

Grade Level **5-12**

Class Periods **2-3**

Goals/Objectives/Student Outcomes:

Students will:

- Learn about conservation achievements through the unique work of three conservationists, who all have roots in Iowa.
- Be able to recognize the distinctive communication styles used by each conservationist.
- Observe how personal experiences affect behaviors by examining the lives of three Iowans involved in conservation.
- Apply their thoughts on conservation through one of two artistic media.

Materials:

1. Posters or overhead transparencies of Ding Darling cartoons. These can be found in the 4-H Ding Darling materials referenced in the resource section. Another source would be a book on collections of his cartoons. One such book is *Ding's Half Century*.
2. An essay of Aldo Leopold's from *A Sand County Almanac* or a collection of his notable quotes.
3. Entries from Althea Sherman's "Bird Journal."

Background:

Three people with strong Iowa connections who were also conservation leaders are Aldo Leopold, Jay Darling, and Althea Sherman.

Aldo Leopold was born on January 11, 1887 in Burlington, Iowa, to Carl and Clara Leopold. Leopold received his masters degree in forestry from Yale in 1909 and then began a career with the U.S. Forest Service in Arizona and New Mexico. Aldo and Estella Bergere were married in 1912. By 1915 he had written the *Game and Fish Handbook*, a management guide for forest service rangers and in 1917 followed this with the *Watershed Handbook*, which included information on preventing soil erosion.

At his urging the Forest Service set aside the first wilderness area in 1924 (the Gila Wilderness area). Also in 1924 the Leopold family moved from New Mexico to Madison, Wisconsin. In 1931 Leopold published the *Report on a Game Survey of the North Central States*, the most comprehensive listing of wildlife

conditions in the United States, followed by *Game Management*, a handbook that is still highly regarded today. After these two accomplishments he gained the title "father of game management" and soon became the chairperson of the nation's first Department of Game Management (later to become Wildlife Management) at the University of Wisconsin.

In 1935 Leopold purchased "an abandoned, worn-out farm" along the Wisconsin River where he and Estella and their five children spent weekends restoring the land and contemplating ethics and the land. Leopold may most popularly be known for his collection of essays, *A Sand County Almanac*. Other conservation causes Leopold became involved with include: establishing the Wilderness Society; serving on various presidential committees concerning conservation; serving as advisor to the United Nations on conservation; and promoting the idea of managing animals in their habitat. As both a teacher and a parent, Aldo Leopold exemplified a life devoted toward understanding and loving the land. His ideas provided a basis for the growing field of ecology. He died April 21, 1948, while helping fight a grass fire on his neighbor's farm.

Jay Norwood Darling was born on October 21, 1876 in Norwood, Michigan. His parents, Marcellus and Clara, had recently moved there so Marcellus could begin work as a minister. In 1886 the family moved to Sioux City, Iowa. Darling began his college career at Yankton College in South Dakota in 1894, transferring to Beloit College in Wisconsin the following year. There he became art editor of the yearbook and began signing his work as a contraction of his last name, "D'ing," a nickname that stuck.

In 1900 Ding became a reporter for the *Sioux City Journal*. Following his marriage to Genevieve Pendleton in 1906, he began work with the *Des Moines Register and Leader*. In 1911 he moved to New York and worked with the *New York Globe* but returned to Des Moines in 1913. Three years later, in 1916, he returned to New York and accepted a position with the *New York Herald Tribune*. By 1919 Darling returned a final time to Des Moines where he continued his illustrious career as a cartoonist, twice receiving the Pulitzer Prize for cartoons.

His cartoons were carried from 1917-1949 by the New York Herald Tribune syndicate. Although Jay "Ding" Darling is most drew the design for the first Federal Duck Stamp. He was actively involved in many conservation causes, even serving as an officer in some. He was a member of the Iowa Fish and Game Commission, chief of the Bureau of Biological Survey under Franklin Roosevelt's administration, helped form and served as the first president of the National Wildlife Federation, helped

establish the Iowa State Teachers Conservation Camp, and developed the Cooperative Wildlife Research Unit at Iowa State College (now Iowa State University). Ding died February 12, 1962.

Althea Sherman [based on an excerpt from Sharon E. Wood, "Althea Sherman and the Birds of Prairie and Dooryard: A Scientist's Witness to Change," *The Palimpsest* 70 (Winter 1989): 164-185.]

Althea Sherman was born October 1853 in Farmersburg Township, Clayton County, Iowa, the fourth of Mark and Melissa Clark Sherman's six children. Mark and Melissa Clark Sherman had moved west to Wisconsin and then settled in Iowa after Mark, a tanner and shoemaker, was displaced from his occupation by the large factories which had sprung up on the east coast. The Sherman's were quite prosperous in Iowa. After buying land in Farmersburg Township in 1844 they purchased land on a Mexican War land warrant for seventy-nine cents an acre. By 1850 the property was valued at \$2500. In the next ten years, Mark Sherman's estate would quadruple in value and would require the assistance of three farmhands to farm the 267 acres. Mark Sherman retired from farming in 1866 and the family moved to a new home at the south end of Main Street in the nearby town of National, Iowa.

Ironically, Althea Sherman would later write regretfully of the prairie life that vanished under the pressures of agricultural development, although it was Mark Sherman's agricultural prosperity that lay the groundwork for her career in science by enabling Althea to obtain the best education available to a young woman of her generation. Later his estate would provide financial security for her old age and money to support her research.

Althea's education began in the common schools of Farmersburg Township. Unfortunately, high schools were rare in the 1860s and Althea and her older sisters Amelia and Ada traveled over forty miles to the academy at Upper Iowa University in Fayette to prepare for college. After the money and effort Mark and Melissa Sherman had invested in sending their daughters to Fayette, college was a natural next step. So in 1869 Althea, Amelia, and Ada enrolled in the oldest and best coeducational college of the time, Oberlin College in Ohio. There Amelia and Ada began preparing for careers in medicine and Althea devoted herself to the study of art.

At the time, Oberlin College maintained two separate degree tracks: a classical course and a less-rigorous literary course. Naturally it was assumed that only men would choose the classical course but a few highly motivated women, including Althea Sherman, chose to pursue this more challenging and prestigious course of study. Later, Sherman attributed her success as a scientist in part to the training in Latin and Greek she had received in Oberlin's classical course.

Althea Sherman graduated from Oberlin in 1875, taught school for a while, and returned in 1882 to seek a master's degree. For a few years she alternated between teaching and furthering her training as an artist. She taught at Carleton college in Northfield, Minnesota, studied with the Art Student's League in New York City, moved to Wichita to be near her sister, and eventually returned to National to help care for her ailing parents. Her father died in 1896, her mother in 1902. From then on, Althea remained in National, sharing the family home with her sister, Dr. Amelia Sherman.

Unfortunately, National did not provide many opportunities for Althea to excel in her profession—the study and teaching of art. In her search for activities to occupy her, Althea rediscovered the birds she had loved in girlhood and began to redefine her profession. In 1900 she referred to herself as a "teacher of art" but by 1910 she was listing her occupation as "bird study at home."

Although Althea Sherman got a late start in ornithology, her career spanned nearly three decades and included the publishing of more than seventy articles and notes on ornithology, animal behavior, and natural history. Her articles were found in some of the most prestigious scientific journals of the day—the American Ornithologists' Union's *Auk*, the National Audubon Society's *Bird Lore*, *Report of the Smithsonian Institution*, *Journal of Mammology*, and the *British Agricultural Magazine*. What Althea Sherman had lacked in scientific training she made up for through extensive self-education.

She subscribed to a variety of scientific journals and studied them carefully. She joined scientific organizations and corresponded with other researchers. She published her first article in 1905 at the age of 52 and just seven years later was elected to the rank of 'member' of the American Ornithologists' Union. Only 100 people were allowed to hold the rank and Althea was the fourth woman to receive this honor. The ultimate compliment to Althea Sherman's work was her inclusion in the third edition of *American Men of Science* in 1921, when she was nearly seventy.

In recent years her work has been dismissed as naive or unimportant, more description than interpretation. Unfortunately, most of the articles she published were produced in the first fifteen years of her work, when she was simply recording her observations. Then, just as she began to produce the kind of interpretations that make a real contribution to scientific knowledge, her body began to fail. She was unable to complete and publish many of her best studies.

Sherman's articles and her written journals give poignant observations of the changes that occurred during her ninety-year life. Using her keen powers of observation (enhanced by years of training as an artist) she meticulously documented the native plant and animal species that vanished with increased agricultural development, the new species that replaced them, and the changing weather patterns that affected not only crops but also the birds and animals that shared the land with farmers. Because much of her work was done in the years before widespread use of high-speed cameras, her drawings of some of the species she studied are all that remain of the flourishing wildlife of the time.

But Althea Sherman didn't just write about birds, she created new ways to study them. She designed an observation blind, a variety of nesting boxes, and a remarkable 28-foot tower containing a false chimney to facilitate her study of chimney swifts. All these she built on the property she shared with her sister.

For her favorite bird, the flicker, Sherman designed nesting boxes so she could monitor the incubation period of eggs, the feeding habits of parents, and the weights of eggs and nestlings, among other things and in the marshy ravine on the west edge of the property she erected a wooden blind to study rails, marsh wrens, screech owls, and sparrow hawks. This blind became the site of a nesting box that attracted two species of predators—first screech owls and then sparrow hawks, allowing Sherman to be the first person to publish first-hand observations of the nest lives of these species.

The best known of her laboratory" equipment was the tower she built in 1915 to aid her study of the chimney swifts. The tower was 9 feet square and 28 feet tall. Inside was an artificial chimney that ran down the middle of the tower to a depth of 14 feet. Platforms, stairs, and specially-designed windows gave views of the interior of the chimney, where the swifts nested. Sherman was especially pleased with her design for the windows. They were made of two panes of glass meeting in a wide 'v' shape that jutted into the chimney in such a way that she could put her head into the opening and look 'to the bottom or to the top of the chimney...without unduly frightening the birds.'

Sherman also was famous for her campaign against house-wren boxes. She even went so far as to call teachers who encouraged students to build them "criminal." The house wren is among the most territorial of all common birds. When a pair chooses a nesting site, they search out all other nests nearby and destroy the eggs. House wren populations can be devastating to chickadees, titmice, nuthatches, bluebirds, other wrens, vireos, and small songbirds.

The boxes protect house-wrens from their natural enemies, encouraging a disproportionate number of wrens to breed, rapidly displacing other species. Althea wrote angrily, "I am being wronged, defrauded, cheated out of my rights to the pursuit of happiness by the maintainers of wren boxes to the north of me."

Throughout the time that her occupation was "bird study at home" Althea and her sister purchased many of the surrounding houses as they became available, so that "the birds in an unmolested state tenanted the deserted homes of man." In her will she designated the National Cemetery Association her heir, or if they refused the conditions, the State of Iowa. The conditions were these:

"that the old Sherman homestead together with the 'mill-lot' be kept in a condition attractive to birds much as it has been during my lifetime. That the House Wren not be allowed to breed there, not the Screech Owl, nor other conditions allowed that will unfit it to be a bird sanctuary."

She also made provisions for the preservation of her note-books, drawings, and paintings by the state, and endowed a professorship at Oberlin College, "to be occupied by a Professor who shall each year give some special instruction in the study of birds."

Her notes and drawings were preserved and Oberlin received its endowment, but the bird sanctuary never materialized. Sherman's heirs refused her conditions, and the land was eventually sold off.

If you visit Althea Sherman's grave today, you will find only a single mound of birdfoot trefoil—a yellow-blossomed immigrant from Europe—breaking the smooth expanse of green. If you listen very carefully you may hear the whirring of insects and the rusty voice of a crow, high above in the evergreen grove nearby. Otherwise, the air is silent.

Procedure:

1. Display two or three of Ding Darling's cartoons on the overhead or as posters on the wall. Ask students to observe these and to try to describe their feelings upon seeing them. Allow students to write down or express aloud their interpretation of the intended message of each cartoon.
2. Distribute the Ding Darling cartoon "What that Mud in Our Rivers Add Up to Each Year." The editorial cartoon was done by Darling between 1946 and 1950 as part of a series of editorial comments on the rapid depletion of our agricultural lands. Today's numbers would read "200,000 160-acre farms are now moving down rivers." Ask students how the cartoon would make you feel if you were a farmer, politician, tree, wildlife, blade of grass, stalk of corn, sunlight, etc.
3. Read several quotes or a brief essay from Aldo Leopold's book, *A Sand County Almanac*. Ask students to react to his work through the following questions. What emotions were stirred in you as you read or heard these quotations? What message was the author intending for the reader?

4. Share some background about each of the three Iowa conservationists. Be sure to include the fact that they spent much of their early childhood outdoors exploring and learning about the world around them. What might they have seen? Also inform them of their Iowa connections and any other pertinent information you would like them to know. Stress the point that while these three were young, Iowa was still developing. More and more people came to Iowa to claim land and begin farming, the railroads were gaining strength and popularity and prairie wetlands were being transformed into farmland.

5. Discuss how the experiences of Darling and Leopold may have influenced their artistic expressions—the cartoons that we see and the words that we read. Have students consider how their own upbringing and experiences affects how they view the land, wildlife, and conservation in Iowa.

6. Display two or three of Althea Sherman's bird drawings from the *Palimpsest* article. Discuss how her childhood and background influenced her technique. Discuss the students' reactions to her drawings.

7. Read several passages from Althea Sherman's "Bird Journal." Ask students to react to her writing and observations through the following questions: What emotions were stirred in you as you read or heard those passages? What message was intended for the reader?

8. Discuss why Althea Sherman tried to build an observation tower in her hometown. Why wasn't she successful?

9. Compare and contrast the conservation ideals of all three Iowa conservationists. Ask students to imagine conversations between the three conservationists. Perhaps the students can write and perform skits or otherwise share their work with each other.

Assessment of Outcomes:

1. Class discussion and questions will allow assessment of understanding how experiences influence attitudes and behavior.
2. Use of several cartoons and quotes will allow students to get a flavor for the distinctive styles of both Leopold and Darling.
3. Check to see that the cartoons or essays written by students reflect an attitude toward or feeling about conservation.

Extensions and Adaptations:

Have students interview grandparents or parents to find out about their outdoor experiences while growing up. Have the students find out if the experiences of these older people influenced their attitudes toward our land and conservation. In what ways?

Ask students to pretend they are newspaper reporters who write articles about farm news. Write the story that would be printed along with one of Ding Darling's cartoons. Encourage students to draw a cartoon of something they care about.

Ask students to write to the Iowa Department of Natural Resources and ask for information about the Iowa Resource and Enhancement Program (REAP). Collect articles about the program and discuss what the program does and why it is controversial in Iowa.

Research to learn about the lives of other Iowans who made a significant impact on the conservation of our land and wildlife. Are there individuals in the students' own community who are working to conserve land today?

Resources:

Aldo Leopold. *A Sand County Almanac*. Oxford University Press, 1949.

Curt Meine. *Aldo Leopold: His Life and Work*. Madison: University of Wisconsin Press, 1988.

David L. Lendt. *Ding: The Life of Jay Norwood Darling*. Ames: Iowa State University Press, 1984.

Jay N. Darling. *Ding's Half Century*. Des Moines: Meredith Publishing Company, 1962.

Gary Laib. *Lessons in a Land Ethic: Teacher's Guide with Student Activities*. Leopold Education Project, 1991.

Marybeth Lorgbiecki. *Of Things Natural, Wild, and Free*. Minneapolis: Carolrhoda Books, Inc., 1993.

"Natural Resources." *The Goldfinch* 5 (February 1984): 6-7, 10-11.

"Iowa's Environment." *The Goldfinch* 15 (Summer 1994).

Sharon E. Wood Althea Sherman and the Birds of Prairie and Dooryard: A Scientist's Witness to Change." *The Palimpsest* 70 (Winter 1989): 164-185.
Prophet For All Seasons. Video.

Wisconsin Academy Review 34 (December 1987).

Stephanie Wald and Jim Pease. "4-H Ding Darling Soil, Water, Wildlife Project." Cooperative Extension Service, Iowa State University, 1983.

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



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.

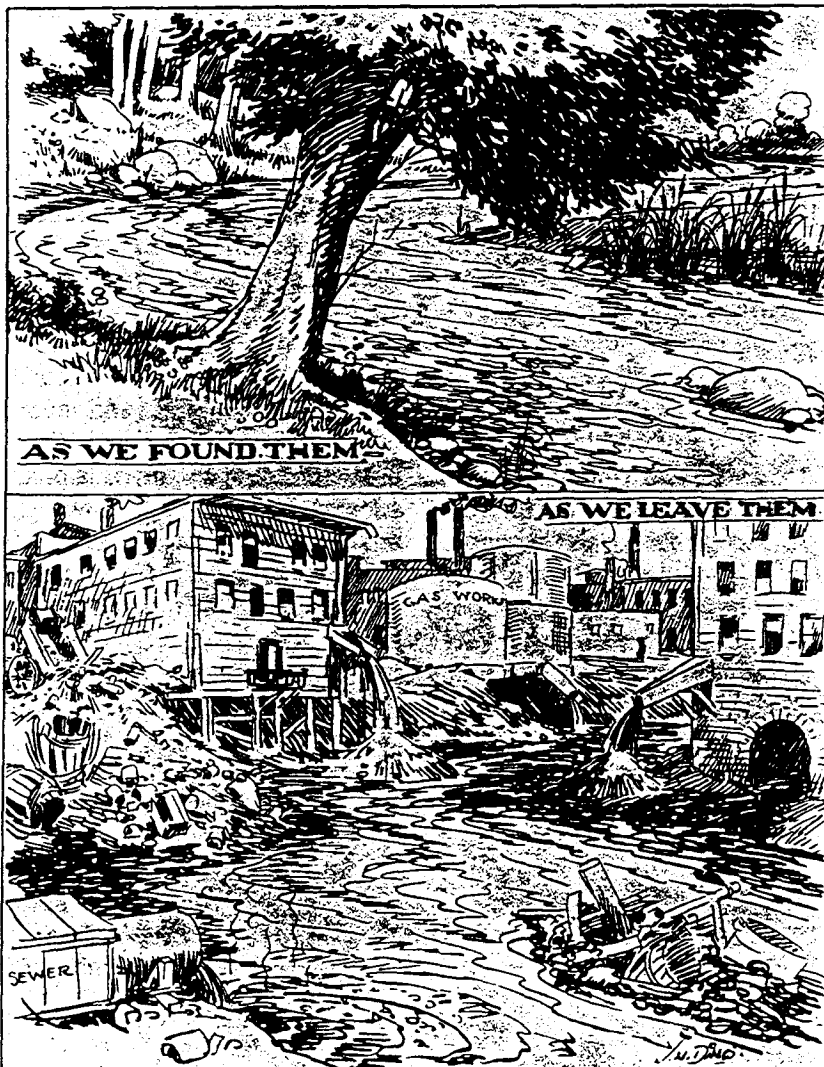
In the early 1890s fish in the Iowa River began to die. Sewage from a meat-packing plant and a starch manufacturer in the city of Marshalltown was causing the problem. When the Iowa River water level dropped, there was not enough water to dilute the waste, and the fish died.

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.

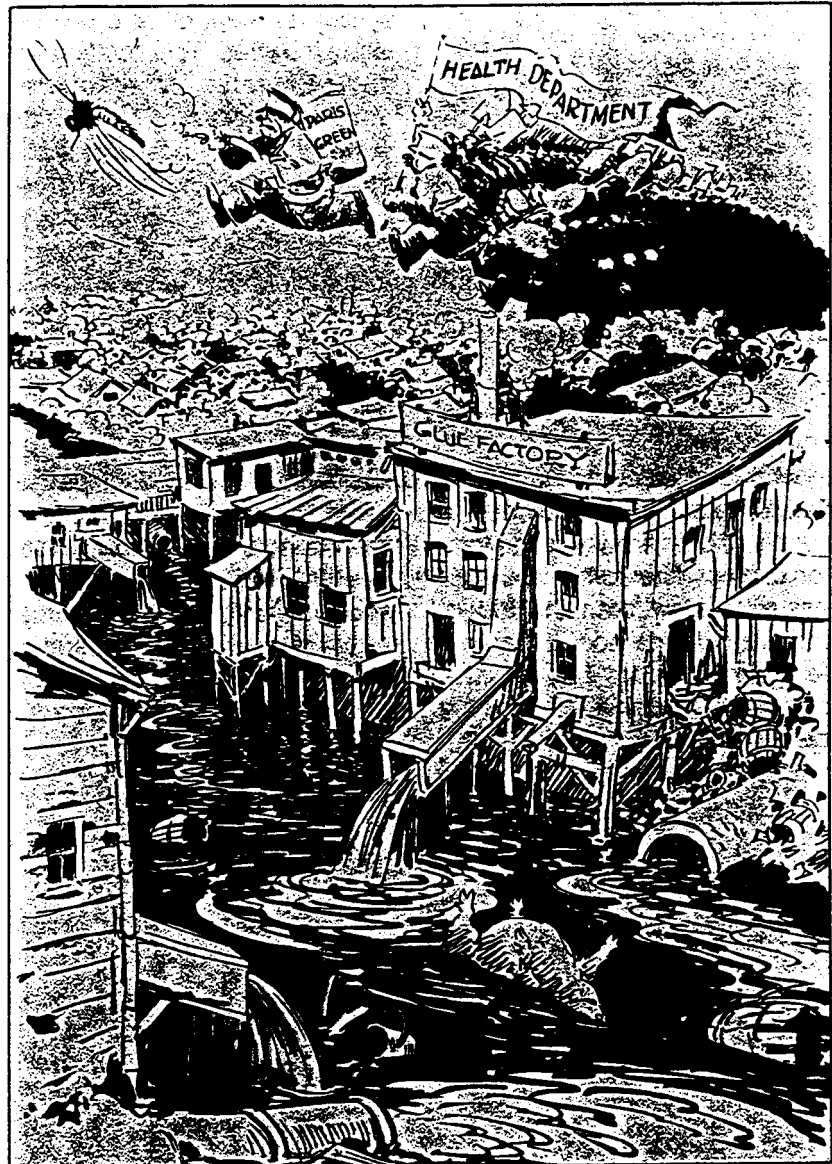
In addition to rivers and streams, **groundwater** sources can also be polluted by non-point sources. Chemicals move into groundwater as water seeps into the earth after a rain. Over three-fourths of Iowans rely on groundwater sources, as well as over half of Iowa's industries. Soil conservation practices 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