

Capt. John E. Riley 81.14.457

# ARMY MOTORS

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» » ARE YOU WILLING TO RISK YOUR LIFE ON THE CONDITION OF YOUR EQUIPMENT?



## Bringing 'Em Back Alive

Ordnance has just hauled off and given birth to a hot idea. It's the kind of idea we like.

Ordnance is bringing seasoned COMBAT maintenance men back from overseas to serve as instructors in their training centers over here. The men who've doped out the tricks of the Germans and the Japs are coming back to spread their know-how around. Like in "Battle Stories" on the opposite page.



They're set up in our wheeled- and combat-vehicle schools to show us the tricks and troubles of operating in the strange places of the earth.

As so many of our correspondents have reported from abroad, you don't begin to know what you're up against until you hit the front-line neighborhood. The mud in Italy is different from the mud in maneuvers.

Because it's different, we like to hear how it affects American units operating under it.

Best man to tell us is a guy just back from Anzio. And another guy just back from England.

We've got men back from New Guinea, too. The mud in the jungles, they say, is like nothing else in the world. It's thick, gooey, and full of poison for vehicles. It's so tough, tenacious and rubbery—we hear they're using it to retread tires. It takes a lot of tricks to drive through mud like that, and it takes a little extra something to operate a maintenance shop in mud like that.

Who could give a better slant than some poor sucker who learned the hard way?

Think of the influence the battle-hardened boys have in the USA. You hear this one shout about his careless drivers, and that one about his don't-give-a-damn mechanics. Thing is, over here we live and train in a vacuum; over here, war is make-believe. We **need** a bunch of guys who've seen the big show to tell us what the hell is really going on. Who could be sloppy about maintenance after hearing first-hand from some guy that his life, the life of his buddies, and a 50-mile advance depended on the way he cared for his truck or tanks?



We're a bunch of hot-house flowers. What we **need** is straight talk from the guys who've lived, worked, and survived on the dung pile to show us how to survive on the dung pile, too.

They've been brought back with the dirt, grease, and the heartache fresh on them.

They open our eyes to the screaming necessity of learning our lessons over here. They teach us a few things, too.

When they talk to us—for God's sake, **let's listen.**

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# Battle Stories

BY TANKMEN  
WHO CAME  
BACK

What did a shell gouging out a hunk of tank armor teach the men inside? What happens when a 33-ton M10 comes to a stop on a sandy beach? Sixteen enlisted tankmen back at Fort Knox, Ky., tell you the little tricks they used to save their skins

## **TECH. SGT. O. J. OLIVER**

*Silver Star, Purple Heart*

First time I saw real action was in North Africa. Our Tank Regiment was up around Kasserine and things were flying. In one action, several of the tanks were maneuvering around and they put their tails to the enemy. Several of them got knocked out right then. The tail armor's thin. The tank should be kept with the hull facing front. A smart tanker backs down and keeps the front of the hull facing the enemy. I learned a good lesson up there . . . to always keep the inside of the tank clean. The walls, the sponsons, the hull wiped dry of any grease. And don't keep any grease rags in the tank. Throw 'em out. The outside can be dirty as hell, but the inside—keep it clean. When you get a ricochet along the

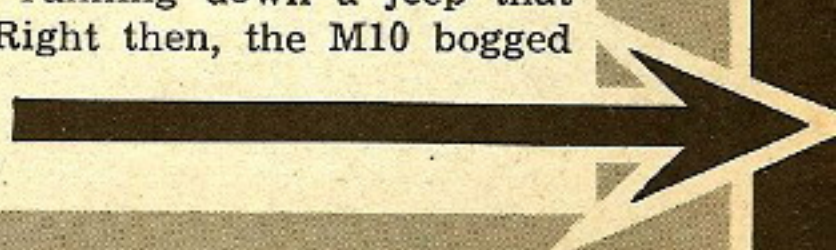
side, you know, the kind that takes a hunk of metal out, like a scoop of ice cream, it doesn't hurt anything. But it turns the metal around there white hot. If there's any grease on the inside of the wall, or any greasy rags resting up against that spot, they'll flare up and start a fire. I tell the fellows here in training to keep their tanks clean all the time.

## **SGT. H. SAUL**

*Silver Star, Purple Heart*

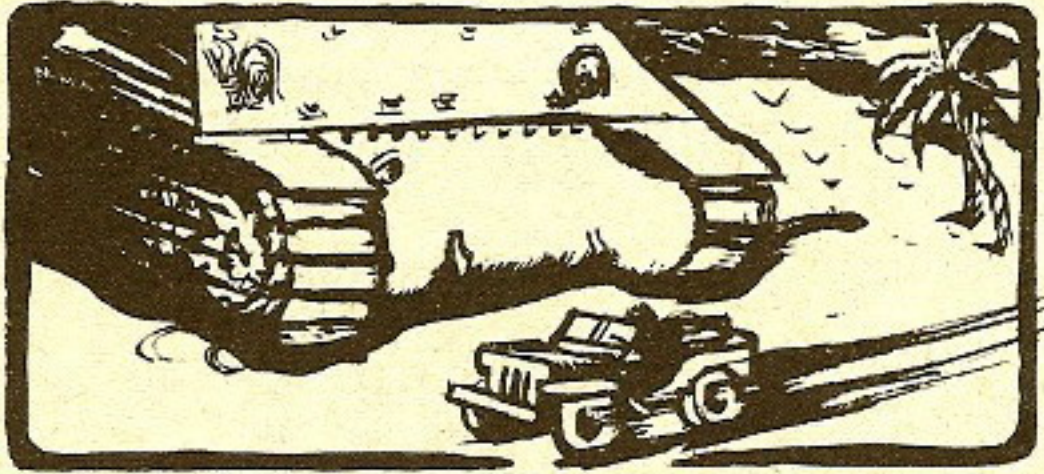
I saw something happen right as we drove off the LST and up the sandy beach into Italy. I was Section Chief, commanding an M10 gun motor carriage in a Tank Destroyer outfit. The M10 in front of us had to stop suddenly to avoid running down a jeep that dashed in front of it. Right then, the M10 bogged

\*Men from the Armored Replacement Training Center; men in the "Purple Heart Club," teaching General Subjects at ARTC; men from the Armored School.





down. It was following in the tracks of the tank in front. I mean it wasn't riding on the soft sand. But slowing down and stopping that 32 tons of tank bogged it right down. We had to finally pull our tank destroyer around in front and tow it out. Of course that was an accident. Just one of those things. But it shows how important it is to keep moving along on sandy beaches. Once you stop, brother, you've bogged down. Something general you can tell the guys here. Every man in a motor carriage crew, or tank for that matter, should try to learn every other man's job. When I was in North Africa I was a



gunner on an M4. The tank commander got wounded and I took over and we kept going. Same thing in Italy. I was commander then. When we got around Mignano I got wounded and the driver took right over. The assistant driver did the driving. That's the way our crew worked, every man knew every job in the destroyer.

### **PFC. A. G. ROBSON**

The first thing that stuck out to me was the amount of night driving we had to do overseas. All the time. Going around the windy mountain roads at night you had to be a regular cat, or it's too bad. Damn hard on your eyes, but with enough practice your eyes get used to driving at night. We did get enough practice—in Tunisia. I think all men should get more practice in night driving. I know we could have used more. The second tank I got shot out of was lucky. We hit a mine near El Guettar in Tunisia. We were stopped cold and couldn't go. 88 fire started landing around us and we had to get out. I threw a smoke grenade and we crawled away under cover of the smoke. It's smart to keep the smoke grenades tied to the outside of the tank. We did that later on. Don't think these grenades are excess baggage. We were damn glad to have them.

### **CPL. J. J. SMURDA**

Boy, if there's any feeling you get when you're in action, it's the feeling that your tail depends on your own tank. You get the feeling your tank's your home, your protection, your moving foxhole. And how we babied ours. You'll see what I mean... around Fondouk in Tunisia, you learn damn quick how important it is to keep your tank in the best shape. I checked over the tank every chance I got. A little thing like a loose connector can be bad. You can throw a track because of it. And that reminds me, we learned to turn gradually, none of this spinning around on a dime stuff. That's fun in

training—but you never have to do it on the battlefield. You go along easy. The system we used to dodge Jerry was to pull up behind a small rise, straighten out and fire, pull forward, count five, and turn—whichever way the tank commander signalled you. Always keep toward the target. It's like a bombardier and pilot setup in a plane. The driver has to search out the terrain that makes it easiest for the gunner. Course it ain't always easy. When you're attacking, you've got to take the leftovers in the terrain. The enemy already has the best spots, usually. But that's where a good driver comes in... he shows his stuff.

### **PVT. C. SCIARA**

*Purple Heart*

Back in the States one of the instructors we had said something about driving in the center of a high-crown road. OK. Over there in Tunisia, I found out what he meant. We had a long drive up to the combat area. Incidentally, I was at the tail end of the convoy and I had a tough time. The line moves slow, but when you're at the end you have to step like hell to keep up. Anyhow, we were riding all over the road. It was a high-crown road, but a lot of us drove along the low side. I noticed the tank wanted to edge off the road more and more, and I had to keep correcting it, pulling on the lever to keep it on the road. Thought nothing of it, till we went into action at Tebourba. I noticed I had trouble maneuvering. The tank wouldn't zigzag as well... worked OK on the one side, but didn't brake on the other. I must have worn the lining down on one side while we were on convoy. Luckily I got maintenance to fix it. Tell the tank drivers to keep in the center if they're in a place where they have to ride on a high-crown road. It keeps from wearing the track out on one side, and from wearing the steering brake out on one side, and keeps you from wearing yourself out jerking the levers all day.

### **SGT. D. E. DONEY**

I was a driver of an M10 in Italy, and I'll tell you it was no snap job. Most of the time we were driving at night, on slopping wet roads. Didn't go across country much because we'd have got stuck. Had to stick to the roads. These tank destroyers are heavy and slide around a lot. Some drivers make them slide even more. When you feel the tank start to slide, don't reach for the steering levers. It's natural... but don't do it. It'll only make you slide more. Just let the tank go, and she'll probably catch herself and stop





sliding, if you've still got forward speed. Had a lot of ditches to go through. It takes a little driving to get through some of them. Before you go in, double clutch down to a lower gear. Ease your tank down gently till you're at the bottom then give it full power to climb out. Just as you come over the top edge and a little over half length of your tracks are out, ease up on the gas. If you give it the gun at that moment, it puts an extra-heavy load on your suspension and you're liable to spring the sprockets. You ought to say something about radio equipment. It's important over there. Be sure the radio operator turns the radio off when he's not using it. One time ours was left on all night. Ran the battery all the way down. We had a hell-of-a-time. That reminds me, I got in trouble with my radio equipment. I disconnected the headphones the regular way, but I left the plugs dangling around on the floor. Just got sloppy. When I got back in, I stepped on the plug and smashed it. Then I didn't have any interphone or radio connection with the commander or the crew. I was plain cut off. Those parts were hard to get, too.

### **SGT. C. M. HEDGEPATH**

I was a tank commander on an M4 in Africa. Yes, I had good drivers. There was one, though. He was pretty bad, and we had him transferred to a different outfit. We were fighting around the port of Farina, near Bizerte you know, at the time. This driver liked to cowboy a tank around. Did it regular. He slammed over a rock one time and almost threw me out of the tank. Played hell with the gunner too. Didn't give the gunner good firing positions. He couldn't understand that speed isn't the important thing. Maneuverability and good sense are. And having a cool head. This guy wouldn't even listen. We came out of combat one time and I told him to open his hatch, the war was over. He wouldn't do it. We were driving near a column of German prisoners and I didn't want to go running them down. I could tell you more. He didn't know how to shift. He'd grind away and waste a lot of time. Had to stop the tank while he fooled around and picked out one of the gears he liked. In fact, I think if it wasn't for that driver we wouldn't have had one tank shot out from us. An 88 hit the track, then another one. We just weren't in good position. Not all the drivers are like him. Now later on, I had a driver. . .

### **PVT. C. LAWS**

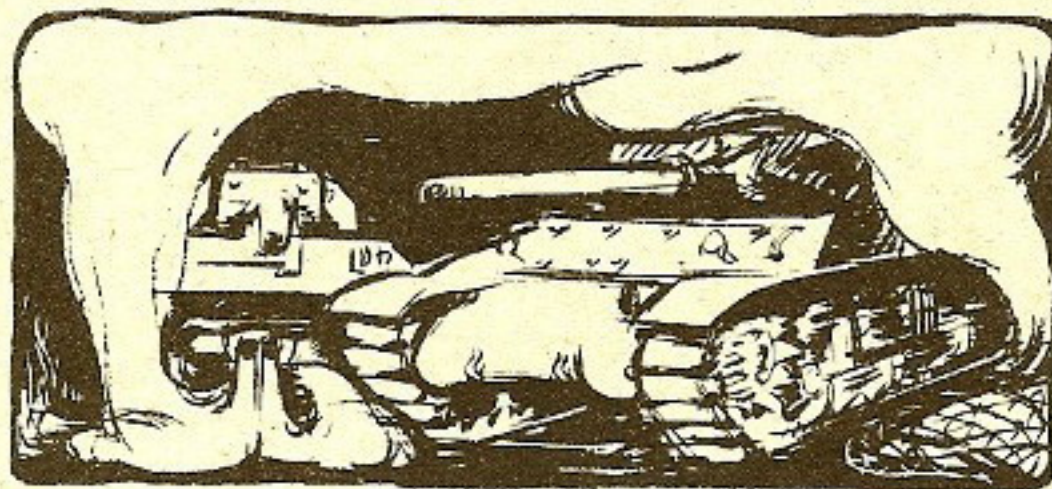
We did a lot of firing from what they call a "hull-down" position—when the tank's positioned so the hull is down below the crest of a hill and just the gun and turret show. It's good sense, and every driver knows it. And it's the driver better than anyone else in the tank who can tell when the tank's in a good hull-down. That's what we found. I always knew I was in good hull-down when I could just barely see over the top of the hill. I was sure we were down low then, in protected position. That's all part of the business of keeping from making a silhouette of your tank. Near Maknassy in Tunisia a few tanks went roaring over the crest of a hill

and got hit in the belly. They made a clean outline against the sky. The Krauts can pop a tank off the skyline at 2000 yards. We always tried to pick out the little valleys and turns, and we came through.

### **SGT. T. J. FITCHER**

*Purple Heart*

I guess I had the wrong idea when I went overseas into combat. I saw movies and pictures of tanks catching fire and flaming up in smoke soon as a shell hit them. That's the crap. I was in two tanks that were hit in North Africa. One time we were just turned bottom side up, and we crawled out the escape door. And the other I got out through the turret hatch. You have at least 4 seconds before a tank catches fire—if it catches at all—and in that time you can be plenty far away. But don't get to feeling that nothing can lick you either. The German equipment I saw was just as good as ours. That 88 mm gun they have can be greatly under-estimated, but never over-estimated. Just realize they're as strong as you are, and you'll fight that much harder. And you've got to work hard. Back here, you see men in training who have only one thought in mind—getting back to the PX for another bottle of beer. In battle a driver has only one thought—his tank. He stays with it 24 hours out of 24. No, he doesn't climb down and go through the whole fancy 100-hour check. He doesn't do it at all at one time. It's five minutes here and there. They add up to a complete service. Every time we pulled back, our driver'd run out with a grease gun. Every time we stopped he'd check or grease something. He'd start at one place and do a little. Next time, he'd start where he left off and do a little. That way it doesn't seem like he's actually doing any maintenance at all. It's that easy . . . but before he knows it he's been through a regular maintenance service job.



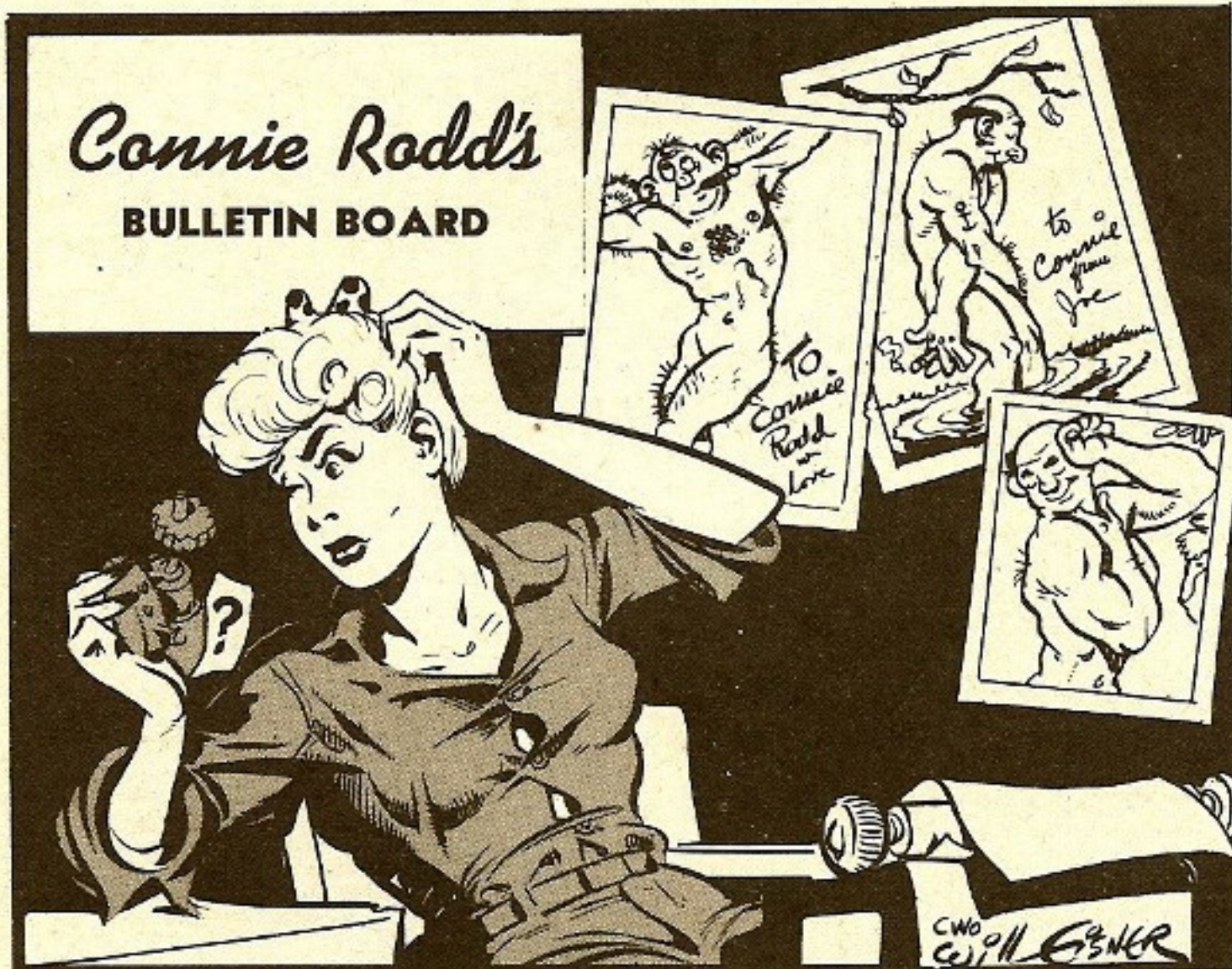
### **CPL. L. C. MICELI**

*Purple Heart*

We always warmed up our M10 Tank Destroyers before dawn. They're the Diesel jobs you know. They made a lot of noise when you started them, but in the dark it's hard for the Germans to tell exactly where the noise was coming from. The thing is the smoke won't give you away. When they're started up they give off a terrific cloud of smoke—sometimes 10 to 15 feet high. In the daylight you'd draw a flock of 88 shells around quick with a cloud like that. Even when it was misty and damp we started up before dawn. The only difference was

(Continued on page 90)





## What Color Is Your M8 or M20 Gasket?

Next time you remove the cylinder head of your Light Armored Car M8 or Light Utility Car M20 with the JXD Hercules Engine, notice the color of the gasket.

According to TB 9-743-4 (6 January 44), the old type reddish-brown copper-asbestos cylinder-head gasket has been replaced by a gray steel-asbestos gasket. The change is made for replacement parts, as well as in production.

When you're installing the new steel-asbestos gasket, tighten the cylinder-head cap-screws to 75 foot-pounds of tension on your torque wrench.

The old copper-asbestos gasket's a horse of a different color—it calls for 55 to 60 foot-pounds. (TM 9-743 says 52½, but the Army now says it's better to up the tension a little.)

## Care and Preservation of Stored Materiel

Supplies and equipment in storage finally get a break. ASF Circular 61 (29 Feb. 44) makes care and preservation of such materiel, including automotive equipment,

a "must" for the division or officers in charge of storage.

From now on, it's as much a responsibility to see that stored equipment is well kept as to see that it's kept. Care and preservation are going to be performed under preventive maintenance policies and methods set up by technical services or ASF.

The circular tells me you can get lots of technical advice and assistance in taking care of stored supplies just by asking for it. Not only are the maintenance divisions or officers expected to help you out this way, but they'll also furnish trained and skilled men for PM operations and repairs that you're unable to do. The maintenance division shops will even take over repair and reclamation work on this equipment, if it isn't up to par after inspection.

Before you go away, let me reach down in my stocking and get ASF Circular 92 (6 Apr. 44) which goes a little further and tells you how vehicles in temporary storage awaiting repairs or final disposition are to be kept. It tells you about things like proper spacing, battery charging, checking tire inflation, cooling-system checking, and taking any necessary precautions against rust—all according to AR 850-18. Besides

you'll have to take care that a chicken thief doesn't get in and hide any removable assemblies under his coat.

Periodic inspections will be every 15 days (I wouldn't want you to be gigged) or less than that if climatic conditions are unfavorable.

You can go now.

## Generator Pulley Gripper

Just signed up another member to the S.F.P.O.C.T.G.F.F.—Society For the Prevention Of Cruelty To Generator Fan Fins. There are no dues, no initiation rites, no other obligations. You simply take one pledge—"I will not steady the pulley by using a screwdriver between the generator fan fins while loosening or tightening the pulley nut."

Instead, you'll wrap an old drive belt around the pulley (the rubber belt gives a friction grip on the metal that'll hold tight, come what may), and apply all the manly strength you need to get the rustiest nut off.

Using brute force and a screwdriver will damage fins on the generator fan and break them off. This'll not only upset the pulley balance so that the drive-end ball bearing wears fast, it'll also cut down on ventilation so that the generator will overheat and burn out. You don't want that to happen, do you?

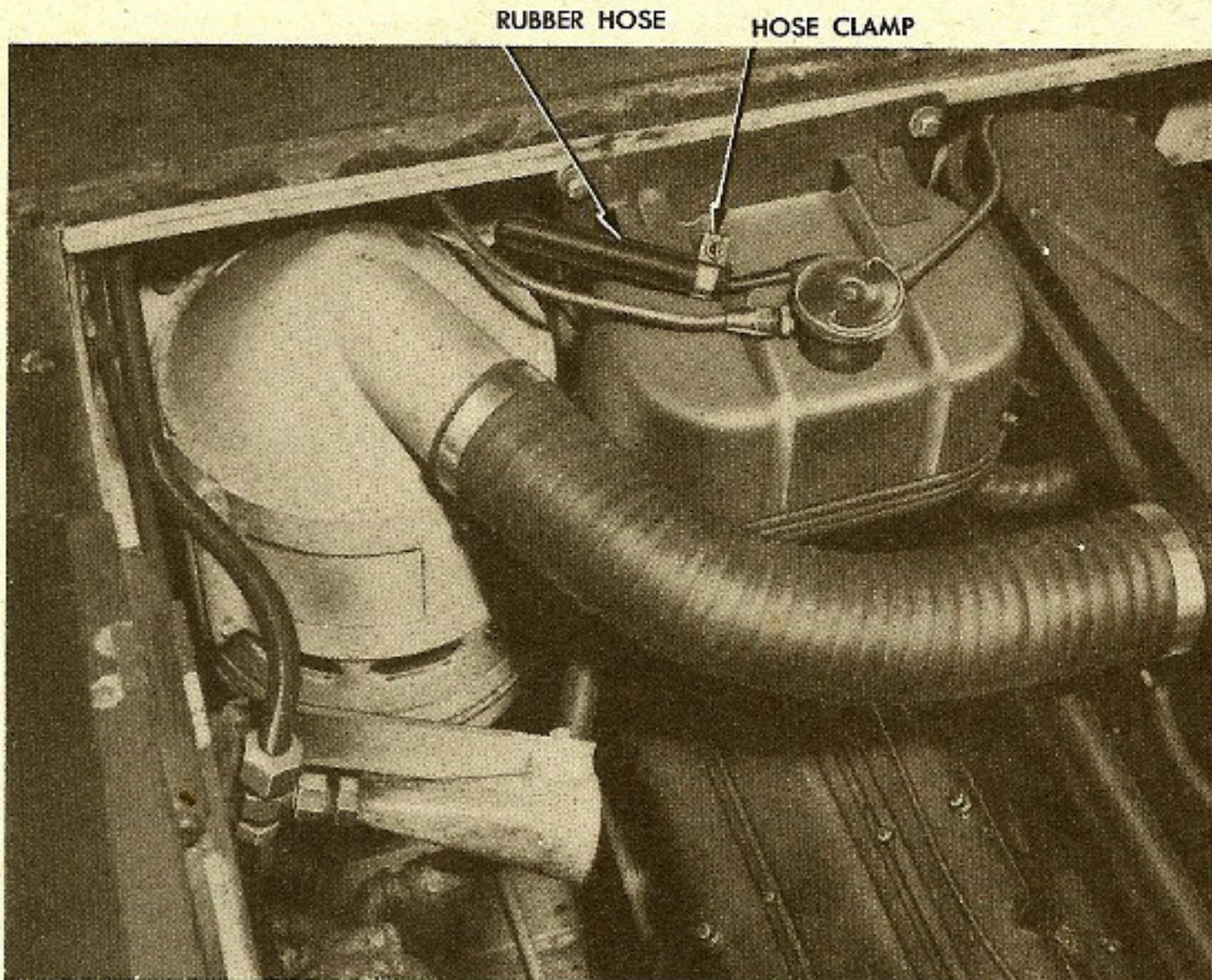
Then step right up and add your name to the roster.

## Surge-Tank Overflow

On the 3-inch gun motor carriage M10A1, juice from the cooling system has been escaping out the surge-tank overflow pipe and getting into the oil-bath air cleaner. The reason of course, is that the surge-tank overflow pipe is close enough to the air cleaner for the escaping coolant to get sucked in.

Remedy is to put an extension on the surge-tank overflow pipe to keep it away from the air cleaner. You'll need the following materials (you can requisition them

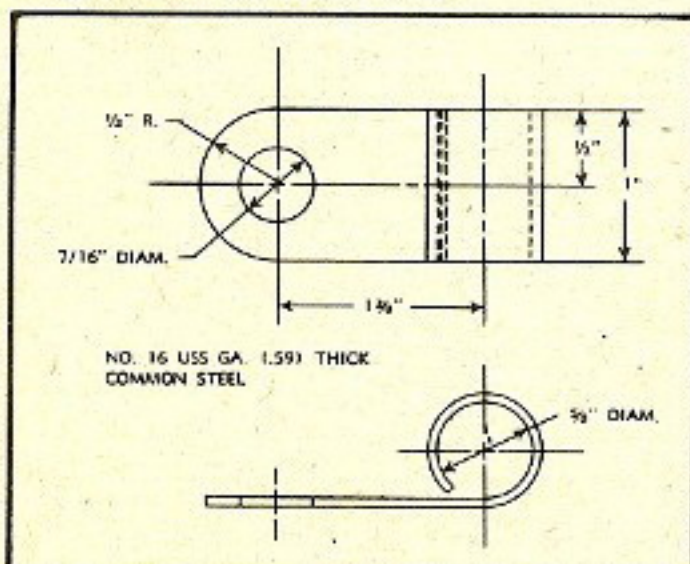




or find them somewhere in the neighborhood):

- 1 CLAMP, hose, inside diameter  $\frac{1}{2}$ - $\frac{5}{8}$ ", Fed. Stock No. 33-C103-25, Pc. Mk. CMAXIA
- 1 HOSE, rubber, ID.  $\frac{3}{8}$ ", length 18"
- STEEL, soft, No. 16 gauge, 1" wi.,  $4\frac{1}{4}$ " length (for hose retainer)

Put the extension on this way: (1) Take the top plate off the front engine compartment. (2) Clamp the rubber hose on as shown in the picture. (3) On some vehicles, there is a bracket on the surge tank or air cleaner which can be used to hold the lower end of the tube. If there is no bracket, make one as shown in Fig. 2 out of the soft steel you're requisitioning, and install it about 3 inches from the lower end of the tube, welded to the bulkhead. (4) Replace the top plate on the front engine compartment.



## Hydraulic Brake Fluid

Now I've gone and done it. A bunch of big-wigs have been trying to tell me you guys are plenty careless with hydraulic brake fluid. They were telling me that samples of the fluid they took from a couple of fillers in the field (Filler, Hydraulic Brake—Master Cylinder—Pressure Type, Federal Stock No. 41-F-2982) were awfully cloudy and contained OIL! They said that some of you guys probably didn't know any better than to let oil and dirt and water and junk get mixed into the brake fluid.

That's when I got mad and told them to shine up their specs and take another look. I know you guys aren't dumb enough to use those brake fillers for anything else but brake fluid. And they certainly can't tell me you'd use a filler for shock-absorber fluid or some kind of lubricating oil and turn around the next minute and use the same filler for hydraulic brake fluid—or that you'd re-use any old fluid you had drained from the wheel cylinders during filling.

I sure know you keep those fillers real clean and that you don't use the same filler for any-

thing else but brake fluid—and that you take every care not to let oil or water from the air compressor enter the filler through the air hose. And I sure know you're smart enough to realize that if the brake fluid isn't absolutely 100% clear and good, you'll probably run into lots of trouble and maybe not have any braking action at all, 24 hours after refilling the brakes.

Anyway, I shot off my mouth and don't intend to worry about my words backfiring—you won't let me down, because you're just as smart as I said you were.

## Draining Pressure Type Radiators

I just wanted to remind you always to remove the radiator cap when draining pressure type radiators. You probably think I'm getting to be a nagging woman because I've told you so many times before. But it's so easy to forget to unscrew that radiator cap, and it can cause such a lot of damage if it's left on while you do the draining.

Even with all the drain cocks open, the system won't drain quickly unless the radiator cap is off. It has something to do with physics—the radiator cap closes off the air, and lack of air slows up the free flow of coolant.

If it's awful cold out and the water doesn't run in a hurry, some of it's going to sit and freeze in the radiator or the block. And when that happens—well, I sure don't have to tell you that frozen coolant can crack the whole system wide open. So just remember to take off your cap for the lady.

## Hydra-matic Transmission Adjustment

Just found out that your TM's on the M5 and M5A1 light tanks and M8 gun motor carriages contain an error—a serious error if you apply their instructions for rear band adjustment on the hydra-matic transmissions not equipped with indicator rods.

In TM 9-732, (27 Nov. 43) page 203, paragraph 100c; and in TM 9-732B, (31 Jan. 44) page 190, paragraph 97c; it says to adjust



the rear band by setting the brakes, moving the selector lever to "DR," and setting the hand throttle so that the engine is running at approximately 1,000 revolutions per minute. These instructions are wrong! You should **never** try to adjust the band with a torque wrench when the selector lever is on "DR" (drive). Use the wrench only when the lever is in neutral.

While the lever is on "DR," lots of spring pressure is on the band, and adjusting with a specified torque on top of this pressure, will wreck the transmission. (Of course on transmissions equipped with indicator rods, the indicator is made to work when the selector lever is in the "DR" position—you don't use a torque wrench when the transmission has indicator rods, anyway.)

But any transmission is a complicated affair, and one thing done off the beaten track can make 60 things go wrong. So I thought I'd better tell you to correct your TM's and cross out the phrase that says, "move the selector lever to 'DR'"—then you'll be sure to do the torque-wrench adjusting when the selector lever is in neutral.

### *Are Administrative Vehicles Orphans?*

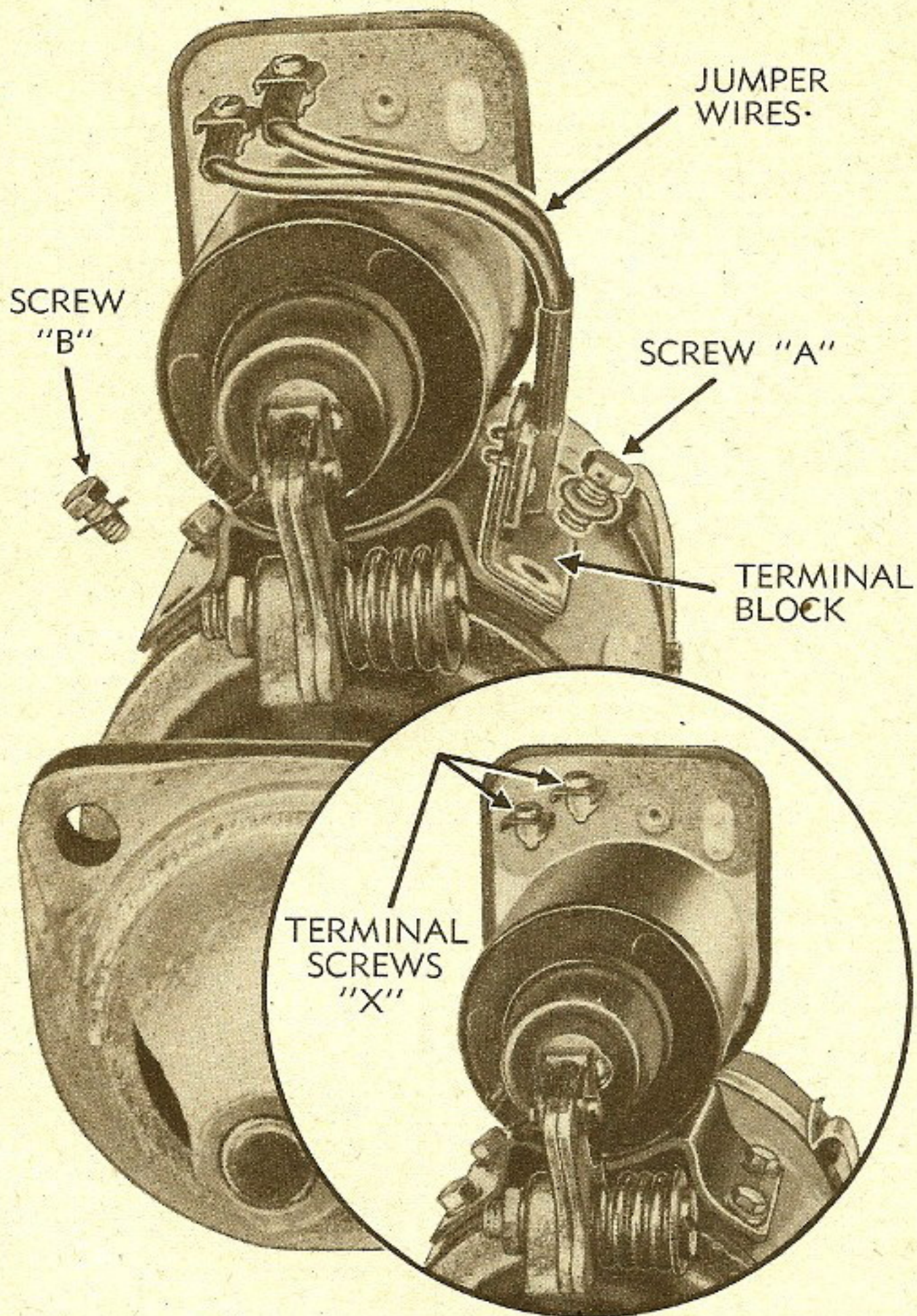
Let's not forget about administrative vehicles when we think of preventive maintenance.

These non-combat cars and trucks are beginning to look shoddy. Headlights, bumpers, hub caps, fenders, windshields, windshield wipers, fire extinguishers all need looking after.

### *How Not to Short Your Starter Motor*

Do you know that you can short the starter motors on your M5 and M5A1 light tanks and M8 motor gun carriages by getting a couple of screws in the wrong holes when you install new or reconditioned starter motor assemblies, and starter solenoid switches?

Because the terminal screws "X" (see inset) were hard to reach when installing or removing the starter motor, a terminal block



and a couple of jumper wires have been added to new and reconditioned motors to make installation easier. Now the solenoid energizing wires can be connected on the side of the motor where you can see what you're doing.

The terminal block is attached to the bracket that holds the solenoid to the starter-motor housing (see Fig. 1)—the screw holding both the block and bracket, screw "A," has to be longer than screw "B" holding only the bracket on the other side of the housing. This is where the trouble starts.

Make sure, when installing the starter motor, that you use the  $\frac{1}{2}$ " screw "A" to hold both the terminal block and the bracket.

Because if you switch the screws and put them in the wrong holes, the shorter screw "B" ( $\frac{3}{8}$ ") won't hold the block and bracket to the housing, and the longer screw will bear the whole load of holding the bracket from one side. Besides, it's too long—it'll dig way into the mumbo-jumbo of coils and stuff in the housing—shorting your starter motor. Make sense?

So watch the screws when you get a replacement starter motor, complete with terminal block and jumper wires, and also watch the solenoid energizing wires—they don't connect to the terminal screws "X" any more—they connect to terminal block on the side of the starter motor.



## Safety Markings For Instrument Panels

Came across a sweet suggestion the other day for marking operating safety and danger zones on

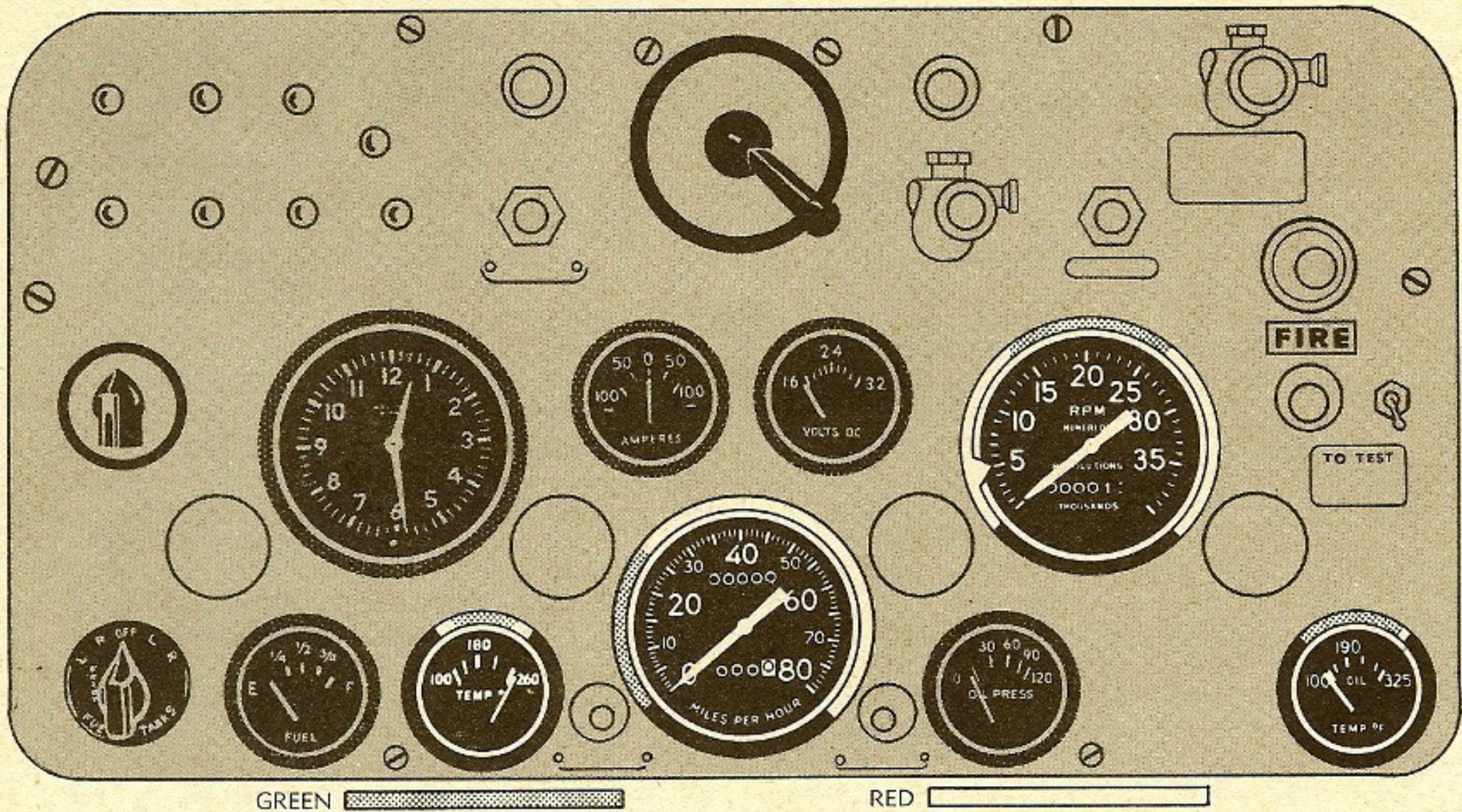
your tank instrument panel.

All you'll need is a few minutes and a little red and green color varnish, quick-drying oil-color, or synthetic enamel to mark the major instruments. (See Fig.) Then, as long as all the needles point to

the green marks, you'll know there's nothing to worry about—it's when you're driving along and one of them points to red that you'd better check for trouble.

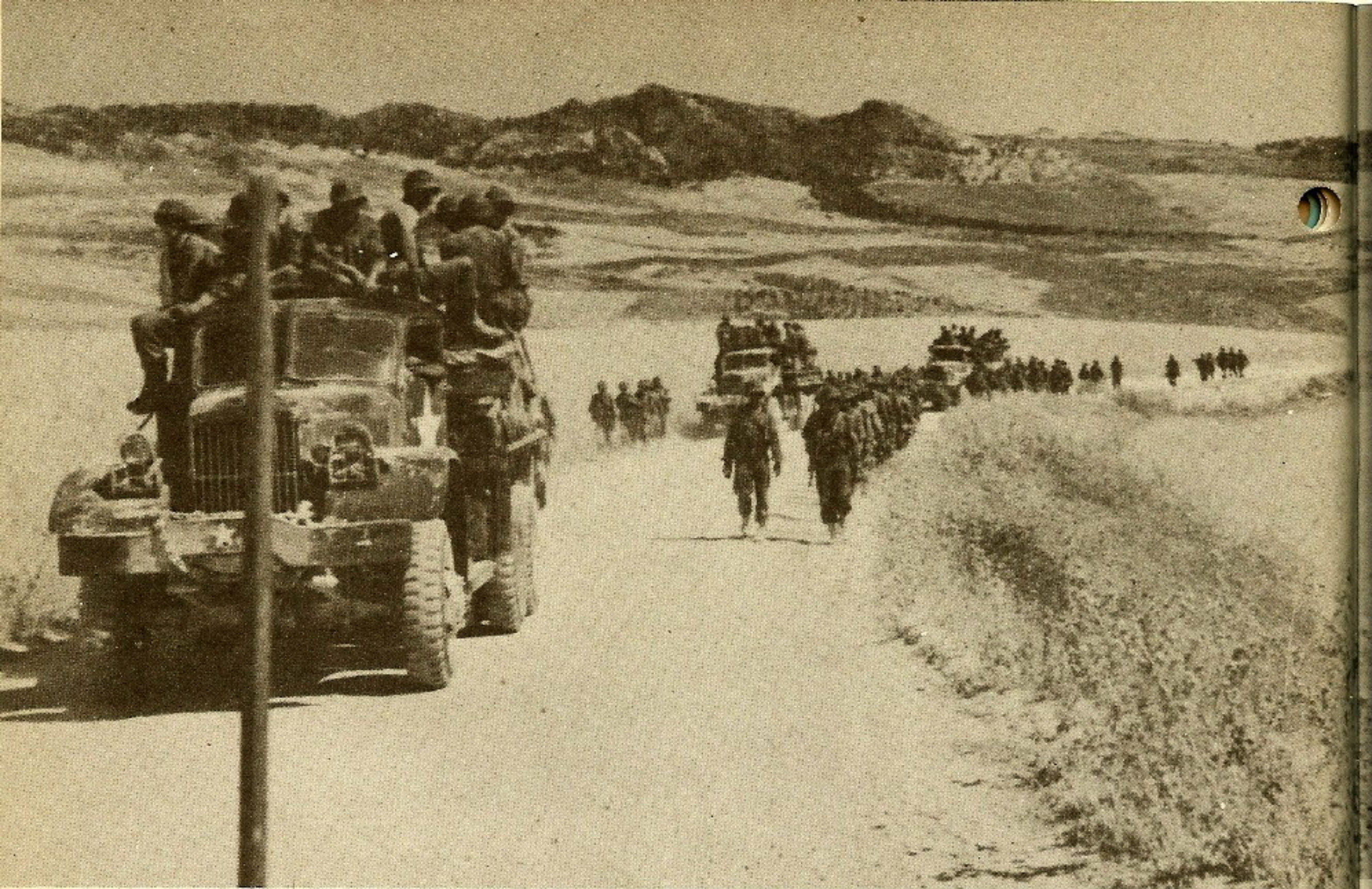
I curtsy to the Armored Command for this chart.

VEHICLE	Speedometer M/H	TACHOMETER		Oil Temp.	Trans. Oil Temp.	Water Temp.
		Idle RPM	Driving RPM			
Tank, Medium, M4, M4A1	G 0-24 R 24	800	R 0-1600 G 1600-2400 R 2400	R 0-100 G 100-190 R 190	G 0-300 R 300	
Carriage, motor, 105mm howitzer, M7	G 0-26 R 26	800	R 0-1600 G 1600-2400 R 2400	R 0-100 G 100-190 R 190	G 0-300 R 300	
Tank, Medium, M4A2 Carriage, motor, 3" Gun, M10	G 0-25 R 25	425	R 0-1500 G 1500-2100 R 2100	R 0-160 G 160-222 R 222	G 0-300 R 300	
Tank, Medium, M4A3	G 0-26 R 26	500	R 0-1400 G 1400-2600 R 2600	None	G 0-300 R 300	R 0-150 G 150-235 R 235
Carriage, motor, 3" Gun, M10A1	G 0-28 R 28	500	R 0-1400 G 1400-2600 R 2600	None	G 0-300 R 300	
Tank, Light, M3, M3A3	G 0-31 R 31	800	R 0-1500 G 1500-2400 R 2400	R 0-120 G 120-190 R 190	None	
Tank, Light, M5, M5A1 Carriage, motor, 75mm howitzer, M8	G 0-40 R 40	450	G 0-3500 R 3500	None	None	R 0-150 G 150-240 R 240
Tank, Heavy, M6, M6A1	None given	1000	R 0-2000 G 2000-2300 R 2300	R 0-160 G 160-180 R 180	None	



Here's how the instrument panel on an M4A3 will look if you paint safety markings on the speedometer, engine temperature gage, transmission oil temperature gage, and tachometer.





**When** summer comes sneaking in, hot, dusty, dirty, panting, and sweating—you're in the win if you've got a fool-proof system for beating the heat. And you sure have: knowing how to keep the cooling system cool; coaxing the crankcase-ventilating system into free ventilation; timing the valves and ignition for smooth, cool travelling; helping the fuel filters filter gas clean; quenching the batteries' thirst for cold water; and treating the tires to summer care.

There are plenty of things you can do. Make hot weather PM your business, and see that your vehicle doesn't curl up like a fried sausage from too much heat. Mainly, though, it's not a **different** kind of PM'ing that fights the heat, it's just **additional** effort and **twice** as much attention. You not only have to fight the wear and tear of vehicle operation, but the wearing of hot weather and all the scorch and dust and dirt that go with it.

#### COOLING SYSTEM

Dirty cooling systems are the biggest cause of overheated engines. The first thing you want to do to start the season right is get rid of the winter antifreeze. Drain and save it. It should be reclaimed and stored, according to WD Circular No. 137 (16 June 43).

If storage space and suitable containers aren't within miles, then it's better to leave

the solution in the radiator instead of throwing it away. Just remember the rust inhibitor in the antifreeze gets used up as the months drag by. If you're leaving the solution in the cooling system all year around, it'll need additional inhibitor.

The antifreeze should be reinhibited every six months with Reinhibitor, Antifreeze Compound, Federal Stock No. 51-I-136-85 or 51-B-669-75. Each four gallons of cooling system capacity will take one container of reinhibitor.

If you're draining and storing the solution from the cooling system, it won't hurt to mix all solutions that have an ethylene glycol base—spill them into the same container. But **never** mix antifreezes having ethylene glycol and alcohol bases (an alcohol base is not GI anyway; what're you doing with it?). If you mix bases, you'll ruin the whole works.

Check the solution before storing it. If it's rusty, throw it away—and even if it's clear but doesn't check to +20° protection with an antifreeze hydrometer—throw it away. Solutions that are clear and strong enough to protect to +20° can be sealed in a container (a clean, gas-free, oil-free, and dirt-free container) and presented to your Post Ordnance Officer. He'll love it.

Now that the system is free of winter liquid,





# Truck Maintenance When the Heat's On

This summer, keep your vehicle cool and calm — so it won't have to be collected.

## AIR CLEANERS

And keep the air cleaner clean! It's an air-conditioning unit—it not only keeps out the dirt and dust, but washes the air before letting it circulate. Air cleaners that aren't working right are engraved invitations to clogged and scarred engine parts.

There are two main types of air cleaners: oil saturated filters and the oil-bath cleaner. The copper gauze or oil saturated type of cleaner has a pad of oil-soaked copper gauze or wool that does the filtering. The cleaner should be serviced every 1000 miles, say the TM's; but more often under extreme dusty operations. Then you'll be sure the system's getting a breath of fresh air.

Clean the filter element in dry cleaning solvent. Allow it to dry and then submerge it in used crankcase oil. Drain off the excess oil from the gauze before replacing it in the cleaner shell.



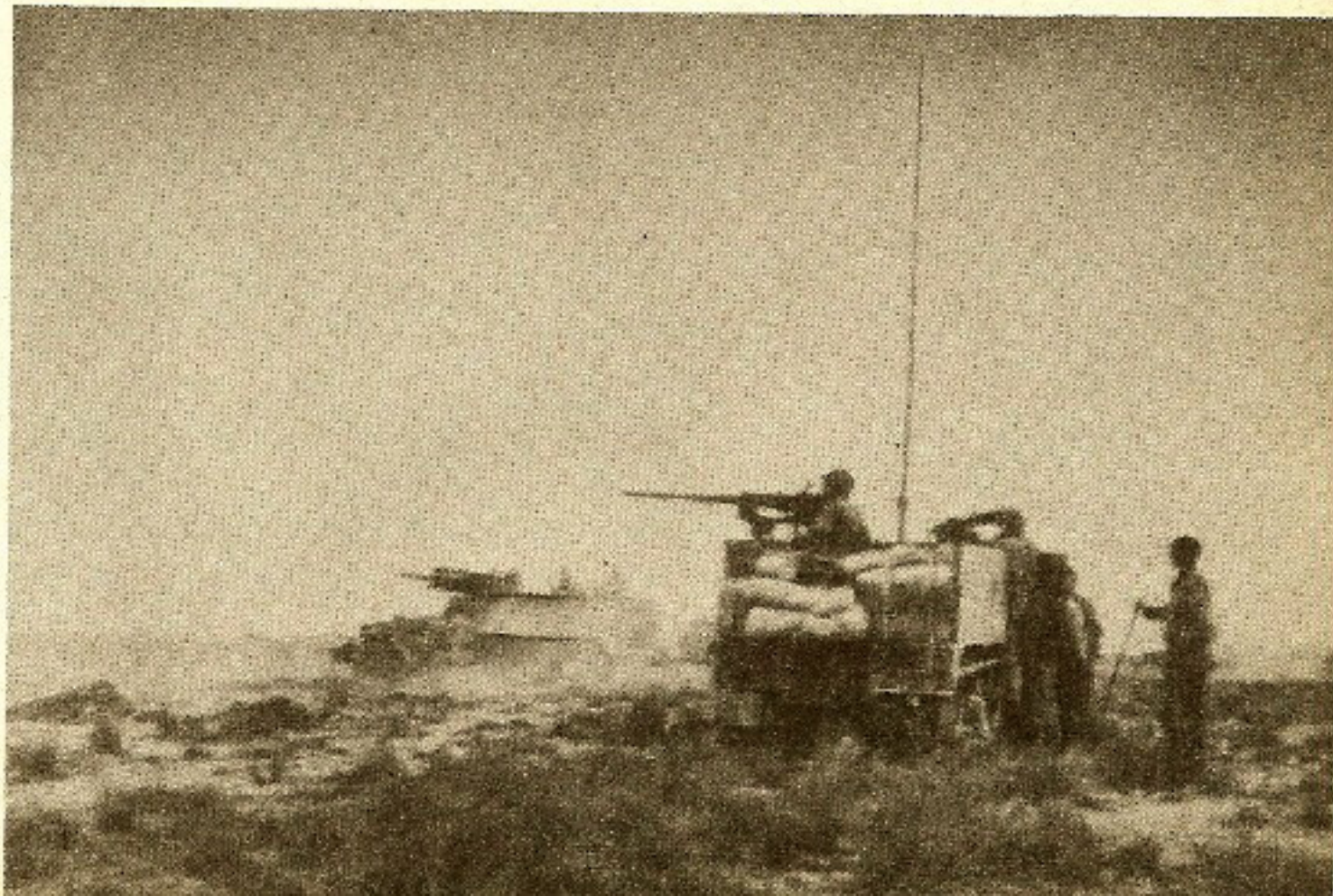
use a radiator cleaner (Federal Stock No. 51-C-1568-500) to clean it **completely**. Then flush the system with water to rid it of all the rust, scale, and what-not.

Now refill the system with water and rust inhibitor, Federal Stock No. 51-C-1600 (one container of inhibitor for each four gallons of cooling system capacity). The system should be clean now—but unless it's functioning right, it won't **stay** clean.

Many things make a clean cooling system dirty and cause overheating. Oxygen in the water will form rust quicker than you can fight it. The oxygen already in the water you can do nothing about, but you can prevent more from getting in. Check the radiator, water pump, water jacket, core-hole plugs, and all other water joints for leaks.

A loose cylinder head or leaky gaskets will allow exhaust gases to enter the cooling system and the acid in these gases jump at the chance to help corrode the system.

Check the thermostat and see that it's in good working shape. Look over all the hoses and find out if they're eaten thin or blocked on the inside—replace any that are not up to snuff. The fan belt should be adjusted so it isn't too tight, yet doesn't have too much slack. Look up your vehicle TM for the proper adjustment.





In the oil-bath type cleaner, the air (strangely enough) gets an oil bath. It comes into the cleaner and down through the oil where the direction of flow changes with a quick twist, leaving all the dust and dirt in the oil. Then the air continues up through a wire gauze filter.

The oil level should be checked daily and the entire filter washed every 1000 miles—more often if necessary. Wash the filtering element in dry-cleaning solvent and allow it to dry. Then clean and refill the oil reservoir right up to the line marked "oil level," never any higher. If the oil level is higher than the marking, the flow of air into the carburetor will pick up oil and cause unnecessary carbon formation, fouling of spark plugs, and maybe excessive wear.

Replace the filtering element and pour over it one pint of the same grade oil you've got in the crankcase. Distribute the oil over the element evenly and wait for the excess to drain off before putting the element back in the air cleaner.

### FUEL FILTERS

Here's another filter that needs attention. A lot of drivers don't even know there's a fuel filter on the vehicle. Out of sight, out of mind—and, finally the gas lines clog up. Besides that, you can't go many miles on a gallon of dirt.

There's a ritual that should be performed every day or so, and that's emptying the water from the bowl. If the bowl fills up with water, then the gasoline gets pushed by without being cleaned and water will be carried over into the carburetor.

How about cleaning the filler element once in a while, too? Normally it should be done every 1000 miles. The best way to clean the element is swish it around in solvent—**don't** try to blow out the dirt with an air hose, you'll crumble the discs like so many crackers.

### MANIFOLD HEAT-CONTROL VALVES

This is just a reminder that manifold heat-control valves on vehicles should be set to a summer (or "off") position now. You'll be surprised with a cracked or warped manifold unless you check the valve.

Some vehicles have a thermostatic heat control that doesn't need hand setting—but a lot of them haven't. The  $\frac{3}{4}$ -ton Dodges, for instance, M6 gun motor carriages,  $2\frac{1}{2}$ -ton GMC's (DUKW's included), and others have manifold heat-control valves that must be set by hand. Check them now.

### VALVES

Valves suffer nameless torture unless the timing is perfect. Because they pick up such a terrific amount of heat from the combustion

chamber, they must inhale and exhale at exactly the right time. More than that, they've got to hit the valve seat and cool off every time they come down. The valve opens and closes about 1,200 times a minute at moderate road speeds, and with all that heat being built up, it can't afford to miss the valve seat even once.

So the valves will take a lot of care—the parts of the valve train must be kept free-acting. Like the tappet adjustments: a tight adjustment holds the valve off the seat; a loose tappet delays the valve-lift timing and reduces the valve lift. Both raise hell with the works.

### BATTERIES

It's common for everybody to worry more about batteries during freezing weather when it takes lots of juice to start a vehicle; consequently, batteries suffer a lot in the summer because nobody loves them.

The biggest item of battery care is adding water. The water of the electrolyte breaks into gases (hydrogen and oxygen) and during hot weather especially, a lot of it evaporates (leaving concentrated sulphuric acid to eat your battery's heart out) and has to be replaced. How often it must be replaced depends on how much driving the vehicle gets and how hot the weather is. Ordinarily, the water should be replaced every week or so with **clean** water (distilled if possible). Dirt and rust in battery water causes the cells to work funny or not at all. Overcharging, either because of a faulty regulator or other possible abuses, also heats up the works and breaks down the electrolyte.

Don't go berserk when you're putting water in, or the electrolyte will bubble right out of the cells. The level of water shouldn't be more than  $\frac{3}{8}$ " above the separators in the walls. A higher level will spill the electrolyte. When charging, the stuff gets hot up and has to expand somewhere, so it expands out the vent hole in the filler plugs. Then not only is the electrolyte lost, but the sulphuric acid in it eats away and corrodes all the metal parts in the neighborhood; the battery cradle, the cables, etc.

Another often neglected something is a check of the battery cables. Worn and frayed cables discharge the battery, or worse yet, start a nice red-hot fire. So to be extra safe—when in doubt about a cable, change it.

**Preventing** cables from getting worn and frayed will save a lot of replacements. When electrolyte spills over the battery and cables, it doesn't dry up or evaporate; it creeps. Yes, it creeps and crawls and eats its way wherever it wants to go. It's strong fluid and the only thing that'll get rid of it is a solution of bicarbonate of soda and water.





Make the solution with one pound of soda to a gallon of water. Dip a rag into the solution and wipe away. The solution will bubble when it hits the electrolyte—when it stops bubbling you'll know you've got the cables and battery clean. (Keep the filler caps tight during this treatment.)

After you've used the solution, wash the battery in water and dry it off. Then grease the clean and dry metallic parts—electrolyte can't creep over grease. It would be a good idea to renew this application of grease from time to time because it melts off at warm temperatures.

Of course you know the battery should be kept at full or near-full charge. If you let it get down too low, you'll ruin the battery. Something called sulphation is produced during discharge, and it can damage the plates.

A glance at the instrument panel should tell you how it's coming along, and you can take a hydrometer reading of each cell; 1.280 is a full charge, 1.220 is half charged, and 1.130 is discharged. The half-charged reading is rock bottom for you (unless you're in the tropics where 1.215 is a full charge). When the battery drops that low it should be taken out and charged.

### TIRES

Good old rubber—synthetic or natural, it doesn't matter—what does matter in hell-like weather is pressure. Tire pressure should be checked and added to or decreased early in the morning when the tires are cool and the dew is on the grass.

Inflate to proper pressure and tighten the valve caps securely. Then leave the pressure in the tires—don't bleed them during the day. The pressure will build up because of the

heat in the tire. But bleeding the tires would only reduce the heat and pressure temporarily, and do more damage than good to the tire. Bleeding the tire causes greater flexing—greater flexibility means more heat is generated. Soon, the tire reaches a curing temperature and . . . BANG! (meaning "flat tire")

Tires are made to stand an increased pressure due to increased temperature; they aren't made to stand a bleeding operation that's fatal to the elastic. So fix the tires in the morning and just worry about your blood pressure.

If you must worry about tires—check the wheel alignment and the brakes and clutch to save excessive wear-and-tear on the rubber. No preaching about how critical rubber is—just a friendly reminder.

### ARE YOU A SMART DRIVER?

Do you know how to be extra easy on your vehicle during hot weather by watching your driving habits? Do you know that slow speeds in high gear are especially hard on that overworked engine? When the vehicle and fan are both operating at reduced speeds, the air coming into the radiator isn't coming in fast enough. But by shifting to a lower gear, the fan speeds up and everything gets cool and wonderful.

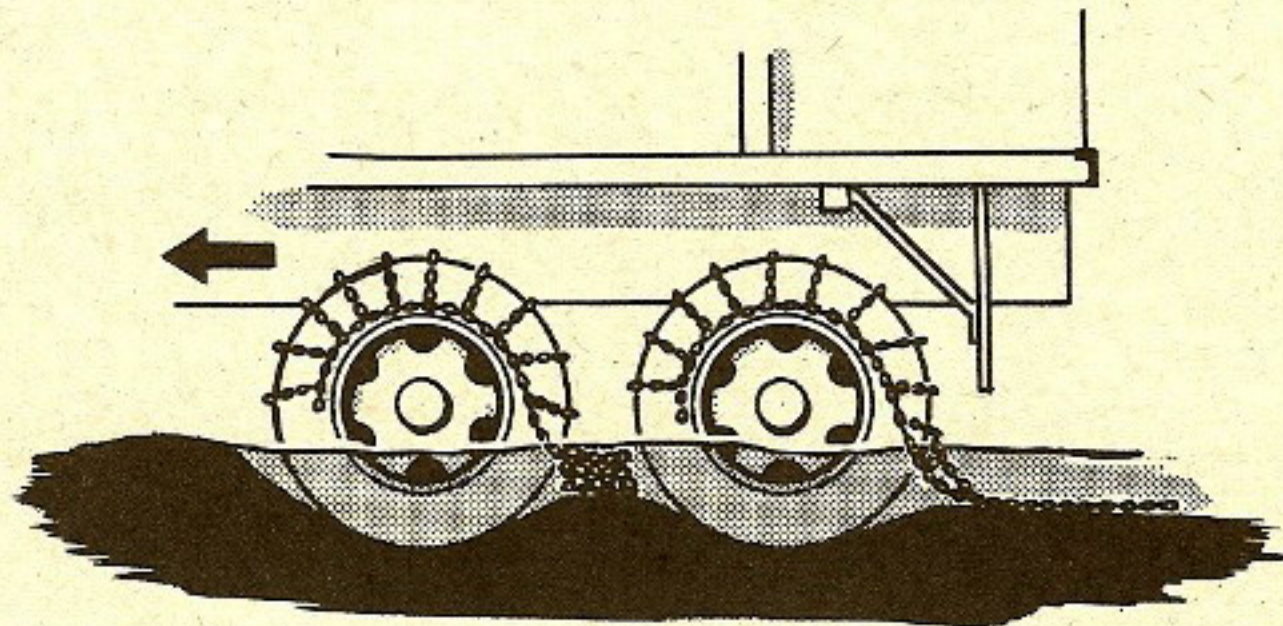
You don't let your engine labor and cough up steep hills and over hard cross-country runs, do you? Take it in a low gear and do it gently . . . nice and easy.

Summer's not so bad. You won't get a sunburn if you know how to prevent it—you won't get an overheated engine, either, if you know how to prevent it—and now you do. If you let your vehicle get red in the face, the engine won't turn a shade of golden-tan all over—it just won't turn over.



## YOUR CHAINS CAN GET YOU OUT OF MUD HOLES!

Last month we told you we didn't know why 6x6's were running around in Italian mudholes with one-half their rear wheels bare of chains. Perhaps it was because you think the chains are too damn hard to put on in a mudhole. They're not—if you're careful in putting them on the front rear wheels so they don't trail out behind and get caught up and tangled by the rear rear wheels. Grasp the middle of the side chains and raise the trailing half up and then drop it straight down to pile up close behind the front rear tire (see Fig. at right).





MORE ON TAMING

# Wild Static

A couple of suppressors and condensers will eat up any noise that eludes the rest of the half-track and scout car suppression system.

**O**ur article on "Clearing Up Static in Radio-Equipped Vehicles" in the February issue, gave you an ace-in-the-hole when static continues to play hob with your radio reception, in spite of all the suppression devices on your vehicle. This ace-in-the-hole consists of condensers ("capacitors") in the radio terminal box. Installed in the radio terminal boxes, they eat up any wild static which manages to elude all the rest of the safeguards sprinkled around your vehicle.

Now along comes TB ORD 23 (29 Jan. 44), subject: Radio Suppression in the Scout Car M3A1 and Half-Tracks (White, Diamond T, and Autocar). This TB tells you exactly which condensers to put in

the radio terminal boxes and also recommends a couple of suppressors to be installed in the distributor.

Knowing how fast you are on the draw, we assume that you've already taken care of installing the necessary condensers as per our February article. If so, just order the "suppressors" listed below. If you haven't got around to the job yet, order all the parts listed below—and for directions on how to install the condensers in your half-tracks and scout cars, see our February article. In order not to repeat on ourselves, we'll just give you the story on how to install the suppressors.

Here are the parts needed for both jobs. Order them through



your regular supply channels.

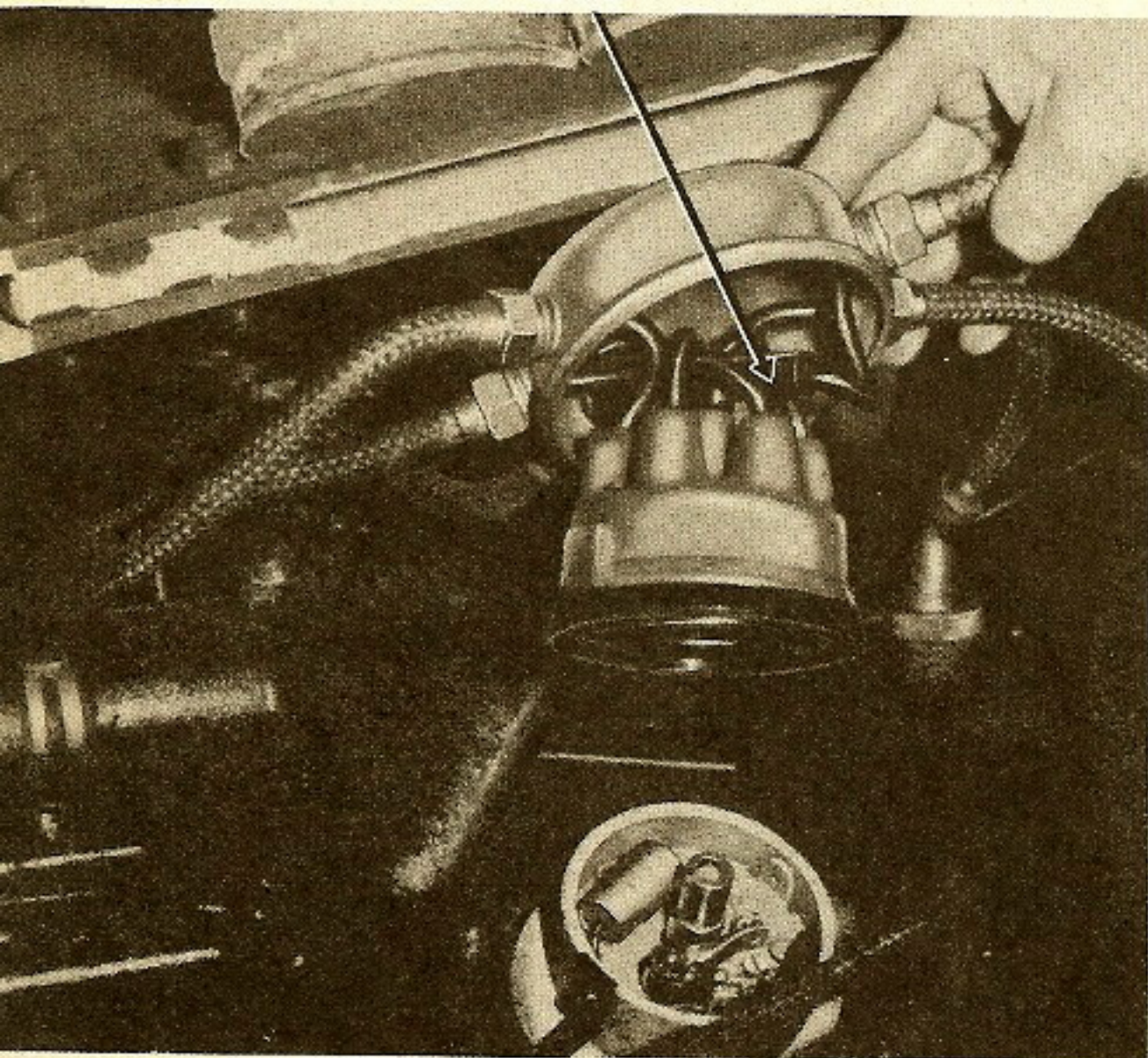
For each of your half-tracks you'll need:

1 Capacitor, Ord. Pc. Mk. A294409 (if your half-track has two radio terminal boxes, order 1 capacitor for each box); 1 Suppressor, Ord. Pc. Mk. C100577-B.

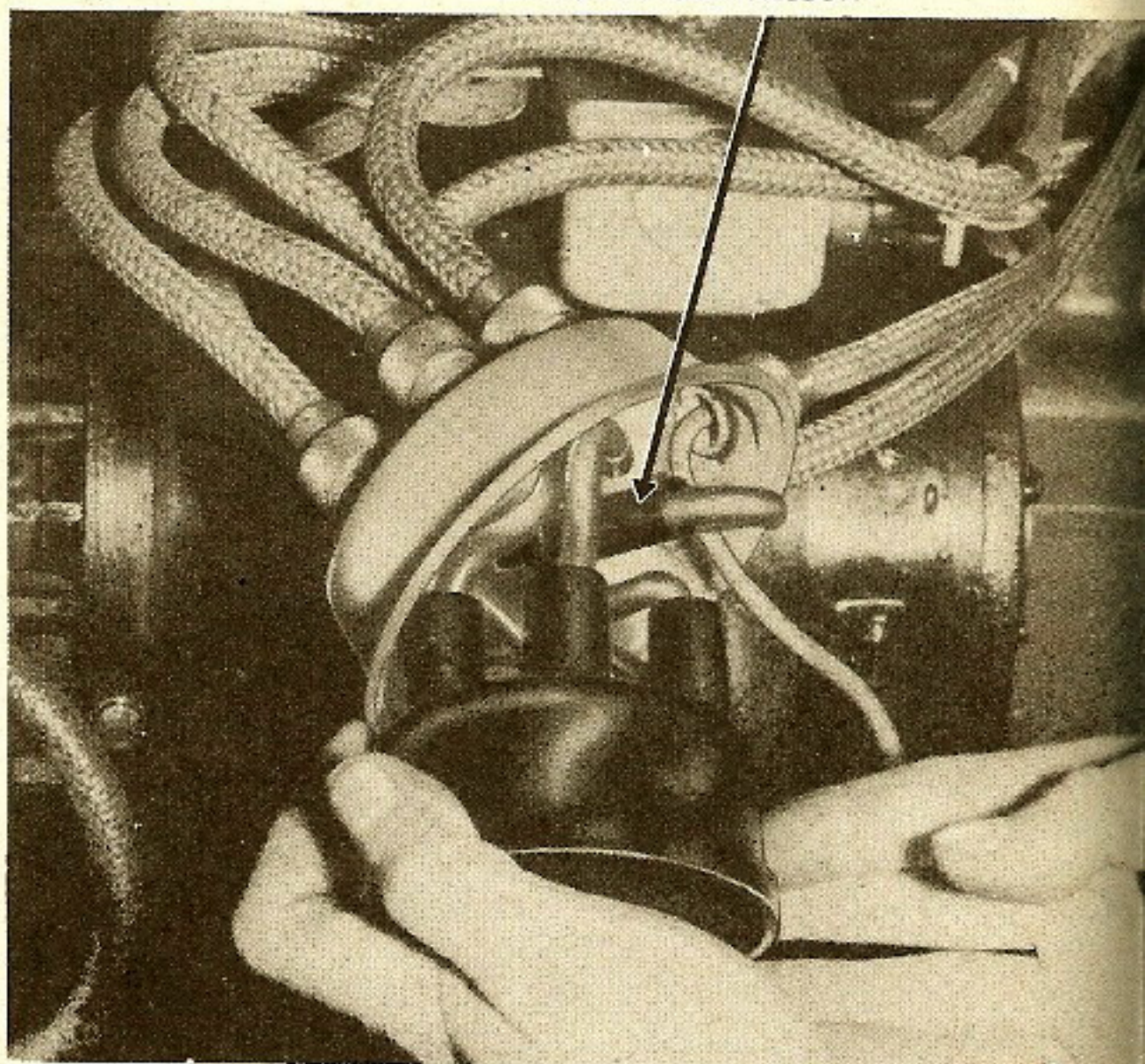
For each of your scout cars, you'll need: 1 Capacitor, Ord. Pc. Mk. A294409; 1 Suppressor, Ord. Pc. Mk. C100577-E.

Lift up the distributor cap and shielding. Disconnect the high-tension cable and cut one inch off the end of the cable. Take Suppressor (C100577-B for half-tracks, C100577-E for scout cars) and insert the end of the high-tension cable into the female end of the suppressor. Insert the male end of the suppressor into the center tower of the distributor cap. Replace the distributor cap and shielding. See Figs. below.

C100577-B SUPPRESSOR



C100577-E SUPPRESSOR





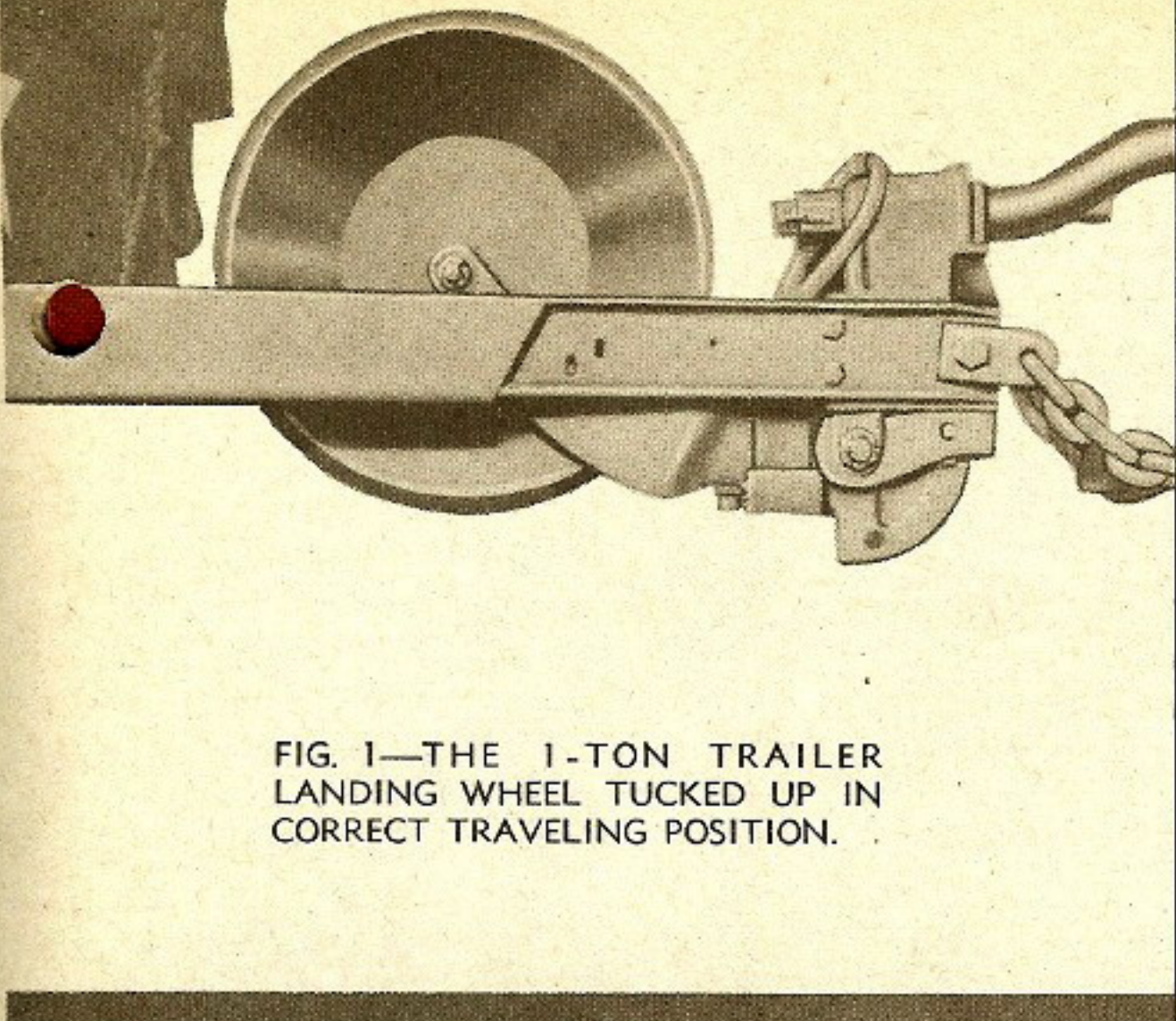


FIG. 1—THE 1-TON TRAILER LANDING WHEEL TUCKED UP IN CORRECT TRAVELING POSITION.

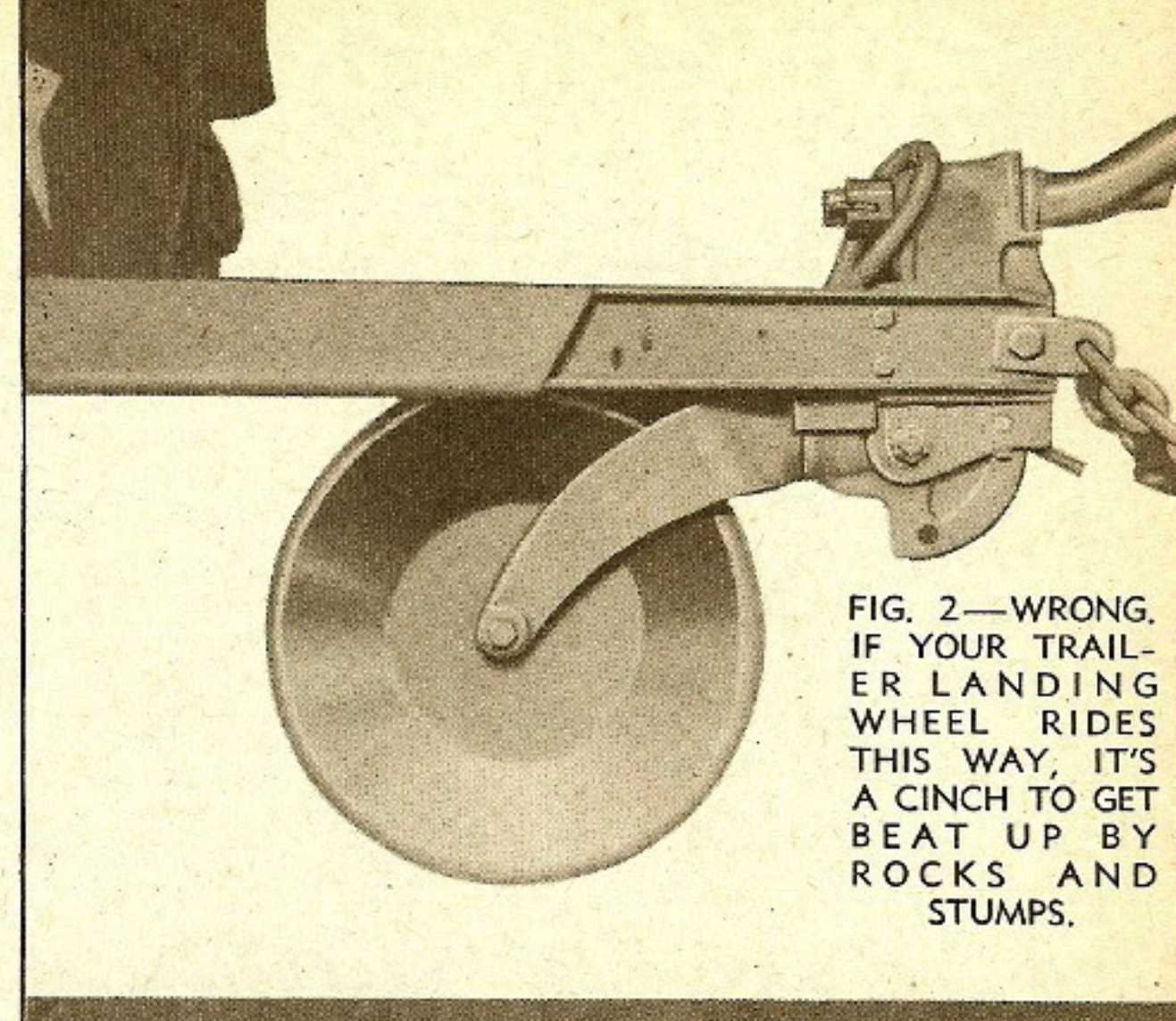


FIG. 2—WRONG. IF YOUR TRAILER LANDING WHEEL RIDES THIS WAY, IT'S A CINCH TO GET BEAT UP BY ROCKS AND STUMPS.

# Landing Wheels Ride High

Observer reports 70% of all 1-ton trailer landing wheels knocked silly by rocks and stumps. You can blame it on a low ride.

How many of your 1-ton trailer landing-wheels have been whacked out of shape? An Ordnance representative prowling around down in the Tennessee maneuver area just lately, discovered that 70% of all the 1-ton 2-wheel trailers—including the 250-gallon water trailer—that he ran across, had damaged landing wheels. On many of them, the caster fork was sadly bent, on others the rubber tires were scuffed and cut.

The reason for the damage is a tiny little bit of ignorance. It's simply that the boys, in getting the trailer ready for towing, lock the landing wheel in the wrong traveling position. In the wrong position, the wheel hangs down with only about a foot clearance from the ground—rocks, stumps and even little bumps in the ground can reach up and take a whack at it. Locked in the correct traveling position, the wheel is tucked well up between the trailer drawbar out of harm's way. Figures 1 and 2 show the difference in the amount of clearance

from the ground when the wheel is locked (1) right and (2) wrong.

Technically, the trouble is that the wheel can be locked up in the wrong position. The little hole in the "quadrant" (the wide flat flange on which the wheel swivels up and down) is positioned so that it will engage the latch when the wheel is retracted wrong side up as well as right side up. The guy pulling the wheel up in the wrong position, figures that since it locks all right it must be right. Of course, he's wrong.

This leads to a suggestion from some authorities that something be done to make it impossible to lock the wheel up wrong. This calls for a little welding job. It consists of welding a couple of stops—one, a rod on the trailer drawbar (A in Fig. 3) and another, a flat piece of metal (B in Fig. 3), on the caster fork block. When somebody tries to bring the wheel up

in the wrong traveling position, the stops keep the latch from engaging and the wheel cannot be locked. Like the monkey trying to figure out a way to get his closed fist out of the jar, your man will then turn the wheel around to see if it'll lock up that way. It will.

Of course, you may at present be sojourning some place where lining up all your trailers and welding stops on them is impractical or just too much trouble. In this case we recommend a slight educational campaign. Get the company together and give them a little talk and demonstration.

If you do it in a nice way, your busted landing wheel troubles will disappear.

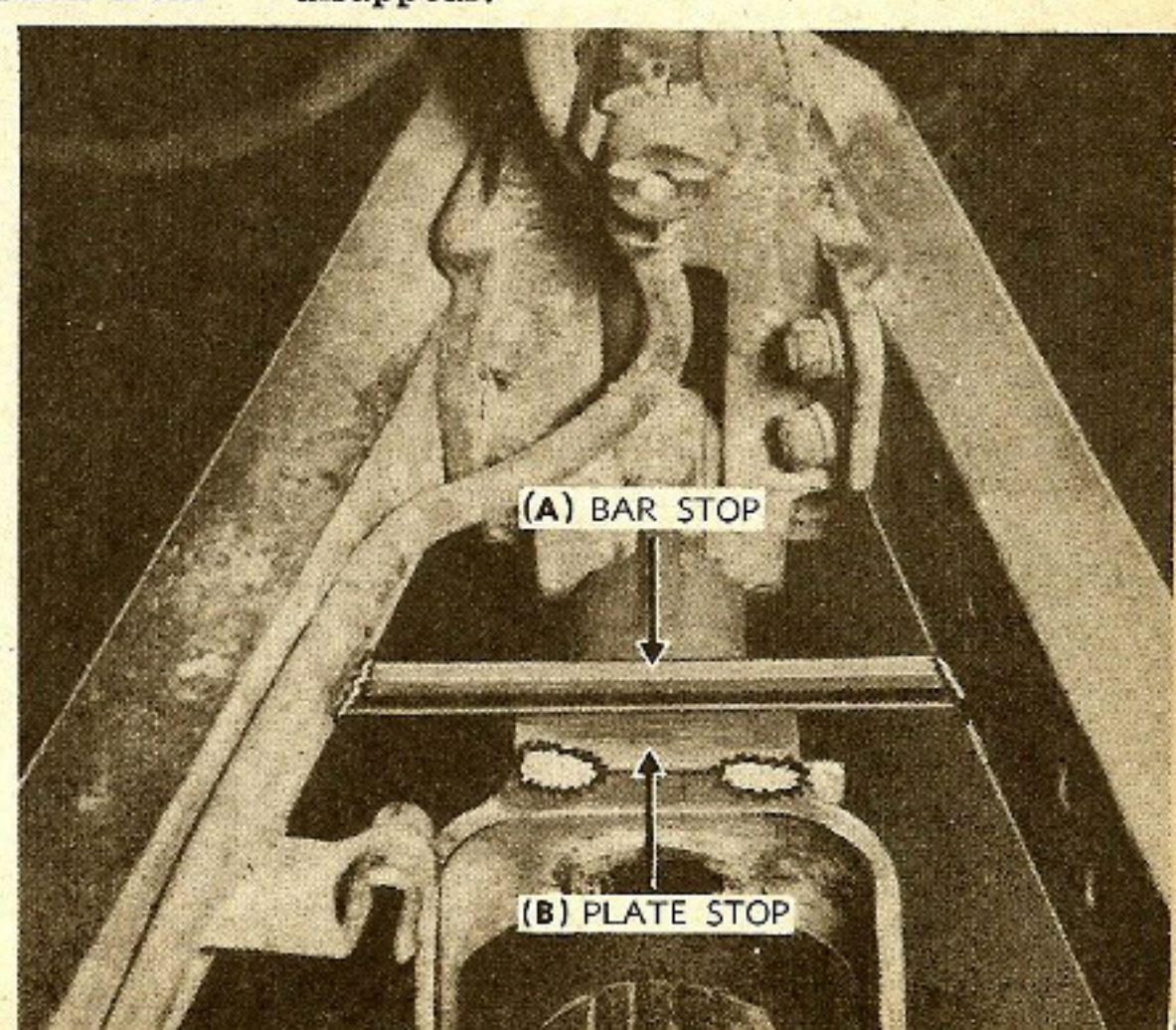


Fig. 3—A little welding job makes it impossible to lock the landing wheel in the wrong position.

(A) BAR STOP

(B) PLATE STOP



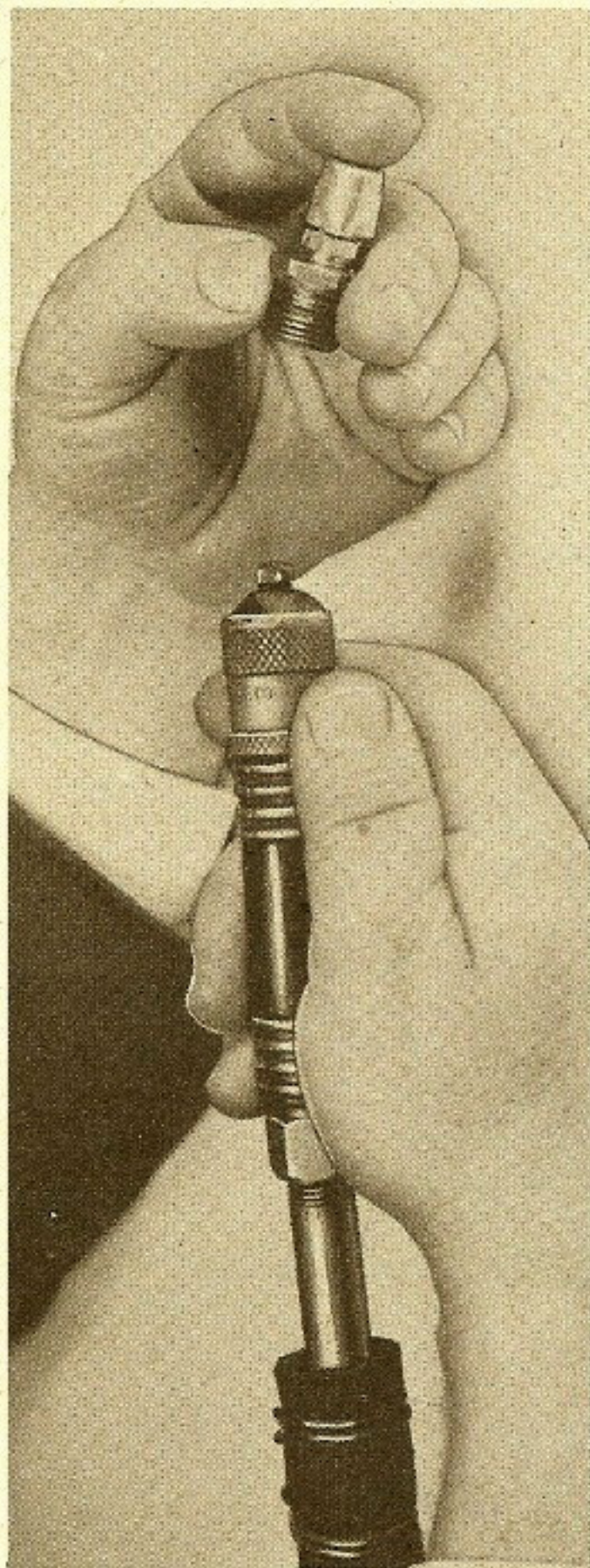


Figure 1

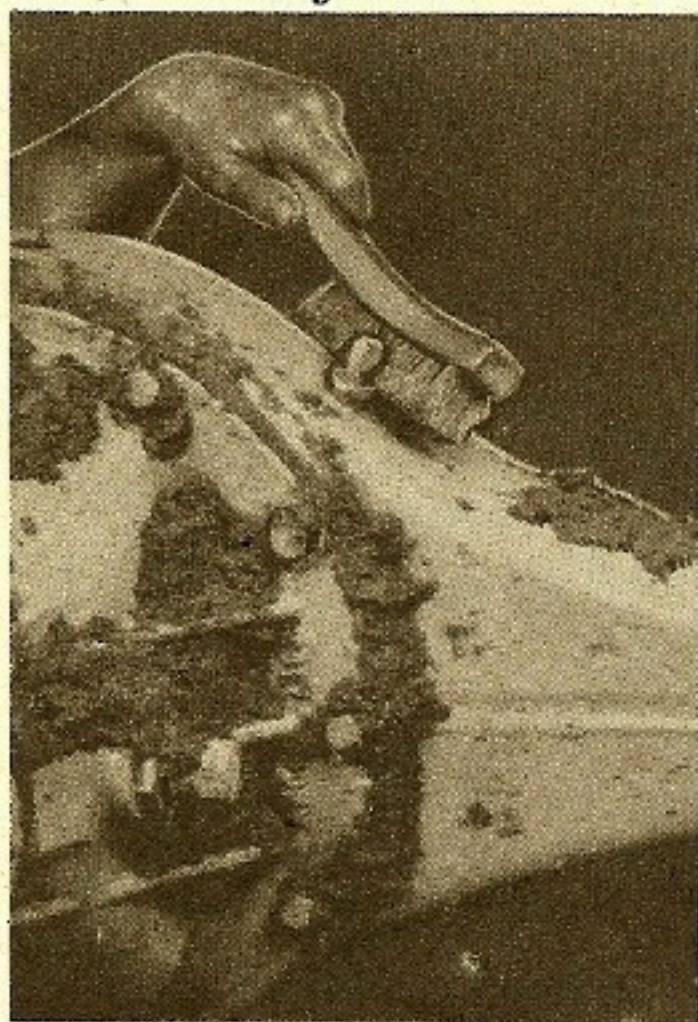


Figure 2

## If Your Half-Track is Still Leaking Gear Lube—

So your half-track (White, Diamond T, and Autocar) is leaking gear lube all over your brakes and making you raise your voice above a roar. All right, we know gear lube leakage is an old story, but relax and let us drop some new hints into your hairy ear.

Next time you feel like a little recreation, crawl under that half-track and run your hand along the top side of the rear jackshaft housing until you hit the breather screw. Has the scotch tape (put on at the factory to keep paint from sealing the screw) been removed? How do you expect it to breathe all taped up? Take it off.

Dirt packed around the axle the last time you dug in to fire that multiple gun or dirt collected traveling cross country may have plugged the breather as effectively as scotch tape. Remove the breather and clean it with an air hose (Fig. 1), if you have one handy, otherwise a stiff brush (Fig. 2) will do.

Now we've got something easy for you. Crawl out from under the vehicle and look between the hub flange and driving sprocket and you'll see some hub relief lube slots. Six of them. These were meant to fling out any excess lube that works past the grease seal in the hub. You can clean them by using a wire like the one in Fig. 3. (We found an old piece of 3/32" diameter baling wire to make this one.)

Why are we in such a sweat about this breather screw and these lube slots? Simple enough—if the breather isn't working properly, pressure builds up in the jack-shaft housing, and if the hub relief lube slots are clogged making it impossible for the lube to escape, bingo, your brakes get slapped in the face with it. Come Monsoon season you'll expect to stop your half-track and end up in the next county.

One more thing—fill the jackshaft housing to the right level (1/2" below the filler plug when cold). Overfilling or underfilling just breeds trouble.

The manufacturer is working on a seal now to keep that lube in its place when you're running your half-track along the side of a hill or when it's shaking like a leaf everytime the multiple gun fires. But seals or no seals, the burden is on you to keep the breather screws and relief slots in good clean shape.

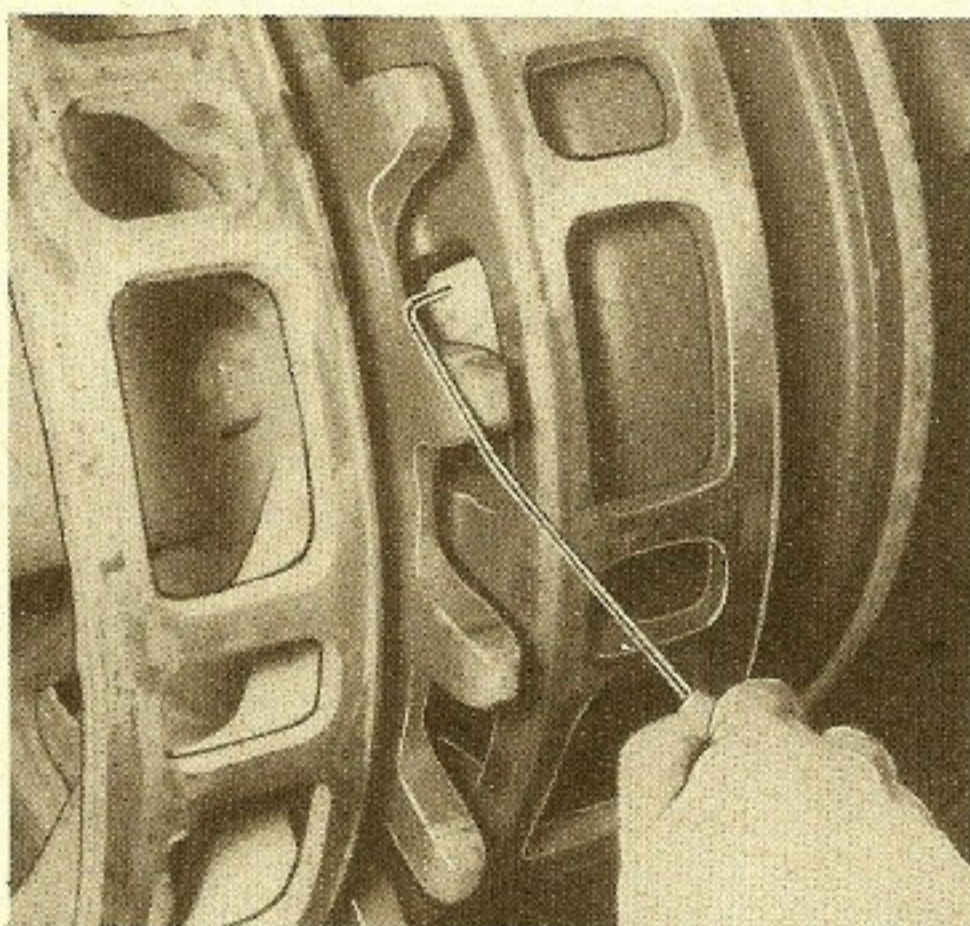


Figure 3

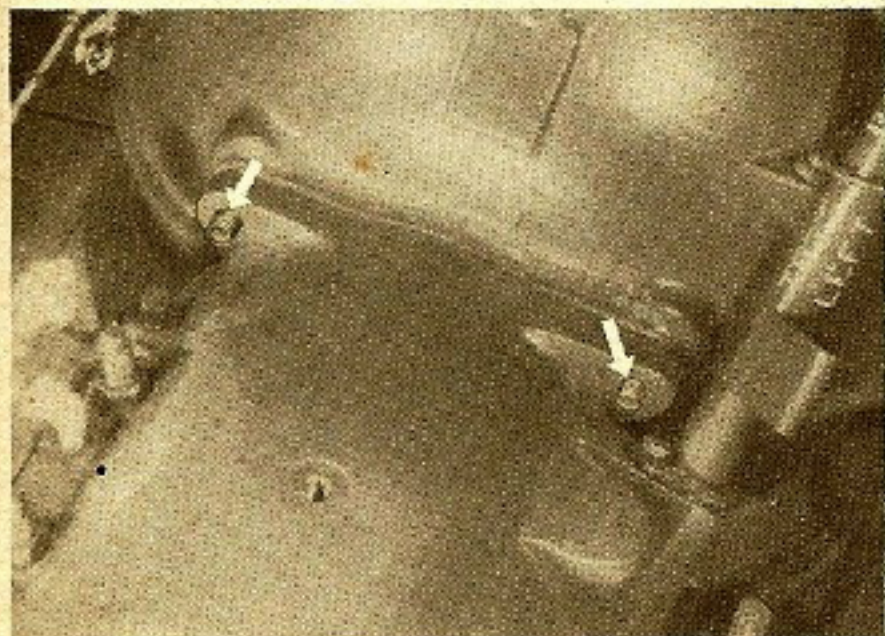


Another one of those "things-we-never-knew-till-now" has been sending a lot of ruined light tank transmissions\* back to the Ordnance shops. The thing-we-never-knew-etc., is that the flywheel housing (containing the hydraulic fluid drive) of the light tank is carefully and precisely machined and matched to the engine block. This gives perfect alignment to the transmission shafts.

But some of the boys in the field, unaware of this, have been scrounging up the detail. In their practice of making one good one out of two bad ones, they have been hooking up different Cadillac engines and transmissions without taking particular care to keep the flywheel housing matched to its original engine block.

For instance, say you've got a light tank with a busted engine that's got to be sent back to the higher-echelon shop. The most natural thing in the world is disconnect it between the flywheel housing and the engine (see Fig. 1). Why? Well, you don't take the trouble to disconnect it between the transmission and flywheel housing because the bolts hooking the transmission to the flywheel housing have to be reached from inside the flywheel housing. That looks like unnecessary work so you just unhook it between the flywheel housing and the engine. This leaves you with a

*Fig. 2—One reason why the matching engine and flywheel housing are often separated—the transmission has to be unhooked from inside the flywheel housing.*



# The Engine and the Flywheel Housing

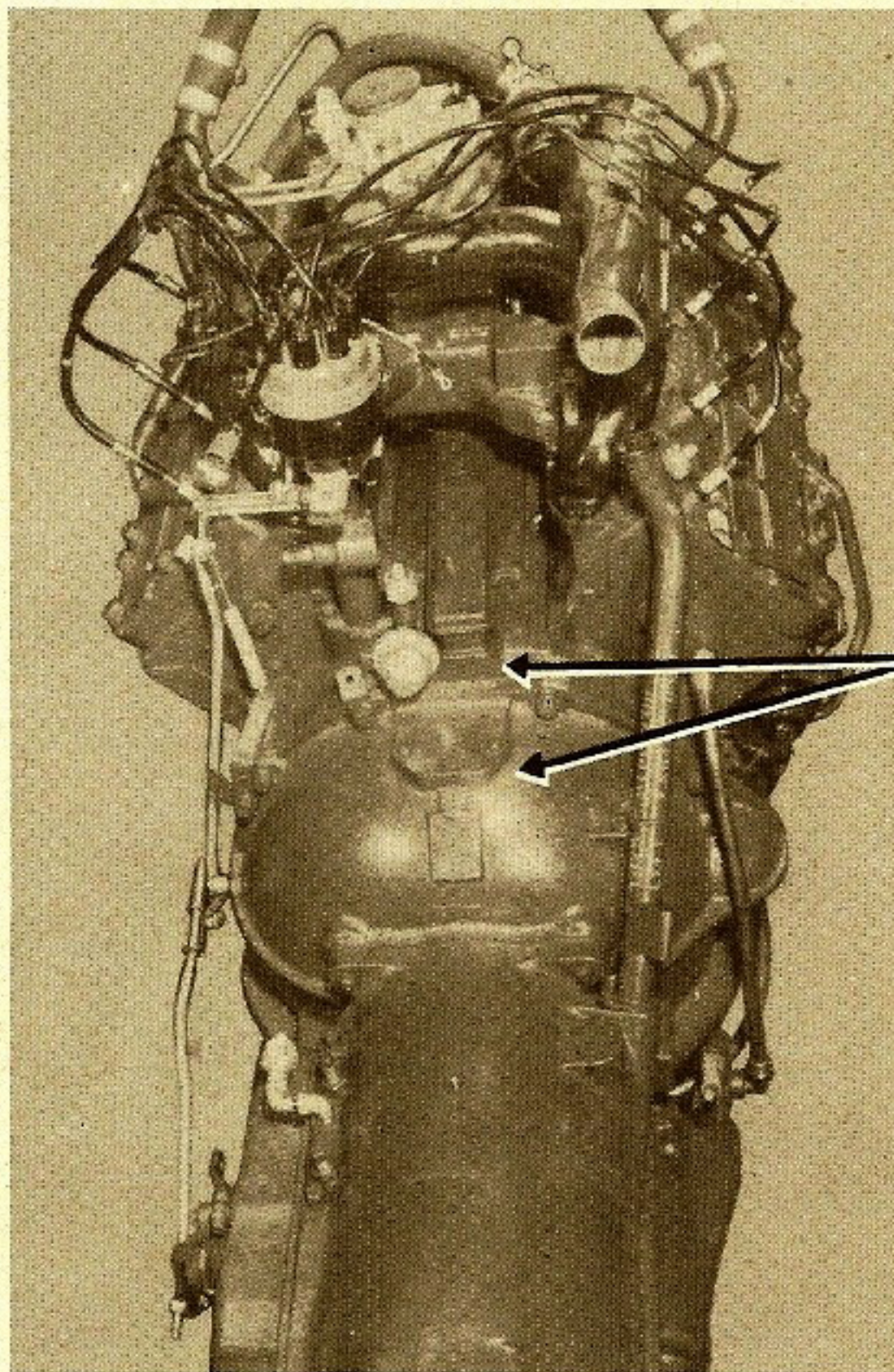
... ON THE LIGHT TANK AND HOWITZER CARRIAGE, M8. THEY COME IN MATCHED SETS.

transmission and flywheel housing assembly. You go get yourself a new engine, hook the two assemblies together—and then your troubles begin. The new engine and the old flywheel housing are not mated; the transmission shafts are not in proper alignment.

The moral of the story is, that if you've ever got a busted engine and a good transmission, on your

light tank or howitzer, keep the transmission but send the engine and the flywheel housing back to the shop as a unit. Or, if you've got a busted transmission and a serviceable engine, detach the transmission and send it back but keep the engine and its mated flywheel housing together.

(This caution is the subject of TB ORD 24.)



*Fig. 1*

THE ENGINE AND FLYWHEEL ARE MATES—DON'T SEPARATE THEM!

\*Light Tank, M5, M5A1; 75-MM Howitzer Motor Carriage, M8.







**BUT - SERGEANT SHORTPANTS THAT THERE'S NUTHIN' BUT A OLD CRASHED B-24**

**Y'R CRAZY, JOE, THATS A PILE OF PRICELESS PARTS**

**GOLLY.. Y'R TAKIN' WHEEL BEARIN'S RIGHT OUTA THEM LANDIN' WHEELS!**

**YEAH AND Y'LL FIND THEY FIT, TOO!**

**YES, SIR - TOOK THAT ORDNANCE SERGEANT AND HIS SCREWY HELPER ONLY ONE HOUR TO FIX THIS TRUCK!**

**NEXT MORNING**

**SPARE PARTS! - SPARE PARTS! LEMME TELL YOU, OMMY MOTUS, I THINK THE WHOLE SYSTEM IS SCREWED UP!!...HMM...ITS GOT A LEAK --- THROW IT AWAY**

**WHO'S TO BLAME, MR. JOE?**

**REKAZISHUNS! ... WE'RE FIGHTIN' A WAR, AINT WE?? HECK WITH RECKAZISHUNS.... GIVES ME A PAIN IN MY... OH, THROW THAT OUT TOO - GOTTA SCREW MISSING**

**NOW, IF I WUZ CHIEF OF ORDNANCE**

**SLOP!**

**IF YOU WERE CHIEF OF ORDNANCE, JOE, HITLER WOULD BE IN THE WHITE HOUSE....LOOK AT THAT PILE OF PARTS OUT THERE... YOU LEFT 'EM ALL UNCOVERED-UNPROTECTED TO ROT IN THE SUN AND RUST IN THE RAIN !!**

**HALF THE SO-CALLED SCRAP CAN BE SENT BACK FOR REPAIR AND REUSED!**

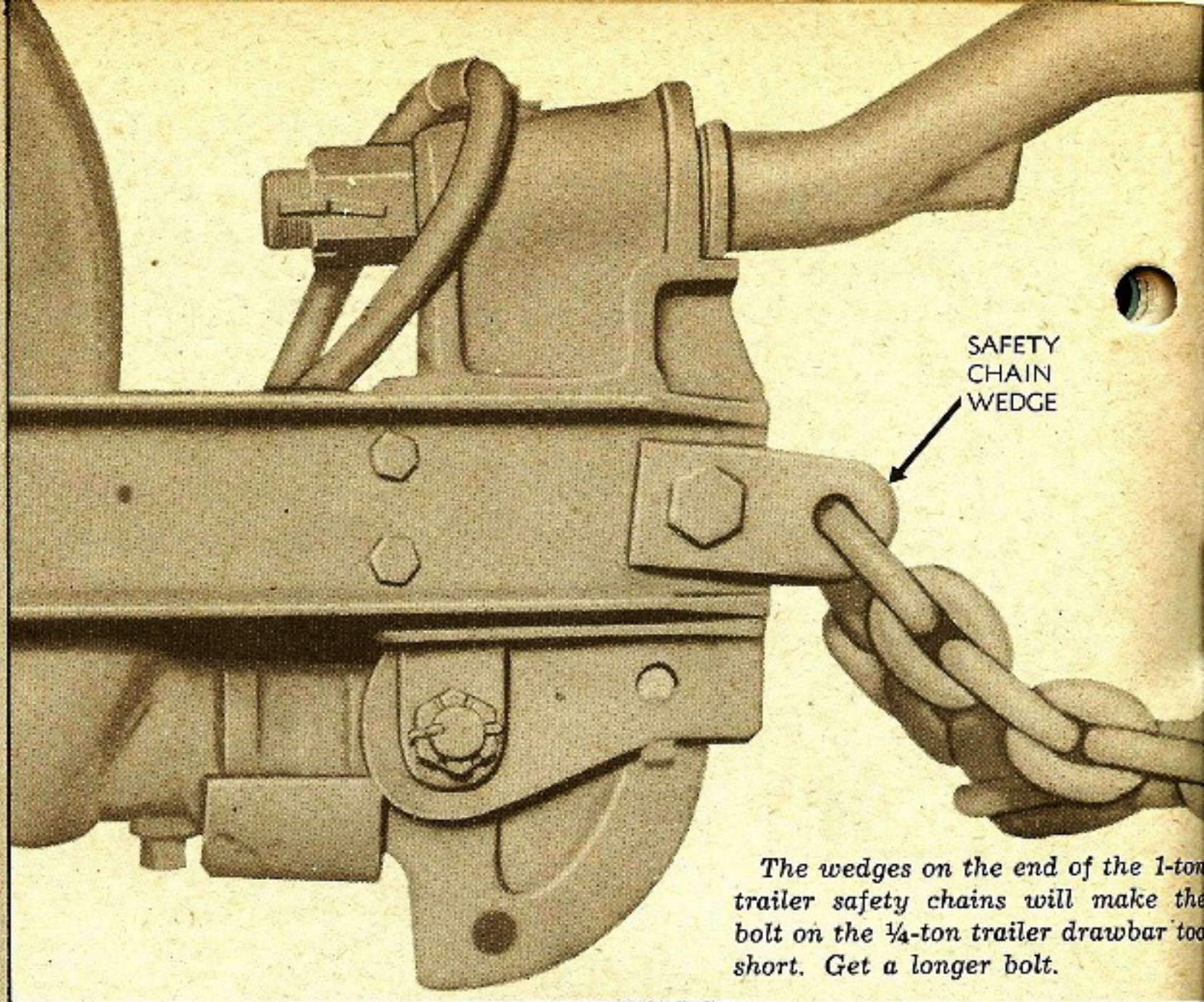


## Short Chained Again

Some tables of equipment have been calling for the ¼-ton trailer to be towed behind the ¾-ton weapons carrier. Maybe at one time or another you have tried this wrinkle and if so, you have noticed a slight fly in the ointment: When the ¼-ton trailer is hooked up to the ¾-ton weapons carrier, the trailer safety chains turn out to be a couple inches too short to reach from the trailer to the truck.

The first thing that pops into your busy little head is, well, since the safety chains are too short, don't use 'em. Ah, but there have been cases of lunettes breaking and if you've ever been chased down a hill by a wild trailer that has jumped its harness, then you'll be interested in learning how the safety chains can be made to fit in this particular case.

There are two things you can do: First, you can replace the short safety chains on the ¼-ton trailer, with 1-ton trailer safety chains—if, of course, you're in a place where you can get supplies fairly easily. But there's one small hitch: The little "wedges" on the end of the 1-ton trailer



The wedges on the end of the 1-ton trailer safety chains will make the bolt on the ¼-ton trailer drawbar too short. Get a longer bolt.

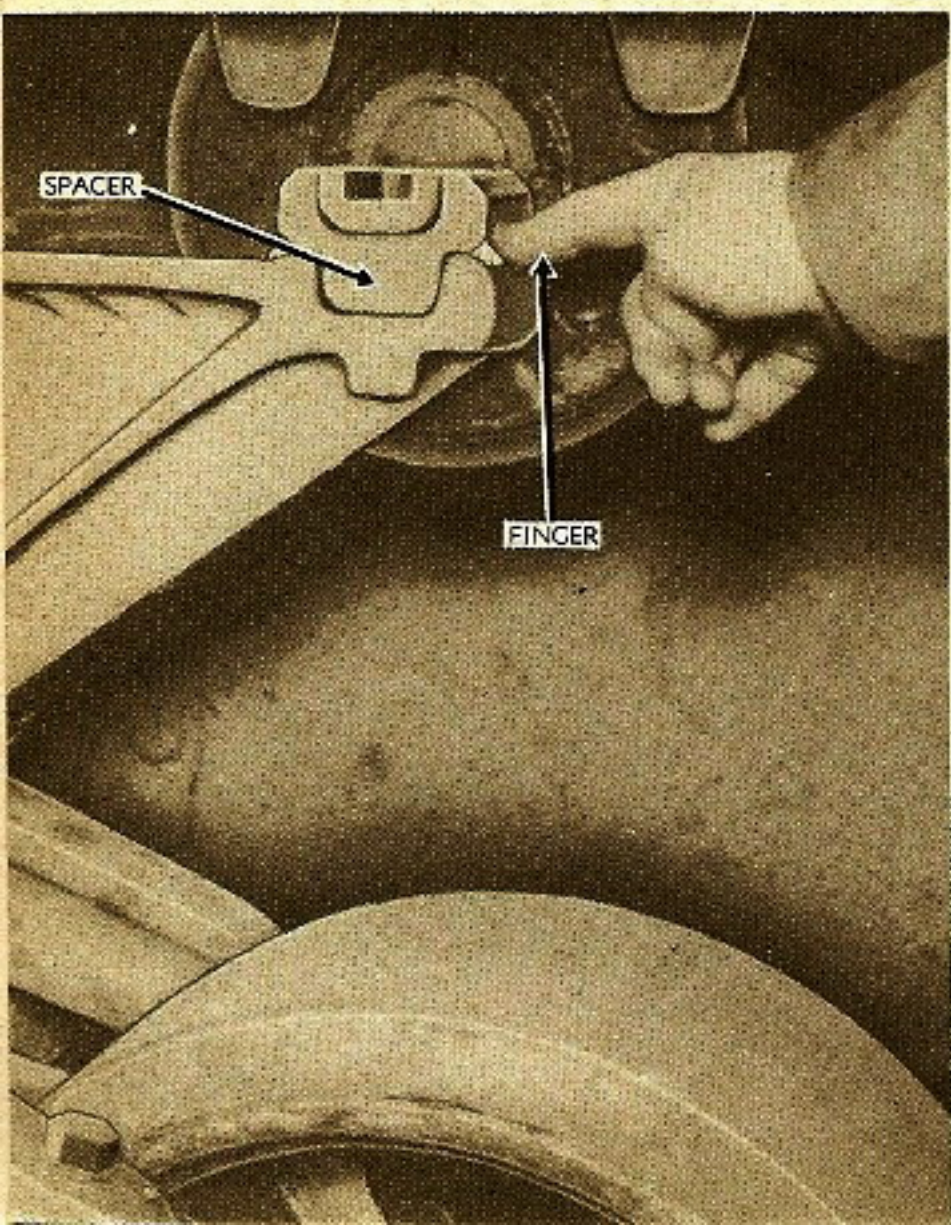
chains by which the chains are attached to the trailer, are a little thicker than the wedges on the shorter chain. This gives the bolt that ties the chains to the drawbar, a little bit too much of a mouthful—the bolt turns out to be too short. So in substituting the longer chains of the 1-ton trailer for the shorter chain now on the ¼-ton trailer, you'll also have to install a longer bolt (also used on the 1-ton trailer).

If you can't get 1-ton trailer safety chains, there's a second thing you can do to solve the

short-chain problem. You can move the eyebolts on the ¾-ton truck in closer to the pintle. Simply remove the two lower bolts on the pintle and install the eyebolts in their place. Install the lower pintle bolts in the holes where the eyebolts used to be. This will give you a couple more inches but still not enough. You'll have to get a blacksmith to forge a couple more links.

Both remedies call for extra effort on your part, but they're a lot better than running the chance of an accident with a wild trailer.

## A WELD TO KEEP AN EYE ON



Every driver and mechanic should have a couple of pet things to keep an eye on when giving his vehicle the once-over. One of our pet things is in the neighborhood of the top track-rollers on the medium tank (and vehicles with medium suspensions\*). Specifically, the spacer supporting the little axle shaft that the track rollers roll on (arrow in Fig. at left).

These little spacers were originally installed (in production and also by FSMWO G1-W2) to raise the roller an inch or so. The spacers were welded onto the bogie bracket. The cap screws that anchored the little axle shaft, passed down through the spacer

and on into the bracket.

Okay—except that welds being only human, are liable to crack up when the going gets rough (philosophy). That's what you've got to watch. If the welds do crack up, they let the little axle shaft work loose, a lot of stress is put on the cap screws and the first thing you know, they either shear off or strip right out.

So, as you cast your big brown eyes here and there over your vehicle, give these spacers a bit of attention. See that the welds are in good shape, make sure the cap screws are good and tight. And if the welds are beginning to crack up, make a date with your neighborhood Ordnance welder.

\*The old M3's, the M4's, the 3-inch gun motor carriage M10, and the 105 mm howitzer motor carriage M7.

Keep your eyes peeled for signs of cracking at these welds on M4 suspensions that have these spacers.



Dear Editor,

Here's a plug for blocking off the fluid from a wheel cylinder when the flexible brake hose is broken or damaged in the field and there're no replacement parts.

Take a discarded brake hose and remove the rubber from the end that attaches to the metal tubing at the frame. Braze or weld this end so that it's solid. We keep two or three of these plugs in our No. 2 tool sets, so that it takes only a few minutes to install a plug at a Tee connection to block the brake fluid and get rolling again.

In case of a break in the front lines, it's best to remove and plug both front lines at the Tee if you have far to go, since there's too much side pull if just one wheel is braked.

**Civilian Automotive Advisor  
Guy Y. McDaniel**

(Ed. Note—In the April 1943 issue, ARMY MOTORS published a similar suggestion and we again caution you to make your weld strong enough so that fluid pressure won't blow the plug out, as some hydraulic systems have up to 3,000 lbs. pressure in the lines.

About the front wheel brakes, 2½-ton GMC's have a shut-off cock that you can turn to stop the flow of fluid to the front brakes if there's a break in the lines.)

Do you have skinned knuckles? Are you late for dates—everytime you have to adjust the carburetor on your M4A3 tank? Here's a little gadget **Mr. Bob Shaw**, of the neighborhood garage, specially designed to add joy to your life.

Instead of using a short, stubby screwdriver and jabbing around blindly trying to get it into the slot of the adjusting screw, make this handy little tool (Fig. 1), and try it.

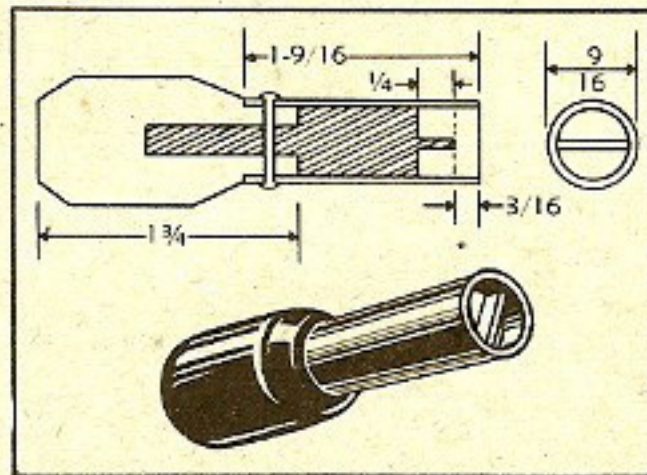
Take a ½" bolt—cut the head off with a hacksaw. Now make a tongue about ¼" long and as wide as the screw slot on the threaded end. Be sure the tongue is in the center of the bolt. Find an old screwdriver handle tapered to 1¾" in length and drill a 3/16" hole in the tapered end. Square the unthreaded end of the bolt so it'll fit up in the handle. Next you'll need

# CONTRIBUTIONS



a piece of tubing 1-9/16" long and 9/16" around. Place the bolt (you may have to file the threads down to get it to fit) in the tubing leaving about 3/16" between the tongue and the end of the tube. Solder is next—sweat it down into the tubing to hold the bolt firm. The handle goes on the squared end. Final step is to drill a small hole through the tubing just below the handle and put a dowel pin through to hold the handle in place.

Bet you can hardly wait for carburetor-adjusting time to come around.



Dear Editor,

In hot climates, drivers sometimes remove the hood sides of their 2½-ton, 6x6 GMC's because they think it helps cool the engine. Actually, it has just the opposite effect; it allows air drawn in through the radiator to flow out of the engine compartment without being directed over the entire engine. Thus cooling efficiency is reduced and engine temperature is raised.

Another bad habit some drivers have is removing the thermostat because the temperature gage

registers a 200° temperature. But unless the thermostat temperature is set high (to open at 160°) the crankcase ventilating system can't remove the fuel and water vapors that form in the crankcase. That's why it's best to maintain engine coolant temperature at or above 160° and to reach this temperature as soon as possible. In hot climates, the engine temperatures on these vehicles may increase to a point where the driver gets worried; however, there's no need for alarm unless the temperature is above 220° F. or coolant is being lost.

This particular cooling system is a sealed type with a four-pound pressure radiator cap. Since the boiling temperature of water increases 3° with each pound of pressure, the boiling point on these vehicles is raised to 224° F. at sea level. This makes operating temperatures up to 220° F. (205° F. at high altitudes) okay for efficient engine operation. But one caution—the engine temperature shouldn't exceed air temperature by more than 100° and shouldn't be allowed to drop below 160° F. in any climate.

If the engine temperature is too high, better check for lack of water, fan-belt slippage, defective thermostat or heat indicator, faulty water pump, clogged cooling system or radiator core air passages, incorrect ignition timing, or pressure-radiator-cap leaks.

**C. F. Coffey  
J. Wallace**

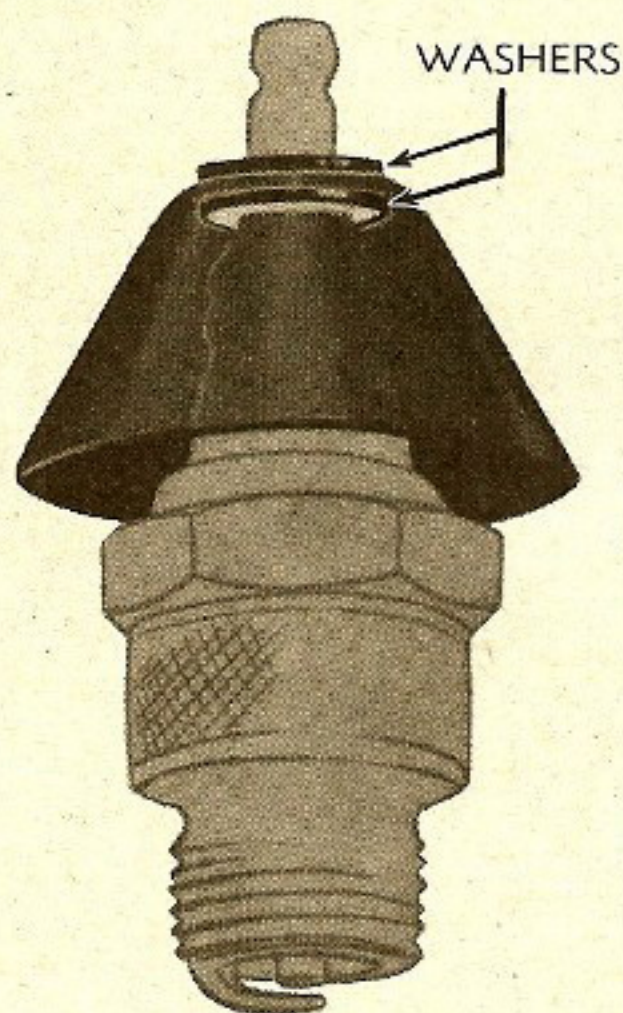
**GMC Service Representatives**



Dear Editor,

We've had trouble with the rubber insulator caps that fit over the sparkplugs on the older ¼-ton 4x4's. The top of the cap deteriorates with age and causes the lower part to crack. We haven't been able to get replacements, so we've hit upon this idea for lengthening the life of the caps.

Put a small, flat washer on the top and bottom of the cap (see Fig.). Press the edges of the crack together and tighten the top of the sparkplug down against the washers.



Of course, this can only be done on the older models, since the newer ones don't have sparkplugs with removable caps, and the sparkplug-wire terminal simply snaps into the electrodes.

**Cpl. H. F. Eaton**  
Troop A, 29th Cav.

(Ed. Note—The reason you can't get replacements is because sparkplug insulator caps have never been stocked.)

T/Sgt. Cecil G. Snyder, 408th Bomb Squadron, has a way of popping up every so often with some pretty neat suggestions, and we've picked these two to pass along.

Sgt. Snyder says they make new bushings for the steering column (to replace rubber or composition ones that have shrunk and fallen to the bottom of the column) out

of well lubricated wood. Simply fasten the new bushing with a small screw to keep it from falling to the bottom of the column. The mechanics in his squadron use a power grinder as a lathe to turn the wood bushing to the correct diameter. (The idea's a good one, but should be used only to prevent deadline of a vehicle when parts aren't available.)

When you want to remove spark plugs and don't have the proper size socket wrench, Sgt. Snyder suggests welding (end to end) two old sockets the size you need. If you want to get fancy, you can dress down the weld.

Dear Editor,

The starter switch on the Autocar open-cab tractor, Model #U7144T, is located in a position to receive the full damage of sunshine, dust and rain. In a short time, due to rust, corrosion, and accumulated dirt, the plunger-release mechanism fails. The switch stays on and the starter motor continues to run after starting the vehicle, until the windings let loose.

Taking the switch apart and cleaning it requires a lot of work and we had to do it much too often, so we found a better way to cure the trouble.

We made a cap out of a piece of tubing (see Fig. 1), 1-11/16" inside diameter, and 3½" long. We closed one end by welding a metal disc to it. Next we drilled and tapped a ¼"-20 hole a half inch from the closed end for a set screw. The set screw is merely to keep the cap from coming off and should not bind.

This "straight jacket," simple as it is, really does the trick and prevents the recurrence of this trouble.

**A. A. Turek**  
Civilian Automotive  
Adviser

(Ed. Note—Here's another type of "straight jacket," for keeping the starting switch clean: Fashion a boot out of salvaged thin leather or canvas and clamp the lower end of the boot around the starter-switch housing. Wire can be used for the clamp (see Fig. 2). Fasten the upper end of the boot underneath the push-rod button by unscrewing the button, inserting a metal washer between the boot and the push-rod spring (to prevent damage to the boot), and replacing the button.

New Autocar starter switches have a dustproof design similar to that used on tractors. But the old switches can certainly be improved by the protection of these covers.)

Dear Editor,

The oil-bath air cleaners on our 1½-ton 4x4 Chevrolets had a habit of coming off when we were driving over rough or bumpy roads. I soldered a flat-head stove bolt (with thread end pointing out) to the side of the air cleaner. Then

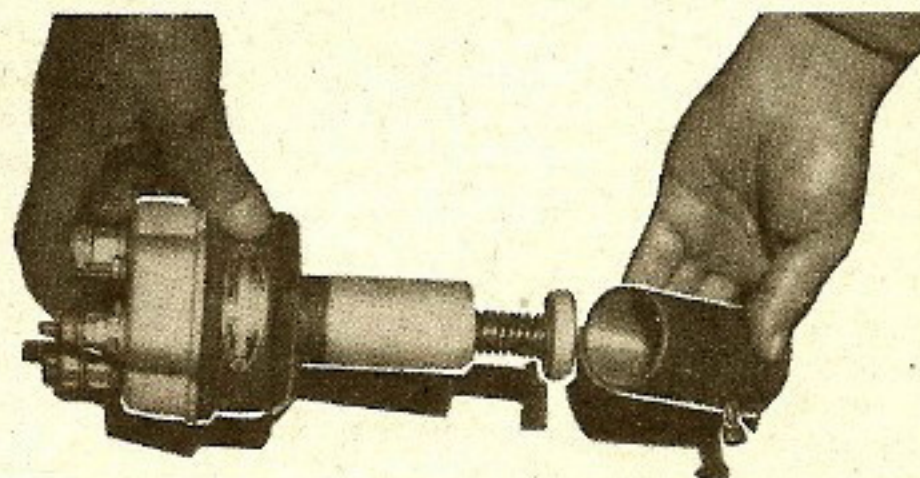


Fig. 1

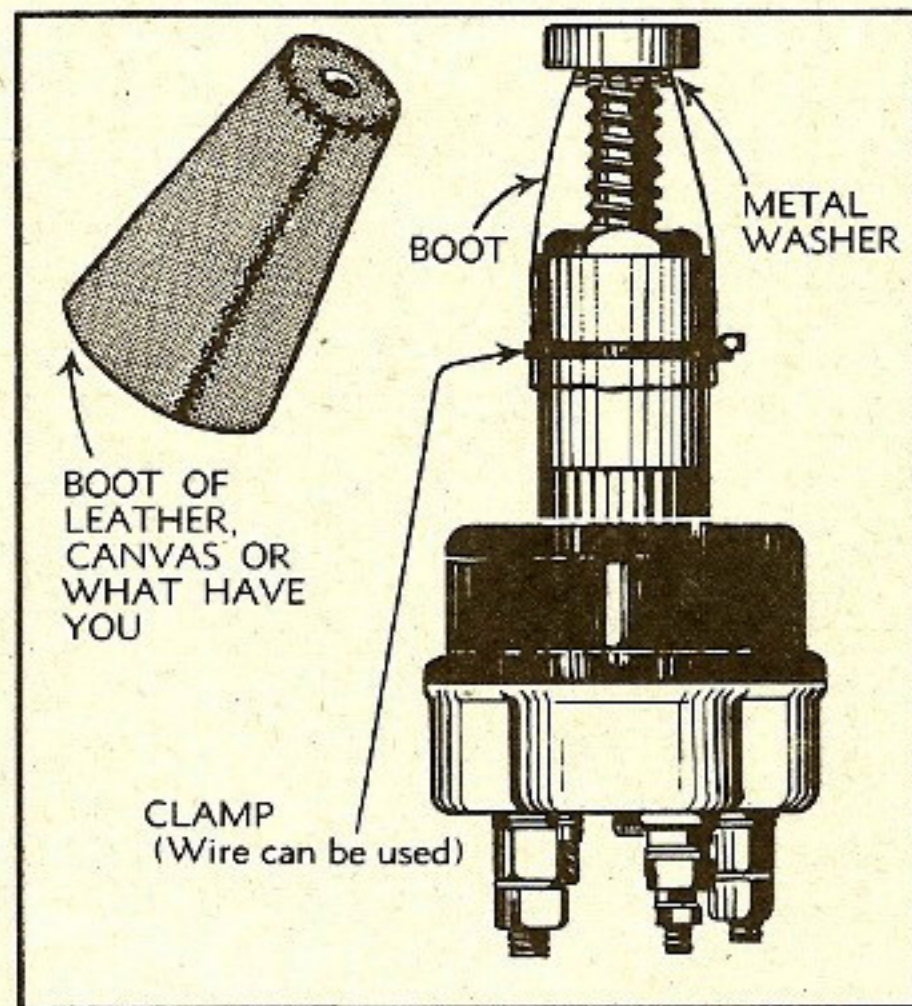
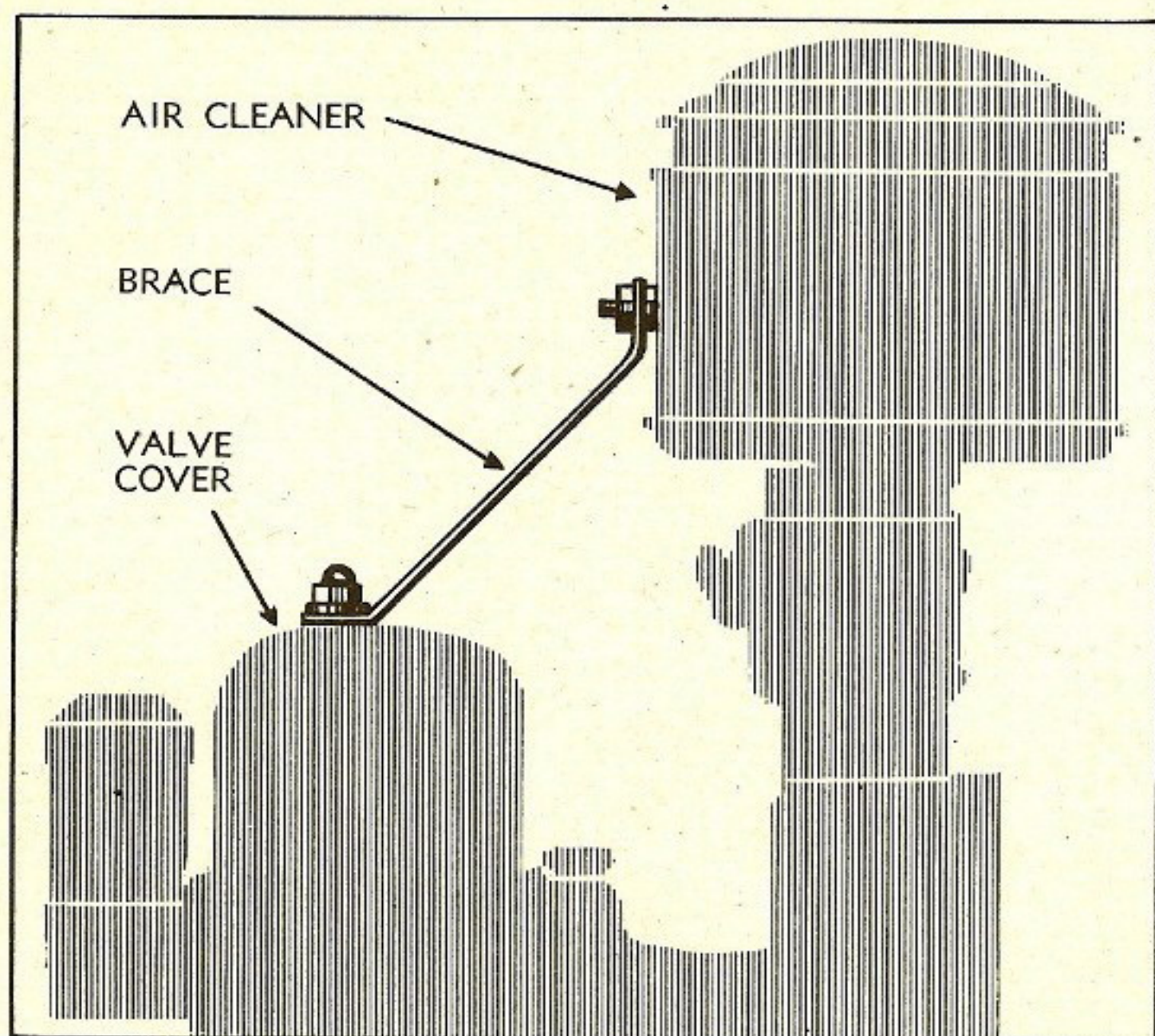


Fig. 2





I ran a brace from there to the stud on the valve cover (see Fig. above). It works wonderfully.

**Pvt. Henry R. Hamann**  
Anniston Army Air Field

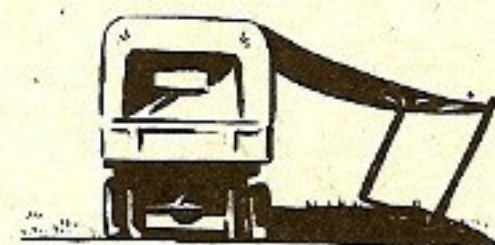
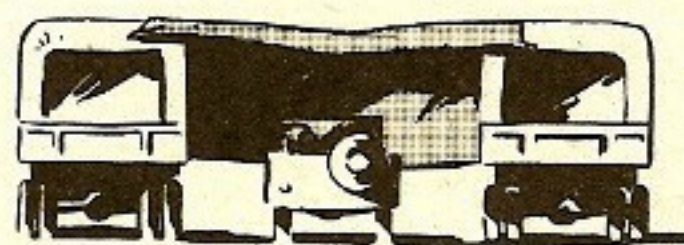
(Ed. Note—Sounds like a practical idea. FSMWO G-508-W3 (1 Apr. 43) calls for a similar support for the air cleaner on the 2½-ton GMC.)

From **Capt. J. C. Wallace, H. and S. Co., 336 Eng. (C).**, comes this suggestion for bracing the 2½-ton GMC running board where gas

cans are mounted. The brace, which the Capt. says decreases vibration and prevents running board bolts from shaking loose, is a 24" iron band (1¼" wide and ¼" thick) welded to the running board and frame (see photo) of the truck.

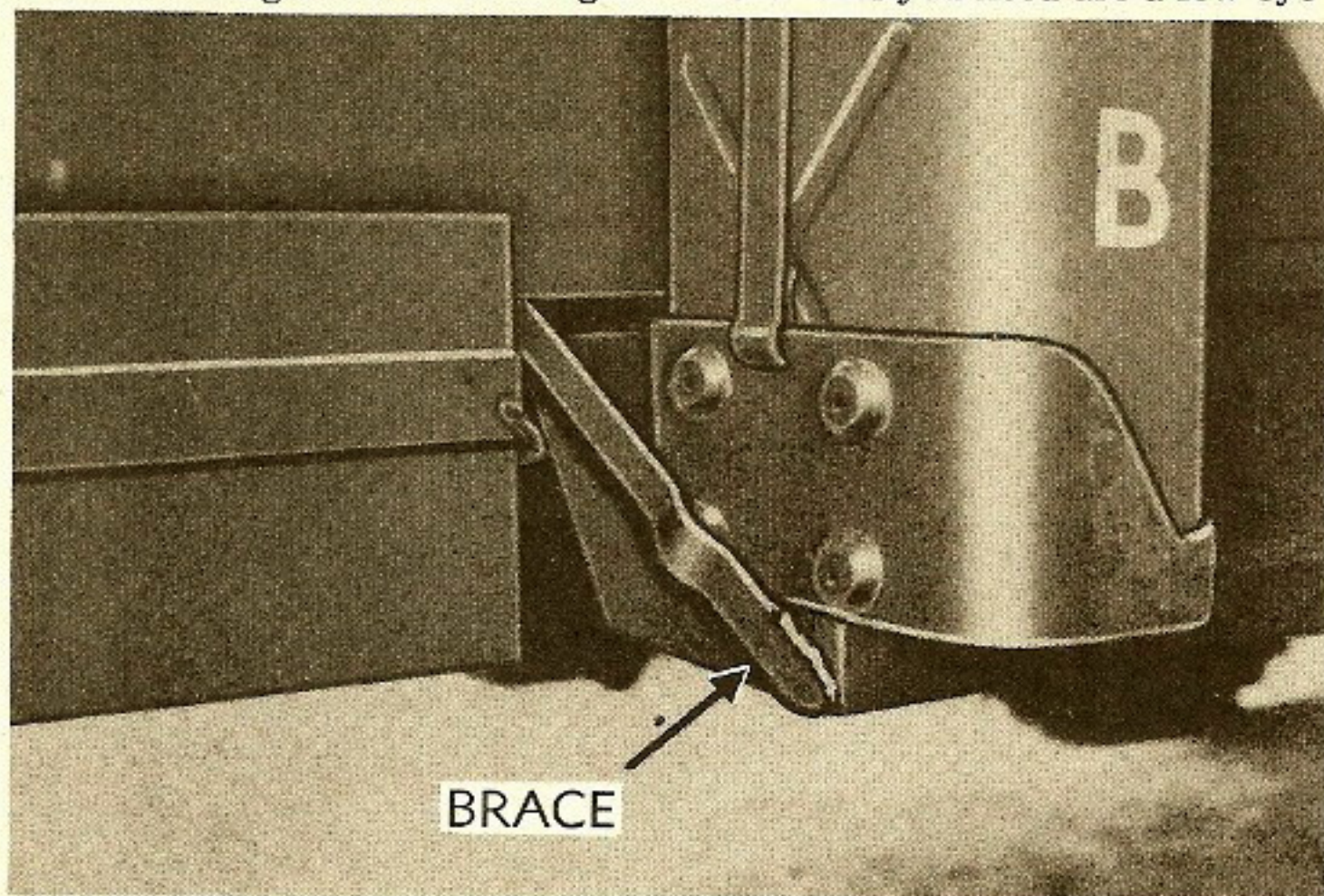
Those snarky drawings (right), done up by **Capt. J. S. Walworth of Office, Chief of Ordnance-Detroit**, are his answer to the question, "Whatinell is old canvas good for?" All you need are a few eye-

lets and buckles spotted around in the correct places, plus some ingenuity, and you have a neat shelter to keep the sun, rain, or wind from taking the crease out of your fatigues. His suggestions pictured several other ways of making up a shelter—stretching the canvas from the back of one truck to the back of another, or from the top of one truck to two poles a short distance away. Our contributing Capt. tells of one Joe who got so excited about the idea he went around borrowing rear curtains and tarpaulins, like mad. That isn't so good. The Capt.'s idea is,



## BUILT A BETTER GIMCRACK LATELY?

Have you worked out a new wrinkle that makes a tough job easier to do? We pay off heavily for valuable—or even just helpful—maintenance dope from the field. For a good printable tip, you'll get a personal subscription to ARMY MOTORS. For a real heavyweight idea, we'll send you the "Little Jim-Dandy Athlete's Foot Scratcher" with which you can tear your toes to ribbons. Get on the ball, Jack, don't keep them good ideas to yourself—shoot 'em in and we'll spread 'em out for everybody to use.

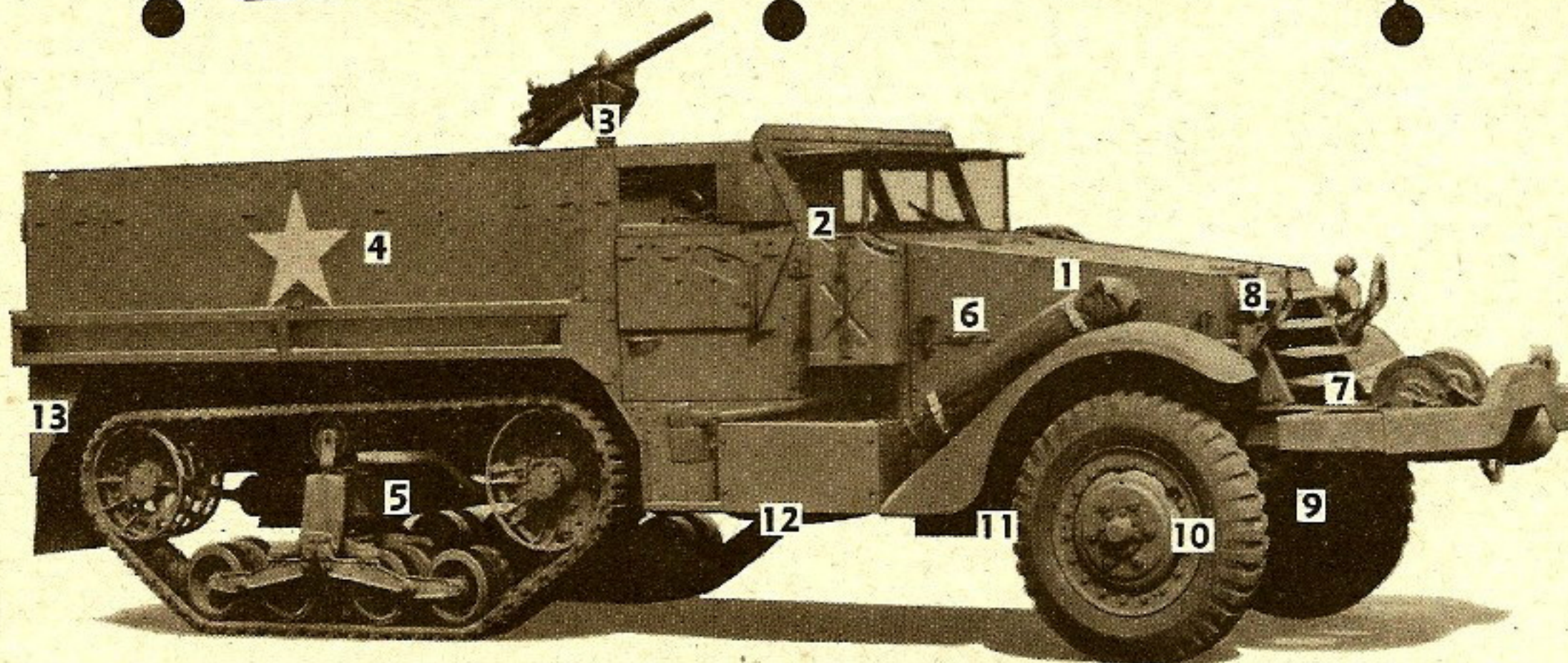




# How's Your Half-Track, Jack?

To be exact, we're talking about the CARRIER, PERSONNEL, HALF-TRACK, M3—built by Autocar, White, or Diamond T. And what we're saying is that this page adds up to a pretty good idea of the noticeable changes that ought to be noticeable on yours. How about looking her over—and looking up what she's lacking?

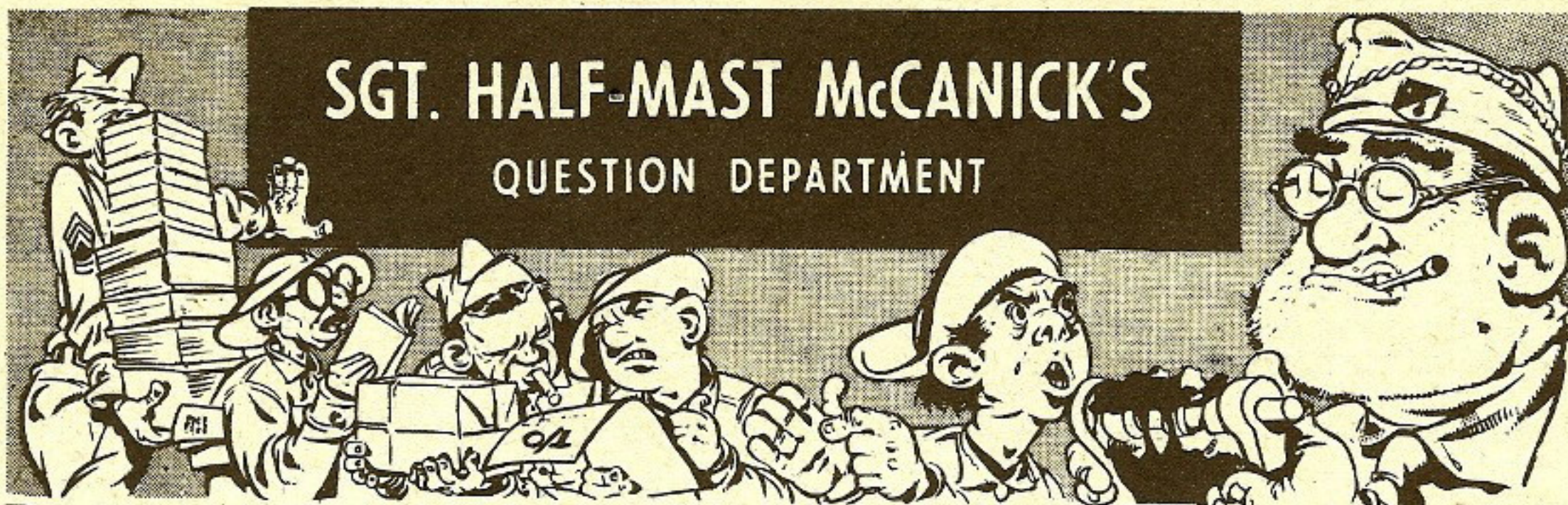
For other publications affecting the M3, consult OFSB 1-1.



- |  |  |
|--|--|
| <p><b>1</b> [ FSMWO G102-W8, Surge tank<br/>FSMWO G102-W13, New type rotor**<br/>FSMWO G102-W19, Engine oil pan protection**<br/>TB 700-45, Fuel sediment bowl<br/>TB 700-75, Engine restrictor or governor removal<br/>TB 710-9, Horn relay*<br/>TB 710-22, Filter assembly<br/>TB 1707A-1, Voltage regulator<br/>TB ORD 23, Radio suppression</p>  | <p><b>5</b> [ FSMWO G102-W36, Spring-loaded idler adjustment<br/>FSMWO G102-W38, Idler post brace<br/>FSMWO G102-W40, Idler post and shaft<br/>TB 700-60, Crescent wrench modification<br/>TB 700-65, Spare band track guides<br/>TB 700-79, Band track tension adjusting mechanism<br/>TB 700-99, Band track chains<br/>TB 1707B-1, Idler adjusting rod lock nut removal</p>  |
| <p><b>2</b> [ FSMWO G102-W5, C1, C2, Trailer brake system**<br/>FSMWO G102-W9, Liquid container brackets**<br/>FSMWO G102-W17, Compass**<br/>FSMWO G102-W32, Starter caution plate<br/>TB 700-37, Caution tags*<br/>TB 700-54, Tire repair kit<br/>TB 700-58, Decontaminating apparatus<br/>TB 700-64, Door stop angle<br/>TB 700-68, Instrument panel voltmeter<br/>TB 710-10, Fuse precaution*</p> | <p><b>6</b> FSMWO G102-W24, Hood side armor plate**</p> <p><b>7</b> FSMWO G102-W16, Radiator bottom armor plate**</p> <p><b>8</b> FSMWO G102-W27, Latest type BO driving light</p> <p><b>9</b> [ FSMWO G102-W15, Brake booster guard**<br/>FSMWO G102-W18, C1, C2, Steering knuckle guard**<br/>MWO G102-W35, Spring suspension<br/>TB 700-95, Steering knuckle boot guard</p> |
| <p><b>3</b> FSMWO G102-W31, Ring gun mount<br/>TB 850-12, Waterproofing canvas and duck</p>  | <p><b>10</b> TB 700-105, Tire lock ring removing tool</p>  |
| <p><b>4</b> [ FSMWO G102-W21, C1, Mine racks<br/>FSMWO G102-W22, Hand rails<br/>FSMWO G102-W37, C1, Fuel tank filler cap</p>   | <p><b>11</b> TB 1705A-7, Front propeller shaft U-joint<br/>TB ORD 12, Propeller shaft U-joint lube</p>   |
| <p><b>5</b> [ FSMWO G102-W23, Bogie volute spring<br/>FSMWO G102-W26, Flanged bogie roller hub**</p>   | <p><b>12</b> FSMWO G102-W41, Interlock mechanism removal</p> <p><b>13</b> FSMWO G1-W9, C1, New style combat zone safety lights</p>   |



# SGT. HALF-MAST McCANICK'S QUESTION DEPARTMENT



Dear Half-Mast,

We've had an argument going on in our New Guinea troop for some time, on whether an engine turns clockwise or counterclockwise.

If it turns counterclockwise, is it technically correct to speak of the front of the engine as at the flywheel?

And is the right and left side of a vehicle figured from the driver's seat or a position facing the radiator?

Pfc. M. F. S.

Dear Private,

Don't know whether my two cents worth will settle your argument or not. The way I've always heard it, it's an old automotive custom to say the front of an engine is at the end toward the front of the truck (that's the end opposite the flywheel in any vehicle). Then, too, cylinders are numbered from that end—which is another way to prove where the front is. In that case, the engine turns clockwise—if you look at it from the front. Of course, if you're sitting in the driver's seat, it'll turn counterclockwise. But that's like saying time goes backward when you look at a clock from the rear.

As for the right and left side of a vehicle, the Army figures it from the driver's seat.

*Half-Mast*

Dear Half-Mast,

For quite some time we've been troubled with dragging brakes on our 1½-ton, 6x6 Dodges. We've tried several ways of correcting the condition—even asked a higher echelon—but we're still both-

ered. Can we enlist your aid?

Sgt. G. W.

Dear Sergeant,

You sure can. When you adjust brakes and they still drag, you can generally blame it on misalignment of the brake-adjusting cam. The brake-shoe cam tends to tip down out of alignment when it's moved with the shoe against it, so that when the brake shoes are applied the cam spring causes the cam to partially return to correct alignment. That results in reduced clearance between the brake lining and drum when the brakes are released.

Once you've centralized the brake shoes (.006 heel clearance, .012 toe clearance), turn the cam just enough so the brake shoe contacts the brake drums; then turn the cam in the opposite direction to take out any sign of drag. Just to make sure the cam isn't in a wedged position, rap the adjusting hex with a hammer.

The cam still could be out of alignment—even after this knock, so depress the brake pedal like you do in normal operation to make sure the brakes don't drag when you release the pedal. If you find there's still drag, back off slightly on the cam and knock the adjusting hex again. Depress and release the pedal again. Keep doing this until all drag disappears.

*Half-Mast*

Dear Half-Mast,

At present, we are using U. S. Army Spec. No. 2-104B engine oil. According to WD Circular 366, 1942, all posts, camps, and stations in the United States have to

buy this oil for use in general purpose vehicles.

When this oil was first put in, we received instructions to mark the vehicle some way so that regular oil wouldn't be added by mistake. Recently we had a Technical Inspector from Fifth Service Command who wanted to know where the instructions came from. Frankly, we didn't know. We searched high and low—with no results.

Please tell us if there is such a directive. We would also like to know if we're required to use this type of oil indefinitely.

Capt. L. C. B.

Dear Captain,

The use of engine oil, USA Spec. 2-104B is now required in all Army vehicles.

When the Army first started using this oil, Training Circular 32 (22 May 42), since rescinded by TC 103 (18 Aug. 43), said that vehicles containing the new type oil should be marked until all units in a group had changed over. This ain't necessary any more, since the Army figures all its vehicles are using the standard engine oil by now.

*Half-Mast*

Dear Half-Mast,

Why doesn't the lube in some of our ¼-ton 4x4's go into the transmission? Are there any special models on which this is supposed to happen?

S/Sgt. M. W.

Dear Sergeant,

The lube in the ¼-ton transfer case doesn't pump into the transmission any more because a change in the assembly of the



transmission main-shaft won't let it.

In the summer of 1942, the bearing on the rear of the transmission main-shaft (Willys Part No. WO-A-916, Ford Part No. FM-GPW-7065) was reversed, so that the **closed side of the bearing faced the transfer case**. The washer or oil slinger (Willys Part No. WO-A-410, Ford Part No. FM-GPW-7080) stayed in front of the bearing in the transmission; and a **second slinger** was added behind the bearing, toward the transfer case.

This way, not enough lube can run either way to do any harm. And if the lube is changed on schedule, there'll always be enough in both places to keep things running smooth.

The change in assembly was made on Ford ¼-ton starting with Engine No. GPW-61720; on Willys, with Engine No. 164742.

*Half-Mast*

Dear Half-Mast,

Could you give me some definite information on tire rotation?

S/Sgt. I. R. B.

Dear Sergeant,

The only definite information on tire rotation there is, is that there's nothing definite. The Army used to tell exactly when to switch tires and how to do it, but it no longer prescribes any set time or mileage figure, or any special which-wheel-to-which-wheel order of rotation.

The important things are switching tires when you notice signs of uneven wear, matching

tires carefully, and including the spare in your tire rotation program. You already know that TM 31-200 (1 Apr. 43) "Maintenance and Care of Pneumatic Tires and Rubber Treads" is loaded with ways to make tires last longer.

*Half-Mast*

Dear Half-Mast,

We're experiencing a great deal of wear on driving sprocket teeth. Almost every 1,000 miles they have to be reversed. Surely there's a remedy for sprocket replacement after 2,000 miles?

S/Sgt. O. B. H.

Dear Sergeant,

In order to track down your trouble right, I need more dope on what's happening and about your operating conditions. (Which reminds me—I've been meaning to ask you guys for more details when you write in about troubles—things like mileage, make and serial number of vehicles, exactly what happened and under what circumstances, how often, etc.) Offhand, Sergeant, I'd say that your trouble's due to too much track tension—though as I said, without more facts, I can't be sure.

*Half-Mast*

Dear Half-Mast,

Now that we have the SNL's for use in requisitioning parts, are we also required to have the vehicle parts list for each vehicle?

WOJG E.E.E.

Dear Mr. E.,

All you need is the "Organiza-

tional Spare Parts and Equipment" section of the SNL for the vehicle that's needing parts. It'll be either a separate section or part of an "all-in-one" SNL. The old 10-series vehicle parts lists (prepared under QM) are automatically superseded by the Ordnance SNL's. Since there are still more SNL's coming out you might keep up-to-date by watching the Month's Directives Lists in ARMY MOTORS.

*Half-Mast*

Dear Half-Mast,

Why not improve the ¼-ton 4x4 steering sector-shaft bushing some way?

Capt. W. G. L.

Dear Captain,

You aren't the first man who's complained about ¼-ton steering sector-shaft bushings, but most of the gripes have been about Ford-built jeeps of the 1942 crop. The trouble was caused by two things. (1) The broaching of the bushing was sloppy and left high spots on the finished surface. These high spots soon wore down and resulted in a very loose fit. (2) Improper assembly at the factory. There are two bushings to be fitted, both of which draw lubricant from the steering-gear housing. Now, these bushings are spiral-grooved to allow the lube to work up into the bearing surfaces. But the outer bushing doesn't have the spiral groove continued completely to the end of the bushing, which helps the oil seal and keeps the lube from leaking past the bushings and seal. The outer bushing was being installed backwards, so that the sealing part wasn't letting the lube get to the bearing surfaces, and in no time at all the bushing was worn out.

The mistake was caught at the factory, so 1943 models shouldn't be giving you any trouble unless the same thing is happening when you repair ¼-ton in the field.

*Half-Mast*

Dear Half-Mast,

What's the story on special purpose vehicles?

Under the Engineer Section of the Tables of Equipment, Engi-

## The Chaplain's Assistant

The Chaplain turns all maintenance troubles over to Half-Mast—all them aggravatin' problems that won't work out. But Half-Mast, who also plays the organ and leads the congregation in the race to the nearest bistro, will never hand you a T.S. Slip. If you've got a problem, somewhere there's an answer—and Half-Mast knows where to find it. He's got an "in" with vehicle manufacturers and there's not an Ordnance designer or engineer that he hasn't borrowed money from. Write "Dear Half-Mast," ARMY MOTORS Magazine, Office, Chief of Ordnance-Detroit, Detroit 32, Michigan.



near Maintenance Company, T/O & E 5-157 (18 Dec. 43), is authorized Shop Equipment Motorized Set No. 1, Electrical Repair, 2½-ton, 6x6. There's a side note: "For chassis see SNL G-508."

My question is: Who is responsible for the maintenance of these vehicles—Ordnance, Engineers, or both?

CWO M. P.

Dear Mr. P.,

Back in the summer of '43, the War Department got out a circular that a lot of guys missed—WD Circular 180 (9 Aug. 43), "Charts of responsibilities under AR 850-15."

The circular lists the responsibilities for all vehicles in the different arms and services. For your particular vehicle, the Ordnance Department is responsible for parts procurement and maintenance (3rd-echelon and up) on the chassis, while the Corps of En-

gineers is responsible for the same on the body.

*Half-Mast*

Dear Half-Mast,

Is there any War Department directive that prohibits smoking by the driver of a GI vehicle?

Sgt. N. L. T.

Dear Sergeant,

In my Five-Foot Shelf of reference books, I came across these: FM 25-10, "Basic Field Manual, Motor Transport," paragraph 12: "The driver will not smoke while vehicle is in motion."

TM 21-300, "Driver Selection and Training," paragraph 90: "It is good practice not to smoke or light matches when operating a motor vehicle or when standing within 25 feet of one, especially when it is being refueled."

An AR 850-15 used to ban smoking except on long trips when the CO specifically permitted it;

though the current AR 850-15 (28 Aug. 43) says nothing about smoking, one way or the other.

Looks to me like your CO's still the guy to say "Yes" or "No".

*Half-Mast*

Dear Half-Mast,

How long should a company keep filled-in Form 48's (Driver's Trip Ticket and PM Service Record)?

Lt. C. S. C.

Dear Lieutenant,

I can't see that it makes much difference how long you keep used Form 48's, though the average time is about six months. It's generally up to the Unit commanders to figure out how long to keep them—some say a month, others a year. But why **overdo** it and accumulate so much waste paper?

*Half-Mast*

## Bogie Cap Bracket

**T**rying to knock off the bracket cap that fits under the suspension gudgeons on the bogies of the M4 Medium Tank—say to get at a broken volute spring—is another one of those little things that make life miserable.

Looking at the thing, it doesn't seem as if it should be much trouble—just take off the nuts and yank the cap down off the studs. But there's the little matter of dirt and rust to be reckoned with. Dirt and rust creep up into the spaces around the studs and bind cap and studs together. Hammering a wedge between cap and bracket doesn't help—you just tip the cap and it binds even more against the studs. A job that should be a matter of a couple of minutes, stretches into an hour.

What you need is something to hammer on to knock off the frozen cap—as the cap is now, there's nothing but the body of the cap to hammer on. From the Ordnance Dept.'s Utica, Michigan, proving ground, comes an idea that gives you something to hammer on and

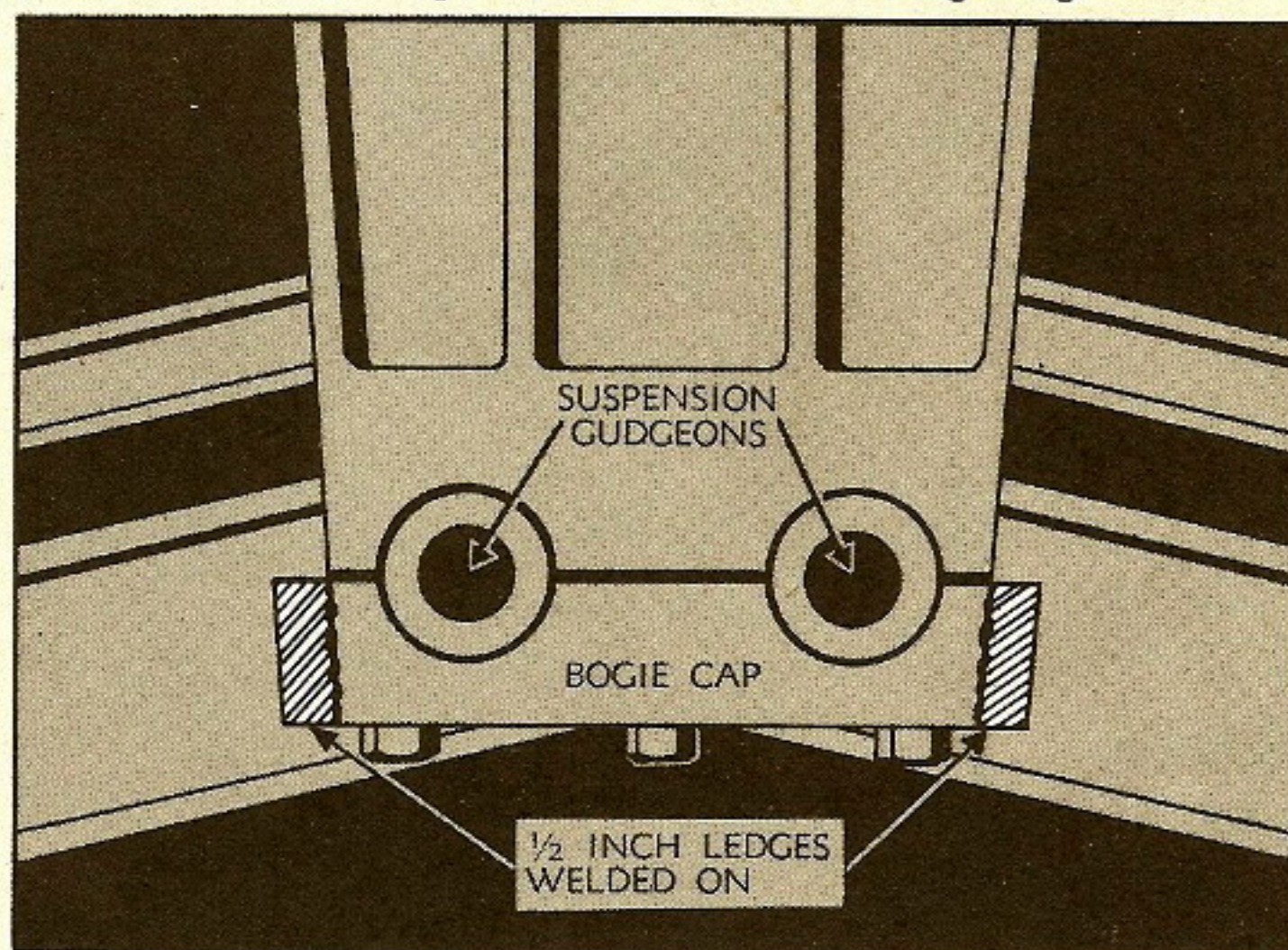
makes cap-removing simple.

Utica simply welded an extension on the cap. A chamfer was ground around each end of the cap and a hunk of metal the same size as the end of the cap was arc-

welded on to form a ledge sticking ½" off the end of the cap. The weld runs all around the end of the cap.

Now all you've got to do is beat away on the ledge and in a matter of minutes your cap will be off.

This won't be necessary on new tanks coming off production lines because horizontal volute springs are the coming thing.



Extensions welded on both sides of the bogie bracket cap give you something to hammer on, make the cap come off easy.



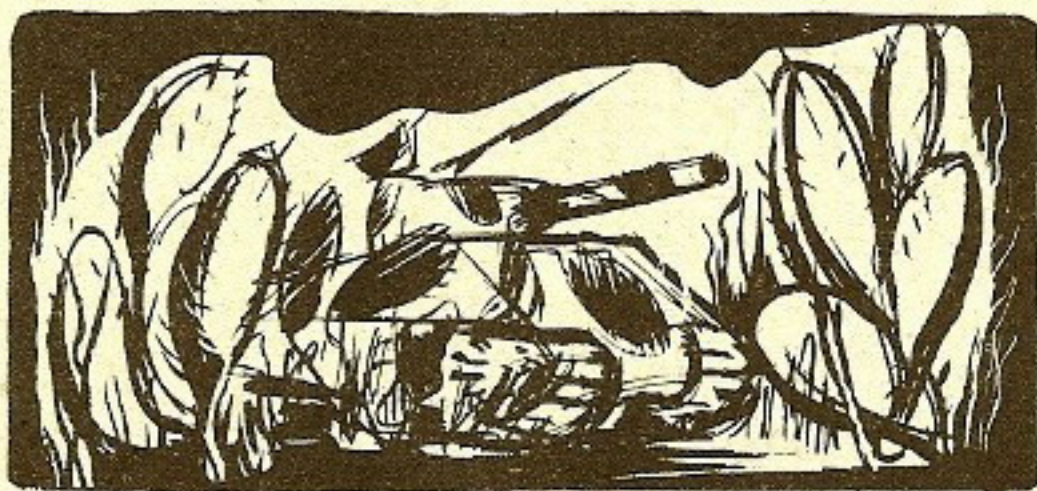
# BATTLE STORIES BY TANKMEN WHO CAME BACK

Continued from page 67

then the cloud from the exhaust settled down and hung on the ground around the vehicles. That's just as bad. It'd give you away. We always got the jobs running good before dawn. That was when I was with my outfit fighting in Italy. The boys there could tell you a few. Another thing, we had to be careful about the exhaust giving away our position. Those two exhaust holes in the back shoot out a blue streak. Sometimes we had to run the engines in bivouac at night so the battery wouldn't run down while the radio was on. There's no auxiliary generator on these jobs. About the exhaust flame though, we dampened our mosquito nets and hung them down over the back so you couldn't see the flame. I know this isn't good for the nets, but that flame would have brought enemy artillery fire in a flash.

## SGT. R. J. SMITH

Camouflage was an item with us. It consisted pretty much of what we could find. Most of it we got by smearing mud and dirt on the outside of the tank. Otherwise the tank looked like a dark spot from the air and was easy to see. The trick about mud is to smear it in spots on the tank. When we were in action near Tebourba we didn't have nets. Used the brush and cactus. Didn't actually place the stuff on the tank. We put it so it cast shadows and the shadows camouflaged the tank. Some guys tell me



they never use their camouflage nets. Just kept them rolled up and used them to sleep on. I can tell you we got a lot of use out of ours later on. Draped it over the tank along with natural camouflage. That reminds me. A sure way to show your tank position to German aircraft is to go around and tear down branches and brush right next to your tank and use it for camouflage. From the air, the places where you tore down that stuff stick out like a sore thumb. The Germans watch for places like that, where the brush and branches were ripped up. They show up plain from the air. A dead giveaway. If you're using branches and brush, take them from someplace at least 75 to 100 yards away from the tank.

## SGT. R. L. WADE

*Purple Heart*

As a tank commander in Italy, I got a chance to see a lot. Mistakes and carelessness took lives. In one

place the EyeTeets left in a hurry. So fast they didn't have time to bury their mines. They just set the fuzes and dropped them on the ground. They were lying out there bare, and still some of our tanks ran over them. Just shows how a driver and tank commander have to watch out all the time. Another example. Some of the tankers couldn't have been watching when they followed German tank tracks as "safe" tracks. The Germans had the tracks leading right into a mine field. A couple of tanks followed in the tracks and got knocked out. Even in bivouac the commander and driver have to be alert. Don't bunch up your vehicles. Keep them 100 yards apart if you can. They make a good target when they're all huddled together. And it's a good idea not to dig slit trenches or foxholes too close to your tank. Ten or twenty yards is too close. The tank's a target, and a near hit by bomb or artillery can bury you in the trench. I saw it happen.

## CPL. W. H. STINSON

*Purple Heart*

I was a tank gunner in the North African campaign. We had some damn good drivers. I mean good. You could tell they were good. One way—a driver who's on the ball knows when his tank will go and when it won't go. Crossing a wadi one time in Africa nineteen tanks got bogged down. The men just looked at the stream and it looked OK. But the bottom was soft. The bunch of them got bogged down. I guess somebody should have reconnoitered. If the driver isn't sure his tank will go through a certain place, he shouldn't go. He's the man who's got to know how the tank will do over every kind of terrain. Don't think 1st-echelon maintenance is only done in the States. A driver spends plenty of time doing it overseas. Ours did. You'd be surprised at the maintenance that was done over in Africa. A driver gets to know every nut and bolt. Gets to know his tank like a book. It means his life or death. And everybody else's. It's as much a driver's job as a tank commander's to keep the tank from getting knocked out. And plenty of times the driver's the man who saves your skin. If you've got a good driver and a tank that'll go, you don't have anything to worry about. In action, everybody worries and gets a little scared, but if you'll just keep a cool head you'll come out OK.

## SGT. J. WALTERS

*Purple Heart*

Teamwork is the thing that brought us back. I could give you incident after incident. I've been in three tanks that were knocked out. And teamwork got us through. Near Benevento, a town right near the Voltorno River in Italy, was the last one. I was the tank commander, but just one of the men in the team. The commander has to work with the driver and with the corporal gunner and they have to work with him. When the tank's all buttoned up,



the driver can't see much. The commander's got to help him see. The driver works with the gunner, giving him best covered positions and level runs for firing. A good gunner won't ask a driver to pull right on top a target. Just as long as the gun can reach, he's close enough. It got so in our tank, the driver knew pretty much what I was thinking. We had signals, just a few words and he knew what I meant. That comes from working together close. Your crew's got to be like that. Have to work as one man—work together, eat together, love one another. Then you've got the teamwork that makes a tank.

### PVT. F. J. STAHLHUT

I was in the maintenance section of a Tank Company. We were bivouaced in a cork-tree forest near Larache in North Africa. We had to improvise a lot. There was a wrecked British plane nearby—a Hurricane, I think. We took out the electric motor that lowers the landing gear on the plane, and rigged it up as an electric drill to run off the battery from a half-track. That's not funny. We had to do a lot of improvising like that to keep our tanks going. We worked out a good system that some other guys might be able to use. For changing tracks.

We had to change over from steel to rubber tracks on our 17 M4's. Oh, my back! . . . what a helluva job. We had to beat the track off! Later we did it easier by using the winch on our maintenance half-track. First, unhooked the track near the rear idler, and winched the tank forward off the old track. Meantime, we laid out the new track in a straight line in front of the tank. So the tank rolled off the old track right onto the new one. Slick . . . worked easy, too.

### SGT. H. B. HENDRA

*Silver Star*

One of the most important things is for a good driver to take care of his tracks. I found it important on our M10 tank destroyer, anyway. We were going along a highway called the Casilina Way, I believe, near Mignano in Italy. And my driver had to pull off the road to make room for a convoy. There was a gully along the side and we had to pull into it to get off the road. We threw a track there. The driver took the ditch at an angle instead of making a sharp right and taking the gully head on. That was the first thing wrong. Then if the track had been tightened right this probably wouldn't have happened. Maintenance came right up though and put the track on. Luckily we weren't too close to the enemy lines.

## 1½-Ton Dodge Propeller Shafts

### CHAPTER 2

This is Change 1 to Connie Rodd's story last month on 1½-ton propeller shafts. Through no fault of her own (of course) the detail got slightly scrooled up. Here's a rehash and amplification:

The story is that a couple of the propeller shafts underneath the 1½-ton Dodge are so nearly the same length that they are liable to be mistaken for each other—and installed wrong—in spite of the fact that one has longer splines than the other. The shafts in question are (1) the propeller shaft running from the transfer case to the front axle; and (2) the propeller shaft running from the transfer case to the pillow block.

The trouble is that each will fit in the other's position—but won't do the other's job because of the difference in the length of the splines.

Here's what happens in the

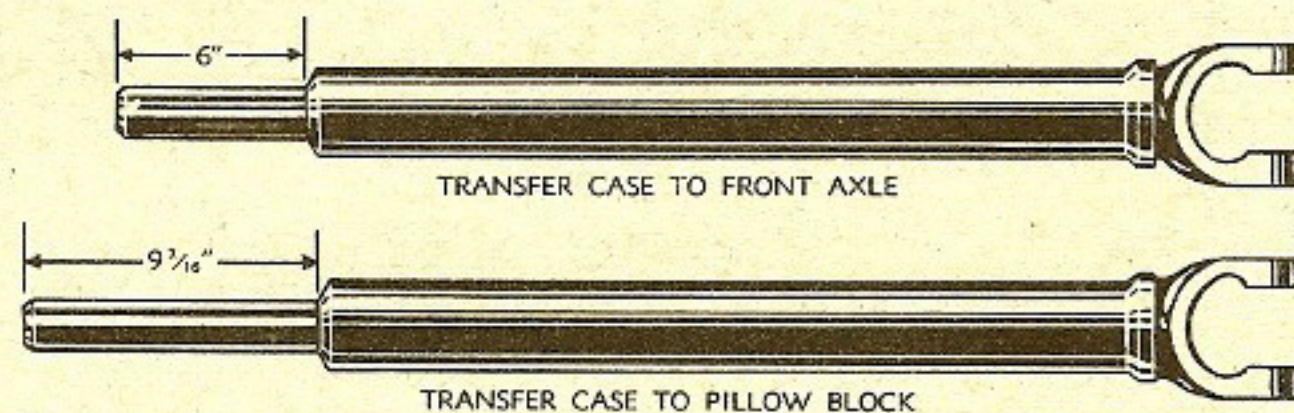
field: A transfer case needs changing. Along comes a mechanic and changes it, taking off the yokes and prop shafts in doing the job. Putting the new transfer case back in, he mistakenly exchanges the positions of the two shafts, thinking nothing of it because they fit.

But soon after, the truck goes for a ride over rough terrain—the bogie action is extreme and phssst, the short-splined shaft pulls out and falls on the ground.

To keep such things from hap-

pening to you and yourn, study the picture below. There are five propeller shafts in all, under the 1½-ton Dodge; the picture shows the two longest ones in question. Of these two longest shafts, the shaft with the short splines runs to the front axle; the shaft with the long splines runs from the transfer case to the pillow block.

P. S. To keep from scrambling the splined yokes, just remember that the front shaft with the short splines takes the short splined yoke; the intermediate shaft with the long splines takes the long splined yoke.



*Install the 1½-ton Dodge propeller shafts as explained above and you won't run into trouble.*



# The Month's Directives

*Your monthly check-list of War Dept. AGO and Ordnance publications affecting 1st and 2nd-echelon motor maintenance—and how to get them.*

## WAR DEPARTMENT AGO PUBLICATIONS

AR—Army Regulations  
FM—Field Manual  
TM—Technical Manual  
TB—Technical Bulletin

MWO—Modification Work Order  
TC—Training Circular  
WDC—War Department Circular

Distributed through Post Adjutants by AG Depots in each Service Command:

Boston AG Depot, 594-596 Commonwealth Avenue, Boston 15, Mass.  
New York AG Depot, 111 Eighth Avenue, New York 11, N. Y.  
Baltimore AG Depot, 601 South Haven Street, Baltimore 24, Md.  
Atlanta AG Depot, Glenn Street and Murphy Avenue, S. W., Atlanta, Ga.  
Columbus AG Depot, 42-52 So. Starling Street, Columbus 8, Ohio.  
Chicago AG Depot, 111 North Canal Street, Chicago 6, Ill.  
Omaha AG Depot, 16th and Cuming Streets, Omaha 2, Neb.  
San Antonio AG Depot, San Antonio, Texas.  
Ogden AG Depot, 2325 Wall Avenue, Ogden, Utah.  
AG Pentagon Depot, The Pentagon, Washington 25, D. C.

Distributed to AAF Activities by Publications Distribution Branch of Area Air Service Commands (see AAF Reg. 5-9).

Distributed outside Continental United States by Ports of Embarkation.

Ordnance TM's and FM's distributed in Central Pacific Area by Ordnance Officer, CPA (see address below).

WD Lubrication Orders for Ordnance materiel are requisitioned only from Fort Wayne Ordnance Depot, Detroit 32, Michigan.

## ORDNANCE DEPARTMENT PUBLICATIONS

FSMWO—Field Service Modification Work Order	SNL—Standard Nomenclature List
OFBS—Ordnance Field Service Bulletin	Organizational Spare Parts and Equipment (OSPE)
OPSI—Ordnance Publications for Supply Index	Service Parts Catalog (SPC)
	List of All Parts (LAP)

Distributed through Ordnance Officers by AG Depots listed above.

Overseas units (other than Central Pacific Area) with San Francisco APO's request on Publications Supply Officer, Overseas Supply Division, Warehouse B—Oakland Branch, San Francisco Port of Embarkation, Oakland, Calif.

Central Pacific Area units request on the Ordnance Officer, Hq. U. S. Army Forces, Central Pacific Area, APO 456, % Postmaster, San Francisco, Calif.

Overseas units with Seattle APO's request on Military Publications Supply Officer, Ordnance Unit, Overseas Supply Division, Seattle Port of Embarkation, Warehouse No. 7, Seattle 4, Wash.

Overseas units with New Orleans APO's request on The Adjutant General Publications Supply Officer, New Orleans Port of Embarkation, Poland and Dauphine Streets, New Orleans 12, La.

Overseas units with Miami APO's request on Atlanta AG Depot (address above).

Overseas units with New York APO's request on (a) the Ordnance Officer, Ordnance Section, Hq. MBS, Depot 150-0, APO 600, c/o Postmaster, New York, N. Y., if located in territory served by this APO, and (b) on New York AG Depot (address above) if located elsewhere.

Distributed to AAF Activities by Area Air Service Commands (see AAF Reg. 5-9).

Office, Chief of Ordnance-Detroit, Does Not Distribute Publications to the Field.

## ARMORED CARS

CAR, ARMORED, LIGHT, M8  
TM 9-743, C2, Operation and maintenance (10 Mar. 43).  
SNL G-136, G-176, C1 (8 Mar. 44).  
SNL G-136, G-176, ORD 7, 8, 9, C2 (24 Apr. 44).  
WD Lubrication Order 139 (14 Jan. 44).

CAR, ARMORED, UTILITY, M20  
SNL G-136, G-176, C1 (8 Mar. 44).  
SNL G-136, G-176, ORD 7, 8, 9, C2 (24 Apr. 44).  
WD Lubrication Order 139 (14 Jan. 44).

## SCOUT CARS

CAR, SCOUT, M3A1  
TB 9-705-12, Removal of restrictor plate.  
SNL G-67, ORD 7, 8, 9 (5 Feb. 44).  
SNL G-67, Sec. 26, Suppl. 1, C1 (29 Feb. 44).  
SNL G-67, ORD 7, 8, 9, C2 (19 Apr. 44).  
WD Lubrication Order 20 (7 Jan. 44).

## GUN MOTOR CARRIAGES

CARRIAGE, MOTOR, 105-MM HOWITZER, M7  
TM 9-731E, C1, Operation and maintenance (5 Jan. 43).  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

CARRIAGE, MOTOR, 75-MM HOWITZER, M8  
TM 9-732B, Operation and maintenance (31 Jan. 44).

CARRIAGE, MOTOR, 3-IN. GUN, M10  
TB ORD 37, Junction-plate-to-fuel-pump tube failure (reprint of TB 753-2, 731B-1, 752A-3, 9 Mar. 43).  
WD Lubrication Order 113 (7 Jan. 44).

CARRIAGE, MOTOR, 3-IN. GUN, M10A1  
TB ORD 43, Spark plug inserts (reprint of TB 731G-7, 759-5, 11 Sep. 43).

CARRIAGE, MOTOR, 155-MM GUN, M12  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

CARRIAGE, MOTOR, 76-MM GUN, M18 (T70)  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).  
SNL G-163, ORD 7, 8, 9 (15 Apr. 44).

## CARRIERS

CAR, HALF-TRACK, M2  
WD Lubrication Order 21 (7 Jan. 44).  
CAR, HALF-TRACK, M2A1  
WD Lubrication Order 21 (7 Jan. 44).  
CARRIER, PERSONNEL, HALF-TRACK, M3  
WD Lubrication Order 22 (18 Jan. 44).  
CARRIER, PERSONNEL, HALF-TRACK, M3A1  
WD Lubrication Order 22 (18 Jan. 44).  
CARRIER, PERSONNEL, HALF-TRACK, M3A2  
WD Lubrication Order 22 (18 Jan. 44).



**HALF-TRACKS**

(See individual vehicle listings)

**LIGHT TANKS**

TANK, LIGHT, T9E1  
SNL G-148, C1 (8 Mar. 44).  
WD Lubrication Order 88 (21 Jan. 44).

**MEDIUM TANKS**

ALL MEDIUM TANKS  
TB ORD 18, Cast track support roller (reprint of TB 700-46, 9 Apr. 43).

TANK, MEDIUM, M3  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

TANK, MEDIUM, M3A1  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

TANK, MEDIUM, M3A2  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

TANK, MEDIUM, M3A3  
TB ORD 37, Junction-plate-to-fuel-pump tube failure (reprint of TB 753-2, 731B-1, 752A-3, 9 Mar. 43).

TANK, MEDIUM, M3A5  
TB ORD 37, Junction-plate-to-fuel-pump tube failure (reprint of TB 753-2, 731B-1, 752A-3, 9 Mar. 43).

TANK, MEDIUM, M4  
TM 9-731A, Operation and maintenance (23 Dec. 43).  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).  
SNL G-104, Vol. 6, 11, 14, C1 (14 Mar. 44).

TANK, MEDIUM, M4 (76-MM GUN)  
TB 9-731AA-1, Operating instructions.

TANK, MEDIUM, M4 (105-MM HOWITZER)  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).  
TB 9-731AA-1, Operating instructions.  
SNL G-104, Vol. 6, 11, 14, C1 (14 Mar. 44).

TANK, MEDIUM, M4A1  
TM 9-731A, Operation and maintenance (23 Dec. 43).  
TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).  
SNL G-104, Vol. 6, 11, 14, C1 (14 Mar. 44).

TANK, MEDIUM, M4A1 (76-MM GUN)  
SNL G-207, C1 (10 Mar. 44).

TANK, MEDIUM, M4A2  
TB ORD 37, Junction-plate-to-fuel-pump tube failure (reprint of TB 753-2, 731B-1, 752A-3, 9 Mar. 43).

TANK, MEDIUM, M4A3  
TB ORD 43, Spark plug inserts (reprint of TB 731G-7, 759-5, 11 Sep. 43).

TANK, MEDIUM, M4A3 (75-MM GUN, WET)  
SNL G-204, OSPE (15 Apr. 44).

VEHICLE, TANK RECOVERY, M31

TB ORD 16, Oil pump identification (reprint of TB 700-39, 23 Mar. 43).

VEHICLE, TANK RECOVERY, M32B3 (T5E3)

SNL G-187, ORD 7, OSPE, C2 (8 Mar. 44).

**TRUCKS**

TRUCK, ¼-TON, 4x4 (WILLYS, FORD)  
TB ORD 10, Grease gun adapter (reprint of TB 10-1206-1, 3 Apr. 43).

TRUCK, 1½-TON, 4x4 (CHEV.)  
FSMWO G506-W2, Radiator overflow tank.  
WD Lubrication Order 503 (20 Jan. 44).

**NO BLOODHOUNDS, WE**

ARMY MOTORS may have a nose for news, but we can't follow you by just sniffing. If you want to keep on getting your magazine, be sure to send us your **individual organization and address** the minute any of these things happens:

- You get an APO number
- You get to a staging area
- You get to a port of embarkation
- You get to an overseas base

That way, we'll know when to take you off our domestic station list and put you down for direct distribution. See?

TRUCK, 1½-TON, 4x4 (FORD)  
TM 9-806, Operation and maintenance (14 Feb. 44).

TRUCK, 1½-TON, 6x6 (DODGE)  
WD Lubrication Order 522 (20 Jan. 44).

TRUCK, 2½-TON, 4x2, DUMP (FEDERAL)  
SNL G-539, C2 (6 Mar. 44).  
SNL G-539, ORD 7, 8, 9, C3 (8 Apr. 44).

TRUCK, 2½-TON, 6x6 (GMC)  
WD Lubrication Order 504 (14 Jan. 44).

TRUCK, AMPHIBIAN, 2½-TON 6x6 (GMC)  
TB 9-802-5, Axle propeller shaft water baffles.

TRUCK, 2½-TON, SMALL ARMS REPAIR, M7 AND M7A1 (GMC)  
SNL G-138, Vol. 2, ORD 7, OSPE (17 Mar. 44).

TRUCK, 6-TON, 6x6 (CORBITT)  
WD Lubrication Order 521 (6 Jan. 44).

TRUCK, 6-TON, 6x6 (WHITE)  
WD Lubrication Order 506 (6 Jan. 44).

TRUCK, 7½-TON, 6x6, PRIME MOVER (MACK)  
FSMWO G532-W3, Winch-drive-bearing adjusting-block.

TRUCK, 10-TON, 6x4 (MACK MODEL NR)  
TM 9-818, Operation and maintenance (14 Jan. 44).

TRUCK, TRAILER, 40-TON, TANK TRANSPORTER, M25  
WD Lubrication Order 138, 138A (7 Jan. 44).

TRUCK, BOMB SERVICE, M6  
WD Lubrication Order 56 (7 Jan. 44).

**TRACTORS**

TRACTOR, HIGH SPEED, 13-TON, M5  
SNL G-162, C1 (8 Mar. 44).  
SNL G-162, ORD 7, 8, 9, C2 (25 Apr. 44).  
WD Lubrication Order 123 (10 Jan. 44).

TRACTOR, HIGH SPEED, 18-TON, M4  
TB 9-785-4, Revised crankcase oil filler arrangement.

TRACTOR, SNOW, M7 (T26E4)  
TM 9-774, Operation and maintenance (31 Jan. 44).  
SNL G-194, G-195, OSPE (7 Apr. 44).

**TRAILERS**

ALL 4-WHEEL TRAILERS (for Truck, 6-ton, 6x6, Corbitt)  
WD Lubrication Order 521 (6 Jan. 44).

TRAILER, 1-TON PAYLOAD, 2W, 250 GAL. WATER TANK  
SNL G-527, ORD 7, 8, 9, C2 (25 Apr. 44).

TRAILER, 1-TON, 2W (for Truck, 1½-ton, 6x6, Dodge)  
WD Lubrication Order 522 (20 Jan. 44).

TRAILER, 1-TON, 2W (for Truck, 2½-ton, 6x6, GMC)  
WD Lubrication Order 504 (14 Jan. 44).

TRAILER, BOMB, M5  
TM 9-760, Operation and maintenance (31 Dec. 43).

TRAILER, 1-TON, SNOW, M19 (T48)  
TM 9-774, Operation and maintenance (31 Jan. 44).  
SNL G-194, G-195, OSPE (7 Apr. 44).

**PASSENGER CARS**

CAR, 5-PASSENGER, LIGHT SEDAN, 4-DOOR (CHEVROLET)  
TM 10-1129, Operation and maintenance (30 Oct. 41).

CAR, 5-PASSENGER, LIGHT SEDAN (FORD)  
WD Lubrication Order 529 (13 Jan. 44).



CAR, 5-PASSENGER, LIGHT  
SEDAN (PLYMOUTH)

WD Lubrication Order 528 (18 Jan. 44).

**GENERAL**

FM 21-6, C1, Training publications  
(1 Mar. 44).

FM 21-6, C2, Training publications  
(1 Apr. 44).

TC 15, Load classification and marking  
of bridges and military vehicles  
(15 Mar. 44).

WDC 134, Blank forms (8 Apr. 44).

TB ORD 17, Protection of electrical  
equipment (reprint of TB 850-6,  
11 Nov. 42).

TB ORD 46, Elastic-stop-nut installation  
(reprint of TB 700-2, 1700-2, 1600-1,  
1 Jan. 42).

SNL G-27, ORD 6, Maintenance and re-  
pair tools (1 Mar. 44).

SNL J-4, ORD 5, C2, Punch, drift, fas-  
tening and scraping tools (4 Feb. 44).

SNL N-19, ORD 6, C3, Tool sets  
(25 Feb. 44).

Donald's not the only  
**DUCK**  
in the movies!

A batch of new Training Films and Film Strips has just been released, covering maintenance of your Truck, Amphibian, 2½-ton, 6x6 (GMC DUKW-353). Here's the list of coming attractions, available through the Signal Corps film library at your Service Command HQ (see FM 21-7):

**TRAINING FILMS**

TF 9-1328, Part I, 1st-echelon  
Maintenance

TF 9-1329, Part II, 2nd-echelon  
Maintenance

**FILM STRIPS**

FS 9-212, 1st-echelon Preventive  
Maintenance, Part I

FS 9-213, 1st-echelon Preventive  
Maintenance, Part II

FS 9-214, 1st-echelon Preventive  
Maintenance, Part III

FS 9-215, 1st-echelon Preventive  
Maintenance, Part IV

FS 9-216, 2nd-echelon Preventive  
Maintenance, Part I

FS 9-217, 2nd-echelon Preventive  
Maintenance, Part II

FS 9-218, Engine Removal,  
Part I

FS 9-219, Engine Removal,  
Part II

FS 9-220, Removal of Major  
Units, Part I

FS 9-221, Removal of Major  
Units, Part II

**Immediate seating on the  
mezzanine.**

*Adjusting 4-Ton 6x6  
Diamond T Timing Gears*

Do you hear strange noises when you're out riding in your 4-ton, 6x6 Diamond T? Weird knocking sounds coming from the engine? If you do, you're in for trouble unless you do something about it right away.

That knocking, caused by too much camshaft and idler-gear shaft end play, can be silenced in one simple operation. There are two thrust buttons on the gear-case cover—one on the end of the camshaft, one on the end of the idler-gear shaft. You don't even have to take the cover off—simply loosen the lock nuts, tighten the thrust-button adjusting-screws with a delicate hand, then back them off an eighth of a turn and tighten the lock nuts.

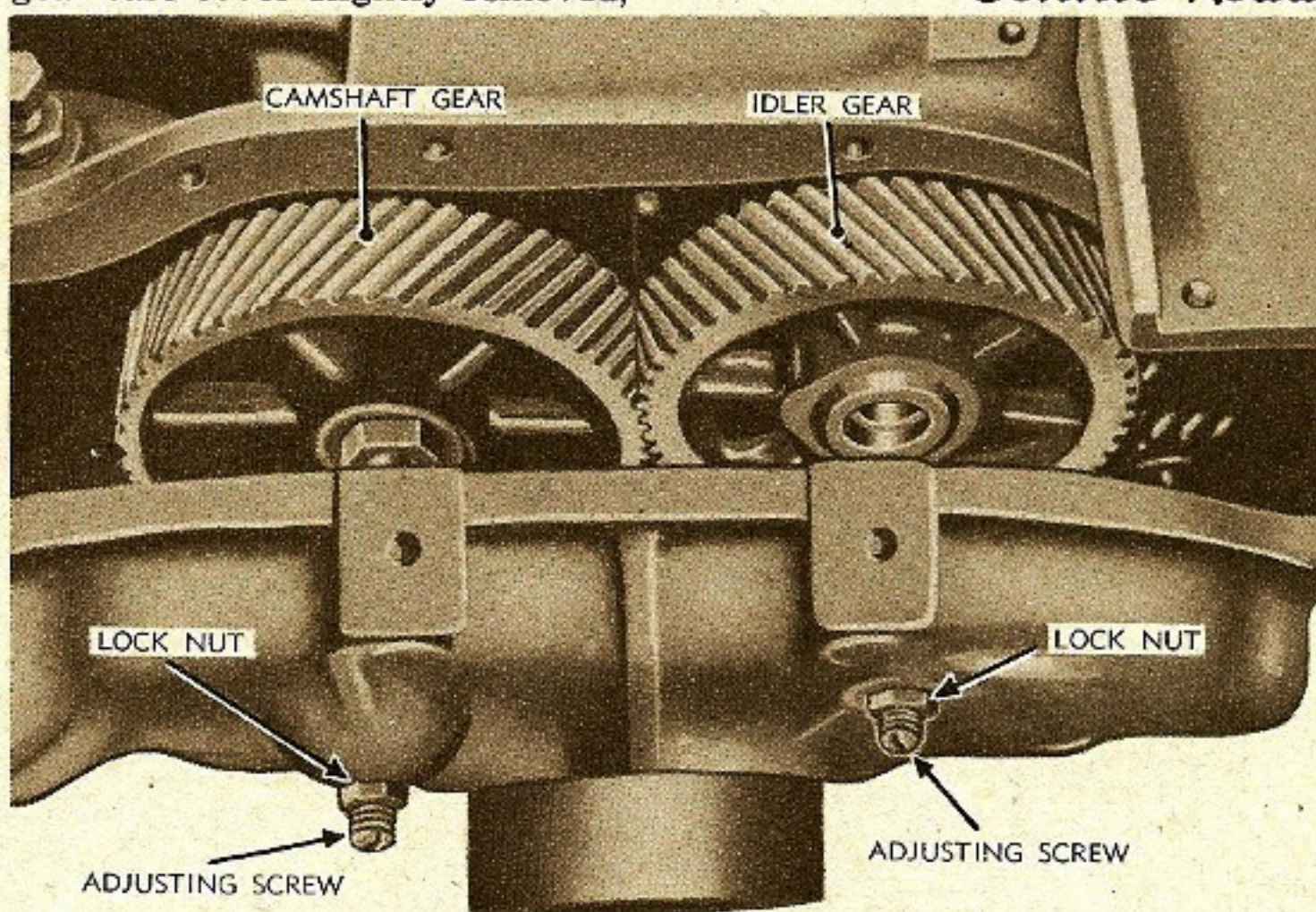
The photo lets you look straight down at a set of timing gears; gear-case cover slightly removed,

so you can see the gears you'll adjust when tightening the screws.

I wept big salty tears last week when one of the boys at the salvage yard showed me three timing gears that had once been the heart of a powerful Hercules engine. Once clean-cut, even-toothed gears, they'd been reduced to broken, mangled messes—all because somebody hadn't heeded the warning knock. A warning that comes long before any serious damage is done.

Adjusting timing gears is a job that's clearly explained in maintenance manuals for the 4-ton, 6x6 Diamond T and only takes about ten minutes to do—quite a contrast to sending your vehicle back to a higher echelon after the gears have knocked themselves out.

*Connie Rodd*



**CAN YOUR OUTFIT TOP THIS?**

Sgt. Tilkus, Service Battery, 751st F. A. Bn., Camp Bowie, Texas, writes that his Battalion has run up the "record of no deadlined vehicles for a period of one year—two months of that year spent on maneuvers over rough terrain in Louisiana. I believe our success is due to our 1st and 2nd-echelon maintenance and to the training we've received from the motor officers and motor sergeants."

How does your outfit's record compare with this?



# PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of ARMY MOTORS

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2C-Inside Front Cover, 3C-Inside Back Cover 4C-Outside Back Cover.







# • • NEWS FLASHES • •

The items on this page include latest news, revisions, and corrections verified after the publication deadline

**Combat vehicle** drivers and organizational mechanics.—A slew of **new** Technical Manuals for old tanks and half-tracks have been printed recently. Maybe the TM for your vehicle is **out of date** and superseded by a **new one** complete with all additions and corrections. This list—like the one we ran for truck drivers and mechanics in this space last month—is to help you check your TM's. If you've got any of these vehicles with the old TM's, trade the manuals in to your adjutant for the new ones.

Vehicle	Old Manual	Superseded By
Light Armored Car M8, Armored Utility Car M20	TM 9-743 (10 Mar 43)	TM 9-743 (21 Feb 44)
Basic Half-Track Vehicles (White, Autocar, Diamond T)	TM 9-710A (16 Sep 42), 9-708	TM 9-710 (23 Feb 44)
Basic Half-Track Vehicles (International)	TM 9-711A	TM 9-707
Light Tank M5, M5A1	TM 9-732 (18 Apr 42), 9-727C	TM 9-732+ (27 Nov 43)
75mm Gun Motor Carriage M8	TM 9-732B (10 Oct 42)	TM 9-732B+ (31 Jan 44)
Medium Tanks M4 and M4A1	TM 9-731A (14 Nov 42)	TM 9-731A (23 Dec 43)
3-inch Gun Motor Carriage M10	TM 9-752A (12 Sep 42)	TM 9-752 (25 Nov 43)
3-inch Gun Motor Carriage M10A1	TM 9-731G (20 Nov 42)	TM 9-731G (28 July 43)
155mm Gun Motor Carriage M12 and Cargo Carrier M30 (T14)	TM 9-751 (15 Sep 42)	TM 9-751 (28 Jan 44)
18-ton High Speed Tractor M4 (Medium Tractor)	TM 9-785 (1 Feb 43)	TM 9-785 (1 Nov 43)

+ See last column, page 69, "Hydra-matic Transmission Adjustment."

\* \* \*

We still have guys asking, "What's the **body** for on the back of **12-ton 6x4** truck (Diamond T) **M20**? It's on there for one thing: to hold **ballast**—gravel, sand, scrap, anything. Unless the truck has the ballast, it **won't** get enough hefty traction to do its job of pulling the 45-ton tank transporter truck-trailer. The wheels will just slip and slide when you hook the truck onto the trailer and try to haul a tank. So pile the body **full** up to the **brim** with sand or dirt or gravel or anything handy, and **leave it in**. You hear?

\* \* \*

Used to be a time when a dozen different places had to be requisitioned for the dozen different blank forms you need for operation and maintenance. No more. **All** the automotive

blank forms listed in **AR 850-15** (and in the **Changes**) now come to your Post Adjutant from **one** place—the **Adjutant General Depot** in your service command. (See page 92 for addresses of Depots.) **Overseas** units requisition from the **Commanding Officer, Port of Embarkation**.

\* \* \*

Tarps, tops, curtains, any kind of canvas—**ain't supposed to leak**. If it does, the waterproofing compound that's in the canvas has probably gone stale. What you gotta do is make the canvas **waterproof** again. Easy, if you just let TB 9-850-13 show you how. It tells you how to spray or brush on a **waterproofing compound**—Compound, Treating Canvas Leggings and Duck, QMG Spec. No. 3, Type 1, Color A, Federal Stock No. 51-C-1580—let it dry, and your canvas will keep water away.

\* \* \*

Ordnance Field Service Publications—**FSMWO's, TB's**, and others—no longer in effect are superseded or cancelled. Cancelling an old FSMWO, for example, used to be done by printing a **change** to the particular FSMWO telling that it's been cancelled. From now on, the cancelling isn't going to be done that way. Instead, **all** the **cancelled Ordnance Field Service Publications** will be listed in **FM 21-6**, "List of Publications for Training" (or in **changes** to the FM). If you want to keep your Ord publications files in tiptop shape, you'll have to watch **FM 21-6** closely and weed out your files the way it says.

\* \* \*

All those questions you're still asking, or itching to ask, about vehicle weight-class markings are answered at last in Training Circular 15 (15 Mar. 44). This TC tells you what to do if your vehicle can't handle that 8-inch square, and exactly where to put those weight-class figures you've been worrying about ever since TC 117 (43) and TC 7 (44) came out. Speaking of figures, there are no fewer than 25 of them in TC 15. If you can't read, at least look at the pictures.



# What Four Mechanics Did To Deserve These ...



## LEGION OF MERIT

**S/SGT. ROBERT J. JOHNSTON**  
**Ordnance (LM) Company, Infantry Division.**

For exceptionally meritorious conduct in the performance of outstanding services from 10 August 1942 to 17 October 1943. At one time during the North African campaign, he was in charge of an emergency automotive parts depot which he solely organized, supervised, and managed. Despite having to labor endlessly to instruct his novice workers in theoretical knowledge and practical handling of automotive parts, Sergeant Johnston operated the depot in an effective manner. When orthodox parts were not available he displayed unusual aptitude in offering sound suggestions for interchangeability. He has demonstrated an inspiring amalgam of loyalty to duty, progressive initiative, and superior technical knowledge, which, when applied under field conditions to practical work in the automotive supply section, proved especially helpful in the North African and Sicilian campaigns.

**M/SGT. CLOVIS W. THORNELL**  
**Hq and Service Company, Engineer Aviation Battalion.**

For exceptionally meritorious conduct in the performance of outstanding services during the period 9 September to 16 September 1943. As battalion motor sergeant, he rendered invaluable service during the early days of the invasion of Italy supervising the disembarkation of heavy construction equipment from LST ships across beaches, and subsequently transporting this equipment rapidly from airfield to airfield, making practically all operations in darkness over heavily congested roads. Without rest or thought of personal welfare, Sergeant Thornell assisted during the daylight hours of the 24-hour-day schedule in servicing and repairing this vital equipment so that at no time was any equipment out of operation. His untiring efforts largely contributed to the successful completion of three airfields in 7 days, which airfields were so vitally needed to enable our forces to gain air superiority in the Salerno beachhead.

## BRONZE STAR MEDAL

**M/SGT. BLYTHE CAMPBELL**  
**Armored Field Artillery Battalion.**

For meritorious achievement in connection with military operations against the enemy as battalion motor sergeant. Since the activation of the unit the outstanding efficiency attained by the maintenance section was directly attributable to the unusual initiative, intelligence, and leadership displayed by Sergeant Campbell. His success in training motor maintenance and tank mechanics, his ability to maintain an unusually large percentage of motor vehicles in commission assured the fitness of the battalion for combat when it arrived in Tunisia. During the Tunisian and Sicilian campaigns Sergeant Campbell was in charge of the forward maintenance echelon. His initiative and energy in recovering and repairing motor equipment damaged by enemy fire and accident, his ability to anticipate maintenance troubles by continual inspections were greatly responsible for the combat efficiency of the battalion and contributed to the success of the campaigns.

**T/4 CALVIN R. ETRIS**  
**Armored Field Artillery Battalion.**

For meritorious achievement in connection with military operations against the enemy as tank mechanic. Prior to the Tunisian campaign, Technician Etris, despite language difficulties, displayed outstanding intelligence and leadership in successfully instructing French Colonial Personnel in the proper maintenance of United States equipment. With the same vigor and success he schooled the mechanics of his section in the proper maintenance of tanks. During the Tunisian and Sicilian campaigns, although higher echelon maintenance units and spare parts were lacking, Technician Etris' initiative and energy in making substitutes for materials not available and his use of tools not adapted to the repair work were instrumental in maintaining a maximum number of tanks and guns in commission, contributing materially to the success of the campaigns.