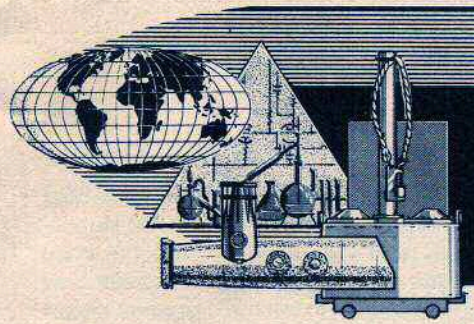
No. 2-61



mine and depth-charge

THE TROUBLESHOOTER

PETE MIRICH, MN2

- *Universal Mine Carrier*
- *Mk 52 Mine Assists*
- *Mk 36 Case Modification*

THE OFFICIAL JOURNAL OF THE *RUDMINDE* PROGRAM

in this issue . . .

mine and depth-charge

THE TROUBLESHOOTER

Published by the Naval Mine Engineering Facility, Yorktown, Virginia.

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REGULAR FEATURES

ARTICLES

COVER PHOTO: "All it takes is injun-uity," says Pete Mirich MN2, shown here using a suction-tipped arrow that gets straight to the heart of a Mine Mk 52 problem. For more on solutions worked out by Pete and his mates at Mine Project 4 see page 8.

Rudminde is a world-wide troubleshooting campaign designed to achieve and maintain a high level of undersea warfare readiness through the discovery and correction of material defects, through refinement of weapon design, and through encouragement of the unique knowledge and skills demanded of highly specialized segments of the U.S. Navy and Coast Guard. The basic instrument of the program is Navord Form 2776—"Report of Unsatisfactory or Defective Mines, Depth-Charges, or Associated Equipment." Anyone who encounters problems with these weapons is encouraged to report them to the Naval Mine Engineering Facility using this Form, as prescribed in NAVORD INST 8500.7.

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THE OFFICIAL JOURNAL OF THE *RUDMINDE* PROGRAM

SOUNDINGS

The Changing Scene In Undersea Warfare

CRAFTY MISSILES

SUBROC DEBUT: Watch for installation of the long-awaited SUBROC on the nuclear submarine THRESHER early this year. It works like this: launched from torpedo tubes, it is shot clear of the water. Then a rocket engine takes over, powers the missile up to 30 miles to drop a nuclear depth charge on or near an enemy sub.

IT'LL NEVER WORK: On the day the keel of the LAFAYETTE, first of a new class of Polaris-firing submarines was laid, a ceremony aboard the nuclear submarine NAUTILUS commemorated Navy's 6th anniversary of nuclear propulsion and honored spunky, dedicated prime-mover VADM Hyman G. Rickover.

We now have 15 nuclear subs in service, 28 more being built. Two nuclear aircraft carriers and a nuclear guided-missile cruiser are also nearing completion, and a guided-missile frigate is under construction.

MISSILE MISTRESS AT 16: The cruiser SPRINGFIELD, originally commissioned in 1944, was rebuilt specifically to serve as a flagship. Now on her first assignment since recommissioning in the summer of 1960, she is the nerve center for 50 Sixth-Fleet ships, including three attack carriers, with some 30,000 men.

The Fleet Commander is VADM George W. Anderson Jr. whose previous flagship was the heavy cruiser DES MOINES.

NUCLEAR CRUISER NEWS: In T-Shooter 4-60, we reported the LONG BEACH launching as pegged for sometime in '62. Actually she's due for commissioning in Oct. 61 but won't join the fleet until mid-62 after a shakedown cruise and a trip back to the yard for installation of the Polaris launching system and other advanced weapon systems.

Navy's first nuclear-powered cruiser, the LONG BEACH is building at Bethlehem Steel, Quincy, Mass. She's expected to cost $375 million and carry a crew of 63 officers and 964 enlisted men.

32—PRETTY PERFORMERS—32: The nuclear-powered PATRICK HENRY becomes the second Polaris-armed sub sent to its operating area. The GEORGE WASHINGTON was deployed from Charleston, S.C., on 15 Nov 60.

Both subs are 380 feet long and displace 5,400 tons. Each is armed with sixteen 1,200-mile-range Polaris missiles.

The "HENRY" is commanded by CDR Harold E. Shear, has a complement of 12 officers and 114 crewmen.

FRIGATE FIRES ASROC: Navy's new antisubmarine rocket (ASROC) became operational in the Pacific on Jan. 20 when it was fired from the guided-missile frigate MAHAN off the California coast. Part of an integrated system consisting of sonar, fire-control computer, launcher, and missiles, ASROC is fired in the general direction of an enemy sub, drops off a homing torpedo that seeks out its quarry at any depth.

Both the MAHAN and her sister ship KING are also equipped to launch Terrier surface-to-air guided missiles.

'SHIP OF THE YEAR': For its first annual Ship of the Year, Our Navy magazine picked the Polaris-firing nuclear sub GEORGE WASHINGTON, skippered by CDR James Osborn, as "exemplifying the Navy's finest traditions of devotion to duty."

Said ADM James S. Russell, Vice Chief of Naval Operations, "By selecting GEORGE WASHINGTON as Our Navy Ship of the Year, you have honored the thousands of Navy officers, enlisted men, and civilians who have labored long and diligently to make the fleet ballistic missile system a potent force for peace.

"The success of this system as a deterrent will depend in a large measure on the continuous high state of readiness of our IBM submarine crews. These men deserve our highest tribute."

FATHOM THAT!

FISH OR FOWL? Men of the 48th Air Force Rescue Squadron have learned to parachute from the unit's SA-16 Albatrosses or SC-54 Rescuemasters cruising above a distress site. When they hit the surface they quickly shed their flight gear and switch to scuba diving equipment, then go down to retrieve personnel or valuable documents or equipment from the ocean floor.

During a recent test, one Eglin jumper-diver was well on his way to the bottom less than three minutes after leaping from a high-flying plane!

THE LADY IS A BOMB: The new atomic depth bomb Lulu, a natural for helicopter use, can be carried by nearly all naval aircraft. Lulu's charge has great kill radius, giving enemy subs virtually no chance to escape.

RUM EYES: With a small RCA electron tube called a vidicon, the Navy's tank-like Remote Underwater Manipulator (T-Shooter 4-60 p. 4) can "see" as it crawls along the ocean floor. The vidicon is the "eye" in each of four TV cameras installed on the unusual craft. Signals from the cameras are sent to the control station above via special cable.

"PEEK-A-BOO"? When the nuclear sub TRITON's periscope broke surface in Phillipine waters, CAPT Edward L. Beach found himself face to face with the only unauthorized person known to have seen the world's largest undersea craft during its 84-day 36,000-mile trip. Here's how CAPT Beach recorded the incident in his log:

"It is a ludicrous situation. On the one hand an impassive Asian, staring with curious concentration at an unusual object in the water; on the other hand, a U. S. Navy officer, equipped with all the technical devices money and science can procure, looking back with equally studied concentration.

"On one end of the periscope an outrigger canoe propelled by the brawny arms of its builder; on the other end a $100 million submarine, the newest, biggest, most powerful in the world, on a history making cruise.

"What an abyss—what centuries of scientific development lie between him and me!"

And what did the good Captain say at the moment he first saw eye to eye with the islander? Well, what did he say?

REVERSE "DEEP SIX": Moving from Buck Jones dreams to Davey Jones reality, the Navy now has a 50,000-gallon rubber petroleum tank under test in 52 feet of water off the Louisiana coast. Fittings permit ships and subs to take on or discharge fuel.

Ocean-floor storage tank areas with over 1-million gallon capacities, usable for gasoline, fuel and lube oils, and fresh water, may eventually come. Even solid materials may someday be stored in similar underwater farms located at strategic points around the world.

430 RED SUBS: So says C. I. Orr-Ewing, civil lord of the British admiralty. In giving this estimate to the House of Commons in March, he also said that Soviet sub fleets, including some nuclear craft, have operated throughout the seven seas in recent years.

"The U.S.S.R." he stated, "has based submarines in the territories of its allies, made submarines available to other nations, and provided assistance to a Chinese submarine-building program."

SCALES, SKIN, AND FEATHERS

LEECHES—LOOK TO YOUR LAURELS: Although the electric eel (Electrophorus) of the Amazon and other South American rivers can put out 500 volts, the African catfish (Malapterusus) has been known to wrestle up a respectable 350 volts. The giant electric ray (Torpedo nobiliana) while producing pulses of only 50 to 60 volts, delivers 50 amperes which electrocutes large fish.

For the big ones, these voltages function for offensive and defensive purposes. With the weaker ones, those which generate down to a few tenths of a volt, the electrical emanations serve as part of a sensory guidance system and for the detection of predators and prey.

The electric catfish has rated pictures in the tombs of the early Egyptians. The Romans, however, got practical and applied jolts of volts from the Torpedo as a "cure" for gout, headache, and believe it or not, mental illness.

—And we like to think of electroshock therapy as a fairly recent gimmick.

SEMANTIC ANTIC: The Navy tattoo, the one you hear just before lights out, derives from an old Dutch alcoholic-control signal! The Dutch word "taptoe" (shut the tap) meant a drumming that signalled closing of barrooms and taverns in garrisoned towns. When the drummers started their second round of the town, all the bars were to be emptied and the customers on their way.

But don't blame the Dutch for the other tattoo . . . the one that literally gets under your skin. That one originated with the Polynesians.

BIRD CALL: Summoned for a two-month tour on oceanographic and research projects, the Navy's blimp SNOW BIRD left Lakehurst, N. J. and wound up at the El Toro Marine Corps Facility near Santa Ana, Calif., the first military blimp to land at El Toro in five years.

WHADDAYUH HEAR FROM THE BUOYS?

ELECTRONIC BUOY: Completely transistorized distance-and-position signalling buoys have been developed for use in sea-search and marine salvage operations.

A new product of Hastings-Radist, Inc., Hampton, Va., the 45-lb buoy is equipped with a 1-watt transmitter and a 12-ft whip antenna. It operates independent of shore facilities, with a range of more than 15 miles, providing about 700 square miles of search-area coverage. The battery pack lasts 14 hours, but additional batteries can be used. The Raydist system's signal is said to make measurements to within less than a yard possible, even from moving aircraft. Distance does not affect the accuracy.

Anchored, the buoy can serve as a stationary reference point for thorough concentric-circle sea search of an area. Dropped to float freely, it will follow drift patterns leading searchers along the presumed route of possible wreck survivors. Used in conjunction with depth-measuring instruments, it is said to be helpful in charting the precise location and features of underwater wreckage.

JULIE NOISE FOR JEZEBEL BUOYS: J-J detection equipment for 69 Neptune antisubmarine aircraft has been ordered from the Lockheed Aircraft Co. The $4.9 million contract completes a program begun in 1958 to modify some 300 earlier-model Neptunes already in service.

The Julie system uses floating buoys employing an explosive sound source for echo ranging. Jezebel buoys locate the submarine by triangulation on the noises the Julie produces. The two are linked together in the plane's electronic equipment, permitting underwater detection at greater ranges.

The new equipment is being put on new planes in production.

RUDMINDE REPORT TO THE FLEET

What's Been Reported? What's Being Done?

Anybody in the business of trying to pry failure reports out of people has himself a job that just never gives up.

Now we don't like to think that the men working with mines or depth charges would take lightly the business of reporting troubles via good ol' NAVORD Form 2776. Not on your life. But one of the other armed services actually ran a survey to find out why reports were turned in for only one out of every ten failures. That, it seems, is about the average return for this sort of thing, and the reason, they found, is people. What kind of people? Here—with much help from the editors of the BUSHIPS Failure Report Digest—are some typical types.

CHEERFUL CHARLIE is one of those guys who doesn't want to cause any trouble. "Why fill out a Rudminde," he says, "when nothin' happened but a short circuit in a control box an' I got another one right here an' I jes slip her in and wire her up an' she works fine."

Trouble is, Charlie's not looking ahead. He forgets that his gear has to be ordered, manufactured, packaged, and shipped long before it's needed, so's to be in all the right places at the right times.

FEARFUL FRED is just the opposite of Charlie. Where Charlie has no respect for the Navy's complexity, Fred has too much. "Whaddayawant," he says, "those people at BUWEPS to send a man out here or make us answer by endorsement or somethin'? We'd all end up in the soup."

Like a lot of us who've never learned any better, failure and defect are dirty words to Fred. Any failure or defect in his book is bad. And in spite of the fact that no one, nowhere, has ever felt a reprisal for a Rudminde that reported something wrong, guys like Fred just can't shake loose from the idea that sooner or later somebody will.

LOYAL LESTER thinks his unit is the greatest. Look over their Rudminde batting average and you might even figure he's right. What you should look at, though, is their gear . . . held together with tape, glue, baling wire, and chewing gum.

So why no Rudmindes? Because ol' Les won't let 'em go through. "Nobody else has reported stuff like we got here," he says, "so if we do it what'll the people up top think 'cept we're just a bunch of goof-offs. Besides, we're responsible for makin' this stuff work and we fixed it up ourselves. Don't make sense now to report that our work was no good."

So how can the Bureau see to it that the Navy is always prepared? How's about some loyalty to the Navy too, Les?

LAZY LOUIE will do any job if it's absolutely indispensable. If its almost indispensable he'll try to get somebody else to do it. If it's anything less, though, Lou won't even touch it, and that includes filling out Rudmindes. "Too much chicken-pluckin' paperwork," says Lou.

Fortunately, though, guys like ol' Lou rarely get moved up into a position where what they think or do make much difference.

SOURBALL SAM reports everything! You bet! So his outfit's no good. So he wants back in civvies toot sweet. So his wife nags him. So his dog bites him.

So Sam gets out plenty of Rudmindes, not because he's cheerful or fearful or loyal, but because he's sore at everybody and everything and he ain't gonna give up 'til he's made things tough all around. Some of his Rud-

mindes are pretty good, too, even though he was just being ornery when he wrote them. What worries us is that we know about men who didn't use Rudmindes when they should have, just because they didn't want to be compared with a Sourball Sam!

EFFICIENT EGBERT is always busy. That's good. But he hates to take time to use Rudmindes. That's bad.

"A man's got only two hands and just so much time," he says, "and in the time I'd use messin' with Rudmindes I get a lot of defective gear fixed up so it'll work."

Well, in wartime we'd never be able to get enough guys like Bert. But in peacetime our job is to see to it that we're maintaining the kind of a system that would support them in war, and that demands that men who find defects take time to report them. Makes us wonder if, in the long run, Efficient Egbert is really as efficient as he seems.

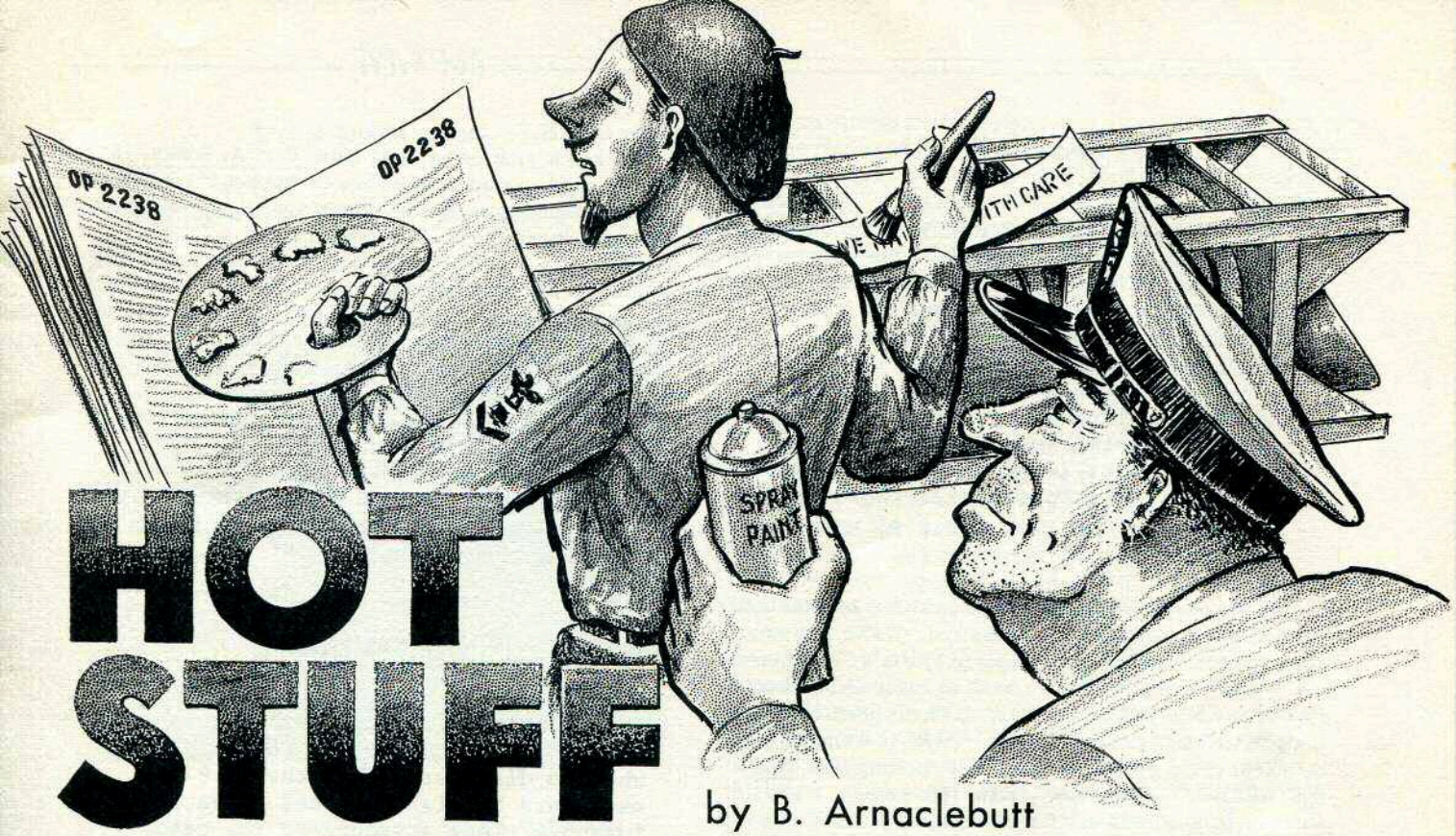
HIPSTER HERB thinks the Rudsville gig is strictly Endsville. "It's all a shuck," he says. "Like all you're doin', Dad, is feathering some Yorktown cat's pad."

Like literally, Herb, you've blown the whole bit. But how's about we strike up a bargain?

Here's the latest table of defects reported through Rudminde. Study it as a guide. Send us in a few good ones and in return we'll see if we can't dream up something that'll be a real gas, like maybe a T-Shooter feature on Zen! Maybe cooperating like this we could get the whole mine force like hip!

DEFECTS REPORTED THROUGH RUDMINDE

ITEM	USED WITH	REPORTED DEFECT	REMARKS
Case, Mine, Mk 25-1	Mine Mk 25-0, 1, 2	Cap-screw holes for tail-cover fastenings break through when bottom-tapping the threads.	Investigated in 1953. Not serious. Keep using 3/8" bottoming tap.
Fin Assembly Mk 9 Mod 0	Mine Mk 25-0, 1, 2	Interferes with installation in P2V and P5M aircraft.	For use on high-altitude drops only. Do not specify Mine Mk 25-0, 1, 2, Operational Assemblies 21, 22, 23, 24 for planting from P2V or P5M aircraft.
Multimeter AN/PSM-4A	All mines	Can't zero accurately; suggest wire-wound vs carbon potentiometers, better quality resistors.	In the mine business nearly everybody lives with this problem. Most ask for a higher-quality carbon pot when they turn the meters in for repair and let it go at that. Could also be you have poor plug-in lead contacts.
Terminal Block TB-19-0	Mine Mk 25-0	12 received as Code 0 but were marked "DRILL". Were not properly packaged. Screws loose, adrift, or missing.	Responsible activity has been notified. NMEF is giving packaging complaints particular attention.
Terminal Block TB-20-0	Mine Mk 25-0	Will not accept CA-526's flat lugs.	Retain TB-20-0s in Code 0. Modify flat lugs to fit using lug pliers shown on page 13, T-Shooter 1-60.
Test Set Mk 72-0	Firing Mechanisms A-6 and A-8 (Acceptance testing)	Has male plug for connecting to male plug on firing mechanisms.	Drawing has been corrected. Replace male amphenol connector (if present) on old procurement test sets with female connector MS3102A-14S-5S.
Test Set Mk 238-0	Detonators, expl. fittings, and primers	NAVORDLIST 22501 includes set in columns A, B, and C.	It's strictly for acceptance testing and should have been listed in column A only. NAVORDLIST 22501 will no longer be used as authority for distribution of Test Set Mk 238. This set will not be included in the next revision of the list.



HOT STUFF

by B. Arnaclebutt

The book nobody knows

Dear B-Butt,

I've been looking and asking for two weeks on where the latest information is on mine case and crate stenciling for all mines. The only thing I've found is some pictures taken at Naval Weapons Station, Yorktown, in 1944.

C.E.H. MNCA

Dear Chief,

You and beaucoup others. One gander at the local-style graphitti on some activities' cases and crates and you'd swear there never was a pub on stenciling. Fact is, I never came across one myself until I spotted a mineman with a pub propped up against a crate he was stenciling. When I bugged him about using a book, he said: "Man! I just kept asking around until one savvy Joe put me wise."

If you tried to find a pub on stenciling in OP 0, the Index of Ordnance Publications, I bleed for you. But there is one in it. It's the 13th pub listed under "Ammunition" in the subject index. And you have to cross reference to the pub-number index to find the title.

So get yourself a copy of OP 2238, Identification of Ammunition. The poop on painting and marking mine cases starts on page 40. Crates are covered on page 102.

B. Arnaclebutt

Name's not the same

Dear B. Arnaclebutt,

In OP 1844 1st Rev., figure 22 shows CA-529 connecting Test Set Mk 65 Mod 1 to Batteries BA-249/U. Figure 23 shows CA-726 doing the same thing.

S.A.M. MN2

Dear Sam,

You're so right! Actually, CA-726 and CA-529 are alike electrically but CA-726 is 30 inches long and CA-529 only 23 inches long. Don't go looking for a CA-726 in Test Set Mk 65 Mod 1, you won't find one. Use CA-529. In figure 23, strike out CA-726 and write in CA-529. Read "Unstable cable labels" T-Shooter 3-60, page 6; also see the article on reverse polarity on pages 22 and 23 of T-Shooter 1-59.

B. Arnaclebutt

Who's gonna do the dishes

Dear Barnacles:

Some 25-1 and 36-2 drill-mine cases shipped to us were a mess! They were stenciled DETONATOR INSTALLED and didn't have det-removed tags on the extenders. Naturally, we followed the det-removal instructions in OP 1452 but what we didn't find was dets. What we did find was plenty of corrosion, salt water in a couple of clock wells, and nuts loose or missing from the clock and extender well closures.

G.R.P. MN2

Dear G.R.P.,

Like the perlite feller says, the condition of some drill-mine cases leaves much to be desired. We've had other reports about cruddy cases—like in Millie's "Sedimental me"—and we've also heard a rash of ruddy alibis about lack of specific orders and such. If what's needed is something in writing, can do! To wit: NMEF is whipping up a BUWEPSINST right now to cover restenciling DET NOT INSTALLED, washing down, removing water . . . in short, a proper field day for all recovered FSMT mines.

—Next?

B. Arnaclebutt

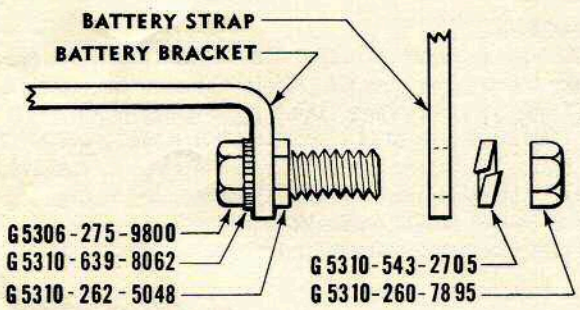
Quick trick

Dear B-Butt:

Nuts supposed to be tack welded to the battery brackets on Mk 36-2 mine cases for Mk 36-1 and 3 mines sometimes get broken off during assembly. We sure aren't going to weld them back on at this stage of the game, but we hate to reject a case just because of a loose nut.

Maybe you Yorktown wizards have a solution?

G.O.N. MN1



Dear G.O.N.,

We had a good Benny Sugg from Earl A. Smoot, Jr., for an adapter-stud to take care of this but it would have cost too much to stock. So here's a do-it-yourself solution:

First, make sure your battery clamp's bolt (see illustration) is threaded up pretty close to its head. If it isn't, get one that is, or run a 3/8"-16 UNC die up to the head of whatever bolt you have on hand.

Next, put a lock-washer on the bolt (an external-tooth G5310-639-8062 is best) and put the bolt in the bracket's hole with its threads pointing aft, then secure it with a jam nut (G5310-262-5048 will do fine).

With this lash-up installed you can use a 3/8" lock-washer G5310-543-2705 and 3/8"-16 UNC hex nut G5310-260-7895 and go ahead with the bracket installation just as if nothing had happened.

B. Arnaclebutt

Museum pieces

Dear B. Arnaclebutt:

Recently we were preparing to assemble some Mk 6-0 mines for an FSMT when we discovered that the Mk 6-2 extenders furnished us had extra bushings 3/4" long attached to the detonator end of the extenders. Who needs them?

H.O.T. MN2

Dear H.O.T.,

This modification was for when Mk 6-2 extenders were used in the now obsolete Mk 7 drifting mines. Request disposition of your antiques from BUWEPS.

B. Arnaclebutt

Pores, alors!

Dear B-Butt:

In testing 1300 Mk 14-2 extenders, 15 failed to pass the leakage test per OP 1452. The diaphragms were okay. The test set seemed okay. Could porosity in the aluminum castings be causing the trouble? Am I on the right track, or do I have too much confidence in the test set?

L.S.J. MN2

Dear L.S.J.,

Fifteen out of 1300 isn't too bad for these mechs. Haven't seen you handle the test set, but we have had reports of similar porosity leakage in Mk 1-3 clock-starter castings.

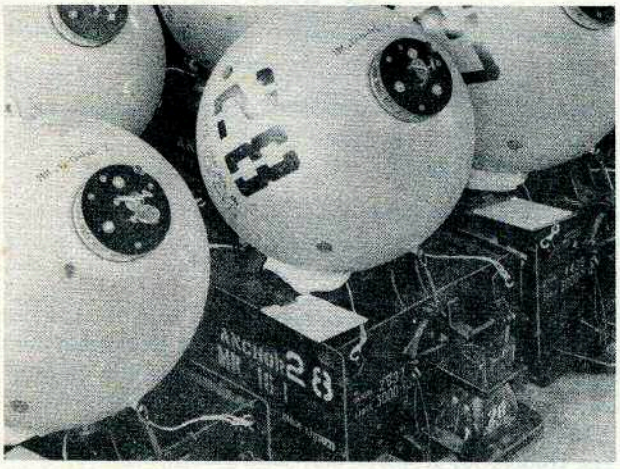
As far as the extenders are concerned, the manufacturing specs have been changed so that the castings are now impregnated to lick the leakage problem.

B. Arnaclebutt

Anchor-puzzle encore

Dear Barnacles:
How come the cover of T-Shooter 4-60 shows Mk 6 mines with Mk 16-1 anchors?

T.H.I. MN2



Dear T.H.I.,
Although that particular group of Mk 6 mines was for one of NMEF's special tests and Mine Mk 16 is now obsolete, the combination is good and you'll probably be seeing some official paper to make the marriage legal before too long.

B. Arnaclebutt

Potted plants

Dear B. Arnacles:
Lately we've been having trouble with premature float release in Mk 25-1 drill mines. Any ideas?

P.O.P. MN2

Dear P.O.P.
My friend Lorenzen has reported the same trouble and probably diagnosed it correctly. What sometimes happens is this: When the signal's explosive fitting fires it blows its plastic seal. This lets sea water leak in which provides low-resistance paths across the cutter fitting's leads and fires this fitting, releasing the float.
One way around this when you assemble Mk 25 drills is to connect CA-958's red lead to CA-23's #5 (black), CA-23's #6 (black w/tracer) to CA-959's black, CA-23's #7 (green) to CA-958's green, and CA-23's #8 (green w/tracer) to CA-959's white. Don't forget to tape up all free ends of CA-23 leads so that they can't make direct shorts.
In the doing you will have eliminated a hot lead to the cutter's explosive fitting by using CD-12's B switch instead of its E switch. So if water leakage creates a cross circuit, it won't become effective until one hour before the cutter fitting should fire, and won't seriously interfere with the planned operation of the drill mine.
A forthcoming revision to OP 1816 calls for this hookup for all three mods each of Mk 25 and Mk 36 drill mines. This, plus an improved potting material that will be used in new procurement of these explosive fittings, should seal the deal.

B. Arnaclebutt

Less work in the wells

Dear B-Butt:
Why use those fiber washers on drill-mine clock- and extender-well studs? They tighten up like crazy and make it tough getting the components out later—some even get pretty badly beat up. I'm against needless work and waste.

R.E.B. MN1

Dear Reb,
One thing I'll never understand is who snaffles all the BUWEPSNOTES and INSTRUCTIONS so you guys that they're written for never get to see 'em. I can't even think up a cure except to tell you to keep sending Rudmindes and read ye T-Shooter religiously.
Anyhow, the word is that you can skip the fiber washers in any drill mines that are not expected to be underwater more than 15 days—and your authority is BUWEPSNOTE 8550 of 14 Nov 60. Just remember that there's no reason to check insulation resistance between well components and the mine cases when you omit the fiber washers. But don't forget to use them in service mines and for FSMT mines where they're very important.
This should make R. B. Bardwell out at Yokosuka happy too. He suggested using cap screws instead of studs in those wells, not only to ease the fiber washer misery but to make cleaning those gasket surfaces easier too. Personally, I'm hoping the designers are going to dig Bardwell's suggestion on new cases. It's good!

B. Arnaclebutt

Blew surge

Dear B-Butt:
On two 26-1 test sets I got a 2000-ohms resistance through the relay-4 coil. This is good, yes?

J.M.B. MNC

Dear Chief,
This is good, NO! Probably the repeated high inductive surges encountered in normal use have taken their toll on capacitor C-1 that parallels Relay 4. Probably you should turn your sets in for repair.

B. Arnaclebutt

a universal mine

by
Maurice D. Horn, MN1

Maurice Horn joined the Navy in 1953, completed high school on his own time, and has been a supersharp mineman ever since. A frequent T-Shooter contributor via letters and Rudmindes, he makes his bow here as a published writer.

Here at Mine Project Four we recently had occasion to take a hard look at the business of handling the Mk 25 and 36 mines. What we found was some room for improvement.

Each mine, for example, had to go through three or more stations, and had to be lifted, suspended, or otherwise jimmied and jockeyed at each—a process that was not much simplified even when we handled them uncrated. What with the variations in suspension-lug spacing, the fact that you can't shift the lugs without altering the crates, and what appears to be a Navy-wide shortage of magazine space, we ended up using two different bomb carriers and enough hooks and shackles and swivels to keep a hardware salesman in business for life.

Still we had stacking problems, and grounding problems too. But let's get down to specifics.

First consider the Mark 36

Mines Mark 36 are shipped in their crates with their suspension lugs spaced 14 inches apart, as you know. So to lift them, we used a Bomb Carrier Mk 4 Mod 0 and had no interference from the crate. This was fine.

But then we were supposed to stack them four high, as ordered, using what most of us know as a "small" magazine crane, the one that has a frame height of 7' 10". (The other crane, the one we generally call "large," is the one with a frame height of 9' 6". Except for the difference in frame height they're exactly the same, and if there are any others in general magazine use I haven't come across them anywhere in my travels.)

So like I said, we started out using the so-called small crane. And we could stack the 36s only three-high no matter what combination of gear we tried.

Why? Well, in the first place you can't get the crane low enough so you can latch onto the mine with the carrier unless you have a swivel between the carrier and the crane and three shackles strung together at each mine-case lug. So we rigged her up like that and lifted away.

Simple? No! The three shackles will let you get the mines off the deck all right. But when you come to mine number four the only thing you can do with it is put it back down because with the three shackles the crane won't go high enough to set the mine on top of the stack.

So what we had to do was set number four down on some 4 x 4 chocks. From there we could pick it up again after removing one shackle at each lug, and this was the only way we could get number four up on top of the stack.

Like one of the guys said, "As a solution, it works!" The trouble is, it works only until you go to pick your next mine up off the deck—say, mine number one to start your next stack. To do this you'll have to put another shackle back on the carrier at each lug.

Only in a magazine where we had a large crane could we move more than three 36s without stopping to re-adapt the hardware to the job. And, believe me, we tried everything including the use of planks under the bottom mine in each stack—a sad solution that complicated grounding problems without reducing the handling problems.

Only with the combination of the large crane, a Mark 4 Bomb Carrier, two shackles at each lug, and one swivel at the top, were we able to stack the 36s four-high in their crates without too much trouble.

Then comes the Mark 25

Almost anytime you're handling Mk 36 mines there'll be some 25s to be shifted around too, and vice versa.

This magnifies the handling problem because the 25s won't fit in their crates with their lugs spaced at 14 inches. Your first step, then, is to ditch the Mk 4 carrier and switch to a 30-inch Bomb Carrier Mk 8.

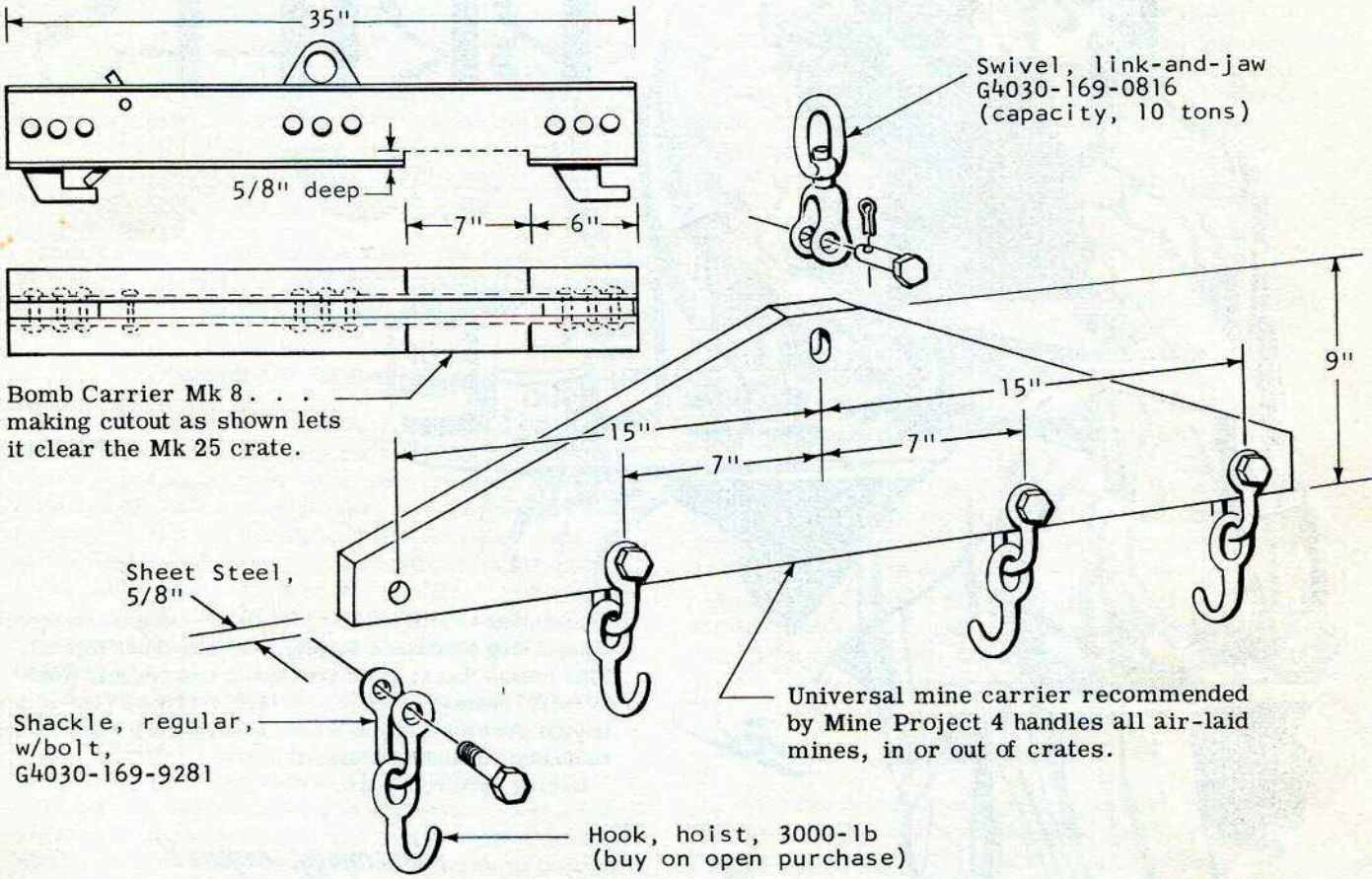
Simple? Again, No! Because you can't marry the carrier to the 25s' lugs because the crate gets in the way.

One solution would be to alter all the Mk 25 crates, but apparently money and other considerations have prevented BUWEPS from having this done.

Another way out is to start playing a game of musical chairs with shackles, hooks, and swivels like we did for the Mines Mk 36. If you have the large crane and can stand up to the added frustration, there are combinations that'll almost work.

Our solution, though, was to get the Mk 8 carrier altered to eliminate its interference with the crates. So it now fits the mine fine and drop-tests performed by the local public works department show that its strength is still more than adequate for safely handling the mines.

carrier that works!



Use the illustration here as a guide if you decide to do likewise. But don't expect too much, and don't omit a safety test.

You'll still need a swivel and an extra shackle to pick up the mine with the small crane. And you'll have to exchange carriers and hardware between marks and you'll still have to slide the top Mine Mk 25 onto each stack . . . a mighty hazardous occupation at best.

So why not go first-class?

There's still one problem I haven't mentioned. To alter the Mk 8 carrier or to juggle hardware on and off the Carrier Mk 4, you've first got to get them. And as things stand today that's not easy. They're apparently in pretty short supply.

The real solution, in my book, is to make up a universal mine carrier . . . one that'll handle any in-service US air-laid mine, in or out of its crate, with lugs at either spacing, using either crane, and without any need to add or subtract hardware as you move from mine to mine, magazine to magazine, or operation to operation.

The only way to get one, unfortunately, is to make it yourself using the illustration here as a guide. In any case the 5/8-inch sheet steel shouldn't be too hard to come by, and everything else you'll need can be had from supply (see stock numbers on the illustration). Everything, that is, but the hooks, which you'll have to pick up on open purchase.

Best by test

Naturally you should get your public works department to drop-test the completed rig before you put it to work, after which you should color-code it with paint per OP 5 and then have it re-tested at intervals in accordance with the code.

And that's it. Here at Mine Project Four we don't claim this carrier as our exclusive invention or design. Several of us, at one time or another, have seen some home-grown jobs pretty much like it in various mine shops.

What we do claim is that it meets safety standards and greatly simplifies all required handling procedures for air-laid mines. Make one and you'll find it will more than pay for itself in saved man-hours, discarded jury rigs, and extra safety for all hands.

millie Amp's BRIEFS

Cog a doodle doo

The Buddhists, in teaching that the only permanent thing in this vale of tears is change, offer a philosophy with which minemen can't help but agree. Take grease, for instance—the kind you use on O-rings and case-opening fastenings.

In T-Shooter 2-59 our feature story told you how and when to use it for this purpose and specified bearing grease MIL-G-16908. Messy but good. Then on page 10 of T-Shooter 1-61 I relayed Frank Kinsinger's fine blintsinger about silicone grease being the definitive ooze to use. And it is.

But no sooner was my item in print than OSO's alert George Siebert (who apparently has been scrutinizing my stuff more closely than I was aware!) wrote me that while the silicone is still best by test, it has been transferred from Z-cog (Ordnance Supply) to W-cog (Fuel Supply). This means that to get it you should now request W6850-702-4297 instead of Z6850-702-4297. Make a note of this in your records and you'll save everyone a lot of time and confusion, including yourself.

George, you're a dear.

Numerology, anyone?

Several of you have Rudminded us gripes about three identical O-Rings. What bugs is the fact that they all have different stock numbers—and only one of these is the number we gave for this part (used on the punch cap in Float Mk 15) in T-Shooter 2-60.

So we drew some from stock and discovered that only one package had the correct stock number GM5330-641-8340.

So the number GM5330-194-3732 for Item 4 on page 18 of T-Shooter 2-60 is wrong; cross it out and write in the correct number.

In case it might help you get your stocks straight, we've also learned that this O-Ring has had the following aliases at one time or another and should be re-marked and stocked together:

33-P-1561-130	Part #AN 6227-B45
GM5330-194-3732	AN Part #6227B-45

As for the flatterer who also inquired about my personal number, it's GEE!38-24-36. So far no Rudminders have griped about that!

Dear John

Apparently John Hallstrom is my kind of man—the kind that never does things half way! At least when he sent in a Rudminde telling us how the batteries get crushed by the brackets in 36-1 mines he not only suggested a way to prevent it in mine cases already in stock, but also suggested a fix for any new procurement of the Mark 36.

The trouble, John, is that the brain busters around here all feel that extra trouble and extra expense can't be justified when all that's necessary is to follow the instructions in OP 1684: Clamp the batteries tightly with the CD-14 battery brackets but not tightly enough to deform the battery casings.

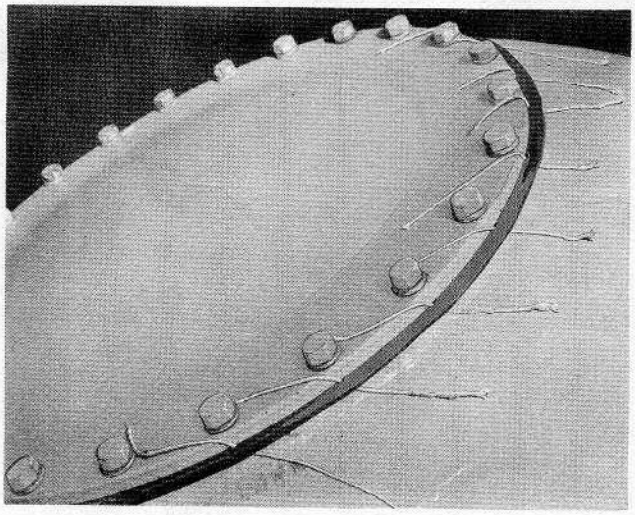
So it's too bad, John. Thanks a lot. Try again. Even if we never get together on mine cases you'll find that sooner or later persistence pays off.

Overseas but not overweight

J. S. Lorenzen, a real global pal, has been eyeballing the OPs like a hawk, checking the facts like a prosecuting attorney, and Rudminding vigorously. Take OP 1860 for instance. He wasn't satisfied when this pub told him that the Mk 71-0 test set is supplied with test weights which correspond to 2-inch and 5-inch negative pressure steps. He wanted to know the heft of these weights. So he scaled some from several test sets and found that the 2-inch ones went from 155 to 160 grams, and the 5-inch ones from 376 to 382 grams.

J. S. got a bit alarmed over these variations. Thought the weights should be more exact. But according to the specs the 2-inch weights are acceptable at 150 to 160 grams, and the 5-inch ones at 375 to 390 grams.

To some of you our buddy's curiosity may seem a bit overboard. Nevertheless, it was this thoroughness of his which prompted him to Rudminde us about more than a few serious discrepancies which have gone unnoticed or unreported for some time.



Shake rattle and roll

Back in T-Shooter 1-60 old Butts blew his parts-packin' stack about sloppy shipments. Now, R. L. Mackey of Navy #3867 sent photos showing more of the same.

The inspection department's "ACCEPTED" tag carried the Drawing Number 385484 . . . the one that specifies: "Two arming-wire safety lock assemblies shall be packed together in a corrugated fiberboard container . . ." Now togetherness like that can make for real fun. But this galloping grab bag that Mackey received?

I ask you, what kind of housekeeping is that?

Washed-out washers

Sharp-eyed G. Chipman, Navy 3923, found that SE-3 Mod 3s from Lot OH-59 made by CT & E don't have the washers under their terminal screws that OP 1452 2d Rev says you should make sure are there.

The idea is that, without the washers, the screws might protrude through the bakelite block and touch the grounded base plate.

What's happened is that the drawing for the mech has been revised to omit the washers and, like G. C. noticed, the plates now have clearance holes for the SE's screws so they can't ground even if they do come through.

So if your SE-3s are furnished with washers use 'em. But don't put washers under the screws of SE-3s that come without them. The ends of the screws on these newer SE-3s have been staked and shouldn't be forced out.

Sedimental me

The trouble comes from laying on the bottom and getting unwanted deposits in their tubes. That's what J. D. Stokes of MCAF Navy 955 tells us about the tubes that lead from an opening in the tail cover to the sensitivity switch in 25-1 mines. You'll find them on Mk 36-2 and 49-1 mines too.

Reaming with a stiff wire cleared the impacted mud and sand from the tubes on two previously planted drill mines, J. D. said, but two others had to be replaced.

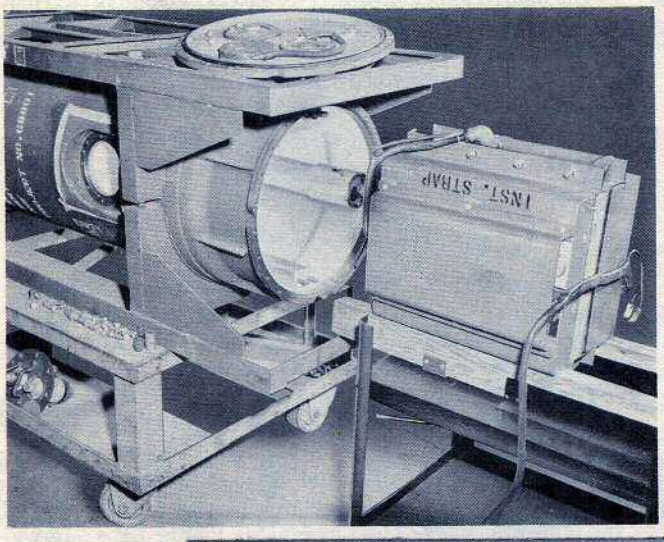
Even though drill and FSMT mines usually get a good washing down when they are retrieved, gook can still stay up in those tubes. So whoever returns these mines to stock should make sure to check the tubes over carefully.

Millie to J. D.: I hope this clears things for you. Over and out.

Millie Amps

Grease on O-rings and fastenings is fine but not on flat gaskets (see my first article). Here's the kind of cold flow that resulted when one mine shop used it for a recent FSMT plant. To learn why see feature on case openings in T-Shooter 2-59.

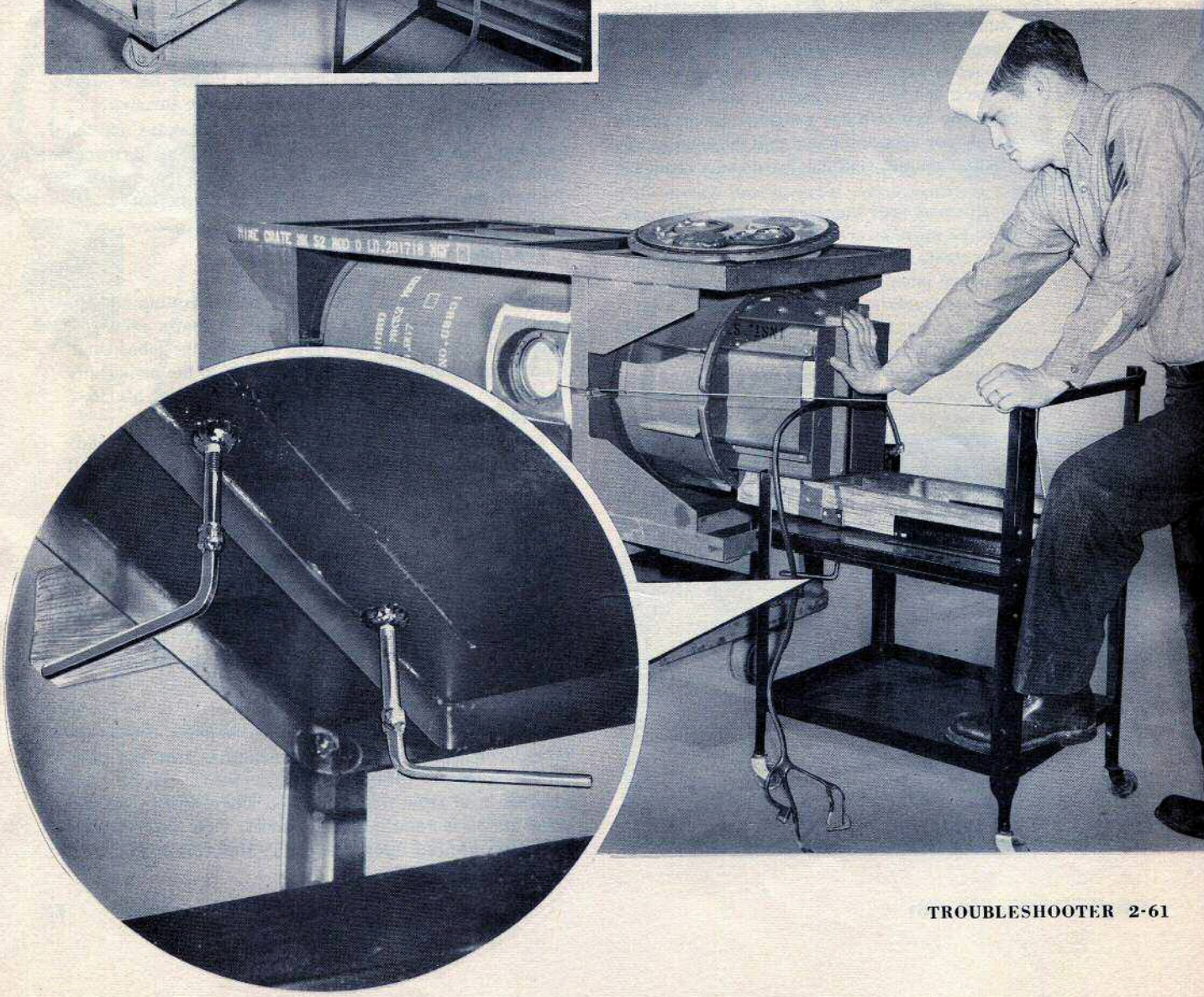
CONTRIBUTIONS
. . . FROM THE FLEET

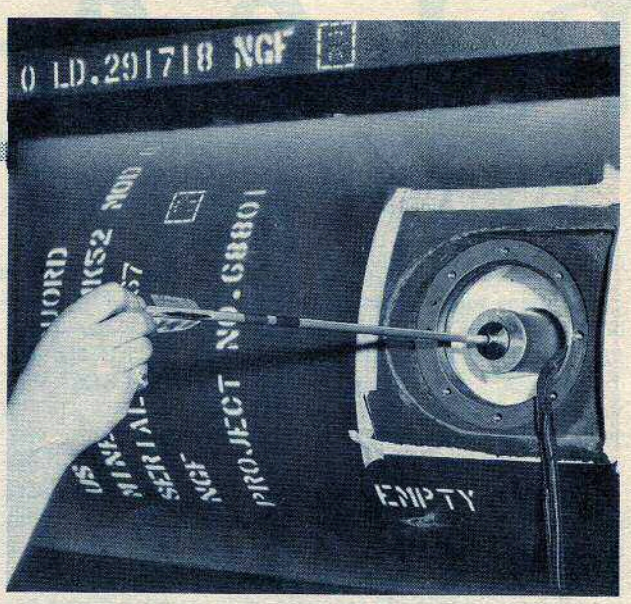


Installing that 135-pound instrument rack in the new Mk 52 mine can be a real knuckle-knocking, blood-blistering, temper-testing maneuver. Usually it takes two men to juggle it into the tail while a third man coaxes the cable along.

But the situation is smoother at Mine Project 4 where the boys have built a smart cart that makes it the simple, single-handed, push-pull operation you see Dick Woodson demonstrating here.

Almost any shop cart can be converted to the purpose. The main idea is to have the tops of the hardwood skids fairly level and at average height for the crated mines in your dollies, with the skids' adjusting screws set halfway. Hinge the back end of each skid to the top of the platform and weld the skids' front-end adjusting-screw nuts to a





support on the underside of the platform as shown bottom left.

Because each skid has its own adjusting screw and is independently hinged, not only can you make up or down on-the-job adjustment, but you can also compensate for any slight list the mine may have taken in its crate.

When you have the rack on the cart properly lined up with the tail of the mine, and before you attempt to slide the rack into the mine, secure the forward end of the cart to the aft of the crate using a couple of C-clamps. Then tie one end of the come-along cord to the forward end of the instrument cable and run the cord's other end out through the arming-device well.

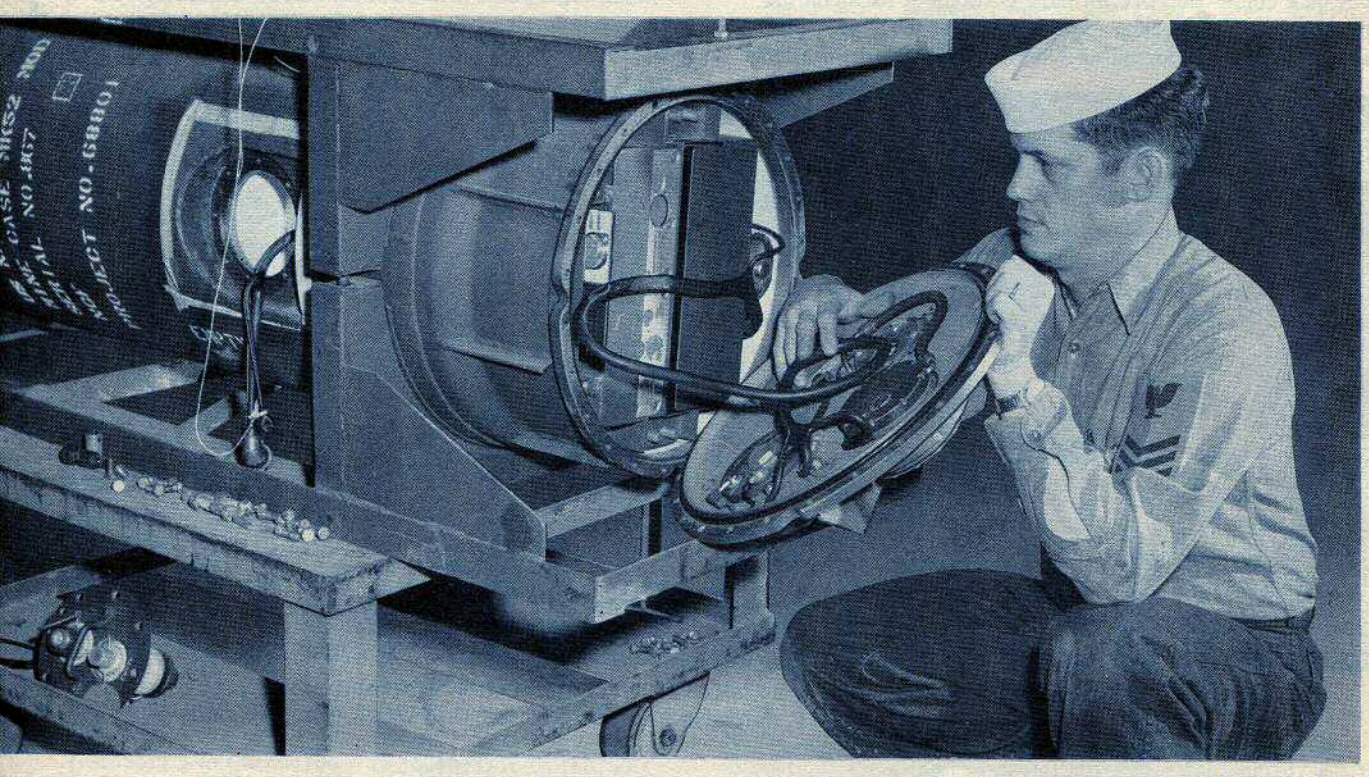
Now you're all set. Simply pull on the cord with one hand while you push the rack into the mine with the other. It should go in like Flynn—and no lawyers needed later.

In the photo at the lower right Dick's not buttoning up the mine—just demonstrating the right way to fake the after end of the instrument cable when you install the tail cover.

At the upper right is a close-up of how a sucker-tipped arrow hits the bullseye to buffalo a stubborn booster out of its burrow in the same Mk 52 mine. If you can't promote an arrow or a dart from Special Services, maybe some mechanic will let you have an old valve grinder—or you can swipe a suction cup from a stick-on ash tray or soap rack.

"Many moons ago when I was a Chief," says the Project's LT Roberts, "there was a suction tool in the basic kit for the Mark 26 mines. Be smart to have it included again."

Ideas like the smart cart and the booster sucker? "There's one born every minute!" say the Indians at Mine Project 4—without reservation.



WOODSON MN!

Pub-S-Crawlin'

with

Clark Starter, MN2

New OPs in the mill

The many who've been requesting copies of OP 1889 will be glad to know that NMEF has just finished manuscripts for three new official assembly manuals on the Mk 49 drill mines. They will be designated NAVWEPS OPs 1807 Vol. 2 (49-0), 1808 Vol. 2 (49-1), and 1809 Vol. 2 (49-2). They'll have been forwarded to BUWEPS by the time you read this, so should be in print before the end of the year.

Naturally we hope you're going to find these new books reasonably accurate. We also hope you'll find them easy to understand and to use, and will gripe loud and clear if you don't. Otherwise they'll be establishing the pattern for all future assembly manuals on in-service mines as when they are revised.

For expedient and practical reasons this pattern is not all we'd like it to be. But we think it does have some good points.

First is the fact that each book is limited to shop instructions on only one mod. There are a number of reasons why this now has to be regardless of whether it will make the books easier to use or not. But the concensus seems to be that it is better and we hope you'll agree.

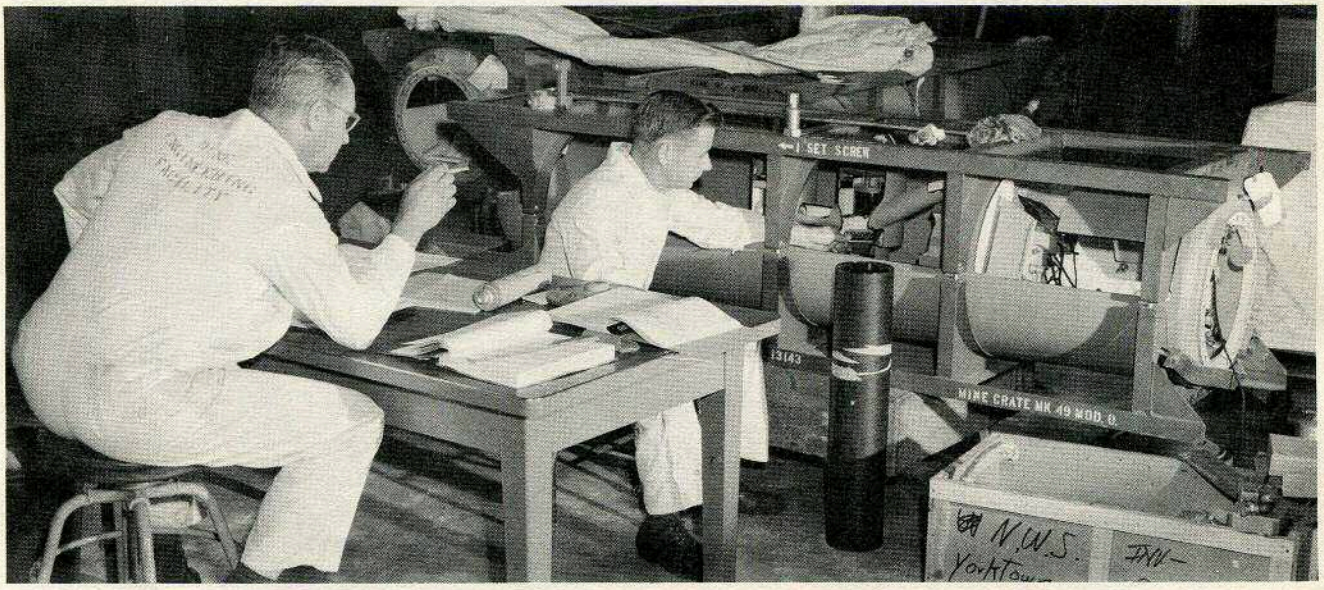
Perhaps the best point is that full advantage has been taken of NOL's excellent experiments in their recent advance copies and preliminary editions of forthcoming mine pubs. Specifically, you'll find that their so-called instruction-sheet formula—exemplified in the preliminary edition of OP 1889 on these same mines—has been picked up in toto.

We've even carried it a step further. Now the job sheets will be the only shop instructions in the three Mk 49 books, with the former tables converted into a series of task indexes—each of which becomes your guide to complete sets of job sheets with which to perform any major task on the mines.

Other parts of the slightly new look include the incorporation of federal stock numbers and the use of less cluttered, more direct language in the text.

If you've been reading between the lines you may already have guessed that in knuckling down to the responsibility for preparing all future revisions on assembly manuals for in-service mines and depth-charges, NMEF's publications group—the same one that prepares ye T-Shooter—is going to make a real college try at eliminating the multiplicity of outdated official technical manuals and up-dated but unofficial review copies, advance copies, and preliminary editions with which the mine force is now plagued. If you could sample the confusion it generates, reflected by Rudminde after Rudminde, you'd understand why.

Meanwhile (back at the ranch) there's still the necessity of making do with what we've got. To help you along the way, here's our crop of pubs notes for this quarter.



NMEF shop technicians Wilbur L. Wilburn (left) and Warner Mooney assemble a Mark 49 mine using manuscript for new OP. All NMEF manuals are checked out this way. Cutaway makes it easier to analyze problems, find solutions.

▶ **OD 7309 2d Rev (Mine Mk 6-0 Gen'l Requisites):** There's still some confusion over which items are used for which mine case. If sheet 31 of your copy hasn't been corrected per Change 1, write the following in the row of blank spaces at the bottom of the columns:

Item	215.1
Description	Case: Mine Mk 6 Mod 0
Drawing No.	1358590
List of Dwgs. No.	284916
Code Number	G0222-06-00
Oper. Assys. 01 thru 16	1A (for each)

Finish this one up by changing the Item Number on page 32 to read 215.1.

▶ **OD 7331 Vol 1 4th Rev; Vol 2 1st Rev (Mine Mk 36-2 Gen'l Req):** In Vol 1 on page 66 under item 288.0, change Used With number to read 259.0 and change the Drawing Number to read 12-Z-3010-498.

Make the same changes on page 65 of Vol 2.

▶ **OD 7337 2d Rev (Mine Mk 50-0 Gen'l Requisites):** On sheet 27, shorten the footnote after the asterisk to read: This item is for shipping purposes only. Next, on sheet 33 after item 301.0, cross out the numbers 220.0 and mark a double asterisk (**) in the "Footnote" column. Cross out the eight asterisks in the "Operational Assembly" columns, and add this footnote at the bottom of the sheet: **By assembly directive only.

▶ **OD 9363 (Nomenclature Manual):** On page 47-7, under Firing Mechanism C-4 Mod 1, 3d line, cross out Mine Mk 23 Mod 0 and write in Mine Mk 19 Mod 2.

On page 49-2, under Horn Mk 7 Mod 0, 3d line, cross out "and Mine Mk 10 Mod 1."

On page 73-13, under SR-7 Mod 2 Relay, 2d line, add and Mine Mk 36 Mod 3.

On page 73-14, under SR-9 Mod 0 Relay, 6th line, add and in Firing Mechanism A-8 type for Mine Mk 27 Mods 3 and 5, and Mine Mk 36 Mod 3.

▶ **OD 12067-D 1st Rev (Index to Depth-Charge Components):** On page 3, under Battery, Dry, B-19, BA-250/U, cross out the words "Note calendar year and quarter of manufacture to be indicated by using the final digit of the year in lieu of the Y and number of the quarter in lieu of the Q. F/unserviceable use 9 in lieu of Y and Q." Also change the battery's sequence number from D002500YQ to D00250000.

▶ **OD 12067-G 1st Rev (Index to Mine Components):** On pages 13 and 14 cross out the words "Note-47" following the description of each battery listed. Also change battery sequence numbers as follows—

On page 13:

G016205YQ to G01620500	G016248YQ to G01624800
G016236YQ to G01623600	G016249YQ to G01624900
G016239YQ to G01623900	G016251YQ to G01625100
G016241YQ to G01624100	G016310YQ to G01631000
G016242YQ to G01624200	G016311YQ to G01631100

and on page 14:

G016324YQ to G01632400	G016322YQ to G01632200
G016326YQ to G01632600	G016309YQ to G01630900
G016327YQ to G01632700	G016323YQ to G01632300
G016340YQ to G01634000	

▶ **OP 948 1st Rev (Mines Mk 10-3, 7, 9):** On page 59 change paragraph 44c to read: Pull CA-775 out of the forward (orienting-slot) end of the sleeve, then remove the tapes from the cable's three leads ONE LEAD AT A TIME and secure the leads to the like-colored terminals on the TB-7. Make sure the terminal screws are securely tightened, then anchor the strain-relief loop to a battery-cover screw as shown in figure 46. (NOTE: The clamp fuse will blow if the black and green leads accidentally touch the TB-7's battery terminals.)

In paragraph 44d change 1 ohm to read 2 ohms.

▶ **OP 956 3d Rev (Mine Mk 25-0):** On page 12, column 2, cross out the last paragraph and write in: The SD-4 Mod 1 contains two electrolytic cells, each of which controls two switches. One pair of switches sterilizes the mine by short circuiting the battery and the other pair by grounding the detonator circuit—thus sterilization is accomplished after either electrolytic cell operates. The time of operation is predetermined by the installation of specified resistors that limit current through the cell. The use of jumpers (supplied with the mechanism) for internal connections between the SD-4's terminals is explained in chapter 3.

On page 67, column 1, after paragraph p write: NOTE: Do not use the aluminum spacers on these assemblies.

▶ **OP 1452 2d Rev (Mine Accessories):** On page 108 of Change 3, in table 21's Test-Selector-Position column, cross out the third entry: $^{1}2$.

For BA-241/U, under Load, add 4 after the figures 1, 2, 3.

For BA-242/U, under 5 meg/50 meg, change the entry to read 5 meg.

For BA-309/U, under No Load, change the 2 to read 1. Also change the 1 under Load to read 2. Also make both of these changes for BA-310/U.

For BA-311/U, under No Load, change the figures 2, 4 to read 1, 3. Also change the 1, 3 entry in the Load column for this battery to read 2, 4.

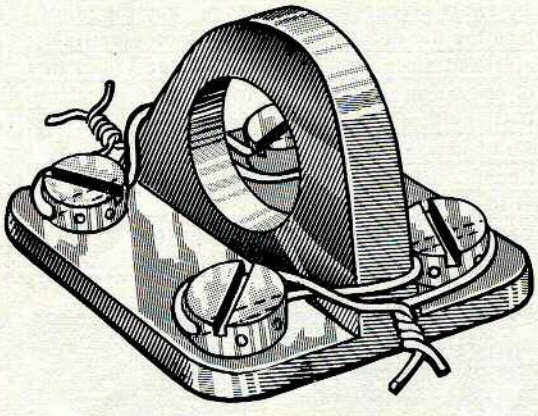
On page 116, after paragraph f, write in: NOTE: These washers are not furnished with new procurement of SE-3 mechanisms and are not required. New base plates have clearance holes to accommodate the terminal-screw ends.

▶ **OP 1736 2d Rev (Mine Mk 39-0):** On page 25, after step 4 under Voltage Polarity Test add CAUTION: The test set's meter will register reverse polarity if CA-714's phone plug is not fully inserted into the test set's jack. Also change the third sentence of step 5 to read: If the needle does not deflect, or deflects in the wrong direction, the mine has been improperly assembled, a component is defective, or CA-714's phone plug is not

fully inserted into the test set's jack.

On page 36, under Test Before Detonator Installation, cross out steps 1 through 12 and write these in: 1. Make sure screws on extender terminal strip are tight. 2. Connect an ohmmeter to the two DET terminals on the extender; an open circuit should be indicated. Reverse the ohmmeter's leads; again an open circuit should be indicated. 3. Connect the ohmmeter between Det 1 and a bare spot on the mine case; an open circuit should be indicated. Reverse the ohmmeter's leads; again an open circuit should be indicated. 4. Connect the ohmmeter between DET 2 and a bare spot on the mine case; a closed circuit should be indicated. Reverse the ohmmeter's leads; again a closed circuit should be indicated. Also add: WARNING: If results of the detonator-circuit tests are not exactly as specified, do not install a detonator until the fault has been found and corrected.

On page 40, after paragraph 2 add: NOTE: Secure suspension lugs by torquing cap screws to 16-20 lb-ft (use screwdriver adapter G120-223-6986) and installing keeper wires.



Keeper wires properly installed

IMPORTANT: Be sure you also change Items 17, 40, and 47 in this book's back envelope to agree with the above corrections.)

▶ **OP 1765 2d Rev (Mine Mk 25-2):** On page 60, column 2, after paragraph b write in: NOTE: Do not use the flat steel springs under Release Mechanism Mk 7 Mod 3 on these assemblies.

On page 66, column 2, after paragraph p write in: NOTE: Do not use the aluminum spacers on these assemblies.

▶ **OP 1797 2d Rev (Mine Mk 25-1):** On page 36, paragraph 22j, line 2, cross out (43-13-18855-161) and write in (43-B-18855-161).

On page 66, column 2, after paragraph b_2 write in: NOTE: Do not use the flat steel springs under Release Mechanism Mk 7 Mod 3 on these assemblies.

On page 77, column 1, after paragraph p_3 write in: NOTE: Do not use the aluminum spacers on these assemblies.

In Item 6 (back pocket) paragraph 22j, cross out 43-13-18855-161 and write in 43-B-18855-161.

▶ **OP 1811 (Mine Mk 50-0 Service and Drill):** On page 1, in the first paragraph under Outline for Mine Operation cross out the last two lines and write in: these components for movement unless, in the case of the extender, a soluble washer has been installed. Also change the first five lines of the first NOTE to read: If a soluble washer is used in the extender the mine will not arm until the washer has dissolved. Although the washer is . . .

On page 2, in the third paragraph under Safety Features change "soluble washers MUST be installed in the extender and hydrostatic switch" to read: a soluble washer MUST be installed in the extender.

On page 17 cross out the fourth line of the paragraph after the NOTE and write in: or use of a soluble washer; in which case in-.

On pages 32-33 cross out the final s in Installation of Soluble Washers and change the next sentence to read: If directed by the officer-in-charge, install a soluble washer in the EXTENDER as follows (fig. 24):

On page 33, column 1, step 1, cross out "or hydraulic switch" and cross out all of step 6.

On page 36, in the first sentence at the top of the page, cross out "AND HYDRAULIC SWITCH". In the warning, again cross out "or hydraulic switch" and in the pair of headings after the warning cross out the final s on the word washers. Also cross out steps 5.1 and 5.2, changing steps 6.1 and 6.2 to 5.1 and 5.2.

On page 37, again cross out the final s on the word washers in both headings.

Finish the job by making the same changes to Item 19 (inside back cover) as on pages 32 and 33, and the same changes to Item 23 as on pages 36 and 37.

▶ **OP 1878 1st Rev (Drill Mine Mk 10-3):** On page 80 under Operational Tests (A-3) change Mod 1 in the fourth line to read Mod 5. Under Voltage Polarity Test re-number steps 1, 2, and 3 to 2, 3, and 4, and write in a new first step: 1. Replace the fuse in Terminal Block Mk 32 Mod 0 with a conducting slug DWG 403342 (Z1350-038-6308). Also, add a new fifth step: 5. Make sure the CD-14 Mod 5's DA-1, DA-2, and S-2 switches are open, and S-1 is closed. Plug CD-14's CA-22 into the receptacle on TB Mk 32.

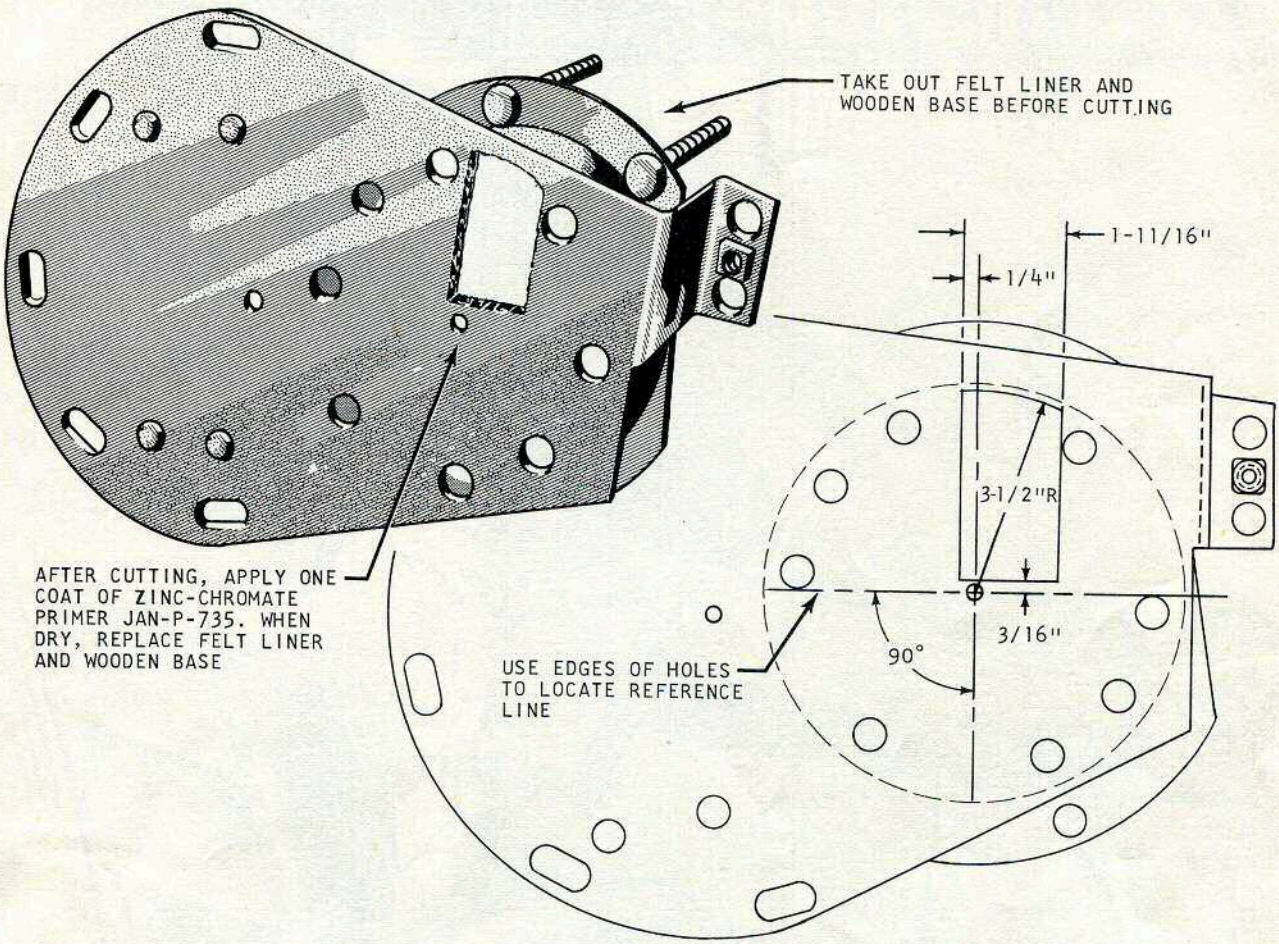
On page 86 under Effect of Firing Mechanism on Mine Circuit Test cross out step 2 and re-number step 3 to step 2.

On figure 35 in the right-hand column write 9 beside the M-5 terminal.

On page 88 under Recovery Mechanism Circuit Test cross out the present step 1 and write in new step: 1. Unplug CA-22 from TB Mk 32's receptacle and plug jumper plug DWG 1389362 into the receptacle. After this new step 1 add: CAUTION: Test the recovery-mechanism circuit promptly to avoid excessive battery drain and overheating the TB Mk 32's 5-ohm resistor.

Change Instruction Sheet A-3 to agree with the above corrections.

Do You do this Job Right?



NEW CURE FOR THE BENDS

You can't bend the battery bracket in a Mk 36-2 mine case to get it out of the way for a Mk 36-2 mine assembly, then bend it back again for another mod of the mine without overstressing the metal. That's why, once this bracket has been bent, the Bureau limits use of the case to Mod 2 of the mine.

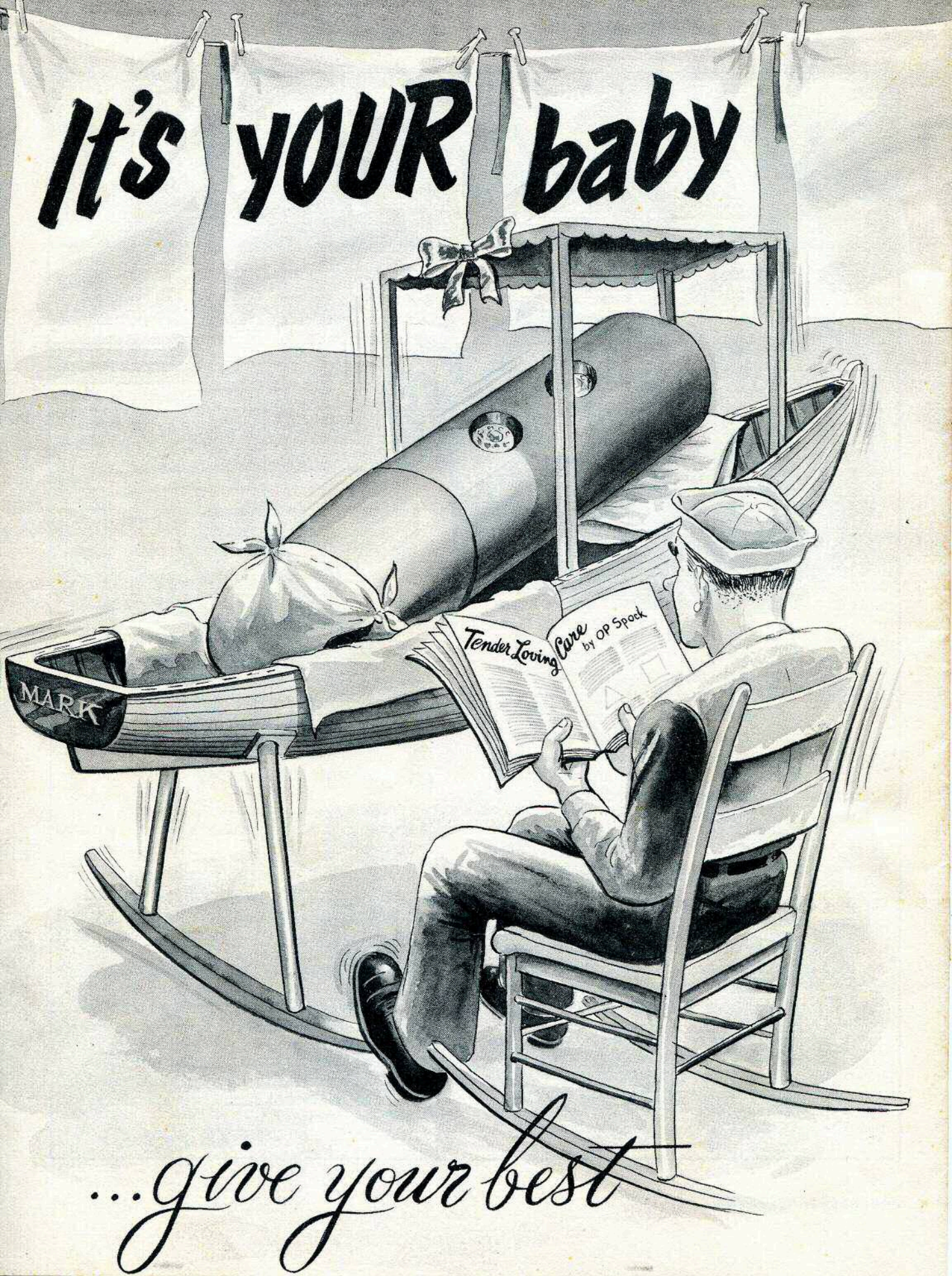
This means that every time one of these brackets has to be bent there's one less case available for building the other mods. The situation is showing up in Rudmindes about bent-bracket cases being received on orders for cases with which to build the other mods, with resultant lost time and tempers all along the way.

Matters are made even worse by the fact that the NAVORDINST 8551.3 requirement for stenciling bent-bracket cases "MINE CASE ALTERED—USE WITH MINE MK 36 MOD 2 ONLY" frequently has been ignored.

The reason for bending, of course, has been to make room for the battery cover plate in the Mod 2. Now, fortunately, it looks like them days may be gone forever. By cutting a hole in this plate like we show here, the battery bracket will stick through in the clear, the bending and stenciling requirements will be eliminated, and any Mk 36-2 case can be used for any mod of the Mk 36 mine.

A BUWEPSINST in the mill right now will be telling you to do it this way.

the Editor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