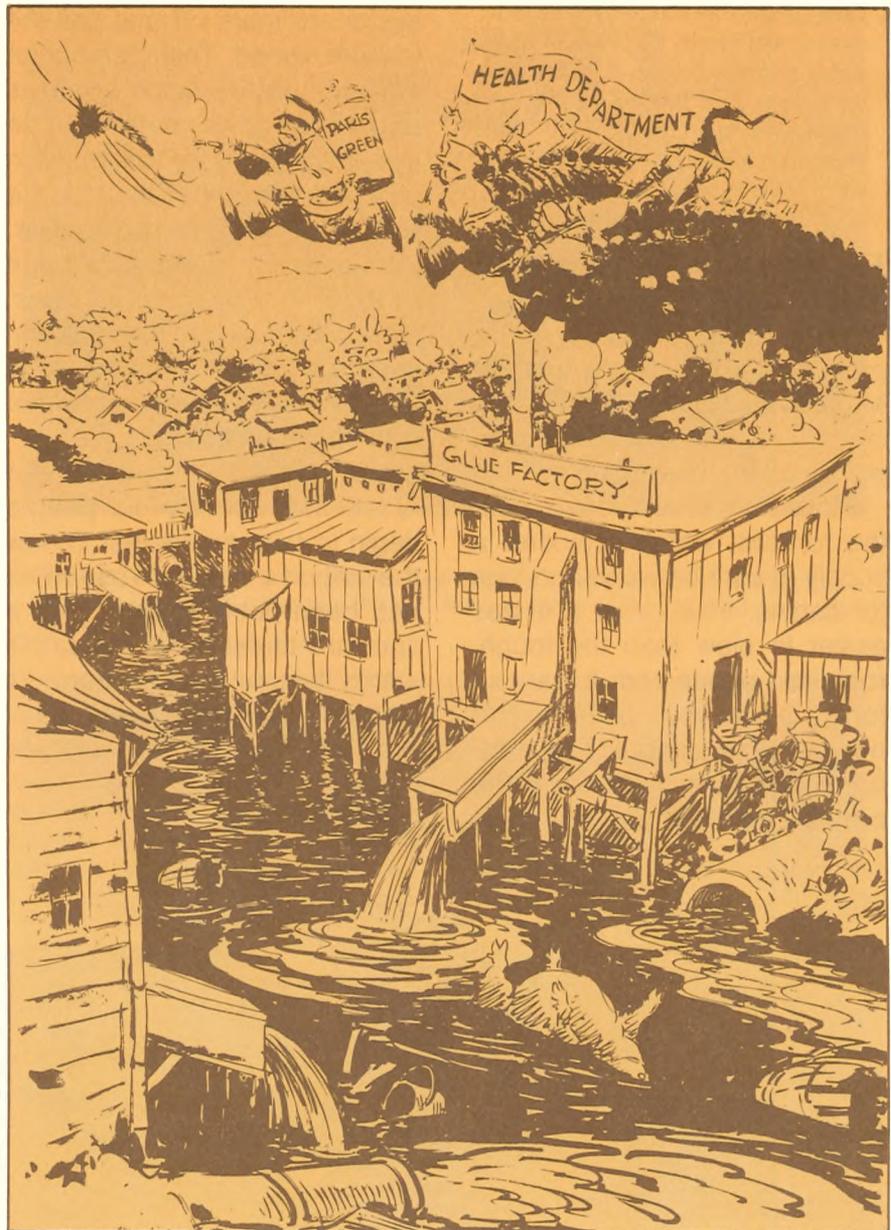
In addition to rivers and streams, **groundwater** sources can also be polluted by non-point sources. Chemicals move into groundwater as water seeps into the earth after a rain. Over three-fourths of Iowans rely on groundwater sources, as well as over half of Iowa's industries. Soil conservation practices help stop some of the agricultural chemicals from reaching groundwater sources, but not enough people have used these techniques to make a difference yet.

Another cause of pollution comes from the lead in automobile exhaust. The lead is deposited on the streets, and rain washes it into lakes and rivers. Since the lead comes from many different places in the city, it is also considered non-point pollution.

Power plants that produce energy use the greatest amount of water in the state. Water is needed to cool the **condensers** of steam-electric plants. Each year Iowans use more electricity.

groundwater n.—water below the earth's surface.

condenser n.—coiled tube or other device for cooling gases to turn them into liquids.



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This increases the amount of water power plants must use. Although only a small part of this water is lost when it **evaporates**, getting rid of the heated water is a problem. Very hot water can kill animal and plant life, if it is dumped directly into a river. This is an area where progress has

evaporate v.—a change from solid or liquid into vapor.

been made, however. Cooling ponds and towers hold the water until it cools down and can safely be put back into the river.

At one time the Iowa region had a good supply of water. People and their activities have created serious water problems. Without a supply of clean water, there can be no future for living things in the state.

— Pam Geary Beck

Down to Earth

We now plough horizontally, following the curvatures of the hills and hollows. Every furrow thus acts as a **reservoir** to receive and retain the waters, all of which go to the benefit of the growing plant, instead of running off into the streams. In a farm horizontally and deeply ploughed, scarcely an ounce of soil is now carried off from it.

—Thomas Jefferson

The land has been an important natural resource throughout Iowa's history. Before the pioneer settlers came, the Mesquakie, Sauk, and Ioway raised crops in the soft, sandy soil along the river bottoms.

Pioneers first settled in or near the forests, which provided a supply of both firewood and logs for cabins. The forest soil was easier to plow than the tough, root-filled prairie sod. It was not long, however, before the newcomers used large sod-breaking plows to change the prairie into cropland. Here the

reservoir n.—a place where water is collected.

rich topsoil lay up to sixteen inches deep.

The United States government had a special system to mark off and sell the lands it owned. This rectangular survey created large squares and rectangles of land. The system naturally led to farming in straight rows, parallel to the fence or field boundaries. Farmers everywhere took pride in their straight, plowed rows, even if the rows ran downhill and served as water channels that washed a little deeper and wider with each rainstorm.

Not until the end of the nineteenth century did people begin to take an interest in how the nation's natural resources had been used. Iowans took a special interest in the resources within their own state. Farmers learned about the importance of **crop rotation** and building soil

crop rotation n.—a system of planting a crop which enriches the soil after one or two crops that deplete it.

through planting **legumes**. In the 1900s a soil survey was begun to find better ways to use the land. One result of the survey was the draining of wetlands to make more cropland available.

Concern about soil erosion grew during the 1930s drought, when winds carried the topsoil into the air. State and national officials began programs to teach farmers how to keep the soil on their farms from washing and blowing away. But not enough farmers used the methods necessary to keep the precious soil where it belonged, on the farm.

The erosion became even worse as farmers changed the kinds of crops they raised. They grew more row crops of corn and soybeans and raised fewer livestock. They plowed pasture land to plant more corn and beans. Then in the 1970s farmers were encouraged to plow and plant from fence row to fence row to raise more grain to sell on the world market. Trees and hedges were torn out to provide more land for growing grain. This destroyed the soil and moisture-holding windbreaks as well as the home for much wildlife.

By 1979 half of Iowa's topsoil was gone. A study of thirty thousand farms showed only twenty thousand used modern soil conservation methods. Sixty thousand farms had never been assisted by the soil conservation service. Even though Iowa led the nation in conservation programs, only one-third of the state's cropland was safely protected from erosion. This was a serious problem in a state

legumes n.—plants that fix nitrogen in the soil. Examples are alfalfa, soybeans, and clover.



For a long time, contour plowing has been recognized as a good way to reduce soil erosion.

where the main business was agriculture. Conservation practices, however, cost money. Soil evaluations and conservation advice was expensive.

In 1979 the state legislature voted to provide some money to help farmers stop erosion. Those with farms needing expensive erosion-control measures could ask for help. That same year the Iowa Department of Soil Conservation began the Iowa Till program. Farmers received money if they followed certain plowing methods. They were required to leave some of the plants from the last crop on top of the soil after harvest. It was a good start, but there was not enough money to help all the farmers who needed to do something to solve their erosion problems.

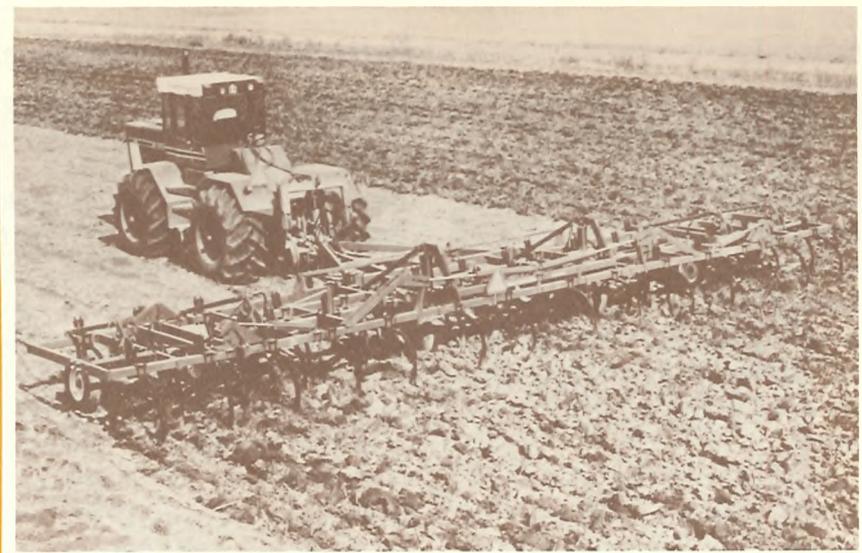
Erosion was only part of the problem. The soil condition was another. In the 1940s chemicals to destroy weeds and pests, and **synthetic** fertilizers to feed the crops became available. Farmers thought these new products would solve problems of disease and fertilization. But the chemicals destroyed the living organisms in the soil. Without these organisms, the humus in the soil disappeared.

Humus is an important part of healthy soil. It makes soil spongy and loose. A humus-filled soil can absorb four to six inches of rain an hour. Most low-organic-matter soils can absorb only half an inch of rain before erosion begins. The use of chemicals actually destroyed humus and aided erosion.

synthetic adj.—made by a combination of chemicals similar to those of which a natural product is made.



The moldboard plow turns the soil over leaving it exposed to wind and rain erosion. The chisel plow stirs the soil, leaving some of the old crop on top to prevent erosion.



courtesy, International Harvester

Another farming method added to erosion problems and helped to destroy the helpful organisms in the soil. Old plowing methods with the moldboard plow turned the soil over and left it exposed to water and wind erosion. If the plow cut too deeply, the organisms were buried where oxygen could not reach them, and they died. The

subsoil ended up on top and the topsoil below. To prevent this problem a few farmers began using a chisel plow. This tool stirred the soil without turning it over. During fall plowing it mixed remaining cornstalks into the soil so the stalks would be **decomposed** by planting time in the spring.

decompose v.—to decay; rot.

Some farmers also looked for a way to solve the problems created by chemical farming methods. Washington University at St. Louis studied the methods these farmers used. In 1975 the university reported farmers using scientific bio-agriculture had produced crops of nearly equal value to those using expensive chemicals and synthetic fertilizers. Because the bio-farmers' operating costs were less than those of chemical-using farmers, the profits came out about the same: \$134 per acre profit for bio-farmers and \$132 for those using

chemical farm methods. Bio-farmers used less fuel because they plowed their fields less often than other farmers. The report also showed crop rotation was still an important part of successful farming.

The bio-farmers had scientists analyze their soil and then provided the proper care to keep the eight chemical soil elements in balance. Many made **compost** on their farms to spread over their fields as

compost *n.*—a mixture of decomposed organic matter, such as leaves, cornstalks, and manure.

fertilizer. These farmers kept their topsoil healthy, filled with microorganisms and earthworms. The farmers reported plant diseases, pests, and weeds were greatly reduced without chemical sprays.

An added advantage of bio-farming was that there were no chemicals left in the soil to wash into the water supply. There were no chemicals absorbed into the plants, which were used as food for animals. The milk and meat and grain produced by these farmers contained no harmful chemicals, because the farmers did not use them.

Beneath the Surface

People have known about and used the mineral resources of the Iowa region for hundreds of years. The plains Indian tribes traveled great distances to find the white chert along the Mississippi River near Burlington.

Long before Iowa was open for settlers the lead deposits at Dubuque attracted Europeans. They traded gunpowder and shot for the lead the Indians mined. Lead mining continued after the Indians were sent west. By 1840 the mining area located on both sides of the Mississippi, near Dubuque, had become the leading lead mining district in the United States.

Limestone quarries produced the building blocks for early Iowa cities. After crushing machines came into use, crushed rock was

used for roads. Finely crushed limestone also provided agricultural lime, which was used to improve the soil. The development of cement created still another use for Iowa limestone.

Limestone was first dug from quarries, but by 1979 there were twelve underground mines. Underground mining did not remove farmland from production, and the mining companies did not have to do any **reclamation** work.

Coal, too, lay beneath the Iowa region. Early European and American explorers made notes in their journals about the coal they saw on sandbars along the Des Moines and Mississippi

reclamation *n.*—to restore to a useful purpose.

Rivers. In early settlement days, people dug coal and sold it to Mississippi River steamboats. At first coal was not really mined but simply picked up or dug from open seams of coal.

The arrival of the railroads spurred coal mining in Iowa. The great steam engines used large amounts of coal. A major transcontinental railroad route crossed the state. Iowa was the last place trains could stock up a good supply before the long journey across the Great Plains to the Rocky Mountains. Demand for coal also increased as industries and homes began to use it for power and heat. By 1890 coal mining had become a major industry in the south central part of the state.

By 1917 eighteen thousand people worked in Iowa's coal

mining industry. At one time 450 mines were in operation. Then in the 1930s production began to decline. Other fuels replaced coal. Railroads began to use oil for diesel engines, and people switched to cleaner oil or gas to heat their homes. By 1980 only four Iowa coal mines remained in operation.

To get coal from the ground, it was often strip mined. Large machinery removed the topsoil and dumped it into piles. Lower layers of soil and rock were heaped on top. This lower soil contained sulphur, which changed into acid when exposed to oxygen. Then nothing could grow on the soil. When it rained the acid washed into streams and ponds, killing the fish. The acid was also a problem when livestock drank from these ponds

and streams. In all, eleven thousand acres of Iowa land were spoiled by acid.

In 1975 Iowa lawmakers set up rules to prevent any more land destruction caused by strip mining. Miners were required to leave the land in good condition so it would grow plants once again. This added to the cost of coal production.

Mining and using Iowa coal created other environmental problems. Some Iowa coal contained so much sulphur it polluted the air when burned. The sulphur combined with oxygen as the coal burned and formed sulphur dioxide and ash before the coal smoke left the smokestack. One removal method used water, which absorbed the pollutants. A new problem was then created—

where should the “dirty water” be dumped? Another problem was the high cost of cleaning the coal smoke. With these added costs to strip mining and using Iowa coal, people began to wonder if the cost would be too high to buy and use it.

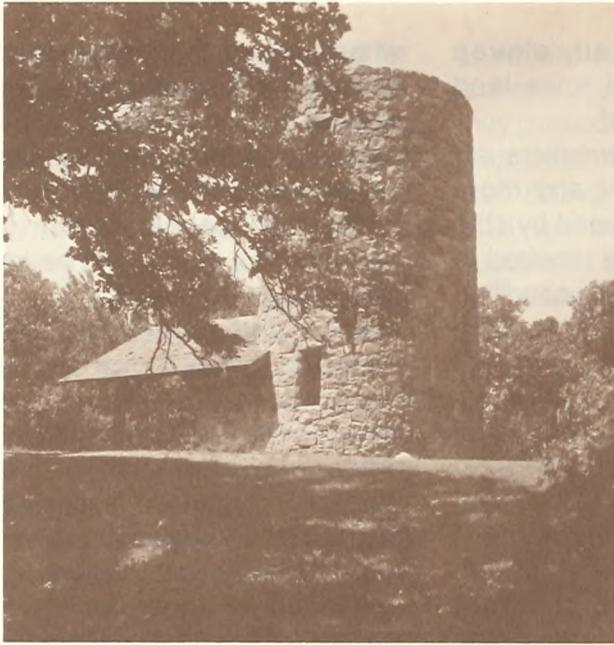
Sand and gravel are also among Iowa’s mineral resources. After the development of cement and macadam, sand and gravel production increased, especially during the 1960s when there was much highway construction.

Gypsum is another mineral resource mined and quarried in Iowa. The first gypsum mill opened near Fort Dodge in 1872. Later, other gypsum mines were established near Centerville, Mediapolis, and Harvey.



courtesy, Iowa Geological Survey

Before laws required land reclamation, ugly acid-filled ponds and spoil banks remained after coal was removed by the strip mining process. These spoil banks are in Mahaska County.



To Save a Natural Place

Swimming, boating, hiking, and picnicking are a few of the recreational activities available at the many state parks in Iowa. Iowa has had state parks for about ninety years. Before there were state parks, people found their own picnic areas along roadsides or in the woods. Around the turn of the century, people joined together to try to persuade the State Department of Conservation to buy land for parks and wildlife refuges. Creating parks would preserve the land before it was all used up for farms or industries. They led the way in Iowa just as President Roosevelt led the way in the nation to set aside land for parks.

One group that helped to bring about state-owned parks was the Iowa Federation of Women (IFW). This group saw the need to **preserve** and **conserve** our natural resources for future generations. May McNider (1863-1954) of Mason City acted as chairwoman of the

preserve v.—to keep from injury or destruction; protect.

conserve v.—to keep safe.

Conservation Department in the IFW. She sought the support of the women's club members. May McNider gave talks and wrote articles to persuade businesspeople and state officials of the need to purchase land for state parks. Mrs. McNider's efforts were successful. The first state park, Devil's Backbone (now Backbone State Park), was established in 1920. Shortly after that, other parks were created: Lacey-Keosauqua, Keosauqua; Pilot Knob, Forest City; and Ledges, Madrid. By 1922 there were fourteen state parks, and by 1943 the number had grown to eighty-six. In 1983 there were 101 state parks, forests, and preserves throughout the state of Iowa.

Mrs. McNider took particular interest in Pilot Knob Park, near her home in Mason City. The park was named for a hill called Pilot Knob, which rises three hundred feet above the surrounding land. The hill served as a landmark for pioneers crossing the state through the tall prairie grass.

Mrs. McNider believed Pilot Knob would be a special park. The knob is the second highest point in the state. The land formation (boulders, clay, and gravel) and nearby water attracted unusual wildlife that Mrs. McNider wanted to see preserved. A variety of shrubs surrounded the spring-fed "Dead Man's Lake." In the lake grew a water-lily unlike any other found in Iowa. There were water birds, the brown thrasher, robins, blue jays, whippoorwills, mourning doves, owls, and hawks. An occasional red fox, badger, and muskrat was also seen in the park area. After several years of hard work, Pilot Knob Park was dedicated on September 11, 1924.

Our state parks are one example of a way to conserve and preserve the natural environment. By maintaining these parks and respecting the wildlife that grows there, we continue the tradition of Mrs. McNider.

—Cynthia P. Huff

Using the Land

When Europeans arrived in North America to create new and permanent settlements, land ownership became an important goal. As time passed, certain rights concerning private property developed. People could decide how to use their land, although laws sometimes set limits about where livestock could be raised, how high fences could be built, and where trash could be dumped.

During Iowa's early settlement period, farms, towns, and small industries were built on the land. Farmers plowed the prairies, cut down trees, and drained **bogs and sloughs** to create cropland. The wildlife that had lived in

bog and **slough**—low, wet or swampy ground.

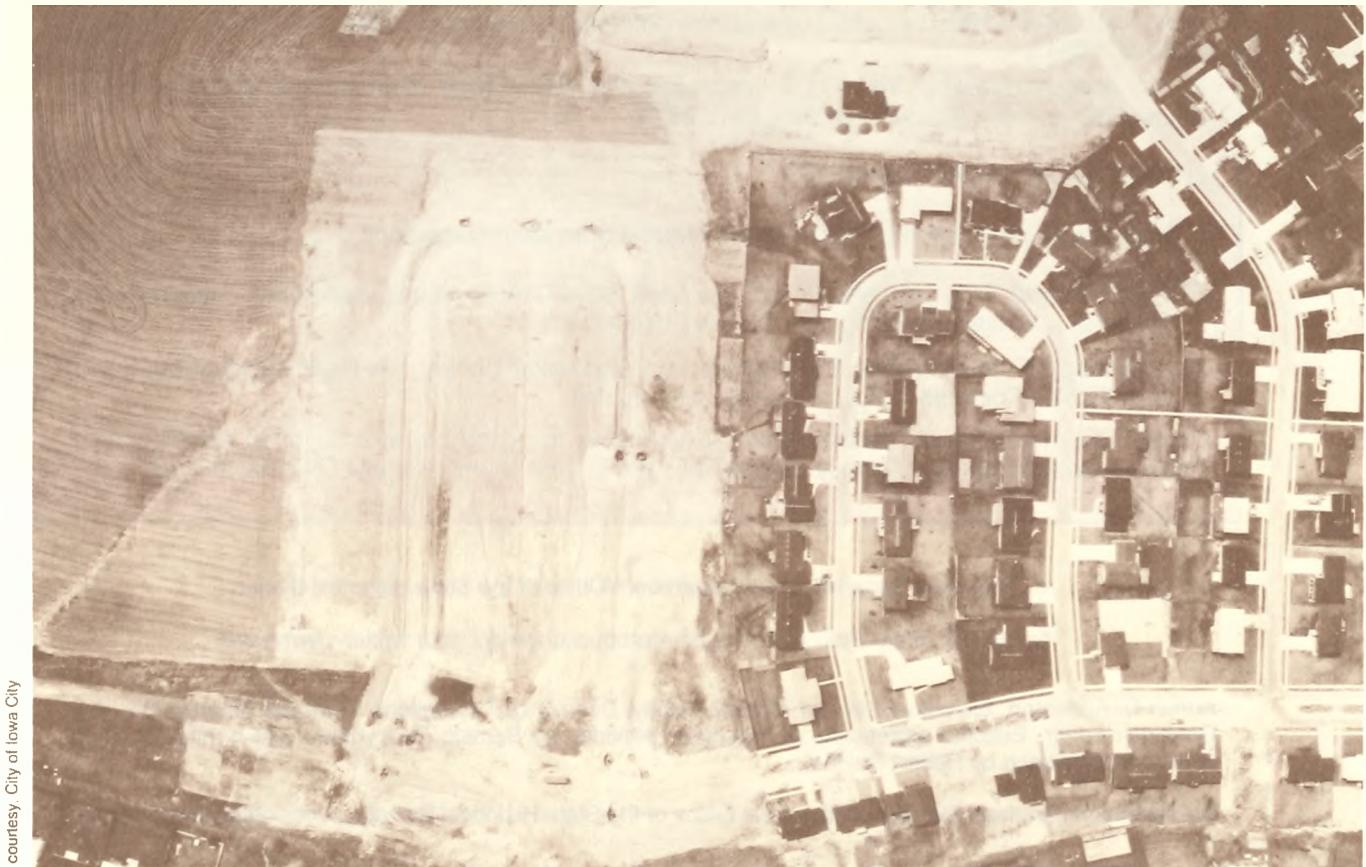
those environments either left or were killed.

When larger industries began to appear in Iowa cities, people moved to the cities to work in the industries. City populations grew, and builders constructed more houses, apartments, and shopping centers. Farmland that surrounded the edges of cities often was used for these new buildings. Although the owner made a nice profit by selling the land to builders, this change in the way the land was used meant some very good agricultural land would no longer be available to raise food.

In the 1960s people began to think about the way land should be used. They thought about the past when towns and cities grew

without any planning or control. They thought about their failure to protect the best agricultural land and natural resource areas. People met with state leaders and decided zoning laws and plans were needed. The cities, counties, and state would need to work together. The plan would have the environmental quality for all living things as the most important goal, instead of the owner's profit or personal wishes.

For the future, they hoped people would understand that the protection of land, air, and water resources must come first, even before a person's private property rights. It would take laws to tell people how they could use the land they owned.



courtesy, City of Iowa City

This farm at the edge of a growing city is being sub-divided to build more streets and houses.

One Step Further . . .

1. Look about the area where you live for signs of water, soil, or air pollution.
2. Visit a water purification plant and a sewage disposal plant.
3. Polluted air can destroy non-living things, too. Find out how this happens. (Check at the library for books on air pollution or look in an encyclopedia.)
4. Many Iowa cities are located on rivers and streams. Find out how the water quality is tested for human safety.
5. Keep a one-week record of your dependence upon natural resources. Record the natural resources which you consume or use either in a natural or processed form.
6. What are the eight chemicals needed to keep the soil in balance? (Look in an encyclopedia.)
7. At first it was thought that agricultural chemicals were both safe and useful. Find out which pesticides have been removed from the market in the United States. Find out what problems these chemicals created.
8. Invite a speaker to talk to your class about natural resources. (Call the County Soil Conservation District or the County Conservation Board.)
9. In addition to air, water, and earth, there are other natural resources in Iowa. Make a list of these other resources and try to find out how they have been used.
10. On a state map, mark the locations of Iowa's natural preserves. Find out why these preserves are important. (See *Iowa's Natural Heritage* or write to the State Preserves Board, Wallace State Office Building, Des Moines, IA 50319.)
11. Find the meaning of the word ecology. Why is it important to understand about ecology when we use natural resources?

BOOKS:

An Introduction to Pollution by Harold E. and Mary Southworth Schlichting.

The World Beneath Our Feet: The Story of Soil by Martin L. Keen. (New York: Julian Messner, 1979.)

What Shall We Do With the Land? Choices for America by Laurence Pringle. (New York: Thomas Y. Crowell, 1981.)

Iowa's Natural Heritage. Tom C. Cooper, executive editor. (Des Moines: Iowa Natural Heritage Foundation and the Academy of Science, 1982.)

OTHER INFORMATION SOURCES:

Suppliers of information prefer only one request from each classroom.

The Duck Stamp Story is available from the Iowa State Conservation Commission, Department of Public Affairs, Wallace Building, Des Moines, IA 50319.

Iowa Geology. Published once a year by the Iowa Geological Survey, 123 North Capitol Street, Iowa City, IA 52242. Contains articles about soil and mining.

Profile of Environmental Quality: Iowa is available from the Librarian, Public Affairs Office, Environmental Protection Agency, Region VII, 324 E. 11th Street, Kansas City, MO 64106.

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