

GRIST

January/February 1980

Volume 24/Number 1

Humans and Cold

Exposure to the cold, be it cold water or cold air, can cause death rapidly to the untrained and unprepared. The increased popularity of cold-weather sports—such as skiing, snowmobiling, skating, backpacking—annually bring more and more people into situations where they are exposed to death-causing coldness (hypothermia).

The National Naval Medical Center in Bethesda (MD), provides effective guidelines for survival in a cold exposure situation.

The loss of body heat is the greatest hazard in any cold situation. The rate of body heat loss depends on the surrounding temperature, the type of protective clothing worn, and the manner in which the survivor conducts himself or herself. An abnormally low body core temperature can be recognized by a variety of symptoms. At the onset of cold exposure, the body tries to combat the excessive heat loss both by constricting its surface blood vessels (to reduce heat transfer by blood to the surface) and by shivering (to produce more body heat). As the body's temperature continues to fall, signs of pain, tiredness, poor coordination, numbness, poor speech, and mental confusion appear. And, as the internal temperature decreases into the 80's°F (27°C), unconsciousness may result, as well as a bluishness of the skin, collapse of the veins in the skin, enlargement of the pupils, muscle stiffness, irregular heart rate, and a weak, barely detectable pulse. Death may occur when the core temperature range is between 80 and 85°F (27 and 30°C) but is more likely to occur when the body core temperature drops below 60°F (27°C). If an individual is involved in a boating accident, caught in a snowstorm, in an automobile accident which is not located immediately, or



Yellowstone NP

NPS photo by Cecil W. Stoughton



Yellowstone NP

NPS photo

(Continued on p. 3)

Ingenuity

GRIST

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

Chris T. Delaporte, Director
Heritage Conservation and Recreation Service

John H. Davis, Executive Director
National Recreation and Park Association

Editorial Staff

Heritage Conservation and Recreation Service
Division of Park and Recreation Technical Services
U.S. Department of the Interior

Frank C. Goodell, Managing Editor

James A. Burnett, Editor, *Design* and *Grist*

Nancy Blauvelt, Senior Editorial Assistant

Kathleen A. Pleasant, Editorial Assistant

Contractors to the Program

Maureen Palmedo, Consulting Editor, *Trends*, *Grist* and *Design*

Graphichouse Ltd., Design Consultant

District Lithography Company, Inc., Printer

The Park Practice Program began in 1956 as the result of an agreement between the National Conference of State Parks and the National Park Service, with NPS serving as the primary sponsor until 1979. The program includes: *Trends*, a quarterly publication on topics of general interest in park and recreation management and programming; *Grist*, a bi-monthly publication on practical solutions to everyday problems in park and recreation operations; and *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 selected back issues in vinyl binders with indices and all publications for 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 N. Kent Street, Arlington, Va. 22209.

The information presented in any of the publications of the Park Practice Program does not reflect an endorsement by the agencies sponsoring the program or the editors.

Articles, suggestions, ideas and comments are invited and should be sent to Park Practice Program, U.S. Department of the Interior, Heritage Conservation and Recreation Service, Division of Park and Recreation Technical Services, Washington, D.C. 20243.



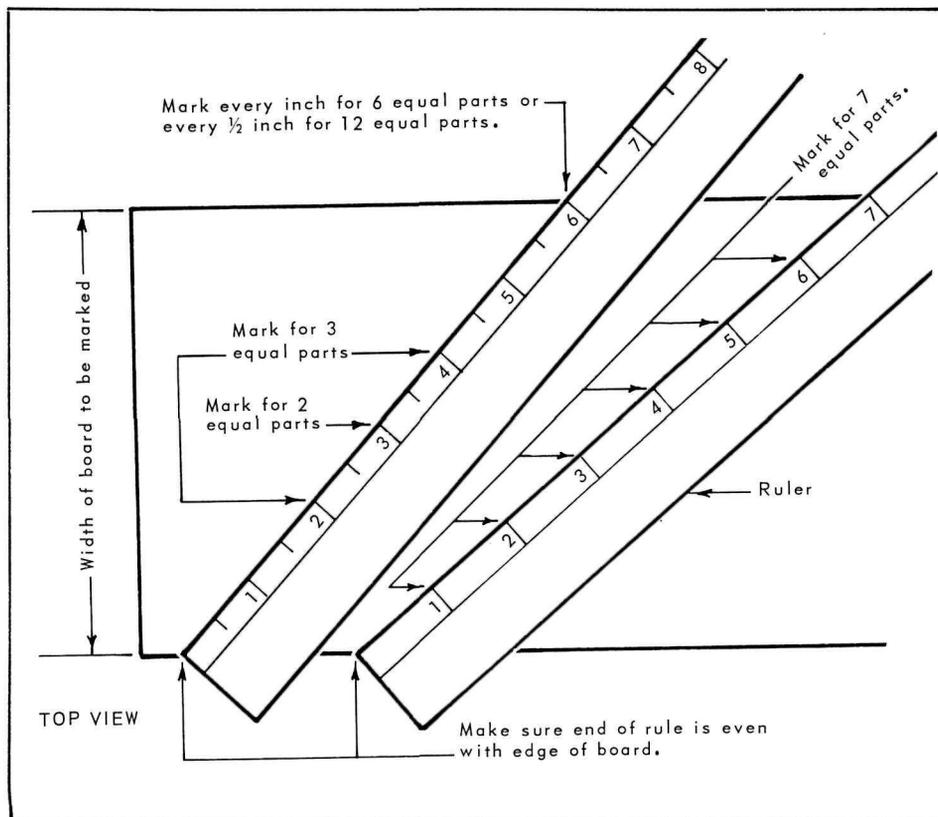
Broom holder

Thomas Chalmers, Equipment Operator at Ole Bull State Park (PA), designed this broom holder for large, bulky street brooms. Made from scraps, it holds two brooms in the space of one. The top broom fits in a groove with the bottom broom resting on a notched piece of 2" x 4" (.05 x .10m). The bottom broom handle extends into the holder at the top section.



Space Divider

Harold F. Mathews from Ralph Stover State Park (PA), has devised a quick and simple method of dividing any board into equal parts of any size desired. Assuring that the end of the rule is even with the edge of a board, angle the rule, as shown, and mark the lengths desired.



Maintenance

(Continued from p. 1)

Humans and Cold



Yellowstone NP

NPS photo

involved in any mishap which could cause hypothermia, the following steps should be taken:

- on boating trips, every individual in the craft should have an approved personal flotation device on during the entire trip.
- every individual should have on several layers of clothing; even if the clothing becomes wet, it will slow down the rate of body-heat loss.
- if involved in an accident on land which might cause hypothermia, the survivors should stay in the vehicle unless there is danger in doing so. When a rescue party arrives in the area, it is easier for them to spot any object as large as a car or plane; it is difficult to see one human being in the snow.
- dress for the weather. Extra sweaters, overshoes, old blankets, anything that can conserve body heat, should be an important "packing item" for any trip in which cold weather may be encountered.
- carry emergency signaling equipment in the vehicle. A few flares or signal smoke cannisters take up very little space and may save a life.
- if stranded, huddle together to conserve body heat until the rescue party arrives or until the weather clears. A few packages of emergency foodstuffs such as raisins, candy bars or other food items which can be kept in the car during the winter months will be all the food that is needed.

Polyethelene Underwater Pipe Proves Cheaper and Safer to Install

From Robert J. Butcher, facility manager, B&U, at Lake Mead National Recreation Area (AZ, NV), comes a suggestion that Drisco 7600 high-density polyethelene pipe with stand steel back up flanges be used in lieu of 8 ply rubberized pipe with helical steel coil and cast iron flanges.

At Lake Mead there are several water intake barges which have used flexible rubberized 8 ply pipe with helical steel coils to pump water from barge to shore. Both 6" and 8" (15 and 20 cm) interior diameter pipe have been used. During recent years, these pipes started failing at a fairly rapid rate and the cost of replacing them with similar material grew prohibitively expensive for a clearing account.

After inquiries and calls, Butcher located a source for a semi-rigid product called Driscopipe 7600, made by Phillips Products, Co., Inc. He ordered several 21' (630 cm) sections of both sizes. Now, after 2 years of use,



Lake Mead NRA

NPS photo

he highly recommends the product.

The Driscopipe has approximately $\frac{1}{2}$ " (1.25 cm) thick walls. It appears to be extremely durable and does not collapse. It is flexible enough to withstand wave action and light enough to be handled and installed by two men without utilizing cranes, backhoes, or lifting equipment. Because it is lighter and less flexible than the rubber pipe, it is much less hazardous to install.

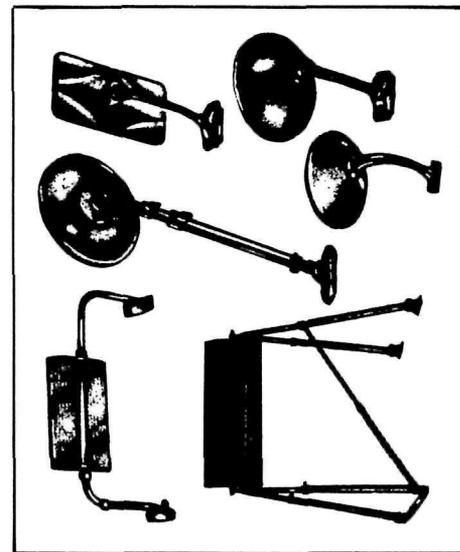
Except for the slightly raised joint where the plastic flange with steel backup flange is fused to the pipe body, the walls are extremely smooth

and very little flow turbulence is created. The pipe comes in various diameters and classes and is considered to be virtually indestructible.

At Lake Mead styrofoam flotation is used for pipe support from shore to barge. It has been found that several small supports or nearly continuous support is better than widely spaced supports. If more than 3' (90 cm) is left unsupported, a sag or bend will develop in this area.

Butcher calculates that Lake Mead has saved \$40,000 in the past two years by using the polyethelene pipes.

Mirrors for Increased Visibility

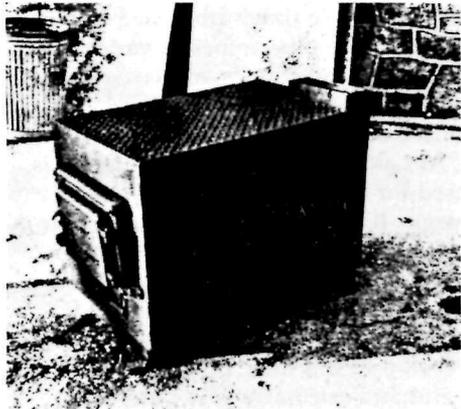


John B. Sage, Landscape Architect from Golden Gate NRA (CA) recommends installing standard exterior right-hand mirrors on all government automobiles and trucks for increased visibility to the driver.

A blind spot exists to the right and for several car lengths behind a vehicle. A right-hand mirror increases the driver's perception of situations occurring around and behind him or her, and is particularly applicable in the case of low profile vehicles which can disappear below the range of the standard interior mirror.

Sage received a NPS Incentive Awards Certificate for this suggestion.

Energy Conservation



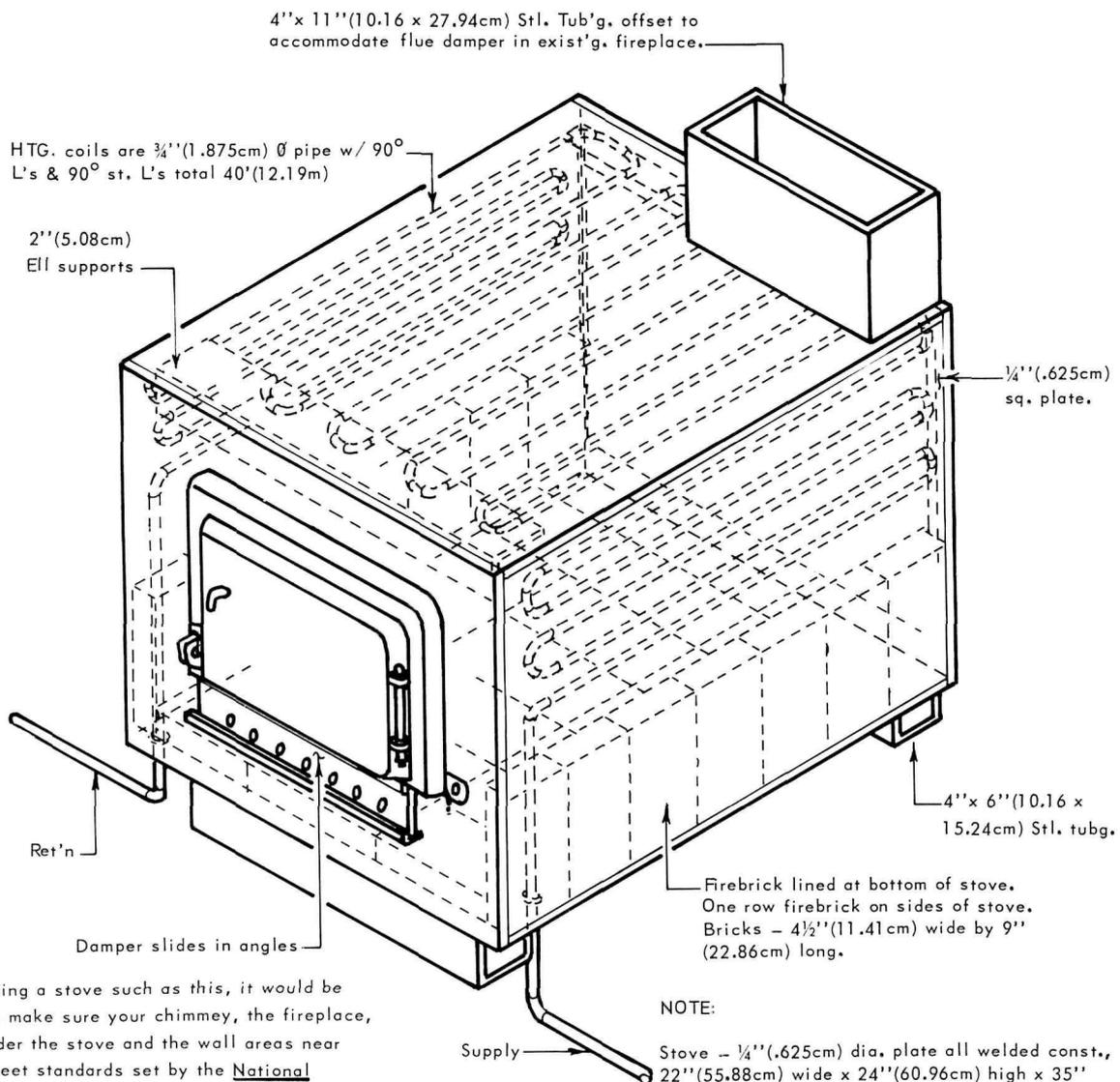
Wood Burning Stove

Paul H. Clark, Chief of Maintenance at Valley Forge NHP (PA), is quartered in a large historical house without storm windows and doors. The house has an oil fired hot water circular heating system with baseboard heaters. He built and installed a wood burning stove that has a heat coil which is connected to the existing heating system. The system has a flow control valve in the $\frac{3}{4}$ " (1.875 cm) piping system that prevents flow through the

system when the stove is not in use.

The system's circulation pump is controlled manually by a single pole switch, thus pumping hot water from the stove into the hot supply side of the furnace. The stove was built with scrap metal from the maintenance yard, at no cost to the NPS. The fabrication was done after working hours and on weekends with welding equipment at the maintenance shop.

For this energy saving device, Paul received a \$50.00 NPS Incentive Award.



Before building a stove such as this, it would be advisable to make sure your chimney, the fireplace, the floor under the stove and the wall areas near the stove meet standards set by the National Fire Codes. Get a copy from National Fire Protection Association, 470 Atlantic Ave., Boston, MA 02210.

NOTE:

Stove - $\frac{1}{4}$ " (.625 cm) dia. plate all welded const., 22" (55.88 cm) wide x 24" (60.96 cm) high x 35" (88.90 cm) long with manual controls and circulatory pump.

Monitor Fuel Use and Engine Problems

An improperly tuned engine and bad driving habits such as accelerating too fast can increase fuel consumption drastically in an automobile, pickup truck or recreational vehicle. But now, these potential fuel wasters can be pinpointed with the installation of an "Expert 400 Mileage Maker," available from Stromberg-Hydramite Corporation in Chicago.

The Mileage Maker does this by monitoring the intake manifold vacuum. During high acceleration, manifold vacuum decreases. When a car's accelerator is operated more moderately, the manifold vacuum increases and less fuel is used.

Mounted on top of the dash, the Mileage Maker has a series of four lights. The lights indicate rate of fuel consumption by telling the motorist whether the manifold vacuum is high or low.

A sudden change in average light

readings have the additional value of alerting the motorist to possible under-the-hood trouble. By comparing the vacuum level on the actuator gauge, shown in photo #3, when the engine is in good tune with gradual or sudden variations in vacuum, the motorist can determine whether he or she needs a tune-up, carburetor adjustment, valve work, or spark plug replacement.

The Mileage Maker monitor is attached at eye level to the top of the vehicle's dash, through the space between door and jamb, and passed into the fender and under the hood, as shown in photo #1. The wire also can be routed through the firewall.

Next, the actuator and bracket are bolted together, and then screwed into pre-drilled holes in a convenient location on the fender cowl. After the actuator is in place, the rubber hose from the actuator is spliced into the vacuum line between the manifold and distributor with a plastic tee hose fitting, as show in photo #2.

The lead wires from the monitor now

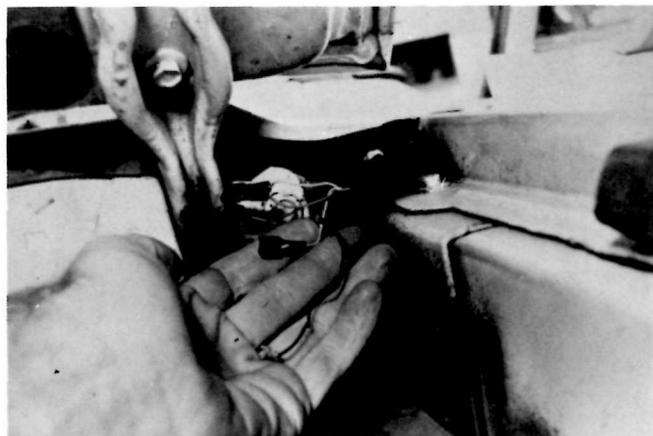
are easily connected to the actuator at the corresponding color-coded terminals. The black ground wire can be attached either to the bracket mounting screw on the fender cowl, or, if the cowl is made of plastic, screwed into any metal grounding area under the hood.

The last step in installing the Mileage Maker is to connect the gray hot line wire. One end is attached to an open terminal on the actuator. The other end of the hot line can be fed around the door past, or through an existing hole in the firewall near the steering column. It then is attached to a terminal on the fuse panel. If there is no open terminal on the fuel panel, the gray hot line may instead be spliced into any ignition-on hot line, such as the windshield wiper motor (see photo #3).

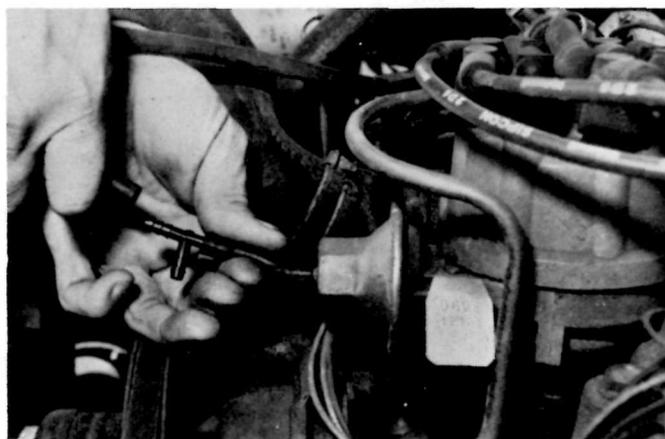
Price of the Expert 400 Mileage Maker is approximately \$49.95. For more information, contact Stromberg-Hydramite Corporation, 2626 W. Addison Street, Chicago, (IL) 60618.



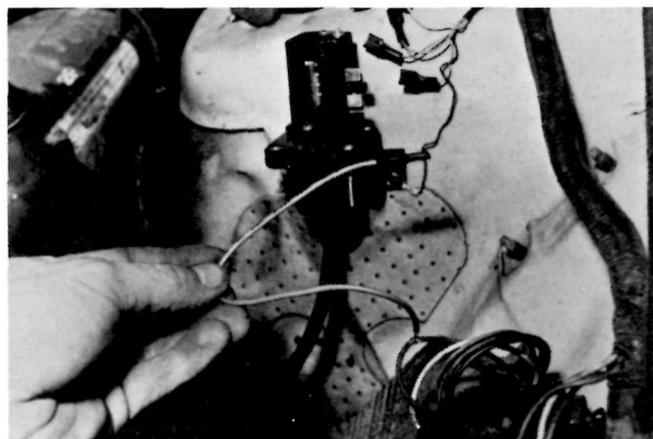
1.



2.

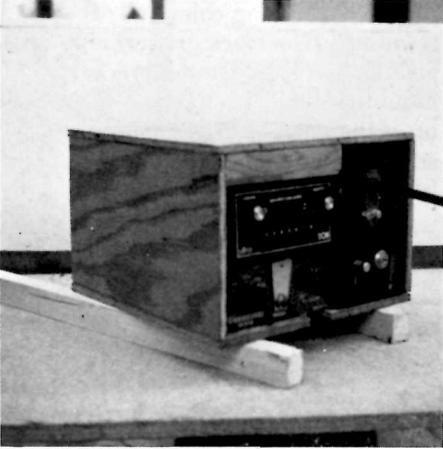


3.



4.

Storage & Safety



Storage for Vehicle Control Units

Park Technician Thomas J. Smith from Fredericksburg and Spotsylvania NMP (VA) recommends installing plywood or suitable containers in vehicles to house all vehicle control units such as a radio, scanner siren, etc.

Smith designed two boxes of $\frac{3}{8}$ " (.9375cm) plywood, each butt edged, glued and secured with finishing nails, sanded, primed, and painted flat black to conform to the vehicle dash color scheme.

The wiring for the units is routed through the box and extends approximately 2" (5.08cm) above, making connection/disconnection a simple matter. Each control slides in or out without removing the others, and the controls are held in position by small wooden cleats within the box.

These boxes protect expensive control units, provide safe and easy access to the units by the operator, and reduce possibility of broken and/or damaged wires.

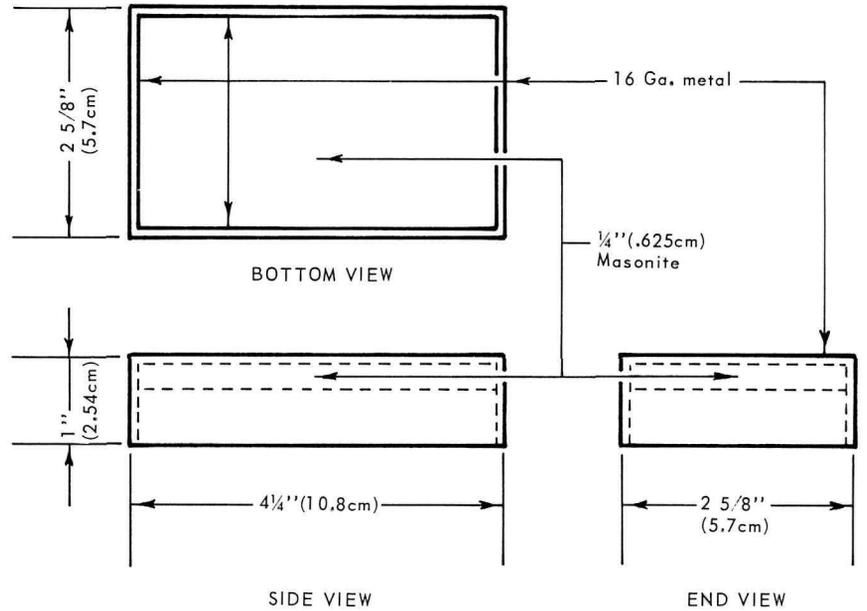
For these devices, Smith received a \$50.00 NPS Incentive Award.



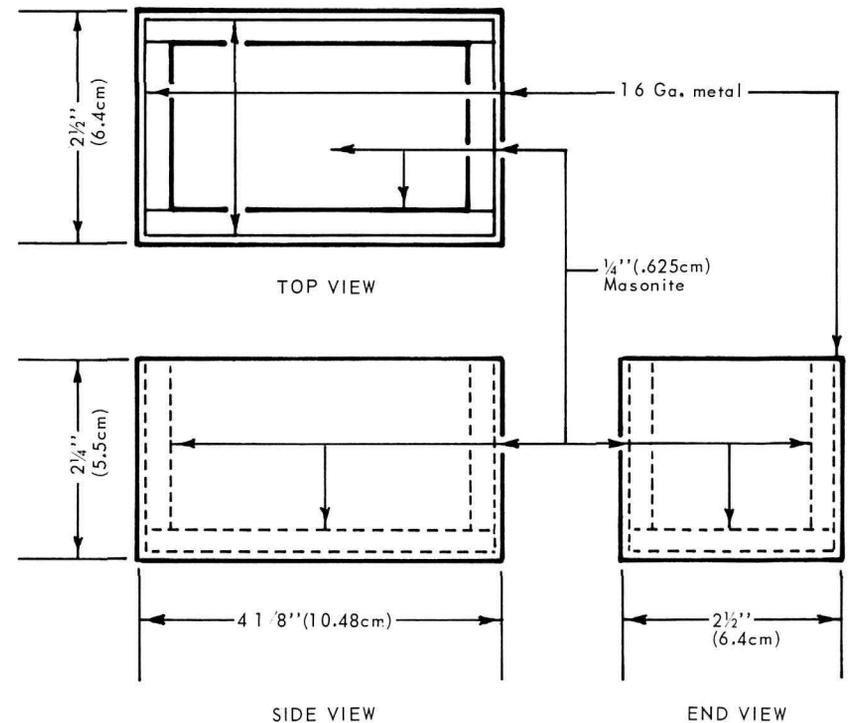


Box for Blasting Caps

Kenneth R. Hockelberg, Engineering Equipment Operator from Rocky Mountain NP (CO) has designed this metal box, lined with masonite to carry blasting caps. The welded steel container, painted fluorescent orange, provides a shock absorbing means of transportation and storage which prevents detonation should a fall occur. Besides being lightweight and highly visible at work sites, the container prevents buildup of static electricity, thus reducing the chance of serious injury to the bearer. Hockelberg received a \$75.00 NPS Incentive Award for his design.



HOCKELBERG'S BLASTING CAP CONTAINER TOP



HOCKELBERG'S BLASTING CAP CONTAINER BOTTOM

Down the Old Oxbow Road

In colonial days, the family oxen were as vital to the farmer's prosperity and perhaps survival as is today's tractor. And harnessing that ox power was dependent upon two devices: the yoke which pulled the plow or cart, and the oxbow, a U-shaped piece of wood which was placed under and around the animal's neck, its upper ends being inserted through holes in the cross bar of the yoke.

Recreating the atmosphere, surroundings, and artifacts of the early years of our country is part of the mission of the Colonial Farm at George Washington Birthplace NM (VA). When the oxbow needed replacement at the farm, the replacement had not only to be as close to the genuine article as possible, but ideally, should be made just as it would have been made in the 18th Century, using only materials that were available at the time.

Historical research provided no guidance for the Colonial Farm staff. Nothing could be found indicating just how our ancestors achieved the difficult, even dangerous, task of imposing a 180 to 200-degree bend in a

piece of green hickory. But former Maintenance Worker William E. Self, retired, provided an answer—he "re-invented" the oxbow bender. Using only materials (or near equivalents) which were available in Colonial days, he put together a bender which is so purely functional, it *must* be just about what was used 200 years ago.

And it works! On it have been made the oxbows required as replacements on the farm and, as a definite bonus, the actual process has been a source of intense interest to park visitors, who value the authenticity the working demonstration imparts.

The basis of the process is the application of tension to a curved template to which one end of the hickory is fastened, the template then pulls and shapes the hickory into a bend at the rate of 10 to 20 degrees a day. The hickory bends without splitting because it is kept wet or oiled throughout the process which may take 10–14 days.

Besides being an added attraction for visitors, the bender is saving the \$40 to \$50 a set of the oxbows cost if they had to be purchased by the Service. Bill received an NPS Incentive Award for this device.

Snow Fencing for Beach Stabilization



During the winter months, winds normally shift sand into dunes or directly into the hinterland.

California's City of Huntington Beach, Department of Harbors and Beaches, has established a successful system of installing snow fencing to stop moving sand during the windy season.

At a cost of \$2,000 for fencing and installation, the Department purchased Easy Fencin' plastic snow fence. Once installed, the fence keeps the sand on the beaches and provides windbreaks for people during the winter months, thereby providing use of the resource on a year-round basis. The need to remove sand with heavy equipment from parking areas and landscaping is eliminated, as is the need to transfer sand from the berm or high tide line to the rear of the beach to fill in the shallow area that is created by the constant movement of people to the water during the summer season.

The fence is used 7 to 8 months of the year and is removed during the summer months when the beach is heavily populated.

In the first year of use, the Department had a direct savings of \$11,000 in sand removal and plant loss. Our thanks to Vincent G. Moorhouse, Director of Harbors, Beaches and Development, for sharing this idea with GRIST readers.

