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Iowa Department of Natural Resources

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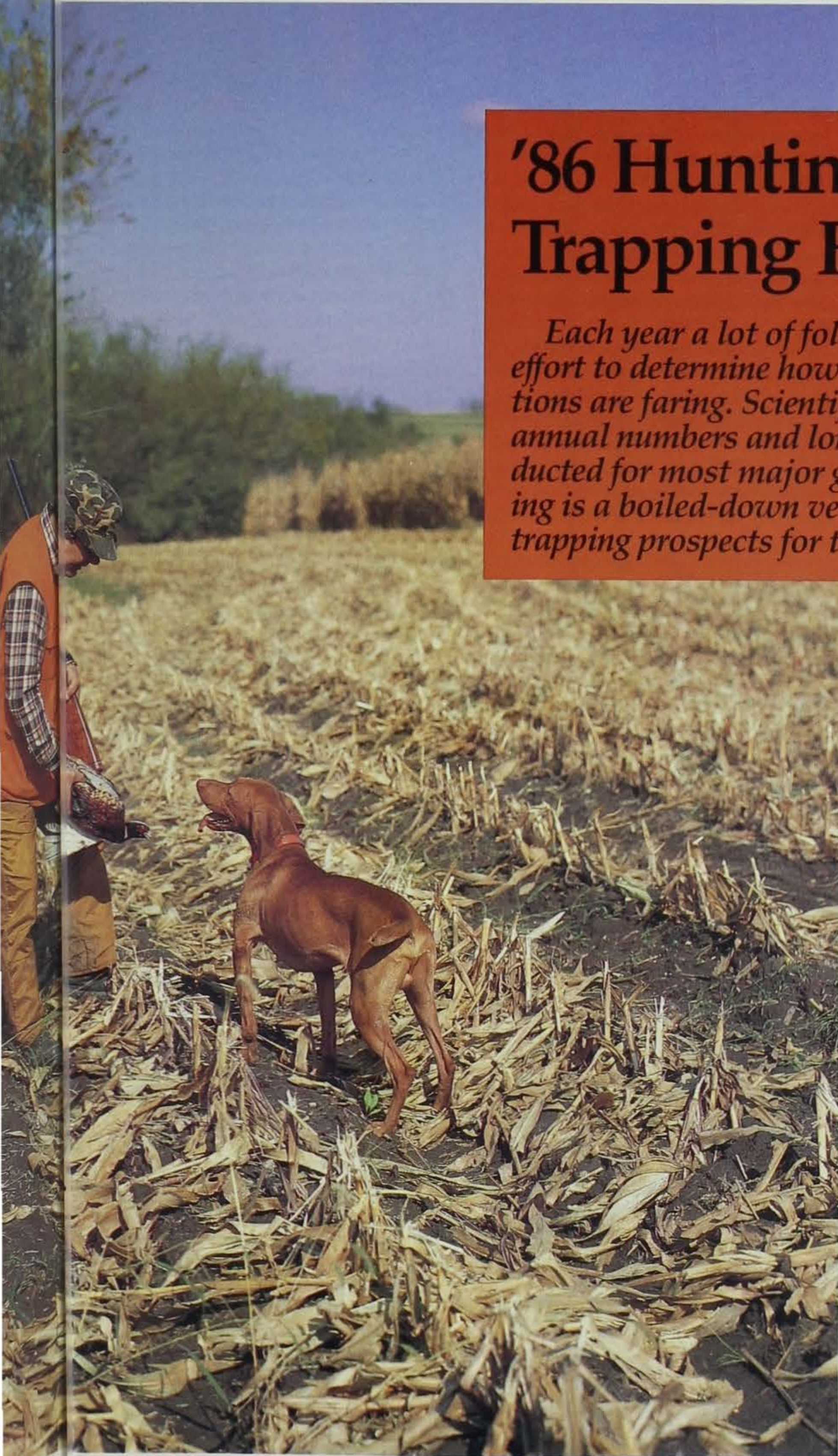
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Ron Johnson

'86 Hunting and Trapping Forecast

Each year a lot of folks put in a lot of time and effort to determine how well our game populations are faring. Scientific surveys to determine annual numbers and long-term trends are conducted for most major game species. The following is a boiled-down version of hunting and trapping prospects for this season.



Pheasants

When the smoke settles across Iowa Nov. 1, there will be vast differences of opinion about this year's pheasant population. Some opening-day hunters will have found scarce pickin's, while others, just a few farms away, will have enjoyed a shoot reminiscent of the good old days. Of course openings have always been that way to some degree, since the number of birds varies with the amount of cover from area to area. But this year, severe weather — heavy rains and hail — just after the nesting season played an important role in designing a pretty wild pheasant density map.

For years, wildlife biologists, conservation officers and others have driven 30-mile routes throughout the state each August. These roadside surveys are run early in the morning under the same conditions as the previous year. Game birds are observed and counted to compare numbers. It has proven to be an accurate method for estimating trends in populations of pheasants.

This year the surveys showed densities to be extremely variable, even within the same counties. Most of the rains were localized, explaining the up and down counts.

The rains killed a lot of young pheasants in some areas, and the results of the surveys show that statewide numbers are down 11 percent from last year, and still down some 20 percent from the 10-year average. Still, the areas that missed the downpours show very good numbers, providing, of course, the habitat is there. Also, the mild winter last year allowed for a good carryover of adult birds, and they were not



Jerry Leonard

affected by the rains. So, there will be a good number of roosters out there.

Quail

The prospects for quail hunting look even better. The quail populations in southern Iowa had rebounded to fair levels last season, following several rough winters. This year the counts are up nine percent statewide, and the better areas in south-central and southeast counties show populations comparable to the thirty-year average. And that includes some very fine quail years.

Quail nest in areas less prone to flooding than pheasants and therefore were less affected by the spring rains. Brood survival was apparently good, at least in the better range. The bottom line is southern Iowa hunters will enjoy some fine bobwhite hunting this year.

Gray Partridge

Gray partridge numbers remain about the same as last year and that constitutes a high count for that species. These birds are still considered a bonus species by most Iowans, but are being pursued on their own merits by a growing number of northwest and north-central Iowa hunters. One important change this year is that Huns can be taken statewide, rather than north of I-80 only.

Grouse

The Department of Natural Resources does little to monitor the populations of ruffed grouse, although considerable effort is spent in attempting to establish grouse in southern Iowa forests. Grouse numbers and hunting success may vary from year to year, but the quality of the hunt remains high for this special bird of the northeast woodlands.

Rabbits & Squirrels

Cottontail rabbit numbers are up again this year — about 33 percent. Squirrels are plentiful across the state and, like rabbits, are underharvested.

Deer

Deer populations are surveyed by monitoring traffic kills, by officers' winter estimates, by aerial surveys and by spring spotlight counts. Deer populations are managed by setting

hunting seasons to limit the herd by zones. The modified bucks-only seasons, with a limited number of any-sex licenses issued in each zone, have allowed for a steadily increasing deer herd statewide. Last year, hunters harvested a record 43,000 white tails. Because the number of any-sex licenses will again be increased, another record harvest will likely occur. The goal is to stabilize the statewide population while providing the maximum amount of quality hunting recreation possible.

Furbearers

Raccoons are a bright spot in the furbearer picture. A quarter million 'coons are harvested most years, and this year should be no exception. Coyote and fox populations are at the same levels as last year and seem to remain stable. Muskrats are still at the low end of their cycle, but should provide plenty of fur. Mink harvest generally occurs incidental to muskrat trapping and should be the same as last year. Beaver are still riding high as pelt prices remain relatively low. The pelt markets in general are expected to be about the same as 1985.

Waterfowl

Better water conditions in Canada and the U.S. have allowed for an improved fall flight of ducks this year. The total counts are up 14 percent, with the mallard showing an important increase of 36 percent.

The fall-flight forecast for total ducks is improved, but is still the second lowest on record. For these reasons the Fish and Wildlife Service recommended, and the Mississippi Flyway Council agreed to restrictive regulations similar to last year.

Goose hunters won't notice a projected slight decrease in both Canada and snow goose numbers. Like all waterfowling, weather, water conditions and migration patterns will play the key roles in determining the quality of hunting.

Overall, the hunting and trapping picture looks better than last year, with most species on the upswing. With a little cooperation from the weatherman, some pre-season preparation and a fair piece of luck, this could be a good one.



Ken Formanek

New Marshes Bring New Life

By Jerry Johnson

A hundred years ago, the migration of waterfowl down the Mississippi flyway darkened the skies of eastern Iowa. Millions of ducks, geese, shorebirds and wading birds flocked into river backwaters and into the many marshes and bogs of the plains states. It was the "golden age" for North America's waterfowl, and for the men who hunted them.

Each fall, dozens of species of waterbirds passed through northeast Iowa on the annual migration to wintering grounds in southern states. Survivors of those winter months passed back through this area on the spring migration to nesting grounds in the wetlands of Canada. Many of those species nested right here in northeast Iowa, raising broods on local wetlands.

The remaining marshes, backwaters and potholes of the prairies are only a trace of the vast wetland tracts. Many of those remaining wetlands are state or federally owned wildlife areas. On many of these areas, improvements are being made to provide more nesting habitat for waterfowl, shorebirds and wading birds.

The Iowa Department of Natural Resources, with some help from the U. S. Soil Conservation Service, has constructed two such low-water marsh areas at Cardinal Marsh, a 1,165-acre wildlife area located two miles southeast of Cresco. The marshes were built on land purchased three years ago with money obtained from habitat stamp revenues.

Jim Ripple, wildlife biologist in Decorah, directed the Cardinal Marsh project. Ripple says the new wetland will provide suitable habitat for a number of waterfowl species.

"There are two new dams," Ripple explained. "One is about 760 feet in length and the other is about 595 feet in length." Each dam is about four feet high and 10 feet in width.

Cardinal Marsh already has two similar shallow water impoundments. The new dams will create

additional marsh areas, one about 8.7 acres and the other about 7.5 acres in size.

"Both are shallow water impoundments. Maximum water depth is about 2.5 feet," Ripple said. "In all, there are about 100 acres of shallow water at Cardinal Marsh."

Stately wading birds such as the blue heron and the common egret are often seen on the marsh areas. Shorebirds also abound including plovers, killdeer, dowitchers, sandpipers, snipe, rails and coots.

"The low water impoundments provide good habitat for ducks," Rip-

ple said. "Moist soil plants they need for food grow there, and the grass around the impoundments is good nesting cover. Mallards and blue-wing teal both nest there."

The marsh also attracts many other species of ducks, both during migration times and as a nesting site. Muskrats and many other species also use the shallow water areas.

Jerry Johnson is news editor for Decorah Newspapers, Inc. An avid upland hunter and bird dog trainer, he also has great interest in marsh life and waterfowl hunting.

Subimpoundments at Cardinal Marsh provide shallow water for mallards and other species.



The State Park User Fee

It's Working

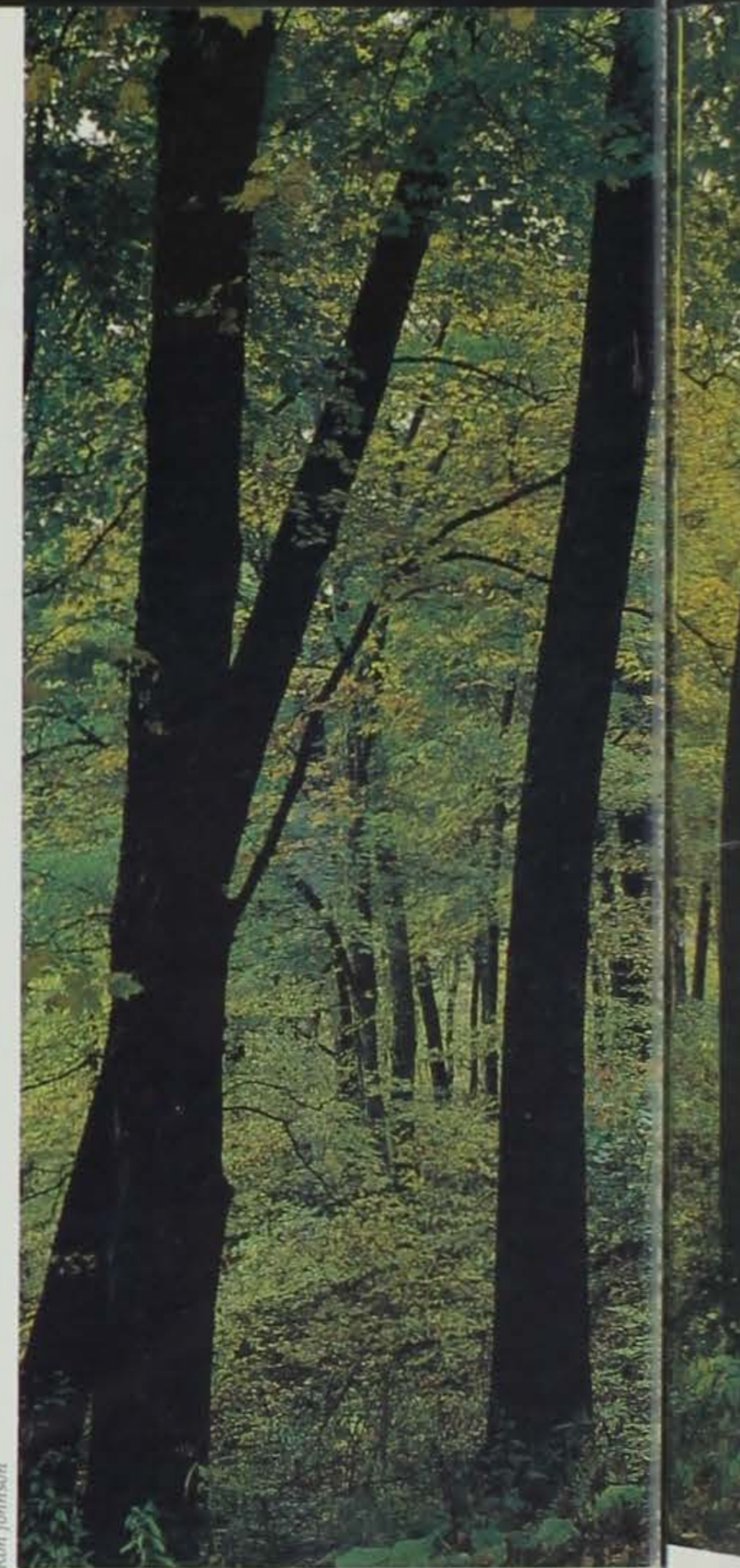
By Jim Scheffler

Iowa's state park system was born in 1919 with the dedication of Backbone State Park near Strawberry Point. In the decades that followed, many more state parks and recreation areas were established throughout Iowa. During the depression of the 1930's, a tremendous amount of construction was done in state parks by the Civilian Conservation Corps (CCC) and the Works Progress Administration (WPA). Their handiwork in the form of beautiful stone and timber lodges, cabins, beach buildings, bridges and trails continues to spell "state park" to many visitors.

As the state park system increased in size, more and more personnel were needed to manage the areas in a quality manner. Likewise, increased amounts of funding were required for the state park program to acquire and develop additional areas and, more importantly, to maintain existing sites. As facilities aged, renovation became necessary. For many years, the necessary funding for such work lagged behind actual needs. The situation began to be critical in the mid to late 70's. By that time, many state park facilities were nearing the half-century mark. Buildings needed repair, and sewer and water systems needed renovation. At the same time, the state's developing economic troubles resulted in a real tightening of park budgets.

The state park program is primarily funded by the Iowa legislature. Revenues from such sources as camping fees and lodge and cabin rental provide only about 15 percent of the total operational budget. (No money for parks are derived from the sale of hunting and fishing licenses.) During the 1980's, severe cuts began to be made in the state park budget. This meant that many badly needed repairs and replacement efforts had to be postponed, indefinitely.

It was apparent to the Iowa Conservation Commission, now the Department of Natural Resources, that a supplemental funding system



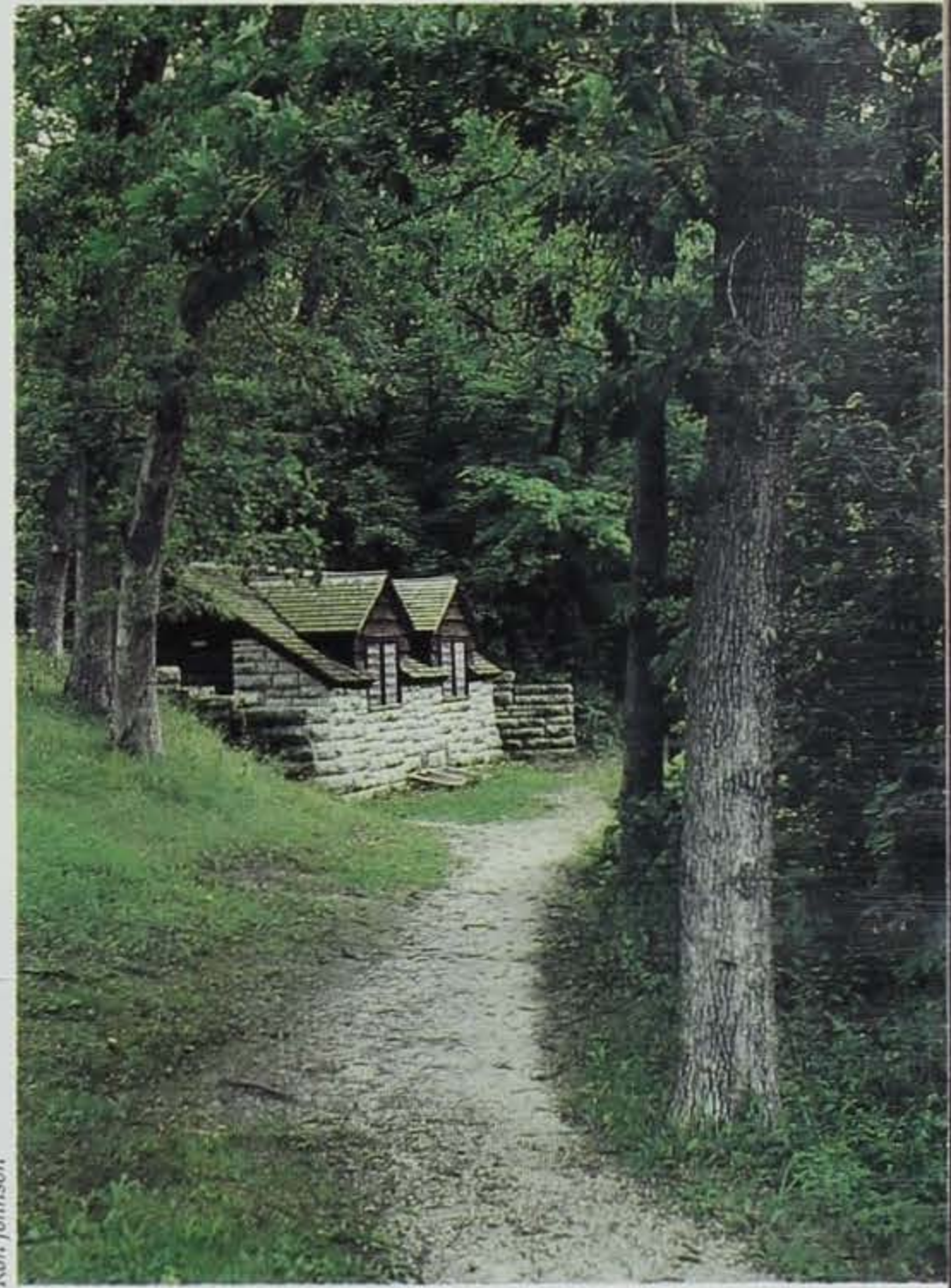
Ron Johnson

was needed for state park facility renovation and replacement efforts. Accordingly, in 1983, the commission began efforts to formulate a state park user fee system. Already, 37 other states had visitor fee systems. The philosophy behind Iowa's user fee proposal was that park visitors should pay an additional, direct amount for use of the parks and recreation areas which they enjoy. Although all Iowa taxpayers do contribute through their state taxes, the funding derived in this manner has simply not been adequate to do all that is needed to keep our state parks high quality areas to visit. In this manner, the user permit is somewhat like the habitat stamp which hunters are required to purchase in addition to their hunting license, or the duck stamps and trout stamps required to take certain types of game and fish.

Efforts to pass the user permit program were introduced in the legisla-



Natural features of many scenic parks such as Backbone are enhanced by Civilian Conservation Corps (CCC) facilities, now in need of repair.



Ron Johnson

ture in 1983 and 1984 with no success. Finally, in 1985, the Iowa legislature passed and Governor Branstad signed into law the Iowa state park user permit program which became effective January 1, 1986. Now, state park visitors must display either annual or daily park permits on their windshields when parked in state parks and recreation areas. The daily user permit costs \$2 and is really a two-day permit, valid for the day of purchase and until 10:30 p.m. the following day. The \$10 annual permit enables the visitor to park his or her vehicle in all state parks and recreation areas during the calendar year. In addition, the user permit law provided for the issuance of free permits to Iowans 65 and older, and individuals on Medicaid or receiving food stamps. These free permits are available through county recorder offices. Handicapped individuals with Department of Trans-

portation handicapped license plates or rearview mirror tags are exempt from the user permit requirement.

The user permit has been a revolutionary step in many ways. For years, the Iowa public has been used to the concept of "free" state parks and recreation areas. Now, persons must pay an additional fee to enjoy these areas.

How is the system working?

Before the program went into effect, parks personnel projected that around \$800,000 would be raised in 1986. By the time that this article was prepared, nearly \$1,000,000 had been raised through permit sales. Although a number of complaints were registered by the public, as often occurs with most new programs or regulations, the overwhelming response has been positive. State park visitors have been very supportive, once they understand the purpose of the pro-

gram. All monies raised go into a state park trust fund earmarked for the repair and replacement of existing state park facilities. None of the money goes into the acquisition and development of new parks and recreation areas or for operational expenses such as utilities and salaries.

Park visitors have had to become acquainted with the user permit program and with the way in which it is administered. State parks personnel have also been faced with a challenge. Signs had to be designed and placed in the most effective locations, special depositories for the "self-service" daily permits had to be designed and made, and handling and issuing problems ironed out. As a policy matter, very few citations were issued until after the Fourth of July weekend in 1986 to park visitors failing to display user permits. This was done to help acquaint the public

with the program and its procedures. Literally thousands of verbal and written warnings were given to visitors. Since the Fourth of July, it has been necessary to issue a number of citations to individuals in violation of the user permit program. The law passed by the legislature specifies that a violation is satisfied if the individual purchases an annual park user permit and submits the proof of purchase within 20 days of the citation date. If this is not done, the person may choose to pay a \$20 civil penalty to the Department of Natural Resources within that same 20-day period. If neither of these steps are taken, he or she will be summoned to district court.

User permit monies are already at work in several projects now underway. Modern vault restrooms have been completed at Stone and Lake Macbride State Parks. These replaced badly deteriorated toilet facilities. In addition, campground shower build-

ings are under construction at McIntosh Woods and Rock Creek State Parks; three Civilian Conservation Corps restrooms are being renovated at Backbone State Park; and work will soon commence at Lewis and Clark where a replacement beach building will be constructed. These projects are important. However, there is a large backlog of remaining projects which will be funded in future years through the park user permit program. These include a large number of shower buildings and restrooms which are extremely important for visitor health and enjoyment. User permit monies will also be used for the badly needed renovation of trails, the replacement of utility systems, and the reconstruction of beach facilities.

The year 1986 has been one of adjustment for both the visiting public and for parks personnel. The user permit program is a new one and there have been some rough edges.

Efforts are being made to make the program run smoother in 1987 for the park visitor. In this, park visitors have been quite helpful through comments on ways in which the system can be improved.

The park user permit represents the best hope for overhauling the Iowa state park and recreation area system. This will take time, for a great deal of work needs to be done. Nevertheless, the Department of Natural Resources is confident that, with continued public support, Iowa's state parks and recreation areas will truly enter a new era of public use and enjoyment.

Jim Scheffler is an associate superintendent of state parks. He holds M.S. degrees in parks and recreation administration and forestry from the University of Missouri. He has been in the parks and recreation field since 1978.

Park user fees contribute to the development of new facilities like this one at Stone State Park.



Ron Johnson

WHEN STONE PARK HAD A ZOO

By Dale Brumm

One of the attractions in Sioux City in 1918 was the zoo at Stone Park. Its 801 acres (then as now) required much maintenance. The Cletrac tractor shown (valued at \$1,450) was the expensive item. The park was valued at \$57,600 and improvements were listed as \$57,187, making a total of \$114,787.

Until financial conditions caused its closing in 1940, the zoo was very popular. Its annual operating budget was \$3,500 and was broken down as follows:

\$1,250 for salaries (Stone Park's monthly salaries are now \$2,430), \$91 for supplies, \$1,332 for feed, \$793 for



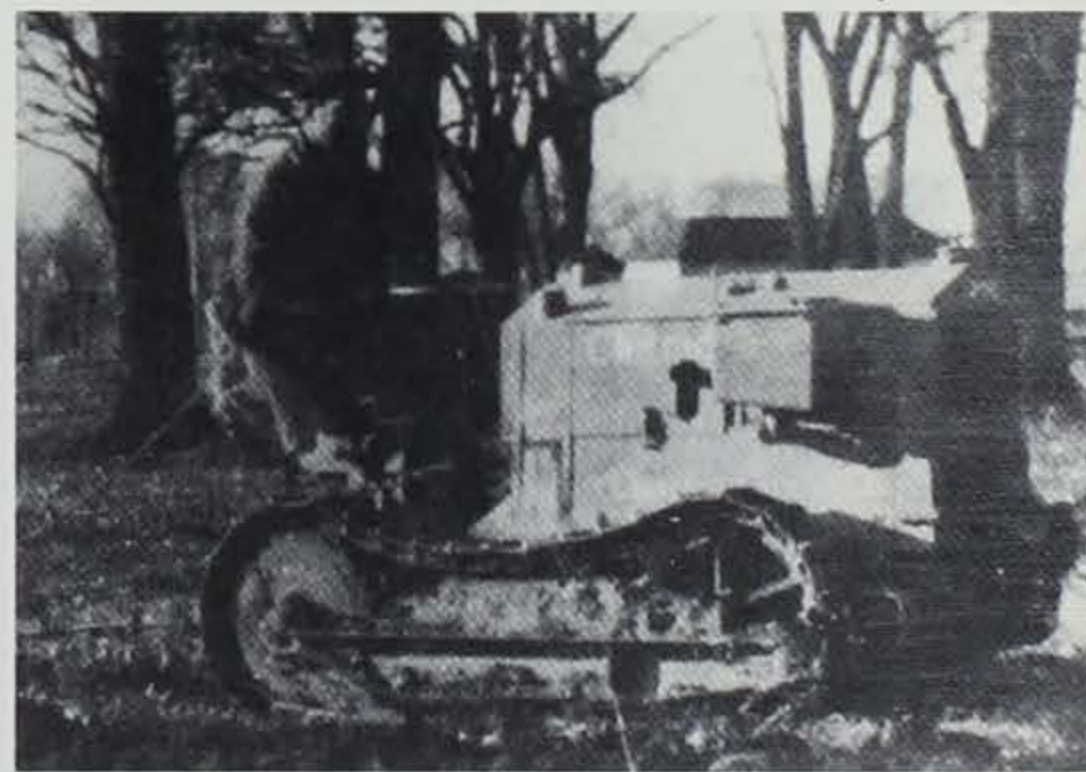
new animals, \$23 for medicine, and \$9 for paint.

From a city inventory provided by LorRayne Livermore, we find the total value on the birds and animals in the zoo was \$3,676. The white-tailed deer was valued at \$50; and in comparison, civil damages for illegally killing a deer in 1986 are \$750. A turkey was listed at \$3, and the damages for them are now \$200. There were 38 species listed including eagles, alligators, timber wolves, elk, buffalo and pheasants.

The equipment had a value of \$10,453, while in 1984 this was \$36,000 with many items less than \$50 not included. Other equipment included a Waterloo Boy tractor, a road grader, and seven work horses.

Park improvements during 1918 included lighting, culverts, zoo, bridges, fountains, water mains, grading and general improvements.

Since 1918, Stone Park has changed considerably. By a city proclamation, it became Stone State Park on July 25, 1935; and soon after, a Civilian Conservation Corps camp was established to make many improvements. These included many buildings, water and sewage systems, roads, picnic areas, and an extensive trail system. The Boy Scouts and Girl Scouts sold the state their holdings. Camping was added to the activities available, and recently a nature center and auditorium were developed.



The picture showing Mr. Ricketts feeding the badger was one of many sights at the zoo. He was such a prominent figure in the park's history that a picnic area in the park is named for him. His great granddaughter, Ruth Keairns, shared this picture with us.

Mrs. Ada Wright also provided pictures. Her uncle is the operator of the tractor, and he worked for the city for 50 years.

Additional information can be gained from Newell Guernsey's History of Stone Park.

Dale Brumm is the park ranger at Stone State Park. He has spent 23 years in parks, the last 20 have been at Stone.

HUNTER'S HIDDEN TROPHIES

By Gene Stephens

C. L. Kilgore shares his beautiful red and white oak timber with his friends. The adjoining neighbors, too, give hunters who ask permission, then show respect for the land, fences and livestock, the privilege of enjoying their wildlife areas.

Last week, I spent several hours in the timber, selecting and working on a deer stand, choosing a spot on a ridge perhaps one hundred yards from a huge creek bank maple. I reflected that the farmer and I, lifelong friends and neighbors, had climbed that tree over sixty years ago to capture a raccoon.

Since then, my knees show some wear, and my eyes stay on dimmer switch, so I was cutting several shooting lanes, well back-grounded, out from a big, rotting blown-over

white elm. For years I've hunted this way — always imploring my hunting partners to "send me a slow one!"

Across Iowa, many alarm clocks rang early the first Saturday in December, signaling a new deer hunting season.

Enjoyment of the outdoors and hunting often seems to run in families. Brother Richard has old letters which tell of great-grandfather Samuel Stephen's trip to California in the 1840's. He would often accompany the wagon train hunter ahead of the party, then intercept them with fresh meat. When the train hunter failed to return one evening, Samuel was among the group that volunteered to search for him the next morning. Some distance out, in rocky terrain, they were charged by a grizzly, and found the victim's body there.

My father, Dewey Stephens, recounted to us the stories his father, Lytle, had told him of the "last" deer and the "last" wild turkey taken in this area.

Dad was well known here and in surrounding counties as a wolf hunter. How his sons treasure the memory of the times we spent with him! Snow always meant wolf hunting. As a tracker and stalker, I have never seen his equal.

His qualities were most evident when hunting. Perception — when was the track made? Where was the wolf headed? Alertness — although there was some pattern to their behavior, anything might happen. A steady hand in a shooting situation that might offer only seconds. And stubborn perseverance — although Dad took over one hundred wolves, there were many, many times darkness would blot out the track, force him to quit miles and miles from home, afoot.

Dad was caught in the swirling funnel of the great depression. He hung on to the family farm — for years, his indebtedness was more than twice the farm's value. He encouraged his sons and helped each start a farm home of his own. He lived to pay his mortgage off. In memory, he rates high among my heroes.

Many of those qualities I so admired in him — courage, optimism, energy and honesty, I would

like to believe were nurtured by his intense love of and respect for nature.

Hunters have such a wonderful opportunity to be intimate with the outdoors. They get a feel for its consistency and its variations, its renewals and disappearances, its beauty and ugliness, its absolute honesty.

My own prejudices make me ill-equipped to enjoy the company of anti-hunters (those who would deny others the privilege of hunting). And maturity has taught me never to waste energy in argument when there is little chance my ideas will be considered.

But many nonhunters I count among my best friends. If one might tactfully ask me how on earth I can possibly take the life of a wild animal, I might answer that I would rather try to defend his position than my own. Some vital ideas and values are so intangible, so difficult to express.

Sons Dave and Jim left their busy schedules and their own families Saturday morning — a ritual of over thirty years. We bantered as they prepared bacon, eggs and toast for a 5 a.m. breakfast, then cleaned our dishes. Putting our coffee and a bag of sandwiches (their mother had made them the night before — an integral phase of the ritual) with our other paraphernalia in the station wagon, we were on our way.

We've each had a number of nice deer, but the past few years have not smiled on us. I knew our resolve not to take one unless it rated top notch was wearing a little thin, but was surprised when one of the sons, adding to the plans for the day, said, "We could use some meat. I have an any-sex license, if you want to, later, help me fill it."

Well before daylight, Dave and Jim, carrying their guns and mine, the food and the coffee, helped me down the trail to my log. They promised to come by and wake me up occasionally (I had heard their plans, and knew they would do their best to send me game.) I stuck a few little live oak limbs up close by, covered the tote bags with leaves, and sat down to begin a long watch.

Dawn finally reached down through the oaks. The birds began calling to one another, joined later by squirrels. Not alarmed - just visiting.

Dave and Jim reported in after a couple of hours, sending a bounding doe through my arena. Dave had seen four, including a buck that outmaneuvered him. A big doe had almost run into Jim. She turned, ran around a wide thorn bush, stopped and looked him over, and hurried on.

After coffee, they took off again, each in a different direction, into new territory.

Time seems to stand still on such days. A hawk screamed occasionally. A chipmunk looked me over from six feet away, and retreated nervously to his woodpile. Jim came up quietly behind me, we split a big ham sandwich and were sharing it with our coffee.

"Shh — deer coming," Jim whispered. He froze, his cup at his lips. "Any horns?" I whispered back. "Can't tell — but they'll go down the creek bank in a minute — we can get our guns up then."

I lifted my gun when he did, and watched them through the scope as they came up out of the creek, directly toward us, two nice does. They spied our motionless silhouettes and stopped abruptly, head on, perhaps thirty yards away.

My cross hairs settled on the larger doe's white neck.

Jim whispered, "Can you see all right, Dad? Go ahead."

Pause.

"You shoot, coward," I whispered back.

Pause.

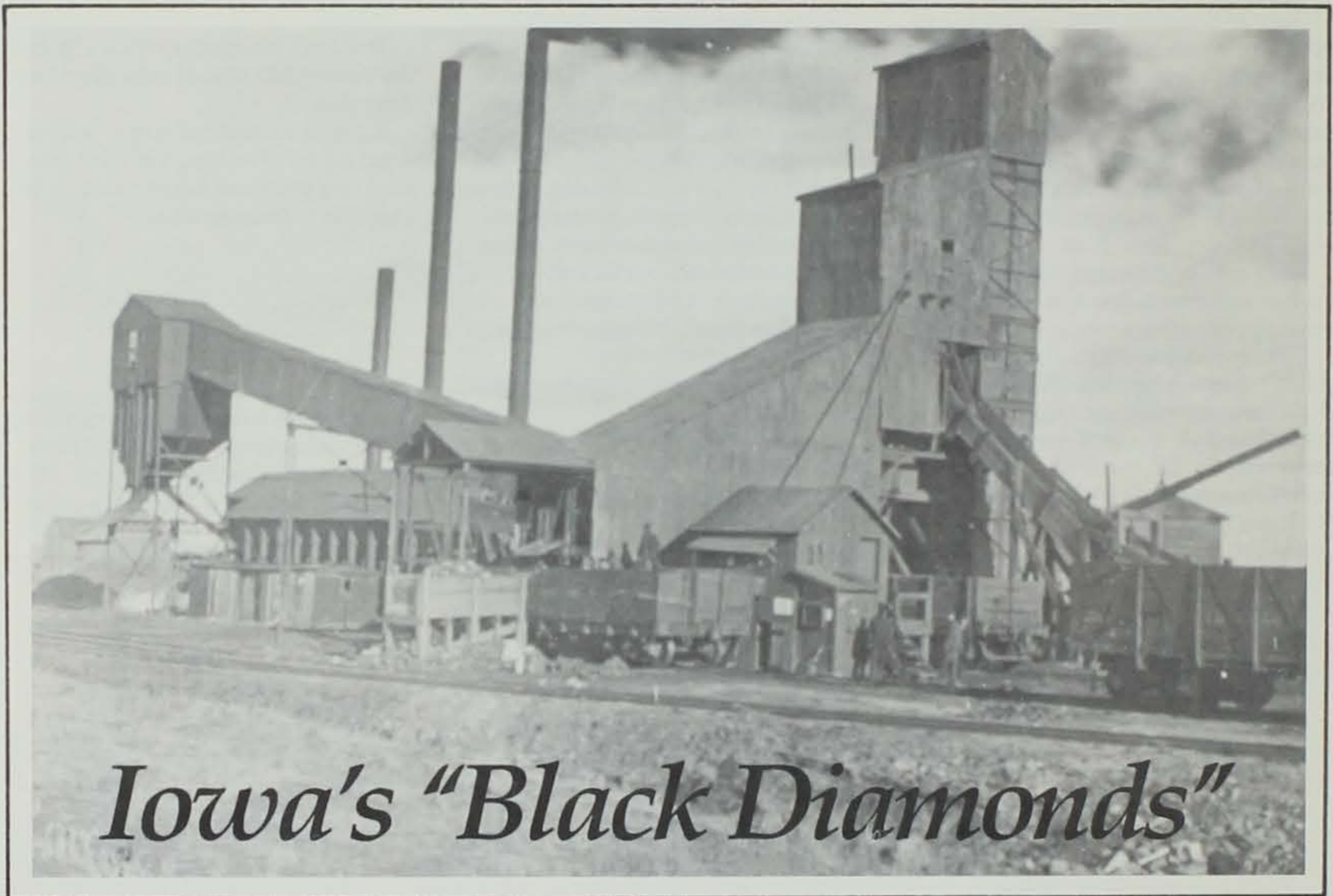
The does wheeled, quickly climbed the nearby hill, tossed their flags, and disappeared.

Jim took a couple of steps, put his hand on my shoulder. We were grinning — a priceless, silent moment of eloquent communication.

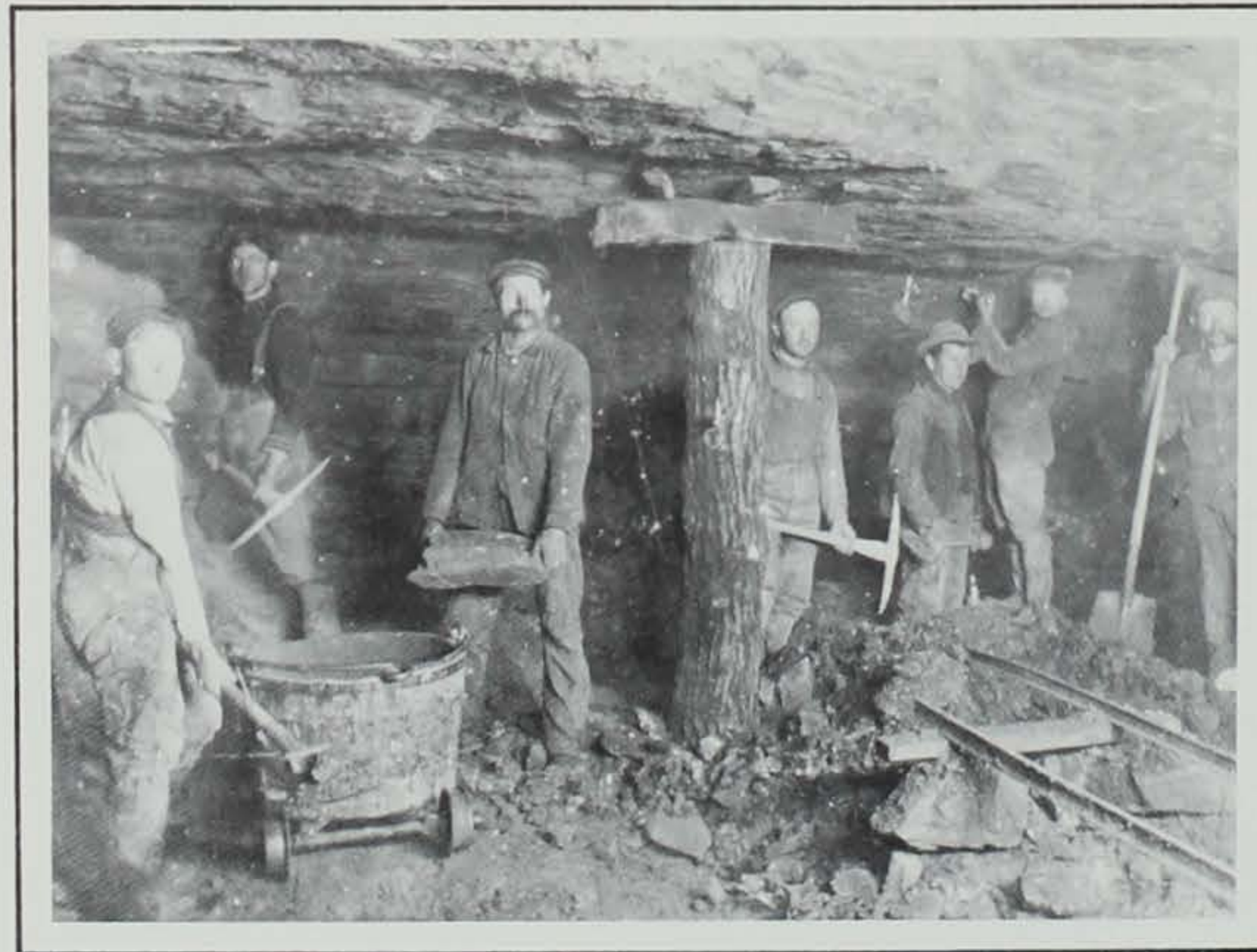
Gene Stephens is an active conservationist and recently retired member of the Washington County Conservation Board. He is a long-time resident of the county and an avid sportsman.



Illustration by Betty Petersen



Iowa's "Black Diamonds"



Buxton mining operation and miners. Photos courtesy of State Historical Society of Iowa.

By Tami Pavlicek

On a cool day in March 1899, Iowa coal miners received word that their hard-fought battle had finally taken a turn in their favor. The United Mine Workers of America (UMWA) had earned their members the right to an eight-hour work day.

It was to be the first step taken by the union in the matter of improving the working and living conditions of its members.

By 1920, most improvements wanted by the UMWA had been achieved. But by 1930, the bottom had fallen out of Iowa's coal mining industry. What had taken 20,000 miners nearly a century to accomplish saw less than a decade of success.

The coal mining era in Iowa began in 1835 in southeastern Iowa. While traveling the Mississippi River between Dubuque and St. Louis, a United States Geological Survey team reported coal deposits on both sides of the river.

Shortly thereafter, "dog hole" mines began dotting the Iowa land-

scape. These small, family-operated mines were usually worked for home consumption. The "dog holes" can still be found in various sections of Iowa today.

The earliest recorded figure of commercial coal production in Iowa was 400 tons mined in 1840. During this time coal was hauled to various locations in the state by wagon since the railroad had yet to reach Iowa.

During the 1840's operators opened several small mines in eastern and southern Iowa. Still, the majority of these early mines were used for home consumption and for maintaining local industries such as blacksmithing and pottery making. The first major development of coal mining in Iowa took place in Des Moines. Wesley Redhead, who immigrated from England in 1829, arrived at Fort Des Moines in the winter of 1851 to work as a tailor and salesman in a clothing store. By 1864, his attention was focused on developing coal mines in the Des Moines area.

Along with several associates, Redhead founded the Des Moines Coal Company and opened up a slope north of town which was worked until its coal was exhausted. While working this mine, Redhead installed a set of Fairbank's scales, which used the ton as the unit of measure instead of the bushel.

The Des Moines Coal Company later began drilling at a spot near the seventh street bridge south of the Raccoon River. It wasn't until June 1873 did they finally reach a vein of coal. They named the mine the "Black Diamond," which was later renamed the "Pioneer." By 1876 it employed 150 men and produced 200 tons per day, making it one of the most important mines in the area.

Operators opened other mines in the Des Moines area, soon making Polk County one of the largest coal-producing counties in the state. Much of the area east of the Statehouse grounds, now a residential area, lies above these historical catacombs.

It wasn't until Iowa's railroads finished laying tracks across the state in the late 1860's that Iowa operators enjoyed a constant demand for coal. Iowa's mines represented the last territory where railroads could obtain

an adequate coal supply before they continued their long journey to the West.

The majority of the railroad building across Iowa took place in the five-year period following the Civil War. From 1861 until 1865 all railroad construction had come to a halt; then after the war, it frantically resumed. During the closing days of the war, President Abraham Lincoln designated Council Bluffs as the eastern terminus for the transcontinental Union Pacific Railroad. In 1867 the Chicago and North Western Railroad completed its line to Council Bluffs, and the Rock Island and Burlington railroads followed two years later. In 1870 the Illinois Central reached Sioux City.

After 1870, as railroad companies continued to expand throughout Iowa, the coal industry grew at a corresponding rate. Between 1870 and 1925 it became increasingly apparent to coal officials that the success of Iowa's coal mining industry was dependent upon the expansion of the railroads. From 1874 until 1900, Iowa was producing more coal than any other state in the nation.

In 1880, a mine inspector's office was established. These inspectors visited mines across the state, recording and checking on the various mining procedures being used.

The industry reached its peak in 1917 when the demands of World War I provided Iowa's coal miners with full employment. That year the mining companies in Iowa had over 18,000 employees and mined nine million tons of coal. Coal mining was Iowa's second leading industry, with only agriculture ranking higher.

Iowa's coal mines drew a number of immigrants from Europe to the state in the early 1900's. Coal camps in south-central Iowa were largely employed with immigrants from France, Germany, Belgium, and Yugoslavia. Because of little work available in Europe at that time, the immigrants were easily drawn to the opportunities that existed in the Iowa coal fields.

While the coal mining industry continued to prosper throughout the late nineteenth and early twentieth centuries, one aspect of their success was being greatly overlooked — the welfare and interests of their employ-

ees. The UMWA was formally organized in 1890 after nearly a 30-year effort by miners to organize nationally.

Besides the eight-hour work day, another major concern of the union was the rate of pay. Miners' wages in the mid-1800's were three to five cents per bushel (80 pounds). The average miner earned about \$450 annually as compared to the average earnings per year for nonminers of \$600.

The safety of the coal miners was a major concern as mining accidents continued to be commonplace. From 1880 to 1985 a total of 1,447 miners had been killed in mining accidents. Falling slate was the major cause of individual accidents and death, as major mining disasters increased in frequency.

Iowa's worst mining tragedy occurred on January 24, 1902, at mine number two of the Lost Creek Fuel Company in Mahaska County. Twenty miners were killed and 14 more were injured by an explosion caused by improper blasting. Shortly after the accident the state legislature took steps to enact proper safety measures regarding the use of explosives for mining. By the year's end, 55 miners had lost their lives in Iowa coal mines, the worst year in history for mining deaths.

Until the coal miners were successful in gaining the eight-hour work day, most miners put in long hours, usually reporting to work before sunrise and returning home after sunset.

Although most families lived in incorporated communities, the mines were usually located several miles outside of town. The mode of transportation for most miners was by foot. Even after automobiles became common, many miners continued to walk for economical reasons.

The use of mules and ponies was vital to the mining operations. Generally, operators used mules in larger mines and ponies in the smaller mines. The animals were used primarily to pull the filled coal cars in the mine to an electric motorcar which transported the cars to and from the surface. Before electricity was installed, the mules pulled the loaded cars the entire distance to the shaft bottom where workers placed the cars on a "cage," which trans-

ported the cars to the top of the mine. On the return trip, the driver brought the empty cars back from the shaft.

Most miners preferred the use of mules over ponies. Mules were regarded as more intelligent and appeared more eager to work.

To expedite the mining operations, larger companies stabled mules underground for long periods of time. In seasonal mines, employees took mules down in September and brought them out the following April. In mines that operated year round, companies kept mules underground for many years at a time. Once underground, employees kept mules in dugout stables adjacent to the working area.

Most Iowa miners and their families resided in coal camps. Located primarily in central and southern Iowa, these short-lived communities were somber and dreary in their outward appearance. The average life of an Iowa coal camp in the early 1900's was eight years.

Most mining settlements were company towns, meaning the mining companies built the houses, schools, community halls, and most of the stores. Due to the uncertainty of the coal supply, the mining camps were not regarded as permanent settlements, and the buildings were constructed accordingly, usually without foundations, and were poorly finished both inside and out. Most camps did not have electricity, water works, or sewage systems.

One of the controversies surrounding the coal camps was the company store. Operated by the mining company, these stores offered the miners everything they needed, but often at inflated prices for inferior goods. Many companies expected their employees to do business with their stores, often threatening them with their jobs if they traded elsewhere. Many miners found themselves in debt, leading to the familiar phrase, "owe my soul to the company store."

The educational opportunities for the young people of the coal camps was limited. Faced with primitive living conditions and poor wages,

teachers were hard to retain. There was little opportunity for miners' children to pursue a high school education. Most boys - some by the age of 12 - went to work in the mines as their fathers had done before them. The girls, upon completion of grade school, were needed at home, where they usually remained until they were married.

The medical services offered to mining families depended on the location of the mine. The residents of rural areas and small towns had sparse medical assistance. The larger mines, however, usually contracted with a physician to provide services to camp families.

Because of their impermanence, most mining communities were never incorporated. Without this process and the subsequent legal framework, there were no town officials to formulate and enforce laws. Many mining sites were notorious for the gambling, drinking and fighting that took place.

The coal mining community of Buxton, located in northern Monroe County, was perhaps the most unusual and affluent of all mining communities in Iowa. In 1900 the Consolidation Coal Company founded Buxton. The population of Buxton and several outlying coal camps quickly expanded to around nine thousand. Consolidation Coal Company, a subsidiary of the Chicago and North Western Railroad, was organized to provide coal for the parent company. Before 1900 the company operated mines near Muchakinoch in Mahaska County.

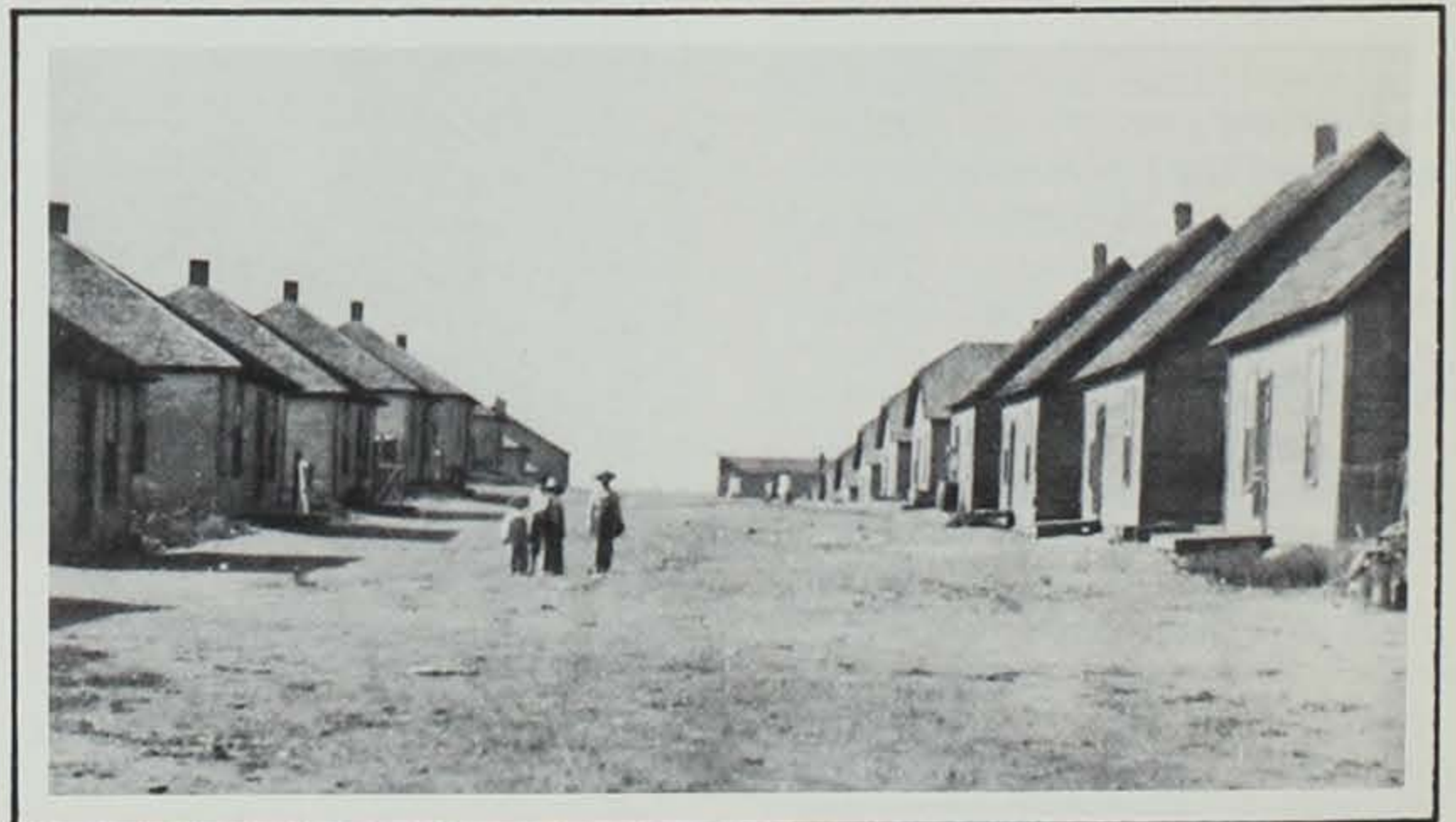
Many Muchakinoch residents then moved to Buxton, continuing their employment with Consolidation.

Once relocated in Buxton, Consolidation earned the reputation as an equitable employer. The company offered its employees equal wages, improved housing, and a wide array of social opportunities. Because Consolidation sold all its coal to the railroad, the Buxton mines operated twelve months a year. This full-time employment meant that Buxton miners ranked among the best paid in the state. In contrast, most miners regularly faced four months of unemployment each spring and summer.

Consolidation offered Buxton residents a wider array of activities than most mining communities. Two YMCA's were constructed which provided residents with a swimming pool, tennis courts, pool rooms, roller skating facilities, a well-stocked library, and a fully furnished gymnasium. The "Y's" also sponsored musical concerts and speeches by such notables as Booker T. Washington. In addition, they provided such services as the use of typewriters and sewing machines.

As was the tradition with every mining camp, Buxton had a baseball team. The Buxton Wonders were the pride of the community. The team, sponsored by Consolidation, traveled extensively throughout Iowa and hosted visiting teams from surrounding states.

Buxton offered its residents a number of stores in which to shop. The company store, the Monroe Mercantile Store, dominated the business



Typical coal miners' camp.

section and boasted 135 clerks and several different departments. In addition, the business district included two general stores, several meat markets, bakeries, restaurants, drug stores, and several beauty shops. There were also three weekly newspapers, each published at different times.

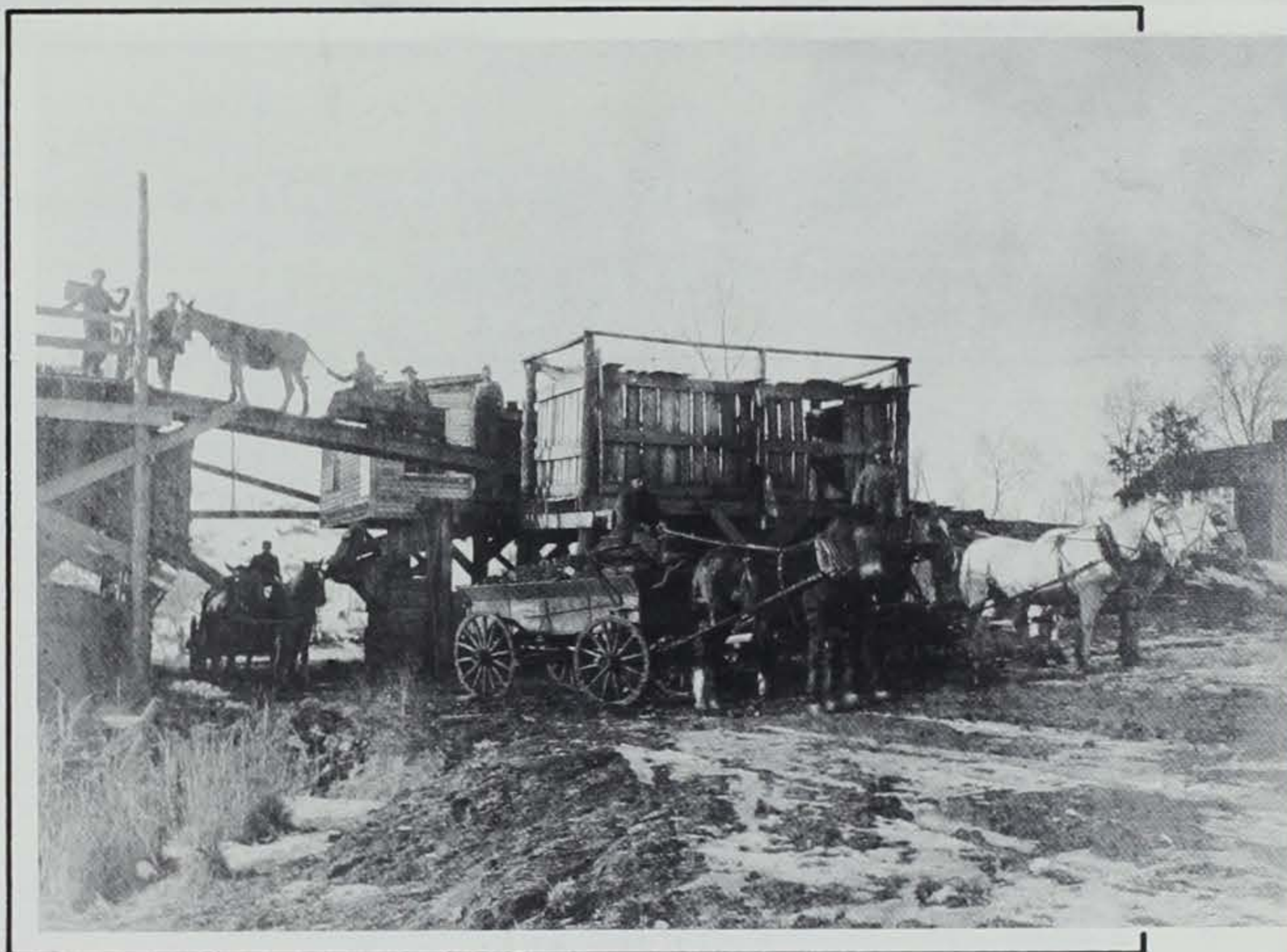
Buxton, never having been incorporated, became known as the "biggest unincorporated town in the United States." The town never had a city council, mayor, or law enforcement body. Cooperstown, a section of Buxton where knifings and murders were common, was said to be the toughest town east of Dodge City.

Soon the inevitable began to happen to Buxton — the coal in the mines was nearly gone. Mines 18 and 19 were the only ones still operating in 1925. In March 1927, Mine 18 closed. Just two weeks later, a miners' strike was declared at Mine 19. The miners never returned.

As the residents began to gradually drift away, businesses closed their doors. In 1944 the Hercules Powder Company of Chicago went to the site of Mine 18, set 12 pounds of dynamite at the base, and lit the fuse. With a terrible roar, the mine was leveled, and the last remains of the town of Buxton settled with the dust.

A landmark in Iowa's coal industry was established in 1890 with the building of the Coal Palace at Ottumwa, a joint venture in which a dozen or more coal-producing counties took part. The brain child of Peter Ballingall, a Scotch immigrant who settled in Ottumwa in 1859, the Coal Palace was designed to publicize the coal resources of the state. The massive structure was veneered with blocks of coal and contained large display rooms for exhibits and an auditorium with seating for 6,000 persons. At 120 feet high, 130 feet wide, and 230 feet long, the exterior palace was more imposing than artistic. But within, grace and beauty reigned where the pillars, walls, rafters, and ceiling were hidden by exquisite decorations and attractive exhibits.

Two unusual exhibits were the key attractions of the Coal Palace — a 35-foot waterfall and a model coal mine. Visitors of the mine were low-



ered by car down the shaft, where a mule waited below hitched to a train of pit cars. The visitors were hauled in these cars into the model mine where they observed miners digging into a clearly visible vein of coal.

After 1891, the Coal Palace lost its drawing power, as attendance and use fell significantly. The palace was allowed to stand for several more years and eventually was torn down. Ottumwa's Ballingall Park now occupies the site where the Coal Palace once stood.

It was inevitable that coal mining in Iowa would be a short-term industry. The only consistent demand for Iowa coal came from the railroads. Ironically, the railroads provided for the vast development of the state's coal industry in the 1870's, then presided over the industry's decline in the 1920's and 1930's, as the rail companies began to purchase coal from out-of-state.

Much controversy existed over the quality of Iowa coal. Because of its high sulfur content, it became increasingly cheaper to resort to other methods of fuel rather than processing Iowa coal for consumption. Coal sales plunged in the 1920's and 1930's as many Iowans turned to fuel oil, natural gas, and electricity for heating purposes.

Since 1840, approximately 5,000 mines have been operated in Iowa. Coal is Iowa's only naturally occurring fuel with major reserves, and may be one key to Iowa's energy future. Coal reserves in Iowa are estimated at 7.2 billion tons.

Currently there are 14 mines in operation in south-central Iowa, employing about 300 individuals. The largest is the Star Coal Company in Monroe County, which processed over 230,000 tons of coal in 1985.

Because of its high sulfur content, only about five percent of the 14 million tons of coal used annually in Iowa is actually Iowa coal. The remaining 95 percent is imported from other states.

Other methods of processing coal for consumption that can reap higher benefits are currently being tested. These methods may dramatically increase and sustain this historical Iowa industry for many centuries to come.

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



Hoffman Prairie Becomes a State Preserve



In conjunction with Prairie Heritage Week, Sept. 6-11, Governor Terry Branstad officially dedicated Hoffman Prairie as a state preserve Sept. 9.

Hoffman Prairie, located between Clear Lake and Ventura on the north side of Highway 18, is 36 acres in size and an excellent example of a quality prairie. Over 130 plant species as well as natural prairie potholes exist on the tract. "Preserve status is the highest protection we can afford a piece of land" said Governor Branstad.

The area was purchased in 1985 by the Iowa Nature Conservancy and is currently managed by a joint agreement between the Conservancy, Cerro Gordo County Conservation Board and the Iowa DNR.

ETHANOL BLENDED GASOLINE SUPPORTED BY DNR

Concerned about the growing number of "No Alcohol In Our Gas" signs at filling stations, the Iowa Department of Natural Resources issued a statement to discount fears that ethanol blended gasoline is bad for vehicle engines.

Larry Dombrowski, economic analyst for the DNR's energy bureau, said that corn-derived ethanol is a clean fuel and that it does not foul the port-fuel injection systems in new cars.

"Studies by General Motors have shown that it is the high olefin content and lack of sufficient detergents in pure gasoline — not ethanol — that has been the cause of deposits which form at the injector tip and inhibit the flow of gasoline," said Dombrowski.

"According to the Iowa Corn Growers' Association, more than 95 percent

of the ethanol sold in Iowa has a detergent additive specifically designed to keep port-fuel injection systems clean," he said.

Dombrowski added that all foreign and domestic auto manufacturers approve the use of ethanol blends and guarantee its safety under warranty coverage. Most major oil companies support and use ethanol in the blending of their gasoline products. He said that a 10 percent ethanol blend raises the octane rating by three points and can increase vehicle performance by reducing knocking and pinging.

"There is an economic advantage to Iowa farmers in the ethanol business," Dombrowski pointed out. "Last year, Iowa corn farmers received \$158 million in value added to their corn as a result of ethanol derived from their crop."



Coleman camper winner, Mrs. Carla Eidenshink of Merville, Iowa, receives her gift from Larry Wilson, DNR director (left) and Melvin Herold. The camper was donated to the state parks section of the DNR by Herold Trailer Sales of Indianola and the Coleman Company. Registration for the give-away took place at the parks booth at the 1986 Iowa State Fair.

CALENDAR

November, 1986

November	Recreation Passbook Month (receive a passbook w/2 consecutive nights paid camping)	Polk County Conservation Board Parks 515/999-2559
November 1	Birdwatching Trip DeSoto Bend NWR (must pre-register)	Cass County 712/243-3542
	Halloween Night Hike 7 p.m. (reservations)	Briggs Woods Park Webster City Hamilton County 515/832-1994
November 1	Turkey Trot Cross County Race Noon	Hickory Hills Park Black Hawk County 319/277-2187
November 2	Orienteering Meet 1-5 p.m.	Hickory Hills Park Black Hawk County 319/277-2187
November 5	Herbs for the Holidays 10 a.m. admission fee \$6/\$8	Indian Creek Nature Center Cedar Rapids 319/362-0664
November 5, 8	DeSoto Bend Bus Trip (must pre-register)	depart from Hillview Recreation Area 712/947-4270
November 8	Registration Meeting (for a snow show-making clinic on January 19) 1 p.m.	ILCC Auditorium Emmetsburg Palo Alto County 712/837-4866
November 8 November 8, 9	DeSoto NWR Tour (1 day and 2 day) (reservations required)	Warren County 515/961-6169
November 8, 17	Owl Walk 7 p.m.	Sac Grant Park Sac County Auburn 712/662-4530
November 9	Fall Nature Hike 1:30 - 4:00 p.m.	Swan Lake Park Carroll County 712/792-4614
November 9	Tour of Energy Tree Plantation 2 p.m.	Hickory Grove Park Story County 515/232-2516
November 10	Conservation Film Night 7 p.m.	ILCC Auditorium Emmetsburg Palo Alto County 712/837-4866
November 12	Marshmallow Roast 7 p.m.	Sac Grant Park Sac County Auburn 712/662-4530
November 15	Winter Bird Feeding 9 a.m.	Wright County 515/532-3185
November 15	Birdfeeder and Wildlife Habitat Workshop 1 p.m.	Conservation Center Warren County 515/961-6169
November 15	How to Sell Outdoor Photographs 1-4 p.m. (must pre-register) (fee required)	Indian Creek Nature Center Cedar Rapids 319/362-0664
November 15 & 16	Country Christmas	Bentonsport Park Van Buren County 319/293-3589
November 16	Winter Bird Feeding 2 p.m.	Buchanan County Courthouse Assembly Room Independence 319/636-2617
November 16	Deer Rut Hike 2 p.m.	Indian Creek Nature Center Cedar Rapids 319/362-0664
November 19	Slide/Lecture w/ Laura Jackson, urban biologist 7 p.m.	ILCC Auditorium Emmetsburg Palo Alto County 712/837-4866
November 20	Water: Crisis in Iowa? 7 p.m.	Indianola Public Library Warren County 515/961-6169
November 22	How to Sell Articles to Outdoor Magazines 1-4 p.m. (must pre-register) (fee required)	Indian Creek Nature Center Cedar Rapids 319/362-0664



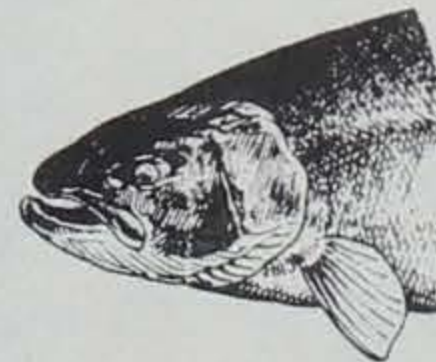
Classroom Corner

By Robert P. Rye

It is often said that we humans do not appreciate our eyes. They give us so much information about the world we live in! Most other kinds of animals depend on their sights just as we do. And through millions of years of change they have developed eyes which fit their particular lifestyle. We call this adaptation and say their eyes are adapted to the way they live.

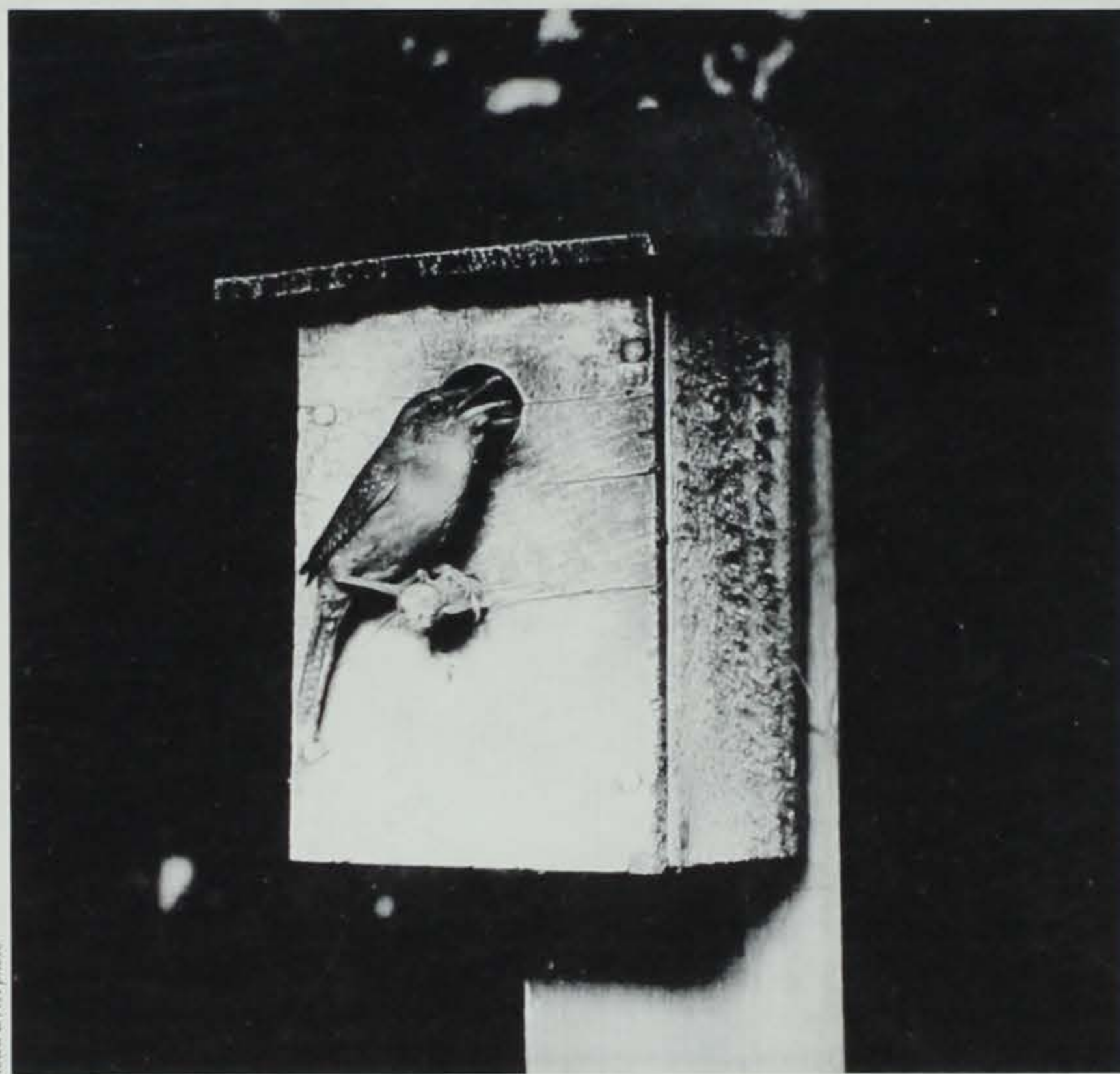
Read the following descriptions and see if you can match them to the animals pictured on this page.

- These animals sleep with their eyes open and look goggle eyed because the lens protrudes through the iris.
- These animals have eyes that act much like a submarine's periscope.
- This animal has eyes that contain thousands of simple eyes, which help it find its prey.
- This animal's eyes only allow it to tell the difference between light and dark. This is expected since it lives underground.
- These bird's eyes are unique because they are in front of its head. This allows accurate depth perception even at close range.
- This mammal—like many prey species—has eyes that bulge from both sides of the head providing a wide radius of vision.
- This bird has eyes that are large and near the back of the head. This allows it to keep a sharp look-out while probing the soil for worms.
- This animal has no moveable eyelids but the eyes are protected by a transparent shield. The shield is shed several times a year with the skin.
- This bird points its bill to the sky to blend with the reeds of its marshy habitat when danger threatens. Its eyes are located so it can still see well.
- Birds of prey possess what is probably the best long ranged vision known.



Answers: A Fish B Frogs C Dragonfly D Mole E Owl F Rabbit G Woodcock H Snake I Bittern J Eagle





Iowa DNR photo

Nature Tale

A Diary of Trogy, the House Wren

By Dean Roosa

The house wren, *Troglodytes aedon*, is among the most familiar birds in our state. This diminutive songster nests statewide, probably within earshot of every reader. Many people erect nest boxes, which, if placed in the right spot, a noisy, enthusiastic bundle of brown feathers will soon occupy.

Wrens spend only the summer months in the northern states, and winter in the southern states and Mexico. They arrive in Iowa in April, and the males immediately announce their presence with a constant, bubbly song. Our story begins with a tiny wren on his way from Texas to Iowa...

Trogy, a male house wren, was singing his way from east Texas where he had spent the winter. He was following the spring north, searching out insects and showering the countryside with the bubbly song so familiar to all. In northern Missouri, Trogy was caught in a late season blizzard and was forced to take refuge in a woodpecker hole. When the weather cleared, Trogy again headed north, guided by instinct in ways humans can only wonder

about. This was Trogy's second trip through the southern woodlands to the plains of Iowa to the wooded valley where he hatched two years previously. He had just spent an uneventful winter in eastern Texas, but now was anxious to satisfy the migration instinct that pulled on him like a giant magnet.

In southern Iowa, a sudden spring thunderstorm caused him to take refuge in an old barn while the lightning illuminated the landscape like midday and the thunder made the old barn shake. But again the weather cleared, and Trogy yielded to the unseen, unheard force that took him ever northward. Soon the countryside looked so familiar and everything felt just right. He was home!

The elderly woman had just finished hanging her wash on the clothesline and had started back to her ancient house along the river. She stopped and listened intently. "No," she thought, "it was surely just the barn door swinging," and started again to the house. She stopped again, turned and exclaimed, "There you are — it's about time," as she looked in the direction of the brushpile in the nearby valley. She had been waiting each day for the first song of the house wren. She had for 35 years kept records of the arrival of the wrens, and her calendar told her they were three days late. "Welcome home" she called, and walked through the screen door into the old house. Her wrens were back and spring could officially begin.

Trogy had raised two families there the previous year; one in a nest-box hanging from the edge of the house, the other from an old fence post at the edge of the valley. Now he sang constantly, proclaiming to the world he was sole owner of the territory, and advertising his availability to any passing female wrens. A week later, the woman noticed twigs protruding from the entrance of the nest-box. She knew Trogy and his new mate had set up housekeeping.

Eleven days later, the adults were making repeated trips to the nest, each time with an insect for the youngsters. Two weeks later, she noticed five young, stubby-tailed wrens sitting on the fence nearby. She was happy; her wren house had again been a successful home.

Wrens are never happy unless they are busy. Trogy and his mate began to search for a suitable nest cavity for their second brood. The old fence post was now gone, so they had to settle for a cavity abandoned by a downy woodpecker, and they began to carry twigs for the nest. But things were different in the valley now. New neighbors were building new homes nearby and each had a cat. Trogy's mate was searching for insects near the ground in a brush pile and did not see the cat until it was too late. Trogy, his youngsters now on their own, was completely alone. He sang his heart out, attempting to attract another mate, but none was found and it was getting late. In August, he stopped singing and began to think about migrating. Soon the woman who owned the wren's valley remarked how quiet it was with no wrens to sing. Trogy had left for his winter home.

On April 10 of the following year, the elderly woman was beginning to worry because she had heard no wrens singing. Walking out to get her mail the next day, she saw a small brown form on the gravel path. Trogy had flown into a phone line that had been put up for one of the new houses nearby. In sorrow, she stooped to pick up the tiny bird that had brought her so much pleasure, and she felt sad because probably no wrens would nest there that year. She admired the subtle coloring of Trogy's feathers before burying him in the valley of his birth.

Two days later, while raking her yard, the woman heard what she thought was a wren song. Could it be? She went into the house so she wouldn't scare it away. Unbeknown to her, Trogy's firstborn had just returned from the southland and had searched out the valley of his birth. He laid claim to the small valley, the brush pile where he caught his first caterpillar, the ancient post where he hatched, and the new nest box attached to the old rural home. He immediately began to sing his bubbly song to remind other wrens that this valley was under new ownership. The elderly woman smiled and made a note in her record book, "New wren arrived today — one week late."



Doug Harr

An attractive plant often seen in prairies and woodland edges is Culver's root (*Veronicastrum virginicum*), a member of the snapdragon family, Scrophulariaceae. With its long, spike-like flowerheads and its whorls of lance-shaped leaves, it presents itself as a very graceful, special plant. It grows throughout Iowa, beginning to bloom in July and continuing through August.

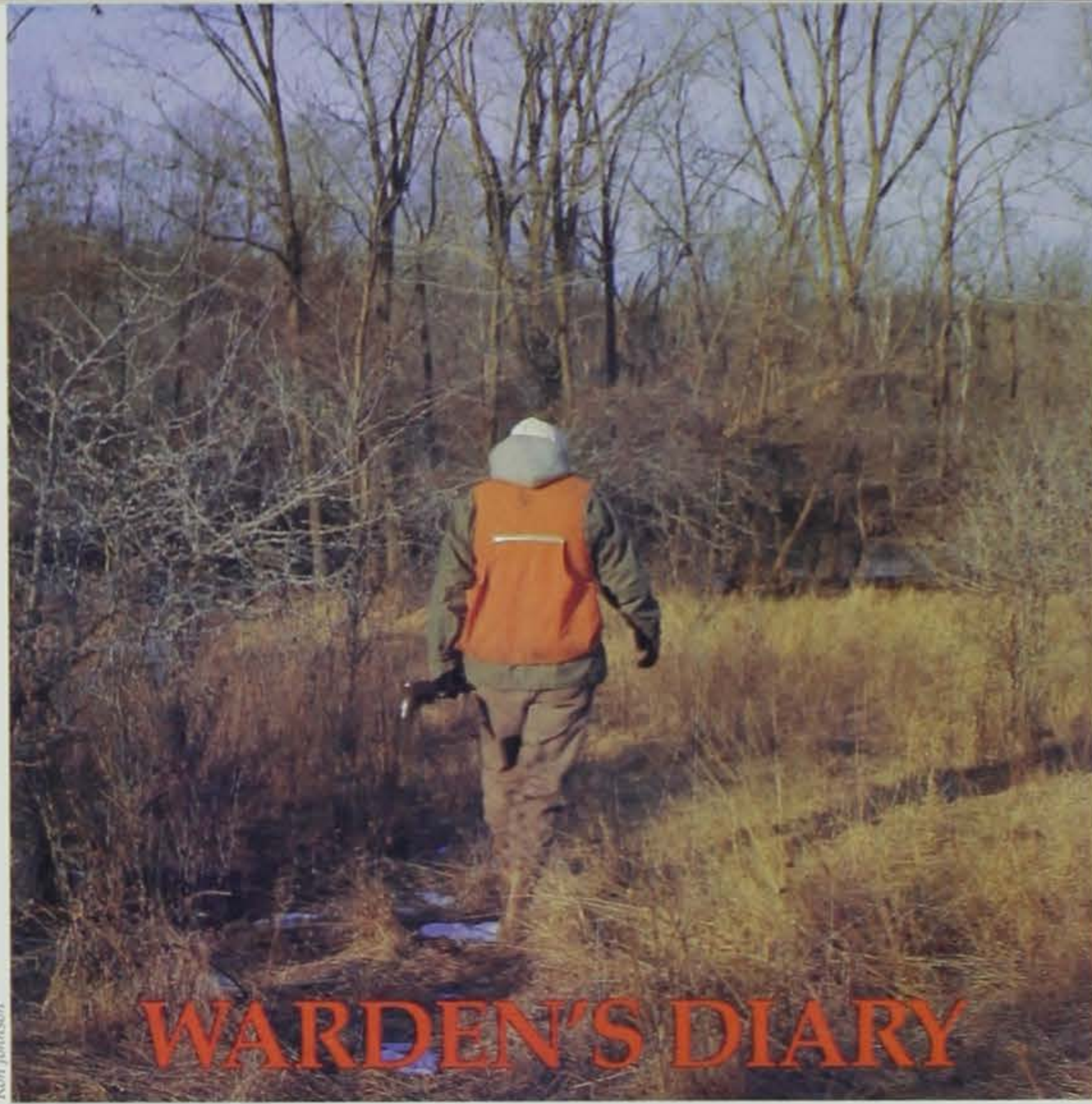
Though pretty and graceful, it has been used extensively for medicinal purposes by Native Americans and early settlers. Also called Culver's physic, it was used as a cathartic by early Iowans. The fresh root was used as a severe purge and abortifacient, and dried roots, in weak solution, were used as a laxative. Other uses, such as attempts to dissolve kidney stones and treatment for venereal disease, were ascribed to this plant. It contains powerful chemicals and should not be trifled with.

This interesting member of Iowa's native flora undoubtedly grows close to your home. Why not take time to make a new wildflower acquaintance?

Wildflower of the Month

CULVER'S ROOT
(*Veronicastrum virginicum*)

By Dean M. Roosa



Ron Johnson

By Jerry Hoilien

Deer hunters are a different breed of cats. There has to be something in the type of game hunted that relates to the behavior of the hunter.

You don't see many hunters go hard for four days to the point of exhaustion after a quail or a pheasant. Not many guns are pointed at one another over a ruffed grouse. I don't hear as many wild tales like "I'm hunting field mice with this 30-06, warden," or "I'm coyote hunting, I don't have a deer license," or "What deer? I just helped out some total stranger gut out and load his deer — that's where all that blood and hair came from," or "That deer had a full set of antlers when I shot and this doe must have been standing in the way," or "We were just bringing in this deer to you, warden. It was a cripple and we had to shoot it, and a rifle is the only gun I own. You don't need a license for that do you?"

I don't wish to sound down on all deer hunters. There's an awful lot of very good ones out there, and they need to work hard in getting rid of some of the problem hunters who give the sport a bad name. It's time the good hunters started getting tough on the bad ones. Stop and talk with a landowner who's nailing up a

"no trespassing" sign and you'll hear a long tale about trespassing and flagrant violations, all brought about by the slob hunter. I don't need to tell you about him — you've heard him bragging in the tavern about his poaching, the big buck he got one night, or how he outsmarted the game warden. When you see or hear about a violation help us and yourself by calling the local warden or the T.I.P. (Turn In Poachers) number 1-800-532-2020.

I attended a meeting last year in Waukon. It was a charter banquet for White-Tails Unlimited. It is the first chapter in Iowa, with Raleigh Buckmaster (a Lansing veterinarian), Bill Moody and Jerry Johanninger (both respected farmers) as the officers. Over 300 sportsmen, men and women, attended the fund-raising. Their purpose is for sound deer management for the benefit of all. They hope to bring about some education for both the hunting and non-hunting public. They want good sportsmanship and respect for the game and land as well. I was very pleased to see such a large gathering of individuals of all ages and walks of life, indicating their dedication to wildlife. This is the kind of effort we need so

badly. Too much attention and publicity is given to the violators and all the problems they create. Here is a group that wants to do something constructive not just for the hunter, but also for the wildlife. My hat's off to them.

The owner of the fishing float just below lock and dam #9 near Harpers Ferry let me in on this recipe of his.

Use a boned rolled shoulder of venison, rolled with a piece of beef fat in it.

Pickling salt (as needed)

1 egg (in its shell, to test brine)

½ cup brown sugar

¼ cup Morton's Tender Quick Cure

Find a non-corrosive bowl or kettle that will hold meat and brine at least two inches above meat — glass, stainless, enamel or crockery will work. Make sure container will fit in your refrigerator. The crisper drawer works well. To determine the quantity of the brine needed, enclose meat in a plastic bag, put in container and fill the container with cold water, remove the bag with meat. Now stir salt into water dissolving each addition before adding more, until the egg will float in the solution. Remove the egg once it has served its purpose. Stir in the brown sugar and Tender Quick. Pour into pot and simmer for 15 minutes. Let cool completely and pour back into container. Lower meat (minus bag) into brine and weight down with a plate, add more weight if necessary to keep meat submerged. Set in refrigerator and let cure for two weeks. Turn every day or two. If you like spiced corned venison, after meat is cured remove from brine and press four tablespoons mixed pickling spices into the outside of meat. Enclose in plastic bag and refrigerate for three days.

To Cook:

Rinse the corned venison and place in a roomy pot. Add water to cover by two inches. Cook the meat at a barely perceptible simmer, partly covered, until it is very tender when tested with a long fork (count on at least three hours). Turn the meat occasionally and add boiling water if needed to keep the meat covered. Let the meat cool partially, uncovered, in the broth. Serve it warm or cool, drain and refrigerate.

Responsible trapping of the prolific muskrat helps keep numbers in check.

of concentration for the furbearer species to be trapped. Again, this not only increases the success of the trapper, but also decreases the chance of catching non-target animals.

A responsible trapper will also be sure to check his traps regularly. Iowa law requires that all traps, except those which are placed entirely under water, be checked at least once every twenty-four hours. Efforts should be made to check traps as early as possible in the morning. Most furbearers are nocturnal animals and are most likely to be caught at night making early morning the best time to run the trapline. This will also allow for trapped furbearers to be dispatched quickly and in a humane manner. The trapper should also be sure to use the proper type and size of trap for the furbearers being trapped and to make use of drowning sets whenever possible.

The trapper also has a responsibility to the farmer or landowner on whose land he is trapping. State law requires that a person have permission from the landowner or tenant before entering upon the property to hunt, fish or trap. Gaining permission from the landowner may let the trapper know if other trappers are working the area, or if any hunting activity will be going on. It will also alert the trapper to any farming operations or activities which may affect the trapline.

Farmers and landowners may sometimes welcome trappers to their area. Many times crop and livestock depredation problems occur if certain species become overpopulated. In such cases, the trapper should assist the farmer or landowner in removing those individual animals that are causing the problem. By doing so, the trapper may gain the respect of the landowner and may also gain access to trap other furbearers on the property.

The public also has a right to expect ethical and responsible behavior from Iowa trappers. A large amount of trapping takes place on public land and the furbearers themselves are actually a publicly owned



Trappers' Ethics

Ron Johnson

By Tom Campbell

With fall and cooler weather upon us, many trappers are eagerly anticipating opening day when they will be able to string steel across their favorite trapping areas.

However, a trapper's work actually begins long before the actual opening day. The local farmer or landowner should have been contacted and permission gained to trap on his property. Each trap is checked to make sure it works properly. There are traps that need to be dyed and waxed, and, of course, there is always preseason scouting to do.

A trapper has many responsibilities which must be taken into con-

sideration. This not only includes obeying state laws, but also following an unwritten code of personal behavior called ethics. Practicing good ethics will ensure that trappers may continue to enjoy their sport and that it will remain a useful tool in wildlife management programs.

The first responsibility a trapper has is to the furbearer resource itself. A trapper owes it to the resource to learn as much as possible about furbearers. Knowing the habits and requirements of the animals also benefits the trapper by providing higher success. The trapper should look for tracks, travel routes and feeding areas to determine the highest areas

resource. When trapping on public as well as private land, trappers are required to have their traps tagged in order that they may be properly identified. Responsible trappers should also take extra precautions to avoid capturing household pets, such as cats and dogs. This would include staying away from occupied houses and farmsteads where these pets would be expected to be found. Iowa currently has restrictions regarding the use of traps and snares in any public road right of way within 100 yards of buildings inhabited by human beings.

Being responsible to the public not only means abiding by all the laws and ethics of good sportsmanship, but also reporting any trapping or fish and game violations which may be observed. The people who violate our state's fish and game laws are not sportsmen but thieves stealing from a public resource. It is everyone's duty as a sportsman and citizen of this state to report these people. This may be done by contacting the local conservation officer or the state's T.I.P. (Turn In Poachers) number — 1-800-532-2020.

Finally, the trapper has a responsibility to other trappers and sports-

men. It is unethical to move in on another person's territory. Not only will this cause hard feelings, but will result in reduced catches for both. Trappers should never move or disturb another trapper's set. Also, to maintain good relationships with other hunters and sportsmen, the trapper may wish to avoid setting traps in areas where hunters may use dogs. If hunting dogs or pets are caught, it is the trapper's obligation to release them and to notify the owner, if at all possible.

It is important for all trappers to exhibit responsible behavior and to adopt a good code of trapping ethics. It is the behavior and activities of the trapper that forms the public image of the sport of trapping. By exhibiting sportsmen's ethics and good common sense, trappers may ensure that they will enjoy their sport for many years to come.

Tom Campbell is a recreational safety officer for southwest Iowa. He holds a B.S. degree in fish and wildlife biology from Iowa State University. He began his work as a safety officer in 1985.

Drowning sets quickly kill furbearers.



The Drowning Rig

By Brian DeVore

In any outdoor sport that involves the pursuit of game, there is at least one or two stand-by techniques that consistently lead to success. While water trapping for furbearers such as raccoon, beaver, muskrat and mink, I have found the drowning slide wire to be one of these techniques. It is a set-up that is easy to manufacture and use by the novice trapper, but it has also proven its effectiveness with the "old pros." The rigs take a little extra preparation prior to the season, but the added fur, trapline efficiency and peace of mind that comes with using them on a regular basis is well worth the effort.

The basic drowning rig is nothing new to the art of trapping. In fact, people who know anything about drowning slide wires probably associate them most often with serious beaver trappers. They can also be deadly on smaller furbearers, especially raccoons, who can be notoriously difficult to hold in a regular set.

A typical rig consists of a length of wire (slide) and some sort of mechanism (lock) that will slide one-way on the wire. A foot-hold trap is wired to the mechanism and set at either a lured or trail set in shallow water near the bank of a creek. One end of the slide is staked or wired near the set while the other end is run out into deep water where it is staked or weighted.

The rig works on the idea that when an animal is trapped in the water, its first instinct is to head for deeper water. The locking mechanism will allow the animal to reach deep water, but will not let them return to the bank — quickly drown-

ing the animal.

There are many variations to the drowning rig, and trappers can get as elaborate or as simple as they want. I prefer simplicity in all I do, and my trapping sets are no exception. I begin by buying a large roll of number nine gauge black (nongalvanized) wire. I have found this wire to be perfect in that it is sturdy enough to retain its shape once it is staked in the water, and yet it is flexible enough that it can be rolled up for easy transport. I have found the heavy gauge important in that it allows the same rig to be used season after season.

I cut the wire into six-foot sections to make the slides out of. I have experimented with different lengths of drowners, and have found that a slide about six feet long will work for most situations. Sometimes it would be nice to have a drowner that is a little longer or shorter to fit different situations, but a trapper can't be carrying around ten different lengths of wire all the time.

Besides the sliding wire, the other important accessory needed for a drowning rig is the locking mechanism. Making one of these is simpler than it sounds. All that is required is

a two to three-inch rectangular-shaped piece of metal that is bent in the middle in the shape of an "L" and has a one-eighth inch hole drilled near each end. The lock is threaded onto the slide through one of the holes and a loop is made on each end of the wire just large enough to allow a stake to pass through. The L-shaped lock works great in that it will slide easily down the wire when pulled "with" the shape of the L, but will bind and stay in pretty much one place when pulled "against" the L.

All that is needed to complete the rig is a couple of T-bar stakes and a good trap. The stakes, which should run at least three feet long to deal with the soft mud found near water, can be easily made by welding lightweight concrete reinforcing rods together in the shape of a "T."

As far as traps go, I am an exclusive user of the 1-1/2 coilspring when it comes to drowning sets. Their compactness, strength and speed make them one of the best all-around traps for most furbearers found in Iowa.

I usually prewire the trap to the rig so all that is required to do at the set is stake both ends of the rig. Once it is done a couple of times, one of these rigs can be set up in under a minute.

I have found that staking the lower end of the rig in two to three feet of water is sufficient to drown most large beavers and raccoons. However, this much water is not always available at the trap site. One little trick that helps is to stake the lower

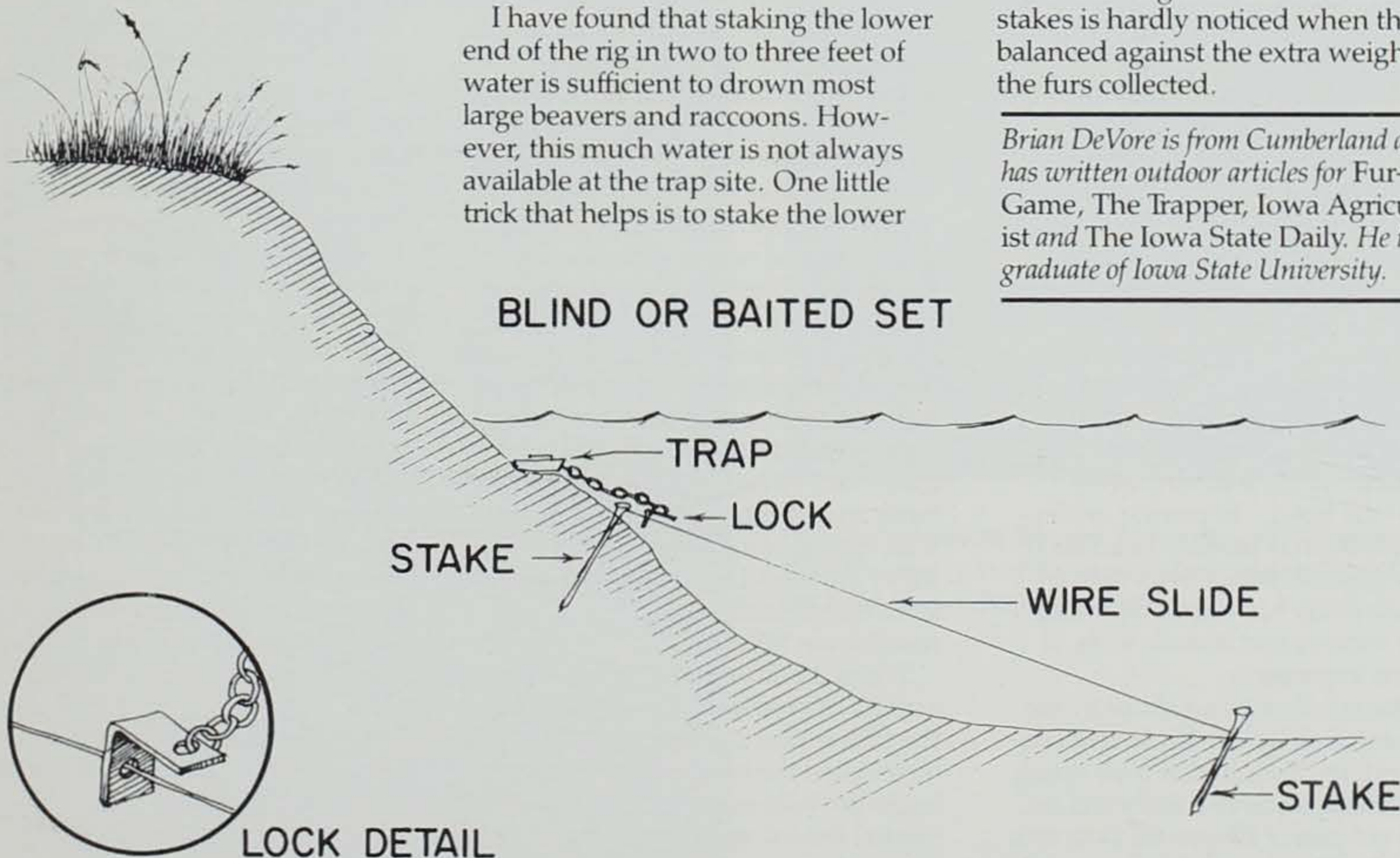
end of the slide downstream from the set; thus allowing the current to facilitate drowning. Utilizing this strategy, I have found it possible to drown everything from raccoons to muskrats in as little as one foot of water.

The advantages to using the drowning rig are numerous. For one thing, it allows the set to remain undisturbed after a catch is made. This is important (especially when trapping raccoon) since animals can tear up a site, making the area worthless for future sets. But the biggest advantage to this type of set is that the animal is humanely dispatched and is usually out of sight of other critters — the four-legged as well as two-legged kind.

When I use one of these rigs, I gain a special kind of satisfaction knowing there is an excellent chance my catch will be waiting for me on the next run.

The only disadvantage to using this rig that I can think of is the additional weight that results from the extra stakes and the rigs themselves. This can be an important factor when someone has to walk through two miles of frozen mud to reach a set. But to tell you the truth, the extra weight of the wire and stakes is hardly noticed when they're balanced against the extra weight of the furs collected.

Brian DeVore is from Cumberland and has written outdoor articles for Fur-Fish-Game, The Trapper, Iowa Agriculturist and The Iowa State Daily. He is a graduate of Iowa State University.



Plymouth County

FIVE RIDGE PRAIRIE PRESERVE

By Kirk Payne

During the past decade, more and more Iowans, as well as Americans, have become increasingly aware of one of the Midwest's subtle natural treasures — the Loess Hills of western Iowa. This long, narrow system of hills, composed of glacially-ground soils, is nationally recognized for its unusually thick deposits of loess and for locally rare plants and animals.

Loess soils cover vast areas of the northern hemisphere. But only along the eastern edge of the Missouri River floodplain in western Iowa and along portions of the Yellow River in northern China have such impressive windblown and stream-sculpted hills developed.

The northernmost reaches of America's Loess Hills extend into Plymouth County. Here, in the drier northwest corner of the state, the Loess Hills harbor some of Iowa's largest surviving tracts of native prairie. Take a drive on Butcher Road as it winds eastward off Highway 12, just south of the town of Westfield, and you will visit northwest Iowa's prairie past.

Butcher Road straddles a breathtaking portion of the northern hills. To the west from the road's crest, the view drifts out over nearly 1,500 acres of unbroken prairie sod. This huge depression is descriptively called "the bowl." In private ownership, the bowl is pastured and used as hay ground. Much of its native floral diversity has been disturbed, but as a scenic and historic vista, it remains impressive.

To the southeast and about a mile as the autumn hawks fly, lie five dramatic ridges, their prairie tops riding like whitecaps above a timbered sea. These are part of Plymouth County's Five Ridge Prairie, the largest parcel

of land in the state preserve system. Here, almost 500 acres of this striking landform have been set aside in public ownership. It was officially dedicated as a state preserve last June.

Visitors must approach Five Ridge Prairie from the east. One-half mile south of the junction of county roads C43 and K18, a mile-long gravel access road leads westward from K18 to the preserve's entrance. From here, visitors must travel by foot through the walk-around gate and into these rugged hills. A network of dirt roads, remnants of past landowners and a two-decade stint as a National Guard training area, winds through the preserve.

Within the preserve, windblown loess deposits reach thicknesses of about 30 feet, unimpressive compared to the 200-foot accumulations in the southern Loess Hills region. But the hills here are still rugged due to underlying glacial material and/or limestone deposits.

The hills themselves have been both provider and protector for the unique prairie communities native to this region. The hills help to create an unusually dry habitat in the area. Their slopes easily shed moisture and those facing west are further dried by their exposure to prevailing winds. This localized dry, or xeric, environment has provided an out-of-the-way home to a number of plants and animals typical of more western regions. Many are found nowhere else in Iowa except in this region of windblown hills.

When the first white settlers arrived in Plymouth County late in the 19th century, prairie probably dominated the hills. Wildfires burning in the hills every few years prevented fire-intolerant trees and shrubs from surviving anywhere but

in deep, moist valleys. The lifestyle of the settlers did not tolerate unrestricted burning, however, and, with the gradual elimination of the wild prairie fires, the invasion of trees and shrubs began.

Prescribed burning is being used to manage the preserve's remaining 350 prairie acres. Early results indicate, however, that fire alone may not prevent the further loss of prairie to the invading woodlands.

The preserve is distinguished by its prairie. This unique mix of east and west, including 15 plant and animals species listed as endangered, threatened, or nearly threatened in Iowa, retains its last stronghold in these northern hills.

On a few ridges, isolated stands of tumblegrass (*Schedonardus paniculatus*) exist. These are probably remnants from historic buffalo wallows. Tumblegrass is listed as critically endangered in Iowa by the Natural Areas Inventory. This grass is an invasive species, thought to have occupied the hard-packed and disturbed soils of favorite buffalo rubbing grounds.

Buffaloberry (*Shepherdia argentea*), a western shrub species, is common on the preserve. Five Ridge Prairie, in fact, has the largest population of this endangered shrub in the state. Settlers of the Great Plains made jam and jelly from its red berries.

While not endangered, yucca (*Yucca glauca*), snow-on-the-mountain (*Euphorbia marginalis*), and cut-leaf ironweed (*Haplopappus spinulosa*) are other Great Plains species common at Five Ridge Prairie, although rare on other prairies in Iowa.

The most significant mammalian resident of the preserve is a small mouse. An isolated population of the plains pocket mouse (*Perognathus flavescens*) is believed to inhabit a corner of the preserve. Only five such populations are known to exist in Iowa.

In total, at least 268 plant, 65 bird, and seventeen mammalian species inhabit the preserve.

Iowans have endured disparaging remarks about our state for quite



Plymouth County Conservation Board

some time. The vast treeless expanses of prairie covering much of Iowa once elicited feelings of desolation and despair among tree-loving pioneers from the east. Even today most Americans think they have seen it all with one pass through the state on Interstate 80. We often hear comments such as "flat," "boring," "unexciting country," and "may be good for growing corn and pigs, but no vacation spot."

And to some extent, we can't argue. Iowa does not have a seashore, a vast mountain range, a national forest or park. Our state was not blessed with an abundance of the kind of natural beauty which overwhelms the average human soul. Iowa is not a dancing bear that entertains on stage for the American public. Its beauty is more subtle and shy. It demands closer inspection and greater participation to be truly

enjoyed and appreciated.

Plymouth County's Five Ridge Prairie Preserve provides a view of Iowa's quiet, but extraordinary natural treasures — the Loess Hills. Such a preserve is unique, but not alone, as county conservation boards across the state work individually and cooperatively with other organizations to give Iowans the opportunities to discover and enjoy our own natural treasures.

Discover your county conservation board and its natural areas. You may be pleasantly surprised.

Kirk Payne is a naturalist with the Plymouth County Conservation Board. He holds an M.S. degree in science education from the University of Iowa. He has been with the board since 1984.



Plymouth County Conservation Board



Plymouth County Conservation Board

Cut-leaf ironweed (above) and snow-on-the-mountain (left) are just two of the many plant species found in the Five-Ridge Prairie Preserve.



Dennis Appelhans

Looking into the basement of Atherton's Phillips 66 station after the June 1984 explosion.

Leaking Underground Storage Tanks

An Environmental Time Bomb

By Larry Kolczak

Tony Atherton is convinced. Leakage from underground gasoline tanks is an environmental time bomb. For Atherton, that bomb exploded on June 6, 1984. When the smoke and dust cleared, the business that had been in his family since 1941 had been totally destroyed.

The Atherton "66" gasoline station at 29th and Broadway in Council Bluffs was a concrete block building with a basement under the office side. From what investigators were later able to piece together, gasoline had leaked out of at least one of the station's three underground tanks, seeped down through the soil to the water table, and spread out across the surface of the ground water. When heavy spring rains caused the water table to rise, the moisture that began seeping into the station's base-

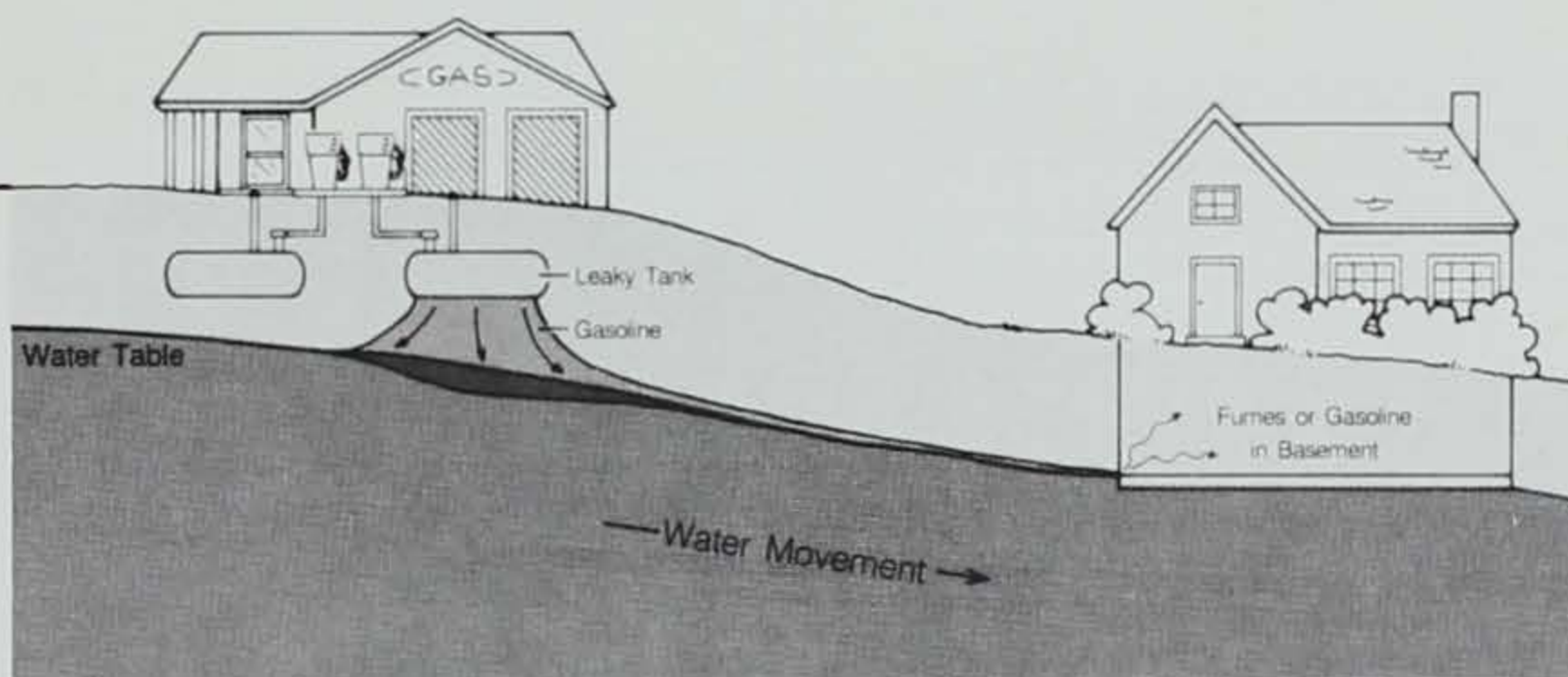
ment carried gasoline in with it. The fumes eventually reached explosive levels, and were touched off by a spark from the air compressor that controlled the lift.

"I'm just thankful that nobody got hurt," says Atherton, whose two sons were working at the station the day it blew up. Fortunately, one was outside, and the other was in the part of the shop that was not directly above the basement. "Butch had just raised a car on the lift," says Atherton. "Suddenly, he could see the ceiling start to go up. He hadn't even heard a noise yet. He headed for the door and had taken only a few steps when the place blew up. The blast helped move him along for about the last ten feet."

"We had a five-inch, reinforced concrete floor above the basement," says Atherton. "It was supported by ten-inch beams of precast concrete. That explosion blew them all over the place. The building was a total loss."

Atherton's experience is an extreme example of the more than 220 leaking tank incidents the DNR's Environmental Protection Division has investigated since 1980. Some cases have involved the leakage of thousands of gallons of fuel. And even large losses such as these have usually gone undetected until fumes were noticed in nearby basements or wells. Dozens of private homes, businesses, and even an elementary school have had to be evacuated because gasoline fumes in their basements had reached explosive levels. And, ground water contamination from leaking underground tanks has affected the drinking water supplies of at least eight Iowa communities.

According to Pete Hamlin, chief of the DNR's air and hazardous waste protection bureau, "This isn't just an Iowa problem, it is a national problem. And it is getting a lot of attention. We first became aware of this as being a serious problem back in 1980. We had a rash of them that year, and since then we have had a noticeable increase in the number of leaking



Schematic example of a petroleum leakage problem. Gasoline moves downward from an underground storage tank to the surface of the water-saturated zone.

tanks reported to us each year." Hamlin attributes the recent epidemic of leaking tanks to the fact that many gas stations were built during the 1950's, and the steel tanks that were commonly used have a lifespan of about 30 years.

By May of 1986, all the owners of underground tanks in Iowa were supposed to have notified the DNR of the location, age and size of their tanks, as well as what the tanks are made of and what they contain. But, officials believe that there are a lot more tanks in the ground than the nearly 27,000 that have been reported so far. According to Hamlin, there may be that many tanks, if not more,

that have not yet been reported, even though it is required by state and federal law.

"I think we have sent out over 30,000 letters," says Hamlin, "but a lot of people may still not have gotten the word. So we are going through a second round of encouraging people to register their tanks."

Fuel distributors are required to notify their current customers of the tank registration law. That helps improve compliance among people who are still using their tanks. But there are a lot of unused and abandoned tanks that also must be registered. Unless the tank was taken out of service before January 1, 1974, it

Atherton's tanks were installed in 1943. All three were leaking when they were excavated after the explosion.



Dennis Appelhans

must be reported, even if the contents were pumped out and the tank was filled with sand or concrete. The concern is that many of these tanks may have been leaking before they were abandoned.

No one knows how many of Iowa's underground tanks are leaking, but the findings of a nationwide study published by the U. S. Environmental Protection Agency in May, 1986 showed that, under test conditions, an estimated 35 percent of the tanks failed the standard "tightness test" used to identify tanks and piping that may have leaks. But failing the test does not necessarily mean that all these tanks would be leaking under normal operating conditions.

The tightness test used in this study (the Petro-Tite test) involves connecting a standpipe to the tank and then overfilling the tank and pipelines to a level that can be observed in the above-ground standpipe. Any change of the liquid level in the standpipe is then measured over a period of hours to determine if there is a leak somewhere in the system. The test must be carefully monitored, however, to account for volume changes that may be due to temperature or to expansion of the tank caused by the above-normal pressure. Because such testing is costly, time-consuming, and must be done by technically qualified people, it is normally only required when a tank is first installed, or when there is good reason to suspect a leak. "There is no requirement at this time," says Hamlin, "to routinely test underground tanks for leaks."

Unfortunately, even if the tightness test were routinely required, its results are not always conclusive. For example, the test does not distinguish between a hole in the bottom of a tank and a loose fitting in a pipe that may not contain fuel under normal operating conditions. Also, the limits of the tank's accuracy (0.05 gallon/hour) could allow a small leak to go undetected. "There's a point

below which the tightness test cannot detect a leak," says Hamlin. "Even a leak of just one drop a second can add up to over 400 gallons per year. That is plenty of gasoline to cause a problem in somebody's basement, a sewer line, or a well."

Often, when DNR staff members investigate a leaking tank incident, they require that shallow wells be drilled down to the water table near the suspected tank. These monitoring wells are then checked to see if fuel is floating on the ground water. The wells can sometimes be used to recover a portion of the lost fuel. One farm co-op in Pierson, Iowa managed to recover more than 25,000 gallons of fuel from a leak that they had and never even noticed until fuel began seeping into nearby sewerlines.

Both the U. S. Congress and the Iowa legislature have passed laws regulating underground storage tanks. The first step was the requirement for owners to register their tanks, but soon there will be requirements designed to detect and contain leakage before it can cause serious problems.

"It is certainly in the best interest of the tank owner to have an early warning system," says Hamlin. "The longer a tank leaks, the more it leaks, and the higher the cost is likely to be when it comes time to clean it up."

Nobody had to tell that to Tony Atherton when he rebuilt his gas station. He made sure his new tanks were double coated, placed within a polyvinyl liner, and specially protected against corrosion. And, he has two monitoring wells which he checks periodically. Tony Atherton is convinced.

Who Is Required To Report Their Underground Tanks?

Anyone who owns or operates an underground storage tank used for petroleum products or hazardous substances must notify the Iowa Department of Natural Resources of the tank's location, size, age, con-

tents and what the tank is made of. Reporting forms can be obtained by calling the department at 515/281-8692. There is a reporting fee of \$5 per tank.

Gas stations, convenience stores, industries, auto dealerships, farm cooperatives, vehicle maintenance garages, schools and hospitals are just some of the places that commonly have underground tanks. It does not matter whether or not the tanks are still being used. Even tanks that were taken out of service as long ago as January 1, 1974 must be reported if they are still in the ground. New tanks must be reported within 30 days of their installation.

What Underground Tanks Are Exempt From The Reporting Requirement?

Among the tanks that are exempt from the reporting requirement are farm and residential fuel tanks of less than 1,100 gallons capacity, and tanks used for storing heating oil to be used on the premises where it is stored. Residential septic tanks are also exempt. Other more-specific exemptions are listed on the reporting form.

What Should Be Done If You Suspect A Tank Is Leaking?

Any spill of any material that could create a hazardous condition, threatening either the public or the environment must be reported within six hours to the Iowa Department of Natural Resources. The department's emergency spill number, which operates 24 hours per day, is 515/281-8694.

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.



Tim Feavel

Forest Management on the Mississippi

By Tim Feavel

The Mississippi River and its tributaries support the largest, continuous and most diverse bottomland and forest ecosystem in North America. Iowans are fortunate to have a major part of such a resource at their doorstep. The U. S. Army Corps of Engineers, as primary administrators, manage this land for inland waterway navigation. Not only has federal ownership prevented many of these forests from being cleared and developed, but many other benefits have also developed along the way.

Approximately 20,000 acres of forestlands in Iowa are managed by the Corps' Rock Island District for a multitude of purposes, including wildlife habitat, recreation, forestry, fisheries, scenic value and watershed protection.



Kermit Kuppeler

The Corps of Engineers became involved as natural resource managers on the Mississippi during the early 1900's when Congress authorized construction of a nine-foot-deep navigation system for barging goods up and down the river. The islands along the Mississippi River were purchased by the government mostly during the 1930's because of the certainty of them being flooded after the construction of the lock and dam system.

The first forest management plan for these lands was implemented in 1941 in support of the World War II effort. The Corps of Engineers was then given the authority by the Secretary of War to meet the demand for various bottomland hardwood forest products which were used for making war goods such as shipping boxes, crates, pallets and building

materials. Millions of board feet of cottonwood and silver maple were sold by competitive bids to local timber buyers. The trees were harvested from the floodplain forests along the entire 310-mile stretch of the river that borders the state of Iowa.

At the time, the plans called for selectively cutting trees above a certain diameter limit — generally at least eighteen inches in diameter was the contract harvest limit. Occasionally, those trees that provided direct wildlife benefits such as oaks, hickories and cavity trees were marked by the Corps and U. S. Fish and Wildlife Service to be left standing. Remnants of these oak-hickory stands can still be found on slightly elevated ridges of land in the floodplain.

The harvested logs, usually cottonwood, American elm and silver

maple, were floated down the river on deck barges or in large rafts called "booms" that were encased in a string of logs chained together to prevent their escape. A tug boat directed the logs to a shoreline area where they were loaded onto trucks and hauled to a sawmill. This rafting method of transporting logs is rarely seen today on the Mississippi River. Flat deck barges are still used to transport heavy logging equipment to the islands and are then loaded with logs for the trip to the sawmill.

The "selection system" of harvesting trees in the Mississippi bottoms of Iowa was continued up until the early 1970's. A new forestry plan was developed during the late 1970's and implemented by Corps resource managers in 1982. The major goal of the new plan is to promote and maintain a regulated floodplain forest resource by striving for an optimum mix of tree size classes and species diversity. This new plan is based on a great deal of coordination and input from professional resource managers from the Iowa Department of Natural Resources and the U. S. Fish and Wildlife Service.

Since 1982, the Corps of Engineers has held annual meetings with the representatives of the Iowa Conservation Commission (now the Department of Natural Resources) and the USFWS to mutually agree on which areas are in the greatest need of forest or habitat improvement. State and federal specialists in the fields of wildlife biology, fisheries, forestry and wildlife ecology that work along the river are active in the decision-making process. On-site meetings in the field are also held to swap ideas and make detailed plans on exactly what is needed in the way of forestry work.

Representatives from the Audubon Society and the Sierra Club, hunter groups and birders have also been actively involved in the Corps' forestry and monitoring program.

After over 40 years of selective cutting in the river bottomlands, it became apparent that the sun-loving cottonwoods and silver maples were not naturally replacing themselves. Being relatively short-lived (100 years) and intolerant to shade, these trees have no seedlings of their own kind to replace them when they die.

Shade tolerant trees such as elm, hackberry and mulberry become established in these declining stands. Dutch elm disease, however, has reduced the American elm to short-term existence up to pole size in the understory. Occasionally, one can find an old monarch that has beaten the odds and survived.

Presently, a regulated tree harvesting program adopted by the Corps involves harvesting patches of trees up to ten acres each in various locations on an island or shoreline tract of timber. All trees, regardless of size or condition, are harvested by loggers from within the boundaries of the clearcut, and the resulting sunlit opening is left to naturally seed into trees again. Silver maples produce a winged helicopter-like seed that disperses readily; and when landing on moist floodplain silty soil, will germinate within a few days. Most people out along the river in April or May have witnessed the fantastic dispersal of seeds from silver maples. Cottonwoods release their white cottony seeds all summer long which also must germinate very quickly or die. This rapid and dense germination of these seeds produces thick stands of young saplings. This helps these species fight off the prolific weed competition in the bottoms.

In a few years, the clearcut area that was once an old stand of trees is now a new stand ready for another 100 years of growth.

Timber buyers and loggers working under Corps contract have become a very important tool in implementation of the forest management plan. They have faced the many challenges and dangers of river logging in order to make a living while improving our forest resources. Without their work, the accomplishment of many long-term objectives would be very difficult. In addition, monies received from the sale of timber are put back into the resource, primarily in the form of tree planting stock and timber stand improvement work.

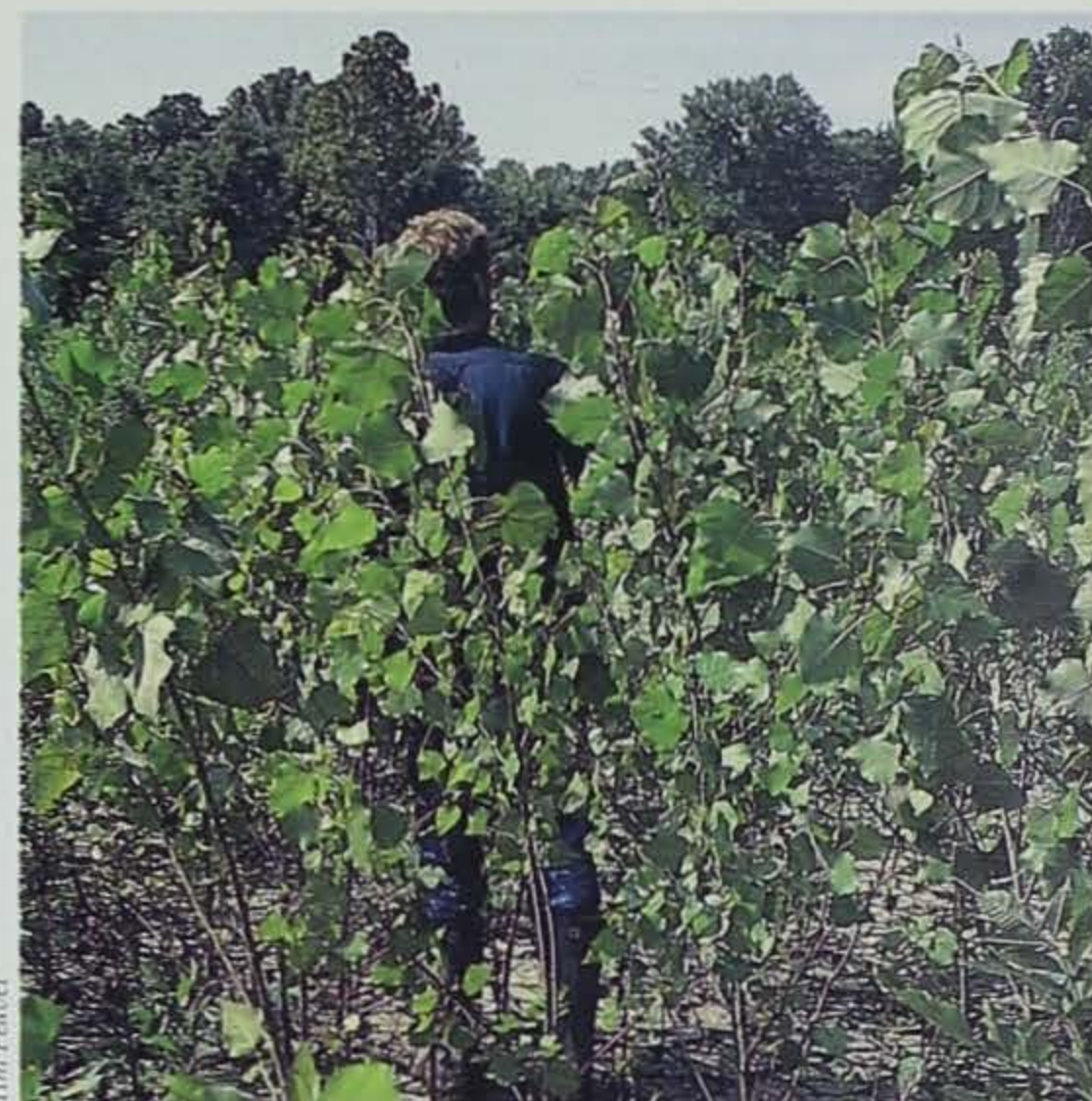
The annual floodings of these lands demand flexible planning and scheduling. Trees may be inundated every spring with flood water reaching ten feet deep in the timber. Certain ridges of higher ground on the bottoms that do not flood as readily

will support oak, hickory, black walnut, pecan, coffee trees and other upland types. Types of areas that presently do not support these trees have been targeted by the Corps for planting. Historical flood records are used to determine planting sites. Regeneration through natural seeding of acorns and nuts is very difficult due to the effects of flooding, parasitic insects, wildlife consumption, weed competition and shade. It's a tough world for an acorn, and a wonder that some do germinate and make it to maturity.

The planting of these mast-producing trees and the regeneration of portions of the floodplain forests through various harvesting methods provide a glimmer of diversity in the extensive maple and cottonwood monocultures.

Any program that is capable of tapping the knowledge and experiences of several agencies and public groups is bound to have positive impacts. The cooperative forest management program that the Corps administers will provide lasting benefits to the many resources along the Mississippi.

Tim Feavel is a district forester with the U.S. Army Corps of Engineers in Rock Island. He holds a B.S. degree from Wisconsin State University and has been with the Corps since 1980.



Tim Feavel

Clearcut areas soon produce thick stands of young saplings. Quick-germinating species such as the cottonwood (above) and silver maple are the pioneer species to these open areas.

A variety of private groups, concerned for the wildlife resource of the river, have taken an active interest in the Corps' forestry management programs. During the winter, the Mississippi River is home to a large number of bald eagles (left).

The Corps relies on the ongoing cooperation of timber buyers and loggers to implement the forest management plan.



Tim Feavel

