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WISCONSIN NATURAL RESOURCES

February 1990 \$3.00 Volume 14, Number 1

Sleeping in a cloud
Harvest of ice
Tailor-made for beaver

A quiet, crafty return

Thomas G. Jackson

In the forests of northern Wisconsin during winter, you might spy tracks of a secretive denizen in the snow. Its two-inch front and back paw prints nearly overlap on each side. Count the toe marks on each snowy track. Unlike dogs and cats, this woodland resident leaves a five-toed imprint for a calling card. It's a fisher, and its track is a rare find on a winter walk.

You stand even less chance of actually seeing this elusive, fast-moving weasel. The solitary fisher uses sharp claws to move with great agility among the branches and trunks of mature hardwoods and conifers. Tracks are often interrupted as it jumps from branch to tree to forest floor. When bounding along the ground, its paired tracks can range up to 16 feet apart on a hunting route that can extend up to 60 miles!

Fishers have boundless energy. They remain active night and day, year 'round. The source of this energy is a generous one and a half pounds of food per day. Fishers prey primarily

upon snowshoe hare and an occasional deer carcass, but they are quick enough to make a meal of a red squirrel; bold and crafty enough to conquer a porcupine.

Any animal that enjoys a battle with a porky has earned a reputation for tenaciousness. The fisher attacks the porcupine like a prize fighter, wearing its quilly opponent down with a barrage of facial strikes. Then the fisher goes in for the kill, biting the neck or the soft belly of the porcupine.

The female fisher's hunting range is more limited in February when she seeks out a den, quite often in a rocky crevice or hollow log. Mating takes place in late March or early April, but due to delayed implantation of the fertilized egg, young aren't born until 352 days later.

Extensive logging and unregulated fur trapping brought abundant populations of Wisconsin fishers to extirpation in 1932 despite formal protection since 1921. The 30- to 40-

continued on page 24

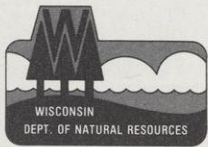


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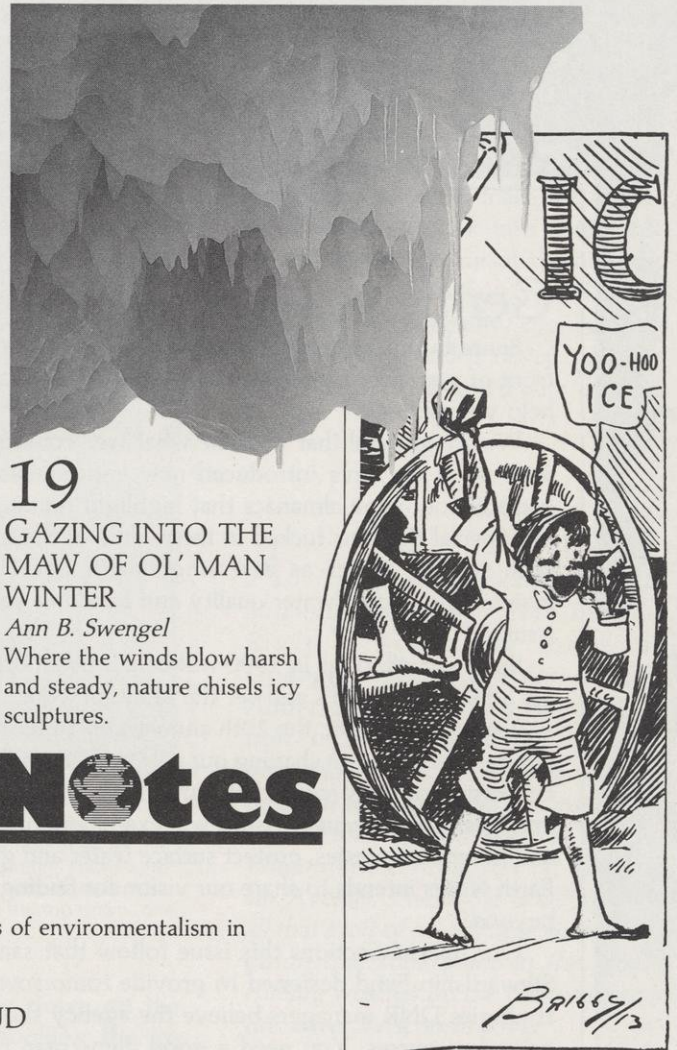
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Dave Kunelius

What's good for the beaver is good for the public as proposed in a new, flexible plan.



MARK WERNER



*The Ice
Wagon*

CLARE BRIGGS © 1913 COURTESY OF STATE HISTORICAL SOCIETY OF WISCONSIN

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ROBERT E. QUEEN



ROBERT E. QUEEN

Gentle readers,

Space in this publication is always at a premium and we generally don't take it to describe what's in front of you. Like a good smorgasbord, we typically lay it out on long tables and merely invite you to help yourselves.

We are grateful that you like what we "cook up" and keep coming back for more. You have stayed with us as we have introduced new enticements like *Wisconsin Traveler*, our four-page travelogue; periodic four-page almanacs that highlight hunting, fishing, and other types of outdoor recreation; and our Special Sections tucked in the middle of the magazine which have lent a bit of humor and spark to such serious topics as assessing health risks from environmental contaminants, recycling tires, maintaining groundwater quality and handling yard waste, as well as the coloring book we shared last issue.

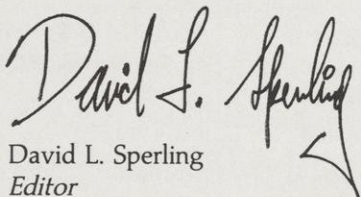
Since our offerings in 1990 will be a touch more varied and we hope eloquent, we thought we might act a bit as maitre d's and set the table for you.

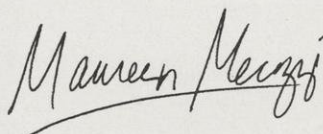
Throughout 1990, the 20th anniversary of Earth Day, we will share Earth Notes, a four-page look at environmental issues shaping our past and future. In this issue we help you appreciate that environmental concerns not only preceded Earth Day 1970, they preceded Wisconsin's settlement by European immigrants. Subsequent issues will examine more recent attempts to curb air pollution, reduce garbage and hazardous wastes, protect surface water and groundwater, and conserve soil. By exploring our past, Earth Notes intends to share our vision for finding and managing environmental issues in the 1990s and beyond.

Our Special Sections this issue follow that same theme. "A fund for the future" describes the new Stewardship Fund designed to provide tomorrow's outdoor recreation. Another four-pager shares the strategies DNR managers believe the agency should follow to anticipate growing demands for limited natural resources. You need a good game plan to succeed with any goal, and this section likens the strategic journey to a game of chess.

What's simmering for future issues of *Wisconsin Natural Resources* this year? We'll marvel at geese and wild orchids. We'll take you hunting for squirrel and fall turkeys. We'll discuss the intricate system that protects your rights to public waters. Special Sections will zero in on wetlands and harbors. And *Wisconsin Traveler* will continue to ferret out interesting places, events and bits of history to illuminate your Wisconsin explorations.

Bon appetit!


David L. Sperling
Editor


Maureen Mecozzi
Associate Editor

Tailor-made for beaver

A draft proposal for managing beaver is a tight fit with the furbearer's habits, habitat and abundance. Trappers, foresters, anglers, environmentalists and even animal rights groups helped wildlife managers fashion it.

Dave Kunelius

Nature did a fine job of designing the beaver. This adaptable furbearer has all the physical attributes to live in the water or on land. Moreover, if habitat isn't to its liking, the beaver changes it: A dam here, a dam there, a bank lodge here, a pond lodge there. The beaver doesn't even need a public relations agency: It is preceded everywhere by a sterling reputation for industriousness — "Busy as a beaver."

Given the beaver's flexible approach to life, you'd think managing the species in Wisconsin would be a simple task. While giving some landowners, trappers and anglers reason to smile, the beaver's willingness to live and labor just about anywhere has others wishing the hard-working furbearer would take an extended vacation.

It's a dam shame, the anti-beaver camp will tell you: A beaver builds a dam and the water backs up, flooding a stand of valuable timber or drowning a field of corn. Beaver dams on trout streams slow water flow, raise water temperatures and cause siltation, killing the trout. Plugged culverts and flooded roads drive county and township maintenance crews crazy.

Aren't they wonderful, say beaver proponents: The water stored behind a beaver dam slowly trickles out during a drought. You'll find some of the best trout fishing around in a pond



In 1715, the beaver's amazing abilities were portrayed as destructive and their populations boundless. Their valuable pelts became the basis of the New World economy.

behind a beaver dam; those ponds provide great habitat for waterfowl, too. And trappers will tell you that beaver pelts sure help add a few bucks to their bank accounts.

The Department of Natural Resources is attempting to balance these opposing viewpoints in a beaver management plan now being developed with the help of county and town governments, national foresters, Indian tribes, Trout Unlimited, the Wildlife Federation, the Conservation Congress, the Sierra Club, animal rights groups and scores of other interests. Volunteers to help with the plan were sought through DNR's citizen involvement newsletter, VOICE; nearly 200 people responded.

The individuals and groups re-

ceived a "concept plan" for comment; their opinions and observations, incorporated into the final plan, will help shape and refine the way beaver are managed in Wisconsin. All involved recognize that beaver are valuable animals whose special place in the natural environment is worth protecting.

The pelt that made Wisconsin famous

Beaver have a special place in Wisconsin history as well. Beaver hides, used by the Indians as garments, were sewn together flesh side out with the fur inside

for insulation. With wear, the longer guard hair would rub off, leaving thick, soft inner fur that would mat down, somewhat like thick cotton.

Fashion drove the desire for beaver pelts across Europe in the 1700s. The scales along each hair interlock the individual fibers, making beaver pelts an excellent material for felt used in the stylish hats of the time.

In the royal courts of Europe where the top hat was a symbol of distinction, demand was high for beaver felt hats. In his book *Beaver Behavior*, Morrell Allred notes that King Charles I of England purportedly decreed as early as 1638 that, "Nothing but beaver stuff, or beaver wool shall be used in the making of hats."

Beaver were trapped in such high

COURTESY OF THE STATE HISTORICAL SOCIETY OF WISCONSIN

numbers in Europe that the species was nearly driven to extinction on that continent. When beaver were discovered in the New World, the supply seemed inexhaustible.

A study of records from the early trapping trade by A. W. Schorger, a wildlife management professor at UW-Madison, shows Wisconsin was noted among the French for the quantity and quality of its beaver. Nicolas Perrot, French explorer and fur trader who first came to the "northwest" (as Wisconsin Territory was noted in those years) in 1665, observed that as one went north to the Wisconsin River, the beaver were of better quality; the winters became long and cold and the hunting season lasted longest.

A memo of 1786 from British traders at Montreal stated that the Chipewewa country south of Lake Superior was unsurpassed for its fine furs. Many thought the region produced the best assortment of furs in North America. Tons of beaver pelts were pulled, carried and canoed out of the territory that was to become the state of Wisconsin. Trading posts were set up at Chequamegon Bay, Madeline Island, Green Bay at the mouth of the Fox River, Pepin County, Prairie Island (in present-day La Crosse), on the Mississippi River below the mouth of the St. Croix, Lac du Flambeau, and Prairie Du Chien. Fortunes were spent, made and spent again with beaver "currency."

Allred noted that beaver pelts formed the average base of exchange for the early fur companies. Ten large pelts bought a gun, two were traded for a pound of gunpowder, one pelt bought two pounds of shot, two pelts bought a pound of beads, a pelt for one hatchet, or 12 pelts for a wool blanket. In the northern, forested portions of the new country both Indian and white became dependent on The Hudson Bay Company for their supplies; the medium of exchange was the beaver. The Northern Outfit of the American Fur Company at La Pointe, Madeline Island issued "beaver money." This paper certificate was payable to trappers as scrip and

good for merchandise only. In actual dollars, a beaver pelt was worth from \$2.25 to \$4.38 in the early 1800s.

The beaver pelt was also the standard by which other skins were measured in the Fond du Lac region. One large, prime beaver pelt was worth two otter and three marten or mink pelts.

By the time Wisconsin attained statehood in 1848, however, active trapping for beaver had subsided, due to the dwindling numbers of the furbearers and burgeoning human populations in the state, who altered the landscape in their wake. The beaver's survival on the North American continent hung by a thread spun by a worm: Silk was in fashion, and beaver hats were no longer in high demand.

Beaver management: Boom or bust

Unmanaged as a boom-to-bust resource prior to statehood, the beaver approached extinction around the turn of the century when fewer than 500 animals were present. Throughout the last 90 years, beaver management has run the gamut from completely protecting the nearly extirpated furbearer to liberal trapping seasons and subsidized trapping contracts.

Trapping seasons were open year-round in the mid-1800s but were closed six times between 1893 and 1947 in which seasons were closed from one to 14 years. These closed seasons plus a program of live-trapping and restocking were instrumental in replenishing Wisconsin's depleted beaver population.

Mandatory beaver pelt registration was initiated in 1934 to maintain an accurate count of the harvest, which has ranged from a low of 1,869 in 1935 to a high of 29,447 in 1979-80. The registration system was dropped in the 1983-84 season after DNR wildlife managers started to census the harvest via mailed questionnaires to trappers. This saved managers time as well as the state some money.

Changes in logging practices that

increased aspen production have caused a boom in beaver populations. Today, the demand for beaver hasn't kept pace with the supply Mother Nature is providing — quite a contrast from the early 1800s. The amount of damage beaver are doing on both public and private lands is increasing along with number of complaints.

Counties and townships have tallied thousands of complaints during the last decade as beavers continuously plugged culverts and flooded roads. County foresters and home owners living near the water have an especially dim view of the flooding and gnawing damage to their trees. Moreover, fisheries managers who spent considerable time and effort keeping beaver out of high-quality trout streams are not particularly fond of Wisconsin's largest rodent either!

More than \$4.2 million worth of beaver have been trapped in the state in the past dozen seasons, making beaver one of the most economically valuable furbearers in the state. Nonetheless, it's hardly easy money. Trapping is a tough business: Working ice sets, or traps, is a cold, miserable and often dangerous task. The traps are costly and trappers are at the mercy of the weather most seasons. It's no wonder that despite plentiful beaver supplies, the number of trappers has decreased.

Several stopgap measures, such as the subsidies, have been adopted to deal with beaver problems while the comprehensive beaver management plan is developed. Beginning in 1983, a variety of trapping payments ranging from \$7.50 to \$30 per beaver provided incentives to control beaver populations, primarily in northern Wisconsin. Other strategies included trapping seasons with a no-bag limit varying by area from October through April; allowing use of snares

continued on p.17

Winter signs of wildlife are beautiful, but you wouldn't be happy to discover a beaver felled a favorite tree on your lakeshore property.

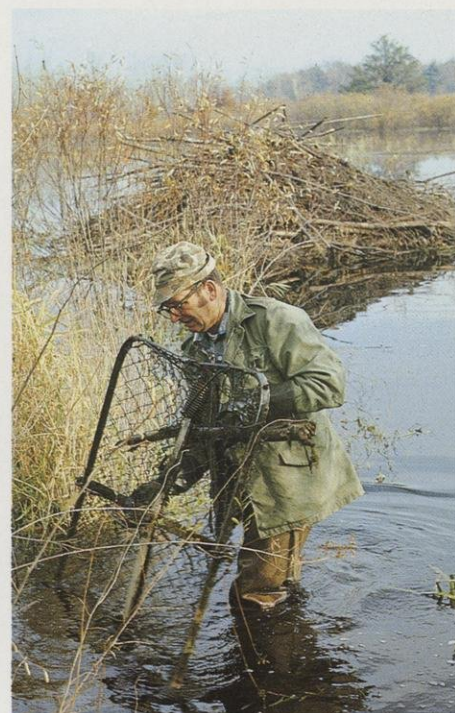




DEAN TYEDT

(above) At home in the workplace. Beaver build lodges in the middle of current construction projects. That provides food, shelter and a chance to keep an eye on the "job site."

(below) Beaver's lips form an airtight seal behind their sharp front teeth so they can chew without choking.



DEAN TYEDT

Most beaver are left alone. However, wildlife and fisheries managers contract with trappers to remove beaver that block trout waters. In other places, beaver dams are welcomed because they create small ponds for waterfowl.



CHARLES PILS

EarthNotes

ISSUE 1

REFLECTIONS AND SPECULATIONS ON ENVIRONMENTALISM FOR THE 1990s

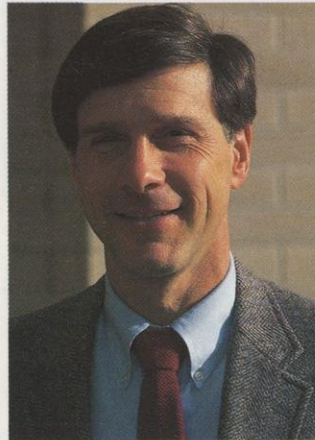
Earth Day 1990. Earth Year 1990. What might we do to make it special? We will take pause in April and in many grand speeches across the land we will celebrate our accomplishments of the last 20 years and our hopes for the next 20.

Environmental issues and challenges evolve very quickly. It may seem that we've been dealing with contaminated fish, birds, turtles and such forever. In fact, we started learning the environmental consequences of PCBs, mirex, endrin, dioxins and water toxicants less than 15 years ago, some just last year.

Our shift from knowing about a problem to acting on it

moves so quickly that history can't keep up! The environmental threats are too real to merely let scientists study the issue in a lab and develop "the answer" in a few years. We must prevent fatal exposures now. So we assess our exposures, estimate risks, act to reduce risks, monitor the environment and we move on. The history of our environmental actions is being written in newspapers and broadcasts, not textbooks.

The daily news provides poor perspective for understanding where we've been and where we're headed in environmentalism. It provides few clues for understanding the ba-



ROBERT E. QUEEN

sis of our current thinking: no family tree of conservationists, no deep well of knowledge to draw from. Who were our he-

roes? What environmental crises did we face before the first Earth Day?

Through Earth Notes, we want to dig into the roots of Wisconsin environmentalism. We want to raise your curiosity so you will explore the state's rich past for yourself — tunneling through our history, parting the philosophical roots of conservation and environmentalism and, ultimately, surfacing again to use this renewed knowledge as a foundation for charting Wisconsin's environmental future.

—Lyman F. Wible, Administrator
Division for Environmental Quality



Get packed for a journey.

Take a compass, binoculars, a magnifying glass, a crystal ball and a mirror. You'll need the compass, bino's and magnifying glass to gain hindsight from some pivotal events in the past, the crystal ball to make some provocative guesses about the future. The mirror? Well, every now and again we need to take a honest look at ourselves today: our achievements, the challenges ahead and our resolve to reach the future we envision.

This is a trip to examine our actions and intentions on environmental issues; a journey to discover why we choose to face some problems and ignore others. The environmental philosophy we developed as a consequence of our actions will mark our route.

Ready?

Environmentalism started in the late 1960s culminating in Earth Day, a sudden awakening to the importance of environmental protection. Right? WRONG! This entire issue of Earth Notes focuses on environmental battles waged and won before 1950. We'll peer back at the fabulous fifties, psychedelic sixties, war-torn seventies and self-aggrandizing eighties in future issues. For

now, grab that compass — you'll need it to navigate through a time in Wisconsin history when maps were in short supply.

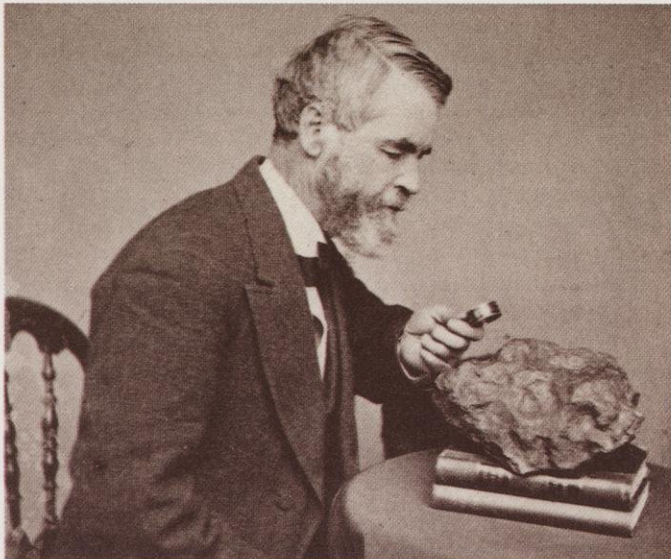
We take pride in a clean environment now, but it wasn't always so. Wisconsin's environment survives as well as it has because relatively few of us have inhabited this bountiful land for relatively little time.

Even our borders and high-

ways were defined by our great waters — Lake Michigan and Green Bay on the east, the St. Croix and the Mississippi River on the west, the Montreal and Brule rivers to the northeast. For nearly 200 years, our lifeline and highways were the Fox and Wisconsin rivers carrying commerce and European civilization from Canada to the Mississippi Valley.



STATE HISTORICAL SOCIETY OF WISCONSIN



STATE HISTORICAL SOCIETY OF WISCONSIN

"The salubrity of the climate, the purity of the atmosphere, and of the water, which is usually obtained from copious living springs; the coolness and short duration of summer, and the dryness of the air during winter, all conspire to render Wisconsin one of the most healthy portions of the United States."

— Increase Allen Lapham (1811-75)
Wisconsin geologist, historian and writer

About 20,000 Native Americans lived here when the French fur traders plied our great rivers from the 1630s through the mid 1700s. The French abandoned their forts and posts west of Mackinac in 1690s, but the voyageurs and renegade coureurs de bois (woods rangers or runners) remained.

Under British rule from the 1760s through 1780s, fur trading forts were established at Green Bay and Prairie du Chien; there were smaller posts in Kewaunee, Manitowoc, Sheboygan and Milwaukee.

The British relinquished their claims and forts when the War of 1812 ended in the Treaty of Ghent in 1814.

Federal land surveyors who established the township and section system of land description reached Wisconsin in 1833. That system and the Northwest Ordinance (of 1787) paved the way for land development. Surveyors set uniform land descriptions based on the 36-square-mile "township" and

one-square-mile "section" we still use today. The Ordinance set the path leading from territorial government to state-



DNR PHOTO

The "beaver mark" blazed by a land surveyor on this witness tree pinpointed Section 3 of Township 37 North, Range 3 West in the Flambeau River State Forest.

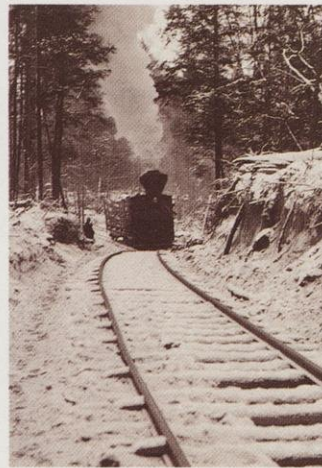
hood, jury trial, religious freedom and private land and public water rights. It is the foundation of our notion that public waters shall remain forever free.

When Wisconsin "badgers" mined lead deposits between 1825 and the 1860s, more than

half of Wisconsin's residents lived in the mineral-rich southwestern corner of the state. Combined mining wastes and a growing population constituted an early environmental challenge. In fact, the population was sufficiently small (statewide, settlers numbered 11,683 in 1836), the crude charcoal lead smelters dispersed and southwestern streams scattered that the environmental effects of mining were spread across a

region rather than concentrated in a manufacturing center.

Even at the time of statehood in 1848, only 210,000 people dwelt in scattered communities along our great waters, the corridors of transportation. It's sobering to realize that bulk of Wisconsin's unbridled development and resource-depletion happened in the span of one human lifetime from the 1860s through the 1940s.



DNR PHOTO

Logging trains crisscrossing northern Wisconsin ...

The railroads crossed Wisconsin in the 1850s. Wisconsin and Illinois lead mines fed Civil War munitions works in the 1860s. The first cheese factory opened at Ladoga, Fond du Lac County in 1864. In 1867, the State Forestry Commission

recommended planting shelter belts of trees to prevent harsh climatic changes predicted as extensive logging continued unabated. The 1870s through 1890s saw the great heyday of Wisconsin logging and the Peshtigo Fire of 1871, which burned nearly six counties in northeastern Wisconsin, claimed more than 1,000 lives, and began a great natural tragedy — soil erosion. The next year, the Legislature outlawed the burning of marshes, fields and woodlots during fire-prone seasons. In 1879, T.C. Chamberlain's "Soils and Subsoils of Wisconsin," described the varieties and textures of soils we were starting to lose.

Our agricultural base slowly switched from wheat farming to more intensive dairying in the 1880s and 90s as grain farmers moved west to flatter, more open prairie soils of the Dakotas.



DNR PHOTO

... brought timber to market and settlers to the woods.



DEAN TVEDT

Water, wind, grazing animals and plowed slopes all take a toll on the life-giving soil. Fencerows, trees, shrubs, contour strips and less invasive farming methods can stem the hillside erosion captured on this Dodge County farmstead in March, 1952.

"The axe and the torch, the plow and the sharp hoofs of the grazing herd have torn a wide breach in nature's defenses, and through this breach the waters tumble, carrying with them soil and fertility and the strength of a people."

— H.T.J. Cramer, Asst. Director,
Wisconsin Conservation Department, 1948



STATE HISTORICAL SOCIETY OF WISCONSIN

The drive to transform Milwaukee into the nation's machine shop and tannery happened before we saw the value in managing heavy metals, chemical wastes and sludges. Human sewage posed more immediate health threats through the 1920s.

From 1900-1970, we built a vast network of pipes, pumps and power stations to meet two of the environmental challenges each great society must face — bringing clean drinking water to people and taking human sewage away. Few Wisconsinites realize the pivotal role this state's programs played in forming the model for our nation's sanitation and protecting public rights to water.

Wisconsin's strict well code was born of necessity. In the late 1800s and early 1900s, waterborne diseases were rampant. Typhoid, cholera, dysentery and diarrhea were widespread killers in developing urban areas claiming more than 2,500 lives in 1910. A report in 1877 by the State Board of Health's Committee on Water and Water Supply concluded that no community in Wisconsin provided a functional water supply or adequate waste treatment. Then as now, in the absence of state and fed-

eral help, few communities could fund their own water works and waste treatment plants.

We also learned that money alone can't keep the environment clean. During the vast public works projects of the late 1930s, Wisconsin quadrupled the number of communities served by wastewater treatment plants. Merely building these plants was not enough: During WWII, many relatively new treatment plants deteriorated; they needed to be maintained and the people who staffed them needed training, community support and professional respect for providing a vital service.

The Well Act of 1936 prescribed construction standards to keep surface contaminants from seeping into wells and introduced the concept of zoning minimum distances between wells and septic systems to prevent contamination of one's own drinking water.

During the same time period, our southeastern corner gained renown as the nation's tannery and machine shop while papermaking developed along the upper Wisconsin River. The significant industrial wastes of acids, alkalis and casting metals paled by comparison to the huge volumes of disease-carrying raw sewage that was dumped into state waterways.

F.H. King's pioneering studies for the UW Agricultural Station reported on "Wind Erosion in Wisconsin," in 1894. In 1899, Professor William Trelease's article on the "workings" of Madison's lakes complained of algae problems.

There were isolated environ-

mental voices, but neither the public, business, nor legislative leaders called for environmental protection. As summarized by Ernest F. Swift, Wisconsin Conservation Department Director from 1947 to 1953, "little that could be called 'conservation' was known or practiced during the first 50 years [of statehood] except for occasional warning cries lost in the tumult caused by falling trees, forest fires, booming guns and a million plows.

"With the awakening at the turn of the century came a great movement for preservation of remnants of renewable resources, but the non-renewable soils, waters and minerals were still considered inexhaustible."



STATE HISTORICAL SOCIETY OF WISCONSIN

We were environmentalists before we were conservationists. State Board of Health efforts to provide clean water and replace unsanitary conditions like this old Wood County well preceded conservation practices to preserve soil, fisheries, forests and game.

"... at the turn of the century came a great movement for preservation of remnants of renewable resources, but the non-renewable soils, waters and minerals were still considered inexhaustible."

—Ernest F. Swift, Wisconsin Conservation Department director 1947-53



DNR PHOTO COURTESY OF THE STATE HISTORICAL SOCIETY OF WISCONSIN

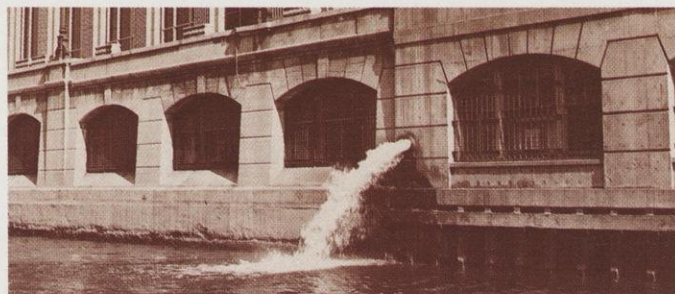
Dramatic, visible fish kills prompted action to curb pollution. Tons and tons of less recognized pollutants — soil, nutrients and chemicals — fouled our waterways without raising a hue and cry for cleanup.

Streams and rivers needed protection, too. Food wastes from commercial cheese operations, processing wastes from vegetable canneries and industrial wastes from the growing paper industry flowed into surface waters unchecked; a state survey in 1877 determined the Wisconsin, Black, Yellow, Wolf, Fox and Chippewa rivers were heavily polluted. The Legislature appropriated \$10,000 from the Conservation Fund (funded by hunters and anglers) to start resolving these pollution problems.

In 1917, the Legislature made it illegal to throw any manufacturing refuse or any substance harmful to fishlife into streams. A fish kill claimed 10-20 tons of game fish on the north fork of the Flambeau River below the Park Falls pulp and paper mill. That prompted formation of a State Committee on Water Pollution, created in 1925 to protect the economic and social values of clean sur-

face waters as well as provide healthy drinking water. The first extensive report on "Stream Pollution in Wisconsin" was filed by the Board of Health's State Committee on Water Pollution in 1927. The following year, a state code restricting lakeshore and streambank development was enacted.

UW Professor O.R. Zeaman's leaflet "Control Soil Erosion by Crops, Terraces and Dams," provided practical advice for stemming runoff. It also started a decade of soil awareness in 1931. A "Land Economic Inventory" by John Bordner linked soil fertility to property value. A university publication in 1936 shared a variety of rural land zoning ordinances communities were using to contain development. The nation's first Soil Conservation District was established in Coon Valley of Vernon County in 1938.



DNR PHOTO

We must strive to see the unseen pollutants. In some places, storm sewers still carry untreated wastes like litter, salts, oils and residues directly into streams and rivers.

In the post-World War II industrial boom, industrial wastes outstripped human sewage flowing into our waterways. Combined captains of industry resisted water pollution regulations claiming that such controls would drive business out of the state. The Izaak Walton League and a handful of state senators resisted the combined lobbying energies of the Wisconsin Chambers of Commerce, the Wisconsin Manufacturers' Association, the Green Bay Association of Commerce, the Wisconsin Council of Agriculture, the Wisconsin Sulphite Pulp Manufacturers Research League, the Wisconsin Federation of Labor, the League of Municipalities and the Green Bay Federated Trade Councils

by strengthening state water pollution controls and budgets. With support from conservationists, the Conservation Commission started a continuing Rivers Survey Project in 1948 and the federal government provided the first state aids to stem water pollution.

Today, attitudes have changed a lot and DNR works with many of the same businesses and environmental organizations in forming environmental policy, monitoring stream quality, testing the efficiency of boilers and baghouses, discussing new tests for toxic substances, planning landfills and debating how to finance environmental programs.



EUGENE SANBORN

Distributing tree seedlings to farmers in Marquette County in June, 1937; an early program to curb soil and wind erosion while promoting forestry.

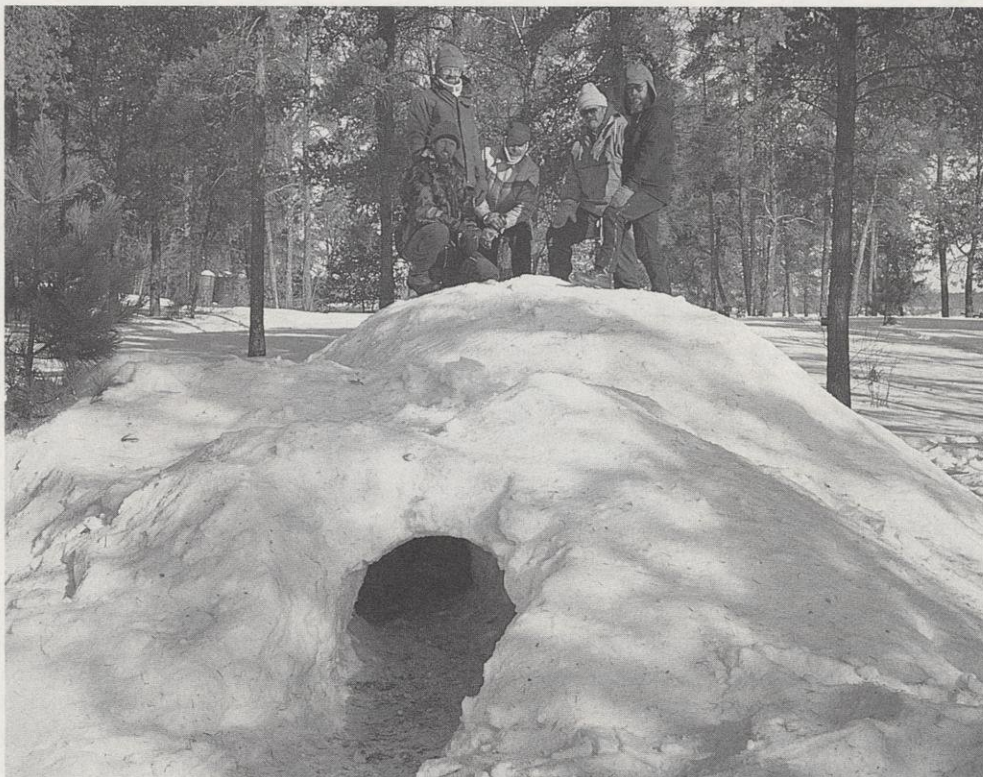
How did we move from an era of business vs. environment to an era in which a clean environment means good business? How are we making the transition from a time of belching smokestacks, bubbling dumps and spewing pipelines to efficient incinerators, landfills, recycling centers and industrial waste pretreatment? How are we convincing businesses that it's more economical to reduce wastes and prevent pollution than to dump wastes and pay heavy fines?

You ask a lot of questions for a traveling companion! Future issues of Earth Notes will describe how the industrial boom from the 1950s through 1980s brought tough lessons

and tough decisions about air quality, water quality and waste management. We'll look at the challenges of curbing invisible, odorless pollutants. We'll raise issues we already know society will face in the 1990s. And we'll share our strategies for meeting the environmental challenges we anticipate while preparing for new environmental threats we don't yet recognize.

Stay with us, and share the adventure.

Earth Notes is produced by the Division for Environmental Quality, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707



JIM BISHOP

In a few hours, you can build a snow shelter strong enough to stand on.

Sleeping in a cloud

When the weather outside is frightful, a snow cave makes a delightful retreat.

James C. Bishop, Jr.

Outside, the temperature was a chilly 15° below zero. Inside, six men slept snugly within a cloud made of snow. The temperature? A mild 28°. Their sound slumber was aided by warm sleeping bags and a high caloric meal gulped down a few hours earlier.

The men had come to the shores of this remote northern Wisconsin lake to explore the area, fish, cross-country ski and generally enjoy the quiet of winter. For shelter they had built a snow cave, which offers better protection from the elements than a tent or igloo.

Grouse, ptarmigan, arctic fox and other wildlife find shelter by using snow's natural insulating properties. Like the Alaskan Eskimos and Canadian Indians who survived by watch-

ing and learning from animals, we Northwoods adventurers learned to appreciate snow for shelter building.

Snow's insulating value lies in the millions of air pockets trapped between flakes and ice crystals. Goose down, Holofill, foam and other products use the same principle: trapped air is a natural insulator.

As more people enjoy winter activities, building and camping in snow caves is increasingly popular.

Mike Kinziger, an instructor in the Parks and Recreation Department at the University of Wisconsin-La Crosse, teaches a course in winter camping that includes constructing and sleeping in snow shelters. Kinziger has built more than 90 such caves.

Once you decide to try camping in a snow shelter, allow plenty of extra time in your schedule to build it right. Even an experienced hand like Kinziger spends about four to five hours on the process — two hours shoveling and forming the cave; two or more hours letting the snow set and harden.

First, a warning. These winter shelters should **never be constructed alone or by beginners**. Cave-ins can occur if the shelter is not properly built and several hundred pounds of snow could totally immobilize a digger. Without help, the cave could turn into a cold temporary grave. Build your first few snow caves in the company and guidance of experienced snow campers. The first time

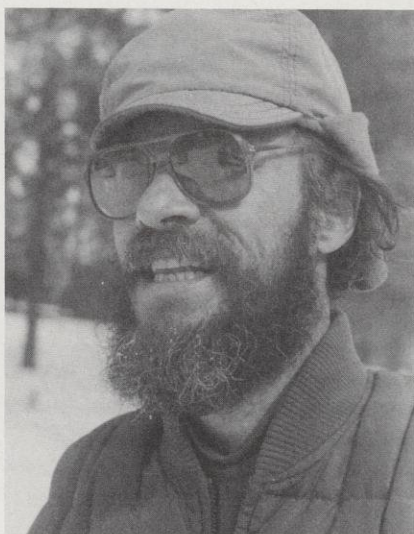
you try and build one on your own, build it in your back yard with a few friends. That way, if you have a cave-in there are plenty of hands to dig you out and you can quickly get into the house to warm up. Snow camping is only fun if you can enjoy it safely.

The work is strenuous. Plan on spending the first hour heaping snow into a pile that will accommodate the number of campers.

Luckily, for us, the snow was readily available and 12- to 14-inches deep. Six of us spent at least 40 minutes of hard and steady shoveling making a mound eight feet high and 20 feet across. We used lightweight, plastic shovels with huge, wide scoops to pile up the snow and remove the excess from the entrance. Even for smaller, two-person caves a great deal of snow must be moved and piled.

Gauging the cave's height is important. Any cave should provide ample room to kneel and sit up in without touching the ceiling and showering snow on the neck and sleeping bags.

Every time we added two feet of snow to the mound, we tamped it down on the top as best we could with shovels, then Kinziger donned snowshoes and carefully walked on the sides to shape and tamp the snow cave. He said tamping is important to



Mike Kinziger, UW-La Crosse, teaches students to enjoy snow caves and winter.

JIM BISHOP

help force the pointed snow crystals into each other during the settling process which is known as "sintering."

After the snow was mounded, Kinziger inserted colored poles through the snow pile to designate each corner, side, and the center of the cave. These would give the excavators a sense of dimension and direction when hollowing out the inside.

Once enough snow is piled, the poles set, and the whole structure tamped firmly down, it is up to nature to firmly meld or sinter the snow crystals together without com-

pressing the trapped air spaces. Kinziger likes to give the mound at least two hours to set. This helps insure a solid roof once the digging begins. Dry, cold, new snow is best for snow cave building because its flakes have nice sharp points, Kinziger said. Wet, snowball snow is the least desirable.

Before digging, Kinziger and the other campers don rainsuits. The constant kneeling, laying and working in the snow would thoroughly soak any other kind of clothing. Waterproof or thick wool mittens or gloves are also needed. Once the digging was over, the men quickly got into warm, dry clothes.

Initially, the cave excavators worked with small hand trowels or GI-type metal trench shovels digging a hole toward the center pole. Once reached, the remainder of the cave was carefully hollowed until all the corner and side poles were located. The poles were then removed. The trench shovels work well because the handles are short and the spade part of the shovel can be tightened at an angle to carve out a curved wall, hollow the core and scoop removed snow towards the entrance.

By looking up through the one-inch pole hole in the ceiling, you can gauge the roof thickness. Roofs can vary but the average thickness should be around 12 inches, give or take a couple. The one- to two-inch hole in the ceiling provides needed ventilation and should be kept open. Keep a ski pole handy in case falling or blowing snow cover over the vent hole.

All excess snow is shoveled out the entrance and can be piled on each side of the entry hole. This will keep out drafts and provide additional protection from the elements.

continued on p.14



(left) Author and snow camping convert, Jim Bishop.

(opposite top) It's hard work. Six campers spent more than 40 minutes piling snow for an eight-foot-high 20-foot long snow shelter.

(opposite bottom) The crew sips tea and swaps stories as the shelter "sinters" or hardens. It's important drink plenty of fluids when working outside in the winter.



S.N.O.W.

Justin Isherwood

A point, maybe more of a promontory, exists somewhere in early winter when snow is miraculous: A wonder drug if ever there was wonder. Some contend this is a childish response, a child too untempered and soft-shelled to witness a world without prejudice for snow tires, fuel bills and slush. I do not believe the accusation: Snow is quickening to us all.

Most compelling about snow is its ease. Snow does not fall; rain does, for rain must hustle, spit and fall through the ether screaming all the way down to splat on the ground. As a child, I was disappointed to know when persons fell from terrible heights without benefit of a parachute they did not splat all over the ground like raindrops. People weren't any the worse for falling 10,000 feet as falling 12, which is a disappointment to a kid.

Snow doesn't splat. After a 10,000 foot fall, snow can land with every crystal, every cornice and gable intact. What recommends snow to me is that it doesn't hurry. Snow waltzes

down a December sky like a debutante down a Danish staircase. Snow understands adoration. It knows how to act when wearing the crown jewels of meteorology. Snow knows it's gonna get soiled when it touches the ground and there ain't no going back upstairs; snow falls then with thoughtfulness and grace. It enlists all virtue, all elegance and worth, all beauty and erudition in one flight, one flirtation of air.

I hear music when it snows. No great operatic choruses, that is for rain to have. Something more Brahmsian, a lullaby nearly too special to miss by dozing off. Snow swaddles sound. It reduces my country, makes even the neighbor's pasture seem foreign and I have but this yard and it too with snow is strange.

The world and what belongs to the world dims under snow; all that is grasping and ownership is lost and

fallen away in the void of snow. Snow increases the diameter of the planet a millionfold. Places that were near and common are, with snow, isolated and exotic stations: islands, asteroids, distant colonies of home. Snow is the most loving page of wilderness, blank and empty and totally its own.

Snow not only obscures the world, it shuts it up. It silences and muffles. Snow obliterates noise, rubs it right out of the air so not only is a person delivered to an island, but an isle distanced from everything else by a dose of all-encompassing quiet. Snow stillness can be uncomfortable. Where has the world gone? Some go mad with snow, unable to take the radical confinement, locked in a white solitary as might be heaven for one and hell to another.

I have wondered what they think of snow in Iran for I know it snows in Iran. I give credit to my own counsel that snow either drives you mad or to worship and folks peter off into

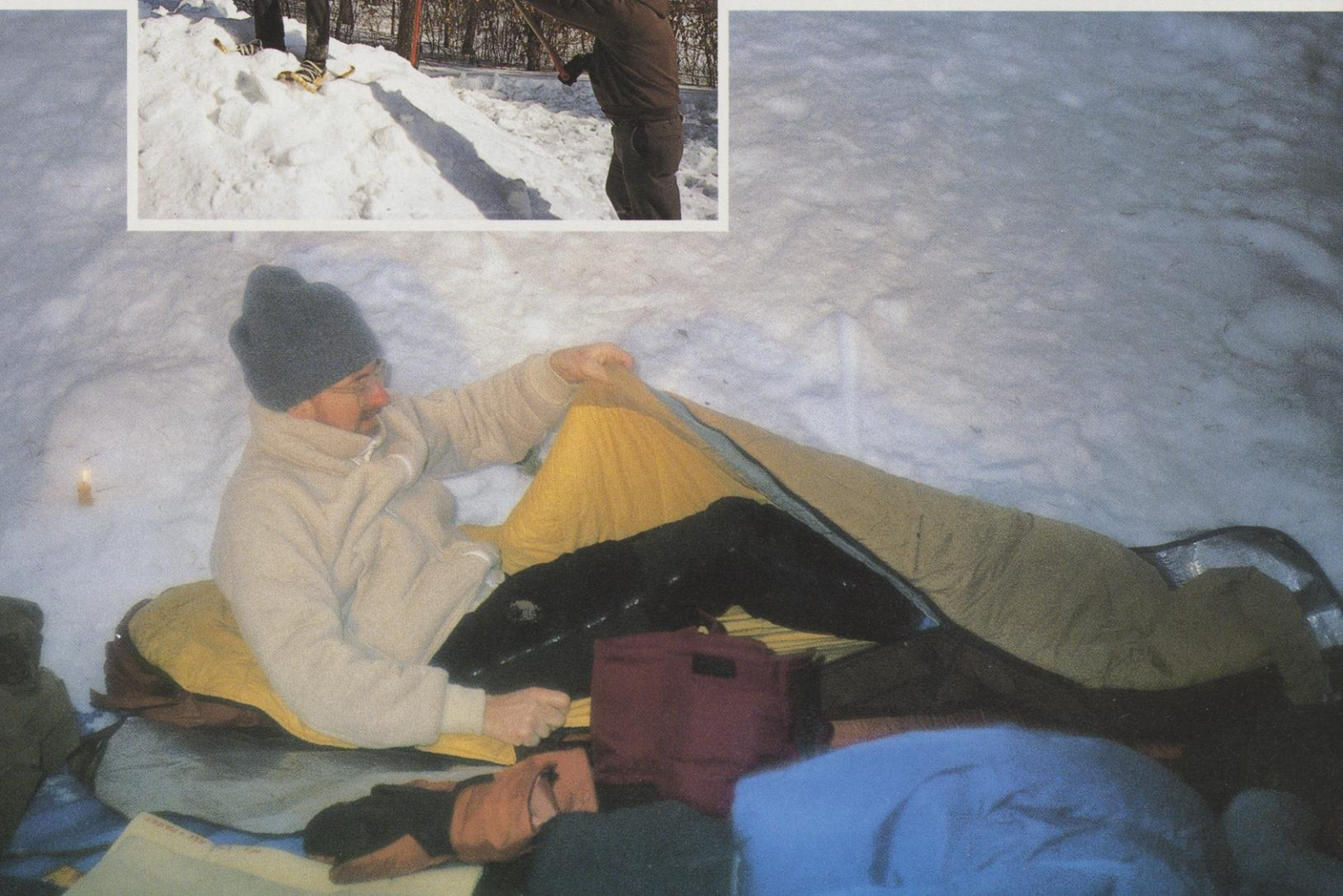
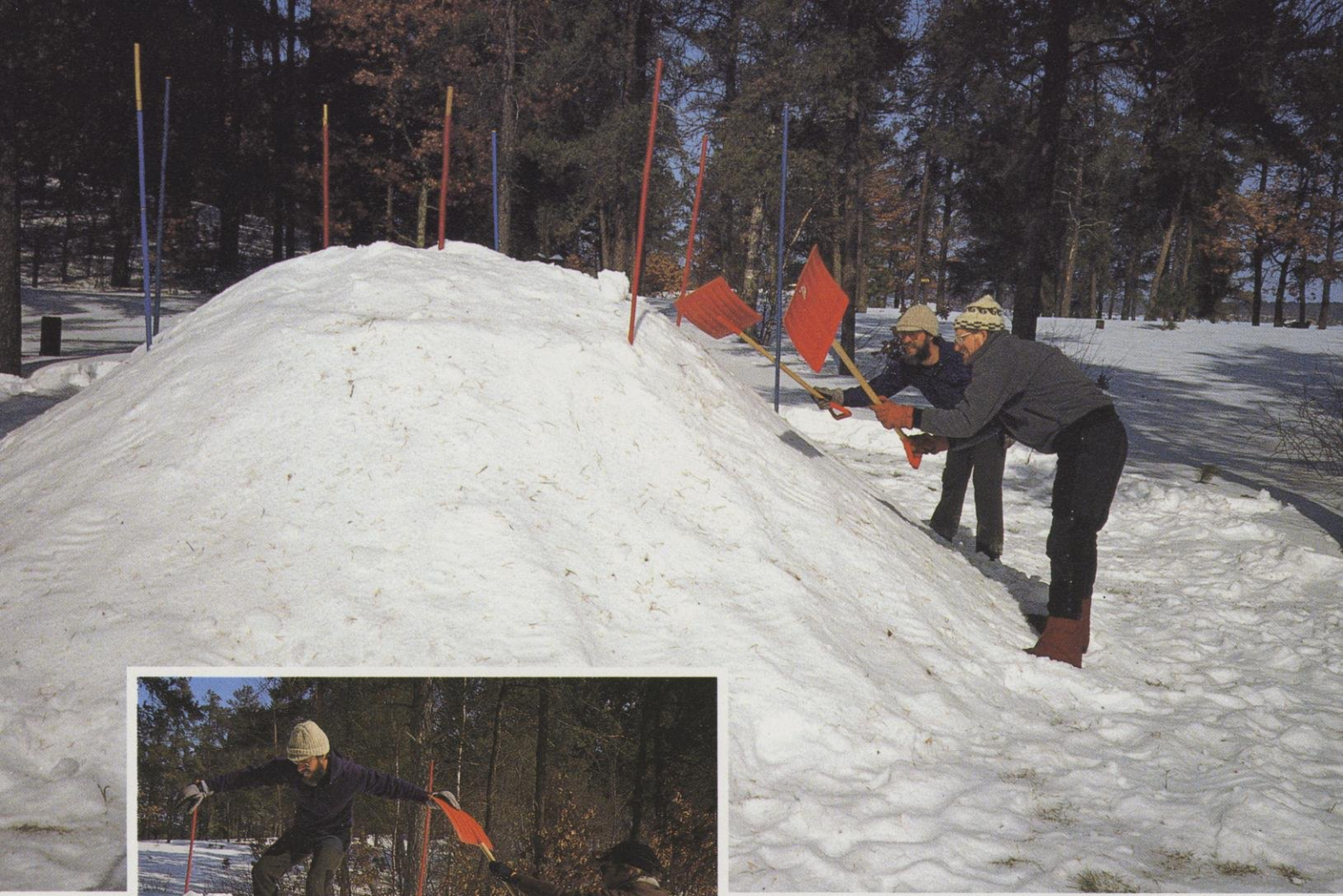
whatever direction they've got a built-in tilt for. Do kids in Iran make snowballs and build igloos or is snow only tormenting them? Every western kid is indoctrinated with the knowledge that Claus comes on snow runners and if you don't get it in your head early to adore snow, you've got trouble explaining how to get a gift-bearing sleigh across the universe.

My son has one of those amplifiers to hear whispers at the range of a thousand feet, a stomach growl at a mile. For the darn of it, we turned the thing loose on snow, listening for the sound snow makes when it hits the ground. The device was barely able to find a sound, but the longer we listened, the more certain we were that this noise at the last edge of audibility was snow hitting the ground: a sound where before was silence. Exactly what pitch I can't honestly say, but it sounded sorta like wind chimes, lead crystal wind chimes costing millions, tinkling together in the slightest way. The sound of spires breaking off snowflakes hurt us to hear. Fractures breaking into the lattices of hexago-

nal oracles, high-pitched winces, gems broken to tinkle across the ground, sounds like a mouse tiptoeing across a bin of recycled glass. I was hurt to know there is a sound to snow and the sound isn't very nice. It was about here my kid says "Heh, heh, heh, all the better for snowballs."

Snow? Love it or leave it, I say. Ship out from snow country every person as can't abide snow and complains endless about snow's rotten character. Those who don't like stillness too can move. And those who must do business and are impatient for plows can leave, taking with them their salt and snow throwers. Take too the noisy snowmobiles and power augers. Take away all those rabid noises and leave snow to those who hold yet a kid's grateful appreciation. Of snow thrown from bellied sky to float and hover in the air and muffle in the hush all that is unadorned.

Justin Isherwood farms, writes and contemplates the nature of nature from his rural Plover home. His recently-released first novel is titled *The Farm West of Mars*.



The entrance hole should face east to stay out of the wind and should slant slightly uphill from the outside opening up toward the center pole. This will allow cold air and moisture to drain out the opening while conserving heat in the cave. The opening should be just big enough to crawl through on one's hands and knees. The smaller the opening, the better for keeping out drafts. At night a block of snow or a large backpack can be placed in the entryway.

Next, the inside of the cave can be smoothed down into a dome shape using shovels. A dome provides strength and allows moisture to run down the sides away from campers should it get overly warm inside. Kinziger tested the dome's strength by having all six campers stand atop the structure a day after it was built.

A six-person structure kept everyone busy. Two campers hollowed out the core, another pushed the snow out the entrance and three others shoveled the snow away.

Only those in good condition should consider building snow caves. Tough, physical work, combined with winter cold, can rapidly drain the body's energy.

Calories need to be replaced, too. Meals high in carbohydrates and fats are a must for winter campers. Kinziger likes to prepare meals at home, pouring the contents in boiling bags and then freezing them. On the trail or in camp, it is a simple matter to reboil the bags. The food can be eaten right out of the bag or poured into a bowl. Stews, soups, oatmeal, cereals, chili, rice dishes, and even lasagna can be prepared this way. Bacon and greased meats can be wrapped in tin foil, frozen, and later thrown right on the grill. The only other utensils needed are a spoon and cup for hot liquids.

Also remember to drink plenty of

It's not just a pile of snow. Sides, top and air holes of the snow cave need to be carefully shaped and tamped to produce a thick, safe shelter. Outdoor reporter Dave Carlson helps instructor Kinziger.

(bottom) The crew settles in for a well-deserved rest. The shelter stayed 43 degrees warmer than the outside air.



Diggers carefully hollow out a thick wall in the hardened shelter, scooping snow out the entryway where others shovel it away.

water, tea or other liquids. The desert-dry air of winter saps body moisture as you exhale air and perspire from hard work and play.

A warm winter's rest

Three basic steps can assure a sound night's sleep in the winter wild.

First, lay a waterproof ground cloth over the snow.

Second, place two closed-celled foam pads or one self-inflating camping pad over the ground cloth. Research has shown that body heat is lost by direct or indirect body contact with the ground. Don't mistakenly suspect you can use a beach-type air mattress as a substitute. The air in these inflatable mattresses isn't insulated from your sleeping bag and it wicks body heat into the cold ground below.

Third, get a sleeping bag specifically designed for winter use. These bags are usually filled with down or thick polyester fibers that imitate the insulating qualities of down. The bags are typically mummy-type, having a drawstring which gathers the top of the bag around your head. Even a quality summer-weight bag will not keep you warm. Sleep wearing a cap and put wool socks or felt liners on your feet to cut heat loss.

Your sleeping bag and extra clothing should be covered with a water-

proof material. Like beach sand, snow can find its way into everything. Once wet, most materials have little heat-retaining value.

Making a snow cave homey

Inside the cave small shelves may be hollowed out for candles and flashlights. At night one or two candles are all that are needed to light a large cave. Blow out the candles before turning in, they use up oxygen. During the day, enough outside light will filter in so you can see well enough to do housekeeping chores. Also keep track of personal items. Snow caves have a way of hiding notebooks, pens, spoons and cups.

Once the snow cave is built and all gear stored properly, campers have time to enjoy the winter outdoors. Few pleasures are more enjoyable than sharing a warm meal with friends around a roaring campfire, or exploring northland trails either by snowshoe or cross-country skis. For the winter adventurer, snow caves offer a chance to sleep in a cloud and get away from the crowds. ■

James C. Bishop, Jr. is DNR's Public Information Officer based in Spooner. Jim is an avid outdoorsman and particularly enjoys ice fishing, skiing and camping in his favorite season, winter!

First time in a snow cave

"You're going to what?" my wife asked with a fearful, puzzled expression.

"I'm going to sleep in a cave made of snow," I said.

She pulled my three-year-old son and nine-year-old daughter close to her and stepped back away from me.

"All night?"

I nodded yes and smiled.

"You're nuts! Kids," she said, "your father has been working hard lately and sometimes when grown-ups work hard they tend to regress into their childhood. Your father really doesn't know what he is saying."

My nine-year-old finally put it all together and with a big, wide-open smile in my direction said, "Neat! Can I go too, Dad?"

Before I could give an apologetic "No," my wife disappeared with the kids mumbling something about my seeing a doctor.

I've slept in all sorts of shelters, cabins, tents, and even tree houses. The idea of spending a night in a snow cave appealed to the kid in me. As a youngster in northern Wisconsin, my brothers and I had hollowed out many a hole in driveway snowbanks. They were neat fun. With that in mind, I looked forward to joining the Kinziger expedition into the north country.

It turned out to be a memorable experience. The others on the crew were seasoned winter campers and had previously built snow shelters. We were all well equipped with the proper gear.

Once we had built the snow cave and even while the snow was sintering, our group was constantly busy.

Some got firewood, others prepared water over the fire for drinking and boiling our food bags. When camp chores were done, we took off on cross-country skis, gliding across the windswept lake, soaking up a warm sun in a clear blue sky. The world was virtually ours alone.

That night around the campfire, stories were told of past expeditions, and of other snow caves. Hot tea and cocoa were made. I related

the cave was cool, I could dress in relative comfort. The crimson light of early eastern sun filtered in through the entry way.

The seemingly warm light was deceiving. I crawled out of my "cloud" and the arctic cold hit me. Kinziger was standing by the fire. "It's 15 below this morning," he said. I hurried over next to him and cast a long look back to the "warm" cave. The smell of hot coffee brought my attention back to the fire. Oatmeal was welcomed too. The rising sun began to take the chill out of the air and soon we were waxing our skis.

About a week after returning from the trip, I took my family out to the snow cave. The kids found it fascinating. My wife, after a while, said the shelter had real possibilities although she was not ready to sleep in one. The kids also delighted in climbing atop the cave and sliding down the sides. As a family, we later built a smaller cave in our back yard



Jim Bishop crawls out after sleeping in the cold cloud.

my wife's reaction to the trip. Laughter. The hot tea warmed my insides. At times we all peered into the flames, enjoying the quiet of a winter night, soaking up the stillness. Someone mentioned it was 11 o'clock. One by one we began to turn in, each allowing those before us time and room to get into their sleeping bags.

Going to sleep in the cave was much like sleeping in one big cold cloud. And sleep I did. Tired muscles welcomed the rest.

Upon awakening, I found the rest of the crew had gotten up before me. Though the 28° weather inside

in Spooner.

Looking back on the experience, here with my cluttered desk and hurried deadlines, I find myself longing to return. And on one occasion when my supervisor asked me what I was dreaming about, I told him, "sleeping in a snow cave."

"All night?" he said. "You're nuts!" ■

continued from page 8

and trapping within 15 feet of a beaver lodge; and letting special contracts to trap and shoot problem beaver. Landowners were allowed hunting and trapping privileges on their own property without a license. And the U.S. Department of Agriculture's Animal and Plant Health Inspection Service shared costs with the Department of Natural Resources to hire trappers to remove beaver from selected high-quality trout waters in northern Wisconsin.

To aid trappers, aerial surveys are flown each fall to locate beaver colonies. Trappers and fur buyers are

When beaver dam culverts and streams the ponded waters flood timber and roads. Standing water can drown and kill trees.



BILL PLATTIS

The gnawing question: What makes a beaver chew?

More than 2,000 complaints were lodged against beaver by private landowners and governments in the past two years. Why?

Teeth. The four large incisors — two upper and two lower — at the front of the beaver's mouth can do more damage than a buzzsaw on the loose.

A beaver's incisors never wear out. They continue to grow throughout the animal's life, and beaver must gnaw regularly or the incisors keep growing and curving until its back molars can't make contact. If that happens, the beaver won't be able to chew its food (usually the leaves, twigs and bark of aspen, cottonwood, willow and alder) and will die of starvation.

Lack of canine teeth creates a gap between the huge incisors and the back molars. This gap is filled by the beaver's lips, which close tightly behind the incisors while the animal gnaws or swims underwater. The natural overbite sharpens the incisors with use, allowing the beaver to cut through a willow branch the



MARK WERNER

A blessing and a curse. Beavers' incisors are sharp and durable, but the rodent must continually wear its teeth down because the front teeth keep growing throughout the animal's lifetime.

diameter of a man's finger with a single bite.

Fish gotta swim, beaver gotta gnaw. The furbearer gnaws for

food, building materials and especially to wear those teeth to the proper length. Here's where they get into trouble with people. A beaver cruising a lakeshore home or cottage frontage fells some ornamental trees. Or, a beaver wanders off the beaten streambank path and chomps down a stand of aspen, formerly a cash crop of pulpwood bound for the papermill.

Beaver usually work alone and at night when gnawing a tree down. To fell a tree, the beaver props itself up on its hind legs, using its broad tail for support. It tilts its head to one side and makes cross-grain cuts three to four inches apart before spitting out the chips, repeating the process as it rotates around the trunk of the tree. A beaver will make several night's work out of downing one tree, even though it could cut through the trunk in a single night. Sometimes, a beaver will abandon a project it has started and move on to gnaw, gnaw again at a different site. — D.K.

polled to determine the number of active trappers and the number of pelts purchased in Wisconsin. This information helps wildlife managers place an accurate value on the state's beaver resource, and helps prepare long-range management strategies.

The zone concept

After surveying lands, beaver populations, trout streams and public attitudes about beaver on an area-by-area basis, DNR wildlife managers have proposed zone management for the species. Zones were determined by the needs of the beaver, the public's attitude toward the mammal and the beaver's place in the ecosystem.

Trapping will remain the principal means of limiting beaver populations in Wisconsin. The length of seasons, timing and incentives to encourage trappers to trap beaver are dependent upon a mix of beaver biology and human sociology within each zone.

Zone A in northwestern Wisconsin has the largest number of beaver trappers in the state. DNR personnel indicated that a long, liberal season would not be needed to control beaver numbers or property damage in the zone, especially since other damage control measures have already been adopted. Therefore, the length and timing of the trapping season would emphasize taking beaver when pelts are in prime condition. The trapping season in Zone A would run from December 1 through March 15.

Zone B, in northeastern Wisconsin, contains the highest density of beaver in the state. It also has the highest concentration of trout streams. DNR records reveal beaver damage more roads, forests, trout streams and private residences here than in any other region. In north-

eastern Wisconsin, wildlife managers propose a long and liberal beaver trapping season. Trapping would begin as early as October 20 and run through April 30.

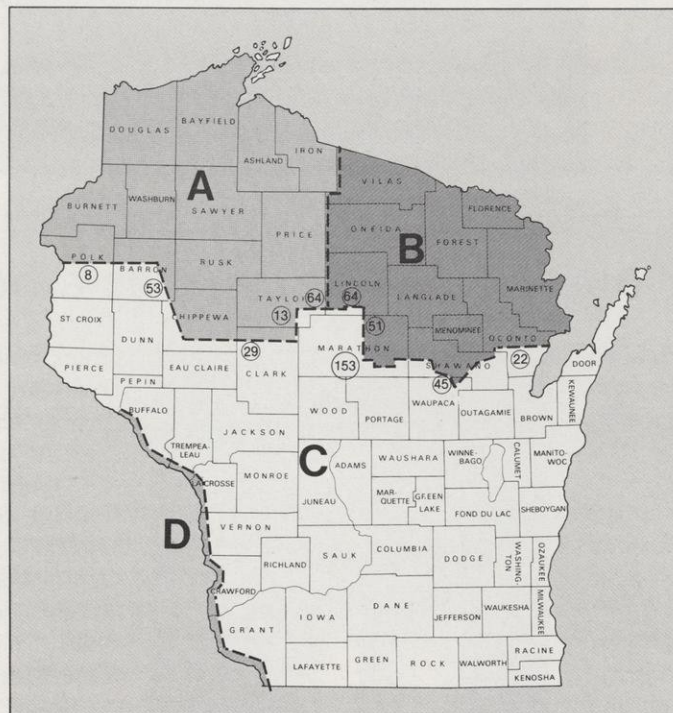
For Zone C, a season from December 1 through February 1 has been recommended. This zone has less beaver damage, fewer trout streams and less timber than zones A and B. Liberal rules for controlling nuisance beaver and trapping contracts for specific stream segments should handle any problems in Zone C. The cho-

Mississippi River is a high-quality duck production area and beaver damage problems of all types are minimal due to low populations. In deference to Mississippi Zone waterfowlers concerned over possible beaver trapping conflicts with duck hunters, the trapping season would still open after the close of duck season and run through January 15.

If the beaver management plan is adopted, the four zones will remain fixed for three years while beaver population research is completed. At

the same time, the plan must be flexible. If the fur market collapses, for instance, the Department of Natural Resources needs authority to pursue other means of controlling beaver in zones A and B.

With the proposed beaver management plan, everybody wins: Beaver can still gnaw, felling trees to build their lodges and dams; wildlife watchers will have plenty of furbearers to observe; trappers can take prime pelts at their peak value; and property owners could rely on aggressive trapping where needed to control washed-out roads and beaver-whittled aspen. With the carefully designed management zones, there will be plenty of beaver in all the right places. ■



Proposed beaver management zones allow longer trapping seasons in northeast Wisconsin, where beaver damage is the greatest, and shorter seasons in the southern and Mississippi River zones where less private property and fewer trout streams are damaged.

sen options reflect a greater tolerance to beaver in Zone C. Wetlands created by beaver in this zone contribute to wildlife habitat. The northern and eastern portions of Zone C provide particularly valuable waterfowl habitat. The eastern tier of counties in Zone C contains the lowest beaver population densities in the state. Hence, a short season emphasizing pelt primeness has been proposed for the zone.

Boundaries in Zone D would not change from last year. The Missis-

Dave Kunelius is lead Public Information Officer for DNR's Division of Resource Management.



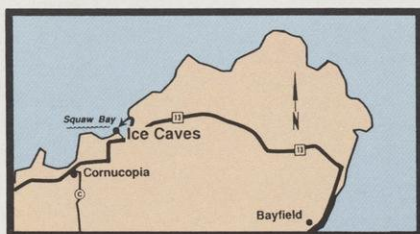
Gazing into the maw of Ol' Man Winter

The
ice caves
of Squaw Bay
offer a
tantalizing,
if risky,
day hike
along
Lake Superior's
rugged
coast.

ANN B. SWENGEL

Story by Ann B. Swengel





LINDA POHLOD

Every winter along the south shore of Lake Superior, the fierce winds and brutal cold sculpt a breathtaking sight from the rugged cliffs of the Apostle Islands National Lakeshore.

Waves crashed and thundered relentlessly in the spring, summer and blustery fall, carving out shallow caves in the rusty sedimentary cliffs of Squaw Bay near Cornucopia in Bayfield County. Now, in winter, abundant seeps of melting snow and water drip out of the cracks and congeal into enormous, seemingly infinite patterns of ice.

It's a study in consistency and change, science and art — the frigid cold conditions follow the laws of science, regularly crystallizing water into ice, but the icicles, flows and rivulets exhibit individuality, harmony and unity at the same time. If frozen rapidly in strong gales, the icicles develop odd curves and shapes that defy the strict plumb lines of gravity. In leeward coves, hoarfrost radiates in all directions in delicate, arborescent crystals. Other formations strongly resemble stalactites and stalagmites.

A visit to "the ice caves," as the area is known locally, is not for the faint-hearted or hurried. The area is accessible only by foot over Lake Superior and the "path" is different every year, indeed every month. Some parts of the lakeshore freeze smooth as a mirror, but most of the way is very rough. After the ice freezes, subsequent snows are planed smooth by the wind, hiding holes, cracks and ice pushes that make for treacherous footing.

It's a rigorous trip you need to

Slowly dripping water, frigid weather and variable wind, the natural forces that forge arty forms as ice crystallizes in shoreline caves along the craggy Lake Superior coast.



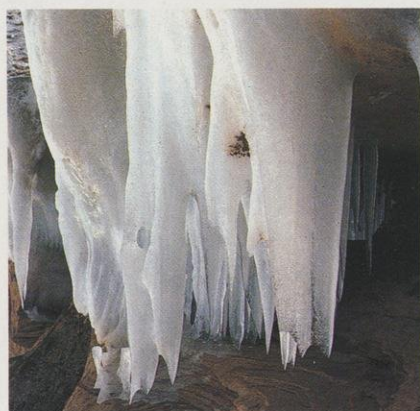
PHOTOS BY ANN B. SWENGEL





The ice caves are enticing, but slippery . . . a fairy tale-like world in winter.

plan carefully. The lake waters must be frozen hard and tight. In the last several years, warm spells in late January and February weakened the ice.



ANN B. SWENGEL

Slowly dripping water forms "stalagmites" of ice in one Squaw Bay cave.

Where ice had frozen, broken loose and refrozen, the route was unyielding as ice heaves formed a slippery, sharp-edged boulder field.

Richly deserving its reputation for harsh winters, Lake Superior warrants

great respect and caution from all visitors who journey here to see and experience its biting gales and staggering wind chills. Judge the day before you venture out. Check ice conditions with the National Park Service office in Bayfield. If you do make the trip, stay well-wrapped, bring food and water and leave an itinerary with someone back on shore.

The nearest access to the ice caves is off Highway 13 between Cornucopia and Bayfield but much closer to Cornucopia. From the junction with County Highway C in Cornucopia, travel 4.5 miles east on Highway 13 to Meyers Road. If you're starting from Bayfield, Meyers Road is 17 miles west on Highway 13. Assuming Meyers Road is plowed and passable, drive northwest on the road down to the National Park Service's shore overlook. Otherwise, walk down the road about half a mile and you'll find some wooden steps leading down to the beach. From this vantage point,

take out your binoculars or a spotting scope and face east. You should be able to spot the caves about half a mile away. If the ice and weather look good, start your trek.

If ever a view were worth the walk, this is it. Visitors are rewarded with an enchanting wonderland of ice in pastel tints and startling shapes. View the cliffs from the ice. Don't try crawling up into the slippery icy caves. The strange, seductive beauty of the caves poses yet another danger. Like the mythical sirens, it entices hikers ever around the next rocky corner, luring you farther and farther from cars and safety as the short winter day inexorably wanes. Whether you view the caves from the safety of the shore overlook or the gamble of the Lake Superior shoreline hike, you'll enjoy the trip. Just play it safe. ■

Ann B. Swengel is a naturalist, researcher and outdoor explorer from Baraboo, Wis.

Readers Write

A COLORFUL IDEA

I congratulate you on the excellent coloring book in your December issue. *Color Wisconsin* is outstanding. Will copies be made available for purchase?

Gene Krejcarek
(retired elementary school principal)
Manitowoc, Wis.

We're glad you enjoyed Color Wisconsin! We certainly appreciate your comments, coming as they do from someone who obviously knows the territory.

We don't have any coloring books for sale, unfortunately. We printed enough extra copies to be distributed free of charge in schools and through Project WILD and Junior Ranger/Wisconsin Explorers, our wildlife and nature education programs.

DEER DEBATE

The October issue was a prize jewelled by Bill Ishmael's article "In a rut."

Mr. Ishmael didn't say so in as many words, but I firmly believe much of the opposition to controlled shoots [to control urban deer populations] doesn't come from vegetarians, it comes from people having conversations while dining on sirloins, medium rare.

Thanks for this educational information.

Gordon King
Merrill, Wis.

SEEING RED

The one bird I did not see mentioned in your December article "Winter Reds" was the pine grosbeak. I have flocks of them at the feeders. They always seem to show up just as the tem-

peratures fall below zero. Their red and gray plumage mixed with the blue of the jays and the bright yellow of evening grosbeaks makes for very colorful bird watching, especially with a sprinkling of chickadees and finches.

I don't have any cardinals here, so maybe the pine grosbeaks take their place.

Judy Wilson
Solon Springs, Wis.

WHY CROWS? BECAWS!

Your October Hunter's Almanac put it down in black and white that crows are protected nationwide.

Pray tell why?

I'm not now nor ever will be convinced of their goodness. It's true they do a bit to remove carrion but [I believe they do] far more

harm to our songbird populations.

I've observed birds all my life and over the last 22 years have begun to see declines in many species. I'm aware of pesticides, rain forest removal, etc., but I've also witnessed crows pilfering nests and young of a number of species. Naturally, this discourages birds from nesting and is drastically cutting into populations of more desirable birds.

Can anything be done to remove crows from the protected list?

Charlotte Kann
Marathon, Wis.

The Department of Natural Resources has no plans to remove crows' protection.

Like many species before it, crows have been vilified and venerated throughout

continued next page

TRUMPETER SWAN TEE SHIRTS



Among those who should feel real pride when trumpeter swans again wing overhead (Dec. 1989 issue) are the staff and inmates at Oakhill Correctional Institute. Due to their enthusiasm, hard work and careful care, young trumpeter cygnets are now growing into six-month-old, four-foot-tall birds.

The remote ponds on the Oakhill grounds were biologically suitable for rearing trumpeters, but the site was primarily chosen because of the positive and enthusiastic attitude of the Oakhill supervisor and staff.

Preparations began months before the cygnets arrived. Inmate crews cleared brush and trees, fenced a 14-acre pond, built pens the size of single-car garages and installed the pens at the water's edge. The inmates were terrific moving boulders the size of small mountains, wading into chest-deep water to erect pens, and hauling wheelbarrows filled with sand and gravel. They

were ever-ready and ever in good humor.

Likewise the supervisor and staff thought of everything. They were and are determined that as many cygnets as possible will grow into healthy swans during the birds' two-year stay at the Oakhill pond.

To celebrate our cooperative venture, Oakhill and the DNR's Madison Area wildlife management staff produced a tee shirt (designed by John Soldier) depicting cygnets on a royal blue background. All profits from sales will be donated to a special fund to restore trumpeter swans in Wisconsin.

To order a tee shirt, drop a note and a check to

DNR-Oakhill Trumpeter Swan Project, P.O. Box 238, Oregon, WI 53575-0238, ATTN: Business Office. Shirts are \$11 apiece and are available in children's sizes 6-8, 10-12, 14-16; adult sizes small, medium, large, extra large, XXL and XXXL for the truly big-hearted.

P.S. Let me also thank the produce staff at Cub Foods who sock away bags of greens — lettuce, spinach, cabbages, kohlrabi trimmings, green onions and carrot tops — to feed the swans. The birds truly relish these green treats.

Doris A. Rusch
DNR Madison Area
Wildlife Manager
Fitchburg, Wis.

Readers Write

history. The birds are extremely intelligent, inquisitive and have adapted to every level of human disturbance. Whether traveling in remote wilderness or on the streets of major cities, I am amazed to find crows on both treetops and building ledges. Even those who don't like crows have to admire their ability to survive in a wide variety of habitats.

TREE MUSHROOMS

I recently read about shiitake mushrooms in your October issue.

Where can I learn about the business of raising these mushrooms?

Monte Lamer
Healy, Alaska

You might write or phone:
Shiitake Growers of
Wisconsin
c/o Joe Krawczk
Field and Forest Products
Route 2, Box 41
Peshtigo, WI 54157
(715) 582-4997

The organization can provide contacts who are actively raising the mushroom for fun and profit. Several suppliers nationwide raise a variety of mushroom spores and you may find someone who grows strains that do better in the Alaskan climate with a considerably shorter growing season.

SAVING FENCEROWS

I enjoyed Anita Carpenter's "Secrets of the Fencerow" (April 1989). It is sad to see so many fencerows being plowed under. Drive down any country road and you'll see fields plowed as close to the road as possible.

I suspect the plowing is done to squeeze as much

cropland out of a piece of land as is humanly possible. What is really being squeezed out is the secrets of the fencerows.

John F. Brensinger
Burlington, Wis.

EAGLE EYE

Your back cover photograph of the October issue was titled "Fall bird hunt." The hunter on the left is carrying a .22 rifle. Game birds cannot be hunted with a rifle. I think editors, photographers and readers can benefit from reading and thinking about safety within our pictures.

Jerry D. Davis
La Crosse, Wis.

You are correct: The hunter on the left is carrying a .22 and rifles may not be used for bird hunting — rabbits, squirrels and other small mammals, o.k., but not game birds. We wrote the caption and have every reason to suspect both hunters were hunting legally.

SIBLING RIVALRY

The Twin Cities are twins, but we like to have notations right. The Raptor Center mentioned on P.12 of your December issue is located at the St. Paul campus of the University of Minnesota.

By the way, I get Canadian Geographic and the Minnesota, New York and Wisconsin natural resources magazines. All four are excellent.

Winslow Stiefel
St. Paul Park, Minn.

BURNING ISSUE

In your October 1989 supplement on newer uses for forest products the advantages of truss frames made

from 2 x 4 lumber were noted, but there is also a less desirable aspect of their use.

Fire fighters know frame trusses as widow-makers. Trusses supporting floors, ceilings and roofs that are exposed to fire fail in a fraction of the time required to burn through 2 x 6, 8 and 10-inch joists and rafters formerly used.

The next time you read of fire fighters killed in building collapse, you can almost bet that premature failure of frame trusses was the cause.

Grey Abendroth
Rochester, Wis.

Little did we know how heated a debate rages over the fire safety of wood trusses! We shared your let-

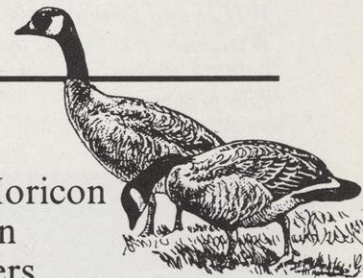
ter with fire fighters, many of whom concur with your opinion. But wood-products researchers point to test fires, claiming wood trusses hold up just as well as joists and rafters.

Who's right? Both groups, apparently; each has facts to support its side. Readers interested in delving further into the topic should consult the March/April 1988 and January/February 1989 issues of *Firejournal*, a publication for fire fighters, engineers, manufacturers and others in the field of fire protection. Your local fire department may have copies on hand; if not, the public library in your area can locate it for you.

NEXT ISSUE:

Canada goose

The human history of Horicon
Oconto River restoration
A chat with Soviet anglers



continued from page 2

inch-long weasel has dense, dark brown to blackish fur which is tipped with silvery color about the head and shoulders; white spotted on the throat and underbelly. Since 1956, DNR wildlife technicians and U.S. Forest Service biologists have brought 120 fishers back to the northern woods of Wisconsin. By 1985, six decades after the last fisher was legally trapped in this state, enough fishers had repopulated the woodlands to justify a limited trapping season.

Track a fisher in winter if you have the chance. You might hear its nervous hissing, a growl, or even see its arched back just before it bounds away. With some luck you might be one of the chosen few to catch a glimpse of this rare, valuable animal, making its way atop a ridge, or down an old logging road.

Thomas G. Jackson works with Wisconsin Natural Resources magazine while pursuing a graduate degree in English at the University of Wisconsin-Madison.



INSIDE

A whittle bit of the outdoors
Asphalt monikers
Skiing by candlelight
Highways to spell!

Exhibit your curiosity



Tambor de Agua by Enrique Rueda; wood and clay rattles by Katharine Goray-Moore
Leigh Yawkey Woodson Art Museum

You've done the museums ad nauseam, you say. Seen it all, from the Ming Dynasty vases to the pterodactyl dioramas.

Not so fast, friend. Two museums in Wisconsin are about to change the way you perceive the world.

Start at the Leigh Yawkey Woodson Art Museum in Wausau. Through February 25, you — yes, you — will be exhibiting a unique, individual creation in "The Art Spirit Sings," a show featuring sound sculptures that are both musical instruments and works of art. Visitors shake, rattle and roll the sculptures to make one-of-

Continued next page

Welcome to God's Country

Perhaps you recall the advertisements for a certain malted beverage a few years ago: "Brewed in God's Country, La Crosse, Wisconsin." Perhaps you wondered how a brewery, for heaven's sake, received a divine endorsement for its product when there are so many other commodities — milk and honey, for instance — that truly deserve the hype.

Not being privy to such lofty negotiations, Traveler can't tell you precisely how the deal went down. However, a few facts may serve to illuminate the matter. Our investigation begins in Trempealeau County in 1857 on the back of a horse named Billy.

Billy's saddle held the Rev. David Oyer Van Slyke, a Methodist "circuit rider" who ministered to settlers on both sides of the Mississippi River. It wasn't an easy life: Slogging through the rugged, hilly country in high snows and deep mud to spread the

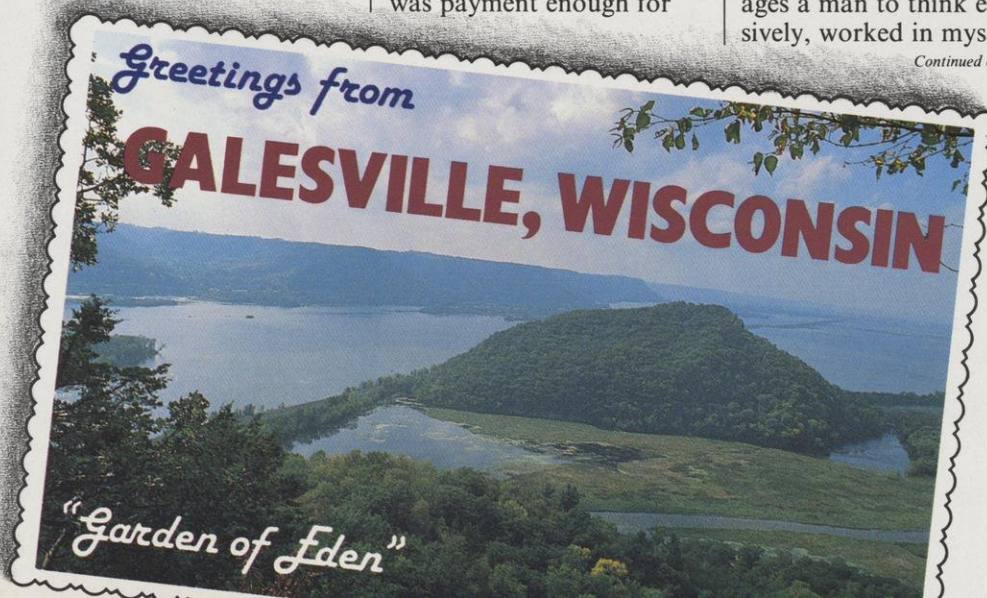
Word, the horseback preacher received little in material rewards from his flock, most of whom had little to give.

Yet Rev. Van Slyke felt himself wealthy beyond all accounting: The glorious scenery surrounding his home base of Galesville, 17 miles north of La Crosse, was payment enough for

his effort. Many were the hours this devout, studious man sat upon the sandstone bluffs pondering the Good Book, occasionally glancing up from Proverbs or Ecclesiastes to bask in the wonder of creation.

Galesville and environs, graced with the kind of natural beauty that encourages a man to think expansively, worked in mysteri-

Continued on page 4



Continued from page 1



Make music with Lynn Slattery Hellmath's "Kopu Sacred Singer" on exhibit in Wausau.

Leigh Yawkey Woodson Art Museum

ous ways upon the a-kind aural portraits. It's absolutely unheard of!

When you've made enough noise in Wausau, head to the **Neville Public Museum** in Green Bay. There you will get "A Fish-Eye's View" of how fish senses work underwater. No need to don a snorkel and wetsuit: At the hands-on exhibit you'll discover how some fishes survive without eyes, how others "taste" food before taking a bite and how some species react to sound waves, all without getting wet yourself. "A Fish-Eye's View" is on display through March 5.



See the world from the perspective of a green sunfish in Green Bay.

Doug Stamm



Leigh Yawkey Woodson Art Museum, 700 N. 12th St., Wausau, (715) 845-7010; Neville Public Museum, 210 Museum Place, Green Bay, (414) 436-3767. For a copy of *A Visitor's Guide to Wisconsin's Cultural Events and Attractions*, send \$1 to Visitor's Guide, Wisconsin Arts Board, Suite 301, 131 W. Wilson St., Madison, WI 53702.

Christening the blacktop

In the early days of goggles, side curtains and hand-cranked starters, motoring was an adventure, filled with the suspense of finding your own way. Navigating was based on the landmark system: "Go to the crossroads and turn left at the red barn ..." Bulky tour books were written to chart a journey — turn by turn, barn by barn, mile by mile.



As the number of automobiles on the roads increased, directions were stencilled in a rainbow of

colors on utility poles. Deciphering the colorful array was no easy feat; often, the main road and all its branches carried the same color.



In 1918, Wisconsin was the first state in the nation to establish a system of numbered highways, which interconnected every county seat and every community with a population over 5,000. Motorists weary of nameless or ill-marked roads were delighted with the change. Word of its ease and effi-

ciency spread, and in 1925 Wisconsin's system was adopted as a uniform code from coast to coast.



Today, Wisconsin's state trunk highway system includes almost 12,000 miles of numbered highways. About 200 numbers exist and are systematically assigned by the Department of Transportation. Interstate and U.S. highways, contrary to their designations, are really state roads; for the convenience of long-distance travelers, the

Road Scrabble

It's the new game sweeping Wisconsin! You can play by car or bicycle ... all you need is an instant photo camera, a county map and two teams.

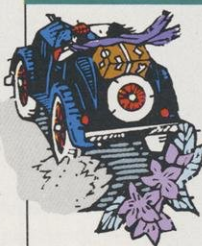
Here's how to play: Pick two adjoining counties — Richland and Sauk, let's say. In the morning, the teams meet over breakfast at a local diner in a border town (in this case, Cazenovia). Flip a coin to choose your county, and you're off! Scour the backroads for lettered county highways. At each new letter, pull over and have a teammate take a snapshot of you next to the sign. Collect as many dif-

ferent letters within your county as you can in a day.

In the evening, return to Cazenovia. The team able to spell the most words in 15 minutes with their photographic "letters" wins. (Each letter can be used only once. No proper names allowed, except P-A-C-K-E-R-S.) In true Wisconsin tradition, the victors treat the vanquished to a fish fry and the losers promise to do better next time.



For a complete set of 8 1/2 x 11 Wisconsin county maps, send \$5.78 to Document Sales, Wisconsin Department of Transportation, P.O. Box 7713, Madison, WI 53707.



Need more information?

Travel questions: 1-800-372-2737
Travel publications: 1-800-432-TRIP
Road conditions: 1-800-ROADWIS
Outdoor recreation: (608) 266-2277
(608) 267-6897 (TDD)
Historical Society sites: (608) 262-9606



highways have the same number across the country.



The county highway system, established in 1926, connects state highways with local roads and communities not on the state highway system. Almost 20,000 miles of county highways are named with single, double or triple letters of the alphabet. In most cases, a continuous highway keeps the same letter in contiguous counties: Highway A in Wood County will be Highway A

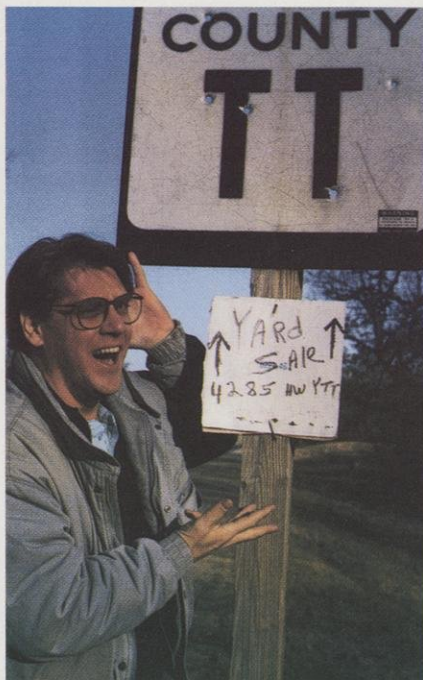
in Adams County. If a road connects Highway A with Highway B, it may be called Highway AB. Each of Wisconsin's 72 counties owns and manages its system.



The last 75,000 miles of concrete, asphalt and gravel belong to Wisconsin's cities, towns and villages. The streets that give you door-to-door service are named by local governments, citizens or landowners.



Department of Transportation, (608) 266-3581.



High-voltage Road Scrabble player James Rhem lights up the blacktop with W-A-T-T, collected along the highways of Dane County. During the game, Rhem and his team enjoyed Wisconsin's outstanding winter scenery and consumed several pieces of a delicious cherry pie in an Edgerton diner.

Notice the "TT" — you may want to award additional points for double- or triple-letter signs. Road Scrabble rules are subject to modification by consent of all players. However, there is one rule that cannot be violated: At no time may any player substitute a sideways "N" for a "Z". Polaroid SX-70 photographs by Maureen Mecozzi

Hey, you ski!



Soft candlelight illuminates the trail at Mirror Lake State Park. Eric Mosher

Try something exotic this winter ... like skiing through history, or gliding down a trail under the stars.

Old World Wisconsin in Eagle, 35 miles southwest of Milwaukee, is open for skiing Fridays, Saturdays and Sundays from 9 a.m. to 4 p.m. through March 4 (weather permitting). Six miles of groomed trails lead skiers past nine ethnic farmsteads and a cross-roads village with buildings constructed by Wisconsin settlers. Admission: \$3 adults, \$1.50 children ages 5-17, half-price for all on Fridays. (414) 594-2116.

Six Wisconsin State Parks invite you to ski by candlelight this season! When darkness falls, park staff illuminate selected trails with candles; the moon and stars may shed extra light if there's no cloud cover. At the end of the run, skiers will be greeted by hearty campfires for toasting marshmallows, grilling bratwurst or warming chilly toes. Entrance fees for those without an-



Ending an evening of skiing with a late-night marshmallow roast. John Moline

nual admission stickers: \$3.50 per car for Wisconsin residents, \$6 nonresidents. **Council Grounds**, Merrill, (715) 536-4502 Saturday, Feb. 10, 5:30-9 p.m. Friday, Mar. 9, 5:30-9 p.m. **Interstate**, St. Croix Falls, (715) 483-3747 Saturday, Feb. 10, 6-9 p.m. **Lapham Peak**, Delafield, (414) 646-3025 and **Mirror Lake**, Baraboo, (608) 254-2333: Saturday, Feb. 17, 6-9 p.m. **Lake Kegonsa**, Stoughton, (608) 873-9695 and **Lake Wissota**, Chippewa Falls, (715) 382-4574: Saturday, Feb. 24, 6-9 p.m.



For a free copy of *Wisconsin Winter Adventures*, write the Division of Tourism Development, P.O. Box 7606, Madison, WI 53707 or call 1-800-432-TRIP.

Continued from page 1

minister. After 29 years of residing in the area, Rev. Van Slyke decided Galesville was really the Garden of Eden. He set about to prove his theory in a booklet entitled:

FOUND AT LAST:
THE VERITABLE
GARDEN OF EDEN
OR A PLACE THAT
ANSWERS THE BIBLE
DESCRIPTION OF
THAT NOTABLE
SPOT
BETTER THAN
ANYTHING YET
DISCOVERED

those of limited faith. Rev. Van Slyke acknowledged the doubters in the preface: "While some have mocked, others are becoming impressed with the idea of its being not only possible but probable."

The nonbelievers may not have seen the light, but they recognized a good opportunity for publicity. Postcards and brochures touting Galesville as the Garden of Eden sprung from the presses faster than blasphemy from the Serpent's mouth. Van Slyke's booklet was reprinted five times, the last

Mississippi while herons preen on shore. Get a different look at the Big River from the 500-foot bluffs in **Perrot State Park** outside Trempealeau. (Keep an eye out for rattlers.) While you're in Trempealeau, visit the **Trempealeau Hotel** or the **Mill Road Cafe** to hear folk or blues music. Your stop in LaCrosse wouldn't be complete without a tour of the **G. Heileman Brewery**, home of the world's largest six-pack and makers of Old Style beer.

And then there's **Galesville**, pop. 1,239. Residents of this quiet village wear clothing (fig leaves tend to freeze in winter) but seem to have a craving for apples. (At the "Apple Affair" each October, Galesvillians bake the world's largest apple pie.) When you arrive in town, stop at the office of the *Galesville Republican*, purchase a copy of the reverend's booklet, and ask for directions to the Pine Cliff Cemetery. There you will find Rev. D.O. Van Slyke's grave. Stand next to it and look out over Lake Marinuka to the hills and plains beyond. You will be treated to one of the most lovely sights in all of Wisconsin.

The reverend himself said it best: "Nobody can prove that this is *not* the Garden of Eden." Amen.

 **Merrick State Park**, (608) 687-4936; **Perrot State Park**, (608) 534-6409; **Trempealeau Hotel**, (608) 534-6898; **Mill Road Cafe**, (608) 582-4438; **G. Heileman Brewery**, (608) 782-BEER; **Galesville Republican**, (608) 582-2330; **La Crosse Convention & Visitors Bureau**, (608) 782-2366; **Trempealeau County Tourist Information**, (715) 538-2311. For a Wisconsin Recreation Guide and Calendar of Events, call 1-800-432-TRIP.



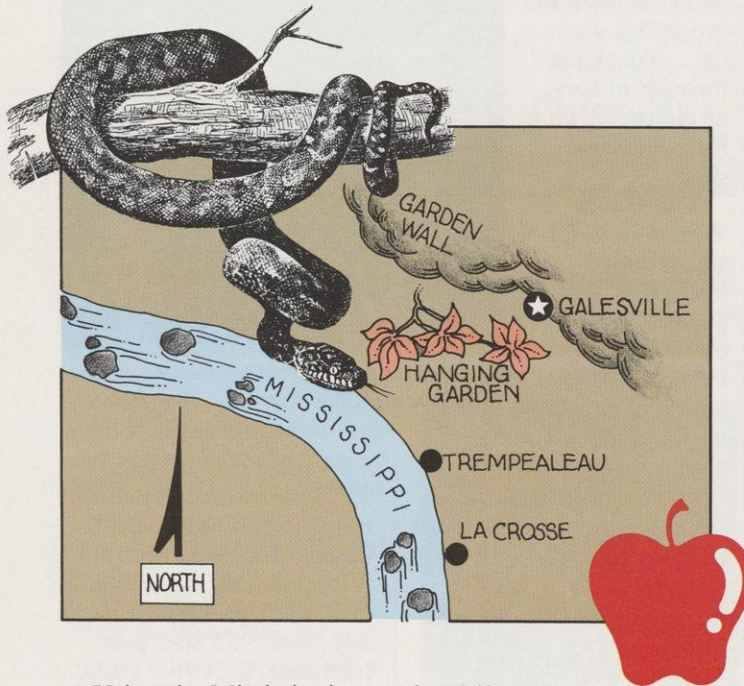
Woodpeckers compete

Whittle away an afternoon at the second annual **Dremel & Ducks Unlimited Masters Carving Competition** in Racine! One of the nation's largest wildlife art shows, the competition features fish, mammal and bird carvings by over 150 top wildlife artists. The show is open from 9 a.m. to 6 p.m. on Saturday, February 24 and from 9 a.m. to 4 p.m. on Sunday, February 25 at the Festival Hall, 5 5th Ave., Racine. An auction of selected carvings begins at 1 p.m. Sunday. Admission: \$5. (414) 554-1390.



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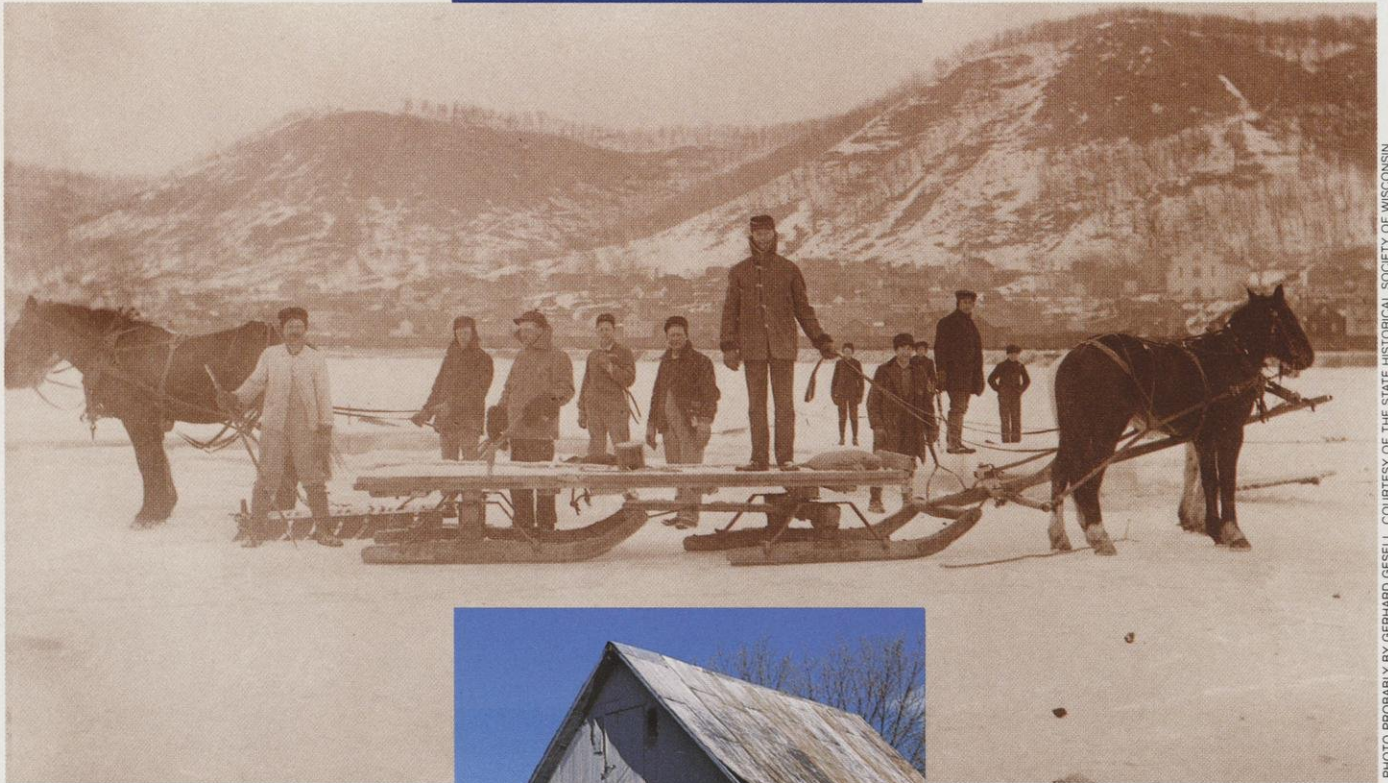
Using the Mississippi, Black, La Crosse and Trempealeau rivers as landmarks, the minister reckoned Galesville to be within the garden wall and placed the hanging gardens mentioned in Genesis 2:8-14 along the bluffs on the eastern bank of the Mississippi. He noted the abundance of serpents (a/k/a rattlesnakes) in the vicinity as further proof of the site's authenticity.

The booklet, published in 1886, was regarded as something of a joke by

in 1969.

Eventually the rest of the area jumped on the bandwagon; from the "Garden of Eden" it was a mere leap of faith to "God's Country." The region has been promoted as such ever since.

One visit to Trempealeau and La Crosse counties and you'll become a convert: The winding back roads offer one enchanting view after another. At **Merrick State Park** near Fountain City, otter frolic in the backwaters of the Missis-



Harvest of ice

It took bitter days and clean water to put
your summer on ice.

Diane Schwartz

Bitter cold. These days, it sends most people rushing indoors or off to the Bahamas. But if you lived before the days of electricity, extreme cold was welcomed because it meant thick ice. And thick ice meant a good supply for hot summer months.

Up to World War II, ice harvesting

on the sloughs of the lower Wisconsin River near Muscoda was an annual effort. For about two weeks during late January and early February, farmers and seasonal workers were busy cutting ice to fill area icehouses. Businessmen and individuals relied on ice to preserve food during the summer. And every kid looked forward to the big summer treat — ice cream!

Rural electrification marked the end of this colorful era, but several long-time residents still recall this icy tradition.

Bernard Ferebee, 76, Eagle Corners, was a kid when his folks put up

Harvesting river on the Mississippi River near Alma, 1885-1910.

(inset) Icehouse in Muscoda Park.



MILWAUKEE PUBLIC MUSEUM PHOTO. COURTESY OF THE STATE HISTORICAL SOCIETY OF WISCONSIN

Ice blocks were cut and pushed with long pikes. In this larger commercial operation, block ice was poled to a conveyor belt and hoisted to a warehouse at riverside.

ice on their Eagle Corners farm. Mark Mouseau, 78, and his wife Katherine owned an icehouse in Muscoda and sold shares to individuals. Buford Bobb, 78, of Orion and Noble Wilkinson, 76, of Muscoda also participated in this lower Wisconsin River tradition.

"My folks put up ice here with neighbors, the Dingmans, so they could keep foodstuffs cool in hot weather," Mr. Ferebee recalled, "We don't have springs around here near the river, so we depended on ice. Many people back in the hills had springs or cellars and hauling ice was too far for them. We put up around 700 cakes of ice usually in the last part of January, and the fore part of February when it was real cold."

"We liked the ice at least a foot thick," Mark Mouseau says, "That was best for refrigerators. But, I remember one year it was real mild. We got eight inches, and this is in March!

People were getting worried.

"The weather was so warm, we couldn't haul it during the daytime hours. So we covered it with canvas to keep it from melting or getting honeycombed. And naturally the roads were muddy, making the whole thing very difficult [in the dark]."

Bernard's family cut ice on the Hunter Slough, a tributary of the Wisconsin in Eagle Township, southwestern Richland County.

"We always used a straight hand-saw, about four-foot-long with big coarse teeth and a wood handle on one end. The ice was cut into a checkerboard square. You would cut lengthwise several times, then you'd cut them crosswise into the length of block you wanted. Then you would float them off to one side into a square

of open water with a jack pole — a 12-foot pole with a hook and spike on the end. You could pull the block or push it with that.

"When ready, you'd grab a hold of the blocks with a pair of metal ice tongs and give 'em a little push down into the water — that would give you a natural force to help pull em' up on top.

"We aimed to keep the ice as clean and free of snow as much as we could. If we didn't, slush ice would form on top of the solid ice and that wouldn't keep any better than a frozen snowball in the icehouse. Then you'd stand the blocks on end, so they wouldn't freeze together solid, load them on to the sled and take them to the icehouse. That work was all done by hand. There'd probably be 30 to 35 cakes of ice on one load.

"The horses were used to walking on ice. They were all shod with special metal shoes that were quite sharp

on the point. We had Percherons and Belgians, big draft horses that probably weighed 14 to 15 hundred pounds each."

Larger operations had motorized ice saws and conveyors. Later on, trucks were also used. Buford Bobb used his 1929 Chevy truck to haul ice for several of the icehouses in Muscoda.

"I and my Dad always looked forward to the ice harvest. As a rule, we'd get the ice out at Balmoral, just north of Muscoda on Highway 80. That's where Muscoda used to get its electricity years ago . . . and it still produces some. There's a dam there and there used to be a feed mill.

"There were a couple guys around that had a deal rigged up just about like a wood saw, only they had it on runners with two handles. Luther Noyes, the cheesemaker had one as well as the Hackl boys.

"The ice saw was all in one unit. It had a pair of handles like a plow that would go down to the machine. And down below, you'd have a set of runners which would slide along on the ice. Then there'd be a car motor bolted onto the frame that ran a big circle saw about four foot from tooth to tooth. The guy would just push that along and they'd let that big blade down through the ice. That's how they would get them huge blocks; them darn things would weigh probably 75 - 100 pounds a piece. They'd have a conveyor belt to lift them onto the truck.

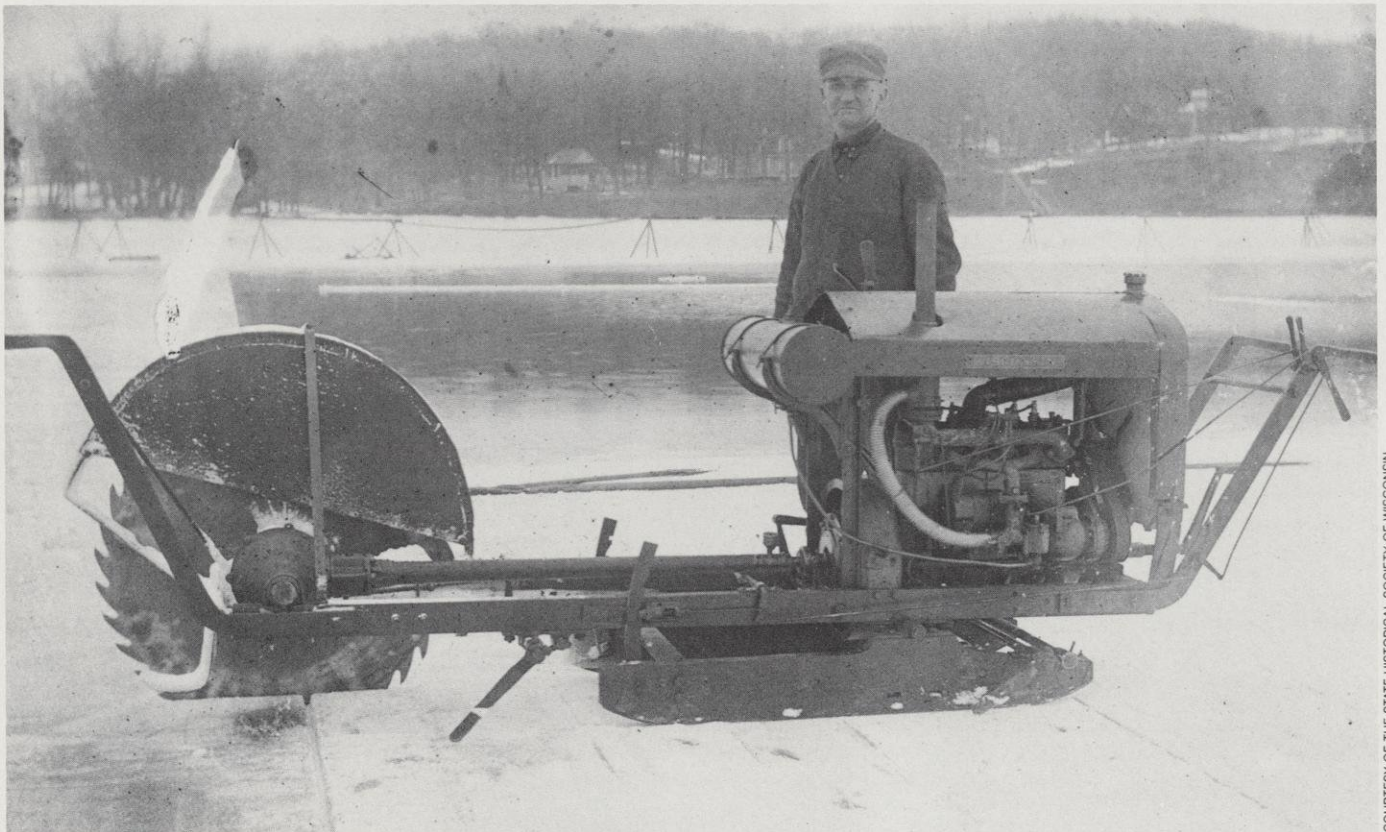
"Ice cutting was quite a deal. Somebody was getting wet every day from falling in. It was slippery, a very wet job taking them cakes of ice off the water. I usually wore a pair of hip boots. That would keep me dry on my legs and knees. The only bad part about that, was that it was hard to say warm in them. Some people wore cleats on their feet. I never had a pair of them."

Then, it was off to the icehouse. In Muscoda, all of the restaurants, the butcher, the creamery, the hotel and Luther Noyes' Cheese Warehouse would contract out to people like Buford to have their icehouses filled. Townspeople could cut their own, but more likely they'd buy a share from a commercial icehouse like the one run by the Mouseau family.

"My folks sold shares to different families for the seasons at a cost of about \$10-15 a share," Mark Mouseau says. "People would come to the icehouse and help themselves to the ice for their personal refrigerators. We served between 35 to 50 customers for many years. After the folks passed on, my wife Gladys and I carried on for another 15 years until electrical refrigerators knocked the dickens out of the ice business, which I was happy for. There wasn't a lot of profit in the ice business and it was a lot of work.

"The folks contracted with Bill

This fancy clutch-driven rig used a big circular saw attached to a gas engine on a sled to cut even squares of lake ice. Madison, Wis. between 1905 and 1924.



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Goodweiller to cut the ice and then we paid the people that housed the ice so much per cake. It would take 100 sleigh loads to fill our icehouse so that's roughly 3,000 cakes of ice. It usually took about three days."

Most icehouses were simple, wood frame structures with gable roofs. A double, outer wall filled with sawdust insulated the building. Tongue and groove lumber, the building material of choice, locked together tightly to seal out as much air as possible. You can spot an icehouse by the long, narrow doorway that extends to the roof. The doorway is important because as the icehouse was filled, the workers closed that portion of the door, dumped in more sawdust, and moved up. A ladder was often nailed right next to the doorway.

To fill the house, each block of ice was hooked to a pair of tongs and hoisted up on a rope powered by a horse and pulley, or a motorized winch. A man would then pull in the ice blocks and arrange them in even layers, stuffing ice chip chinking between the blocks to help freeze them together. Then, sawdust was poured between layers. When the icehouse was full, another three feet of sawdust was added to the very top. Ice blocks varied in size, but were about two feet high, 16 inches wide and maybe 10- to 15-inches deep, depending on the ice thickness that year. Sometimes, the work could be dangerous. Noble Wilkinson recalls a close call at Luther Noyes' icehouse in Muscoda.

"I worked the ice harvest up at Luther Noyes' cheese warehouse in 1931, the year I got out of high school," he said.

(opposite top) In small towns and large cities, by horse, truck and rail, ice houses filled the ice boxes that kept milk, meat and produce cool all summer. Crews outside the City Ice Company in Janesville wait to load up one morning in 1911.

(opposite bottom) Ice was marked, scored and cut methodically to get uniform blocks that would fit into ice boxes. Horses were shod with sharp shoes to toe the line on the slippery ice.



Bernard Ferebee outside the old family-run icehouse in Blue River. You can spot old icehouses that have doors that open all the way up one side of the building. These were used to load ice from the bottom up to the rafters and unload it from the top down, one layer at a time.

"I happened to be down on the platform one time hooking the ice and Bud Johnson was up there pulling it in. He went to pull one in and a chunk of ice broke off and dropped. They hollered and I looked up and jumped out of the way. But Bud lost his balance and he come down on top of me.

"[Ice harvesting] furnished quite a little employment in the winter. I probably got 25 cents an hour ... about the top wages before and even during the depression. It was a busy time. Farmers could get a job for their team and sleigh. Everyone was busy during the ice harvest."

At the Ferebee's icehouse, the ice was stacked about 14 feet high.

"Course it would melt down because it would thaw underneath. But it lasted pretty much all summer. We wouldn't open the icehouse until June or so and it'd be harvest time before we would run out of ice. We'd keep a cake in the ice box all the time replacing it every three days or so. You had to remember to empty the pans under the refrigerator or you'd be scrubbing the floor. Them pans would run over in a hurry in hot weather.

"If we wanted to make ice cream, we'd pound a block into chips and chunks and freeze ourselves some ice cream. That was quite a treat. The ice must have been healthy too, because we ate the ice and it never made us sick. I don't think you'd dare do that today."

An icehouse still stands behind Hillberry's Grocery Store in Blue River. It housed ice for Einer Godager's store and for Barney Anderson's slaughterhouse operation. In Muscoda, an icehouse has been moved next to the old railroad depot. It was originally owned by the Jake Heffner saloon, now the former Wagon Wheel restaurant on Wisconsin Avenue. These old buildings are all that's left of an old-time winter tradition that took place in the bone-chilling weather on the backwaters of the lower Wisconsin River.

Diane Schwartz is a graduate student in the Institute for Environmental Studies program at UW-Madison. She is collecting oral histories to document how the people of southwestern Wisconsin mark change along the lower Wisconsin River.

DEER TALES

Field notes from a pair of readers

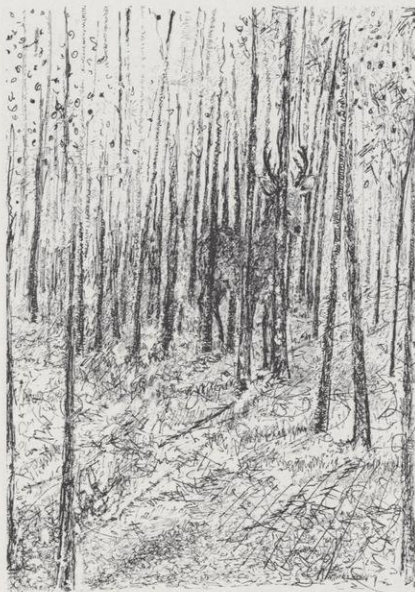
In Wisconsin, fall is a season of festivals — La Crosse has the Oktoberfest, maples set the hills ablaze with a festival of color, homecoming festivities grace campuses across the state, but perhaps the most celebrated is the fall deer hunt. It's a time when cousins, uncles, aunts, grandfathers, grandsons, fathers, mothers and friends unite to weave tales of whitetail lore and lose sleep anticipating a Boone & Crockett buck.

On this eve of Wisconsin's true "fall classic," I will not be able to roam the hills and farmlands of Central Wisconsin, but you can bet my thoughts will wander back home recalling the traditions and lessons of Wisconsin deer seasons past.

Tonight, I imagine the great deer camps of Wisconsin's Northwoods and taverns across the state are filled with stories of past hunts and expectations for tomorrow's opener. My own remembrances are not of great bucks nor spectacular shots. Rather, I recall lessons I learned and the camaraderie of hunting parties.

In preparing for the hunt and during the season I learned many lessons about life, nature, friendship and teamwork. It was a time when my Dad and I could talk about his childhood, his family upbringing and the guidance he provided in raising his children. Trees were no longer just trees, but became individual species: maple, oak, popple, tamarack, cedar and spruce. Dad became the greatest cook: slinging eggs, sausage and coffee on my first opening morning. For me, that taste will always be November 1977.

The weeks before the deer season meant weekly trips to the hunting grounds after a long morning chopping wood. Opening day meant long,



Even big deer just blend into the brush.

dark walks into the cold dark woods. A flashlight guided me to the stand Dad and I had prepared together.

He left instructions — I was not to see him until I had a ten-pointer, preferably field-dressed! The hour before sunrise was long. In my head, each cracking twig was a ten-pointer who would grace our trunk a few hours later.

Sundays, 8:30 a.m.: meet the gang at the end of the dirt road leading to the "Big Hardwoods." Here, we organized our day. The first drive was set and deer would soon pour out of the cuttings, shots would hit the target and knives would part the hide of a hearty farmland buck.

As a young hunter, the last day of the season always went too fast. Often 4:30 p.m. would come and my tag was still intact. To me, this wasn't the end of an unsuccessful season, but rather a triumph. We met, made plans for the next year, more experienced hunters continued my woodland edu-

cation and Dad, as always, passed on valuable lessons.

Tomorrow, I will not be perched on a stand in Central Wisconsin, but you can bet my thoughts will wander there.

— Keith A. Kufahl was raised in Shawano and hunted 11 years in the rolling hills west of Tigerton in western Shawano County. He now resides in Charlotte, North Carolina.

The morning is crisp and cold as my brother, Norm, and I leave the warmth of his Wisconsin Rapids home to go sit in a marsh. As we head towards the marsh, the headlights on the old Ford pickup bounce off the biggest doe I've ever seen . . . a lucky sign I tell myself.

We park the truck and make small talk guessing what time the others in our hunting party will arrive and where they'll be. Norm says if it gets too cold, I'll find him sitting in the truck.

Now, it's time to go. We undo the gun cases, grab the shotguns and our hot seats, wish each other luck and head off to our stands.

It's still dark when I get to the old oak.

I glance at my watch bringing it really close to my face in the early light. It's 6:20. I no sooner lower my arm and some fool fires a shot in the distance. I shake my head and chuckle to myself. I can't even see the hand in front of my face and someone thinks he can see a deer running by.

I sit patiently awaiting the rising sun. When it comes, the morning light is quickly smothered by gray clouds.

Sitting on a deer stand makes me very observant. I notice all the small

saplings rubbed up. In my mind's eye, I see nothing but bucks. Later in the day, I find out that the "rubs" were made by a local farm boy with his knife on a bow hunting outing. He sure fooled me.

My eyes keep moving back and forth, scanning over the oaks by my stand.

Finally I hear movement. Something is running over the fallen oak leaves. I'm poised and ready.

Here they come! Right in front of me! Two fox squirrels. I never realized how much noise they can make. They play chase and tag, then spot me, give me a long stare and go off on their way.

A while passes. I catch a glimpse of something out of the corner of my eye. I turn suddenly and here is one of the squirrels at my shoulder. I don't know which one of us was more startled.

Another 45 minutes pass and I'm still nestled next to my stand. All of a sudden, I see movement under some nearby pines. I drop to one knee to get a better look. It's definitely deer, not one but **two**. They bound into a clearing not more than 25 yards from me. Unfortunately, I see no antlers. These two have a gay old time, extremely carefree, not a worry in the world. Heck, they don't even see me. I figure they must have read my backtag and are harassing me because they know I don't have a Hunter's Choice permit.

I watch them playing for a while wishing I had a video camera. I eventually rap the butt of my gunstock, get their attention and they bound off.

Thirty more minutes click off the clock.

Suddenly, I see deer legs under pines in the same area as before. I drop to one knee again. Now I realize there is more than one deer coming through. More than two. Possibly three!

Two more does come straight across from me into the same clearing. I start asking myself if it's the same two deer.

My 20-gauge Mossberg is



The bucks stay in the background. The does seem to know I don't have a Hunter's Choice permit.

shouldered. The does keep staring through the pines at something else. I turn in that general direction. Here comes a six-point buck! He stops right in back of an old brush pile that's extremely thick. I can clearly see his head and neck, and I silently plead with him to move away from the protective brush.

He just stands there staring at the two does.

My heart is pounding and my breathing is heavy. My arm is getting sore from holding up that shotgun.

I glance at him again. Please move!

Now the does are looking straight at me. I turn back to the buck, then back to the does, then back to the buck again.

The lead doe has caught my scent and she begins to grunt. The buck holds his ground. She lifts her front leg and beats her hoof into the ground once, then twice. By the second beat, in the blink of an eye, the buck just rolls his shoulder and is gone back into the pines. Now that the damage is done, the pair of does gracefully depart.

I never even got off a shot.

This scene will forever be imbedded in my mind. So will my second-guessing. Could my slug have gone through that brush pile? I guess I'll never know.

I have yet to get a buck, but this scene will haunt me every opening day.

You can't eat from a memory, but I will treasure this moment the rest of my hunting days.

— Ken Erdman
Milwaukee, Wisconsin

In the field, as in our stories, the big deer get away to fuel our dreams for the next season.



