

## Gentle Trail and Overlook

Superintendent Robert Johnson of Blackwater Falls State Park in Davis, West Virginia, shares this trail and overlook with GRIST subscribers and readers. Credit for this structure goes to Superintendent Johnson, Daniel Pase, Construction and Maintenance Supervisor and Roger Evans, Carpenter Supervisor.

The paved parking area and paved trail leading to a wooden ramp and deck-type overlook permits handicapped and aged guests to easily view the spectacular Blackwater Falls in the bottom of the gorge. The length of the trail is approximately 150 yards and the total trail and deck is for all practical purposes, level. The decking is totally constructed of rough sawed oak lumber which is anchored into a natural stone out-cropping. The entire deck is enclosed by a 42" high railing and especially built with wheelchairs in mind.

Except for labor, the construction of this overlook did not cost the State of West Virginia anything. All building materials, including bolts, nails, lumber, paving and even fill dirt were contributed by ten different companies and organizations. These agencies were eager to contribute when they learned of the nature of the project.

Often the main attractions of park and recreation areas are located in areas not accessible to handicapped persons. The staff at Blackwater Falls provide an excellent example of how park areas can provide enjoyment for

all visitors at minimal cost while, at the same time, establish a net-

work of concerned citizens and organizations to benefit all.



# Safety

## Grist

### A publication of the Park Practice Program

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

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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 \$105; annual renewal is \$45. A separate subscription to *Grist* is \$20 initially, and \$12 upon renewal. Subscription applications and fees, and membership inquiries should be sent *only* to: National Recreation and Park Association, 3101 Park Center Drive, Alexandria, VA 22302.

The Park Practice Program includes: *Trends*, a quarterly publication on topics of general interest in park and recreation management and programming; *Grist*, a quarterly 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.

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 by the editors.

Articles, suggestions, ideas and comments are invited and should be sent to the Park Practice Program, Division of Cooperative Activities, National Park Service, Washington, D.C. 20240.

### 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.

## Light Bulb Safety Guards

During a recent management evaluation of El Morro National Monument, New Mexico, bare light bulbs were pointed out as a safety hazard. An attempt was made to purchase light bulb guards, but without success. One type of guard was available for purchase, but it would require replacing the entire light fixture.

Maintenance Workers Mike Varela and Willie Chatto put their heads and welding skills together and came up with their own version of light bulb guards. They used discarded grates from refrigerators and ovens for their

materials. They bent the rods to the required dimensions and then welded or brazed them into place. One-quarter inch washers were welded on the base of the guards and used to secure them to the ceiling with metal screws. Black spray paint was then applied to finish the job.

Varela and Chatto estimate a savings of approximately \$8.00 for each guard for not having to replace the existing light fixture. The purchase price for each new guard would be approximately \$15.00.

Both Varela and Chatto were presented with a \$25 National Park Service incentive award for their suggestion.



## Wind Meter for Helicopter Landings

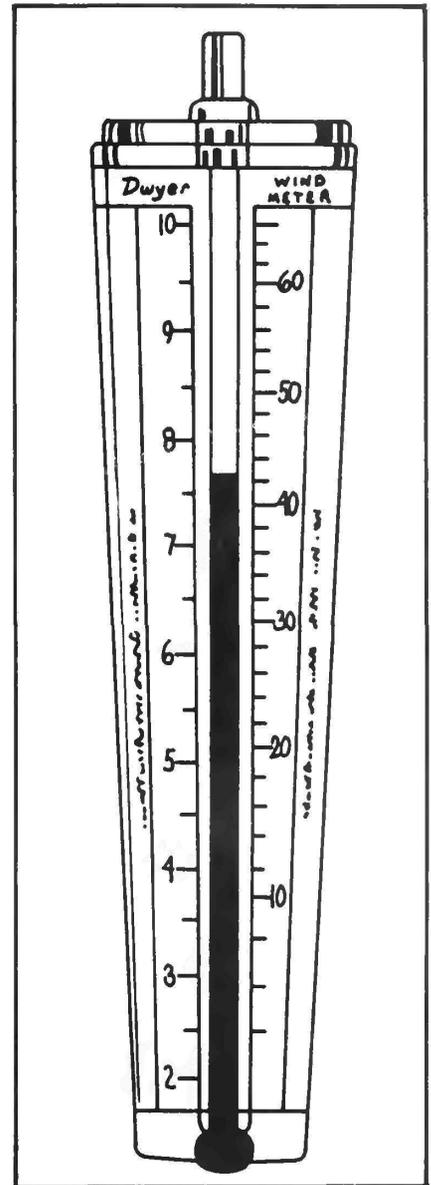
When helicopters land in the Grand Canyon National Park (AZ) the wind direction and velocity are radioed to the pilots by National Park Service and YACC personnel who are sometimes inexperienced in judging true wind conditions. This creates a potentially dangerous situation for the pilot, passengers and ground crew.

Blacksmith/packer David B. Smith suggested equipping back-country camps frequently used for helicopter landings with Dwyer portable hand-held wind

meters. This would eliminate the need for ground crews to have to estimate the wind velocity. These units are inexpensive, compact, durable, easy to use, and would greatly enhance the safety factors for the pilots.

Smith also suggests that additional units be purchased and kept in the rescue cache for use in inner-Canyon search and rescue operations where helicopters are often required to land in hazardous places and under hazardous wind conditions.

Smith received a \$50 National Park Service incentive award for his suggestion.



Wind Meter

## Wheelchair Seatbelts

Visitors to Carlsbad Caverns National Park, New Mexico, occasionally use a "loaner wheelchair" provided by the National Park Service. Since most of the visitors using the wheelchair are familiar with its limitations, there is only a slight possibility for accidents to happen.

However, when park employees would use the wheelchair to transport visitors out of the cavern, the possibility of visitors falling out of the wheelchair existed.

Park Technician Ronald P. Merrill suggested placing a seatbelt on the wheelchair. He suggested a belt with webbing fabric with a small fastening buckle rather than a large one and to be of the same color as the wheelchair. The seat belt would provide security to the person in the chair and could

reduce the possibility of an accident occurring.

Merrill received a \$25 National Park Service incentive award for his suggestion.

## Air Pressure Warning Device

James R. Ervin, Laborer of Carlsbad Caverns National Park, New Mexico, suggested that the dump trucks and vehicles with air brakes in his park be equipped with an audible warning device to alert the drivers to loss of air pressure if the pressure falls below a safe level.

Although these vehicles have a pressure gauge, if the driver is not paying close attention the air pressure could be lost without the driver realizing it. The audible warning device would be an added precaution against the

loss of air pressure and could prevent a serious accident.

Ervin received a \$25 National Park Service incentive award for his suggestion.

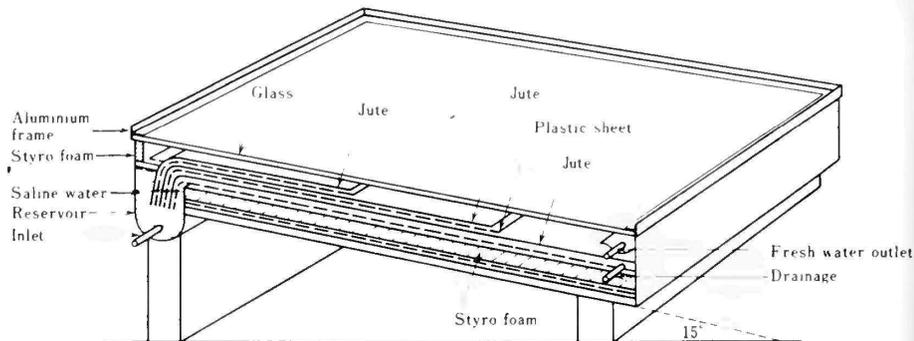
# Energy Conservation

## Drinkable Water with Sun's Help

In regions of the world where there is no regular supply of drinking water, the distillation of locally available brackish-water may be a viable alternative to fresh water supplies carried long distances by truck or pipeline. Such distillation could be done using solar radiation, which is well suited to the task in spite of it being a low grade source of energy. Basic solar distillation equipment also tends to be simple and easily maintained and is therefore usually appropriate to the technological level of areas where it can be most useful.

A solar still of simple design and construction has been developed at the Center for Energy Studies of the Indian Institute of Technology. The following description is adapted from one of a series of reviews specially produced for the UNU Fellows who study or carry out research at the Center.

The multiple wick solar still consists basically of a unit of two aluminum frames enclosing a sheet of glass covering several interspersed layers of jute cloth and plastic sheets. The overlapping layers of jute cloth, dyed black to absorb radiation and separated by sheets of black plastic, have their upper ends dipped in a reservoir of saline water. The capillary action of the jute cloth sucks up the saline water, which then flows down the length of the cloth under gravity to the end of the cloth which is exposed to the sun's rays. These exposed ends provide a continually wetted surface from which the water evaporates.



A constant water level maintained in the reservoir and a trough along the lower wall collects the distillate. A copper tube provides an outlet for excess saline water.

The solar still is light and easily portable. The daily yield is significantly higher than basin type stills and it can be built for about half the cost of conventional stills within the same area. On a typical cold sunny day in Delhi, India, the distillate output was 2.5 litres per  $m^2$  daily corresponding to an efficiency of 34 percent.

Other advantages are that it can be oriented to any angle to receive maximum solar radiation and salt forming on the blackened cloth can be brushed off easily.

*Solar Distillation, 1982, by G.N. Tiwari and M.A.S. Malik, published by Centre of Energy Studies, Indian Institute of Technology, New Delhi, India, for the UNU Fellowship Programme.*

*Reprinted from United Nations University Newsletter, Vol. 7, No. 2, May, 1983.*

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## Solar Collector

The Visitor Center, administrative buildings and residences at El Morro National Monument (NM) are heated by #2 fuel oil. This oil is expensive to purchase and takes a large portion out of the Monument's operating budget.

Budget Clerk Lowell T. Back proposed the purchase of one Hansolar TA-3 Solarcollector to mount on the roof of the Supervisory Ranger's office. Three people occupy this office which is

difficult to heat because it is farthest from the oil furnace.

Since there is abundant year-round sunshine at El Morro, Back felt that the office could be totally heated by this solar unit. These units are simple to install and require little or no maintenance (they only have a blower unit to maintain). Also, the units are particularly suitable for older buildings since very little modification needs to be done to the structures.

Back estimates that a single

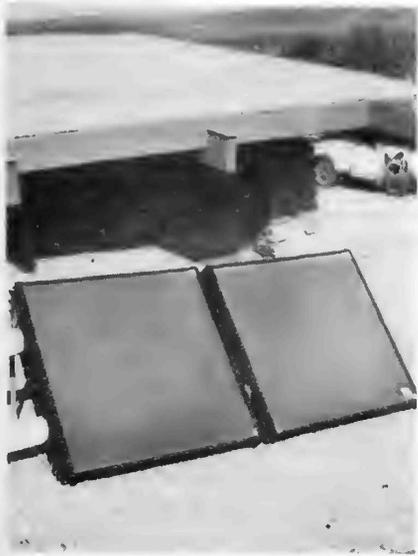
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# Administration

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solar panel unit would save about 70 gallons of oil. At \$1.15-\$1.25 per gallon, a first year's savings would be approximately \$80.50. In approximately 5 years the unit would pay for itself.

A \$100 National Park Service incentive award was presented to Back for his suggestion.



## Mailing Procedures

Since its inception in January 1980, the new San Antonio Missions National Park has followed normal operating procedures of mailing out job vacancy announcements in franked 9½" x 12½" kraft brown envelopes. Normal distribution of a vacancy announcement is made to the local community, Regionwide and/or Servicewide. The average distribution per vacancy announcement is approximately 500 copies.

Personnel Assistant Delia C. Arzola saw a way to reduce the cost to the National Park Service when distributing these announcements. Since each vacancy announcement contains a franked return address and postage fees paid indicia on the last page of the announcement, she suggested folding the announcement in half, stapling it closed and putting a mailing label in the appropriate space on the announcement. This process would eliminate the time-consuming process of reaching for an envelope, opening, stuffing and sealing the envelope.

It would also provide a considerable savings in postage fees for the park by eliminating the weight of the envelopes. Weight of 500 (9½" x 12½") empty envelopes is approximately 20 lbs. versus 2 lbs. for 1 ream (500 sheets) of 8½" x 11" paper.

Further, by using the announcement as a self-mailer, the park would not need to order and store as many envelopes as it had previously, and would provide a more effective, efficient

and timely method of distributing job vacancy announcements.

A \$25 National Park Service incentive award was presented to Arzola for her suggestion.

## Vehicle Checklist

General Services Administration (GSA) vehicles are used at Lassen Volcanic National Park (CA) to transport people and materials. When these vehicles are received by the park staff, the vehicles are often in a less than perfect condition, and some have missing parts or are damaged. There was no method of keeping track of damage or missing parts.

When the vehicle was turned in for sale some two years later, one had to rely upon the memory of someone at GSA or the person who initially picked up the vehicle as to its original condition. Often these key persons could not recall the condition of the vehicle or were no longer employed there. Therefore, the park had to pay for any repairs that GSA deemed necessary to sell the vehicle. This same situation occurred when the park staff received seasonal vehicles in a used condition and returned them in the fall of the year to GSA for redistribution in the local area.

Shop Leader Philip M. Youngblood, formerly with Lassen NP, solved this problem by developing a vehicle checklist to aid in the inspection of vehicles when they are picked up at the Motor Pool. Each person who signs for a vehicle uses this form to inspect and record the

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# Maintenance

## Log/Firewood Splitter

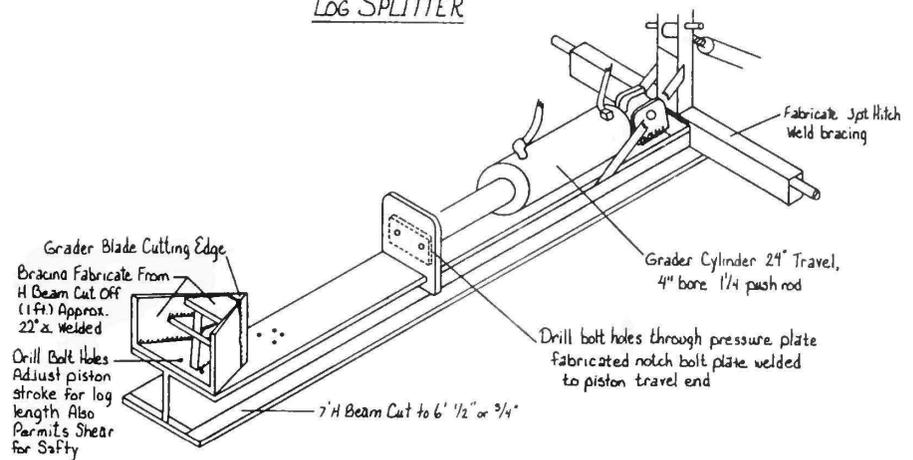
Labor Foreman II Thomas C. Miller of Shawnee State Park (PA) developed this log or firewood splitter. It is constructed from steel and hydraulic cylinder salvaged from various scrapped machinery which can be adapted to function from any maintenance tractor with hydraulic pressure in excess of 1500 PSI.

An 8" x 8" x 7" H beam was donated by a local steel yard that would, if purchased, cost about \$60. A hydraulic cylinder which can have a 4 or 5" bore but should have at least 18" stroke with 1/4" push rod should be able to be obtained from any old scrapped grader or tractor. Hydraulic hoses should be of double steel wall construction to guard against breakage which could cause possible injury to the operator. The cost of hose and fittings is approximately \$116 at a local automotive store.

It took 16 staff-hours for the welding and cutting and the hitch and bracing were done with scrap iron on hand around the park.

In the past, firewood was cut for the superintendent's residence and maintenance building, thus saving the ever-increasing cost of heating oil and electricity. Cutting was done by chain saw, splitting maul and wedges which can be very time-consuming and extremely dangerous. Since the log splitter was constructed by park personnel and many scrap materials were used, the cost is approximately half that of one purchased from a dealer. Commercial splitters vary from \$400 to \$1200.

LOG SPLITTER



## Trailer Anchor

Each year the maintenance staff at Lassen Volcanic National Park in California moved a seasonal trailer into the park to use as housing. The trailer had to be leveled and it would often fall off the jacks which created a hazard for the workers. Also, the possibility existed that the trailer would fall over the bank nearby.

Maintenance Mechanic Michael E. Kain suggested digging a 2-foot hole, placing an anchor in it and pouring it full of cement to hold the anchor securely in place. The trailer would be tied down to the anchor so it would not move when the maintenance staff was blocking it up. Also, it would not shift throughout the summer.

Four such anchors were put in place to hold the trailer and the safety hazard has been eliminated. Also, the time involved in setting up the trailer has significantly decreased.

Kain received a \$25 National Park Service incentive award for his suggestion.

## Temporary Trash Storage

Trash pick-up in the off-season months of September through March in the Virginia district of Assateague Island National Seashore requires two trips to the dump at Wallops Island per week. Although there is not a lot of trash collected on these trips, if left in bags on a truck to accumulate, the seagulls and rats will tear open the bags and scatter the trash, creating an unsanitary and unsightly mess. It is also a waste of time and fuel.

To improve the situation George R. Turlington, Heavy Equipment Operator, suggested building an inexpensive wooden box to store trash until a sizeable load is accumulated. Then using a forklift, he would put the box on the stake dump truck and haul it to the dump in one trip. This method considerably reduced the amount of fuel used, and wear and tear on the vehicles.

The box should be built on skids and should measure 7' wide, 8' deep and 4' high. It should have a covered top and doors on the front to allow for quick dumping. It should be built out of wood to avoid the problem of rusting that conventional dumpsters incur. The whole unit can be built by 2 persons in about 2 hours and costs approx-

imately \$80 for materials. It would pay for itself the first month and generate a savings thereafter.

Turlington was presented a \$100 National Park Service incentive award for his suggestion.



## Boundary Signs

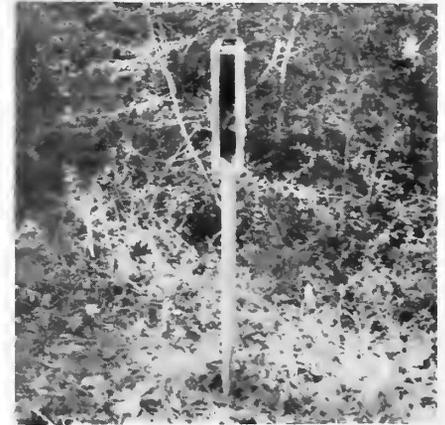
In locations where public roads enter Big Thicket National Preserve lands in Texas, there was nothing to indicate where the National Park Service boundary crosses the road. This creates problems for the visitor as well as patrol rangers, particularly at night. Park Ranger Alfred De La Cruz felt a sign placed next to the road would be highly visible and would indicate what unit of the Preserve a visitor is in.

De La Cruz suggested placing signs on the boundary where it crosses a road. The signs would be two-sided with one side reading: entering (name of unit), Big Thicket National Preserve and the other side reading Leaving (name of unit), Big Thicket National Preserve. The signs could be made by the existing sign machine at Big Thicket using vinyl coated sheets that were already in stock. The sign could be stapled to a piece of plywood which would be bolted to an angle iron frame. This would

then be mounted on 2" steel pipe. The signs would stand 60" from ground level to the top which is approximately eye level on a standard size pickup.

De La Cruz pointed out that the signs could possibly be subject to vandalism such as being shot at, but they could be easily replaced by restapling another sign on.

A \$150 National Park Service incentive award was presented to De La Cruz for his suggestion.



## Protecting Traffic Counters

Field Traffic Counters (Vehicle or Pedestrian) are normally installed by hiding the counter housing behind a tree or bush and/or by anchoring the housing to a stake driven into the ground, or to a fence post, or even by chaining to a tree, etc. These methods generally leave the counter housing open to vandalism and/or theft.

Visitor Protection and Services Technician Ken Mabery at Chaco Culture National Historical Park (NM) recently constructed this handy subterranean protection box.

1. Dig out a hole in the ground the desired size for pouring concrete.
2. Construct a frame that will have interior dimensions of a box that is at least twice the size of the traffic counter housing (larger if desired).
3. The top of the box that will hold the counter and at least the rim of this box should be constructed of steel to prevent vandalism. The lid should have a hasp for a padlock.
4. Place a large piece of flagstone or cinder blocks in the earthen hole at the desired depth for the floor of the box.
5. Place the box frame in the



hole (lid already attached to the rim).

6. Place a piece of PVC or metal pipe through a hole in the frame and angled up to the surface. Interior pipe diameter should be slightly larger than the rubber tubing or electrical wires.

7. Pour concrete in the earthen hole, around the frame. The grade of the concrete should be slightly higher than the surrounding terrain in order to keep sand and dirt from sifting in.

Coloring in the concrete will help it blend in with the terrain. Use steel that will rust, thus blending more than stainless steel. This box can also be used for extra battery storage, additional rubber hose storage, and



tools, depending on how much larger than the counter housing the box is made.

In 1979, three counters were lost due to theft, and approximately 15 incidents of vandalism to these counters were experienced. Costs of repairs and/or replacement in one year totaled approximately \$600. However, since Mabery designed and installed these subterranean boxes, there has been no loss. Also, the need for routine maintenance has decreased since all the mechanical parts of the counter are out of the weather. Trips back to headquarters for maintenance supplies have been eliminated with on-site storage.

Mabery received a letter of commendation for his suggestion.

## Attachment for Cleaning Leaves from Ditches

Each year, beginning in early Spring, the maintenance staff at Shenandoah National Park (VA) has to pick up leaves from ditches along the park drive which is nearly 32 miles long in the North district. This was accomplished by using two dump trucks and drivers plus two additional persons working in the ditch with each truck using pitch forks to remove the leaves by hand and put them in the trucks. They also had to clean out inlets



and culvert pipes. This long process took approximately 6 weeks for 6-7 workers.

Engineering Equipment Operator (Leader) Jerry L. Henry and Motor Vehicle Operator Terry P. Bell greatly improved upon this process by developing a simple attachment that was installed on a Ford loader, which is also equipped with a four-way bucket. Their attachment is the same width as a normal ditch line. They have a section of 2½" pipe which fits over the bucket's cutting edge that allows the bucket to slide over the grass along the shoulder without disturbing the grass.

Continued on page 10.

The attachment fits both sides of the bucket. The loader is used in the ditch to push the leaves from one inlet to another. After many piles of leaves are made, they drop off the attachment and start picking up the leaves. There is very little hand work to be done. The ditches are graded and the mowers can mow the shoulders and slopes much easier.

By using Henry's and Bell's at-

tachment, the park realized a savings of 500 staff-hours. At a cost of \$8.574 per hour, the savings total \$4,287.00 for one district (there are 3 districts in the park).

The attachment also shaped the ditch which saves time and money by the staff not having to grade the ditches with the grader. It also protects the sod on the road shoulder and saves on the cost of hydroseeding.

Henry and Bell each received a \$200 National Park Service incentive award for their suggestion.



## Removing Graffiti

Park Ranger Jeffrey Lynn, with the National Park Service's Coulee Dam National Recreation Area (WA) patrols approximately 80 miles of water on the Franklin Delano Roosevelt Lake in eastern Washington state.

One of the many problems he encountered while on boat patrol deals with graffiti. Much of the lake has sandstone and/or clay cliffs bordering the water. Visitors to the recreation area continually carve their names or "phrases" into the cliffs with branches, driftwood or rock, thus creating an unsightly appearance to this area. Where there were only a few words or names Lynn raked off the graffiti, smoothing the rake tracks with the flat side of the rake.

In areas where there was a lot of writing, a rake would take too long. Also, some of the writing was so high up on the cliff that Lynn could not reach it with a rake.

Lynn requested the aid of the District's Fire Control Officer, Ranger Walter Yewdall and Biologist, Ranger Tim Finger. Together they took the District's skid-mounted, portable fire pump by boat to the affected areas. They ran the pump from the boat and put a man on the hose on shore. Since the pump has an adjustable pressure regulator, they were able to use a

low setting to remove the graffiti embedded in the sandstone and they increased the pressure for those words embedded in clay.

Lynn's idea worked beautifully. The pump took the graffiti off the

cliff walls and left them natural-looking. Compared to the rake, the pump worked faster, more effectively and resulted in a more natural look to the walls.



Before



During



After

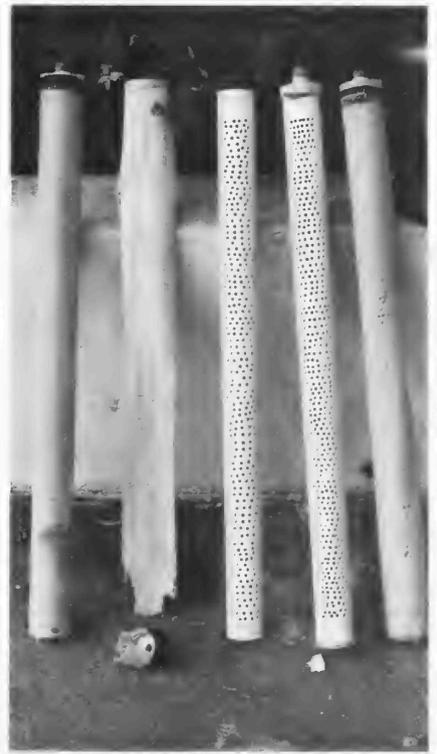
# NSPR "Best of Grist" Awards

The 1983 National Society of Park Resources' (NSPR) Best of Grist Awards were announced at the NSPR banquet held in October 1983 at the annual NRPA Congress in Kansas City, Missouri. These certificate and cash awards are presented each year to recognize the most outstanding contributions to GRIST. The award-winning contributions were selected by the NSPR Park Practice Committee headed by Jeff Bourne with the Howard County Department of Recreation and Parks in Ellicott City, Maryland. The contributions were taken from GRIST issues covering the period July 1982 through June 1983.

Everyone throughout the park and recreation community is encouraged to share his or her innovative developments and adaptations with GRIST subscribers and readers. You just may have an award-winning idea!

**First Place Award (\$200)**  
 "Filter Tubes for Swimming Pools"  
 by Gregory L. Roth and Dean Corl

Parks Supervisor Roth and Crew Foreman Corl of the Centre Region (PA) Parks and Recreation Department developed and built their own fiberglass mesh filter tubes for one of their municipal pools to replace old tubes that had collapsed in the diatomaceous earth filter. Their new tubes were made of 2" schedule 40 plastic pipe. Approximately 1,000 holes were drilled into a length of 35" pipe. Then the ends from old tubes were glued on with epoxy and the old filter tube covers put on. These tubes provided a considerable savings to the department. This article appeared in the Jan/Feb 1983 issue of GRIST.

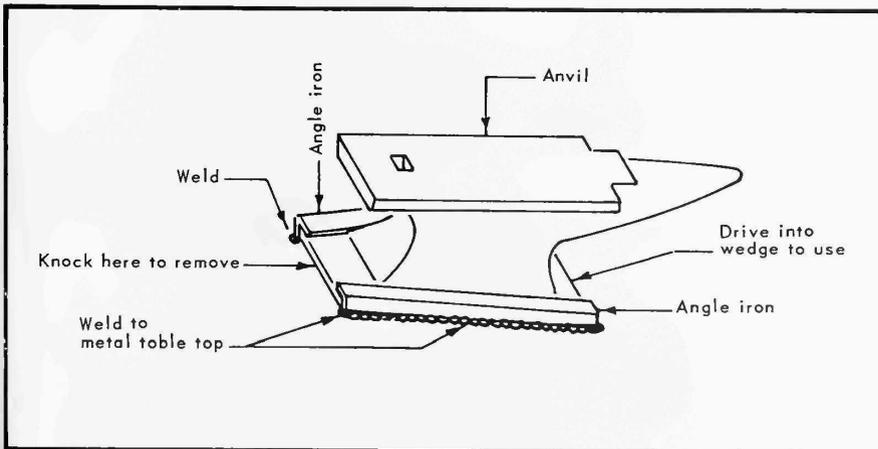


## Second Place Award (\$125)

"Removable Anvil Mount"  
 by Dale Miley

Maintenance Worker Miley at George Rogers Clark National Historical Park (IN) devised a removable anvil mount by forming a dovetail-like mount welded to a table top and form-fitting a piece of angle iron to the curved base at each of the long sides of the anvil. The angle iron strips were welded to a corner area of the table top.

Miley's device provides a firm and secure mounting for a 100-lb anvil so that the anvil cannot fall from the table and cause serious foot injury or floor damage. Miley's contribution appeared in the Jul/Aug 1982 issue of GRIST.



### Third Place Award (\$75)

"Better Turf Management  
Through Reduction of Cost for  
Sod"

by David Frioud

David Frioud, Division Director of Parks with the City of Dunedin, Florida, shared an experiment with GRIST subscribers and readers which resulted in considerable monetary savings and improved aesthetics of Dunedin's park areas. The grounds maintenance staff at Dunedin restored the turf at their athletic sports complexes by taking native Bermuda sod and placing it in sparse areas of their ball fields. They laid over 90,000 square feet of sod at various athletic fields which provided excellent field conditions. This Bermuda sod (genus - *Cynodon*, species - *Dactylon*) flourishes very well in Florida. It is apparently resistant to mole crickets, sod webworms, funguses and diseases. Also, it seeds throughout the months of May through September and each stalk has hundreds of seeds so the propagation characteristic is ideal.

As part of their regular maintenance process, they also have sludge trucks from the pollution control plant dump liquid sludge on the ball fields. Since the sod experiments proved so successful, they have established a sludge application schedule for all their athletic fields. The results from the sludging of the fields were outstanding.

Frioud's article also appeared in the Jul/Aug 1982 issue of GRIST.

