

GRIST

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Summer Lightning

Summer lightning is a natural hazard which concerns virtually every manager of a park or recreation area. The Boy Scouts of America suggest that visitors should be forewarned to avoid certain areas even when storms are nearby. They caution that the following locations should be avoided during a storm:

- hilltops
- open fields
- swimming pools, lakes, seashores
- wire fences, overhead wires, railroad tracks
- isolated trees
- open boats
- small unprotected shelters if they are the tallest object in an exposed location.

When seeking shelter, the Boy Scouts suggest that the following types of structures be selected in the order listed:

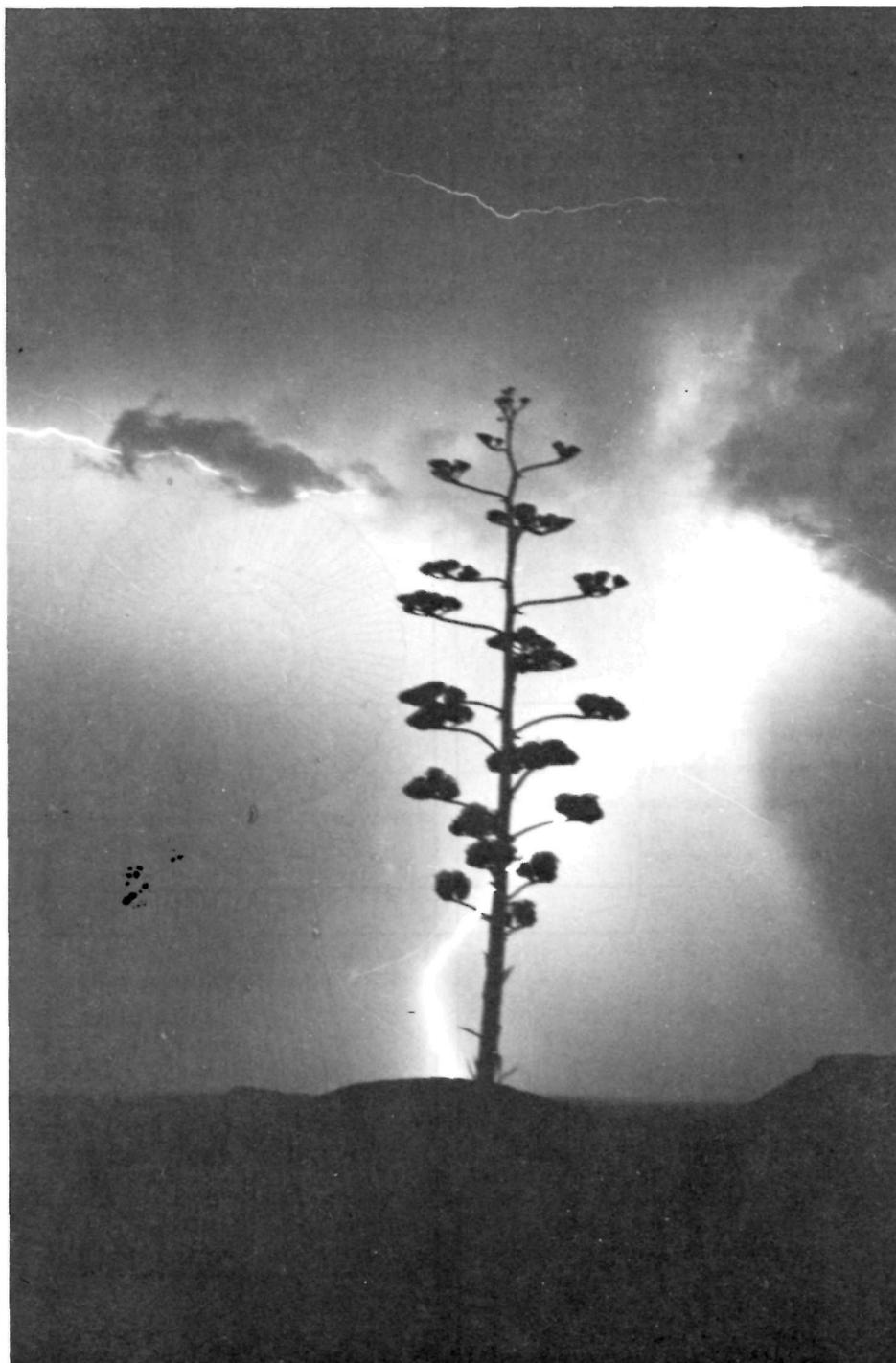
- large metal or metal-framed buildings
- lightning protected buildings
- large, nonlightning protected buildings
- metal topped car or bus

If campers are out on a trail, they should first seek shelter in dense woods, depressed or low areas, caves or the foot of a hill or gully. If they are in open country, perhaps farm land, camp should be set up on the lower portion of a slope where a steep hill might provide some protection from high winds and lightning. The slope may well turn into a major drainage ditch however, so it is important that the selection of such a site be made with some care so that the camp isn't washed out.

Protecting Buildings from Lightning

Structures can be altered to provide lightning protection. However, this

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Recycling

GRIST

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The Park Practice Program is a cooperative effort of the National Park Service and the National Recreation and Park Association.

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The Park Practice Program includes: *Trends*, a quarterly publication on topics of general interest in park and recreation management and programming; *Grist*, a bimonthly publication on practical solutions to everyday problems in park and recreation operations including energy conservation, cost reduction, safety, maintenance, and designs for small structures; *Design*, a quarterly compendium of plans for park and recreation structures which demonstrate quality design and intelligent use of materials.

Membership in the Park Practice Program includes a subscription to all three publications and a library of back issues arranged in binders with indices and all publications for the remainder of the calendar year. The initial membership fee is \$80; annual renewal is \$20. A separate subscription to *Grist* is \$15 initially and \$7.50 on renewal. Subscription applications and fees, and membership inquiries should be sent only to: National Recreation and Park Association, 1601 North Kent Street, Arlington, VA 22209.

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Articles, suggestions, ideas, and comments are invited and should be sent to: Park Practice Program, Division of Federal and State Liaison, National Park Service, Washington, DC 20240.

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Recycling Old Tree Trunks and Barrels for Trash Cans

While most park and recreation managers don't have old coconut trees lying around, there are a number who do. This suggestion, made by Wallace Hing and Louis Kelekolio and Naoto Katoku at City of Refuge National Historical Park, does have merit for parks suffering from an overabundance of those wonderful trees.

The men suggest taking a section of a tree that would make a good trash receptacle. The tree should be about 36 inches (0.91 m) in diameter around the base, 42 inches (1.06 m) high and about 16 inches (0.40 m) at the top in diameter. First cut the tree trunk level, then hollow out the inside with a chain saw. Because a coconut stump is soft, the process should be easy. A 14-inch (0.35 m) diameter plastic receptacle can be placed inside the stump, making an attractive litter basket

which blends in well with surrounding trees, sand, rocks and the ocean.

The receptacles last about 3 to 4 years and require less time than it takes to make one from slats suspended on a pole base.

Another handy idea was presented to *Grist* by David C. Dutcher, an interpretive specialist at Independence National Historical Park. Dutcher suggests using metal-bound wooden barrels as trash containers in place of the more modern, less attractive barrels at historic sites. He points out that such barrels are available for \$12.00 for a 50-gallon size, and \$5.00 for a 30-gallon size. With plastic liners and the application of fire-retardant sealants, the wooden barrels should not present a fire hazard and should enhance the environment.

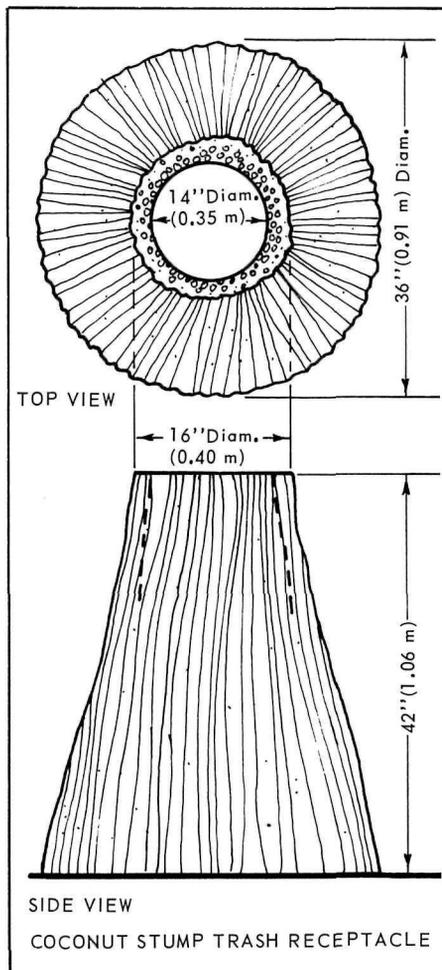
Take Care Recycling Those Old Drums

Thomas W. Conley, general foreman in the metal crafts shop at Brentwood Maintenance Yard of the National Capital Region in Washington, cautions that reusing old drums for other purposes may present potential hazards.

"An old drum," says Conley, "may have contained anything including combustible material which would have remaining fumes that could easily ignite and explode on contact with a cutting torch flame."

To emphasize his point, Conley enclosed an article about a man who was converting such a drum for other uses when the drum exploded in his face, sending the man by air-lift to a hospital's special shock and trauma unit. Although the barrel was empty and had been, he thought, properly prepared, it still contained sufficient fumes to cause the drum to explode with the heat of the acetylene cutting torch.

To avoid such tragic consequences, Conley recommends using only drums whose prior contents are known to be nonflammable and noncombustible. Much thanks for this important safety tip.



Ingenuity

The following helpful hints will make your job a little simpler, a little more efficient. Send in your ideas to us at *Grist!*

Low Lying Tire Changer

The low electric or gasoline driven golf carts consume less energy than larger ones and are increasing in popularity.

As more and more park officials use these vehicles, they discover that changing tires on close-to-the-ground carts is not an easy task. It is nearly impossible to get a conventional jack under them!

To solve this problem, Ramon Sanchez, a maintenance worker at Fort Davis National Historic Site in Fort Davis, Texas, designed a jack using a fulcrum technique to raise the wheels and change the tires.

The tool raises the carts about 9 inches (0.23 m) off the ground and stands about 13 1/3-inches (0.34 m) high. It weighs 12 pounds (5.40 kg) and can be easily managed by one man.

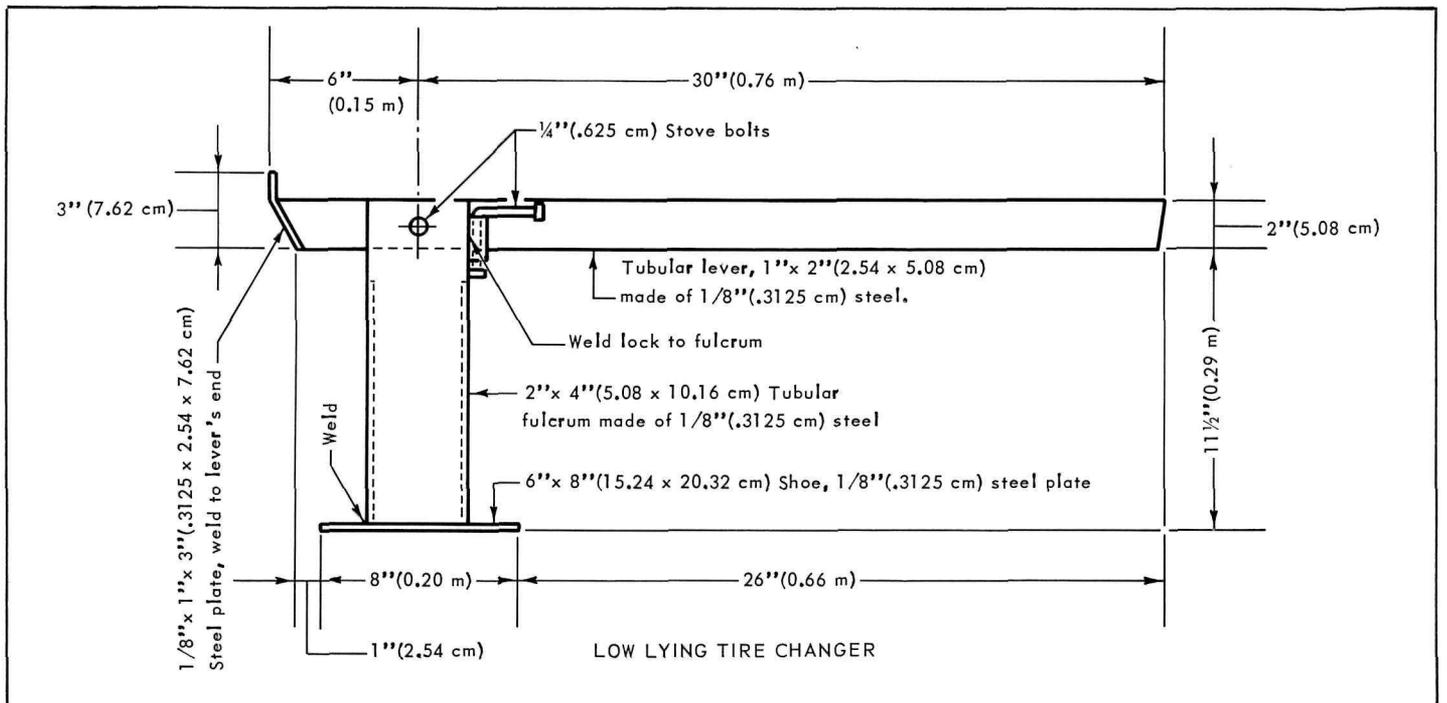
Sanchez received a \$25 incentive award for his idea.

Signaling Device for Trash Compactor Driver

George E. Atkins, a motor vehicle operator at Shenandoah National Park, suggests that a horn-like signaling device be installed in compactor truck cabs so that the driver can be notified.

Atkins suggests that a button be placed within easy reach of the workers at the back of the truck so that they could signal

when they are ready and avoid the possibility that one worker might fall off if the truck pulled away too soon. Often workers use whistles or other signals that are difficult to hear over the din of the compactor. This solution eliminates the possibility that the driver might not hear correctly or mis-hear a signal.



Maintenance and Safety

Alterations for Safety and Convenience

Making a mass-produced item work in any situation often requires a little ingenuity. The following ideas, submitted by *Grist* readers, demonstrate ways in which people have improved on an existing product to make it more efficient and safer for their needs.

Pivotal Cash Register

Lewis D. Wissinger, Jr., a park technician at Shenandoah National Park, suggests that a cash register at an entrance station be placed on a pivotal stand or table top. By placing it on a pivot, the machine can be easily repaired and the individual selling tickets can get at the machine with ease.

If the machine could be rotated, steps would be saved, the keyboard would be easier to read and the people selling tickets would have more time to answer questions.

The use of a pivotal stand depends much on the demands on the machine. Perhaps the cash register in your park

would be better used on such a stand. Take a second look and see.

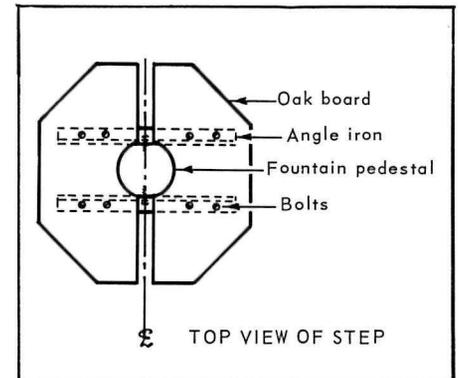
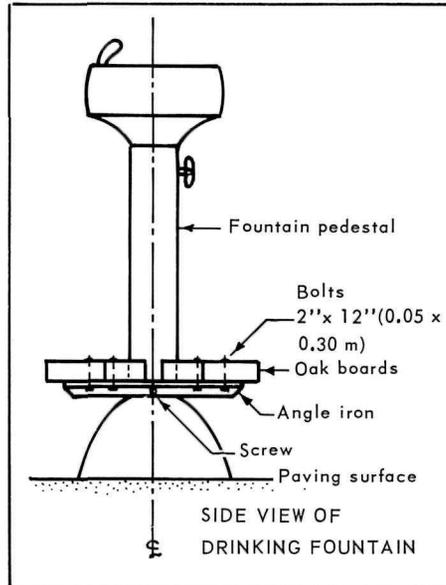
Fix a Fountain for Kids

In parks where special fountains for children have not been installed, an adult must hold the child up for that precious drink of water. Often water ends up run-

ning down the neck and all over the face as parents try to position their children to catch the water as it falls from the spigot and children lean into the water.

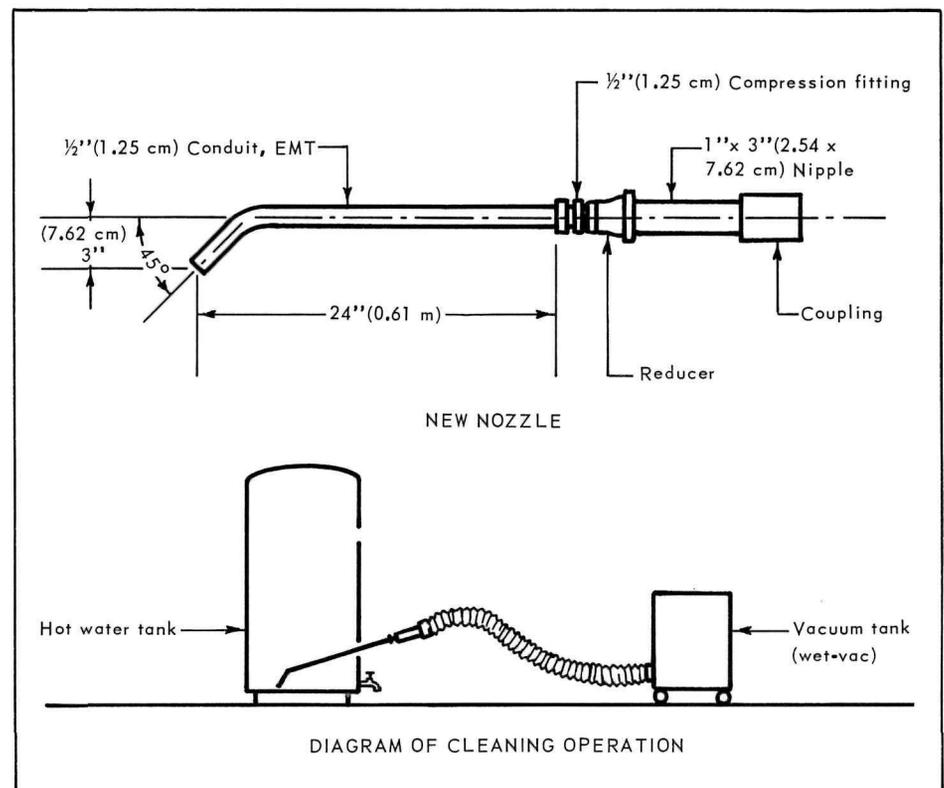
To minimize such problems, Jack Graham, superintendent at Yellow Creek State Park suggests this adaptation, developed by Jack McAllister, a park maintenance worker at Yellow Creek.

Essentially, a small step has been added that clamps around the standard pedestal type fountain. The halves are held together by clamps until special angle iron bolts are tightened. The step may even be built from scrap lumber.



Maintenance Chore for Hot Water Heaters

The problem of calcium deposit build-up on the inside of hot water tanks usually results in the replacement of the tank, an expensive and time-consuming chore. James Patrick McCall, an electrician at Grand Canyon National Park, has developed a method to clean the deposits out before they reach such proportions that the tank must be replaced. McCall has devised a little spout that fits into the bottom element hole that allows someone to vacuum the tank clean of all debris in less than 2 hours. Inspection of the tanks after cleaning shows no deterioration, rust, etc. So, instead of spending about \$175 to replace a tank, it now takes 2 hours and about \$12.00.



Sharpening Large Rotary Mower Blades

It seems old fashioned technology might be just the right thing to efficiently sharpen the large blades used in a rotary mower. Instead of using an electric driven grinder, which takes hours, if we could bring the blades to a blacksmith to be heated so that the edges could be hammered smooth again, we'd have just the service we needed for sharpening blades.

To overcome the problem, Stephen W. Irby, a maintenance worker at Arkansas Post National Memorial, suggests using a small scarfing tip on an acetylene torch to remove blunt portions of the blade. After scarfing (with care taken not to scarf the cutting edges), the grinder or file will give the blade a sharp cutting edge in less time, with more efficiency. The torch takes over where the blacksmith might have stood!

Traffic Cones Shot Full of Holes

The wind has a nasty tendency to blow over traffic cones and make their presence useless. Often sand bags are used to weight down the corners, but the base is not that wide and they still tend to be blown over. To avoid the problem, Joseph Hebda, a R&T foreman at Prince William Forest Park in Virginia, suggests cutting out four 2½" (6.33 cm) holes about two inches (5.08 cm) up from the base, and four 1½" (3.79 cm) round holes about six inches (15.24 cm) from the base and two 1½" (3.79 cm) round holes about 11 inches (27.94 cm) from the base.

The holes keep the cones from being blown over by the wind and fast moving vehicles. Hebda received a \$25 incentive award for his suggestion.



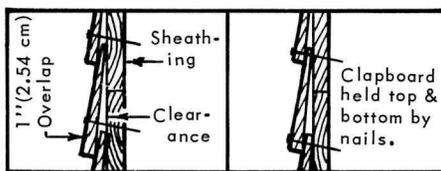
Replacing a Clapboard

A recent article in the *Old House Journal* gives instructions for replacing damaged siding when caulking, painting or application of preservative will not do the trick.

If clapboards are nailed top and bottom, says the Journal, nails may have to be cut (see illustration). If only a section is in need of replacement, the most difficult task is replacing the last inch hidden by the upper clapboard. Using a chisel and wedges and taking care not to split the good sections of clapboard, it can be done. In some instances, it may be easier to replace the entire board after applying a preservative to the replacement.

Clapboards may be nailed top and bot-

Two ways you may find clapboards nailed.



RIGHT:

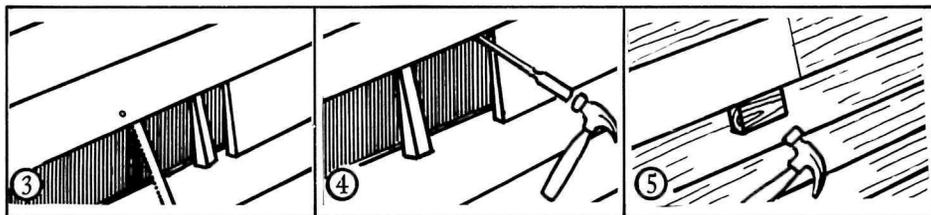
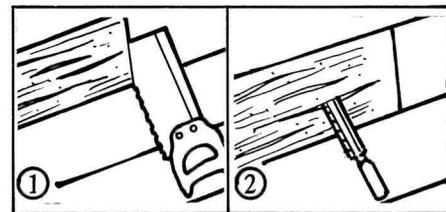
WRONG:

tom or only at the bottom. Nailing at the top and bottom both doesn't allow for the wood to expand and makes replacement more difficult.

With a hacksaw, cut the damaged board as close as possible to the upper board. Using a chisel, rip out the damaged board, avoiding any tear to the building paper below.

If nails can be removed from the front, push the board out with wedges and cut the nails with a hacksaw blade. Cut out the remainder of the clapboard, even with sawcut, by working carefully with a chisel, taking small cuts.

Patch any nicks in tarpaper with asphalt roofing compound. Tap the new section in place and nail at the bottom only.



Hang Up a Cable Tie, Save a Tree

Setting up a temporary fairground requiring lighting, telephone and public address system wiring often requires the use of massive cables and wires strung from trees. To speed installation, most people use tails or other permanent fixtures attached to park trees, presenting the possibility of doing permanent, often unnoticed damage to trees. To avoid this problem, John Hoke, an urban park programs specialist with the National Capital Region of the National Park Service, suggests using a wide assortment of 'cable ties,' developed by the electronics industry.

"All the ties are designed to quickly and neatly secure cable and wiring harnesses associated with many industrial applica-

tions where masses of wiring are involved," says Hoke. The ties are relatively inexpensive and come in sizes to accommodate almost any size cable.

By using the ties instead of nails, park vegetation should suffer much less severely from the intensive use of an area for a special event. "Even where large tree-trunk girth is involved," says Hoke, "the larger ties can be 'seriesed' to enable the lashup of wire bundles to large tree trunks. As these larger ties are demountable," notes Hoke, "their relatively higher cost over that of the smaller ties, need not be considered as expendable. On the termination of the event, the ties can be removed for subsequent use." The smaller ties usually have to be cut before removal and cannot be saved.

The ties, made of nylon or plastic, can be found in Thomas' Registry under the heading "Ties & Clamps; Electric Cable."

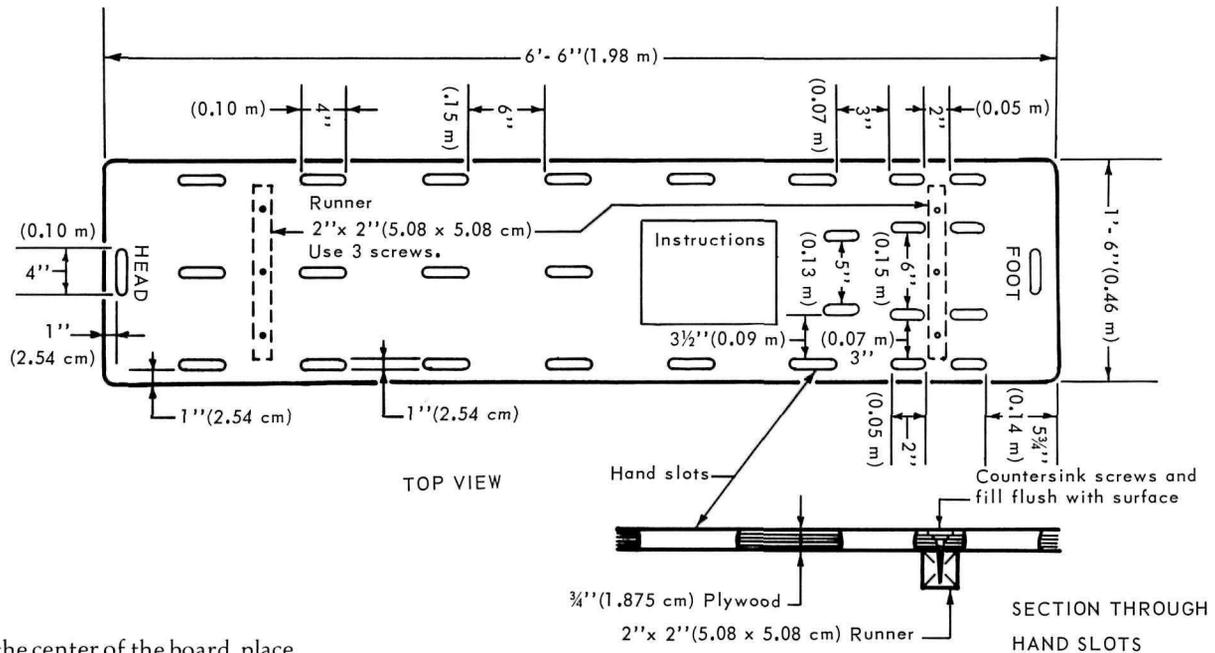
Litter Board

Camping outposts can use this plan, developed by the Boy Scouts of America, for a litter board. The board, only $\frac{3}{4}$ " (1.875 cm) thick, can be stored at the back of a door or against a wall.

Using high-density coated plywood or marine ply, cut slots around the edge, as shown, and sand smooth the entire surface. Attach 2" (5.08 cm) by 2" (5.08 cm) runners.

Once the instructions and the head and foot markings are applied, use three coats of clear waterproof sealer all around,

sanding between coats. If instead of this type of coating, paint is selected, make sure that the paint is of a non-metal base, so that if x-rays must be taken with the patient on the litter, there is no interference.



At the center of the board, place the following instructions:

1. Place patient on board at head and foot markings.
2. Secure patient to the board with ties, strips of clothing or ripped fabric.
3. Treat the patient for shock before transportation. Cover the patient with blankets only after he has been secured to the board.

Protecting Museum Objects from Light

Ultraviolet light from the sun causes fabrics to fade, colors to wash out, and may even cause chemical changes in materials which undermine efforts to preserve them.

Objects most affected by light are textiles, paper, wood, paintings, leather, feathers and other organic materials. For many years, museums often had huge skylights to let in the sun's light from above since the walls were often covered with paintings and other exhibits. Today, most museums are replacing the glass in those windows with treated,

filtered glass so that the sun doesn't damage the objects within.

Fonda Thomsen; a writer for *In Touch*, a publication for interpreters in parks; suggests in a recent article that valuable objects be stored in dark areas, that illumination from the sun's rays and even from artificial light be minimized by turning off lights and closing shades and shutters when possible. The most damage to objects is done by daylight, next in impact is fluorescent lights. Incandescent light is relatively low in ultraviolet rays. Special filters can be placed over windows which present the most severe problem. To further assist managers of collections, Thomsen suggests the following light levels: 15 footcandles for oil and tempera

paintings, undyed leather, horn, oriental lacquer; 5 footcandles for textiles, costumes, watercolors, tapestries, wallpapers, prints and drawings, dyed leather, fur, porcupine quill, feathers and natural history objects and finally; 125 footcandles for daylight coming through windows.

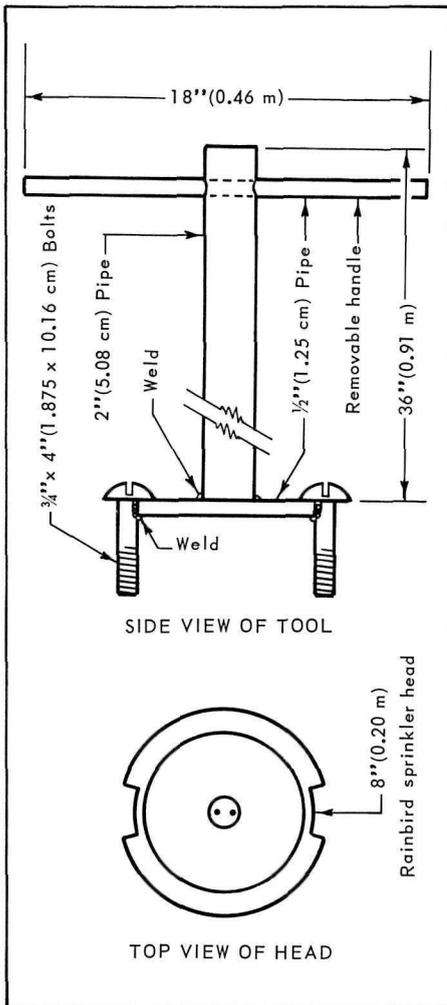
Taking the Top Off a Sprinkler System

Sprinkler systems are great until the sprinkler heads have to be removed—or repaired.

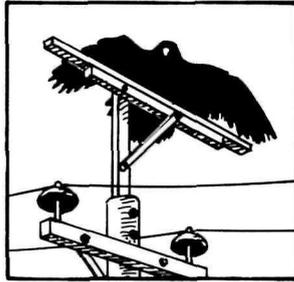
Until Edward T. Pacheco, a maintenance worker at Chamizal National Memorial in El Paso, Texas, designed a special tool, Rainbird sprinkler heads had to be removed by digging around each head.

Pacheco's tool requires less digging, is made of scrap metal and cuts the time it takes to change each Rainbird head.

Pacheco received a \$110 incentive award for his idea.



Making Power Lines Safer for Birds



We see birds sitting on power lines all the time and wonder how they can do it without getting electrocuted. In fact, many birds do, if their wings should come into contact with two wires. When this occurs, they complete an electrical circuit and are usually dead within seconds.

Conservation News reports that the problem is most severe in the western part of

the country in Colorado, Idaho, Nevada, Utah and Wyoming, and that eagles seem to be the most subject to the problem, along with egrets, herons, crows, ospreys, ravens, vultures and wild turkeys. Unfortunately, research has shown that 90 percent of those electrocuted are golden eagles, often young and inexperienced birds.

Electrocution can be prevented with the use of corrective insulation or pole modification, for example, an artificial perch which keeps the bird's wings from touching the wires simultaneously, or an elevated center wire which gives the bird room to land safely.

For additional information, contact the Fish and Wildlife Service, Bureau of Land Management or Edison Electric Institute in New York City for their report on "Suggested Practices for Raptor Protection on Power Lines."

Equipment Reports

The U.S. Forest Service regularly reviews the value of key pieces of equipment used in their work. The summaries of the reports now ready and published by the Service are collected in a single publication titled: *Equipment Development and Test Program*.

The USDA Forest Service operates special Equipment Development Centers at San Dimas, California and Missoula, Montana. These centers develop and test improved equipment, systems, materials, processes, techniques and procedures useful in forest management and utilization. The results of their work, in summary form, can be found in the 1976 publication covering every aspect of engineering relevant to forests and trails, recreation, occupational safety and health, forest insects and disease, timber, forest residues, range, wildlife, watershed and minerals, fire and aviation, cooperative forestry and transportation systems.

Although the report does mention trade, firm and corporation names in its report, the Service is quick to point out that in no way does such mention constitute an official evaluation or endorsement. The document is available from the U.S. Government Printing Office: 1976-621-889/4333.

Summer Lightning

(Continued from page 17)

precaution need only be taken if there is a clear potential hazard from lightning (this differs around the country), the need for protection of campers, the need to preserve structures, or to prevent fire by lightning which might destroy irreplaceable objects.

If a contractor is hired for the job, make sure that all equipment carries a master label of the Underwriters Laboratories, Inc.

How does a lightning protection system work? Essentially, the rod, or "air terminal" located at the top of a structure, or even a tree, is connected by a metal "conductor" to a "ground terminal" which is in contact with the earth. The terminal forms the apex of a triangle or cone of protection against a direct strike. The cone has a base radius one to two times that of its height.

In addition to providing valuable protection, the use of these devices can be incorporated into any interpretive presentation which not only explains how lightning works, but helps campers to understand the kinds of precautions they must take when they are on their own.

Vandal Resistant Money Collection Box

In an effort to develop a collection box that would receive recreation use fees, the Forest Service has designed this vandal resistant box which Tony Skufca, director of recreation for the Forest Service in

Region 6, claims cannot be tampered with by bolt cutters, hack saws, pry bars, or hammers. The anti-fish baffles on it make it impossible to withdraw envelopes, and the lock is obscured from easy reach.

When set in concrete, it takes a great deal of hard work and determination to remove them.

Since using this box, theft of campground fees from vandalized collection boxes has completely stopped, says Skufca.

