GRIST

VOLUME 14/NUMBER 6 NOVEMBER/DECEMBER 1970

# 42% RETURN ON SURVEY

Last spring a readership survey was sent to approximately 2,700 subscribers to the periodicals of the Park Practice Program. We are pleased to announce a return of about 42% of the questionnaires.

Developed by the National Recreation and Park Association; the National Conference on State Parks; and the Division of Park Practice, National Park Service, the survey was designed with ultimate improvement of the publications in mind. Your responses have given us a good idea of your interests and an indication of the strengths and weaknesses of the program's offerings.

The comments were varied, running the gamut from total praise to total rejection. The percentages do show, however, that the material is either read or perused to some degree by a majority of the subscribers, that a majority of the subscribers find the publications either "stimulating" or "generally of interest," and that there is a considerable readership expansion factor over and above the individual subscriber.

Most respondents indicated a problem with binders. The Park Practice Program will make available new loose leaf type binders for **Trends, Grist, Design,** and **Guideline,** to be provided early 1971. **Guideline** size is changing, too. It will be issued in 8 1/2" x 11" and will carry an index for each calendar year.

Some comments suggested that many subscribers—possibly half—have never read the apologias. This impression comes from an evident misunderstanding of the purpose of each periodical. The apologias will eventually be rewritten and we encourage everyone to read them.

There were also requests for changes in content to a greater or lesser extent for each title. We'd like to take this opportunity to urge you to contribute. These are your publications and input from you is vital to their success.

## GETTING OUT OF A SUBMERGED CAR

Every year in the United States about 400 people are trapped in automobiles plunging into water.

Most fatalities result because the rider, trapped under water, tries frantically to open the door. Because of the pressure of water outside the car, the door will not open. Needlessly, in most cases the rider then panics.

Instead, he must now do a most unnatural thing: calmly allow the car to fill with water. When the pressure inside equals the pressure outside, the door will open.

The following information details what the trapped passenger should do:

### IF CAR SUBMERGED UPRIGHT

The air pocket inside, in the uppermost section of car, contains more than enough air to last the 10 or 15 minutes it takes car to fill with water. One-half pint of oxygen will maintain life for one minute. As car fills with water, keep head against roof in air pocket.

When water stops rising, pressure inside is about equal to pressure outside. Take a deep breath, open door, push out and up to surface. Air pocket remains after door is open, so there is no need to hurry.

If the windows are open, brace yourself against the force of water rushing in. When water stops rising, proceed as described above.

### IF CAR SUBMERGED UPSIDE DOWN

The same procedure is required. Keep head against floorboard in air pocket, until pressure equalizes. Take a deep breath and open door, and push out and up to surface.

### IF CAR SUBMERGED ON SIDE

If window is open, keep head against door below window opening as water rushes in and fills the car. When pressure equalizes, door will almost be forced open. A small person could float out the window opening to rise to surface. Larger persons open door and proceed as previously described.

If window is closed, position self with head against door, below bottom of window, until car is almost filled with water. Then, with few inches of air space left, open window or door and float to surface.

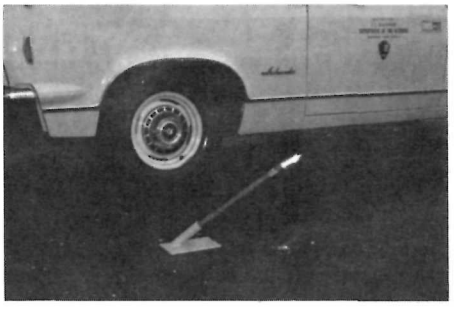
### HOW TO HELP

A conscious person could rescue an unconscious person by keeping his head above the water level. This is relatively easy, as the body is bouyant and not great weight is involved. By taking hold of hand or clothing at the neck with one hand, the rescuer could float to surface with victim.

(The above article was taken from the SWAMP WATER, published by Everglades National Park.)

## STABLE HIGHWAY FUSE HOLDERS

Highway fusees or flares are useful, and at times a necessity, to warn motorists of road hazards such as rock slides or vehicle accidents. One problem frequently encountered in the use of fusees is the instability of the holders. Often they are blown off the hard surface onto the shoulder or into the gutter. This can make them difficult or impossible to see, thus failing in the job of warning of danger ahead, and can be a serious fire hazard when shoulders and gutters are covered with dry grass, leaves, or pine needles. A ranger at an accident scene has enough to do without having to extinguish a fire started by his own fusee.



To solve the problem, Arnold Long, Park Ranger, Blue Ridge Parkway, designed the fusee holders shown in the photo. They were made from a 6" x 6" piece of sheet metal with a 1" pipe spot-welded to it. The holder keeps the fusee securely in place and at an angle easily seen by approaching motorists.

*PARK PRACTICE* GRIST

a bimonthly publication of the nonprofit, educational Park Practice Program cooperatively conducted by the National Park Service, U.S.D.I., the National Conference on State Parks, and the National Recreation and Park Association as listed hereafter.

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Subscription applications and fees, and membership inquiries should be sent ONLY to: Executive Secretary, National Conference on State Parks, 1700 Pennsylvania Avenue, N. W., Washington, D. C. 20006.

Printed by District Creative Printing, Inc., Washington, D. C.
Not printed at Government expense.

# Speaking of Interpretation

## PROTECTION FOR REMOTE MESSAGE REPEATER STATION

A 1/4" thick mild steel liner designed with welded hinges, blind bolts, concrete anchors, and elimination of pry points is providing protection to remote-location message repeater stations at Richmond National Battlefield Park. A simple vandal-resistant method of mounting the activator button was also designed for quick, easy replacement procedures as shown in the photographs.

Park Historian Glenn L. Hinsdale designed the steel protected station after vandals forced off the concrete slab roof of a conventional station and removed the equipment. The new protected station, shown here, withstood an assault by heavy caliber bullets without damage to the contents. However, after that incident, the position of the speaker was reversed and an additional small piece of 1/4" steel plate was mounted behind it on the components rack to deflect possible projectiles passing through holes in the grill. No detectable loss of sound quality resulted.

Not shown on the working drawing, but visible in the photograph of the interior, is a canvas or plastic grille cloth curtain, weighted with a length of welding rod, to deflect liquids sprayed or squirted through the grill. It should hang at least an inch behind the window to preserve proper air flow.

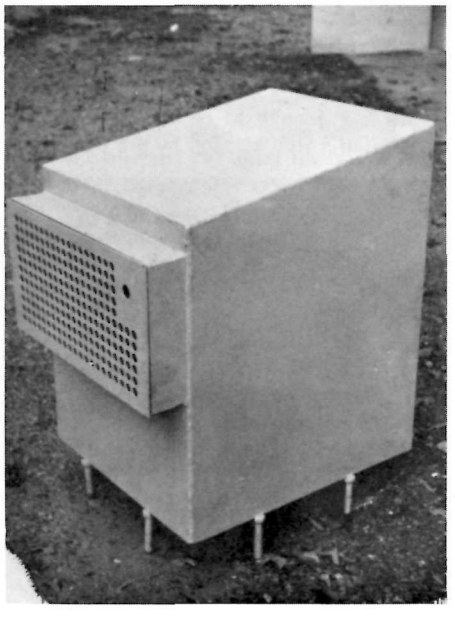
## ONE-AT-A-TIME BROCHURE DISPENSER

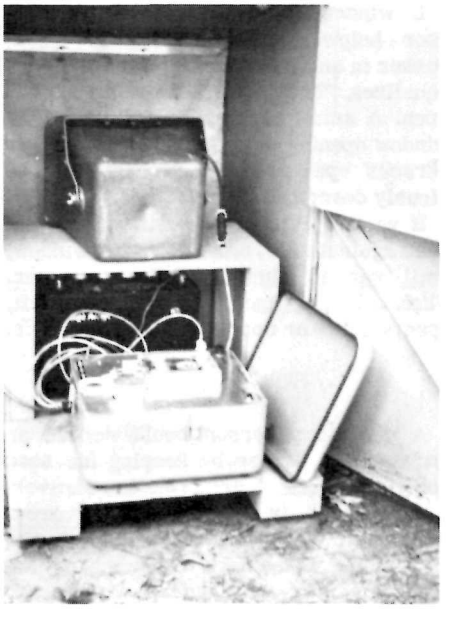
A simple, self-service method of making printed information available to the public at Beltzville Reservoir (Pennsylvania) was needed, and Engineer B.W. Schwartz found a ready made solution.

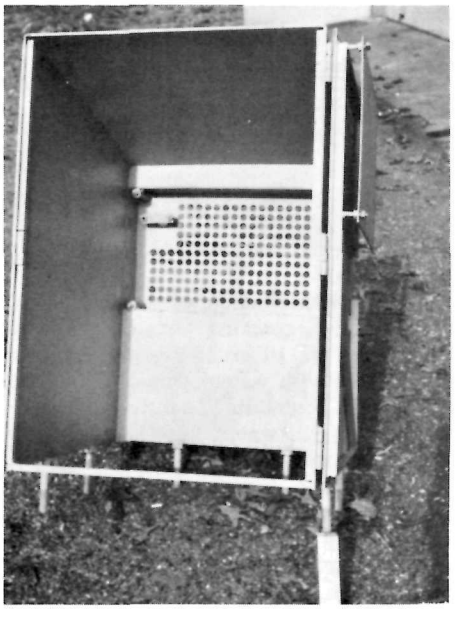
Interfold the brochures and place them in a holder of the type used to dispense interfolded paper towels in rest rooms. Attach to the front of the dispenser one of the brochures and lettering inviting visitors to take one.

This method has proved to be very effective in reducing the number of brochures wasted. Observation indicates that only one brochure per family is now taken in contrast to several taken, and many often scattered on the ground, from an open stack.

Note continuous welding and concrete anchors. Heavily prime all metal surfaces prior to brickwork.

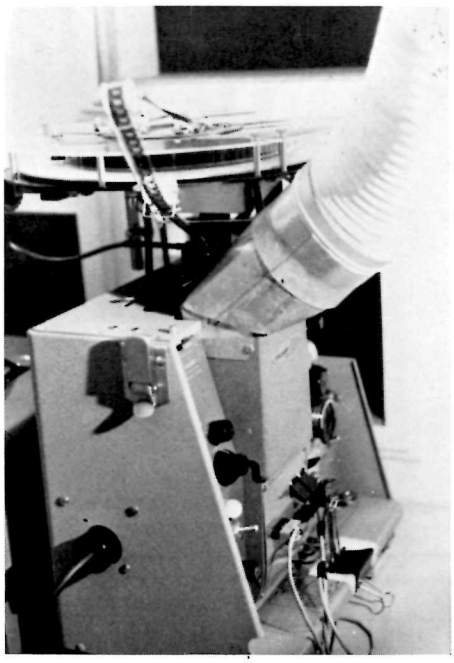






## COOL IDEA FOR AN AV HOT SPOT

Ninety degree temperatures in the AV projection booth at Booker T. Washington National Monument caused a "fever" in the brains of Superintendent Stanley C. Kowalski, Historian Barry Mackintosh, and Maintenanceman A. S. Wright. Operation of the Kalart/Victor 16mm projectors for even a short time sent the temperature soaring in spite of an inlet from the air conditioning system and a 7" exhaust fan. Not only was this hard on people, but on film and the delicate control units (containing heat-sensitive relays) as well.

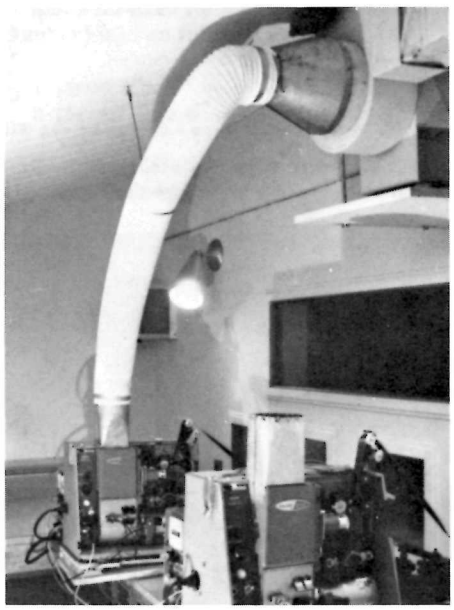


Even a larger exhaust fan probably would not reduce the heat to comfort level, the men decided.

The feverish brain activity brought forth a cool idea—why not capture the heat right at its source and eliminate it before it had a chance to dissipate throughout the room? The resulting device is shown in the photographs. Attached to the fan housing is a 7" to 4" sheet metal reducer, to which is attached a 4' length of clothes dryer exhaust hose. At the other end of the hose is a metal collar which permits it to be easily and snugly slipped over either of the rectangular-to round extensions fabricated to fit the exhaust vents of the projectors. These latter units are screwed to the Kalart/Victor bulb housing using the rivet holes which held the original louvered tops. Should depot replacement be necessary, the modified bulb housing would be retained at the park and the projectors would be returned with the standard housings taken from the replacement units. With conventional reel operation or an overhead-type film magazine, the exhaust vent extension is angled to clear the film as in photo 4. The exact design of the exhaust vent extension will vary with other model projectors, of course, but the principle is the same.

Stan, Barry, and A. S. proclaim the system an unqualified success. Both temperature is now maintained in the low 70's, film problems are significantly reduced, no control unit malfunctions, and lifespan of 1200-watt projection bulbs rated at 10 hours has ranged from 38 to 53 hours since installation of "instant exhaust" system.

Cost, including parts and labor, was $15.



## LET "COKE" HELP CHANGE THOSE TIRES

They thought Ranger Richard Guilmette Grand Teton National Park, was joking when he suggested that a little Coca Cola be put around the bead of the large truck tire which was refusing to come off the rim.

Dick once worked for a company which bought three million dollars worth of old army surplus trucks, and he had the job of removing the tires. Faced with that back-breaking task he recalled that back in high school chemistry his teacher had someone bring a recently pulled tooth to class where it was placed in a glass of "Coke" and by the time the class met next the tooth was completely dissolved. Anything that powerful might lossen up those old tires, he thought, and proceeded to try it. It worked!

Laying the stubborn tire the mechanics had been struggling with flat on the floor, Dick put some "Coke" around the bead, waited about five minutes, then, wearing soft rubber insulated boots he stomped once on the tire and it broke from the steel rim. Another four easy stomps and the tire was completely free.

The mechanics insisted that Dick should share the trick, so here you have it. Not only does it save about 50% of his time and much sweat in dismounting tires, but, he says it is a safer method because it reduces the likelihood of pulling or straining a back muscle while beating on a tire with a sledge hammer or using brute strength and tire irons. The "Coke" also cleans the surface it is working on, which makes for a better seal when the tire is reseated on the rim.

You'll find that "Coke" is also a good penetrant for rusty bolts and machine parts, Dick says.

## CEMENT AND EARTH FLOORS FOR TRAIL SHELTERS

Adirondack-type trail shelters in Great Smoky Mountains National Park were earthen, and dust often accumulated to an inch or more. A damp garment, sleeping bag, or other equipment dripped on the floor was immediately coated with mud. Futhermore, these shelters, designed to sleep twelve persons, are frequently overcrowded, so that late-comers must sleep on the floor--in all that dust?

John O. Morrel, Management Assistant, suggested that a mixture of Portland Cement and earth be used for the floors and aprons of these shelters. Treatment of the earth, both inside the shelters and to the extent of the overhang of the roof, effectively eliminated the above conditions. Maintenance time is reduced because the shelters can be swept out in a few minutes and a better job can be done, for it was virtually impossible to clean small bits of trash from the dirt of the old floors.

## FIRE ROAD GATE TO FOIL VANDALS

Fire and service road gates were the objects of vandalism at Cumberland Gap National Historical Park. An average of three gates a year were being illegally entered and sometimes destroyed. After trying several designs and different materials, Park Ranger W. T. Rolen, Jr., studied the problem, talked with several engineers about it, and then designed the gate shown here.

Gates of this design have been in use for a number of years now and none has been destroyed and no locks have been damaged in spite of several instances where evidence showed entry had been unsuccessfully attempted.

One post provides a permanent pin weld and horizontal slots cut only long enough to accommodate wire rope with rope clamp nuts welded (see sketch). The other post (both are made of 6" steel pipe), also with slots for the wire rope, provides for locking the rope inside the post. A cut-out is made and a metal plate is welded inside the pipe so that if dropped, keys will not go to the bottom.

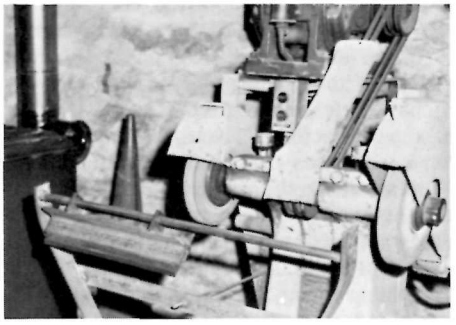
The gates were manufactured for the park by Hoe's Foundry in Middlesboro, Kentucky, and were delivered ready for installation at about $35 per gate when ordered in lots of five or more.

A couple of minor problems developed. It takes a few seconds longer to unlock the gates, especially for people with large hands, and wasps seem to favor the lock receptacle for nest building. The wasp problem was solved by using an insecticide (Whitaire's Wasp Stopper, distributed by Mine Safety Appliances Co., Pittsburgh, Pa., took care of that).

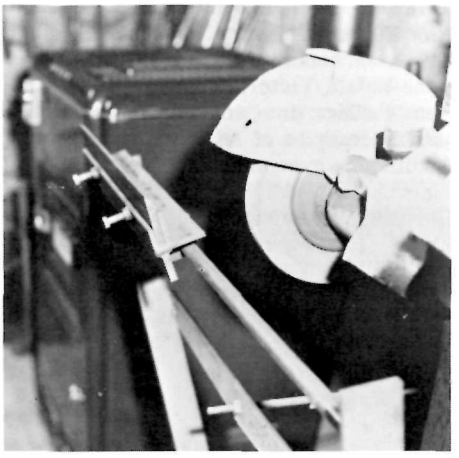
The problems are outweighed by the advantages, Ranger Rolen says. In addition to being almost vandal-proof, the design keeps the locks dry, they do not freeze in winter, and consequently they last years longer.

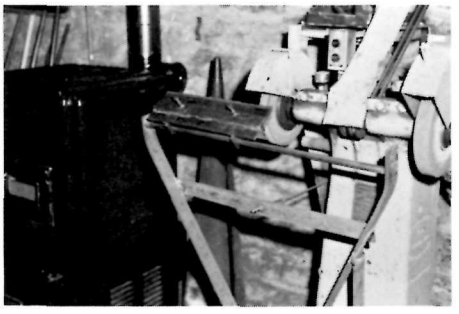
## PRECISION GRINDING OF WOOD CHIPPER BLADES

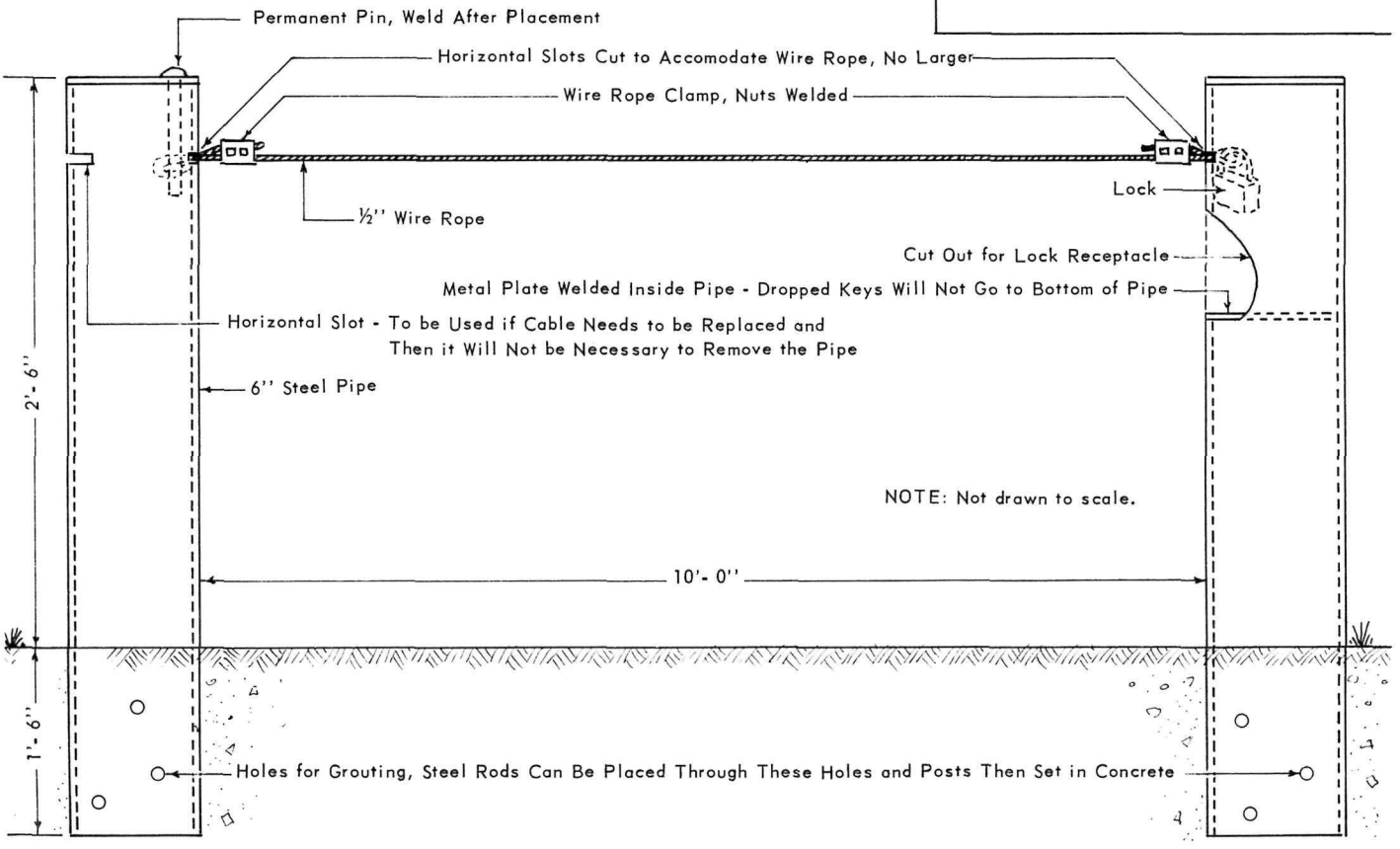
The Asplundh Chipper Company recommends that its wood chipper blades be sharpened at a 45-degree angle and that proper balance be maintained. Recommended clearance between cutting edge of blade and another part of the chipper is between 1/32 and 1/16 of an inch. Grinding to specifications is impossible to do freehand. Maintenanceman E. Lynwood Vaughan, Shenandoah National Park, devised and built an attachment for a floor-mounted grinder which makes grinding to specifications possible.



The grinder base has two projections, separated about 13 inches, through which a rod can be inserted parallel to the shaft of the grinder wheel. The curved sides of the attachment come together at the bottom







and are bolted to the other projection. Adjustment for obtaining the 45-degree blade angle is controlled by nuts on a threaded rod fastenend to the grinder at one end and to the attachment at the other. The chipper blade is held in the jig by two bolts (see photo showing blade in place). The jig slides from one end of the bar to the other. There is a safety feature, too. The dimensions of the attachment permit grinding from one end of the blade to the other but will not permit either end of the blade to run off the grinding wheel.

## SPEEDING UP ADMISSION TICKET STAMPING

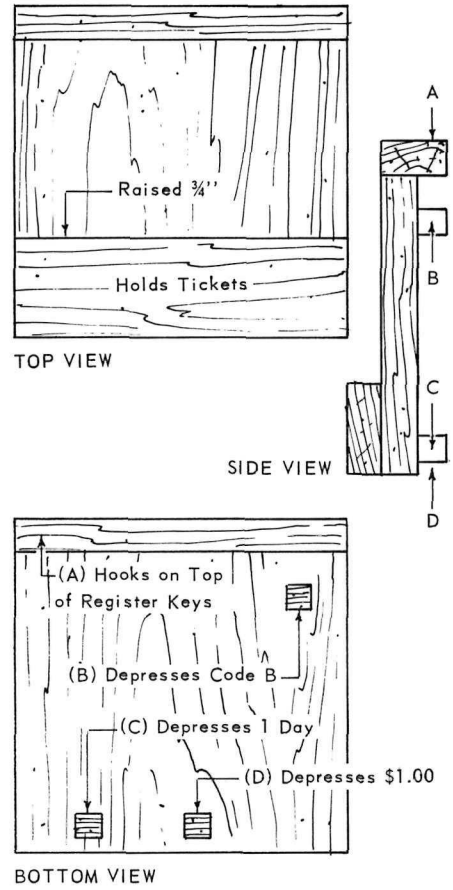
More than 95 percent of the sales at the Shenandoah National Park entrance stations are for one-day, one-dollar, private vehicle tickets. Coding errors were common due to the location of the cash register key for the most used code, that is, the daily. It is necessary to void any ticket with a coding error, and this created delays and additional work on the part of the entrance station cashier and the accounting clerk in park headquarters.

Seasonal Park Ranger Fred R. Emswiller, Jr., designed a device which simplifies, speeds up, and reduces errors in ticket sales. A wooden plate was made to fit on top of a cash register. It has wooden knobs the proper length (1/2") to keep code, day, and fee keys depressed so that they turn out a one-day, one-dollar, private vehicle ticket. (See sketches for specifications.) This reduces to one the number of keys which must be pressed. That key records the complete transaction.

At the bottom of the plate, on the side away from the keys, there should be a small strip of wood to hold the unprinted tickets so that they will be readily available.

Removal of the device for stamping another type ticket, such as an annual, can be accomplished in a matter of seconds. It is only necessary to lift the device from the register and press the E button to clear the machine in preparation for stamping a different type ticket.

Fred says that tickets can be stamped four times as fast with the device.




NOTE:
Knobs Gluded as Required
All Knobs are ½ x ½ x ½" Wood Blocks
All Other Parts ¾" Wood

## TEMPLATE SPEEDS FIREPLACE BASE CONSTRUCTION

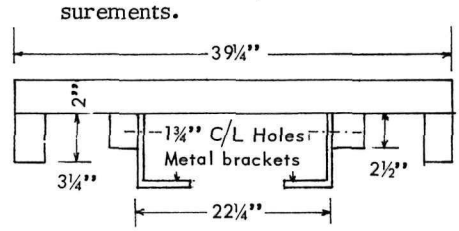
Construction time for fireplace bases has been cut in half at Natchez Trace Parkway by using a template designed by Maintenanceman William R. Himes.

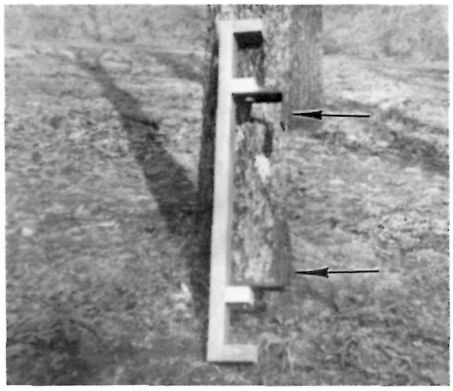
The template serves as a form for pouring the concrete base and also for holding the brackets on which the fireplace will be mounted in place until the concrete hardens.

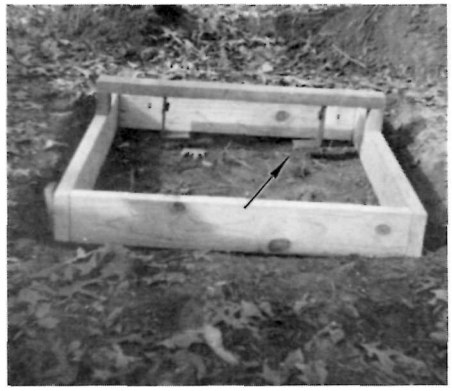
Material used for the template (surplus lumber) was as follows:

1 piece 2"x4" — 39 1/4" long
2 pieces 2"x4" — 3 1/4" long, end pieces
2 pieces 2"x4" — 2 1/2" long, for fireplace brackets

Center of hole, 1 3/4" from beam
Metal brackets, 22 1/4", outside measurements.





Book Suggestion—OUR WILDLIFE LEGACY, by Durward Allen, Funk & Wagnalls, 1954. Land use ecology, wildlife management and agricultural practices and how they affect the environment.

## BRUSH SWEEP ATTACHMENT

A manpower saver, for areas where it is necessary to pickup brush from road and trail and where ground clearing in general is required, has been designed by Walter Ellison, foreman I, and Amel Stevenson, laborer, Manassas National Battlefield Park.

The brush sweep was designed for use on the hydraulic lift of a snow plow or other types of hydraulic lift equipment. It was made from scrap material. Worn out grader or snow plow blades and discarded runners from a rotary mower were used for the teeth of the brush sweep (see sketch). Bolts were used in the construction, but welding would, of course, add stability to the device.

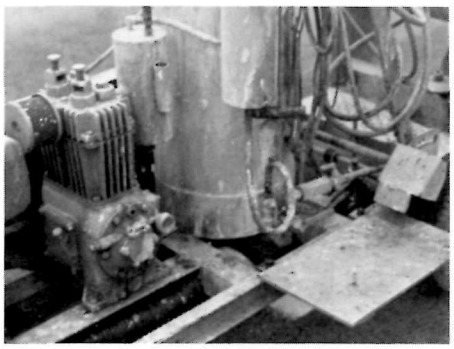
Cost of construction, including parts and labor, was about $37. When put into use it was discovered that one man and the brush sweep could do as much work in one day as four men could accomplish by hand in five work days. At Manassas, this came to savings, in labor alone, of more than $340 for one week. Two laborers and one caretaker could be released for work elsewhere in the park.

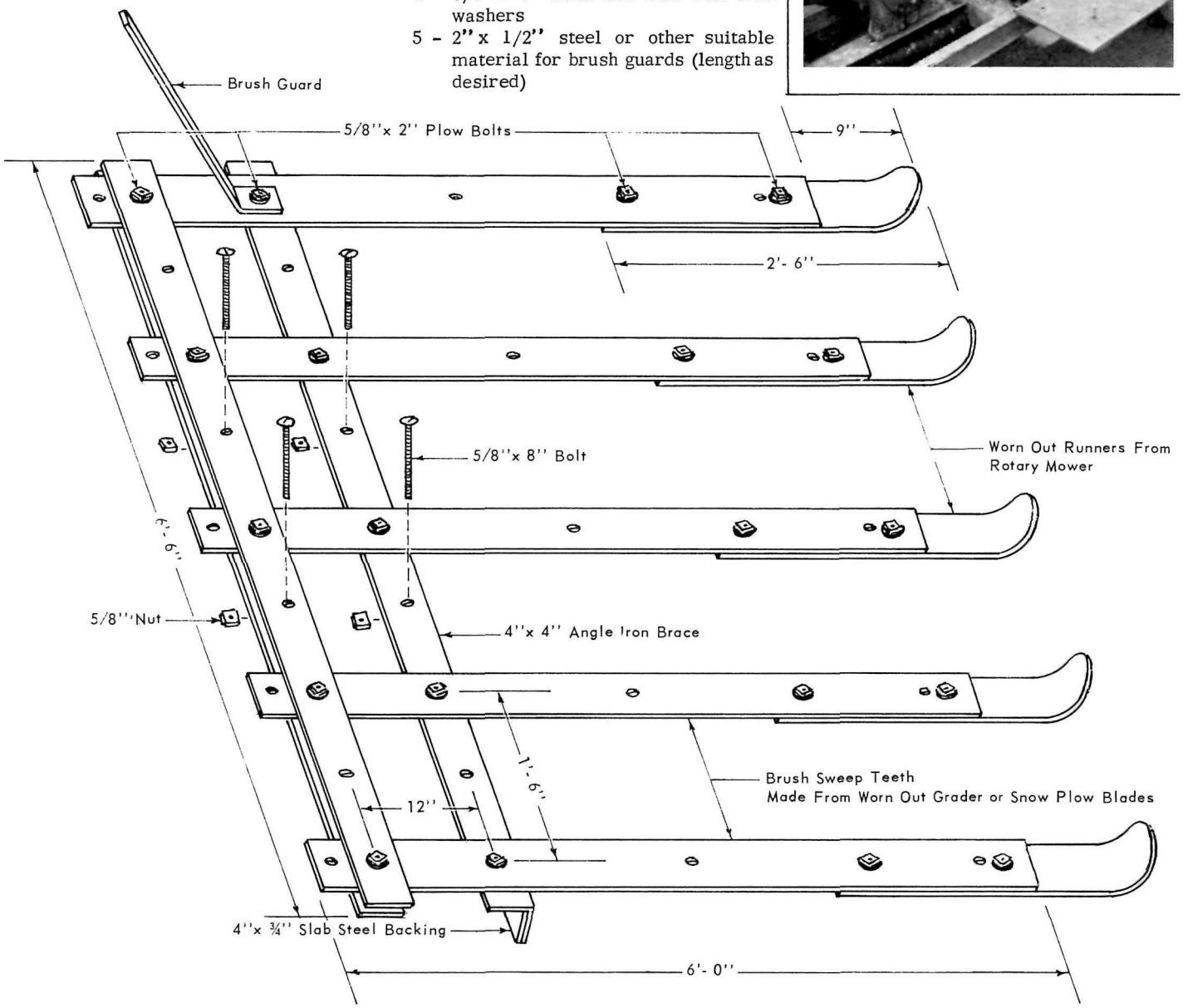
List of Materials

- 2 - 6' 6" grader or snow plow blades (worn out)
- 5 - 6' grader or snow plow blades (worn out)
- 5 - rotary mower runners or skids or other suitable material
- 1 - 6' 6" length of 4" x 4" angle iron
- 1 - 6' 6" length of slab steel 4" x 3/4" (angle iron backing-welded into place)
- 20 - 5/8" x 2" plow bolts and nuts with lock washers
- 4 - 5/8" x 8" bolts and nuts with lock washers
- 5 - 2" x 1/2" steel or other suitable material for brush guards (length as desired)

## RIDING PLATFORM FOR TRAFFIC MARKER MACHINE

The traffic marker machine used at Natchez Trace Parkway made no provision for the operator of the paint striping device to ride. Walking alongside the machine he had to reach over it to press a lever which releases the paint. This put him in a strained position, and coupled with the fact that he had to walk the entire distance, made it necessary to have an alternate operator, thus keeping two men tied up. If a man could ride the machine he would be in a better position





to reach the lever without strain, and, not having to walk, could do the whole job. That's the way Maintenanceman Fred S. Young figured it.

The platform, shown in the photos, is made of heavy metal, at least 1/4" thick,

Striper with driver and employee both riding.

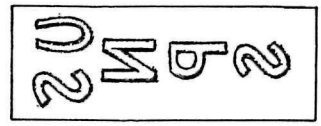
properly braced and approximately 12" x 16". Note that a guard has been provided over the wheel pulley.

## BRANDING BOUNDARY MARKERS

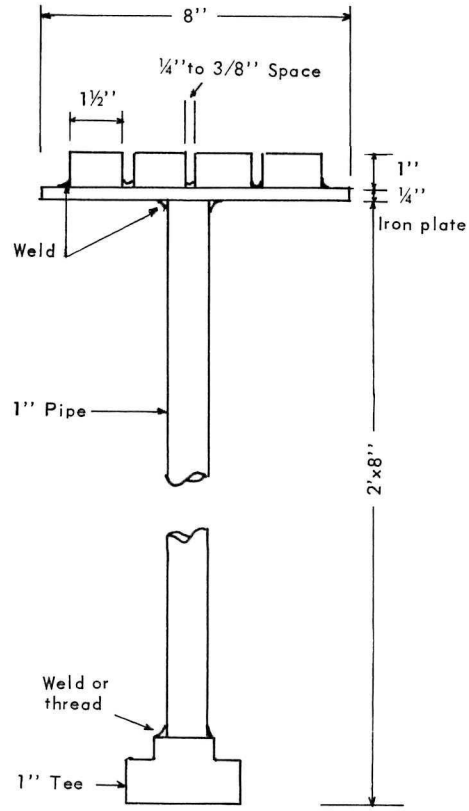
Land owners who prize the aesthetics of their surroundings have sometimes protested about boundary marking with standard signs, painted posts and fences, and tree blazing. Some kind of marking is essential, so Park Ranger Douglas M. Bowen, Blue Ridge Parkway, set about to find a more acceptable and pleasing method which would still be clear warning against troublesome accidental or intentional encroachments.


The post shown in the photo was marked with a branding iron. Boundaries are now clearly defined but in a way to which no reasonable person could object and which shows Parkway neighbors that the National

Iron strip letters ¼" thick 2" high. All with a radius were forge formed, others cut and welded to shape.

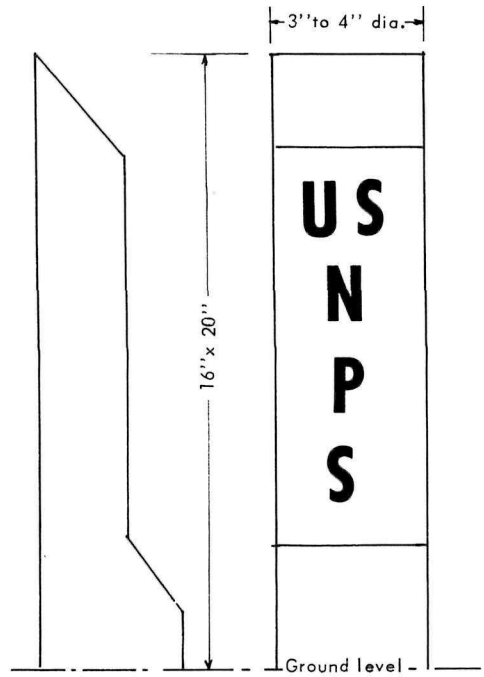


TOP VIEW




U.S. NPS BRANDING IRON

SIDE VIEW




SIDE & FRONT VIEW OF BRANDED POST

Park Service is as interested in the unmarred beauty of the surroundings as they are.

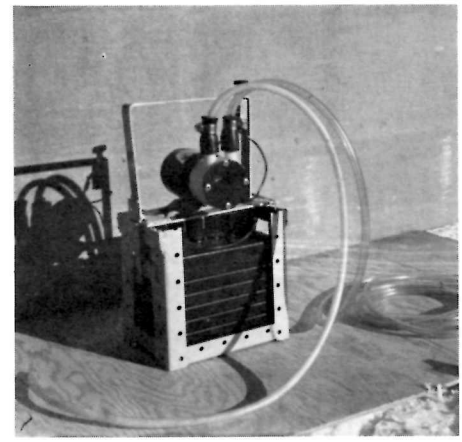
Doug suggests using yellow locust with all bark removed for the boundary posts, making sure that the branding surface is free of all high or low spots.

## LAND JOB FOR A BILGE PUMP

Why not a bilge pump to do the job of draining water systems in comfort stations, residences, and other buildings before the onset of freezing weather? Maintenanceman Paul M. Johnson, Shadow Mountain National Recreation Area, followed up that thought and mounted a boat bilge pump on a frame with a motor vehicle battery and coupled to plastic chlorinator hose as shown in photographs.

The hoses should be long enough to carry the water outside (Paul used 5-foot and 10-foot lenghts). The unit, which is approximately 6"x 8"x 15" and weighs 30 pounds, is portable.

Time required to drain systems is reduced by two-thirds at Shadow Mountain.



## PREVENTING BEARING FAILURE DUE TO SNOW OR WATER

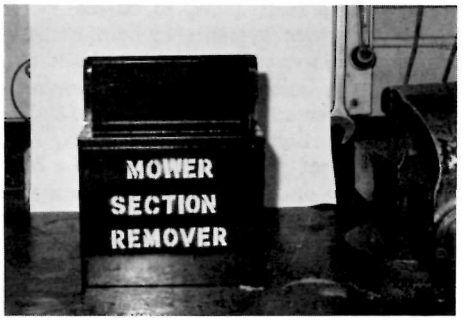
Bearings, inner, outer, and drive line, of snow removal equipment are exposed to water while removing snow. Ordinary grease loses its lubricating value when it comes in contact with water, resulting in bearing damage. Bearings cost about $45 each, and it takes approximately sixteen hours to replace a bearing. Add to that the down-time of the equipment.

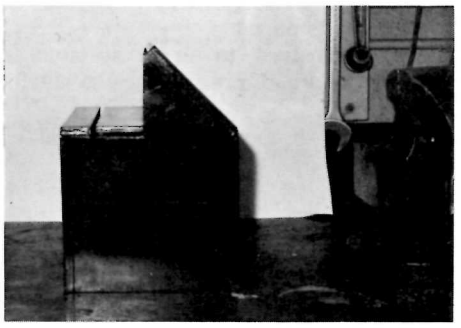
Automotive Mechanic Doran L. Langston, Grand Teton National Park, says that this damage can be prevented by using a heavy fiber grease that is water resistant and will not run out. Texaco manufactures this water and heat resistant grease which sells for about $1 for 5 pounds.

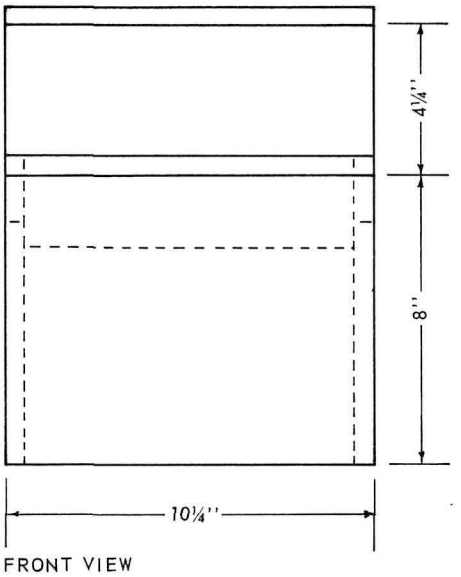
It can also be used on boat trailers, eliminating the necessity of removing wheels and packing bearings each time the trailer is backed into the water.

## SAFE REMOVAL–MOWER SECTIONS FROM SICKLE BAR ATTACHMENT

Removal of worn out mower sections of tractor sickle bar attachments has its hazards. After an employee at Blue Ridge Parkway, Rocky Knob District, received a serious injury from a ricocheting mower section which was being removed using a hammer and vice, a study was made to find a safer method. The use of grinders and acetylene torches was ruled out because of the time element, expense, and possible damage to the knife back. The method which had been in use for many years, that is, removing the mower sections with a hammer by shearing off the rivets was the least expensive, least difficult, and the most acceptable by the employees. But how to make the method safer, how to stop those dangerous flying pieces—that was the question.





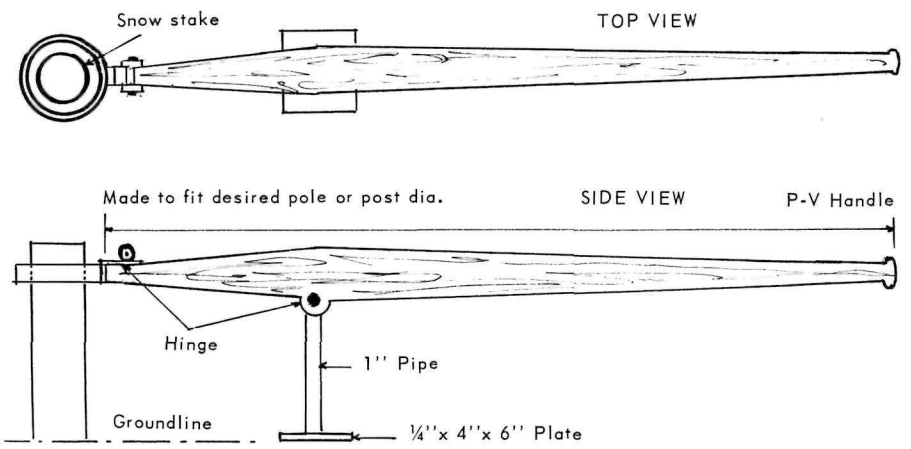

Alvin W. Anderson, district ranger; Collin E. Farmer, construction maintenance supervisor; and John L. Belcher, automobile mechanic, constructed a device which eliminates the hazard.

They built a bottomless metal box anvil with a slot and a 45-degree shield as shown in the photographs and sketch. The anvil is made from 1/2'' steel, reinforced inside around the slot for strength. The knife back is placed on the anvil and the mower sections in the slot of the box anvil. A mower section is struck with a heavy hammer directly above each rivet causing the rivet to shear off. After each section is removed, the knife back is moved ahead into place to remove the next mower section. Cost for metal, machining of parts, and labor was about $27.

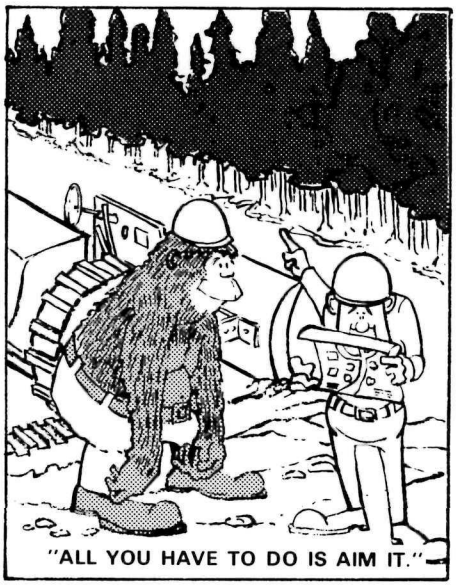

## SNOW STAKE PULLER

In one trip over the road at Crater Lake National Park, they can now remove all the snow stakes, not just those loosened by thawing. They are using the device shown in the sketch, which was designed by Automotive Mechanic R. E. Van Wormer.

The stake puller also reduces the possibility of back injury from tugging, lifting, and twisting partially loosened poles.




THE SURVIVAL KIT

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