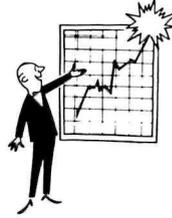


JANUARY 1968

NUMBER 1

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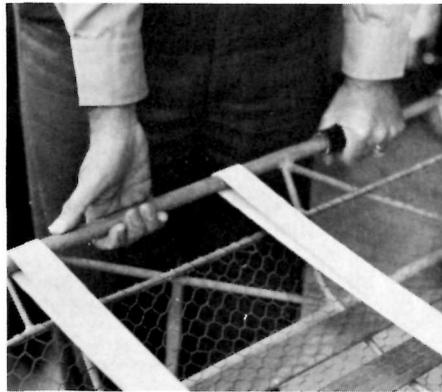
## MORE COMFORTABLE LITTER HAND-HOLD (NPS W 66-109)

The 3/4-inch diameter frame of the Stokes litter provides a poor hand-hold for most people when carrying a heavy load for some distance, and unfortunately, many situations where the litter is used require its being carried a considerable distance. Hands and fingers cramp, and it is often necessary to put the litter down to give the hands a rest, even when such aids as shoulder straps are used, as the hands continue to support a good part of the weight to keep the litter from bouncing as the bearers walk.

Theodore L. Picco, Supervisory Park Ranger, Hawaii Volcanoes National Park, suggests that by adding a 1 1/4-inch or 1 1/2-inch rubber grip, it is possible to support the weight for a longer period of time without hand cramping.

Installation of such grips is simple and

costs little or nothing. This is Ted's method. Cut a piece of old 3/4-inch (inside diameter) high pressure hose into approximately 6-inch lengths, then cut each piece lengthwise on a spiral. Coat the inside of the hose and the frame area it is to cover with rubber cement, then "screw" the hose onto the metal frame and wrap it with

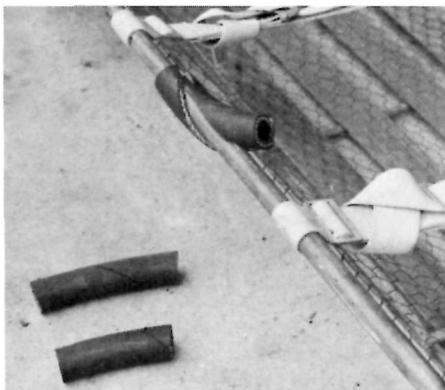


dalism — a concrete water meter box used as a housing for the counter.

Lynn used a Fraser No. 3 water meter box manufactured by the Fraser Cement Products Company, 741 West Katella Ave., Orange, California. He bought his from Standard Wholesale Supply Company, 855 West Bonanza Road, Las Vegas, Nevada for \$4.25 each.

Cut a length of reinforcing rod and fit it completely around the box, then weld eyes to form a hinge and hasp for locking. (See photos) Place the box in the ground with the top flush with the surface. The traffic counter hose extends through the open bottom of the box, then to the surface. In a wet area the bottom of the box can be water-proofed if necessary.

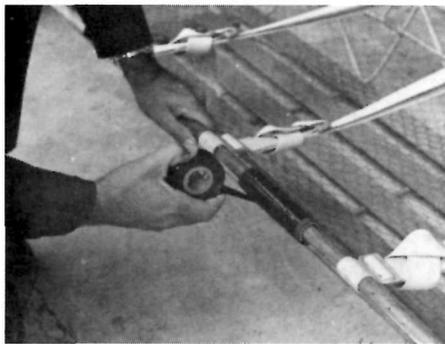
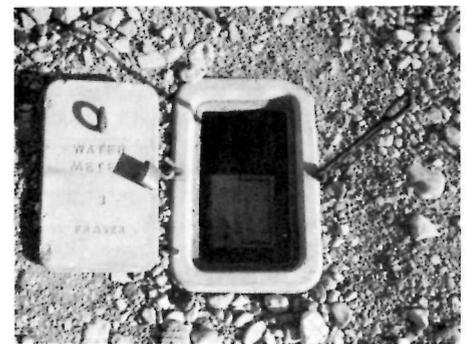
The box shown in the photographs has been in use for five months with no damage from vandalism. Previously, three exposed traffic counters at this location, valued at \$50 each, were completely destroyed by vandals.



friction tape. (Plastic tape is shown in the photographs, but Ted recommends cloth friction tape. It provides a much more anti-slip surface than plastic electrician's tape.)

## PROTECTION FOR TRAFFIC COUNTERS (NPS SW 66-55)

An average of five traffic counters had to be replaced each year at Lake Mead National Recreation Area and repairs had to be made on others to restore them to working order all because of vandalism. Assistant District Ranger Lynn R. Williamson found a way to reduce the van-



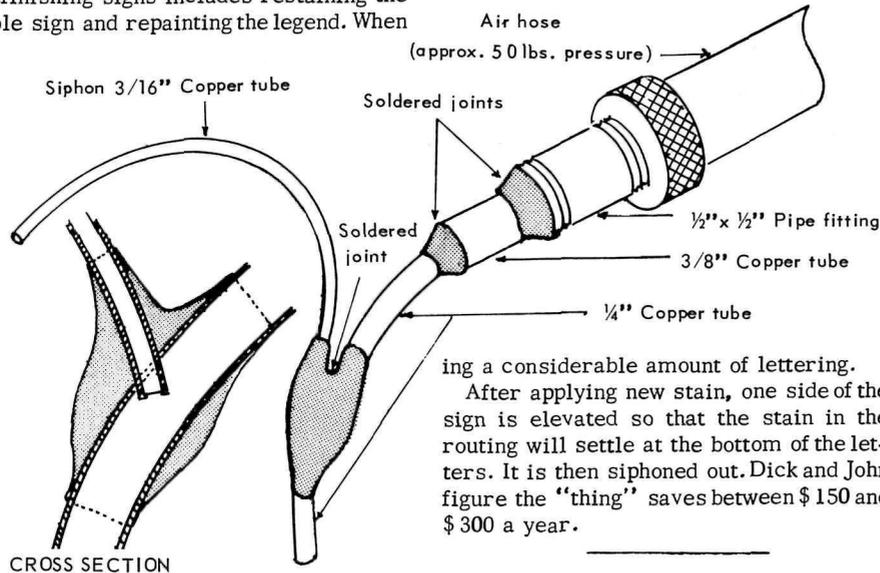
**SIPHON SIMPLIFIES SIGN REFINISHING**  
(NPS SER 66-83)

Refinishing signs includes restraining the whole sign and repainting the legend. When

removal process time to fifteen or twenty minutes, as compared with two hours by the old method, on some of the signs hav-

ing a considerable amount of lettering. After applying new stain, one side of the sign is elevated so that the stain in the routing will settle at the bottom of the letters. It is then siphoned out. Dick and John figure the "thing" saves between \$ 150 and \$ 300 a year.

out becoming a part of it. By using the standard cocoa brown of the arrowhead and white lettering, the added piece appears to be an integral part of the sign. Superintendent John F. Rohn, Jr., Homestead National Monument, is the designer. The material used was regular 2-inch sign stock (in this case, the back of an old sign). It took about an hour to rout the letters and another two hours to cut the material to dimensions, sand, and paint. The letters are 1 1/4" high, 5/8" wide, 3/16" stroke, and the numbers are 2" high, 1 1/8" wide, 7/16" stroke. The sketch provides specifications for making the sign which was designed for use over the standard small arrowhead emblem.



applying the new stain, some of it accumulates in the routed legend, and the old paint prevents it from soaking into the wood. This accumulation has to be removed before the legend is repainted, otherwise it would prevent the paint from adhering properly. Richard E. Batman, Signmaker, and John V. Meehan, Signmaker Helper, Shenandoah National Park, used to remove it by hand, and it took a lot of time.

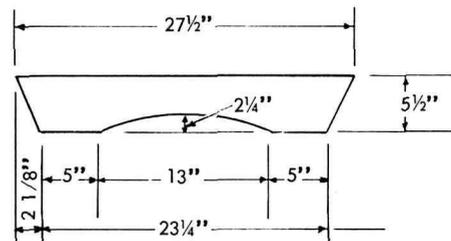
Between them they devised a siphon and vacuum "thing" (see sketch) which cuts the

ing a considerable amount of lettering. After applying new stain, one side of the sign is elevated so that the stain in the routing will settle at the bottom of the letters. It is then siphoned out. Dick and John figure the "thing" saves between \$ 150 and \$ 300 a year.

**COMPANION SIGN FOR NPS ARROWHEAD EMBLEM**  
(NPS M 66-56)

Although the sign above the National Park Service arrowhead emblem in the photograph was designed especially for the 50th anniversary of NPS, it can be used equally well for local identification or for the celebration of local events or anniversaries.

It is simple, inexpensive, easily made, and can be hung above the arrowhead with-



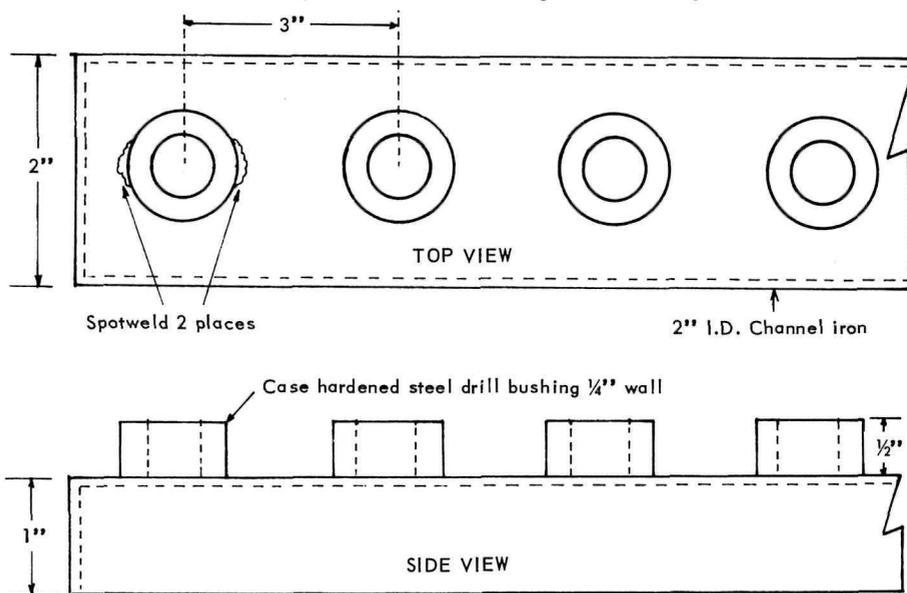
**DOWEL LOCATING DRILL BAR**  
(NPS-MW 67-161)

Cecil L. Murphy, Signmaker at Glacier National Park, has suggested the use of the dowel locating drill bar to save signmaking time and improve work quality. All sign lumber is warped (curved) when received, but regardless of the extent of the curve, the drill bar straightens the material and locates the dowel holes directly in the center of the board. Little sanding is required to provide a smooth sign face.

Since the drill bar is self-locating, the need for measurements is eliminated. Once the dowels are inserted and the sign firmly clamped, it is ready for sanding and finishing. (The old method of grooving and splining required the sign to be left overnight in clamps for the adhesive to set firmly.) Use of the drill bar reduces assembly time by 40 percent and improves quality and durability.

The drill bar currently in use at Glacier National Park is for 2-inch sign lumber only, but the design can be adapted to any desired thickness of material.

Dowel Locating Drill Bar for Assembling Multi-board Signs



Use 3/8" dia. dowel and 11/32 twist drill

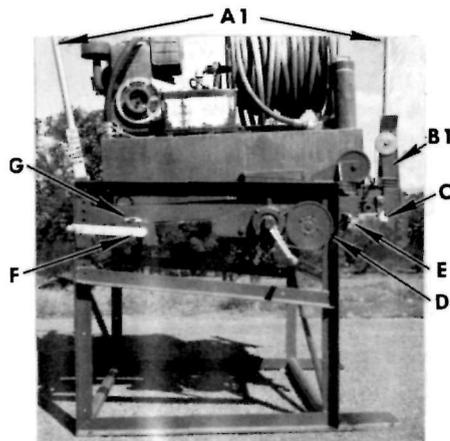
Leaving one end of drill bar uncapped allows drilling of board twice the length of bar. Recommend one drill bar each of 36" and 72" lengths for maximum convenience on various length signs.

Note; This bar is for use with 2" material, the design is adaptable to any thickness.

**ADJUSTABLE FIREFIGHTER LOADER & STORAGE STAND (NPS-SW 67-53)**

Charles E. Blundell, Maintenance man at Great Sand Dunes National Monument has pointed out that the business of getting a fully loaded tanker on the road in the least possible time is a problem that has bothered firemen for many years. In the parks, where travel is often difficult, the get-away time is of special importance.

One solution to the problem has been to have a special vehicle on constant stand-by for an emergency, just as cities have fire trucks loaded and waiting in municipal fire stations. While this is a practical and



economical solution in towns, park operators usually find that this ties up a great deal of money in seldom-used, though vital, equipment. It also means great expense in vehicle maintenance, since nothing wears out as fast as idle machinery.

Another answer has been the development of the slip-on pumper unit, which may be mounted on a vehicle, typically a pickup truck, in case of fire. This permits the truck to be assigned to other routine jobs. This method is more economical, though much less efficient, than the stand-by fire truck, because the slip-on unit must be stored empty to reduce the weight in loading the unit. Considerable time must be devoted to filling the tank, once the machine is in place on the pickup.

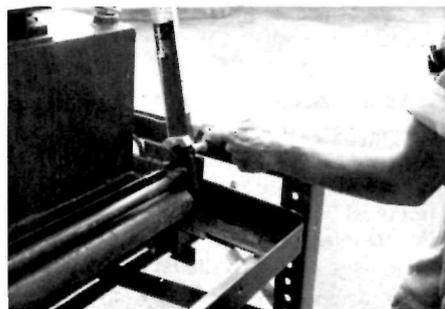
The job of mounting the slip-on unit usually requires four men and takes approximately fifteen minutes to one-half hour or more for completion, plus the extra time it takes to fill the tanks. A safety factor is involved, too, since many of the storage racks suspend the unit in the air. If this method is used, the unit may swing or fall, injuring the operator and others. Methods which require loading of the firefighter "by main strength and awkwardness," involve much effort and strain, which again can injure the hurried fireman and helpers.

It appears that the ideal setup would be one which would allow storage of a fully water-loaded slip-on unit on a stable stand which could be loaded by one man on a truck

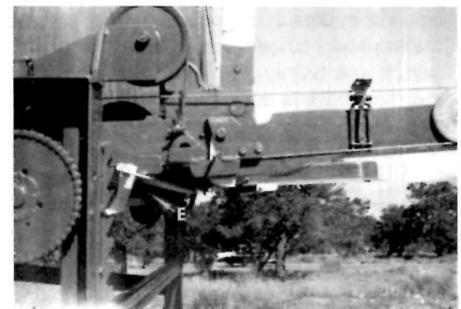
bed of any level. Loading time of one minute or less would be highly desirable.

Charles has designed an adjustable firefighter loader and storage stand, which in several demonstrations has taken only 50 seconds to load. He first constructed a basic frame of angle iron and attached it to the bottom of the slip-on firefighter. On each end of the frame, he attached a roller made of 2" I.D. pipe, mounted with eccentric hinges with a lever in order that the unit be easily lifted or lowered. The storage stand, also of angle-iron, is built with tracks where the rollers run when loading and unloading. The rear of the tracks adjusts to various heights by means of pins and holes, and the front adjusts similarly by means of a winch. These adjustments permit loading of any

truck. The pull needed in loading and unloading is exerted by a double-drum winch, giving the operator complete control over the movement of the load. After the unit is in position in the truck bed, operation of two simple levers on the same side of the base drop the slip-on to rest on non-skid tapes to assure stability when the truck is in motion. No bolting, shimmying, or bracing is necessary. All this is done with a fully loaded 75-gallon tank and a full set of tools — a load of about 1,600 pounds. The equipment has been inspected and approved for safety, and has served other purposes, such as watering trees and washing parking areas. The cost of the loader storage stand was approximately \$250. The savings in time getting the firefighter in use could very well mean thousands of dollars saved.



A2



B2

(A1) Levers which raise and lower rollers. (A2) Rear roller assembly with lever which locks rollers down and up the same as the front assembly. (B1) Track extensions. (B2) Track extensions lock down. (C) Track extension lock. (D) Track front adjusting winch. (E) Track elevation catch (see picture B2). (F) Loading and unloading double winch assembly. (G) Loading and unloading double winch assembly safety catch.

**EASY FERTILIZATION METHOD (NPS-SW 67-80)**

Fertilizing the campground and picnic shrubbery in the park areas cannot only be facilitated, but the same job that used to take weeks now can be done in a few days. Applying the dry fertilizers is a slow job, taking much time that a caretaker could use to greater advantage elsewhere.

By taking a 55-gallon drum, inserting a spigot in the side, and connecting it to an extension hose, Vance Pederson, Laborer, and Harold L. Scoble, Maintenance man at Lake Mead, have come up with a fast, economical way to apply the fertilizer. The drum is placed in the back of the pickup and then filled with water and the dry fertilizer, eliminating the need to lift the loaded drum. By driving around the area, a man can usually reach most of the shrubbery from the roadway.

At a given campground in the Boulder Beach area, it has been determined by actual test that complete fertilization using the old method would require 80 manhours to perform. By using the liquid method the same job can be accomplished in 20

manhours, or a saving of 60 manhours in one campground of 190 sites. Other benefits include: 1) immediate absorption into soil surrounding each particular plant, 2) better distribution of chemicals throughout the area from trunk to drip line of plant



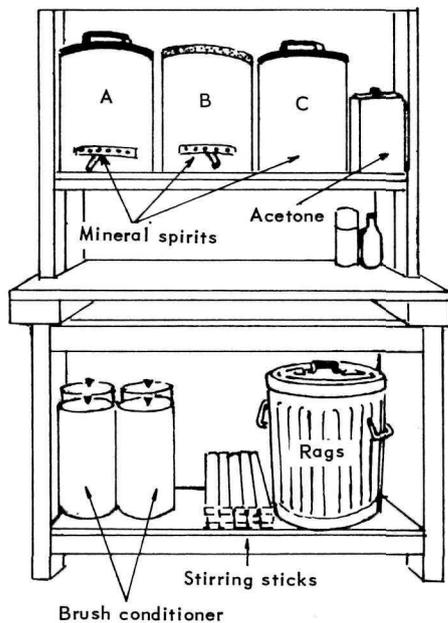
(no intense concentration of chemicals in lumps or spots), 3) no fertilizer "wash-out" from subsequent irrigation, and 4) easy method of spot treatment for particular plants requiring a booster.

**PAINT BRUSH CLEANING CENTER**  
(NPS SER 66-169)

As in any park area where paint brushes are used, Christiansted National Historic Site has the problem of keeping their brushes in good condition. Most employees don't want to take the time to clean a paint brush properly.

Richard M. Ward, Management Assistant at Christiansted, has come up with the idea of a "paint brush cleaning center," where all the necessary materials are made readily available in a handy working area.

Basically, the "cleaning center" is a bench with a working surface at a handy height with a supply of mineral spirits. The relatively low flammability of mineral spirits makes it a more desirable cleaning substance. There are three containers which are five-gallon cans with the top cut out and with a small faucet valve placed about two inches above the bottom.



Place about one gallon of spirits in can "A," which should have a solid cover. Can "B" should have a hardware cloth cone shaped cover. Can "C" is kept full of fresh mineral spirits with a solid cover.

To clean a paint brush, run a small amount of spirits into a small can from can "A" and partly clean the brush. Empty the dirty spirits into can "B" and repeat until the brush is almost clean. Then use the fresh spirits from can "C" for the final cleaning.

When can "A" is empty switch covers with can "B" and use the spirits in the reverse direction i.e. can "B" to can "A." The dirty spirits that were emptied into can "B" have now settled and will be almost clear. In this way much of the spirits can be used over and over with only a small amount of fresh spirits used for each brush. Over a period of time,

both can "A" and "B" will become full — just empty and clean the sludge from the bottom and you are ready to start over again.

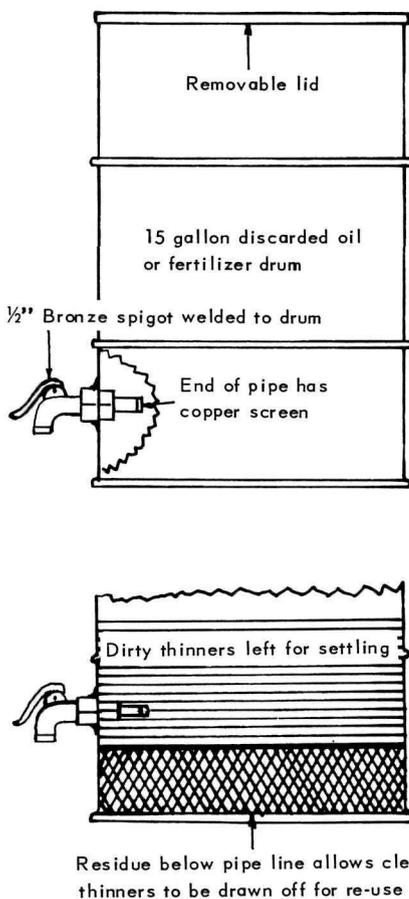
The bench is also used to store paint stirring sticks, rags in metal cans, and other painting supplies. Each employee has a set of brushes with his name engraved with a vibrator tool, a brush conditioner, and storage container. This is another step to encourage taking better care of their paint brushes and in the end saving money.

Dick says that the cleaning center has reduced the time needed to clean a brush as well as providing a savings on mineral spirits and brushes.

**PAINT THINNER RECLAIM BARREL**  
(NPS W 66-54)

As a measure to cut the ever-present budget, E. W. Hilbert, painter, Death Valley National Monument, devised an easy method for reclaiming paint thinner (mineral spirits) that has been used for cleaning brushes.

He used a 15-gal. discarded oil or fertilizer drum. Near the bottom of it (see sketch) weld in a 1/2" bronze spigot, the inner end of which is covered with copper screen. Put used thinner into the drum and allow time for it to settle. Clear, clean thinner can then be drawn off.

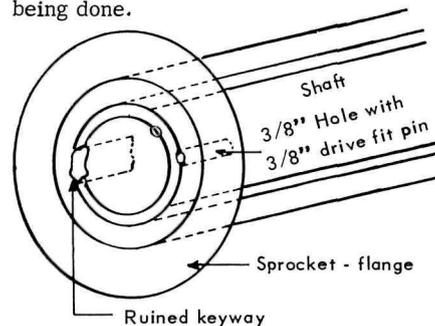


The residue can also be reused. It is basically paint pigment, and although it has deteriorated in strength somewhat, it is satisfactory for use as a primer coat on raw wood, such as fences, signboards, and the like. If it is not to be used, it should be removed frequently enough to keep it below the level of the spigot.

**EMERGENCY REPAIR ON SHAFT AND SPROCKET ASSEMBLY**  
(NPS M 66-84)

Occasionally a key way is ruined between a shaft and the gear or pulley. When this occurs it is possible to rekey the pulley and shaft at the same time. This is the way Orville G. Romans, Mechanic, Grand Teton National Park, does it.

Drill exactly into the space between the two metal parts (see sketch) so that half the hole is in the shaft and half is in the pulley or gear. Using a pin or rod slightly larger than the drilled hole so that a drive fit can be attained, repin the two parts securely. If additional holding power is desirable, two or three spaced holes can be drilled and fitted with drive fit pins. Judgment must be used in the size of hole to be drilled depending upon the size of the shaft and gear or pulley upon which the work is being done.



Shafts and gears that are keyed are engineered to take a certain size key to minimize weakening of the part. The suggested rekeying should be considered an emergency measure, although it has proved to be a satisfactory long term repair in most cases. It should be said, however, that this type of repair could add strain to other parts of a machine. There is also some danger of imbalance on fast revolving shafts, and the possibility of variations in judgment of inexperienced persons concerning the sizes of the redrilled keyway and the substituted key, which if not correct might be detrimental. Also manufacturers stipulate that modifying design or altering equipment automatically voids any warranty covering materials, workmanship, or performance.

The procedure is not recommended as general practice, except where the shaft and sprocket are worn beyond normal repair, or where the down-time of a machine is likely to cost more than eventual replacement of the parts affected by the emergency repair.

**BIT-SHARPENING DEVICE**  
(NPS-SW 67-48)

One day while Silas D. Hatfield, Heavy Duty Mechanic at Petrified Forest National Park, was sharpening dull and broken drill bits on the shop grinder, he decided that there was a definite need for some kind of device to hold the bits at the proper angle. After looking at the prices of commercial bit grinding devices, he discounted them because of the high price (\$20 - \$30) and, more important, because of the time required to set up the device for each grinding operation.



Silas came up with the idea of using the resting plate on the grindstone for a bit-holding device. He ground a groove in the plate 5/16" wide at an angle of 59° to the stone, the 59° angle being on the left side in order to get the proper sharpening action. Now he can sharpen a dull or broken bit quickly and properly, with no added expense or waste of time.

**PARK SHOP-BUILT PILE DRIVER**  
(NPS SER 66-118)

The dock at Fort Jefferson National Monument needed new pilings and timbers, but the Fort is extremely isolated, and therefore, the cost of having a contractor to do the repair work would have been prohibitive. Four park employees working on the job were able to install only one new piling in a day. Obviously something had to be done, and Maintenance man Delbert Galloway did it.

In the photograph you see the pile driver which Del designed and built, using materials on hand at the Fort. On a flat bed utility trailer, he mounted a small diesel motor and attached a windlass to it. Two rails to guide the driver and a frame to support the rails were constructed of 2-inch pipe.

The driver was made from a 5-gallon bucket reinforced with iron and filled with lead. A rope was attached to a hood on the bucket, then to a block at the top of the rails and then to the windlass. (See photo). As the motor turns the windlass, the rope is wound around the windlass until the driver is hoisted 2 to 3 feet above

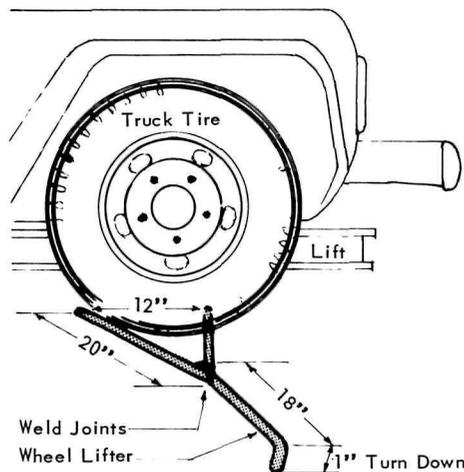
the piling at which time the rope is released, allowing the driver to fall on the piling.



Now, using this pile driver, 2 men can install 4 pilings in a day. Del figures that taking into consideration the 40 or so hours required to build the pile driver, it has saved 548 man hours.

**TIRE MOUNTING TOOL**  
(NPS MW 67-110)

The tire mounting tool shown in the sketch was designed by Mechanic Orville G. Romans and used with good results at Grand Teton National Park.



The tool is placed on the floor, about the center of the axle on which the tire is to be mounted. The tire is rolled up onto the V-shaped lifting bar, the tire tool is grasped at the turned-down end, and then with little effort the tire can be lifted to the proper height and slipped on to the mounting lugs. Using this tool, one man can change a large size tire. Before, it required the service of two workers in what was an awkward and difficult operation with a definite risk of back injury. The tool makes it much easier for one man to mount a smaller tire, too.

**INEXPENSIVE, TEMPORARY CATTLEGUARD**  
(NPS-SW 67-67)

It seems that often parks survive their tight budgets because of a good source of surplus "junk" and a little bit of creative genius that is forced on their personnel by the necessity of having to make do with what is on hand.

The need for an "instant" and "costless" cattleguard on a secondary or back road led Park Ranger Bob Crisman, now of Fort Davis National Historic Site, to the discovery of a way to assemble an inexpensive cattleguard in a very short time. While it may not be suitable as a permanent installation on a main road, it works well on the narrow back country patrol roads or service roads which have drift or boundary fence crossings. This type cattleguard can be assembled and put into service during hunting season to avoid losing a lot of time opening and closing gates during daily patrols. It can be removed at the end of the hunting season and stored beside the gate or fence or left in place as a more or less permanent installation.



The cattleguard is made from three or four rows of old tires laid down the width of the road or fence opening, with the treads bolted together from inside the casing. If there is a source for old junk tires, the only cost is for a handful of 3/8" bolts and washers to fasten them together. If the terrain is such or trips across the cattleguard are frequent enough to cause it to "creep" out of place, it can be staked down easily, or secured to the adjoining fence posts. Laying flat with a thin layer of dust and dirt covering them, the tires are not as distracting as it might seem, and, of course, they are harmless to drive over.

The "Old Tire" cattleguard has been tested on one ranch in the Davis Mountain area and has proven very successful. In fact, experience on this ranch has shown that it works much better than the cinder block cattleguard reported in a previous issue of GRIST, as cattle on this ranch have learned to walk across the cinder block cattleguards, but as yet have not crossed the "tire" cattleguard.

**REAR-END TRACTOR BOOM EASES WORK AND INCREASES PRODUCTION (NPS SER 66-127)**

Paul W. Leonard, Laborer, Manassas National Battlefield Park, designed the rear-end tractor boom shown in the photographs. It was constructed for about \$30 from a 7-foot piece of 4-inch pipe and a simple "A" brace of 5/8 x 2 1/2-inch flat iron. At the point where the boom hooks to the tractor, 3/8-inch pieces of flat iron were welded together and to the pipe, to provide a firm hook-up. The over-all height of the "A" brace is 22 inches. The width at the draw bar is 22 inches with 18-inch hole centers. The "A" was reinforced with a 1-inch pipe and 1 piece of 5/8-inch steel at the top. The pin joint from the pipe to the "A" is on the outside of the brace proper. In use, it was quickly learned that a lower mount was needed, so a small point hook-up (8 inches high) was constructed from flat iron and bolted directly to the draw bar. An extra hook-up point needs to be put on the pipe for this.

The load capacity is limited by the hydraulic system and light front end of the tractor. Models sold by machinery manufacturers cost about twice as much as Paul's, are not as sturdy, and the amount



of weight they can lift is influenced by the same factors.

To prevent slippage of chains, which are wrapped or slung over the pipe and around the object being lifted, small 45 degree angles of steel were welded on the end and then every 5 inches along the top of the pipe.

The boom's "A" brace is mounted to the tractor's draw bar by three 5/8-inch bolts and fits any of the three tractors in use at Manassas. Mounting and dismantling the boom is simple and can be done by one person in a few minutes.

By using the three-point hitch and the tractor's hydraulic system, this device has proven to be very useful on such projects as: pulling fence posts, handling heavy machinery, loading slabs of concrete, moving and mounting cannon tubes

up to the 12-pounder size, dragging brush and logs out of the woods, and most any job where moderate weight needs to be elevated and/or loaded.

Besides saving innumerable man hours of work, the device has prevented possible strains and ruptures. Mounting a cannon tube now takes 2 men about 15 minutes, whereas without the boom it took 2 men 2 hours. Three or 4 dump truck loads of concrete slabs can now be hauled in a day, whereas only one could be hauled before Paul's boom was available because the slabs had to be broken into small enough pieces to be handled by hand.

**MAGNETIC STRIP SIGNS FOR PARK VEHICLES (NPS SW 66-72)**

Chief Park Ranger Robert C. Morris, of Bryce Canyon National Park, suggests the use of magnetic strip signs on park vehicles instead of painted lettering.

Bob had in mind the value of this type of vehicle identification in areas using GSA or other rental vehicles. The signs are relatively expensive, but they may be removed easily and changed from one vehicle to another. In the long run, he says, painting letters on new vehicles and removing them (with the resultant damage to body paint) will cost more than the magnetic strip signs.



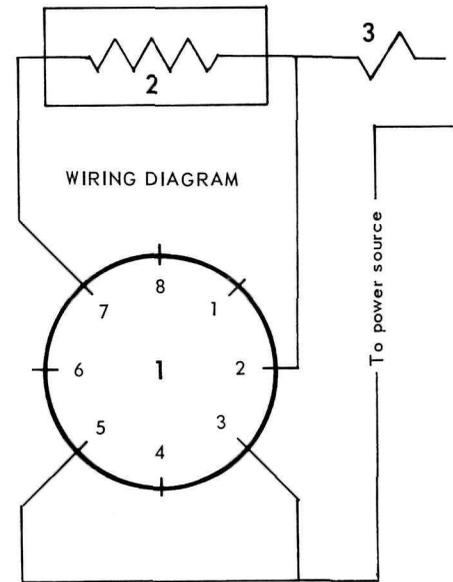
This type of sign could also be used for other identification or marking, such as: DANGER — EXPLOSIVES.

The flexible strip or magnetic metal signs are available from the Marshall-Steward Co., 1267 Sandridge Road, Placerville, California. Signs reading — PARK RANGER —, with letters three inches high, using type face #5, and green in color, cost, for an order of 10, \$6.60 each. If purchased in larger quantities the cost is less.

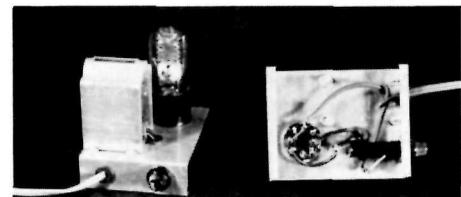
**BUILD YOUR OWN AUDIOVISUAL COUNTER (NPS SW 66-51)**

Park Naturalist Vernon Dame, Lake Mead National Recreation Area, built for \$11.25 a counter for tabulating use of audiovisual units that lack a circuit capable

of momentarily actuating a counter. The unit makes the count and then a delay tube turns off the counter until the audiovisual station program is over. Commercially available counters designed to make one count of several minutes duration cost about \$50.



1. Octal socket 2. Mercury counter 3. Fuse



Twenty-three of these counters are in use at Lake Mead, some for three years without trouble or modification. They are used to count the following types of audiovisual programs.

- Message repeaters: 6 Mohawk, Jr. La Belle play-matic units
- Audiovisual programs (Carousel projector, La Belle amplifier and Viking tape deck combination)
- Captioned slide Admatic cases
- Audiovisual cabinet (selectroslide unit)
- Units on standby equipment

Here is a list of parts (from Allied Electronics catalog # 660).

Mercury counter to 99,999, no reset, type No. CE-40AN502, base mount.

Aluminum chassis, miniature type, C-B-1617, 1" x 3 1/8" x 4", catalog #87Z816, 41 cents each.

Socket, octal, type 7858, catalog #40Z058, 15 cents each.

Amperlite delay relay type 115C5, catalog #75Z295C, \$ 2.40 each.

Fuse holder for 3 AG fuses, Type 342001, catalog #53Z001, 46 cents each.

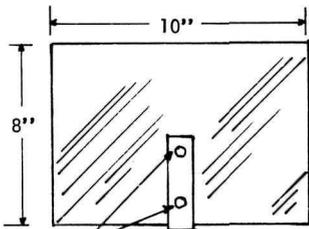
Fuses, 3 AG. lamp, 250 volts, catalog #53Z117, 28 cents package of 5.

Miscellaneous items: electrical cord, rubber gromets, nuts and bolts.

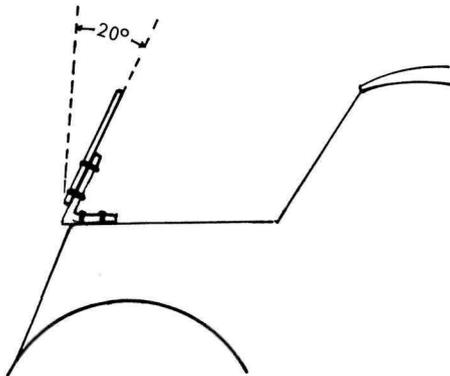
**SNOW DEFLECTOR FOR  
SNOWPLOW VEHICLES  
(NPS SE 66-103)**

Snowplow operators in the Great Smoky Mountains National Park complained that snow builds up in the center portion of the windshield between the wiper blades, at times, seriously limiting the field of vision of the operator.

Ray G. Branam, Automotive Mechanic, devised the deflector shown in the photo. It was tried out last winter, and was so effective that this winter it is being installed on all snowplows. It is simple, inexpensive, and can be made and installed in an hour.



1/4" Holes drilled in metal strap and plexiglass



The following materials are required.

- 1 piece of clear plexiglass 1/8 inch thick x 10 inches wide x 8 inches high
- 1 piece of 1/8 inch thick steel, 1 1/2 inches wide x 12 inches long, about 4 inches of which is turned up to form an angle of approximately 70 degrees with the base
- 2 machine bolts, 1/4 inch diameter with nuts and washers
- 2 metal (self threading) screws for attaching the device to the hood of the vehicle

Drill two 1/4 inch holes in the turned up part of the flat steel stock and matching holes in the center of the plexiglass (see drawing). Drill two 1/4 inch holes for metal screws (self threading) in the flat part of the steel stock for mounting on the vehicle.

The device must be mounted far enough forward to permit the hood of the vehicle to be raised and must then be sloped back slightly from the perpendicular (maximum 20 degrees). The amount of slope will largely depend on the position of the deflector in relation to the windshield and may have to be determined by trial and error.

**TOOL BOX LID BECOMES ROAD  
WARNING SIGN  
(NPS SER 66-95)**

All protection vehicles at Blue Ridge Parkway carry two "Slow Hazard Ahead" signs, so in designing a tool box for these vehicles Ranger Kim M. Fene and Fire Control Aid Charles H. Byrd looked for a place to store them. They decided that by attaching two slotted boards inside the lid the signs would always be where they could be removed easily (see photograph).

But then Kim and Chuck discovered that the sign could be of value right where it was, when the lid of the box was open. So they added reflective beaded white stripes on a red background, and the result was a very effective sign as well as storage place. Together with the blinking tail lights, the signs provided an eye-catching warning device which is always there and which sets up instantly.

The tool box itself is very functional. It includes wood spacers to keep the tools apart and orderly; and drawers mounted

on casters make smaller contents more accessible (without them it would be necessary to get into the truck bed to remove tools and trays). The drawers may be locked from the inside with sliding bolts. The box will fit either the front or rear of the truck bed.



The following is a partial listing of individuals who have received National Park Service Suggestion awards to date. Following the listed awarded idea, you will find a page number if the idea was reported in this issue of PLOWBACK. Other listings cover awards for ideas of local application only. Awards information received after November 1, 1967 will be reported or listed in subsequent issues of PLOWBACK.

- Atwood, Charles, Jr. (NPS NE 67-116) Safety sign at public building entrance.
- Batman, Richard E. (NPS SE 66-83) Refurbishing routes signs. See p. PL-2.
- Beach, Warren D. (NPS SE 67-47) Identification number assigned each "attempt to locate."
- Bentley, James L. (NPS W'66-126) Welcome packet for newcomers.
- Berg, Bernard (NPS SE 67-45) Place slogan "fasten seat belt" on dash board.
- Bice, E. Sue (NPS SW 67-95) Prepare travel questionnaire form for travel authorization.
- Black, Fontaine (NPS NE 67-112) Glass case exhibiting employees photos of awards.
- Blundell, Charles E. (NPS SW 67-53) Adjustable firefighter loader and storage stand. See p. PL-3.
- Bowman, James (NPS NE 68-12) Chain gate post protects lock. See Grist, Vol. 11, No. 1, p. 3.
- Branam, Ray G. (NPS SE 66-103) Snow deflector for snowplow vehicle, See p. PL-7.
- Brower, Frederick J. (NPS NE 68-2) Re-

- duce motor vehicle operation costs by agreement with GSA.
- Bruce, Charles W. (NPS NE 67-117) Correction or addition to John Brown diorama.
- Bruce, Charles W. (NPS NE 67-118) Visitor Center pictures re-aligned.
- Byrd, Charles H. (NPS SE 66-95) Box lid becomes road warning sign. See p. PL-7.
- Campbell, Charles D. (NPS SE 67-2) Aid detects leak in water line mains.
- Carrillo, Richard (NPS M 68-14) Independent self-contained telephone system.
- Cintron, Julio H. (NPS NE 67-131) Inform agencies that personal mail be marked 'personal' or 'deliver sealed.'
- Coe, Harold A. (NPS SE 67-17) Install register to record descendants of soldier who fought in Chickamauga battle.
- Crisman, Bobby L. (NPS SW 67-67) Temporary cattleguard. See p. PL-5.
- Cummings, Calvin R. (NPS SW 68-7) Do-it-yourself display. See Grist Vol. 11, No. 2, p. 10.
- Dame, Vernon D. (NPS SW 66-51) Build your own audiovisual counter. See p. PL-6.
- Daniels, David J. (NPS SE 67-18) A card system to list equipment information.
- Dilley, Willard E. (NPS M 66-60) Mosaic photo slides. See Grist Vol. 10, No. 5, p. 34.
- Embleton, Charles W. (NPS SW 68-6) Safety striping on steps. See Grist Vol. 11, No. 1, p. 6.
- Farrar, Glenn C. (NPS SE 67-54) Gasoline blanket purchase order quarterly or biannually.
- Farrell, Joseph F., Jr. (NPS NE 67-131) Inform agencies that personal mail be

(Continued from PI-7)

- marked 'personal' or 'deliver sealed.' Fauber, C. R., Jr. (NPS SE 66-223) Semi-annual inspection motor vehicles by non-NPS employees.
- Fene, Kim M. (NPS SE 66-95) Box lid becomes road warning sign. See p. PL-7.
- Fulcher, Nancy C. (NPS SW 67-68) Adopt GSA Motor Vehicle control record.
- Fulcher, Richard (NPS NE 67-116) Safety sign at public building entrance.
- Galloway, Delbert (NPS SE 66-118) Park shop-built pile driver. See p. PL-5.
- Gastellum, Frances I. (NPS WASO 68-4) Form 10-180 date completed on front.
- Giesecke, Mary M. (NPS SE 67-35) Replace four forms with one form.
- Grooms, Dorothy L. (NPS WASO 66-53) Design in tablet-type pad sample form.
- Haag, Donald W. (NPS W 67-168) Mounted 3-roll toilet paper holder to prevent vandalism.
- Hanson, Kermit E. (NPS SW 67-27) Area road mileage markers.
- Harley, William C. (NPS NCR 67-122) Hang platform on tailgate.
- Hatfield, Silas D. (NPS SW 67-48) Bit-sharpening device. See p. PL-5.
- Henderson, Larry E. (NPS SW 67-50) Free informational packet for concession employees.
- Hilbert, E. W. (NPS SW 66-54) Paint thinner reclaim barrel. See p. PL-4.
- Holland, Ross (NPS WASO 68-2) Coloring black and white slides. See Grist Vol. 11, No. 2, p. 10.
- Ketner, Bernice R. (NPS SE 67-11) Photograph safety hazards whenever possible.
- King, Roy L. (NPS SE 67-58) Liners for garbage cans.
- Kinsey, William R. (NPS NCR 67-77) Install additional flashing light on rear of Park Police motorcycles.
- Kirkpatrick, Dorothea R. (NPS NE 67-129) Door-stop and service phone in tower.
- Kiryakakis, James G. (NPS NE 67-103) Standardize drawing sheet to fit in standard files.
- Kohajda, Anthony M. (NPS NE 67-122) Thermostatically controlled heat tape.
- Kosiske, Sue (NPS M 67-50) Bonds and checks mailed to employees.
- Lake, Richard L. (NPS M 67-178) Change testing procedures for authorization.
- Lake, Robert D. (NPS W 67-234) When replacing wood shingles or shake roofs, place over old shingles.
- Leahy, Catherine A. (NPS W 67-77) Eliminate the Lieu Day Form.
- Leahy, Catherine A. (NPS W 66-125) NPS publish information leaflet for information desk to each park.
- LeGarde, Gordie (NPS M 68-1) Lumber rack for limited space. See Grist Vol. 11, No. 1, p. 8.
- Leonard, Paul W. (NPS SE 66-127) Rear-end tractor boom eases work. See p. PL-6.
- Logsdon, Louie A. (NPS SE 67-12) For visitor protection put light at entrance.
- Lueck, Rudy (NPS SW 68-5) 'Please send me' box. See Grist Vol. 11, No. 2, p. 14.
- McClanahan, Lester F. (NPS NE 68-14) Attach string to projector to measure distance for screen set up. See Grist Vol. 11, No. 3, p. 19.
- Martin, Carol A. (NPS SW 68-4) Mini-skirts for girls. Grist Vol. 11, No. 1, p. 6.
- May, Lewis A. (NPS SE 67-39) Paint rest room windows with fluorescent paint.
- Meehan, John V. (NPS SE 66-83) Refurbishing route signs. See p. PL-2.
- Morris, Robert C. (NPS SW 66-72) Magnetic strip sign. See p. PL-6.
- Murphy, Cecil L. (NPS M 67-161) Dowel locating drill bar. See p. PL-2.
- Nawrocki, Frances (NPS NCR 67-172) File purchase order copies numerically.
- Nick, Frances L. (NPS SW 67-209) Change suction line on walk-in freezer.
- Nick, Francis L. (NPS SW 68-3) Install temperature alarms.
- Pachta, Noel J. (NPS SW 68-3) Air hose adapter on air equipped trucks. Plowback March, 1967, p. PL-13.
- Paris, Lucille A. (NPS NE 67-96) Install glass panel on doors.
- Patrick, Lyman N. (NPS W 67-18) Power and telephone pole trailer.
- Pearson, Kenneth P. (NPS M 68-3) To eliminate windshield glare, paint dashboard with flat black paint.
- Pederson, Vance D. (NPS SW 67-80) An improved method of applying fertilizer. See p. PL-3.
- Pettyjohn, Eugene F. (NPS SE 67-18) A card system to list equipment information.
- Picco, Theodore L. (NPS W 66-109) More comfortable litter hand-hold. See p. PL-1.
- Phillips, Bernice S. (NPS SE 67-18) A card system to list equipment information.
- Ponec, Carol (NPS M 67-50) Bonds and checks mailed to employees.
- Pratt, Jerome J. (NPS SW 67-171) 'Ketch-ALL' automatic mouse trap.
- Ortiz, Stella (NPS SW 67-108) Revise Forms DE-134 and CA-1.
- Quist, Arnold G. (NPS W 68-36) Install electric hand dryer in public restrooms.
- Reith, Laura J. (NPS SE 67-37) Install announcer near audiovisual room.
- Rickard, Kirby, Jr. (NPS SE 67-2) Aid detects leak in water line mains.
- Riddle, John C. (NPS NE 68-13) Prevent accidents with landscaped barriers. See Grist Vol. 11, No. 2, p. 12.
- Rohn, John F., Jr. (NPS MW 66-56) Companion sign for NPS arrowhead emblem. See p. PL-2.
- Romans, Orville G. (NPS M 66-84) Repairing shaft and sprocket assemblies. See p. PL-4.
- Romans, Orville G. (NPS M 67-110) Tire mounting device. See p. PL-5.
- Sahd, Jay (NPS W 67-26) Speaker phone for conference room.
- Sallay, Ruth N. (NPS WASO 68-5) Revise present Pen & Ink Change Memo.
- Sands, Jack M. (NPS NCR 67-150) Rubber stamp directions for offenders.
- Schattilly, Ethel E. (NPS SW 66-68) NPS directory additions.
- Scoble, Harold L. (NPS SW 67-80) An improved method of applying fertilizer. See p. PL-3.
- Scrafford, Joel (NPS NE 68-18) Broom holders for side patrol box. See Grist Vol. 11, No. 4, p. 28.
- Sharpe, Marvin S. (NPS W 67-264) File drawer inserts.
- Simone, S. W. (NPS NE 67-17) Individual study Carrel. See Grist Vol. 11, No. 5, p. 40.
- Smith, R. V. L. (NPS W 68-23) Property card coding for Form SF-559.
- Stewart, James (NPS NE 67-17) Individual study Carrel. See Grist Vol. 11, No. 5, p. 40.
- Susong, Dunbar G. (NPS M 65-103) Post base for removable signs. See Grist Vol. 11, No. 5, p. 38.
- Susong, Dunbar G. (NPS M 67-180) Self-registration board. See Grist Vol. 8, No. 1, p. PL-5.
- Thorne, Martha Kay (NPS NPS 67-180) Park Police obtain zip code when issuing traffic violation notice.
- Toth, Jess F. (NPS W 67-37) Install announcer near audiovisual room.
- Tothero, Jacob E. (NPS NE 67-123) Use 'Fluoro Finder System' for flaw detection.
- Tunks, Henry L. (NPS SE 66-226) Install barrier in middle of island at parking lot.
- Vandercreek, Lois B. (NPS M 65-106) Suggest preparing nominations for suitable awards.
- Vaughn, Joseph E. (NPS M 67-48) Rubber stamps to denote numerical codes.
- Vanderspek, John W. (NPS W 67-236) Index for geographic place names.
- Ward, Richard M. (NPS SE 66-169) Paint brush cleaning center. See p. PL-4.
- Weaver, Richard K. (NPS M 66-41) Drafting table improvement. See Grist Vol. 11, No. 2, p. 13.
- Wilkins, Keith M. (NPS SW 67-12) Safety handles for chisels. See Grist Vol. 11, No. 3, p. 22.
- Wilkins, Keith M. (NPS SW 67-13) Hand-saw guard. See Grist Vol. 11, No. 3, p. 24.
- Wilkins, Keith M. (NPS SW 67-78) Tool carrying bag. See Grist Vol. 11, No. 3, p. 22.
- Wilkins, Keith M. (NPS SW 66-89) Framing jig. See Grist Vol. 11, No. 2, p. 11.
- Willard, Ed. (NPS NCR 67-90) Mail boxes to disperse maps for shuttle bus routes.
- Williamson, Lynn R. (NPS SW 66-55) Concrete water meter box for traffic counter. See PL-1.
- Winkel, George W. (NPS NCR 68-6) Assign Sergeant as Court Liaison Officer.
- Veitl, Charles A. (NPS WASO 67-47) Theft proof flags. See Grist Vol. 11, No. 5, p. 36.
- Zielinski, Tillie (NPS NCR 67-89) Place small sign on telephones throughout NCR area.