

## Preservatives on Wooden Play Equipment

by Laurence C. Walker

Treating wooden play equipment with a preservative makes good economic sense, as well as conserves a natural resource. Moreover, when properly selected and applied, a preservative leaves the equipment safe for children to use.

Untreated wood lacks durability. Even reputedly rot-resistant species decay quickly when they are in contact with the ground. In warm, moist climates like the southern United States, this decay may occur in as little as 6 years. Use of preservatives is recommended, therefore, to lengthen the lifespan of wooden equipment and to protect the children using it.

Preservatives *are not* used to strengthen the wood. The term *softwoods*, used to describe southern pines means that it comes from a needle-leaf conifer; *it does not mean the wood itself is soft*. Actually southern pines are hard woods. Indeed, many a longleaf pine bole has been fashioned into a ship mast, where toughness is essential.

### Benefits of Preservatives

When preservatives are used properly, wood playground furniture should outlast metal and require less maintenance. Wood won't rust, and if it should splinter because of abuse, the injuries it might cause are minor compared to similar injuries caused by slivers of rusty steel.

Aesthetically, treated wood can be stained or painted to blend in with a rustic landscape. And, in contrast to most metal coatings, the paint will endure.

Treated wood resists electrical current conduction, reducing the potential danger from such electrical hazards as fallen wires. Likewise, it resists temperature change—think of a metal sliding board in January's freeze or July's scorching heat! Treated wood can better withstand alkaline and acid damage in areas of heavy industrial air pollution. Wood, of course, is easier to machine than metal, and requires less energy to manufacture products. Treating does not



This treated platform and slide can be purchased from the Timberform Division,  
Niedermeyer-Martin Co.  
Telephone 503/387-2411

## Grist

### A publication of Park Practice

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Membership in Park Practice includes a subscription to all three publications and selected back issues in vinyl binders with indices and all publications for the calendar year.

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Articles, suggestions, ideas and comments are invited and should be sent to Park Practice, U.S. Department of the Interior, Heritage Conservation and Recreation Service, 440 G Street, NW, Washington, DC 20243.

### FOR SAFETY'S SAKE

All ideas and suggestions shared in the pages of *GRIST* are presented as guidelines, not final working blueprints. Be sure to check any device or plan you want to adopt for compliance with national, state and local safety codes.

## Preservatives . . .

(Continued from p.1)

affect the processing of finished millwork.

What preservatives are recommended for play equipment? Modern clean salt treatments that are almost stainless, without either an oily or dark appearance, are especially appropriate. They also are safe. They have a greenish natural tint and blend pleasantly into a rustic setting.

Chromated copper arsenate (CCA), trade-named Osiose salts, is commonly used. To make a wooden surface repell water, paraffin may be added to the CCA. The CCA treatment does not hide the wood's grain, figure marks, or annual rings.

### Safety

Wood preservatives have been called poisons. There is some arsenic in CCA; there also is some arsenic in kitchen detergents and many pharmacy prescriptions. The U.S. Food and Drug Administration allows 2.6 MG of arsenic per kilogram of food.

Recent studies published in Australian technical journals and reported by that country's health bureau assess the amount of arsenic and copper in washings from pine treated with CCA. These findings note that "the health hazard appears to be very small." However, for maximum safety, "thorough washing with scrubbing of the treated surface, particularly the intact ends, is recommended when the treated material is accessible to children."

Hosing and cleaning the treated wood with a soft brush should accomplish this recommendation adequately. But check the ingredients in the detergent; some laundry compound detergents have high arsenic levels.

These studies show that the amount of arsenic a child might ingest from "mouthing" a piece of treated wood for several hours would be less than a therapeutic dose administered to an adult human. Additionally, while the "copper does not appear to reach a toxic level," it too can be removed by washing.

One scientist attributed the nontoxicity of CCA to the form of

arsenate used in it. This arsenate is readily excreted if ingested, and "so completely fixed in the wood that it is virtually insoluble."

Researchers reviewed CCA toxicity in the proceedings of the American Wood-Preservers' Association. They concluded that the small amount of arsenic removed with a wet hand from a square foot of treated wood is "less than one-third that normally consumed each day in an average person's . . . food and water." Scrubbing reduces even that amount.

The white crystalline coating often seen on freshly treated timbers also raises questions among some people. This coating is actually a harmless and temporary by-product of the treating process. The granules are sodium sulfate, a salt used in medicine. To avoid complaints about this, simply allow 6 weeks between treatment and use of the equipment.

### What a Preservative Does

To put a popular misconception to rest, preservatives do not "retard the bacteria" that can decay and rot wood. CCA treatment prevents *fungi* (that branch of the plant world which is almost exclusively decompositional) from entering the wood and causing decay.

Spores of thousands of *fungi* species are in the atmosphere. Some come to rest on wood. If that is their proper host, they germinate, sending out thread-like strands that penetrate cell walls and permeate the tissue between the cells. These strands secrete chemicals that destroy the cellulose fibers, hastening their decay. CCA works by killing the spores when they contact the wood.

Insects, especially termites and wood borers, are also discouraged by some preservatives. The CCA combination of chemical elements completely repels these insects. Boron-based compounds usually do not.

In conclusion, it makes good sense for recreation managers to protect their investment in wooden playground equipment by treating it properly with a safe preservative.

Laurence C. Walker is Hunt Professor of Forestry at Stephen F. Austin State University in Nacogdoches, Texas.

# Recycling and Energy Savings

## Recycling Skiers' Trash

An item in *Conservation News*, a National Wildlife Federation publication, suggests that skier-generated garbage is an ideal fuel source for ski lifts and resort buildings.

Refuse generated by tourists, especially petroleum-based plastic utensils and dishes, gives off nearly twice as much heat per pound as normal household waste, the article says. New multiple-use incinerators can generate both steam heat and electricity from waste, thereby reducing the need to haul fuel to the mountain top and trash from the resort restaurant to local landfills.

Citing the U.S. Environmental Protection Agency as a source, the article says: "Incinerators could solve the problem of seasonal peak need, when the normal population of small mountain communities explodes for several months, then returns to normal. More tourists mean more trash which means more heat and electricity for more tourists. . . ."

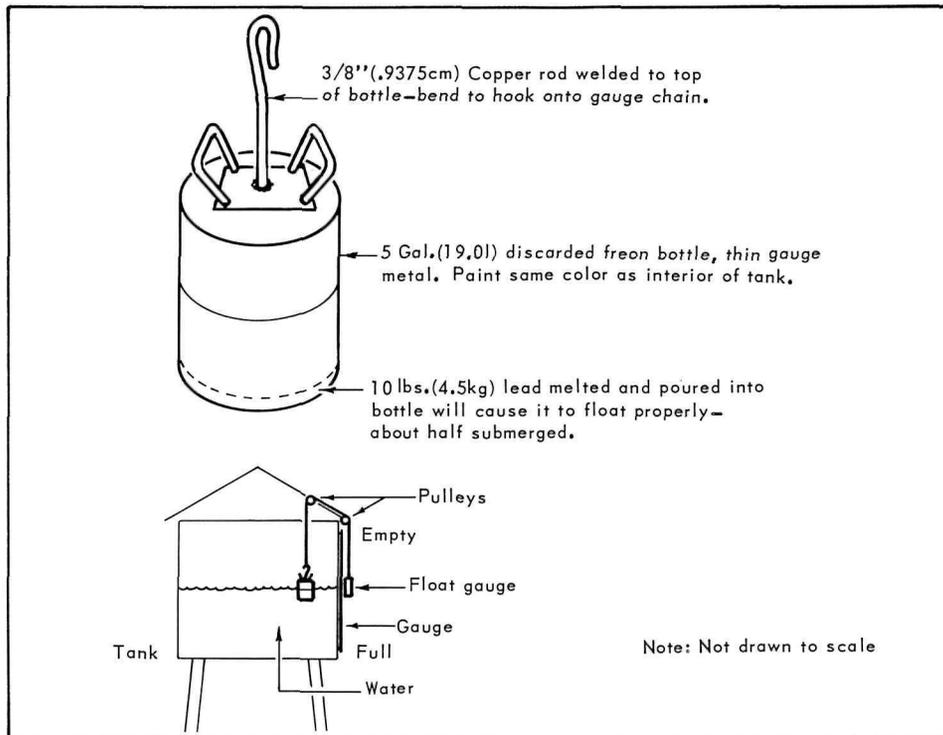
The issue, vol. 44, no. 24, is available from the National Wildlife Federation, 1412 16th St., NW, Washington, DC 20036.

## Battery Charger Saves Park Money

The cost of replacement batteries for flashlights can be a slow drain on the budget. At Castillo de San Marcos in St. Augustine, Florida, Michael R. Stuckey, a park technician, is eliminating these undesirable battery costs.

With a little investigation, Stuckey found that a rechargeable system for batteries would nearly pay for itself in 2 years. The system is readily available in discount stores and sells for approximately \$100. It contains a charger, holder, and 30 rechargeable batteries.

Depending on use, the park would replace these 30 batteries three to four times a year, costing \$45-\$60. In the long run, that's a charge worth saving!



## Freon™ Floats

As the price of gold and silver soared this past year, so did the price of many other metals—among them copper.

The high price of replacing the simple copper floats in water tanks challenged James T. Swindle, acting maintenance foreman at Natchez Trace Parkway in Tupelo, Mississippi, to come up with a cheaper, but equally effective alternative. Recycling empty 5-gallon (44-liter) Freon™ tanks, Swindle partially filled them with lead, then brazed a hook into place. The cost was about \$15 each—a \$105 per float savings over the copper ones!

Swindle melts about 10 pounds (4.5 kilograms) of lead and pours it into the empty Freon™ tank. He paints the float to match the interior of the water tank. So far, with a minimum of effort and cost, he has saved the government approximately \$1,575 on the replacement of 15 water tank floats.

## Self-Timing Light Switch

Restroom lights in campgrounds and visitor centers frequently are left on all night, wasting energy, drawing insects, and increasing maintenance costs.

William F. Paleck, supervisory park ranger at the National Park Service's Navajo Lands Group in Farmington, New Mexico, suggests replacing light switches with self-timing switches, which automatically turn lights off after a specified time.

Timing switches with 5-60 minute timing tolerances, which can be installed in place of standard switches without rewiring are readily available at a low cost.

# Maintenance

## Ski Trail Blazer

Blazing a trail is never easy, but blazing it through newfallen snow is even tougher. That's why one park employee's idea for a trail blazer made of recycled materials makes good sense.

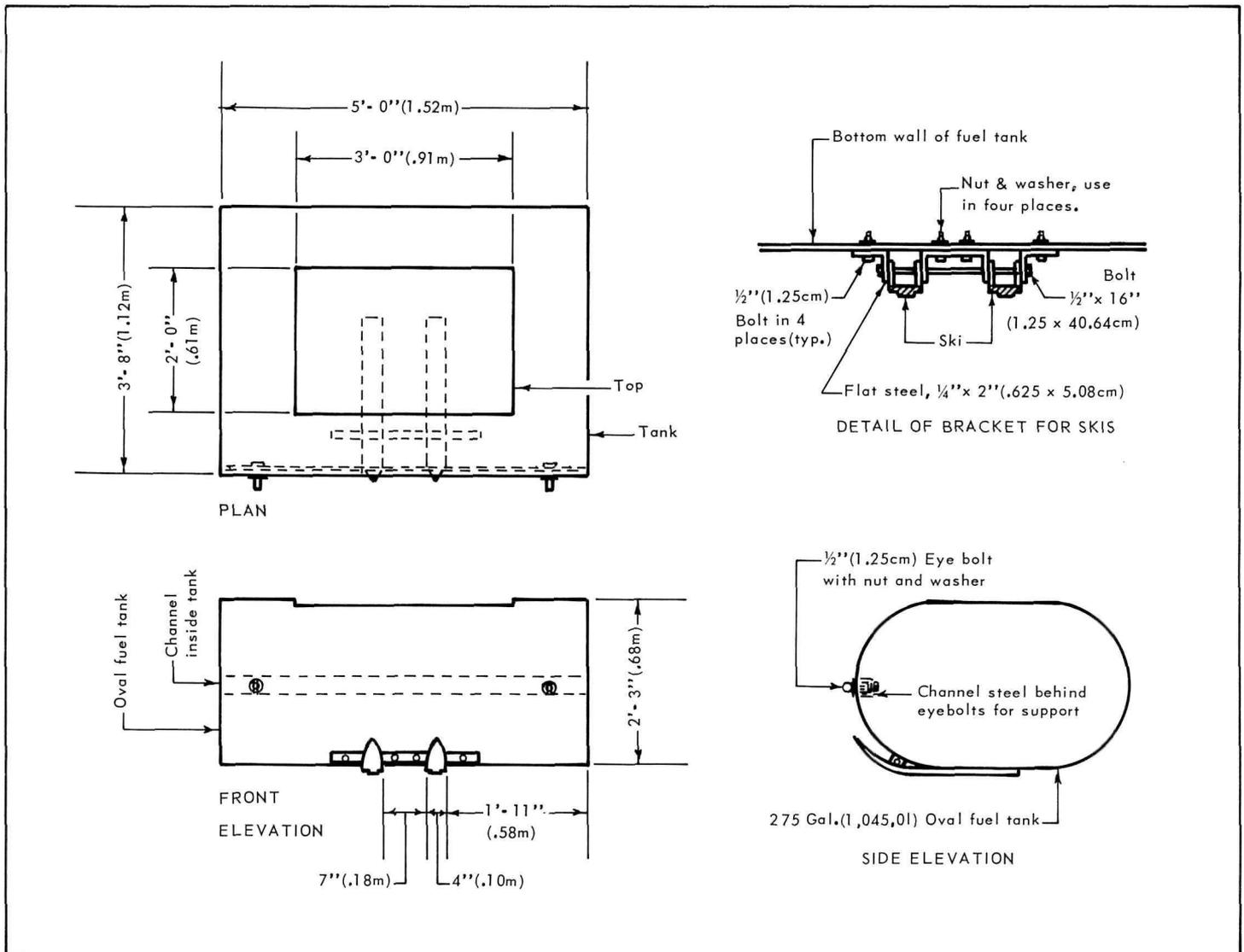
Peter J. Parsil, park superintendent of Pearce Valley Park, Bucks County, Pennsylvania, has designed and used what he calls the XC Trail Blazer to create an initial cross-country skiing trail. Park maintenance staff constructed the piece

of equipment from a recycled 275-gallon (1,045 liter) oval fuel tank and used snowmobile skis donated by a local dealer. The 5-foot (1.5 meter) wide fuel tank packs the snow and the skis cut in to create ski trails.

The skis are fastened to the bottom of the tank, with the back of the skis left loose so they can follow the terrain. A 2-foot by 3-foot (60-centimeter by 90-centimeter) hole in the top of the tank allows weight to be added if necessary in deeper snow. The trail blazer is pulled

from ½-inch (1.25-centimeter) eyebolts attached 4 inches (10 centimeters) from each side. A piece of ¾-inch (1.875-centimeter) manila rope is spliced to snap hooks for quick hook-up. The trail blazer is pulled through the snow with a Thiodol Spryte with the rope looped through a ring hitch.

Our thanks to Charles W. Pfansteil, chief landscape architect of the Bucks County Department of Parks and Recreation, for sharing Parsil's great innovation.



# Pipe Spool

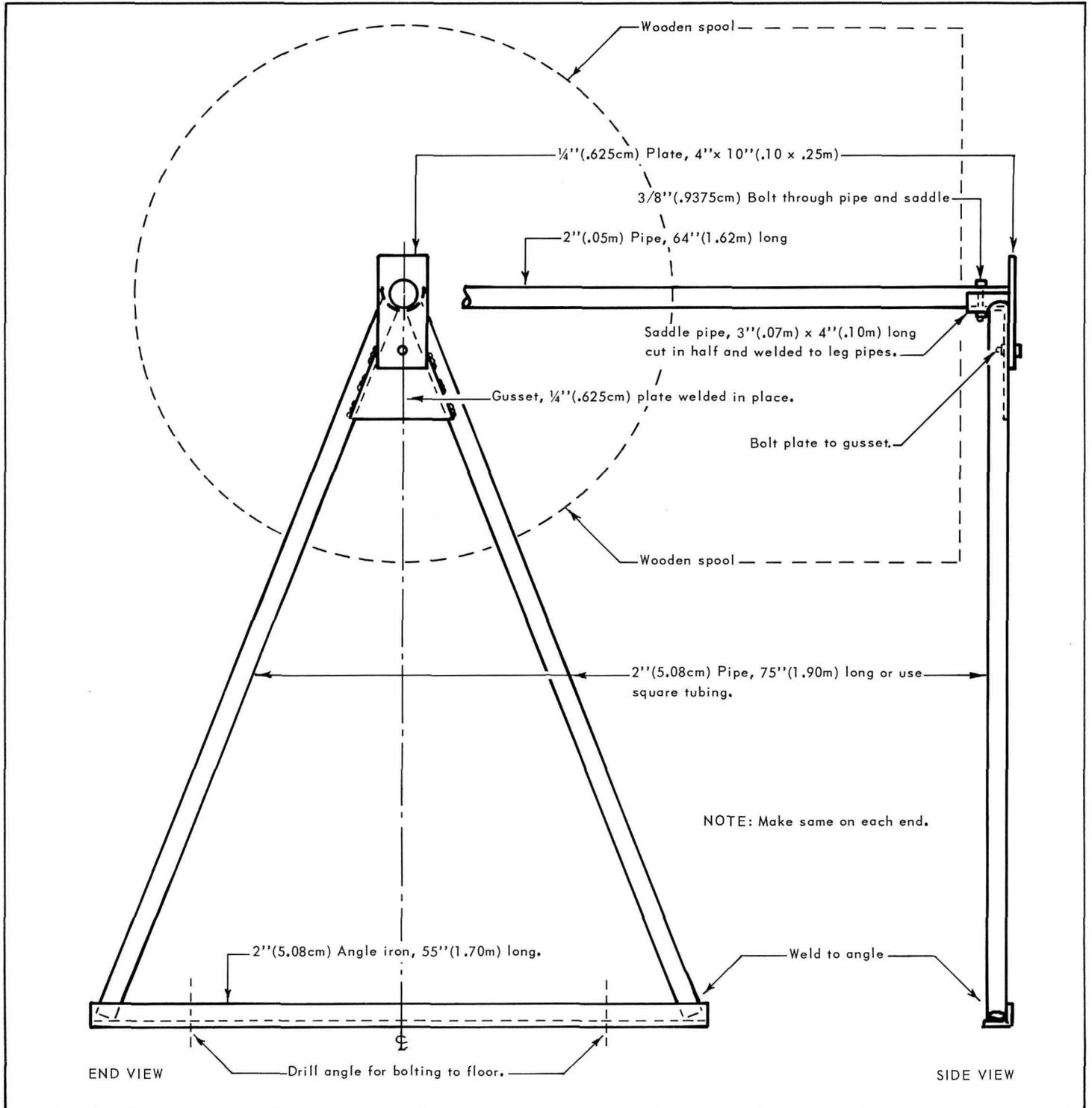
Wrestling plastic pipe isn't an Olympic sport, nor is it fun. But a wrestling match is what results when workers try to install plastic pipe in ditches. The pipe is semirigid when reeled off the huge rolls—2-inch (5-centimeter) pipe comes in 8-foot (2.4-meter) diameter, 275-pound (123.75 kilogram) rolls. Frequently, it takes 3-4 men risking mashed fingers and bodily bruises to install the pipe, costing man-hours and increasing safety hazards.

Gerald P. Frisinger, a painter at Canyonlands National Park in Moab, Utah, has constructed a spool and A-frame device to reel off the balky pipe. Using his idea on one 1500-foot (450-meter) job, the National Park Service saved an estimated 30-50 percent in work hours. The job will entail another 13,500 feet (4,050 meters) of pipe to be laid, and if the 30-percent time savings is carried through, the savings on the whole job could amount to some \$300 in labor costs.

The device uses a discarded telephone wire spool hung between the A-frames on a 2-inch (5-centimeters) galvanized

pipe. The spool and frame are bolted in either a small utility trailer or pickup bed. When the pickup or trailer is moved in line, the plastic pipe reels off smoothly into the ditch. Wrestling and safety hazards are eliminated.

If two rolls of plastic pipe are on the spool, a splice can be made easily and the installation continued with a minimum of delay. When the frame is not in use, the bolts are removed and the whole frame folds up for easy storage.



# Safety and Security

## Emergency Oxygen Unit

Sudden illness and accidents can strike anywhere, anytime. When emergency oxygen needs to be administered a safe and reliable oxygen unit is crucial.

A number of companies manufacture reliable, portable units designed for use by nonprofessionals in an emergency. However, one particular unit was used by the medical committee at the 1980 Winter Olympics in Lake Placid, New York, and has received that committee's recommendation. The unit is Pre-Med



oxygen, manufactured by Cleanweld Turner.

The committee cited three reasons for recommending this unit:

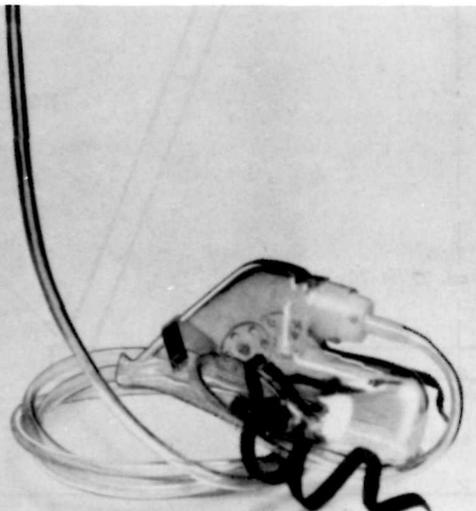
- 1) It is light and easy to use;
- 2) The oxygen coming out is warmed to a temperature of some 70° Fahrenheit (21° Celsius); and
- 3) The oxygen coming out is humidified.

In addition, the committee praised the small portable units as being "very adaptable to our ski patrol back packs and in the field situation. . . ."

The Pre-Med unit is stored in a rugged, heavy-duty corrugated case, with a handle that allows the unit to be carried while oxygen is being administered. The Pre-Med unit provides pure breathing oxygen in accordance with U.S. government standards of rate, volume, and purity. The disposable unit is designed for one-time emergency use; then it must be replaced.

The solid-state oxygen generator uses dry chemicals to produce oxygen, much like the emergency systems found on commercial airliners. The unit does not use a pressurized cylinder. Oxygen is free-flowing at a preset rate. A relief feature prevents pressure buildup in the event of oxygen blockage.

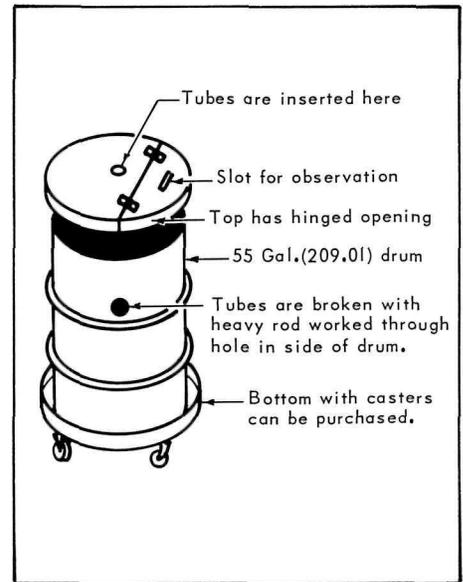
Further information is available from Richard D. Shivers, Executive Vice-President, Cleanweld Products, Inc., 16016 Montoya Street, Irwindale, CA 91706.



## Tube Crusher

A fluorescent tube and incandescent light bulb crusher can save space, collect debris in a central location for disposal, reduce safety hazards, and keep potentially lethal weapons away from children. A simple plan for a crusher, made of recycled materials, has been suggested by Frank Mannion, a heating, ventilation, and air-conditioning mechanic at Independence National Historical Park in Philadelphia.

First, Mannion drills a hole into the



side of a 55-gallon (209-liter) drum. He fits a rod and damper assembly inside the drum with a handle sticking out through the side hole. He cuts the drum's top into two pieces, 1/3 and 2/3 the total size, then hinges them together so the top can be opened for inspection and emptying. Finally, he drills a 2-inch (5-centimeter) hole in the top for inserting the used tubes and bulbs.

## Battery Locks

Since Carroll F. Bryant, automotive mechanic at Natchez Trace Parkway, Tupelo, Mississippi, suggested a battery locking device, there have been no more stolen tractor batteries at the park.

To protect an exposed battery, Bryant suggests wrapping a chain around the battery and its platform, then securing the chain with a lock. On enclosed batteries, he suggests installing a hasp and lock on the access door.

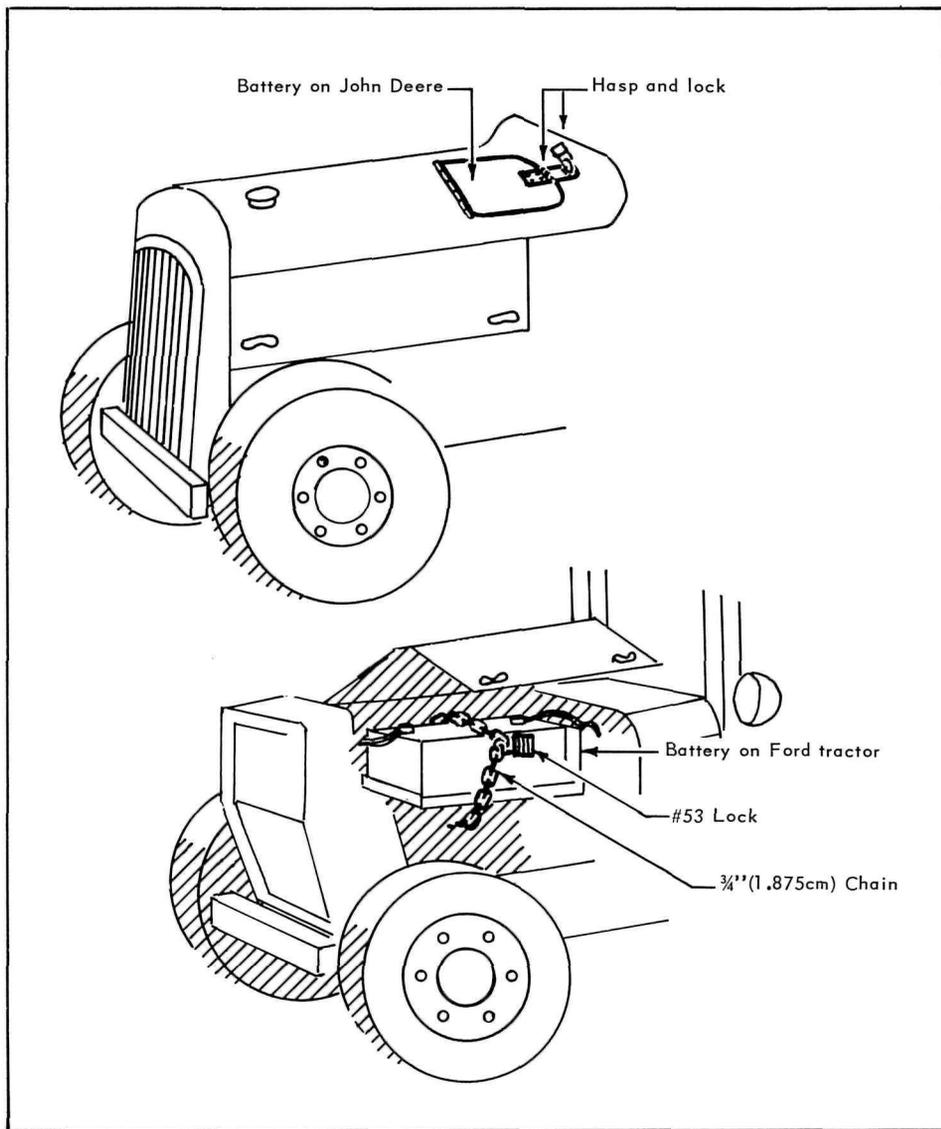
His idea has taken the charge out of battery theft!

## Tire Cage

Changing a tire on a split-rim wheel can be hazardous. Too easily the ring, common on the wheels of garbage trucks and other large vehicles, can pop off and injure the worker doing the job.

Charles Bowling, of Clifty Falls State Park in Madison, Indiana, recommends a tire-changing cage that is working well in his shop. The cage consists of a top and bottom base welded together with 3-inch (7.5-centimeter) steel pipe on three of the four sides. The fourth side is left open so the tire can be put in the cage. After the tire is in place, two chains secure the open end. Then the tire can be filled safely.

The cage costs approximately \$50 in time and welding rod. Scrap metal and pipe were salvaged from some old swing sets for the device. Casters on the bottom make the cage easy to move around.



## Sign Theft Deterrent

Sign theft is costly, but hard to detect and even harder to prosecute. Prevention, of course, is the best solution to the problem.

At the Blue Ridge Parkway, an engraving program helps deter sign theft. Tim W. Pegram, park technician, reports that all signs, both redwood and metal, produced through the Federal Highway Administration, are stamped with a

special mark to identify them immediately.

The mark, engraved deeply to prevent obliteration, is placed in a predetermined location. It is not letters or symbols that suggest the Blue Ridge Parkway, but a more subtle and secret mark known only to park personnel.

Now, sign thieves, beware!

# The Best of *Grist*

The National Society of Park Resources (NSPR) awarded the following suggestions as "The Best of *Grist*." The awards were granted in October at the NSPR banquet held during the NRPA Congress in Phoenix, Arizona. Articles that appeared in *Grist* between July 1, 1979, and June 30, 1980, were eligible.

## Robert Kauffman— "Challenging, Innovative Rope Trail"

The Owl Trail, a 600-yard (540-meter), self-guiding rope trail, provides a wealth of contrasting environments from land and water to field and forest. The trail helps blindfolded visitors increase their nonvisual sensory awareness and deepen their appreciation of the outdoors.

Adding to the challenge of the trail are special devices that prompt interaction with the environment. Sensory corrals let blindfolded visitors experience such items as rocks, moss, trees, shrubs, and water. "Go-to" ropes connect the guide rope to additional objects of sensory interest located adjacent to the trail. Bridges heighten the sense of excitement and risk while signs with raised letters direct one along the trail.

Kauffman's Owl Trail article appeared in the March/April 1980 issue. Formerly an Instructor of Recreation at East Stroudsburg State College in Pennsylvania, Kauffman now is at Shepherdstown College in West Virginia.

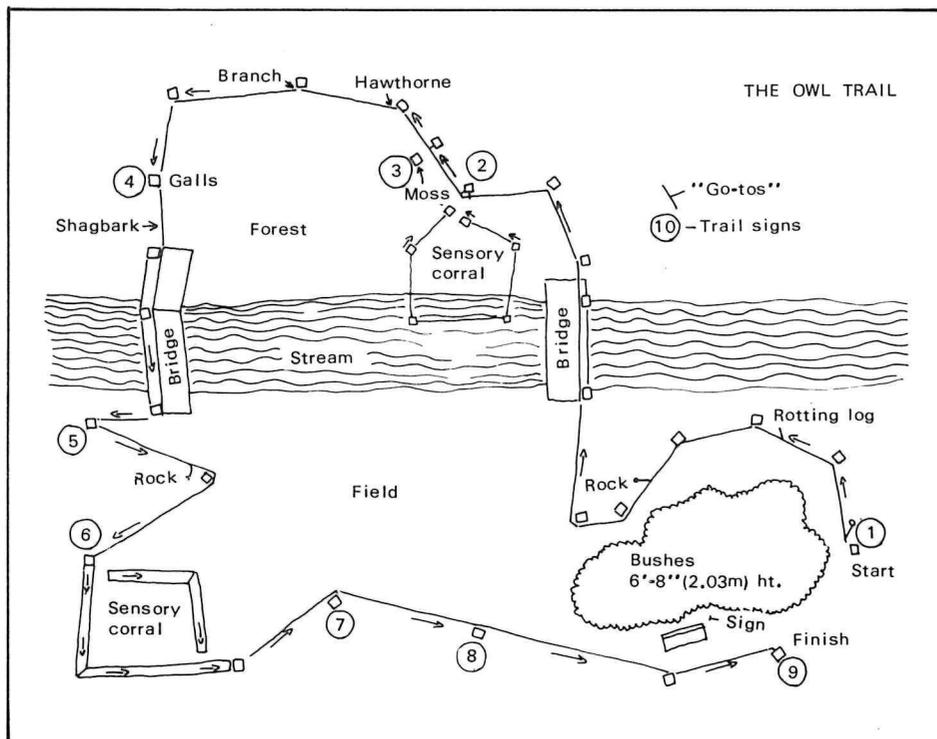
## Frank Elliot— "New Marking System Weathers the Winter"

This article, appearing in the November/December 1979 issue, reported a successful system of marking pavements that withstands winter wear in Yosemite National Park.

Using a mechanical applicator, the park maintenance crew lays a preformed

polymer film—"STAMARK" brand from 3M—into the hot asphalt surface. A compaction roller presses the film firmly into place, leaving a pavement marking that is almost flush with the roadway surface.

This winning item came from Frank Elliott, chief of maintenance for Yosemite.



## Vincent Moorhouse— "Snow Fencing for Beach Stabilization"

Huntington Beach, California, found a great way to halt shifting sands during the windy season. The city installed snow fencing. The plastic snow fencing keeps sand on the beaches and out of the parking lots. It also provides a windbreak so visitors can use the beach during winter months.

Moorhouse, director of harbors, beaches, and development for the city, shared this idea in the January/February 1980 issue.

