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Wisconsin NATURAL RESOURCES

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Sponges in Wisconsin?

GEORGE J. KNUDSEN, Chief Naturalist, DNR

Yes! Wisconsin has about 12 fresh-water sponge species! Most of the 3,000 known sponges live in the oceans but about 150 kinds inhabit fresh water, and some 30 of these are found in the United States.

They occur as small to medium encrustations attached to submerged rocks, logs and twigs and grow only in clean water less than six feet deep. Look for them in clear ponds, lakes and rivers. Wisconsin sponges vary from marble-sized clumps to elongated masses. They may be in a thin film or a layer one or more inches thick. When growing on top of underwater objects they contain algae cells, which color them green. When growing beneath objects they are brown, gray, tan or even pinkish. Once thought to be plants, they are now known to be simple animals.

Growth forms are so variable that species are very difficult to identify. Some are smooth and compact, others intricately branched. Scientists tell them apart by using a microscope to look at "spicules" and "gemmules," tiny sponge structures that have characteristic differences.

Very small pores in the sponges' outer layer draw in water containing oxygen and one-celled plants and animals. These organisms are digested and wastes expelled through the large pores which can be seen in the photograph. Fresh-water sponges die back in winter and start a new growth cycle in spring.

Skin divers and snorklers have the best opportunity to see sponges, but people wading or boating in the shallows or walking the shorelines can also find them.

Doug Stamm photo

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Front Cover:
"Fiddleheads" or emerging ferns herald spring in Wisconsin. At this stage they are also called "crosiers" because they resemble a shepherd's crook. Along with their relatives, the fern allies, there are 118 kinds in Wisconsin, about 13,000 worldwide. Fiddleheads are young leaves or fronds. Some are edible. Photo by Louis E. Ulrich Jr.

Back Cover:
Ferns are beautiful, mysterious and ancient. The first land plants, they were the foundation of higher plant evolution with origins that go back 400-million years. Before it was learned that ferns reproduce by microscopic spores, many people believed that they bore secret seeds. Fern seeds were said to drop on St. John's eve (June 24) and bestow invisibility and other powers on whomever found them. Photo by Louis E. Ulrich Jr.

Minnows and water milfoil. Doug Stamm photo

SECOND GUESS THE PLANNERS!

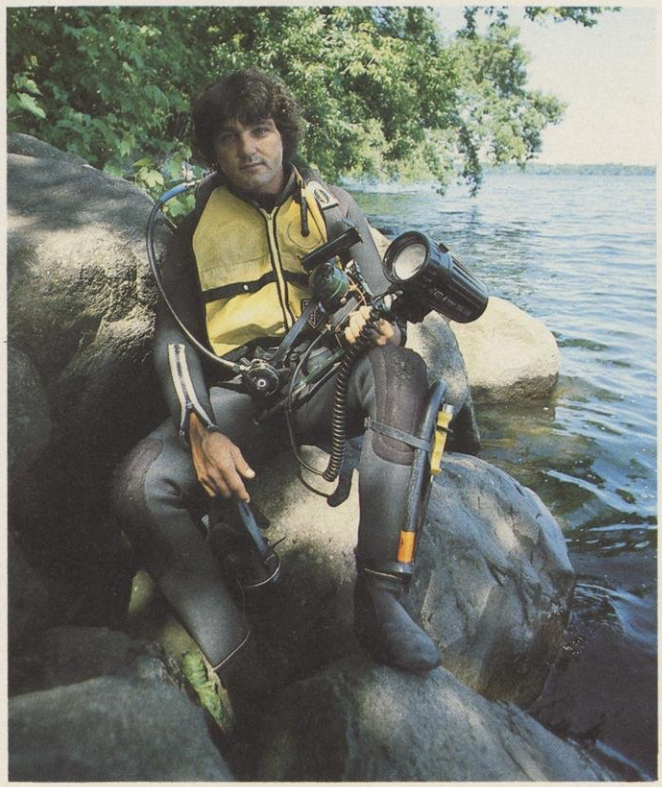
Be first to send your questionnaire! Wisconsin's Fish and Wildlife Management Plan is out. It'll be published here in a special 24 page May-June supplement. The questionnaire will give you a chance to react, tell a planner what you think.

Watch for it. Next issue.

WISCONSIN DEPT. OF NATURAL RESOURCES

I began to notice a pair of large, smallmouth bass.

Underwater acquaintances



The author. Doug Stamm has written *Under Water: The Northern Lakes,* published by the University of Wisconsin Press. ($7.95).

You might expect a cold shoulder, but actually, if done right, you can make friends with a fish.

DOUG STAMM, UW-Madison Sea Grant Institute

It's not often we make an acquaintance with a fish. It's perhaps even more rare to make friends with a pair of fish — unusual, I suppose, only because we simply don't often have the chance.

Anyone who spends time in any of Wisconsin's varied environments, and who is also aware of its creatures, will after awhile begin to notice a particular creature that is more obvious or appears more often than others. Commonly, some of us recognize a particular pheasant or other wild bird, maybe a rabbit or squirrel, a raccoon, even deer. We might get to know the creature well enough to expect it to appear at a specific time and place as it moves about in the daily or nightly routine. Frequently, we set out food or build shelters, and it doesn't take long before the animal begins to expect it. Making an acquaintance with some familiar wild creature is not so rare.

But a fish?

Well, fish are not so different. We're conditioned to thinking in terms of how to or where to catch them and our contacts are usually at the end of a fishing pole, most commonly at the end of a dinner fork. When we do see them, they're in our environment, not theirs, helpless and struggling. We're too removed from their aquatic world to understand them as wild, sometimes cunning creatures.

A daily routine of diving and photographing.

Photos by the author.

But still, a fish?

As science dives deeper into their realm, fish give us more and more information. They're a little like birds. Both fish and birds are shaped by the sharp limitations of their medium. Most birds generally have the same form. One fish generally resembles another. Both must fly or glide through their respective environments.

The males of both usually are most colorful. They stake the territories, help build the nests and often guard them. They attract females with rituals of display and dance, and many male fishes help raise and protect the young as birds do. Seasonal breeding migrations are common in both birds and fish. In terms of intelligence, birds probably have the upper hand, but I wonder if we couldn't catch birds just as easily if we dangled worms in trees. At any rate, we befriend birds. So why not fish?

Strange as it seems, I've done it!

I was spending hours underwater in a daily routine of diving and photographing. One northern Wisconsin lake was ideal. It had clear water and an environment varied enough to support a diversity of creatures. I returned to this particular lake often. It wasn't long before I began to notice a pair of large, smallmouth bass. Bigger and older than most smallmouths I had seen, they ranged in weight from five to six pounds and by the end of the summer, they were literally eating out of my hand.

They were cautious at first and stayed far enough away in the haze so that we could barely see each other as they circled me. I had seen a lot of smallmouths before, but these two were immediately unique. Together constantly, which was unusual, they always appeared in approximately the same place and followed me for a specified distance. I was being escorted, it seemed, through their territory. Evidently, no other bass were allowed to venture where I could. I never saw another smallmouth along their shoreline territory.

They were the first to make close contact, not because they were especially interested in me, but more because I had unintentionally become their "bird dog." My explorations across the lake bottom flushed crayfish from cover, and the two smallmouth quickly learned to follow close by for an easy meal. Inevitably, in their territory, I could look behind and see them closely following.

I began to bring and catch food for them. I tried bread at first; bluegills and rockbass would do anything for bread, but the pair ignored it. I caught large leeches, some over 12 inches long and common in the lake. The two smallmouth would hit the leeches, then quickly spit them out. It was crayfish they wanted! And not just any crayfish, but those that had recently molted. Recent molts were soft and the claws posed less of a swallowing problem. Seems the smallmouth could recognize those crayfish by sight. To get a large, freshly molted crayfish, they would venture close and take it from my hand. As tame as they had become though, they still remained wild and cautious. Whenever they approached close enough to snap a crayfish from my fingers, they never moved at less than full attack speed.

Over the course of a summer, they got used to me and my handouts. If I didn't feed them, they would hunt and allow me to follow. Their primary diet was crayfish, which they grabbed whenever one left cover. Occasionally, I would help by rolling over a log or rock. Crayfish rarely escaped in that maneuver. If I didn't help, they hunted undisturbed by my presence, often teaming up as they followed the length of a log, one on each side flushing crayfish under the log to each other. I wouldn't venture to say it was planned, but it worked well.

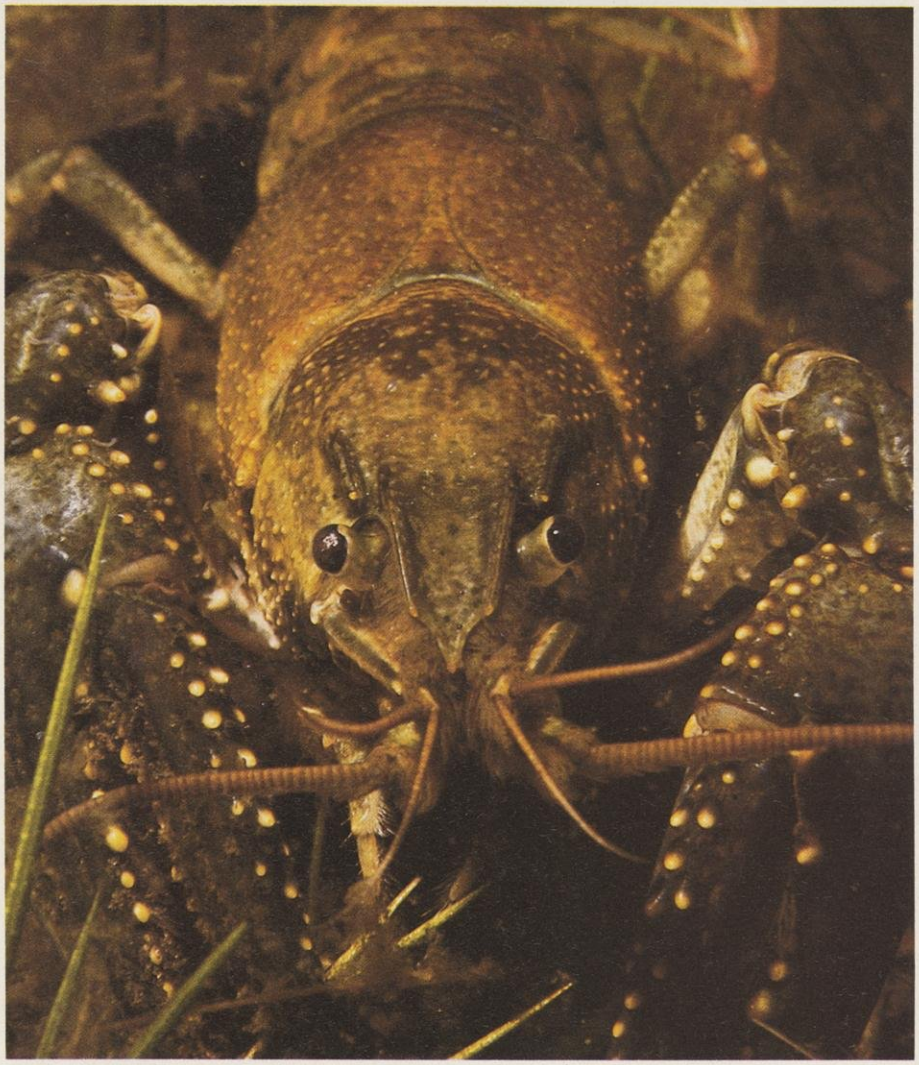
My entrance, and especially exits from the lake, caught the attention of many anglers eager to ask where the big ones were. To protect my friends, I purposely sent them to distant regions of the county.

When autumn descended on the north, changes in the Lake were rapid. Water cooled quickly, vegetation began to fall to the bottom and activity in the shallows was less common. As is their nature, the smallmouth frequented the near-shore territory less and less, finally

A muskie lurking in a tangle of sunken tree.

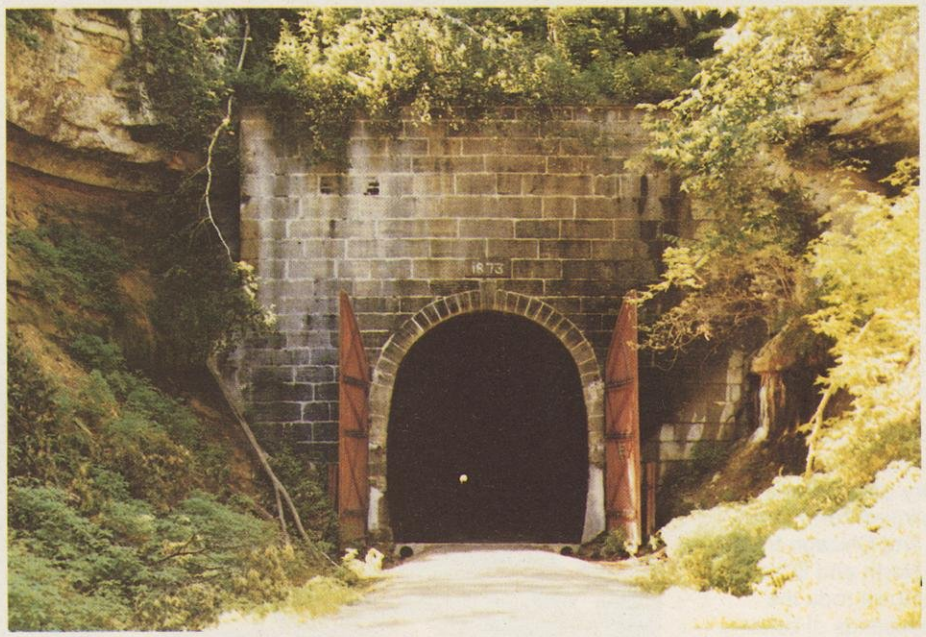
leaving it entirely for the quiet winter realm of dark and deeper water.

I returned to their lake the following spring, wondering if the pair would be there watching their old territory. But I never saw them again. I've long since finished my work in their waters. Even so, I still go back occasionally in summer, alert for two dark forms to take shape in the haze. But no dice! And lately, I've noticed something new — this musky, always lurking in the same tangle of sunken tree. It looks well fed.



It was crayfish they wanted.

Comin' through the mountain



One of Elroy-Sparta's unique tunnels. The longest of the three went through 3,800 feet of solid rock and took three years to build.
Photo by Allan Brandau

The whistles are silent now. But the nostalgia of old railroads and the mystique and power of the men who built the tunnels still hover over the Elroy-Sparta trail. Today it's a bike or a snowmobile that makes the run. Hospitality, though, is still straight out of Americana.

JOHN G. YOUNG, Park Ranger, Wildcat Mountain State Park
ROBERT PESZ, Secretary, National Elroy-Sparta Trail Association

In 1965 Wisconsin pioneered one of the most successful and unique recreational endeavors ever attempted. Just one year after the last train used the railroad line from Sparta to Elroy, the old Conservation Department purchased the right-of-way for $12,000 and began development of Wisconsin's first state trail. From this simple beginning, the Elroy-Sparta State Park Trail has grown into a nationally famous bikeway whose annual visitor attendance averages 35,000.

The 32 mile railroad grade which stretches across the watersheds of three rivers, the Baraboo, Kickapoo, and La Crosse, was formerly owned by the Northwestern Railroad. An account of railroad operations on the Elroy-Sparta line reveals a rich and colorful history. Without doubt, the most fascinating thing about the right-of-way is its three tunnels. To maintain low gradient it was necessary to dig tunnels through the three hills that separated Kendall from Wilton, Wilton from Norwalk, and Norwalk from Sparta. The first two (starting at Elroy) took 1-1/2 to 2 years each to complete. Both tunnels were dug through 1,680 feet of solid rock. The third is an incredible 3,810 feet long, took three years (1870-1873) to complete, and cost $1.5 million. Imagine what a project like this would cost today!

Wisconsin winters posed special problems for the tunnels. The cold outside and warmth inside caused freezing and thawing that eventually weakened rock around the entrances. It became necessary to erect huge double doors at each end of the three tunnels to seal in the higher temperatures. Then men had to be stationed at each of the six entrances to open and close the huge doors when trains came and went. The tunnel keepers developed a special lighting and flagging system to coordinate movement up to and through the tunnels. A red flag or light hung on the shanty outside the tunnel meant all train traffic had to stop. A white flag or light meant train operators could proceed.

The Elroy-Sparta line did a very healthy business at the height of its existence. Six passenger trains and from 40

Prairie plants are common along the trail. This is compass plant or rosinweeed. It grows six to eight feet tall and is so named because some of its leaves point north and south and because when the stem is broken a resinous material is emitted. Photo by George Knudsen

to 50 freight trains passed between Elroy and Sparta every day! Between 1873 and 1910 all railroad traffic that travelled to Madison and Chicago from southern Minnesota, North and South Dakota, and northern Iowa rode the Sparta-Elroy rails. Thousands of soldiers regularly travelled to and from Camp McCoy northeast of Sparta over a period spanning two world wars. A number of important dignitaries rode the line, including the late President Harry S. Truman who rode his campaign train to Sparta for one of the famous whistle stops.

Service on the line began winding down after 1911. From 1911 to 1925 freight service fell steadily, although there were still six daily passenger trains. Passenger service dropped to four per day in 1925, two in 1948, and was discontinued in 1953. Freight service stopped in 1964. One year later the tracks were removed.

Today, as Francis Miller, an amateur poet who lived in the area his entire life, writes in his "Glendale Crossing" there is:

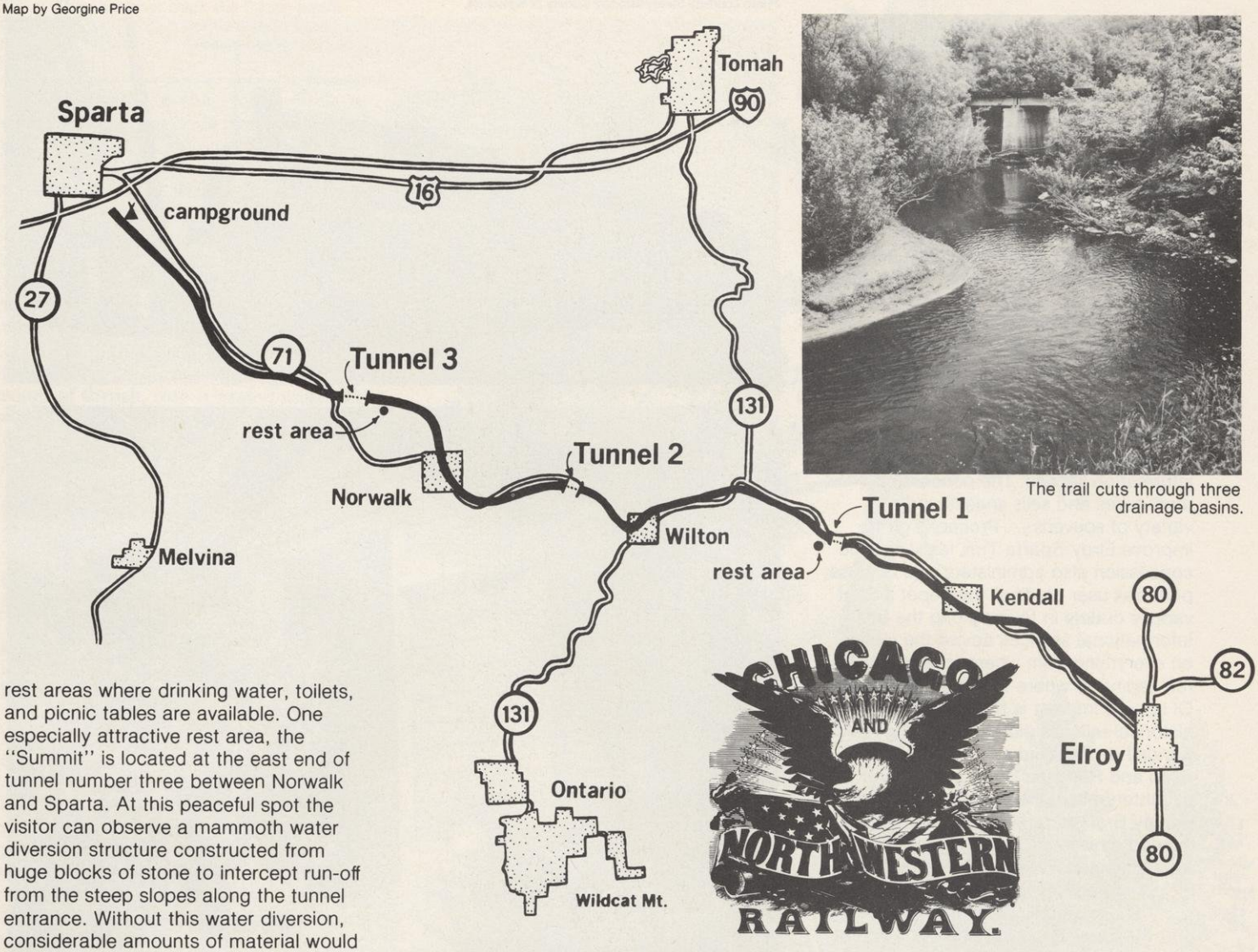
". . . *No whistle or Crossing Bell*
To Remind Me of the Iron Horse
The Cinder and the Smell."

But there is still the beautiful countryside — a countryside that, remarkably, has not changed much from the days when the iron horse came screaming 'round the bend.' Rolling hills, wooded slopes, rugged bluffs, and productive farm fields blend beautifully in this portion of the state. The tunnels are still here too for the visitor to admire and pass through. But trail riders must be prepared with field clothes and a flashlight because the tunnels are cold, have water dripping from the ceiling, and are very dark, especially tunnel number three which is nearly three-fourths of a mile long. In addition to beautiful scenery and the fascinating tunnels, hikers and bikers are rewarded by wildlife and wildflowers along the trail. Deer, rabbit, fox, and songbirds abound. Prairie plants, all but eliminated from most of the Wisconsin countryside by agriculture and absence of periodic natural fire still thrive along certain stretches. Old railroad grades provide some of the last strongholds for these plants because the frequent fires started by passing trains gave prairie plants a competitive edge over encroaching woody vegetation.

Cycle-hikers take a break along the trail.

The large number of annual visitors to the trail has made it necessary to provide additional facilities for hikers and bikers. These now include a number of

Map by Georgine Price



The trail cuts through three drainage basins.

rest areas where drinking water, toilets, and picnic tables are available. One especially attractive rest area, the "Summit" is located at the east end of tunnel number three between Norwalk and Sparta. At this peaceful spot the visitor can observe a mammoth water diversion structure constructed from huge blocks of stone to intercept run-off from the steep slopes along the tunnel entrance. Without this water diversion, considerable amounts of material would have eroded off the hillsides following heavy rains. Rustic camping is provided at both ends of the trail. Although there are parking lots near the campgrounds, visitors have to walk-in or hike-in and pack their gear.

Trail maintenance is by seasonal crews headquartered at Wildcat Mountain State Park. Their responsibility is to make sure facilities are neat and that everything is in good working order. Litter pick-up, although not much of a problem, is part of the daily work. Most trail visitors have a healthy respect for the environment and are concerned about aesthetics, but a few careless individuals persist. A virtually unending job is mowing both sides of the 32 mile trail plus the several acres of rest area.

Over the past few years increased attendance with resultant increased maintenance needs have prompted administrative and fiscal change. Maintenance costs, which have been $20-to-25-thousand annually, used to be absorbed by other state parks. However, it soon became obvious that to continue operating, the trail would have to partly pay its own way. In the summer of 1978 a state park trail user card system was

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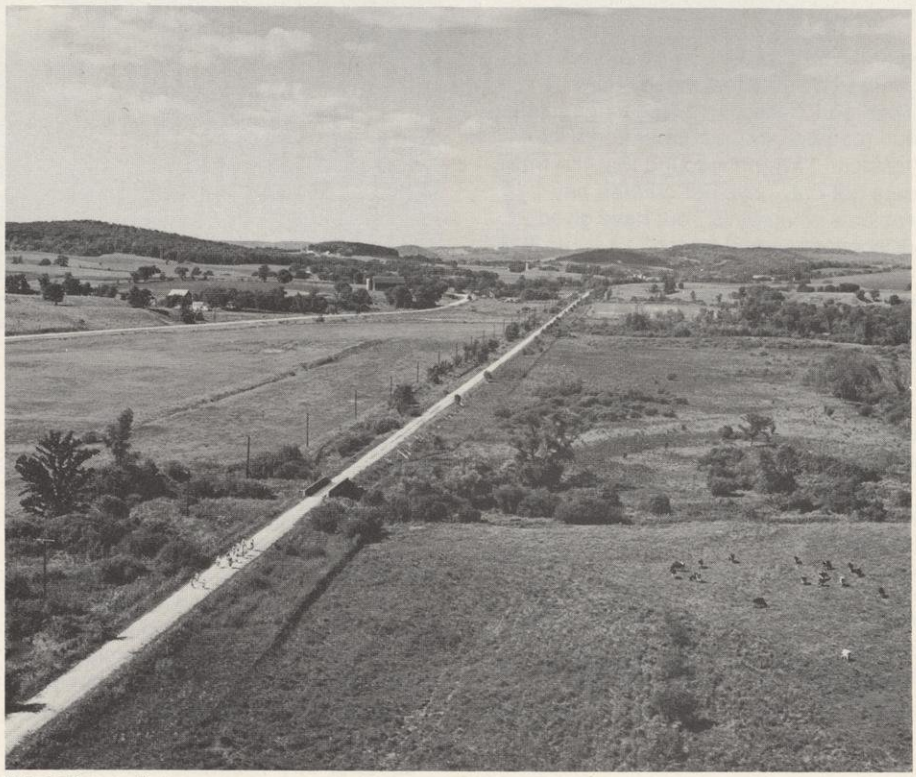


The trail near Elroy.

Photo by Dean Tvedt.

initiated to help defray operating costs. The daily user fee, required only for persons 18 and older, was set at a nominal 75¢ for Wisconsin residents and $1.00 for non-residents. Seasonal rates were set at $2.50 for residents and $3.50 for non-residents. Although a few trail users objected to a fee for something that had previously been "free," most visitors accepted the charge as a way to preserve an activity they thoroughly enjoy.

To provide information to the large number of visitors, the National Elroy-Sparta State Trail Association was formed. Besides giving information, it promotes trail use and schedules annual events in towns along the line. Headquartered at the newly renovated Kendall Depot, this non-profit organization operates a trail concession and an information service. The concession rents bikes and sells snacks and a variety of souvenirs. Proceeds go to improve Elroy-Sparta Trail facilities. The concession also administers sale of state park trail user cards at the depot and at various outlets in towns along the trail. Informational services advise the visitor on everything from where to learn about railroading to where to get a good meal. Of special interest is the association's historical railroad picture display in the Kendall depot. Through the efforts of Allan and Rosanne Brandau, son and daughter-in-law of association president Harvey Brandau, photographs depicting railroad days in each town along the trail were collected, organized, and reprinted for permanent display.

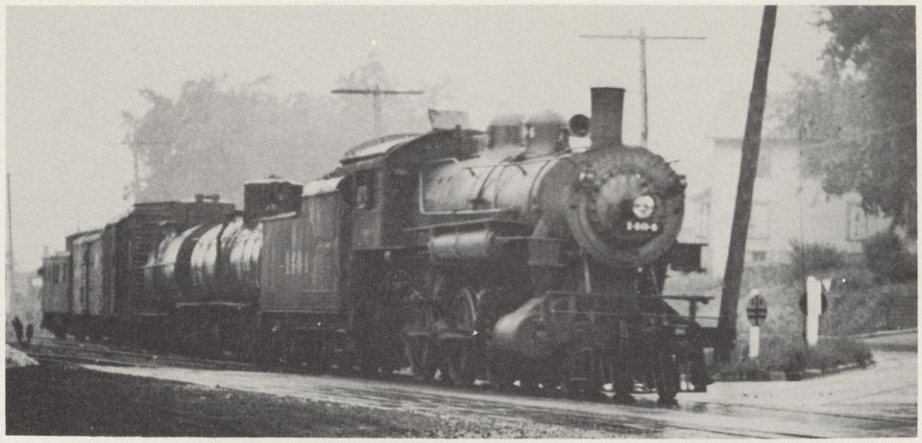
Other organizations that help support the Elroy-Sparta Trail are the Wilton Lion's Club and the Sparta Jaycees. "The Wilton Lion's Club has for the last several years served pancake breakfasts to hundreds of bikers in the shelter in the village park," said Hollis Meachan, Lions Club member and former Wilton Village President. "We have found that the trail users not only have not created any problems whatsoever, but have given our economy a real boost."

Hollis pointed out that in the early years of the trail's operation there were apprehensions about the type of people a hiking and biking trail would attract.

"These apprehensions were unfounded," he said. Trail users have proved to be the most desirable of visitors.

A very popular event associated with the Elroy-Sparta Trail is the annual "Bike-a-Rama." This celebration, sponsored by Sparta Jaycees, usually takes place in July or August. Sparta Jaycee Mark Winekes, a member of the National Elroy-Sparta Trail Association, says Bike-a-Rama is designed to promote

Photo courtesy State Historical Society of Wisconsin



Tunnelkeeper's shack from a 1930's railroad photo. Men were stationed at both ends of each tunnel to open and close the giant doors as the trains came through. They spent the rest of the time in the shack.

Sparta, the Elroy-Sparta Trail, and bicycling in general. Activities include a parade, carnival, dances, and bike races.

And winter doesn't end the fun. Although by mid-November the huge tunnel doors close to end bicycling and hiking, December 1st marks the official start of the Elroy-Sparta snowmobile season. Easements across private land allow snowmobilers passage around the three tunnels. By agreement, Monroe County does the maintenance chores from December 1st through March 1st. The county uses its own trail groomer to smooth the surface for riders. Local groups, through the Monroe County Alliance of Snowmobile Clubs, cooperate in providing volunteer help for the work.

All in all, the Elroy-Sparta Trail is everything a state park should be. It has history, nostalgia, scenery, wildlife, plants, hiking, biking, and snowmobiling. But best of all, it has unmatched cooperation from local citizens whose friendly efforts have made all 32 miles glow with hospitality.

Salubrious mud

Fields plowed last fall are its universe. Photo by Cindy Gaul

Extruded by the pressure of a hoof. Photo by David Thompson

In spring when it's sticky underfoot and dirt tracks through the house, most of us just jump puddles, wear rubbers and wait for May flowers. But science can tell you why.

Mud, mud, magnificent mud!

FRANCIS D. HOLE, Soil Scientist, Wisconsin-Extension

Walking on paths or anywhere else is forbidden in many nature preserves during the spring thaw because landscapes are especially sensitive then. The world at that time, some say, is in the "velvet" like buck deer whose antlers are forming under a soft spongy skin. Applied to landscapes, velvet time is a two or three week period when surface soils become mush from snowmelt and spring rain. It takes about that long for this soft condition to progress downslope from hillcrest to chilled wetland where frost lingers longest. A carpet of leaf or sedge litter above, and the interwoven root mat just below usually hold soil in place until excess water bleeds off and the land becomes terra firma again. If storm winds come then, forest trees tip easily, creating new openings.

When there is enough moisture and a hard freeze follows, the cold ground becomes a lid over subsoil, a winter refuge for many quiescent creatures. These include bear, groundhog, 13-lined ground squirrels, frogs, salamanders, snakes, lizards, worms, ants, cicada nymphs and grubs. Surprisingly, the frozen soil layer is routine habitat for myriads of spring-tails, mites, nematodes, protozoa, spiders and certain other insects. ("Snow-fleas" are spring-tails that feed on pollen grains in lingering snow banks.) During mud time, however, dormant creatures and plant roots receive the wake-up message. Each warm-up in the repeated freeze-thaw cycle produces a distinct flush of animal activity in rhythm with the flow of sweet sap in the sugar bush.

Ordinary spring mud is an almost fluid paste that can be extruded by the pressure of a boot, hoof, car or tractor tire. Animal tracks in it constitute an up-to-the-minute report on populations and movements. Mud shows in stream banks steepened by spring freshets, in millions of earthworms casts thrown up after a thaw, in crayfish chimneys, in drenched spots on tall ant mounds and in wet humus heaved by moles. Wherever protective vegetation is interrupted, mud is exposed. Fields plowed last fall are its universe.

Human beings who want to get around in spring have been fighting saturated, liquid soil since before the Roman Legions. In Wisconsin, traffic ability is enormously improved whenever road crews put a hard surface over the soil — logs, planks, crushed stone, blacktop or concrete. If the work is well done, including proper ditches and culverts, an all-weather road results but it is not immune to the vagaries of mud time. No highway lasts many years in Wisconsin without constant repair. The restless soil does not cease working.

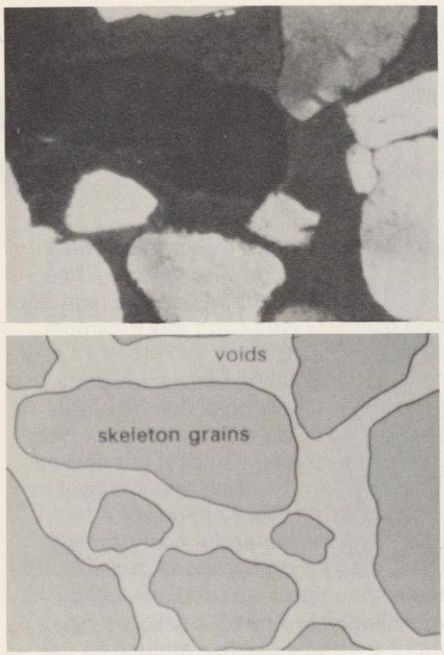
Water is the primary soil lubricant and there is never a time when submicroscopic films of this precious liquid do not coat soil particles. All soils contain pores which scientists refer to as "voids." As the water skin thickens on surfaces of these voids, the soil becomes progressively lubricated.

Silt particles measure five-hundredths to two-thousandths of a millimeter in diameter — finer than sand and coarser than clay. About two-thirds of Wisconsin is blanketed with these silty soils and they convert to their own brand of sticky ooze during the thaw. Some call it "yellow clay."

Sand has mineral grains that tend to bind and therefore is the most difficult kind of soil to lubricate. Quicksands are those very rare kinds in which upwelling waters "float" the grains apart just enough to deplete bearing capacity of the soil. Nearly all sands in Wisconsin are relatively firm.

Besides water, there are two common natural lubricants: wet clay and wet organic matter. Of these, clay is more plentiful, particularly in subsoils. It consists of submicroscopic natural mineral sheets that are as flexible as tissue but far tougher than leather. With water films between them, these atom-sized clay sheets give soil a sticky, slippery consistence. The clay swells on wetting and shrinks on drying. When dry, soil sucks up water like a sponge. It is such a dynamic process that there is a measureable heat of wetting — a bit of warmth is released when dry soils imbibe.

Mud time is prolonged at the foot of slopes as compared to hillcrests, and a characteristic color pattern develops in the subsoil. Called "mottling," it consists of yellowish or reddish brown patches on a background of white to bluish gray. The wetter the soil, the more extensive is the pale background color. Mottling is a



All soils contain pores which scientists refer to as "voids." As the water skin thickens on the surface of these voids, the soil becomes progressively lubricated. Photo by author

reliable indicator of seasonally poor drainage. The color pattern persists the year around, and is therefore a useful clue to the water regime of the site.

In urbanizing regions with clay soils, mud time may be stench-time. Saturated soil refuses to handle the extra burden of mud plus the liquid waste of septic system effluent. Parts of southeastern Wisconsin are especially susceptible.

Where farm animals are allowed to congregate during mud time, the saturated soil is churned. Pigs readily turn soft earth into a chaos of putty-like material and seem to relish it. If there's a theme for this kind of instability, it's theirs:

Mud, mud magnificent mud!
Nothing so splendid for cooling the blood,
Follow us, follow us down to the hollow
And there let us wallow
In salubrious mud!

As for the rest of us, staying on pavement or indoors as much as possible is probably a good policy during mud time. We can touch ground again when the upland regains stability. Meantime, we can reflect on the sober fact that a little mud coats us all and that everything, ourselves included, is only temporarily not soil.

Ordinary spring mud is an almost fluid paste. Photo by Tom Riles

Don't kill a camper, kilowatt

When the energy trumpet sounds, campers will hear a great tenting toot. The rest of us will rush to listen. In one man's opinion, it will be the noise of a kooky brave new world.

*DALE MARSH**

There is a cunning splinter group among us who quietly motor away on sunny weekends to perfect their independence from the society the rest of us has learned to adore. They call themselves CAMPERS, refer to their recurrent operations as CAMPING and make their residence in CAMPGROUNDS. They call their equipment A CAMPER.

Obviously the group's vocabulary is short, but it does seem to suffice for the simple objective involved, which is presumably to experience the essence of life unfettered, as it were, by a wrapping of sound-deadening walls and flowered bedspreads. To a camper, anything more is a bonus. Just making do with nature's raw materials, polyester and aluminum, seems to be stuff enough.

As our energy supply becomes more critical (God preserve us) we may well need to look to these campers (God go with us) for leadership. To get a better handle on this and find out what changes might occur with a camper at our head, I interviewed them—the few that were awake—right in their own campgrounds, employing their simple abbreviated vocabulary.

Basically I wanted to discover their average level of awareness, test their highly regarded crisis threshold, and learn whether or not campers might indeed be the keepers of a long-term survival technology. I concluded that campers are fairly intelligent and have ready solutions to problems that frustrate the rest of us. Without reservation, I believe they can be trusted with leadership in times of an energy shortage.

Why more power plants, campers ask; is not a drop cord plugged to a post projecting from the forest floor sufficient for electrical needs? Why more sewage treatment plants, they query; are not the vast acreages of bushes and cacti that beckon a natural solution? Admit it, they persist, camping is a model life for conservation of energy and preservation of the environment. Frankly, I very nearly agree.

However, being a genetic cynic, I searched until I found the inevitable malcontent willing to disclose the fraudulence of camping, if any existed. I found this camper in an oasis on I-90 set up between a plastic kangaroo on a spring and a very active dumping station. Sure enough, he revealed that camping was not all sunny skies and wildflowers. In fact, he had seen neither, having been lost in the Chicago loop for the past 7-1/2 days.

He laid it out plain. Before investing in rolling stock, he warned, investigate the history of camping in America. For a good basic description he suggested reading "The Donner Party." For a session in camping strategy he recommended "Custer's Last Stand." He said the "Mormon Trail" chronicles typical social conflicts that confront the camper.

Armed with this historical information, it further occurred to me that today's camper also faces contemporary problems unrecorded in the annals of camping. For instance, I worry about $5.00 per gallon gasoline. Will campers accept this and still higher prices with customary good grace or will they fling gestures like the rest of us? The fact that the small new cars can't tow a camper might be cogent also.

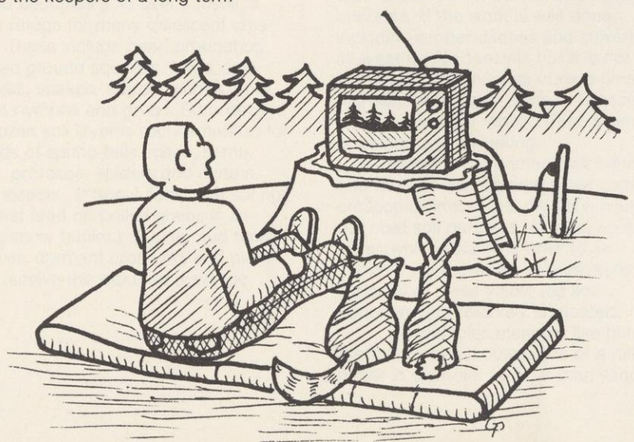
Then again, to voice such petty concerns is hardly objective. The issue has nothing to do with camping for pleasure. We're talking camping out of sheer necessity. We're talking about a pattern of life after the energy to power a toothbrush is gone—after the holy pilot light goes out! Staying home with a dead house on an unilluminated avenue is unthinkable. For sanity's sake we must adopt the same positive attitude as the weekend camper or face life without a cooler and all hope.

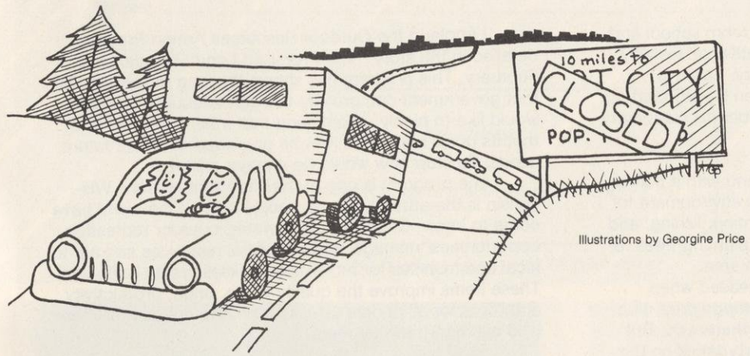
Having agreed to that much, and assuming you are not legally retired, your first concern as a new camper must be for job security. A lot of employers have rules about how much of your time can be spent away from the job. These employers must be shown that the company business can be performed at a campground just as well as in a factory (especially a factory without power).

Actually, energy crisis or not, work habits have long needed some fundamental changes—sort of decalvinization. After all, why should only sales people and politicians have all the fun, working on the road and monopolizing the expense account fund.

Under the camping regimen, the Department of Labor will create a new category of gainful employment listed simply as "S" (Survival). This will replace the existing category "UNE" (Unemployment), a term that has never enjoyed more than average appeal among the work force anyway. Having achieved 100% employment, we can afford to be generous by introducing the four-hour work day; bypass the ill conceived four-day work week altogether. Campers assure me this is equitable, allowing sufficient time to level the trailer and still catch a mess of fish for supper. One camper, who happened to be using the Capitol lawn at the time, even inferred that a person working more than a four-hour day, tends to significantly harm the natural environment. Good point.

Campers believe that God wanted us to live in natural climates rather than create a single, artificial one of 76° year around. That's why wheels are so important. Campers seem to know that somewhere the natural climate is always suitable and reason that one should





Illustrations by Georgine Price

proceed to that place forthwith. The scenario is cleverly simple. Should you desire to take up farming go where the farming is good; if you are employed to dig a ditch, go where the digging is easy, etc. Do campers make sense? I'll say.

Executives already can testify not only to the feasibility, but the desirability of flexible, mobile work habits. Therefore, corporations will readily take to business on the road and show up in appropriate places. I can imagine Ford stream-camping in Voyageur National Park; I see Philip Morris in the Smokies and Howard Cosell on Bull Shoals. I visualize the staff of Sports Illustrated choosing to jog, backpacks flopping, from hemisphere to hemisphere. And there is that cross-your-heart company . . . what's its name—for the Grand Tetons.

As a matter of gut principle, trade unions will be disappointed with a full time camping lifestyle. However the leadership will be amply preoccupied simply maintaining liaison with the wayward membership and trying to hold a successful meeting.

Politics will be vastly upgraded. Campaign costs will be reduced as politicians crowd around the main crossroads during migration periods rather than relying on wall-to-wall saturation through the media. Also, elected officials will be more responsive, knowing their constituents might break camp at any moment leaving them with only a few gophers to poll.

The camper approach to national defense will be fail-safe. Campground fees to foreigners will be pegged so high no enemy would think of invading the country.

Medical care will be simplified to accommodate camper needs. Preventive medicine will give way to CET (critical emergency treatment). Unfortunately, costs will remain exorbitant. But, at least, we'll have the satisfaction of knowing the high price may have helped us avoid certain death. Nowadays this takes two opinions and we're still not positive!

Campers believe the soil needs a great deal of rest, so, for the first time in history, farmers will take extended spring vacations. Campers also think recreation is the cornerstone of every natural resource program. They would have government agencies upgrade two main areas of shortfall; shade management and the floundering "Wildlife for Lunch" program. Endangered species will be absolutely safe around campgrounds because to the very last critter, they are inherently bad tasting. Ugh!

Many new environmental enrichment programs will be developed such as Pollution Supplementation to find better air contamination technology. This will be needed to restore the gorgeous sunsets that suddenly vanished because particulate matter had also disappeared. Sunsets are very dear to every camper's heart.

The fear of natural disaster, which has plagued cities for millennia, will no longer threaten. Floodplains, for instance, will be occupied nonchalantly—much as they are now—but without the risk of great damage. At worst, flood, fire and tornado will claim only an occasional picnic table. The camper's only real extravagance, the folding lawn chair is, of course, easily manuvered from harm's way.

Campers claim the social life of the modern campground is unexcelled in history. The Adam-and-Eve approach never grabbed a firm hold even when it had an excellent chance. And while the Romans had lots of fun, they wouldn't share it. Campers attribute their newfound social freedom to the invention and ample application of mosquito dope (most campers invest retirement funds in companies that manufacture this product).

As, by necessity, we become a society of campers, the natural environment, which we have heard so much about, but which no one had ever seen, will assuredly recover. Environmentalists will have no further purpose in the court rooms and for the first time will be content communing with nature. Their idle attorneys will head for the camp at Council Grounds. Various DNR's will devote their energy to fishing trout as they have long wished to do and the Environmental Protection Agency will become the national umpire for softball games.

And finally, the universities! Despite the academic fetish for redundant concepts, the seriousness of the energy collapse will filter through at last. And despite this, the insatiable appetite for grants will prompt a "back to civilization" proposal, submitted in quadruplicate. Such studies will occupy fully 96% of professorial time.

Meanwhile, back at the gas pump, the stuff is still under $5.00 a gallon. At least it was yesterday. So lets go camping before it all really happens.

* Dale Marsh is DNR's Chief of Watershed and Land Resources. He has a bent for satire.

The readers write

When I was young I attended a one room school and often hitched a ride home with my grandfather on his way back from the neighborhood cheese factory. I always remembered to say a polite thank you when he dropped me off at the gate. After 69 years I still remember his customary reply:

"That don't buy hoss feed."

It's almost tree-planting time again and with it comes the back-bending exercises to improve the environment for wildlife. I suggest that those who enjoy hunting, fishing, and the outdoors swap one hour at hard labor planting trees for equal time spent in their favorite recreation area.

I'm sure landowners are genuinely pleased when sportsmen stop to report their success, perhaps drop off a bird or a fish, and depart with a courteous thank you. But those who buy young trees and pay property taxes on the land might be able to do much more with the odd corners of their fields if those who use the great outdoors would apply some of their effort to the short end of the whippletree.

Pulling a fair share of the load seems a fair price to ask of those who delight in nature's trails.

JAMES A. JONES, Rosendale

Born on a farm in Washington County, my grandfather loved the land and all growing things. Among the happiest memories of my childhood are recollections of his beautiful flower gardens and his bountiful vegetable and fruit plots. His yard and gardens reflected the care he lavished on them and provided a constant source of beauty and abundance.

I was not surprised, therefore, to discover a yellowed newspaper clipping which he pasted in a scrapbook more than fifty years ago. I think it's interesting and as appropriate today as it was in the 1920's. It indicates that, even then, some folks were already aware of an impending ecological crisis. This is what it said:

"Blessed are they who plant the tree and shrub, for generations shall rise up and call them blessed.

Blessed are they who tend the flowers, for in the heart of a flower may be seen its Creator.

Blessed are they who appreciate the gifts of nature, for they shall be known as lovers of beauty.

Blessed are they who clean up the highways, byways, and home grounds, for cleanliness is next to godliness.

Blessed are they who paint their buildings and fences, for improvement and praise shall be their reward.

Blessed are they who war on the signs and banish the billboards along the rural highways, for they shall be called the protectors of roadside beauty and landscape scenery.

Blessed are they who stand against friend and foe to protect nature's gifts to the nation, for they shall be recognized as true patriots.

Blessed are the towns with planning boards, for great beauty, prosperity, and peace shall descend upon them.

Great shall be the reward of those who protect our forests, for the bird shall continue to delight them, the fish and wild animals shall furnish them food.

Whosoever conserveth national resources serveth himself and the generations which follow him."

SHIRLEY WESTPHAL BELLERANTI, Cudahy

I applaud the Outdoor Resources Action Program detailed in the story "The Promised Land" last January-February. This program has shown the long range benefits that government can provide through adequate planning. I would like to highly recommend that it be continued and that its goals and objectives be upgraded to reflect future needs. To stop now would be a major mistake!

The program is one of the important reasons Wisconsin is the attractive state people around the world have come to know. Clean air, clean water, outdoor recreation opportunities, management of natural resources and aid to local communities for recreation facilities are its hallmarks. These items improve the quality of life, pride, productivity and roots for all people of Wisconsin and not just for those who can afford to buy them.

PETER J. HARRIS, Director of Parks, Recreation and Forestry, Ashwaubenon

I am a subscriber and feel you put out a high quality magazine, and getting better all the time, though I do have to grit my teeth through your yearly hunting glorification issue. Sorry.

RICHARD LUNDEEN, Hayward

I'd like to call attention to an oversight in the "Mad City Ducks" story in the January/February issue of *Wisconsin Natural Resources*. Although I am credited with being the author, the article was jointly written by both myself and Robert Trost, also of the Department of Wildlife Ecology. Somewhere along the line, his name was omitted. Any future citation or use of the article should contain both of our names to give Mr. Trost the recognition he deserves as co-author.

I hope this letter will serve as my personal apology to Mr. Trost over this incident.

SCOTT CRAVEN, Department of Wildlife Ecology, UW-Madison

We surely enjoy the magazine, getting better all the time. Thought the deer pictures in the November-December issue were great.

MRS. WILLIAM P. HASKE, Pittsville

Your deer hunting articles in the November-December 1979 issue actually brought tears to my eyes, remembering pleasant hunting days in Wisconsin's family deer camps. It just cannot be explained to those who have never experienced it. I hunted with my father and brother since my teenage years—my father died last year at age 100.

I've hunted deer here in Arizona, but the hunt is not the same! Your magazine is terrific! Thank you.

JOHN C. KADON, Scottsdale, Arizona (formerly of Abbotsford and Milwaukee.)

The Wisconsin Buck and Bear Club scored this nontypical whitetail rack at 231 5/8 points, the highest of any deer taken in Wisconsin last season. Records show it to be the highest scoring deer ever taken with a bow in the state, third highest ever in Wisconsin for either gun or bow, and 48th in North America, gun or bow. Shown here is Dennis Shanks of Mount Horeb who shot the buck in Iowa County on October 28th.

I read with interest Rob Irwin's article "The Biggest Deer in the World is a Badger." I was particularly interested in the typical and nontypical deer antler records, as my father shot a buck in Sawyer County in 1920 which I feel would score very highly. Through the years many people have urged him to have the head measured by the Boone and Crockett Club, but he has never done this.

I would like to request that a representative of DNR officially measure this rack for the record. The head is now on display at Bert's Bar on Fourth St. in Barron, but if you will contact me I will make the head available to you.

BARD G. KITTLESON, Barron

DNR does not measure deer antlers for the record. That is done by the Wisconsin Buck and Bear Club, official state representatives for Boone and Crockett. Write their president, Arnold Krueger, 3726 S. 79th St., Milwaukee, WI 53228. He'll send the necessary forms and instructions for measuring your rack. If it comes close to a record, club representatives will stop around to verify your measurements.

When I was a kid, *Arizona Highways* used to make me want to saddle up my bike and ride into the desert sunset. When I was older, the magazine made me want my camera to capture the mysteries of nature, too.

I wish I could say the same thing about the *DNR*'s two-year-old magazine, WISCONSIN NATURAL RESOURCES. Sometimes it tries to be like the traditional *Wisconsin Trails,* while other times it looks like *Wisconsin Outdoors.* Mostly, it looks like it has no real identity, except to make the Department of Natural Resources look great. Sadly, our backpacking and flyfishing is overshadowed by self-backslapping and just plain fishing for compliments. WISCONSIN NATURAL RESOURCES could really detail and expand our love of the Badger State. It can show us its grand domain and why we should be out there occasionally. It tries to do that, but the editorial confusion is obvious. It's neither fish, nor fowl, nor public relations.

My main criticism is that lack of individuality. When the Highway Department of Arizona decided to make a magazine, it created something so unique that millions of strangers used those unknown roads. I'd like to see us get the same inspiration about the Natural Resources of Wisconsin.

From "Comments on the Arts" by Hayward Allen, Channel 15, WMTV, Madison

Wisconsin Natural Resources is flattered to be included in a "Comment on the Arts," but Mr. Allen shouldn't be confused. The DNR magazine is not meant to be an arty picture-book, tourist promotion publication like the wonderful Arizona Highways *(can't afford it anyway). But it does try to be pretty and show the state's beauty. Admittedly, pretty pictures stimulate a feeling for the "grand domain" and even make you want to protect it. Not much grand domain, though, in a photo of illegally dumped hazardous waste. To save the environment and the wildlife in it, you talk issues—try to show people the way to go and why—and temper it with background. That's what Wisconsin Natural Resources does. That's its individuality—almost embarassingly obvious! Our files are full of letters from people who think we're doing it right and in an artistic way too.*

Mr. Allen's comment that the magazine exists only to glorify DNR is malarkey and if he actually reads Wisconsin Natural Resources, *he knows it. One has to do more than look at the pictures. The very first issue (January-February 1977) told why the magazine exists. Among other reasons, it said this on the editorial page:*

"The search for answers to serious resource questions is still on. The aim of this magazine will be to help readers find them and furnish some lore and good reading along the way."

The editor thinks we've accomplished this purpose and so do 70,000 paid subscribers.

Readers are invited to express opinions on published articles. Letters will be edited for clarity and conciseness and published at the discretion of the magazine. Please include name and address. Excerpts may be used in some instances. "Letters to the editor" should be addressed to Wisconsin Natural Resources magazine, Box 7921, Madison, Wisconsin 53707.

Thinking like a mountain*

*From chapter 8 of the book, *Pioneer Conservationists of Western America,* by Peter Wild, Mountain Press Publishing Co. Box 2399, Missoula, MT 59806

In one chapter of Jung's *Man and His Symbols,* M. L. von Franz proposes that an individual is capable of growing through several stages. A person begins with the wholly physical, but he can progress to the romantic, on through the leader, and become the seeker of spiritual truth. To illustrate these four stages, the psychologist mentions Tarzan, Ernest Hemingway, Britain's Lloyd George, and Gandhi. Few people reach the height of a saintly Gandhi, or even of a Lloyd George; instead, most get "stuck" emotionally at one of the earlier levels. Aldo Leopold would have chuckled at such a simple scheme, for he realized that man and the nature in which he lives are far more complex than the neat categories that humans delight in imposing on the world. Nonetheless, the course of Leopold's life and thought—life and thought that helped expand the edge of the early conservation movement—roughly followed von Franz's theory of growth.

In 1909, at the age of twenty-two and fresh from receiving a master of forestry degree from Yale, Aldo Leopold stepped off the train at Springerville, a cow town in what was then the rough-and-tumble Arizona Territory. Headed by zealous Gifford Pinchot, the recently created Forest Service glowed in its heroic age. As a new member of the campaigning agency, Leopold looked forward to his first assignment. Getting into the spirit of his surroundings, he went native. Susan Flader, the foremost writer on Leopold, describes him during his first days on the frontier, ". . . outfitting himself with a horse, saddle, boots, spurs, chaps, ten-gallon hat and all the other accoutrements of the local cow-culture."

This was indeed the frontier that American boys dream of—or at least a remaining shadow of it spilling over into the twentieth century. As the son of a prosperous furniture manufacturer of German descent in Burlington, Iowa, Leopold had hunted ducks along the banks of the Mississippi River; but to him the outdoor thrills of his childhood must have seemed a bourgeois foretaste, a mere preparation for the real thing now before him. The wild White Mountains of the Arizona and New Mexico Territories, with their wolves, grizzlies, and sometimes half-wild men, would be his home for the next fifteen years.

Leopold might have spent his life happily "stuck" in an emotionally immature and romantic stage, chewing tobacco with other Forest Service employees, camping in the ponderosa forests miles from civilization, and killing the hated wolf—in short, being a man among men. He did in fact act this out to a certain degree, revelling in the largeness and ruggedness of the country, but he possessed two traits that raised him above the average: capacity for perception and ability to change. He knew how to evaluate the prejudices of his times and how to form his own opinions. Yet, instead of boasting of his growing skills as a scientist and woodsman, he went the other way. As, unlike the men around him, he began to grasp the complexities of the environment, he became increasingly humble and dubious of the Anglos' approach to nature.

Curiosity about his new surroundings often drew the young ranger away from duties assigned by the Forest Service. The first summer in the White Mountains, green as he was, he led a survey crew of experienced locals up and down ridges, mapping and cruising timber. The six hands grumbled about their boss. When something caught his eye, he would leave work to scout off by himself. The Indians, then as now on the bottom rung of the social ladder in the area, brought the eager Yale-man special delight as he watched them jerking venison in their camps. But despite the disgust of his crew and his dereliction of duty, Leopold was learning, beginning to see the effects of two cultures on the region. For centuries small bands of Apaches had lived in the White Mountains without significantly damaging the environment. Pushed back from their wanderings over the surrounding plains, they held the tangled canyons and high plateaus of the area as a last stronghold, and by fierce guerrilla warfare they kept the whites out until the late nineteenth century. Then, when the Army captured their leader Geronimo in 1886, with a whoop the exploitation, the stripping of the mountains, the ditching, the overgrazing, began—and with it the erosion, the depletion of timber and wildlife. Upon his arrival twenty-five years later, the young Leopold recognized the problem, while others busied themselves with making it worse. He knew that if the process continued, it would leave a wasteland for the sons of the proud pioneers. Though rapid misuse followed a similar pattern throughout the West, damage was especially evident in the arid tail end of the Rockies. Flader describes Leopold's realization of what was happening:

Reducing the wilderness to possession entailed an incalculable investment of labor, hardship, and sometimes

Leopold in the Southwest in 1910. Photo courtesy of Susan Flader

even bloodshed. Hence the community ought to consider whether its methods of conquering the wilderness were efficient methods—whether they produced "a maximum of habitable land for a minimum of effort and suffering."

Years of nosing his horse into one washed-out valley after another in the national forests of the Southwest led him to question whether current practices yielded a net gain—whether more land was not lost to erosion than was gained by clearing, fencing, groundbreaking, and irrigating. While one individual was putting a new field under irrigation, another was losing an older field from floods, and a third was causing the floods through misuse of his range.

In his youthful exuberance, all this wasn't immediately clear to the new forest ranger, but he was wise enough and far enough ahead of his time to have inklings that the quality of an ecosystem reflects the quality—and the future—of the people inhabiting it. Hunting always fascinated Leopold, at first with a rifle and later with bow and arrow, and his gradual change of heart about the relationships of wildlife to the environment preceded a wider view of the delicate workings of the biota. Treatment of the wolf started him thinking. Manly heroes require enemies, and in the early days of his career Leopold joined his fellows in the Forest Service in a holy war against the wolves and lions that fed on deer and elk. Yet through all the bloodshed he began to understand that what he, the Forest Service, and the local ranchers were doing was part of a larger mistake. Years later he recalled in *A Sand County Almanac* an epiphany during one of the slaughters:

In those days we had never heard of passing up a chance to kill a wolf. In a second we were pumping lead into the pack, but with more excitement than accuracy: how to aim a steep downhill shot is always confusing. When our rifles were empty, the old wolf was down, and a pup was dragging a leg into impassable slide-rocks.

We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters' paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

From then on Aldo Leopold slowly shifted from the utilitarian Forest Service approach to a holistic view of the environment, a change that took much of a lifetime, until it was refined and assumed a spiritual significance for another generation in the eloquent "Land Ethic" of his posthumous *Sand County Almanac*. Though the shift was so gradual that perhaps even Leopold didn't perceive it, two events symbolize the progression from his thinking of game as a crop to his ultimate realization that man should stand in humility and wonder before the diversity of nature—a diversity that should be restored and preserved rather than manipulated for short-term gains. The first was a national scandal, one that drew into its maelstrom the *Saturday Evening Post*, the writer of romantic Western novels, Zane Grey, and the U.S. Supreme Court: the Kaibab disaster of the 1920's and 1930's. The other was quieter: Leopold's joining in 1935 with Robert Marshall and other conservationists to found the Wilderness Society, an organization dedicated to preserving the variety of nature. However, before he would reach that stage of intellectual and spiritual development, radical for his time, Leopold had a long way to grow.

The elk, deer, and turkey that once teemed in the mountains of Arizona and New Mexico had withered under the habitat destruction and hunting pressure of white settlers. The U.S. Forest Service controlled great tracts across the two states, and to a certain extent the agency condoned or at least winked at the laissez-faire attitudes of the pioneers and their sons. By overgrazing, overcutting, and overhunting they were destroying the land on which they depended. When the zealous conservationist Gifford Pinchot became the first head of the Service in 1905, he envisioned the correction of just such abuses. Ironically, despite the "esprit de corps, pride and idealism," as Jack Shepherd typifies the outlook of the young agency, other factors conspired to pervert its best intentions.

For one thing, its leaders didn't comprehend that a growing population could levy demands beyond the capacity of the shrinking forest lands. For another, the Service didn't understand delicate relationships within ecosystems. From the beginning the agency emphasized timber production, not realizing that especially in the fragile Southwest intensive logging could upset an entire biota. And, regardless of their wisdom or lack of it, the new stewards of the country's forests often stood helpless before the political clamor of locals, who tended to scorn regulation of their exploitive habits.

As for wildlife, game manage-

"On an everyday basis it meant that man should become a servant of the earth, rather than its manipulator."

ment—of which Aldo Leopold would become the father—did not exist as a profession. The animals of the forests received little thought from officials whose main job was cutting trees. Cold statistics reflect the lack of concern: entrusted with enforcing the game laws of Arizona and New Mexico, the forest rangers had not made a single arrest by 1915.

Arriving in the midst of the wildlife crisis, Leopold grasped both the environmental and political aspects, and he launched a personal campaign to do something about them. His success at working in both areas simultaneously shows his perception as a scientist and his skill as a diplomat. He was quick to recognize allies. Despite general apathy, some devoted hunters—many of them from the cities—realized the need for changing old ways. Businessmen saw their clientele of tourists and hunters melting away with the wildlife. Leopold managed to wrangle the job of overseeing game work in the Southwest District, and it is to the credit of the Forest Service that it was flexible enough to give the ambitious ranger his head. Out of his office soon came *Game and Fish Handbook,* spurring rangers to their responsibilities in the woods. Taking to the field himself, he explained wildlife conservation to ranchers and to local citizen groups; he founded *The Pine Cone,* bulletin of the New Mexico Game Protective Association. All the while, Leopold was publishing articles in professional journals and urging stricter federal regulations. His views, however, were still utilitarian—he saw game as a crop—and, though progressive for the times, still short-sighted. Along with others, he would discover that sound conservation consisted of more than catching poachers and enforcing bag limits, that the environment would kick back at the egotism of managers.

The early conservation movement emphasized selective preservation. The simplistic thinking ran that if deer and elk were good, then wolves and lions were bad. Denied natural predators, the game population soared. In less than twenty years, for instance, the deer count on the Grand Canyon National Game Preserve of the Kaibab Forest exploded from 4,000 to 30,000. The game-loving public now beheld the spectacle of thousands of animals tottering across the overbrowsed landscape until they dropped of starvation. Yet most people were unable or unwilling to see the cause—so embedded was the sanctity of deer and the prejudice against lions and wolves. At one point the Forest Service issued permits to kill some of the surplus game, but the governor of Arizona, making political hay from public sentiment, arrested the hunters. The novelist Zane Grey hired cowboys to round up the malnourished animals and drive them across the Colorado River to less populated areas, but despite the whoops of horsemen the deer refused to behave like cows. Though the Kaibab lay outside Leopold's district, the problem was endemic to much of the Southwest. Still in the developing stages of his thinking about wildlife, Leopold did not solve the overpopulation disaster, but the faulty thinking that caused it moved him to re-evaluate his own approaches. Apparently humans could not orchestrate nature as easily as does a bandmaster waving his wand over obedient musicians.

Speaking of predators as necessary to the health of nature was professionally risky in the 1920's and 1930's—as it can be in some places today. But by doing so Leopold showed he was beginning the process of "thinking like a mountain," as he would later put it—striving to understand the diversity of the earth and its "indivisibility." The shift involved more than a scientist's appreciation of nature's complexity. On an everyday basis it meant that man should become a servant of the earth, rather than its manipulator. The corollary on the philosophical level was that by living in harmony with the environment man could restore harmony with himself. Certainly this was no new insight, when people such as Rousseau and Muir are taken into account, but it was a novel stance for a practicing forester and influential bureaucrat.

Leopold's fifteen years in the Southwest brought him personal satisfaction and a measure of professional success. He married Estella Bergere, daughter of an old Spanish family, built a house, and began a family of his own. After official duties, he delighted in exploring, thinking, writing. Starting as a greenhorn ranger fresh from Yale, in ten years he rose to chief of operations, the second highest position in the hierarchy that governed the 20 million acres of the Southwestern District. Yet he did more than initiate conservation reform and open the eyes of the public and the Forest Service to wildlife problems. To preserve the rapidly disappearing diversity he saw as essential to environmental health, in 1924 he persuaded the Service to set aside one-half million acres of the Gila National Forest as the country's first wilderness area. This was a coup for Leopold and a major step for an organization so concerned with extracting resources that unmanaged lands were anathema to it. More importantly, the

The Leopold Shack

Photo by Anne Short

new concept broke ground for the Wilderness Act of 1964 and the nation's present growing wilderness system.

Yet in the midst of success, the chief of operations faced problems. Then, as now, the Service predicated certain promotions on transfer. Leopold had moved around within his district, but after turning down jobs in other areas, he realized that further advancement would come only if he were to leave his home in the Southwest. In addition, along with earning a national reputation as an environmentalist, his activism had generated a certain amount of strain in his district. In the same year as his wilderness victory on the Gila, he accepted a new position in Madison, Wisconsin, becoming associate director of the Forest Service research unit, the U.S. Forest Products Laboratory. Nearly twenty-five years of public service, study, and publication lay before him, but the course already was set; his mature thinking would be an expansion of ideas formed during his years in the abused Apache country at the southern tip of the Rocky Mountains.

He took his new job with the understanding that he would soon replace the current head. Contrary to expectations, however, the director stayed on, and Leopold chafed through four years of administrative paper-shuffling. As a result the Forest Service lost perhaps its most original thinker when he quit in 1928. For the next few years he conducted game surveys in the Midwest for the Sporting Arms and Ammunition Manufacturers Institute and assisted universities in developing wildlife programs. He implemented his environmental philosophy by encouraging habitat restoration of lands that settlers had wrung of their resources, then abandoned. Much of the latter work brought pleasure, especially his mending of acres around the family's weekend shack—the inspiration for *A Sand County Almanac.*

Widespread professional acclaim followed in 1933 with publication of *Game Management.* In it Leopold still showed himself a technocrat, believing that the environment should be manipulated, albeit with greater sensitivity than in the past. He was increasing his knowledge of the environment, which eventually brought him closer to the worshipper of nature, John Muir, than to its exploiter, Gifford Pinchot. At any rate, the text established him as the "father" of a new science. He wrote it in the depths of the Depression, jobless and worrying about feeding a wife and five children. In the same year as its publication, however, the University of Wisconsin sweetened the book's success by creating a chair of game management especially for Aldo Leopold. He kept the job until his death, working with graduate students, establishing cooperative programs, always writing.

Though the shift to the last major development in Leopold's thought is difficult to pin down, when he helped found the Wilderness Society in 1935 his thinking took a direction that would result in the capstone of his career. Ironically, the manuscript of *A Sand County Almanac,* the book that would make his name famous, circulated for seven years, suffering repeated rejections by publishers. Editors felt that the rambling philosophy of the essays was not what the public wanted. With typical grit, Leopold kept revising and sending out the manuscript. On April 14, 1948, an editor at Oxford University Press called to say that his firm would be happy to print the book. Seven days later the Leopold family spotted smoke across the swamp near its country shack. A veteran of fire, Leopold armed the family with buckets and brooms and led it to a neighbor's burning field. Soon after, he fell on the fire line, dead of a heart attack at the age of sixty-one.

A great green shout

Did Joyce Kilmer know? He said only God can make a tree. Didn't say people who plant them are angels. They are.

JUSTIN ISHERWOOD, Farmer, Rt. 1, Plover

Tree planters are a strange lot! Cognizant of ethereal influences, they have an instinctive awareness of fragile significances and higher laws. The footfall of the universe is familiar to their ears. The act itself is an experience that has significance beyond the combination of its tools and simple repetitive motions. A foundation is cast with each successive move of the shovel, support to a structure that recognizes the place of fields and roads, of power lines and ponds, but also expects trees in the mix. Trees are binder and fiber to give reinforcing strength to a whole. They provide cover for the human animal, increase the distance between dwellings, expand real estate and give texture to plain sand land.

The lives of trees resemble human lives. First years are frail. Little bodies with little bones are prone to the effects of poor nutrition and a hostile environment. As teenagers, both species have a gangling countenance, arms too long for their bodies, more appetite than ambition and of insignificant practical use. In their twenties, thirties and forties, they find a kind of loveliness. Limbs solid, strong. Heads filling out. They begin to supply some shade, to repay the principle with children of their own. Fifties, sixties and seventies are lofty years, their horizon extended, their days longer and more enlightened. A richness is natural and profits gained get reinvested. Humus accumulates to bank moisture for a dry summer. It is like sending another generation to college.

At last they too are old, their bodies and limbs twisted by arthritic winds. They could be thought of as ugly, fit only for fueling stoves. Instead, their wounds make them grand. Faces that tell of blizzards, droughts and all the wars with winter when cannons boomed in the woods. These old, define dignity. Dignity being survival. But more! It is also having built something, made the place better. Better being a word of problematic definition. Better isn't more. Cotton candy spun seductively on a paper cone at county fair is more. It looks thick and real, but even a child discovers there is no heft to it. Nor is progress always better. Sometimes better is having the nerve to unbuild something, able to say no. The near imperceptible tolerances which separate information from learning and scholarship from wisdom. A study, which any tree planter knows begins while the hand is in the hole and the spark is felt as it passes between the root and the earth. The engine jumps, catches and turns.

Our Constitution does not mention the right to have and plant trees. It should. It insures the right to have and bear other things of considerably less importance and less defense. Trees insure privacy, the sometimes overlooked ingredient of democracy. Dictators, tyrants and feudal lords carry chain saws, figurative and literal, to hack down cover and expose the inhabitants for view and inspection.

Tree planters make the best friends. And the best marriage partners for they know what they are waiting for. Planters make a promise with spring. The vows are kept moist in the pail, an occupation not given to boasting 'cause they know the odds. Part will die and some years most. Still, it is the promise of possibilities that causes the shovel to make room for the roots and the hand to slip them home. After the small wound in earth is closed, hope surges. Hope — that the rains will come and urge the whisper just planted into a great green shout.

Planters of trees are a generous sort. They know the shadings between a fertile gift and one which is sterile. They have a sly perception of the gift which will repay in full the initial investment,

They hammer back the frozen arctic blasphemy until only a gentle breath dare cross the threshold. Illustration by Jim McEvoy

payment made in the etched circle of shade around then, safe from the heat of day, payment in the caution they give the wind to drive slower across their farmer's field. In winter they dull the axe-edge of a chill factor and hammer back the frozen arctic blasphemy until only a gentle breath dare cross the threshold. For them, the blizzard empties its white pockets and spares the man with the snow shovel.

As if that's not payment enough, these servants bring music, too. The songs of thrush, rose-breasted grosbeak, wren, oriole, cardinal and that treetop wonder, the meadow lark. They make steeples ring.

Tree planters are a separate sect from the rest of humanity. As if they planted their own eyes, so as to see the world differently. Oddballs, because giving is more important than taking and planting valued more than reaping.

Children carry our genes into a time we will never know and thus immortalize us. Those who plant trees have other children whose lives in that tomorrow country extend the fame of the planter. Trees define the character of the person better than a cemetery stone. A thousand headstones cannot comfort the land or sketch a better portrait of regard for the township than planted pine, oak, spruce or sweet-blooded maple.

Ethan A. Greenwood wrote in 1932 the words that serve as creed to tree planters. "And why should men delay to plant and cultivate all sorts of good trees because they may not live to see them fully grown? What can a man do better on earth than to cultivate and beautify it? While ever ready to depart, the lover of beautiful trees should act as if he expected to live a thousand years . . ."

Ethan, my stalwart friend, the truth is that a planter and lover of trees does live for a thousand years, in fact, may be immortal.

The promise of possibilities. Illustration by Jim McEvoy

A billion trees

State nurseries have distributed more than a billion trees for planting in Wisconsin since 1911. In that year 192,000 were produced. This year DNR production will total 14-million trees.

In addition to scenery, conifer plantations established in 1955 and before are now producing pulpwood, sawlogs, poles and posts. Plantations grow at the rate of one to two cords per acre per year and the first thinning at age 25 usually brings in more than enough revenue to recover the cost of planting.

Trees and shrubs sold by DNR can be used for forestry plantations, for underplanting in established woods, for windbreaks and shelterbelts and for wildlife habitat. Stock intended for ornamental purposes and Christmas trees must be purchased from private nurseries.

Currently, DNR operates three nurseries . . . at Boscobel, Wisconsin Rapids and Hayward. As soon as frost goes out in early spring, trees and shrubs are lifted from the beds and distributed immediately. The process is now underway or will be soon.

It's too late to order trees for this year anymore, but order blanks for 1981 will be available from DNR foresters by next November. Stock can be ordered for the following spring at that time.

For more information contact the DNR forester in your county or write for the free booklet "Tree Planting in Wisconsin," Bureau of Forestry, Department of Natural Resources, Box 7921, Madison, WI 53707.

AZTALAN AND THE MISSISSIPPIANS

Though they came from an enlightened tradition, history has recorded many strange customs practiced by the prehistoric peoples who inhabited Aztalan, the ancient Indian village near Jefferson. Among the customs: Sun worship, a vicious social regimen that required death of survivors of the upper class, and cannibalism.

PETER TOEPFER, Milwaukee
Mining engineer, geologist, historian

The Mississippian tradition had its beginnings along the middle Mississippi River in about 700 A. D. Its people spread out from there, some as far north as Aztalan. Like the Hopewell Cult which died out years earlier, it was based on cultivation of primitive corn, beans, squash, and pumpkins. In about 900 A. D. an improved corn from Mexico brought a rapid expansion of the Mississippian culture. Its villages spread up the Ohio and Tennessee Rivers, and southward to the Gulf and Atlantic coasts. Muskogean Indians dominated this southern area, but Algonquin, Siouan, and Caddoan tribes also followed the culture. It was still practiced when the first white men and women arrived.

DeSoto, the butchering conquistador formerly with Pizarro in Peru, cut a bloody path through Mississippian towns in the South. Disease brought by Europeans spread rapidly inland from the coast, wiping out the large (and no doubt unsanitary) Indian cities before English explorers ever reached them. Disease ended the Mississippian way of life. The Creeks, Choctaws, Chickasaws, Cherokees, and Seminoles, who were Mississippian survivors, easily adapted to white civilization and were known as the Five Civilized Tribes.

The Mississippian towns were characterized by great earthen pyramids on which wooden temples were built. These were temple mounds, much larger than the burial mounds of the earlier Adena and Hopewell cultures. Mississippians buried their dead in cemeteries.

Immense mounds are found at the many town sites. The Great Monks Mound at Cahokia across the Mississippi from St. Louis rises 100 feet to a flat summit, and has a square base 16 acres in extent. In volume it is said to equal the Great Pyramid of Egypt. Mexican influence was very strong, even to occasional human sacrifice and ceremonial cannibalism.

Interesting accounts of a Mississippian town have been given by French explorers who visited the Natchez Indians between 1682 (LaSalle) and 1730 when they were destroyed in war with the French.

The Natchez worshipped the sun. Their venerated chief was known as The Great Sun, and was the sun's brother. He was revered, wore a crown of swan's feathers, and was carried about by litter-bearers. His feet were never allowed to touch the ground. His home was built upon one of the two temple mounds. Every morning he would greet the rising of his brother, the sun, and would point the direction his brother was to take across the sky.

The other great mound had a temple on its summit. Outside were carved, brightly-painted eagles, mounted on posts. Within the temple were shelves holding stone and baked clay idols, skulls of enemies killed in war, and bones of the ruling clan members. An eternal fire was kept burning within the temple.

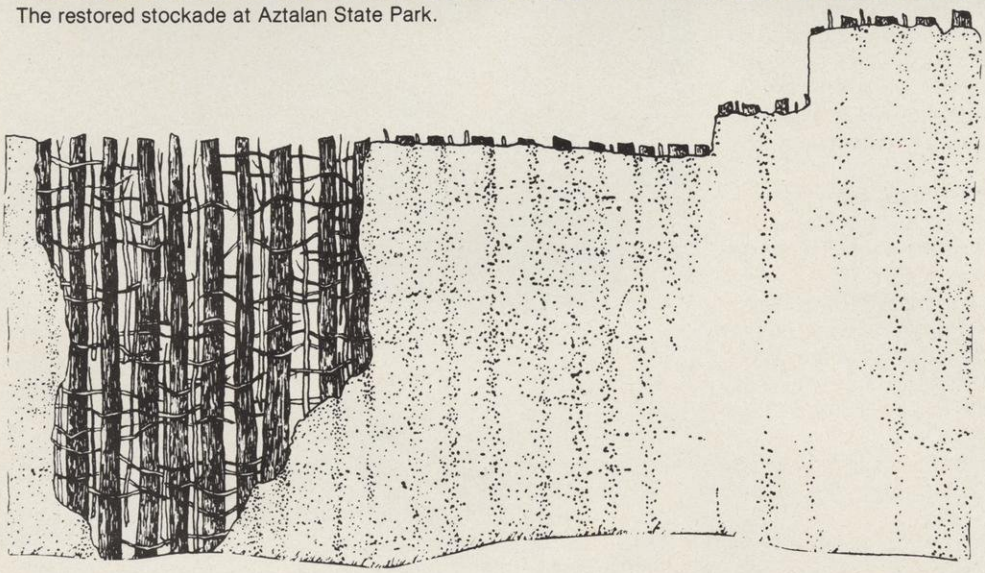
On the death of The Great Sun, his wife and close associates were strangled to accompany him in death. The temple and The Great Sun's home were burned, and fresh earth was carried to the tops of the pyramids before the buildings were rebuilt.

A strict class system was followed. The Sun Class (whose members were known as Little Suns) was the royalty, and from them the new Great Sun was chosen. Below were the Nobles, the Honored Men, and the great mass of common people, the "Miche-Miche-Quipy" who were called "Stinkards"* by the English. Every member of the upper classes had to marry a Miche-Miche-Quipy, and the children's status became that of the mother. However the children of Sun Clan men and Noble men were reduced only one grade in the class system. Social climbing had its disadvantages. The Miche-Miche-Quipy mate of a Sun Clan

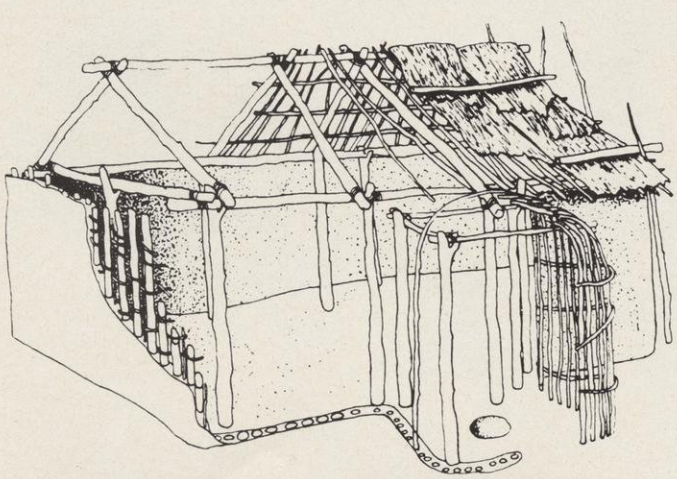
Continued...

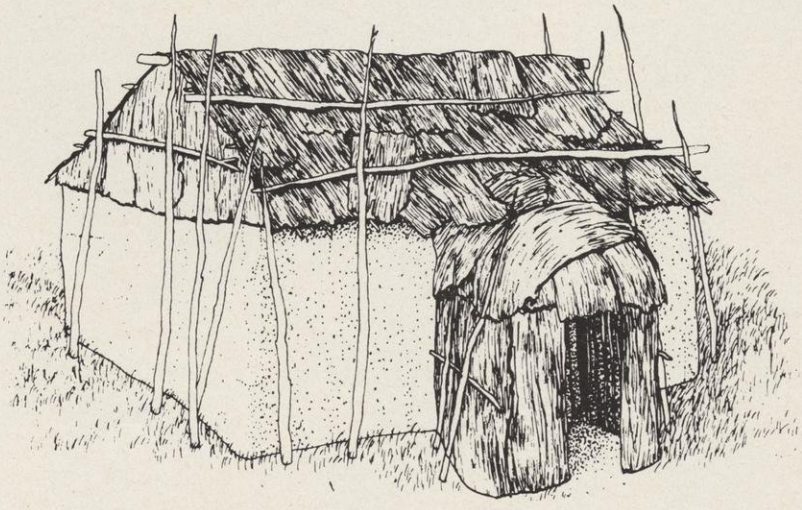
*The early French settlers called the common people of the Natchez "Puans," a word which comes from the Latin "Putere" and means "to stink." English translations of the early French writings customarily render the word "Puan" as "Stinkard." Both English and French called the common people of the Mississippians "Stinkards" which reflects the contempt with which they regarded them. However, Antoine Simon Le Page du Pratz, who kept a journal while he lived among the Natchez for eight years in the early 1700's considered them "eminently distinguished above all other Indian nations." In his journal he says, "The common people are named in their language Miche-Miche-Quipy, that is Stinkards, a name, however, which gives them great offense, and which it is proper to avoid pronouncing before them, as it would not fail to put them into a very bad humour."

The restored stockade at Aztalan State Park. Photo by Staber Reese



The original stockade surrounding the Mississippian settlement at Aztalan was 12 to 19 feet high with watchtowers positioned at regular intervals. It was of wattle construction. Drawing by Robert Burke





Both the square and round houses of the inhabitants of Aztalan were made of close rows of upright tamarack posts. (see next page)

member was little more than a slave, and could be killed at any time. On the death of a Sun Clan member, the Miche-Miche-Quipy mate was always put to death.

A single short-lived outpost of the Mississippian tradition was established in Wisconsin. This was Aztalan, five miles east of Lake Mills in Jefferson County, and now the location of a pleasant and interesting state park. The stockaded village covered 21 acres on the bank of the Crawfish River, and is believed to have had a population of about 500.

Two earthen mounds are seen at opposite ends of the village site, but these are small in comparison to those of other Mississippian towns. The village is believed to have been in existence between 1100 and 1300 A. D. It was destroyed by fire, very probably in warfare. The French descriptions of the Natchez Mississippian town could apply perfectly to what is known as Aztalan. Evidence of cannibalism, probably following human sacrifice, has been found. It is not difficult to visualize The Great Sun, borne on his litter between throngs of fawning Miche-Miche-Quipy on his way to sacrificial rites on the great pyramid.

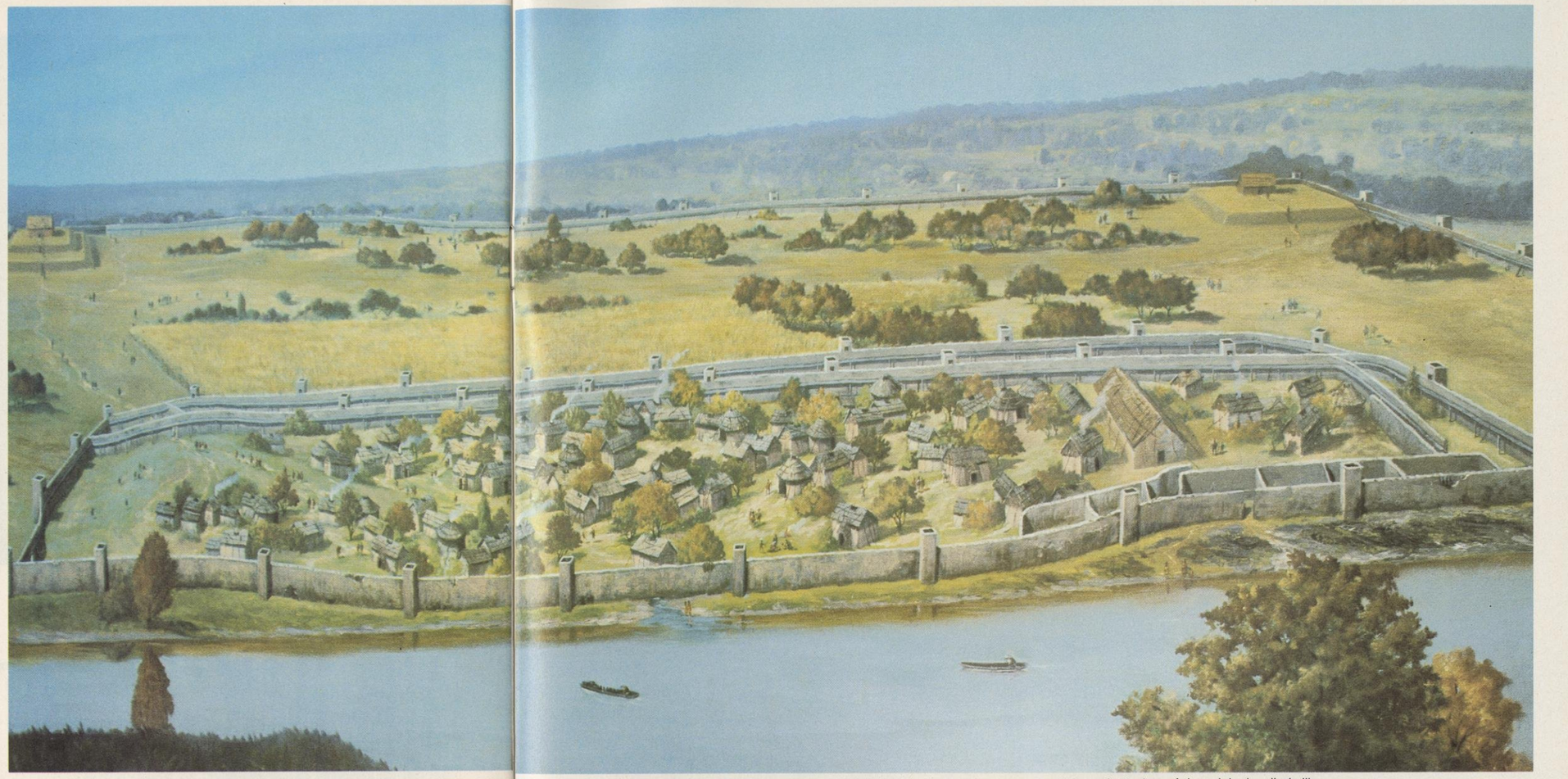
These Indians may represent a colony which spread out from the great Cahokia center. The Cahokia Mississippians are believed to have been the ancestors of the Algonquin Illinois who by 1800 were completely wiped out in warfare with the Fox and Kickapoo. Whatever the ancestry of the Aztalan villagers, they were foreigners to the woodland tradition peoples of the area. No doubt the human sacrifice and cannibalism were hated by the potential victims. It would appear that the Winnebagos gathered to destroy this foreign settlement.

When discovered by the first land surveyors, the Aztalan mounds and village site were at once recognized as being unusual. Dr. Increase A. Lapham carefully surveyed and mapped these mounds while they were still undisturbed, and made efforts to have the land withdrawn from sale. He failed. The land was sold, and for many years was under the plow.

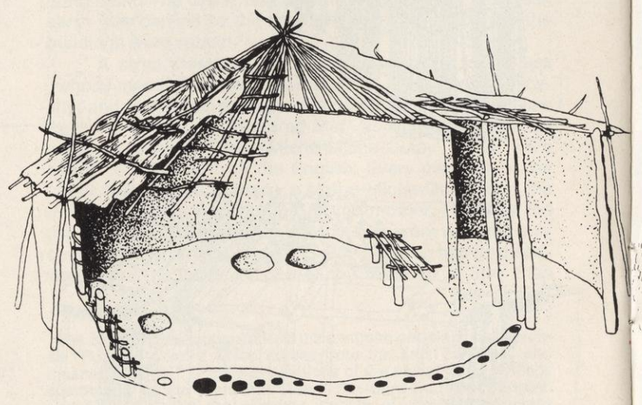
Only the large mounds escaped complete destruction. When ultimately a state park was established here, Dr. Lapham's map became the basis for restoration. The large mounds were returned to their original shape. Dr. Lapham had outlined the stockade wall surrounding the town. When he was there, the burned stumps of the posts were still in place, and clay along the line of posts showed the stockade to have been of clay-wattled construction. This wall has been partially restored. Aztalan Park is a very interesting place to visit.

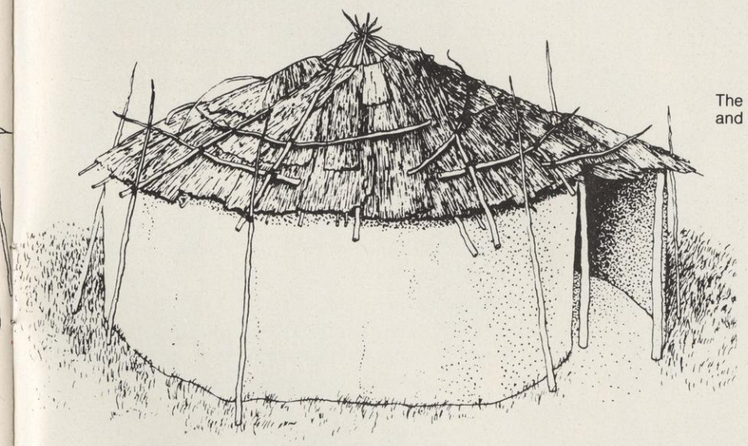
The name, Aztalan, was given in the romantic notion that this was Aztlan, the legendary place of origin of the Aztecs.

Visitors to Aztalan State Park should not fail to stop at the Aztalan Museum just to the north where the nucleus of a pioneer log cabin village has been assembled from scattered old houses in the area. The cabins, made of hand-hewn logs and mortared with lime, were built with pride and reflect the sturdy character of our pioneers. The museum contains much valuable information about the prehistoric village and its inhabitants.



An artist 's view of the original walled village. From a Milwaukee Public Museum mural.





The tamarack was interwoven with willow and covered with mud and straw.

Drawings by Robert Burke

Gaywing

Swampflower

FRANK J. VANECEK, Wildlife Manager, Ladysmith

About the time everyone has finished oohing and aahing at Wisconsin's springtime splash of colorful wildflowers, a more subtle emergence of beauty is taking place in the cedar swamps. The warmth of the spring sun, which will soon produce carpets of hepatica and trillium in the open hardwoods, is slow in reaching the forest floor under the dense shade of the cedars. But by early June, these cool damp places will put on their own show of beautiful wildflowers, ranging in size from the tiny goldthread and gaywings to the large and showy ladyslippers. Too often though, this delicate display goes unnoticed. The casual passerby often eyes those dark swamps with caution and indifference, not knowing that the green branches of the cedar hide a unique community of colorful and delicate wildflowers. Only a few are shown here. To see these yourself and more, all you need do is head for the nearest cedar swamp sometime in early June and start looking. It won't be long before you spy gaywings, cornlilies or something new. If the swamp is privately owned, get permission first, and above all — don't forget rubber boots and mosquito dope.

Miterwort

Bunchberry

Starflower

Gaywing *(Polygala paucifolia)*

Only four to eight inches high, its two lateral sepals resemble wings. Another name is bird-on-the-wing. A perennial member of the milkwort family, gaywing often grows under pine trees but also thrives in cedar swamps and other acid-soiled moist places.

DNR Photo

Miterwort *(Mitella diphylla)*

Also called bishop's cap, the name refers to the shape of the seedpod which resembles a bishop's liturgical headdress. Northern bishop's cap (Mitella nuda) is a close relative with similar flowers on a leafless stem.

Photo by author

Bunchberry *(Cornus Canadensis)*

The name comes from the "bunch" of scarlet berries that show in late summer. Three to six inches tall, the plant has underground stems by which it spreads to form patches.

Photo by Robert H. Read

Star Flower *(Trientalis Americana)*

A perennial member of the primrose family that grows in most woods and bogs, often among mosses. Flowers have seven petals and seven stamens. Plants with flower parts in sevens are very rare.

Photo by author

Yellow Ladyslipper

Cornlily *(Clintonia borealis)*

Yellow flowers are followed by spherical blue berries which give this perennial its other name, blue-head lily. Indians used the basal leaf clump to place on dog bites to draw out poison. Covered with silky, white hairs, the leaf blades were also bitten into artistic shapes by the Chippewa and used as decorations. Photo by Robert H. Read

Yellow Ladyslipper *(Cypripedium calceolus)*

Many wild orchids grow in Wisconsin. This one gets its name from the flower's inflated yellow lip that resembles a slipper. Functionally, the slipper is a wonderfully adapted insect trap that guarantees pollination. Any bug entering the lip can escape only by going upward past the modified stamens and pistil. It also grows in Eurasia.

DNR Photo

Sweet White Violet *(Viola pallens)*

A subarctic bog perennial with especially sweet-scented white flowers that are veined with purple. It spreads by sending out slender runners. Photo by William G. Laine

Sweet White Violet

Far left: Cornlily

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