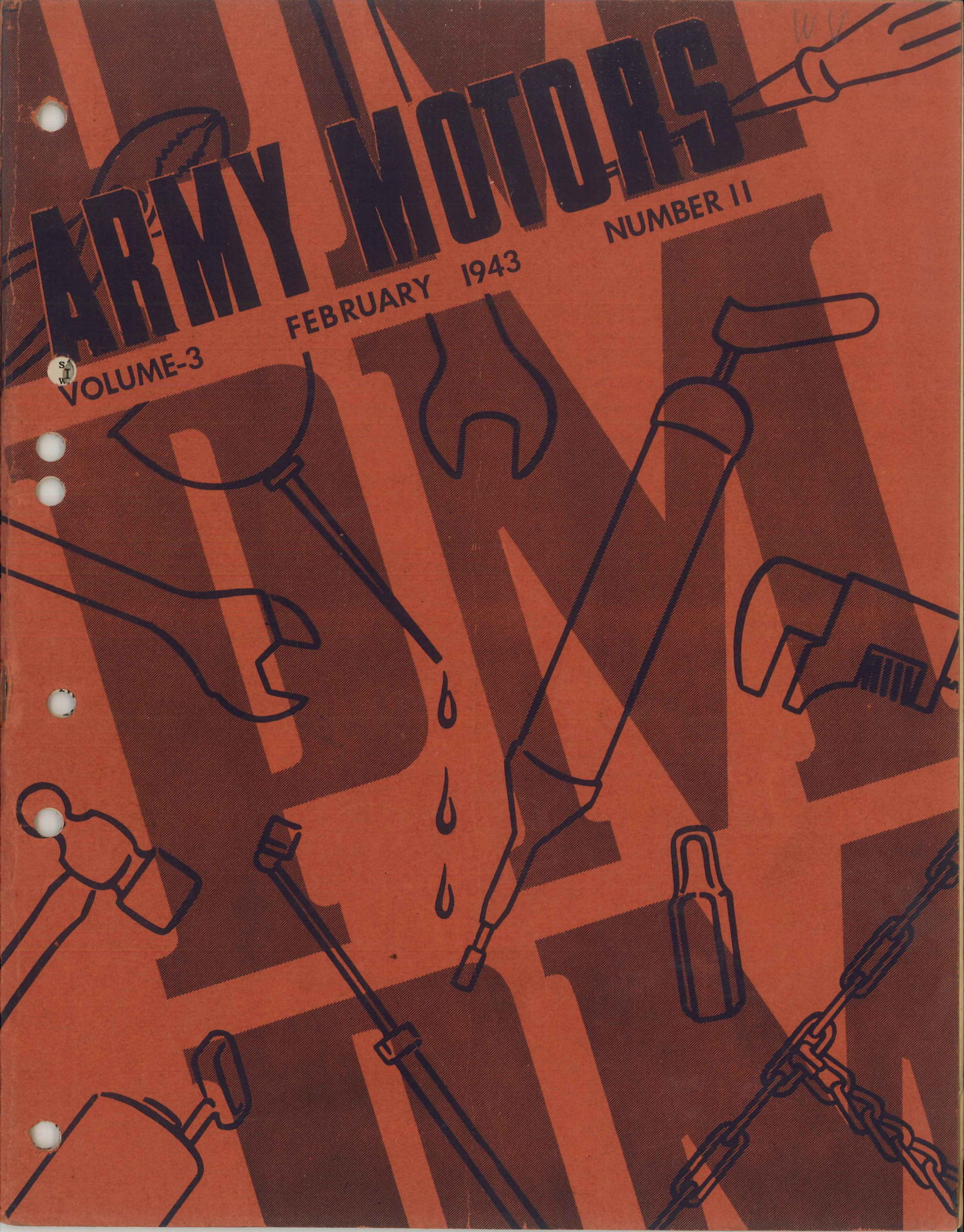


ARMY MOTORS

NUMBER 11

FEBRUARY 1943

VOLUME-3



Steering Wheel

Horse of a Different Color

The Army Motors magazine is a maintenance magazine. As such it is continually harping on this little thing and that little thing that has to be fixed on the jeep, on the 3/4-ton Dodge, on the 2 1/2-ton GMC.

For this reason, somebody might get the impression that the trucks we use are a bunch of cluckeroos.

To correct any such impression, we'd like to tell you about a German bulletin found on a captured Nazi officer in the North African desert *which ordered that captured American trucks be used for all reconnaissance and similar work wherever possible in preference to German or Italian vehicles.*

Then we'd like to report on the frequent use of the word 'love' in correspondence received by this magazine from readers on the desert and other battle-fronts. The letters come in with such phrases as: "We love and respect our trucks"; "The boys love their trucks"; "...the American trucks are loved and respected by all who use them."

Now the word 'love' is a highly emotional word and the greaseballs that we know, would no more think of using it lightly than they'd confess to a desire to be manikins. The fact that they do use it, and use it often, reveals the deep affection they've come to feel for their vehicles.

That's a funny thing about being face to face with death: the emotions usually suppressed, come to the surface. If our trucks were misbehaving or breaking up in action, we'd hear fierce and bitter words about it. The fact that we hear words of deep affection tells how well they're standing up. And the praise goes double because the trucks - due to shortages in certain areas - are being subjected to brutal strain, are being used 24 hours a day with heavy overloads over the worst kind of terrain. The safety margins were eaten up long ago.

What's actually happening is that an old trick we tried to pawn off on the men of Motor Transport is taking effect of its own accord. Remember how we

used to beat the drums about how the men of the horse cavalry loved their horses? And then tried to talk you into feeling that way about your trucks?

Well, strangely enough, it's come to pass. The earlier struggle between men and trucks has ripened into love.

But then maybe we shouldn't be surprised. After all, what is the little jeep, the 3/4-ton Dodge, the 1 1/2-ton Chevy and the 2 1/2-ton GMC?

Just a horse of a different color...
Olive drab.

THE MOSTEST MEN...

...will get to read the ARMY MOTORS magazine if the three copies authorized to every unit of company strength are distributed as follows:

One to the AUTOMOTIVE OFFICER

One to the MOTOR SERGEANT

One to the Company DAY ROOM

In This Issue . . .

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ARMY MOTORS is published monthly in the interest of Preventive Maintenance by the Preventive Maintenance Unit, Holabird Ordnance Depot, Baltimore, Maryland. Your contributions of ideas, articles and illustrations are welcome. Address all correspondence to the Editor, at the above address.

* A Unit of the Preventive Maintenance Section, Maintenance Branch, Field Service Division, Office of the Chief of Ordnance.

INSIDE THE Tire Gage

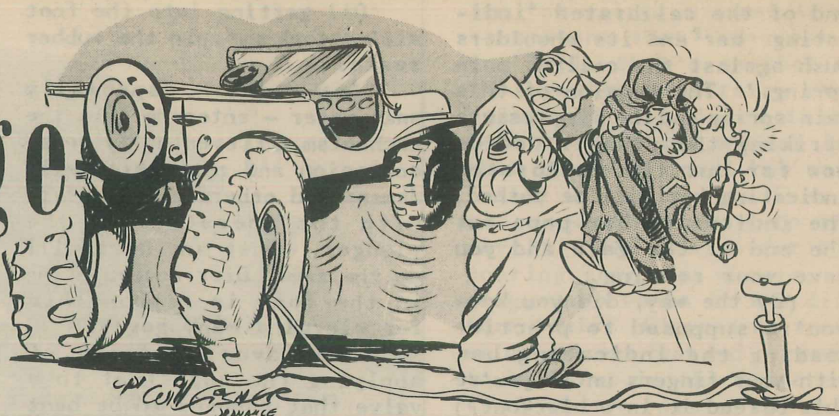
Not very long ago, the tire gage* was made part of the vehicle tool set. Today, every driver is entitled to one.

This tire gage is the brass stick about a foot long (Fig. 1) which we hinted last month is not receiving the proper care. As a matter of fact, you mention the driver's tire gage and you'll draw a sharp raspberry from many a driver and many a mechanic.

But the fault is not with the tire gage. It's a sturdily constructed and satisfactory instrument, and will stand up under the normal conditions of use in the field. It wasn't intended, however, to be used as a supplementary hammer or as a crowbar for light work.

Take a look at what's on the inside of the gage (Fig. 2) and you'll see why. There's the 'foot', the part of the gage you stick on the tire valve when checking tire pressure. Inside the foot is

*The "Tool and Equipment List" says "gauge." The government style manual says "gage."



a double deflator unit. When you put the foot on the tire valve, the deflator pushes down the tire-valve core and allows the pressure of the air in the tire to rush into the stem of the gage. At the same time, the deflator seats against the rubber seal on the other side of the foot to keep the air from rushing right out again. (The other side of the foot, you know, is to enable you to take care of the inside tires of dual-wheeled jobs.)

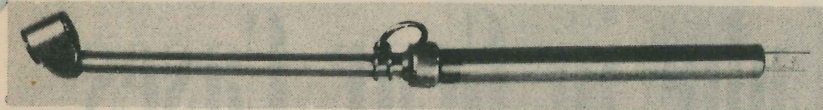
Stop right here and consider a couple of things. Applying the foot to the tire valve for instance. Now we don't want to insult your intelligence; but if you don't get the foot on square and tight, you won't get an accurate reading. The air pressure squeezes out between the washer and the valve tip

and the reading is lower than it should be. Another point: the things that wear out first in the gage, are the rubber washers in the foot. Poked at the sharp edges of the tire valve, they are cut and slowly worn away. These little rubber washers (together with the screw nuts) are available from your supply channels* - don't be afraid to requisition them. To replace the washers simply take out the screw nut in the foot, discard the old washers, press the new ones in squarely and replace the screw nut. You'll need a big screwdriver to engage the slots on both sides of the hole.

The air that enters the foot rushes up the skinny part of the stem, squeezes past and is cleaned by a felt 'filter washer,' whistles through a small passage in the 'spreading plug' and strikes the 'plunger.'

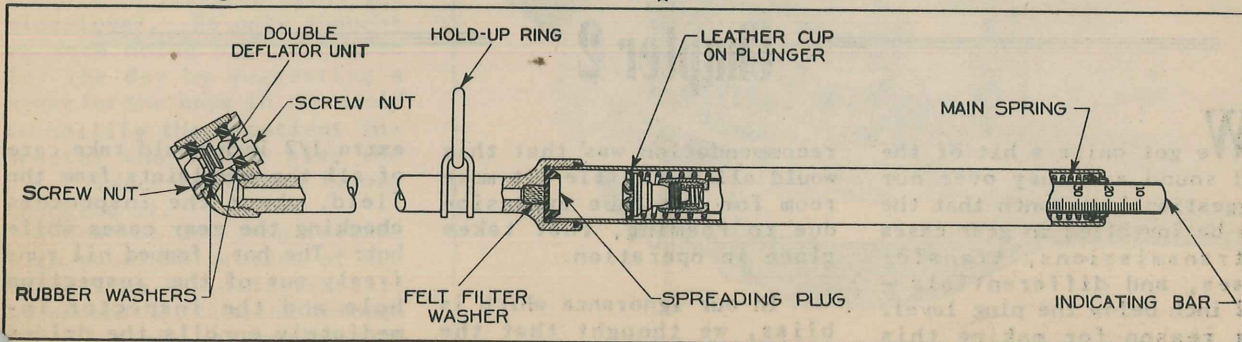
The plunger activates the gaging mechanism. Its

*Screw nuts Fed. Stock No. 8-G-615-18
Washers Fed. Stock No. 8-G-615-28



Above - Figure 1

Below - Figure 2



nose is inserted in the bottom end of the calibrated 'indicating bar' and its shoulders push against the coiled 'main spring.' The tension of this main spring and the air pressure striking the plunger decide how far out the calibrated indicating bar will be pushed. The indicating bar pops out the end of the gage and you have your reading.

(By the way, did you know you're supposed to practice reading the indicating bar with your fingers until you're able to read it in a blackout?)

To protect the guts of the gage from normal metal corrosion, the inside of the barrel containing the coil spring and indicator, is nickel plated, the indicating bar itself is nickel plated and the whole is lubricated.

And there you have the simple, non-mysterious mechanism of the tire gage. Nothing to fall apart or wear out easily.

Well, what *will* damage the gage?

As mentioned before, using the gage as a hammer just because you happen to have it in your hand, will dent the barrel. Any dent in the barrel prevents the plunger from riding smoothly - it may even stop it altogether - giving you erratic readings according to where the dent happens to be, and what the pressure of the particular tire being

checked, happens to be.

Oil getting into the foot will attack and ruin the rubber seals.

Any water - especially salt water - entering into the mechanism will eventually cause corrosion and rust which will damage and otherwise interfere with the operation of the plunger. Dust and dirt will do the same. Dirt accumulating in the foot is responsible for clogging many gages.

The favorite trick of applying the gage foot to a valve that happens to be bent down to the wheel rim, and then prying the valve up to where it's more easily reached, will beat up the washers.

You see - just a lot of little foolishness that common sense will avoid.

Taking the gage out of the tool box where it picks up dirt and gets bounced around by heavier tools is the first common sense move. Hang the gage in the cab, *foot down*. This will keep the indicating bar from working out and being damaged. To encourage you to hang them up, we hear that the later gages will be coming through with rings on them.

Every company has a master gage to check the driver's gages by. The master gage is an expensive precision-built instrument boxed in a small, velvet-lined coffin. We suggest that a slight ritual

take place every week or so in which each driver approaches the Master Gage with fear and trembling to have his tire gage checked.

Speaking of the master gage, two free factory recalibrations are contracted for with each of these gages. They should be exchanged for new gages at the supply depots. Unserviceable driver's gages should also be exchanged for new ones. When the depot has about a hundred of the unserviceable gages, it ships them back to the factory for reworking.

Question: "Why not des-
the gages so they can be re-calibrated in the field?"
Answer: "It's not too difficult to recalibrate the gages for one particular reading, but it takes a whole set of master gages and instruments to recalibrate them correctly for all pressure readings."

Turning the whole matter of the tire gage over in our mind the other night while fondling a glass of stale beer, it seemed to us that here was a pretty good thing. Imagine a mass-produced instrument with a range of from 10 to 160 lbs. capable of checking every tire in the Army! Not bad!

If you don't believe us, go get your own glass of beer and think it over. We'll wait right here for your answer.

THE LEVEL OF Lube in Gear Cases

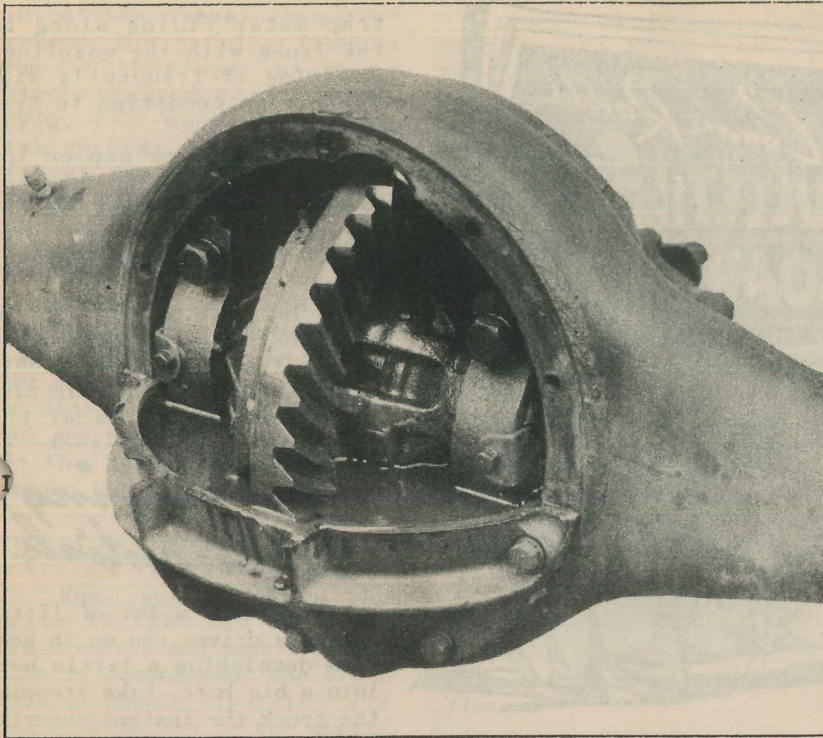
Chapter 2

We got quite a bit of the old sound and fury over our suggestion last month that the oil be installed in gear cases - transmissions, transfer cases, and differentials - 1/2 inch below the plug level. Our reason for making this

recommendation was that this would allow a little bit more room for the lube expansion due to foaming, that takes place in operation.

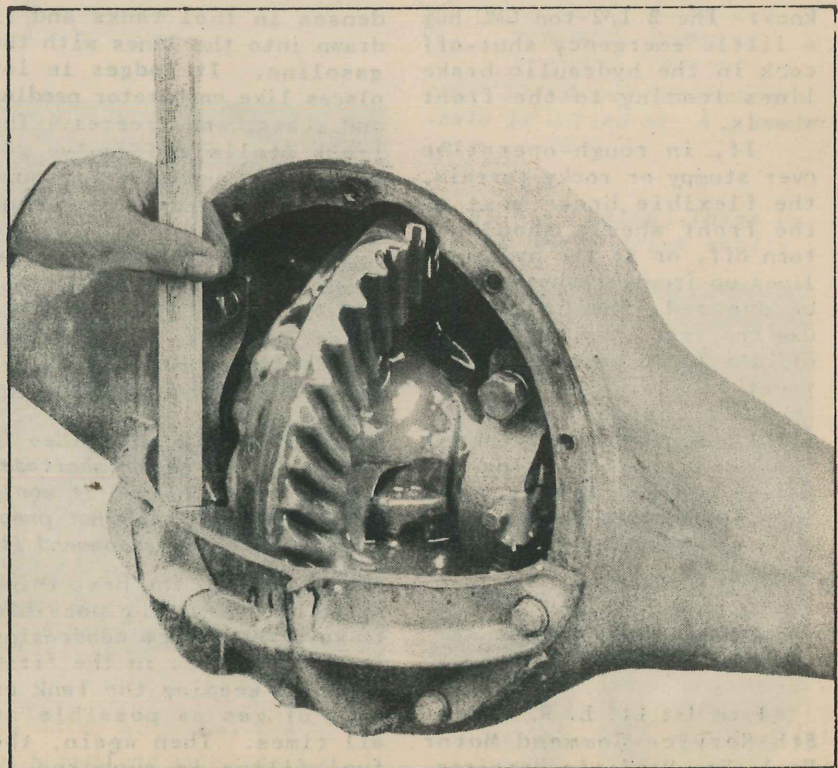
In our ignorance which is bliss, we thought that the

extra 1/2 inch would take care of all the complaints from the field, about the inspectors checking the gear cases while hot: The hot, foamed oil runs freely out of the inspection hole and the inspector immediately enrolls the driver



Above - Figure 1 - Oil drained down off gears.

Below - Figure 2 - Oil clinging to the gears.



the wheels. How about installing the oil to a lower level to prevent that? you ask.

Well, that's another of those twice-told tales that we've heard a dozen times before. But the answer is, that the plug level has very little if anything to do with oil expanding out into the wheels. The reason for oil pouring into the wheels, is clogged-up vents in the differentials. Clogged-up vents allow extreme heat and pressure to build up in the differential which forces the oil through the seals and results in high tide in the wheels. Keep the vent clean and open and you won't build up pressure in the axle.

Another of our reasons for the 1/2-inch-below-the-plug-level suggestion, was that on cold mornings, cold gear lube in being installed in the differential, often piles up on top of the gears, in the back of the case, etc. Then when the gear case warms up in operation, the lube flows down and you've got a level 'way over the plug level. We

(Continued on page 348)

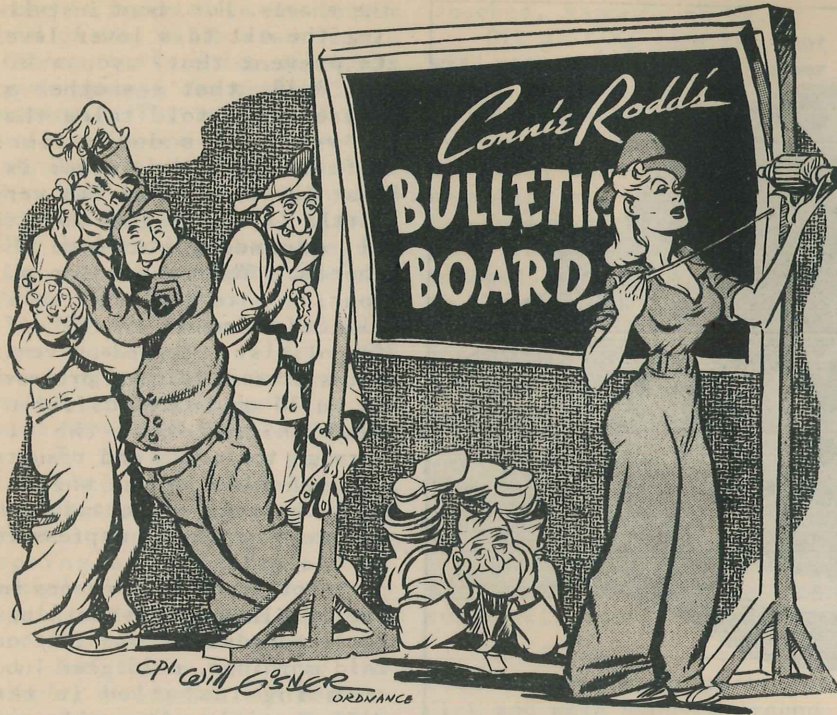
on the gig sheet as a member of the black dragon society.

But the Society for Prevention of Maintenance Manual Desecration immediately uttered a loud shriek and said no! - the oil must be installed to plug level. The manufacturer put the plug where it is for that purpose.

Okay, we say, okay - but there's really no difference. A half-inch below or right at plug level - anywhere in that range is perfectly all right.

There's that much (and a little more) safety margin in the gear cases. Not by the wildest stretch of our imagination could we see anybody doing any harm by installing the oil to 1/2-inch below the plug level. We only thought we were doing our good deed for the day by suggesting a way for the boys in the field to mollify the impatient inspector who didn't give the oil a chance to subside before checking it.

Now you may come forward with your own stories of how the oil in the differentials is expanding, busting through the oil seals and pouring into



Brake Savers

Here's something a lot of drivers (and mechanics) don't know: The 2 1/2-ton GMC has a little emergency shut-off cock in the hydraulic brake lines leading to the front wheels.

If, in rough operation over stumpy or rocky terrain, the flexible brake hose at the front wheels should be torn off, or if the hydraulic lines up front anywhere should be damaged, the driver can use the little spigot to shut off the fluid pressure to the front wheels.

This prevents all the fluid from pumping out through the torn lines leaving the driver without brakes. The shut-off cock at least saves the braking effort at the rear wheels.

Ice Lock

From 1st Lt. L. R. Wilbur,
5th Service Command Motor
Pool, Ft. Benjamin Harrison,

Ind., comes the story of ice lock in fuel lines, fuel pumps, fuel filters and carburetors.

Convoying in sub-zero temperatures, moisture condenses in fuel tanks and is drawn into the lines with the gasoline. It lodges in low places like carburetor needles and seats, and freezes. The truck stalls and you've got to get out and finger around until your digits get blue with cold.

So - Lt. Wilbur says "How about using a pint of alcohol to a full fuel tank to act as an anti-freeze, and if water does condense in the tank, it won't freeze in embarrassing places.

Technically, this idea is OK but because of the shortages and the added burden it would place on Supply, it's not practical. We don't recommend it.

Of course, the best thing is to do everything possible to keep water from condensing in the fuel tank in the first place by keeping the tank as full of gas as possible at all times. Then again, the fuel filter is supposed to

trap water riding along in the lines with the gasoline. Draining it frequently will keep it in condition to trap more water.

The pressure cap on the gas tank cuts down on condensation by preventing the regular breathing of moisture-laden air in and out of the tank.

Water that collects in the gas tank, lies on the bottom of the tank (gasoline floats on water). Use the drain plug or petcock which is at the lowest part of the tank to drain it off.

Saving Differentials

There are a lot of little things a driver can do to keep from developing a little hurt into a big hurt. Like stopping the truck the instant a bearing knock develops.

Another thing to prevent big hurts was called to our attention by Captain A. W. Bauer, 884th Ordnance Heavy Maintenance Co. (Auto). Captain Bauer says his shop gets differential gears that look like they've been through a confetti-maker all because some drivers have never been taught to disconnect drive shafts and pull axle shafts at the first sign of trouble in the differentials. One broken tooth or sizeable hunk of metal in a differential that's still being operated by a drive or axle shaft, acts like a monkey wrench in the works.

Of course, if there's a mechanic anywhere in the neighborhood, a driver will report any trouble in the differentials to him, but out on a lonely mission with no mechanic anywhere to be seen, here's what the driver should do the moment his pink and shell-like ears pick up the kind of strange noise in the axles (front or rear) that he has been taught mean trouble:

TROUBLE IN THE FRONT AXLE:

1) Disengage transfer case immediately to throw the truck

out of front-wheel drive; 2) remove the driving flanges from both front wheels by loosening the capscrews (Fig. 1). Most trucks have two puller screws in the flange (or two holes where puller screws may be inserted) to make it easier to get the flange off. These are the two screws that you've seen sticking out with the nuts on them. Back the screws out, take off the nuts and screw the screws back into the holes provided. They bottom on the hub and push the flange loose. On the 2 1/2-ton GMC these happen to be 7/16" cap screws. Turn the screws alternately - each a little bit at a time until the flange comes loose.

When you've taken the drive flanges off both the front wheels and your transfer case is disengaged, the front axle is absolutely idle. (It can't be driven by the wheels because you've removed the axle driving flanges; it can't be driven by the transfer case because you've disengaged that.)

Now plug up the openings at the wheel hubs and just drive your truck to a repair shop in rear-wheel drive.

TROUBLE IN EITHER OR BOTH OF THE REAR AXLES - You'll have to remove the axle shafts and drive shafts of the particular rear axle that's bad.



Fig. 1 - Front wheel drive flange.

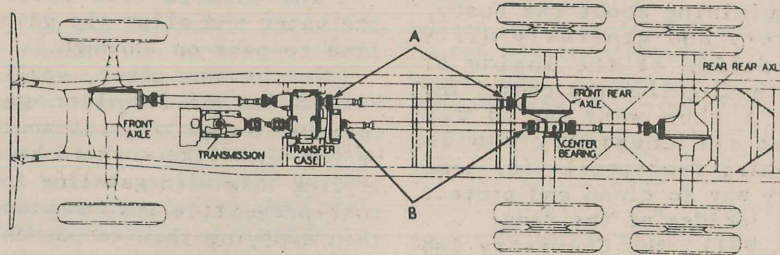
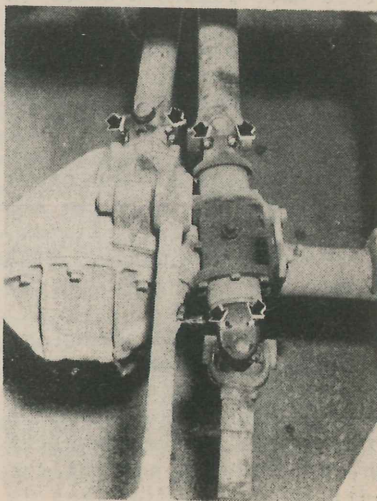


Fig. 3 - (above) Intermediate axle is untied at 'A'; rear axle at 'B.'

Fig. 4 - (below) These U-bolts untie drive shafts.



Fig. 2 - At the back wheels, the flange and axle are one.



(Remember, although it's pretty unlikely, both rear axles might go bad.)

1) At the rear axles, the driving flange and axle shaft is one piece (Fig. 2) take it out at each of the wheels involved by removing the capscrews, (lockwashers, etc.).

2) Untie the drive shaft that leads from the transfer case to the particular rear axle that's gone bad, at both ends - at the transfer case and at the axle (Fig. 3) by taking out the U-bolts or whatever else is used to connect them up (Fig. 4).

Having untied the drive shaft at both ends, place it in the body of the truck.

With the axle shafts out, and with the drive shaft detached, plug the openings at the wheel hubs and you can

bring your truck to a repair shop under the power of the remaining rear axle - or in the rare case where both rear axles are out, under the power of the front-wheel drive.

Although in reading about it, it sounds like a major operation, it's really very simple. Give any driver a couple of minutes instruction and he'll know exactly what to do - and best of all, there's nothing he can ruin.

When you're out on the desert or up in the mountains where axle assemblies come few and far between, you'll be darn grateful when your drivers bring 'em back alive and unharmed.

Gas Cans

Last month's Rumors Dep't reported on letters coming in complaining about the rusty, watery and generally dirty condition of the inside of the 5-gallon gas cans. The Dep't then went on to say that the Chemistry Lab is looking frantically for some easy way to clean and protect the insides of the cans.

Well, the Chemistry Lab doesn't have it yet - that is, they don't have anything they want to release yet - but they did pass on some tips we're sure you can use.

First, those traces of 'whitish powdery' stuff some people have remarked about in the cans, is zinc oxide. Some of the cans are galvanized on the inside and when exposed to air in the presence of moisture, oxidation takes place. We don't believe you can get enough of the oxide in your gasoline to do any harm.

Probably the biggest kick on the cans, is rust on the inside.

Various inside coatings have been used and there's probably no practical way you can tell which can has which. But according to the Chemistry Lab, practically none of the coatings now in the cans is

an absolute protection against rust.

In the field, the most effective rust (and oxidation) preventive is gasoline itself. So the best and easiest thing for you to do is keep your 5-gallon cans full of gasoline at all times if possible. However, since stored gasoline has a tendency to 'gum up,' you'd better use the gasoline so that it doesn't remain in the cans more than a month - then refill the cans with fresh gasoline. This will also get rid of any water tending to collect in the cans.

Any water in the can will lie on the bottom of the can (gasoline floats on water) so if you suspect that you've got a lot of it in the gasoline, pour the last part of the gasoline from the can slowly through a piece of chamois.

The chamois will absorb the water and allow the gasoline to pass on through.

Now in many cases, you'll have a lot of 5-gallon gas cans in storage where it would be too much like work to keep filling them with gasoline for rust-preventive purposes and then emptying them to prevent gumming. Best thing in that case to prevent rust, is coat the insides of the cans with preservative oil.*

As a matter of fact, a great many of the cans recently produced have no protection for the bare metal on the inside other than a flim of preservative oil which is sprayed on at the factory: the first time gasoline comes in contact with the preservative oil, the oil washes off. (Of course, the oil is only used to protect the can against rust until it's delivered to the field)

There's no reason why you can't do likewise - use the preservative oil to rustproof your cans in storage.

Pour about a quart of the preservative oil into the can and shake it around until the inside is thoroughly coated, then drain the remaining oil.

Now here's something to be careful about: too much of the preservative oil is bad for your gasoline. It's especially bad for the high-octane gasoline used by the Air Forces (it increases the gum content of the gas and may clog the small passages of carburetors). So be careful to drain out all the excess. Now if you know the inside of the gas can like we know the inside of the gas can, you know that the filler neck forms kind of a 'well' on the inside of the can which prevents all of any liquid that happens to be in the can from draining out. To be sure there's a small drain hole in this filler neck which is supposed to allow all the liquid to drain out - but be dammed if it does. So here's a little trick for you (which is also a good way to get rid of the water that won't drain out of the bottom of your cans): tilt the gas can up on one of the corners directly under the filler hole, and poke a suction gun (2nd echelon set and up) down in the can and suck out the excess oil. Good, no? (Yes.)

As we say, the gun is also a good way to get rid of all that water that won't drain out because of the well at the filler neck. To keep water from condensing in the gas can in the first place, keep the cap on tight. Finger or hand tight is not enough - tests show you've got to apply at least 25 inch-lbs. of torque (twice hand-tightening) to really seal those cans.

Talking about water, we shudder every time we hear about people using the gas can for drinking water. Once gasoline is used in the can it leaves a deposit of lead that really never comes out. All drinking water later used in the can is contaminated.

As a final shot, we'd like to say that for all those cans that are flaking and solid rusty on the inside, a chemical reconditioning process is being developed.

*Order "Oil, lubricating, preservative, medium, Ord. Dept. Spec. AXS-674", from the following depots: Augusta Ord. Depot, Augusta, Ga.; Benicia Ord. Depot, Benicia, Cal.; Raritan Ord. Depot, Metuchen, N.J.; Rock Island Ord. Depot, Rock Island, Ill.; San Antonio Ord. Depot, San Antonio, Texas.

Everybody who's been aggravated by the way the rear body panels have been cracking out on both Ford and Willys 1/4-ton jeeps will be pleased to hear that a reinforcement on this rear panel is being placed on jeeps in production. The Tank-Automotive Center in Detroit promises a Field Service Modification Word Order, which will tell all about how to make the fix on jeeps in the field. In anticipation, Willys is already making up a field service kit.

We'll try to get the dope on it for you in time for the next issue.

* * *

Here's a good idea used by one of the big commercial trucking companies in training drivers. In order to bring home strongly to drivers the consequences of neglected preventive maintenance and poor driving, this company makes every driver spend about two weeks in its repair shop. The sight of burned-out clutches, ruined bearings, stripped gears, etc. does something to drivers. They get a deeper appreciation of what riding the clutch, lugging the engine, etc. does to a truck.

Might not be a bad idea for the Army.

* * *

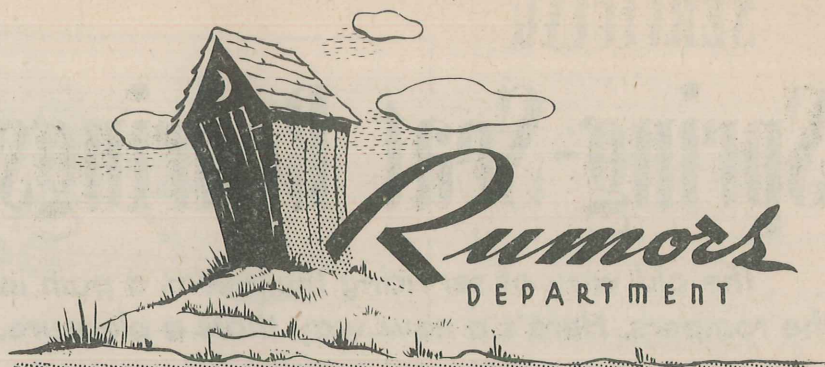
We hear from the Inspector General that many organizations have surplus vehicles lying around for periods of from two to three weeks without being operated - usually due to a shortage of drivers.

Best thing to do in such cases, is put these vehicles in 'Limited Storage' and protect them against the rapid deterioration that overcomes idle vehicles.

See AR 850-18 (or the article in the September ARMY MOTORS) for instructions on how to place vehicles in Limited Storage.

* * *

More and more we hear the question, "What's that there box with wires all attached



to it? from greenguards in the 2nd echelon.

That there box with the attachments is a Low Voltage Circuit Tester. We expect to have an article on the use of it next month.

Same with the High Voltage Circuit Tester in the 3rd echelon tool set. We expect to have an article on that too.

* * *

If you're hep to the jive in AR 850-15, you know that when you turn in old, unserviceable major unit assemblies in exchange for new ones, you've also got to turn in the sub-assemblies and accessories designated by the Chief of Ordnance as necessary to form such major unit assemblies.

If you're really solid, you know that War Department Circular 376, dated Nov. 21, 1942, (which rescinds W.D. Cir. 312) tells exactly what sub-assemblies and accessories the Chief of Ordnance considers necessary to form such a major unit assembly.

All this by way of pointing out the terrible necessity of accurately describing any vehicle you're ordering parts for. Here's the story:

It happens that Circular 376 specifies that when you turn in a transfer case, you've also got to turn in the universal-joint yokes or flanges that hitch it up to the transmission.

But when you order parts out of a depot, the flanges or yokes are not attached. The reason is that although a

dozen different makes and models of vehicle use the same transfer case, the attachments are different. And for the sake of simplicity, the depots store the one transfer case that fits many different vehicles in one bin.

So when you simply order such-and-such-a transfer case, without painstakingly describing exactly which make and model truck you want it for, you're heading into trouble. You'll get the transfer case, maybe, but not the particular attachments for your truck. So you won't be able to install it.

Get hep - when ordering parts for any truck, describe exactly what truck you're ordering for. Like this: GMC 2 1/2-ton CCKW #353, USA Registration No. 431147; also include the vehicle manufacturer's part number and the unit manufacturer's part number.

* * *

If you're still interested at this late date, the Federal Stock No. of the 'Re-inhibitor' (used in reconditioning old anti-freeze solutions) is in typographical error as it appears in Ordnance Field Service Technical Bulletin (OFSTB) 700-20, dated Oct. 13, and in Motor Transport Technical Service Bulletin (MTSB) Z-3, dated Sept. 15. It appears as 511-136-85. It should be 51-I-136-85.

Just to be open about the thing, we made the same error ourselves but corrected it in an earlier issue.

(Continued on page 348)

SERVICING Spring-Seat Bearings

The old way of servicing them was a pain in the rompers. Here's a new way that's a pleasure.

A new procedure has just been set up which so simplifies the job of servicing rear spring-seat bearings on the 2 1/2-ton GMC that you'll hardly have to soil your tootsies on them.

The new procedure will be forthcoming in TM 9-2810, "Motor Vehicle Inspections and Preventive Maintenance Servicing" (expected to be ready for publication soon.)

Although it also touches lightly on the bushing-type bearing in the rear spring seat of trucks like the Diamond T Wrecker*, the big news is that the new procedure boils the present job of servicing the roller bearings in the spring seat of the 2 1/2-ton GMC down to practically nothing.

If your memory serves you, you know that the GMC manual (TM 10-1563) specifies that rear spring-seat bearings must be removed and packed with fresh lubricant every 6000 miles. This is a job that you wouldn't wish on your worst enemy. You have to tear down the whole assembly.

But with the new procedure you don't have to tear down anything or remove the bearings. All you have to do every 6000 miles is 1) check the bearings for adjustment - this way: Take off the cap, loosen the lock nut and tighten the adjusting nut (if it needs it) until the bearing is solidly engaged. Then without backing off the adjusting nut, tighten the lock nut securely. 2) lubricate the bearings by

*Tighten these bushing-type bearings by adjusting the large nut until here is free fit with no end play.

removing the cap, unscrewing the plug (underneath the spring seat) and forcing chassis grease through the lubrication hole until the new lube appears at the end of the outer bearing. Be careful not to force the lubricant past the seal at the inner side of the seat. Wipe off the excess grease and replace the cap.

And that's all there is to it - you don't have to take the spring seat down and remove the bearings.

Besides being a great timesaver, installing the grease through a fitting at the bottom until fresh grease shows around the bearing results in a spring seat housing full of grease. Being filled with grease, no water can get in as the truck flounders through marshy or otherwise wet ground. Being filled with

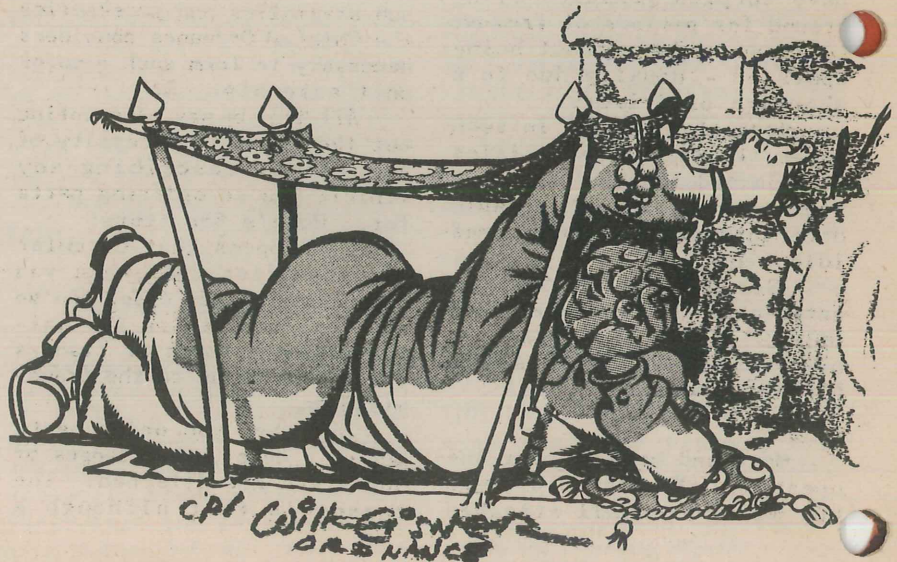
grease, there's less chance of condensation in the housing with consequent rusting and emulsifying of the grease.

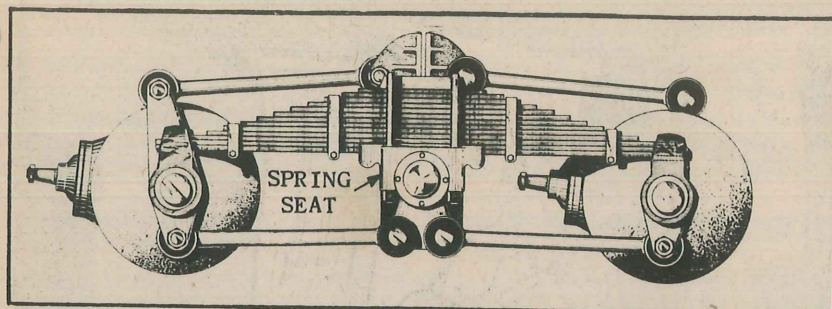
A word to the wise: don't ever try to save time by leaving the cap on and pumping the assembly full of grease. The pressure will blow the inner seal allowing the grease to flow out of the assembly and you'll have a broken up bearing within a few hundred miles.

Speaking of blown seals, many people are disturbed by the fact that the area around the inner seal is usually well bathed in grease. To their scientific mind, this means only one thing: the seal is blown. But that's not necessarily so. The appearance of grease around the inner seal is a natural condition of seepage. If the grease seeps out, the dirt can't seep in. Of course, too much grease around the inner seal is another thing and probably means leakage.

But if the inner seal just oozes a little, leave it alone. If it really leaks, then and then only, install a new seal.

A further word on checking the adjustment of the bearings. If the bearings are properly adjusted and in good shape, the adjusting nut will be fairly snug. On the other hand, if the adjusting nut is loose, the bearings are loose. And any looseness that requires more than 1/4





(and any other parts that need changing).

Here's a special tip: If you're somewhere out in North Africa, in the South Pacific or some other ridiculous place where the parts don't grow on trees, we'll be frank with you: Even though the bearings are sometimes more than 'slightly' brinelled, you can still leave them in the spring seat and get many a mile of wear out of them. These pearly words of wisdom were dropped from the lips of a Timken Corporation representative (Timken makes the assembly - they ought to know).

However, if you have a replacement bearing, use it instead of the badly brinelled bearing - and you'll save yourself the eventual job of tearing down the spring seat again.

But the big point of our story is the new procedure on servicing the spring-seat bearings. Because it makes such an easy job of what was solid aggravation, we don't think we have to urge you twice to jot it down and paste it up in your 2 1/2-ton GMC maintenance manual.

That way, you'll both be up to date.

of a turn in the adjusting nut, should arouse your suspicions. It may mean a bearing riding so loose that it has become badly brinelled. Tear the spring seat down and inspect the bearings. If they need replacing, replace them - same with any other part while you've got the assembly down.

Now here's a funny thing about those spring-seat bearings. A good many of our clients have become alarmed at the brinelling that takes place. Any time they take these bearings out, they seem to find the small markings in the bearing cups that mean brinelling.

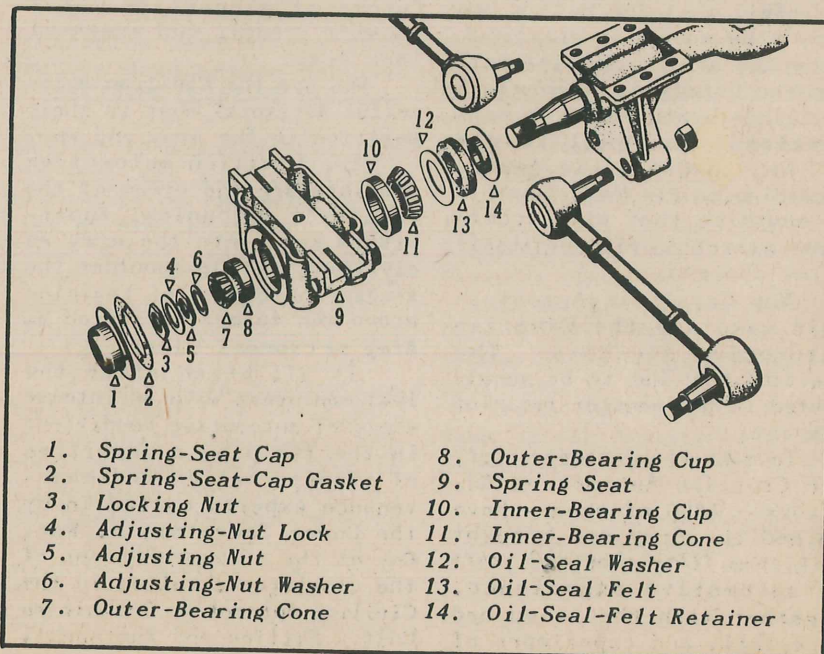
But strangely enough - and hold onto your hats - a slight brinelling of the bearings in the spring seat of the GMC is nothing to tear your hair about. As a matter of fact it has been found to happen to these bearings anywhere within the first 500 miles of operation. It's one of those things and there's nothing you can do about it. And nothing is likely to be done about it because the slight brinelling of the bearings in the spring seat really doesn't do any harm worth troubling about.

The brinelling occurs in the first place because the action at the spring seat is an oscillating action. That is, it's a slightly rolling, jumpy up-and-down action rather than the full rolling motion you usually associate with roller bearings. This oscillating action, since it doesn't fully distribute the grease over the bearings and since it causes the rollers to keep

striking approximately the same spot on the cups, results in the slight marking - or brinelling - which as we say, is not bad in this location.

Now what do we mean by 'slight' brinelling? How slight is slight? A *slight* brinelling is a brinelling you can't feel by running your fingernail over it. The bearing may be polished where the rollers have been wearing on it but if you can't feel it with your fingernail, leave the bearing alone - it's not brinelled to the point where it has to be replaced.

On the other hand, a brinelling you can feel with your fingernail, may cause the bearing to bind in the spring seat and eventually go to pieces. Having the spring seat torn down, you'd better change the bearings





Civilian Automotive Advisors

The Catalytic Agents have joined the Army.

"Well what the hell," you say, "the more the merrier - bring 'em all in. Who the hell are the Catalytic Agents? A religious brotherhood, a professional football team?"

No. A Catalytic Agent, according to Pfc Noah Webster, is anything that will accelerate a reaction without itself being changed.

The Catalytic Agents in this case are the Civilian Automotive Advisors. The reaction that has to be accelerated is the monster training program.

To make along story short, the Civilian Automotive Advisors - 1800 of them - have joined the Army and brought with them fifty thousand years of automotive experience. Together with the tried and true skill and experience of

the Army's own mechanical personnel, they make the future of preventive maintenance, repair and overhaul look rosy.

Who are the Civilian Automotive Advisors? What is their position in the Army and why?

The Civilian Automotive Advisors are the cream of the country's mechanical supervisors come into the army as civilians to help shoulder the staggering burden of training green men formerly carried by Army personnel alone.

It all began after the 1941 maneuvers with an intense study of automotive conditions in the field by a committee of transportation and maintenance experts called in by the Under Secretary of War. One of the recommendations of the committee resulted in the Civilian Automotive Technician Unit. Skilled and thoroughly

experienced technicians - the sort of key men around which the reputation of a commercial fleet is often built - were to be brought in to aid and abet the harried motor sergeant and motor officer in training the vast influx of greenguards which flooded the Army around 1940, 1941, etc. The Advisor program began, not as a criticism of the teaching abilities of Army personnel, but as a solution to a problem so large as to require the aid of the best mechanical talent and experience in the nation.

Assigned temporarily to divisions* and other combat organizations, the Advisors help train the driver, they work with the greaseball, and they give advice on automotive maintenance to the officers. They exercise no command function and give no orders. The Advisors are detailed as in-

*According to a table of allotment published in Adjutant General's Letter AG 210-61, subject: Civilian Automotive Technicians, dated July 14, 1942.

structors and advisors to the maintenance shops of units in the field. Not mechanics or production men, but instructors, their expressed and prime purpose in life is to raise the unit's level of efficiency in motor maintenance. In their work, they are normally responsible to the commander of the unit they are assigned to.

WHAT ARE THEIR QUALIFICATIONS?

Generally men with wide experience as Fleet Superintendents, Maintenance Managers, Shop Foremen, or Service Managers, the Advisors are selected through an elaborate network of interviewers, composed of approximately 400 transportation and maintenance executives throughout the country. These executives were let in on the Army's problem, and asked to assist in finding men. In many cases, they selected the best men from their own shops and persuaded them to go to work for the Army.

WHEN ARE THEY AVAILABLE?

The Advisors are assigned upon request to the Commanding General of the Service Command. Army Ground Force units request the services of the advisors from sixty to ninety days in advance of the activation date of the unit. This permits the Commander to put together a complete team or get ready to reassign an existing team of advisors who are about to be released by a unit departing for overseas.

WHERE DO THEY WORK?

Taking an Infantry Division as an example, there's a 'Head Automotive Advisor' who normally works with the Division Ordnance Officer as his advisor and assistant on matters automotive. The Head is usually a man with years of experience as maintenance manager of a large bus or truck company or a large heavy-duty automotive repair shop. He is required to be thoroughly grounded in heavy-duty automotive maintenance.

Assisting the Head are eleven other Advisors, ten of whom are assigned to regiments or other units of the Division, as instructors or assistants to the automotive officer.

Finally, one Advisor in a Division is a parts specialist, experienced in setting up parts stock and able to assist in any parts problems.

The Advisors, since they spend all of their waking and sleeping hours with the division are assigned their own quarters in the officers' barracks.

Question: Why are the Advisors civilians instead of Army officers?

Answer: Under Civil Service, the Advisors' appointments can take place immediately whereas Army commissioning might require weeks or months. 2) Advisors as a rule, owing to their required years of maintenance experience, are normally older than the average man being commissioned into the Army which brings them over 'troop age.' 3) As civilians, Advisors do not have to accompany the unit they were initially assigned to, into the combat zones. In this way, they can then be reassigned to newly activated organizations.

TRAINING THE TRAINERS

The Civilian Automotive Technician Unit of the Preventive Maintenance Section of the Office Chief of Ordnance runs a series of schools for Advisors to acquaint them with the Army way and bring them up-to-date on the peculiarities of Army equipment. The first school was set up at Holabird, with others now being conducted at Atlanta, Normoyle, Fort Crook, and Stockton.

A 'Civilian Automotive Advisors Guide' is being prepared which explains the military maintenance setup to the incoming Advisor, outlines the training program and is expected to be useful for pressing flowers. The effect of the guide will be to standardized Advisor instructional methods.

One noteworthy indication of just how important the Civilian Automotive Advisor program really is, appears in General McNair's message (on page 333).

In reviewing the broad picture of motor maintenance, General McNair makes special mention of the fine work the Advisors are doing.

To the motor sergeant or officer with the wind, rain, and greenguards in his hair, the Civilian Automotive Advisor is a friend indeed. He's two more hands, two more eyes and 30 pints of fresh new blood in the training program.

When the chips are down and the fighting really gets heavy, his influence will begin to show.

3/4-Ton B0 Driving Lamp

A certain number of 3/4-ton Dodges were delivered to the field before the Blackout Driving Lamp (that's the single headlamp mounted on the left side of the truck) began to be placed on these vehicles in production.

The Tank-Automotive Center in Detroit now announces that kits containing the Blackout Lamp for these vehicles are ready for issue from Holabird only.

For all of your 3/4-ton Dodges that don't have the lamp, order the following kits from the Holabird Ordnance Depot, Baltimore, Md.:

Kit No. 3 - "Blackout Driving Lamp, 6-volt Dodge 3/4-ton, 4x4 Weapons Carrier; Dodge 3/4-ton, 4x4 Ambulance.

Kit No. 5a - "Blackout Driving Lamp, 12-volt Dodge 3/4-ton, 4x4 Command Car; Dodge 3/4-ton, 4x4 Carryall."

We haven't given you the USA Nos. of the trucks needing the lamp - just requisition it for all of your vehicles that don't have it now, specifying the vehicle model and type.

Some time ago, one radiator cap (Fig. 1) was made standard for all vehicles. You could use it on the radiators of all makes and models: On the 1/4-ton jeep, on 7 1/2-ton Macks alike.

But somehow along came the 3/4-ton Dodge with a filler neck that was too deep to take the standard cap - and so, of course, the interchangeability of the cap between vehicles wasn't complete. For the 3/4-ton Dodge, you had to use the one cap that came with the vehicle.

Now comes a bulletin from the Fargo corporation announcing that the radiator filler neck on all future 3/4-ton's will be made so that the standard cap may be used on it. This makes the standard cap completely interchangeable among all vehicles - including the 3/4-ton's produced from now on.

To clear up any confusion that might arise over the radiator cap situation, the Fargo bulletin reviews all the different kinds of caps that have been used on Dodge vehicles since January 1, 1940.

Four radiator caps have been used. The first was a plain cap, (Fig. 2) Part No. 776379. This was used on the 1/2-ton's (T-202, T-203, and T-207 series). And, as we understand, is now obsolete.

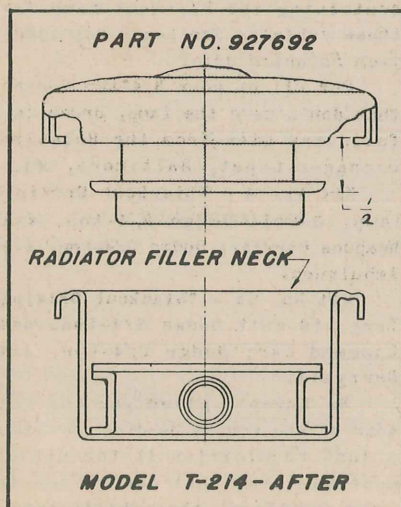


Figure 1

The Interchangeable RADIATOR CAP

Specifications require all makes and models to use one standard interchangeable cap. Here's how it affects Dodge vehicles.

The second cap was a 'pressure-control' cap (Fig. 3) Part No. 919077. This was used on the later 1/2-ton's: the T-211 and T-215 series. Since this cap was used under the hood, it may be identified by its plain, unpainted top and by the measurement of 1/2 inch from the top of the cap engaging lugs to the bottom of the sealing flange that contacts the gasket in the radiator filler neck.

The third cap used on Dodge trucks was also a pressure-control cap, and it has been standard equipment on all the 3/4-ton Dodges produced up until very recently. It's Part No. is 923006 (Fig. 4). It may be identified by the fact that it's painted (since it's used outside the hood), and also by its measurement of 1 1/16 inch from the top of the cap engaging lugs to the bottom of the sealing flange that contacts the gasket in the radiator filler neck. This third cap is the one mentioned above as being used on the 3/4-ton's with the deep filler neck - the deep filler neck which prevents the vehicle from using the standard interchangeable radiator cap that all other vehicles are using.

Now along comes the fourth cap to be used on Dodge trucks. This is the standard interchangeable cap (Dodge Part No. 927692) that all other makes and models use. It's the cap illustrated by Figure 1 and the measurement from the top of the cap engaging lugs to

the bottom of the sealing flange is 1/2 inch.

And that's the sum and substance of the radiator caps used on the Dodge trucks.

What it all boils down to is the fact that you'll have to carry two kinds of radiator caps to take care of your Dodge vehicles. The new standard interchangeable cap (Dodge Part No. 927692) will fit all your 1/2-ton Dodges and also the very latest 3/4-ton's just coming off production lines. For your earlier 3/4-ton's, you'll have to carry radiator cap No. 923006 (Fig. 4).

Incidentally, besides the radiator cap being standard and interchangeable, the gasket down in the filler neck is also standard and interchangeable. It's Dodge Part No. is 920746.

Someday, some big broad

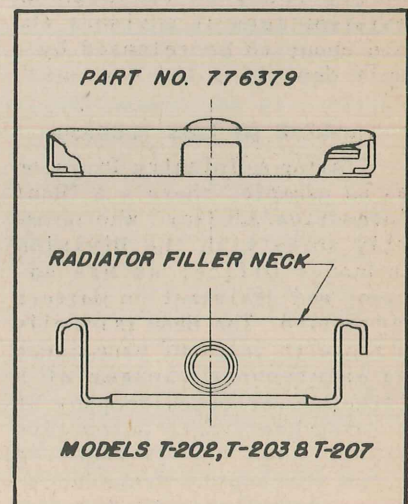


Figure 2

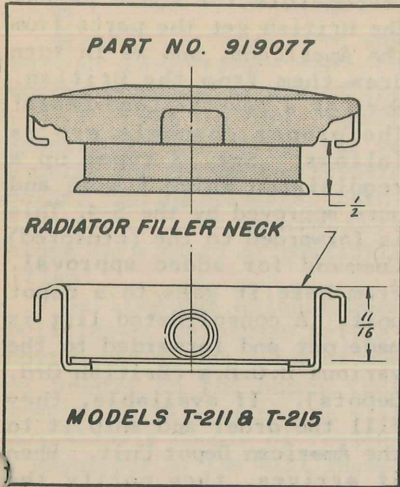


Figure 3

minded fellow is going to realize that since the radiator caps and gaskets are interchangeable between all makes and models, maybe they ought to be given a Federal Stock

No. and made Parts Common.

* * * *

For the benefit of those in our audience who were non compos mentis at the time we ran a story last year describing 'pressure-control' caps, we will now undertake to describe what is a pressure-control cap and how it works:

A pressure-control cap is one which seals the cooling system in such a manner as to prevent the loss of coolant by evaporation or by surge. The pressure-control cap which was described above as being standard on Army vehicles, has two valves: an intake and a relief valve. If too much pressure develops in the cooling system, the relief valve which opens somewhere in the neighborhood of 4 lbs., lets go and allows the cooling system to vent through the

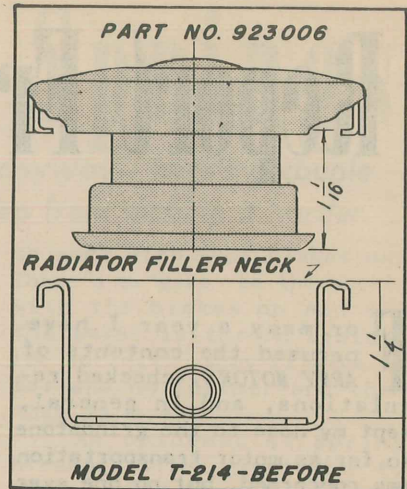


Figure 4

overflow pipe in the radiator filler neck above the radiator cap seat. On the other hand, if due to the contraction of the liquid in

(Continued on page 348)

A New Steel Trailer Wheel...

The rubber shortage rears its ugly head again in the appearance of a new ersatz caster wheel for the 1-ton and 250-gallon, 2-wheel trailers.

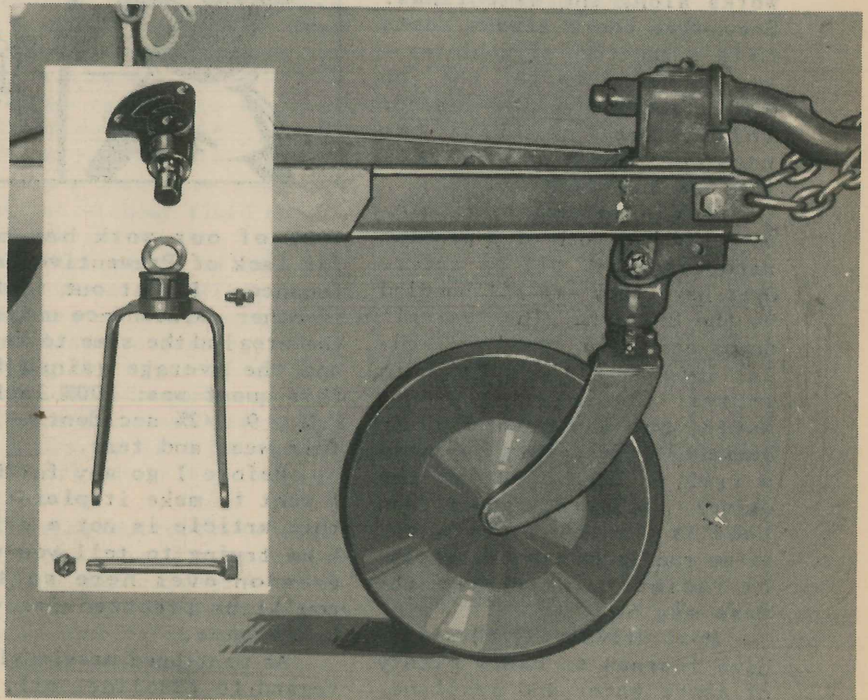
The new wheel (right) is all steel and replaces the rubber tire and tube formerly used. It can be installed without making any changes in the present spindle and fork. In place of the roller bearings formerly used in the rubber tire, a plain bearing is pressed into the new steel wheel.

The nomenclature and Federal Stock No. of the new wheel is 'Steel Wheel, Retractable, Federal Stock No. 8-W-1550'. You'll be getting it as replacement for your old caster-wheel tires and tubes from now on.

Here's a good idea: since you won't be getting replacement rubber tires and tubes for your portable grease dispensers and air compressors, and since these use the same tires and tubes the trailers use, (and need them a lot

more) replace the trailer tires with the steel wheels and save the

rubber goods for the compressors and dispensers.



Report From Africa

For many a year I have perused the contents of *ARMY MOTORS*, checked regulations, and in general, kept my nose to the grindstone so far as motor transportation was concerned, but no one ever told me of days like these. General Sherman said: "War is hell!" He was a cream-puff - he should come to Africa, particularly Egypt.

For the benefit of those who are to follow, I'd like to point out some of the headaches of the maintenance sections in the desert, as we have experienced them.

To begin this narrative, I might relate certain conditions under which we operate which were never dreamed of back in the States. First, wars are fought on a 24-hour basis and motor transportation works along the same lines. Secondly, there always seems to be a shortage of vehicles - and in order to get the job done, trucks are over-loaded. Third, for the first two reasons, *THERE IS NO PREVENTIVE MAINTENANCE*.

Back in the good old U.S.A. we never had much of a problem with gasoline, oil or water. Over here they are all handled by the British. The 'petrol' dumps are to be found at regular intervals along the main routes; the same applies to water, but any breakdown in between these points may mean a trek of 25 miles for the driver. Drivers, rather than hoof it for that distance, often run in on a dry crankcase or radiator, whichever the case may be.

Most drivers by this time have learned to carry plenty of spare water and gasoline, but few ever think of oil.

One compliment to the American driver is that he becomes an A-1 trouble-shooter in nothing flat. I like to think that he also surpasses his British counterpart in ingenuity. (Our British counterparts like to think they surpass the Americans in ingenuity.) Blackout technique around here is just about flawless.

By now you should have a pretty good idea that the Maintenance Companies do everything but loaf. What I mean is our shops are kept busy. Since arriving here



100% of our work has been for lack of Preventive Maintenance. I went out to find if other maintenance units in the area had the same to report and the average gained from this quest was: 90% lack of P.M., 9 1/2% accidents, 1/2% fair wear and tear.

Before I go any further, I want to make it plain that this article is not a gripe. I am trying to tell you what goes on over here so that you'll be prepared for what is to come.

As mentioned previously in regard to gasoline, oil, and water, the British are also

responsible for spare parts. The British get the parts from the Americans, and we in turn draw them from the British. Sort of a reverse Lend-Lease! The proper channels are as follows: Sgt. X types up a requisition which I sign and have approved by the S-4. This is forwarded to the (censored) Command for added approval. From here it goes to a depot unit. A consolidated list is made out and forwarded to the various B.O.D.s (British Ord. Depots). If available, they fill the order and ship it to the American Depot Unit. When it arrives, they notify the (censored) Command, who in turn notifies us that our parts are ready to be picked up. After driving some hundred odd miles to get them, we return to our shops and finally are ready to get to work.

Parts are not too plentiful. Consequently we have to adapt, revamp, and substitute approximate parts for the right article. Another way of gathering parts is by scavenging off wrecked vehicles in the desert.

(Ed. Note: In spite of the swell job being done by the S.O.S. in getting parts to where they are needed, the ingenuity of our men has always been notable even to cannabilizing wrecked trucks for serviceable parts.) So it's not unusual to see an American jeep with a British dead front axle, Italian wheels, German tires, with a Greek soldier at the wheel.

Our most common failures are: 1) bearings for want of grease; 2) transmissions and motors for want of lubricants and coolants; 3) electrical parts, mostly of bakelite composition; and 4) rubber parts for braking assemblies. Springs are in a class all by themselves and bracing, special builds, and refabrication are a daily routine.

As a last word - American trucks are tops. Respected and loved by those who use them, we of the Maintenance will 'Keep 'em Rolling!'

Broken Springs

They've got a hard life anyway-- here's a couple of things you can do to keep from making it harder.

Reports from at home and abroad invariably mention spring breakage as one of the major items in the repair shops. Unfortunately, all we usually get are the two cryptic words, 'spring breakage,' nothing more, and we are left alone in a world of possibilities.

So like our neighborhood politician, Selectman Kettlebottom who slings a lot of mud at people in the hopes that some of it will stick, we will now sling a couple of reasons - maybe one or two will answer your spring-breakage problem.

First, when you discover spring leaves broken at the center-bolt hole, blame it on loose U bolts. Loose U bolts allow the spring leaves to flex in the middle - something that no respectable spring leaf would ever think of doing. Furthermore, although you may strongly deny ever having left a U bolt loose, you may have really done so unwittingly. A U bolt that is tight when the truck is empty may be a loose U bolt when the truck is loaded. As a matter of fact, it's often possible to take as many as two complete turns on each supposedly tightened U bolt after the truck has its rated load on. (This applies to overslung springs which practically all our trucks have.)

Spring breakage near the eyes or shackles is generally caused by shackle bolts pulled up too tight or by lack of lubrication. Spring eyes bound up so they cannot move are sure invitations to breakage. (Most spring shackles require lubrication - however some trucks we've seen have a rubber bushing at the shackles which of course, are not to be lubricated.)

Spring rebound clips prevent the leaves from separating on the 'rebound.' Missing rebound clips, clips which are loose because the threads on the bolts have been stripped by overtightening or on which the rivets have been broken,

can't prevent extreme rebound: broken springs result.

Loose spring clips (like loose U bolts) also allow the leaves to shift or even fan out sideways which in many cases throws all the shock of the ride on a few or even one leaf. The first healthy bump and you've got a broken spring or springs.

The continual vibration and movement that the springs are subjected to make their's a tough enough job under any circumstances - so when a condition like bad shock absorbers crops up, the difficulties are doubled. Bad shock absorbers allow the front end to whip up and down so much that the normal fatigue of the spring metal is immensely speeded up. When the springs get tired of taking it, they just separate at the weakest point. Whenever you discover a shock absorber that appears to be damp or leaking, check the fluid in it - then disconnect the arm and feel it. If it works too loosely and offers no resistance to force applied against it, you'll have to replace it - shock absorbers that have been run for a time without fluid suffer internal injuries.

Lubrication of springs (except where specified) leads to excess 'bounce' - excess bounce leads to breakage. Even spraying the edges of springs is considered dangerous because of bounce and also because the oil picks up dirt particles which work their way between the leaves.

Chasing butterflies over rough terrain is hard on springs - any extreme bounciness of ride is hard on springs. One trick especially will break your springs every time: hitting a hole, rut,

or rock with your brakes on. There's no 'give' to the wheels with the brakes on and all the twist is thrown against the springs: they'll give so far and no further and then they'll break.

An epidemic of spring breakage often gives rise to the cry of 'defective springs,' but the truth of the matter is that springs are hardly ever defective. They're just one of those units that have a tough job, and a certain amount of breakage due to fatigue is to be expected. Just give them a reasonable amount of care, watch out for the dangers we've mentioned and, if possible, take it easy over rough roads. That way you'll at least give your springs a normal life span.

B. O. Lights

Word has just arrived by carrier worm that blackout lighting equipment for Fire and Crash Trucks is now available for issue.

We have no Federal Stock Nos. for you and we don't know what's in the kits. All we know is that the Office Chief of Engineers reports that the B.O. lighting equipment is available from the following fire-equipment warehouses:

1501-1525 Warner Street
Baltimore, Maryland

17 Fairlie Street, N. W.
Atlanta, Georgia

111 N. Canal Street
Chicago, Illinois

2212 N. Harwood Street
Dallas, Texas

436 S. Main Street
Salt Lake City, Utah

GENERAL McNAIR SPEAKS HIS



The leader speaks to his men. The long channels of communication are set aside for a moment and the Commander steps forward to bring with the force of his own personality, the broad picture of the problems, and the strategy necessary to meet the problems.

The following 'Notes for ARMY MOTORS' - a front-office view of maintenance, training, and organization as they affect wheeled and combat vehicles - have been personally dictated by Lieutenant General Lesley J. McNair, Chief of the Army Ground Forces.

MIND



HEADQUARTERS
ARMY GROUND FORCES
ARMY WAR COLLEGE
WASHINGTON, D. C.

Compared with 1941, 1942 was a banner year in Army motor maintenance. The Army is becoming encouragingly maintenance-minded. As I see things, the improvements are due to a number of causes.

The first and most important element is command. The impulse in this and every other activity of the unit must come from the top. If the commander insists on a high standard of maintenance, it will come about. His staff cannot achieve success without his visible and forceful support.

Civilian automotive technicians have done a fine job, and deserve much credit for the improvement. In most cases, they are being used properly - as instructors of military personnel, not foremen, executives, nor mechanics. The unit personnel must learn a maximum from them during their stay with the unit, and become independent of them as soon as possible.

Motor officers and mechanics are trained and selected better than was the case a year ago. Motor officers must be schooled in their duties. Lacking a course in one of the special service schools, they should be schooled locally by ordnance units.

My picture of maintenance includes the following features:

The commander leads in this activity as in fighting.

All personnel of a motorized unit should be able to drive a motor vehicle properly, and all must be imbued with a unit pride in keeping their vehicles off the deadline and in column when moving. Vehicles of a motorized unit must not fall out any more than men of a dismounted unit.

Maintenance begins with the first echelon. If there is good driving and good first and second echelon maintenance, there need be little third echelon maintenance.

Third echelon maintenance in units should be encouraged and insisted upon to the limit of skill, time, tools, and parts, because -

- (1) Vehicles are out of service a minimum of time.
- (2) The unit is kept continuously mobile.
- (3) The unit will appreciate more the importance of first and second echelon maintenance if they perform third echelon maintenance.
- (4) Organic third echelon units cannot make all third echelon repairs promptly.

1943 certainly will develop bottlenecks in motors and many other items of equipment. Our production will be strained heavily. Let's appreciate and treasure the splendid motor equipment that is being supplied us - both tires and mechanisms - and get out of it every possible mile of useful service.

L. J. McNAIR,
Lt. Gen., U.S.A.,
Commanding.

How to start a STALLED VEHICLE

There are three approaches to the problem of starting a vehicle that refuses to start.

The first is to pick up a stout club and race around the vehicle thrashing it madly, meanwhile uttering fierce, half-human cries. This may not start the vehicle, but it's wonderful for the nervous system.

The second approach has been frequently observed in the field by Sgt. Harold Schornstein, Q.M. Station Complement, Fort Dix, N. J., and as he puts it, "It makes my blood boil."

What makes Schornstein's blood boil is the 'process of elimination' approach in which the mechanic goes over the the vehicle changing parts until he finally strikes upon the root of the trouble and the vehicle starts.

"I realize," said Sgt. Schornstein, "that not all mechanics are electricians or ignition specialists, but still when I see these guys wasting time changing parts when a screwdriver in the hands of a wideawake man acquainted with the proper procedure would find the trouble before they could say Jack Robinson, well..."

With his bloodboiling at a merry rate, Sgt. Schornstein sat himself down and sketched out the third or 'screwdriver' approach to starting a vehicle that refuses to start.

Upon viewing Sergeant Schornstein's letter, 'Fangs' McGuire, our demon trouble-shooter, entered into the spirit of the thing. Adding his own abysmal knowledge to Sgt. Schornstein's screwdriver strategy, he presently emerged with a checklist 1st class of the things most likely to be responsible for stalling the

A McGuffey's First Reader on finding the roots of the trouble including a couple of tricks with the ammeter that many people never think of using

most common Army vehicles.

Valuable to drivers and mechanics alike, the checklist starts with the simple statistics that 90 per cent of the time, the ignition system is at fault, with the fuel system a runner-up.

Seated in the cab, the driver can make three quick passes that'll start him on the right track. First, turn on the ignition switch; second, look at the fuel gage; third, look at the ammeter.

The ignition switch should bring the gas-gage needle to life. That and an inspection of the tank should tell you whether you've got gas.

Anyway, while you're up there in the cab, you might as well test the condition of the battery. Step on the starter. The snappy noise it makes informs you that both it and the battery are in there punching. On the other hand, a run-down battery or a starter circuit with loose or corroded connections, will wheeze and die.

The next thing to do in that case, is make sure the cables and connections are clean and tight, and then test the battery with a hydrometer and a voltmeter, if available, (or replace the battery if you have one and are in a hurry).

But let's say the starter and battery are good, and the

truck still won't start. In this case, you can use a certain little gage on your instrument panel to tell you a few secrets. This little gage is the ammeter.

As soon as you turn on the ignition switch, it starts to tell you things. If, for instance, it jumps all the way over to full discharge, and you smell something burning, you know that there's a ground somewhere between the switch and the coil which is allowing the full capacity of the battery to drain out through wires that aren't big enough to handle it. (Even without the ignition switch on, an ammeter needle lying all the way over warns of a ground between the ammeter and the switches.) The result is a terrific heat set up in these inadequate wires, burning off the insulation. (Turn off the switch and find that bare wire or whatever else is grounding!)

Then again, you can use your ammeter to lead you to trouble in the ignition system. Step on the starter with the ignition switch on. If the ammeter needle doesn't move at all, current isn't flowing. You've got loose connections in the low-voltage circuit between the distributor and the ammeter, or burned contacts on the breaker points.

To isolate the trouble

quickly, all you need is a screwdriver and the muscletone necessary to raise the hood. Reach in and ground the low-tension wire running from the coil to the distributor by placing your screwdriver at the distributor terminal. If you get a spark, you know that current is getting this far and perhaps the trouble is in the distributor. No spark means that the current is being cut off somewhere in the connections leading back to the ammeter. With your screwdriver, back track through each of the connections leading to the ammeter. When you come to a connection where you get a spark, repair or replace the unit involved. Then just to make sure, test for a spark at both ends of the repair or the unit replaced.

Take the case where your needle moves up to show a discharge of 3 to 5 amperes and parks there without moving at all. In this case, there's a short somewhere between the distributor and the low-voltage lead connected to the coil. The reasoning behind this, is as follows: There's a 3 to 5 ampere draw by the coil from the battery past the ammeter. (Thus you get the 3 to 5 reading on the ammeter.) The opening and closing of the breaker points causes a slight current fluctuation that you will see as a like fluctuation of the ammeter needle. So if the ammeter needle doesn't fluctuate, there's a short somewhere between the distributor and the low-voltage lead connected to the coil.

The first thing you suspect is the condenser in - or on - the distributor. You can make sure by inserting a piece of paper or other insulation between the breaker points. This should prevent the current from flowing to ground and the ammeter needle should return to zero (because there shouldn't be any other ground). If the ammeter needle doesn't return to zero, take out the condenser retaining-screws and lift the condenser clear

of ground. If the ammeter needle now returns to zero, you know that the condenser was shorted and the current was leaking right out through the insulation and to ground. Replacing the condenser should solve your problem.

Incidentally, although the check we've just described read like a 2-hour job, actually it only took a few minutes.

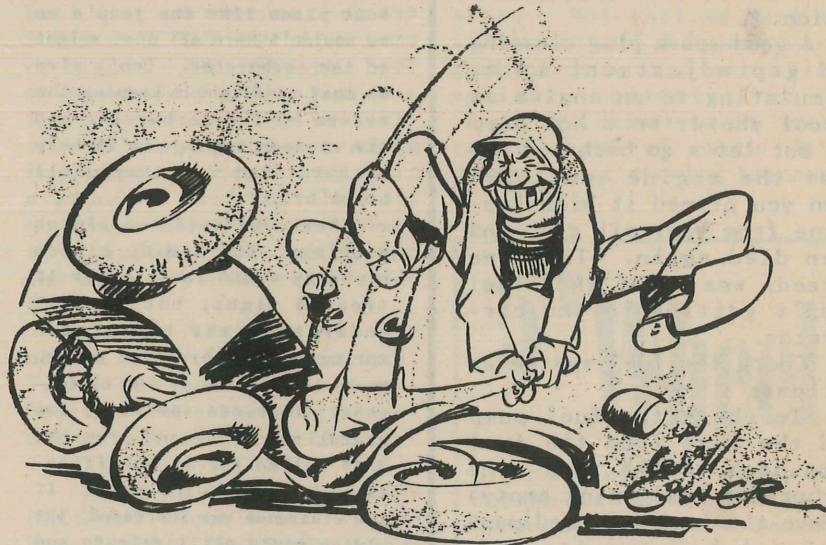
The normal behavior of the ammeter needle when the starter is cranking the engine over, is that certain tantalizing rhythm - the needle should bounce lightly. Well maybe it does, but the engine refuses start. What to do?

There are two things you can do: 1) check the current in the high-voltage circuit; 2) check to see if fuel is getting to the carburetor.

current is flowing down the high-tension line this far, the trouble might be with the spark plugs. But before you take them out for inspection, check the fuel system.

The fuel supply can be checked on most Army vehicles simply by removing the air cleaner and gazing down the air horn while jiggling the throttle. If gas is getting this far, you can see it squirt out of the accelerating-pump jet. Sometimes a choke that won't choke will keep a vehicle from starting - so while you're up there, check the choke by having somebody pull the button on the dash while you look down the throat and see if the choke butterfly is operating properly.

You may run across carburetors like the new Zenith



Of course, you check the easiest and most probable source of trouble first: the ignition system.

You know that current is getting to the points (remember you proved it by turning on the ignition switch, stepping on the starter and observing the ammeter needle jiggling between 3 and 5), so now just pull off a spark-plug wire and hold it about a 1/4 inch from a good ground while operating the starter.

If you get a good, snappy spark with a strong blue core,

'29 series' (on the 3/4-ton Dodge) which have an inaccessible or crooked air horn that you can't readily look into. In this case, put some gasoline in an oil can and shoot a little into the venturi passage of the carburetor. Now try to start the engine. If it kicks over momentarily and stalls soon after, your spoon-feeding was responsible for the brief spark of life and you can bet that fuel is not getting to the carburetor.

On vehicles with an 'up-draft' carburetor - C.O.E.

jobs, etc. - check the fuel supply this way: Make sure the choke closes, crank the engine with the starter a few times, and look for a fuel drip at the carburetor.

But if even after priming it, the engine won't rise to the bait at all, look for the trouble to be in the ignition system.

Take out the plugs. If the business end of the plugs is damp with gasoline, you've proved again that fuel is getting to the combustion chamber - the plugs are probably the trouble: look for dirt or dampness on the porcelain which might be grounding the current before it's reaching the electrodes; examine the electrodes themselves for gaps too wide to allow the current to jump across, and for a fouled or a burnt condition.

A good spark plug cleaning and gap adjustment is as stimulating to an engine as a cool shower on a hot day.

But let's go back and say that the engine sputtered when you primed it with gasoline from your oil can, and then died again. This, we agreed, was proof that fuel wasn't getting to the carburetor.

Check the fuel system as follows:

To check the fuel pump and the line from the fuel pump back to the tank (the carburetor bowl being empty) remove the fuel-pump sediment bowl and dump out its gasoline. Put the bowl back on, making sure it seats well against its gasket. (If you have a new gasket, use it.) Since most Army vehicles have a pump-priming device connected to the linkage, all you have to do is give it a few strokes on the priming lever or spin the starter briefly; if the fuel-pump sediment bowl starts to fill up with gasoline, the fuel pump itself is working and the line from the pump back to the tank is clear. If the bowl doesn't fill up,

first remove the fuel-filter element and clean it to check it off as a source of trouble. When you reassemble it, be sure the gasket is a perfect

seal: air leaking in will lower the sucking ability of the fuel pump. (That's why all connections in the line must be airtight.)

Letter of The Month . . .

Dear Editor,

We get our mail kind of slow here so you may have already solved our problems, and we don't know about it yet, but here goes anyway.

First thing, we have quite a few rough roads - you know, the washboard type. Well, we can't keep carburetors in one piece. I'm speaking of the G.M.C.'s. They break off where the two screws hold the bowl to the carburetor body. Couldn't the air cleaner be fastened some place like the jeep's so we wouldn't have all that weight on the carburetor. Don't give me that stuff about keeping the screws on the carburetor and air cleaner tight. It'll help an awful lot but they still break off.

Next, we have the clutch problem. The G.M.C. clutch probably would last longer if treated right, but I can't understand why the clutch springs should break so often. Would it help any if the clutch-pedal clearance (pedal to toe board) was increased from the 3/4" called for in specifications to about 1-1/2 or 2"? If the clearance was increased, the clutch would still release and the clutch spring wouldn't get all that strain which is caused when the driver pushes this pedal all the way to the floor board.

Editor's Note: Right on the nose; Connie Rodd said the same thing in December.

Just one more thing and I'll shut up.

Some time ago I saw an article in ARMY MOTORS about putting plugs in the brake drums so they could be washed out with a hose. One of the main objections for not doing

this was that the water would cause rust. Well, you were right about the rust, but up until now I still have my first mud to see that doesn't have water in it.

It's a darn good idea to take all the wheels off when they run through mud, but how can two or three mechanics take all the wheels off G.M.C. trucks every night for a week or two. Sometimes it is muddy in places where we have to go every day for longer periods than that. I'm talking about times when you have 15 or 20 trucks doing the same thing every day, and it doesn't have to be very muddy to get plenty of mud in your rear drums. Of course, if you had some way of getting it out, brake shoes would last four times as long. Could a different type backing plate or drum be made to keep the mud out in the first place? If you fellows want to, you can pass the word on to the G.M. big-wigs to add a zerk fitting to the brake pedal where it's anchored alongside the clutch pedal. Then us fellows can squirt a little grease at it, and we won't have to take the whole pedal assembly off and hammer the pedal off the shaft to smear a little grease on the shaft so the pedal will release.

Hoping to hear from you soon,

Sgt. James T. Gillespie
Ser. Btry. 97th F.A. Bn.
A.P.O. 502 c/o Postmaster
San Francisco, California

P.S. Remember you asked for these gripes.

P.P.S.S. I think 2nd-echelon should have a set of large socket wrenches, or at least about 5 sockets of sizes larger than one inch.

Next, check for, and clear out any clogging in the gas line by disconnecting the line where it enters the fuel filter, and blow back towards the tank (*with the gas-tank cap off* and have someone at the tank listen for gurgling). Blow gently at first. If the air won't pass through the line, look for clogging at the places where it usually occurs: the couplings and shut-off valves.

If the air bubbles through the line, it's logical to assume that the fuel pump is at fault - repair or replace it.

Here's another condition - one that causes many mechanics to raise the hood, stare vacantly at the engine, and decide to replace something without further investigation. All other tests have disclosed a fully charged battery, a good supply of gas, a spark that seems all right at first glance - and yet the engine won't run.

Double-check the spark by holding the plug wire a 1/4" away from the block. If it becomes red, thin or disappears, *the fault is generally partial shorts, resistances, or leaks in the wiring.* So before you throw away that suspicious-looking coil, condenser or distributor cap, examine the wiring connections from the ammeter all the way down to the distributor.

Next wipe all dirt and corrosion from the distributor cap and wires; examine the pigtail leads inside the distributor cap. While you're at it, see that the rotor is in good shape and that no cracks are present in the distributor cap itself. Cracks in the distributor cap collect dampness which serves as a track for current, and spills it all over the place.

Many times poor ground at the distributor prevents the coil from drawing it's full quota of current. Since the contact points serve as a means of grounding the circuit, bad points will partially block the ground.

Also since the distributor housing is grounded directly to the block, oil or looseness between the distributor housing and block may partially stop the ground.

To check the ground at the distributor, first appoint a straight man to the cab to read the ammeter for you while you're bending into the engine. With the points closed, ground the low-voltage wire of the distributor terminal with your screwdriver. If the ammeter reading immediately increases when you do this, the ground at the distributor was indeed poor and preventing the coil from drawing its full ration of current.

The first question a wise guy will ask in this case, is "How do you know how much the coil is supposed to draw? Coils have varying capacities." Well the average coil draws 3 1/2 to 4 1/2 amperes - some go higher - but when you have at least this much it proves the primary winding is still in one piece, and a reading in excess of normal indicates a grounded winding (the coil no longer offers the resistance it's supposed to offer and the current flows freely - too freely).

After using the tactics above, you should have isolated the bad part or connection. See the maintenance manual if you don't know how to make repairs.

Never blame a particular unit for trouble unless you have checked the other things in the circuit which may be responsible. Of course, if you have testing equipment handy, you'll save a lot of time by removing the suspected unit and testing it. But don't get the 'coil-changing' habit.

And that just about dredges the bottom of the peculiar mind of 'Fangs' McGuire, our demon trouble-shooter. There is one more thing: timing. If the distributor is far out of time, the engine won't start - but even then if you have checked the other factors

we have described, the engine will spit back at you when you step on the starter. If you're a qualified mechanic, and can read a maintenance manual, you'll know what to do about timing.

All we wanted to get across in this article was that the 'parts changing' approach to solving the problem of why a vehicle won't start, is madness, amateurish, and what have you. The man who knows his business, will select a screwdriver from his tool kit and tickle the engine in the right places to find the sources of trouble.

And, stimulated by AR 850-15 which says that drivers are charged with 'emergency repairs', we recommend that drivers be schooled in the very fundamental skill of starting a vehicle that won't start. Not that we want to see unauthorized personnel monkeying around expensive vehicles, but still if we expect the driver to do 'emergency repairs' maybe we'd better start showing him how.

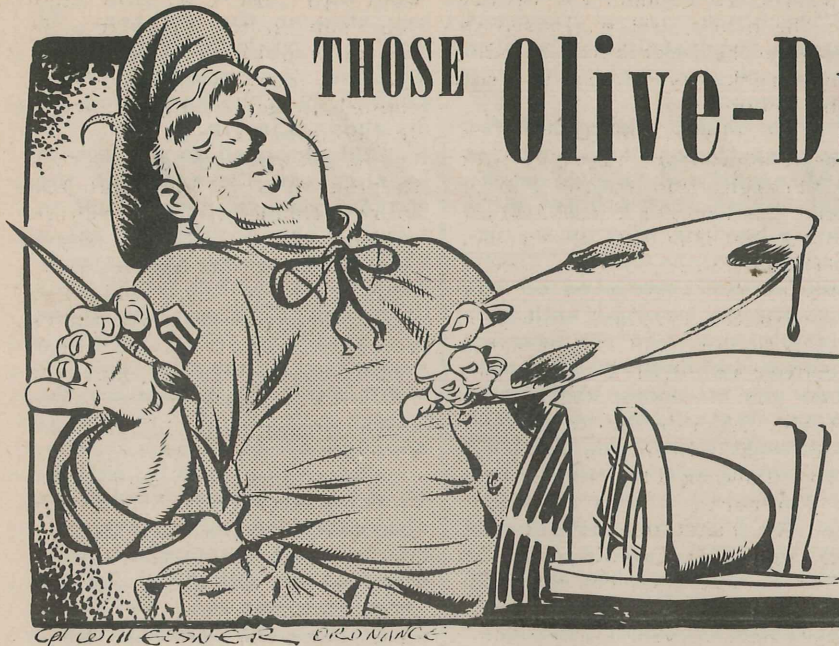
Right?

5th Wheel

When tractor trucks are disconnected from their trailers, the grease-covered fifth wheels pick up windblown sand and dirt like flypaper picks up flies. To put a stop to this and protect tractor fifth wheels, the 316th Ordnance Depot Co., Camp Gordon, Georgia, covers them with burlap. Held on by a draw string, the burlap cap is easily and quickly tied in place - in two minutes flat to be exact.

Can you thoroughly clean off sand-mixed grease and re-lubricate a fifth wheel that quickly? Or that easily?

E. L. B.



THOSE Olive-Drab Blues

The boys have reported trouble in mixing O.D. paint. Here's how - and a couple of tips besides.

Two extremely ugly individuals from the Chemistry Dep't stepped into the office yesterday with the request that we run a little something on "The Importance Of, and How To Mix Paint."

Seems that some of the boys in the field have been hollering bloody murder over the way lustreless olive-drab enamel and metal primer (see box below for Fed. Stock Nos.) settle down and pack in the bottom of the cans.

The reasons and the answers to the reasons are simple to the point of being ridiculous. 1) These paints are highly-pigmented and the heavy coloring matter tends to 'settle out, and deposit on the bottom; 2) Many depots and shops have the bad habit of always using the cans of paint off the top of the heap. The cans at the bottom of the heap grow old in storage and the paint in them settles down to a rock-like consistency. One day, some fool gets one of the old cans

and has as much trouble mixing the paint, as a guy trying to dissolve a billiard ball in a pail of water.

The thing for shops and depots (in filling requisitions) to do is keep drawing the paint cans off the bottom so that no can will ever grow old in storage.

Anyway, enough foolishness, here's the proper way to mix paint: First, before mixing, the paint should have been stored in a room at a temperature between 65° and 70° so that the paint is at this temperature when mixed. Just like oil, paint thickens in the cold.

If you have a paint-mixing machine (base shops are the only place we've ever seen them) everything will be jake. Just place the can in the shaker upside down and let it shake for ten minutes.

If the only paint-mixing machine you have is Pfc. Murphy equipped with a small paddle, have Murphy pour off the liquid

that is on top of the freshly opened can, into a mixing pot. (You ought to have a couple of five-gallon solvent cans with the tops cut out and with handles attached to serve as mixing cans.) Then have your man Murphy mix the settled pigments thoroughly with the paddle to a creamy consistency, slowly pouring back the liquid portion of the paint in small portions, stirring each portion in thoroughly. Finally - and this takes real skill - have Murphy pour the paint back and forth from one can to the other to assure a complete mix.

Although it may take from 30 minutes to an hour to get the paint well mixed - in exceptionally bad cases - it's time well spent and is really the prime factor in determining whether your paint job is going to be any good or not.

Although olive-drab enamel or metal primer is supplied ready to brush, you may have to use up to 1/2 pint of thinner (See box for Fed. Stock No.) per gallon to get it to the proper consistency. For spraying, thin your paint with 1 1/2 pints of thinner to each gallon of paint.

(Continued on Page 348)

FED. STOCK NOS. OF PAINT		
Lusterless Olive Drab,		
	52-E-4171-15	1 gal.
	52-E-4172	5 gal.
Thinner,		
	52-T-445	1 gal.
	52-T-450	5 gal.
Refinishing Primer,		
	52-T-520	1 gal.
	52-T-530	5 gal.
Metal Primer		
	52-P-20466	1 gal.
	52-P-20467	5 gal.



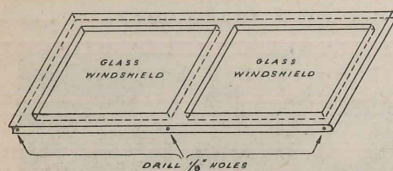
Contributions

Got a good idea? Invented something lately? Got a gripe? Shoot it along to us. Maybe you've solved a problem everybody else is worrying about. Pass it to us, and we'll buck it to the rest of the boys in the field. You'll get a personal subscription if we like your idea - you lucky thing.

Dear Editor,

We've found that water collects in the windshields of Ford 1/4-ton trucks. So to help avoid ice forming and cracking the windshield in cold weather, we drilled 1/8" holes as shown on the attached drawing, to allow the water to drain out. The rubber stripping might prevent the flow of water from the windshield so we cut a small piece out of the rubber where it blocks the hole.

Lt. F. J. Taylor
Lt. F. M. King
305th Infantry
Camp Gruber, Okla.



Dear Editor,

Here at Harding Field (where it rains about as many days as the sun shines) we have had difficulty in keeping rain from entering our barrels of lubricants. The rain has also washed off the markings on the tops of barrels making it necessary to sample same to determine the contents.

Not having covered storage space available and not being able to secure funds to build a roof over our barrels, we put into effect the plan shown on the attached drawing. While

it's true that rain does hit the tops, it will not accumulate in sufficient quantities to enter the contents nor will it obliterate the markings as quickly.

Capt. Earl M. Gregg
Base Motor Pool
Harding Field, La.

Editor's Note: Is there such a thing as rain-resistant paint to be used in marking such lubricant barrel-tops?

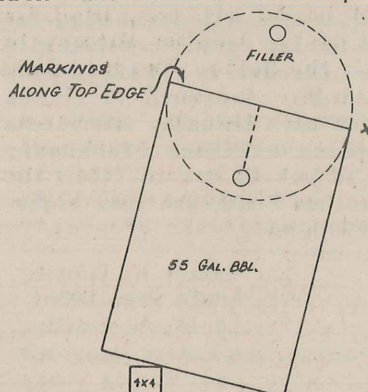


Fig. 1 - 4x4 placed under drum so water can't collect on top and run into fluid through filler caps. In placing barrels in position, the filler plug must be at right angles to the low position of the barrel, 'X', in order to keep moisture from entering the barrel.

Dear Editor,

Here's one solution that will help alleviate all this

grief about the periodic replacement of front-axle-steering-knuckle-flange-joint oil seal felts.

Just wipe 'em off, that's all - the ball joint, I mean, not the seal.

When the boys come in from their details on cross-country operation in the evening and the mud and particles of gravel are sticking on the ball joint, the mud will freeze during the course of a chilly night.

The next morning, the first time the driver turns the wheels, the frozen mud or gravel will rupture this delicate felt, and when the lube warms up and thins out, you detect the leak.

Lt. I. L. McCracken
Maintenance Officer
The Cavalry School
Fort Riley, Kansas

Editor's Note: We've mentioned this a few times before, but it doesn't hurt to mention it again. Another angle below:

Dear Editor,

In December ARMY MOTORS, Captain E.E.P. asked for a cure to prevent water from entering into the front-wheel-ball joints.

By considerable research we found that at the time the vehicle was painted, the polished surface of the joint was not masked - the paint

pigments have a ruinous effect on the grease seals. Once this happens, replacement of the seals is the only complete cure.

The reason that the make of vehicle giving trouble varies with different regiments is because all units are not from the same assembly plant. The plant from which the affected units come, may not be aware of this condition.

Lt. C.M.C.

Ordnance Automotive school
Fort Crook, Nebraska

Editor's Note: On receiving new vehicles, it would be a good idea to see that all paint is removed from the part of the ball joint which swings back and forth. While you're at it, smooth on a thin film of grease to prevent rusting.

Some day you may lose the spark-plug wrench on your truck and due to shortages may be unable to lay hands on a replacement in a hurry.

Mr. F. C. Brannon, Head Instructor, Ordnance Section, the Automobile College of Nashville, tells how to make one in a hurry. Get a piece of tubing about the size of a spark-plug wrench and drill holes (see Fig. 1) to take handle 4 inches long at one end (the handle must not be longer than 4 inches).

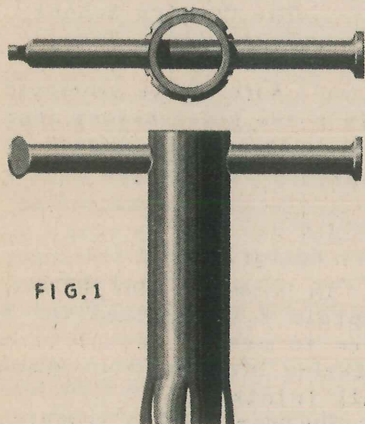


FIG. 1

Make 6 slots of 1/2-inch length in the other end of the tube and pry open to proper

size. Weld the slots. Result: Hexagonal spark plug wrench of proper size with 4-inch handle (Fig. 2). Just a word of caution: Tubing used should be made of proper steel, preferably hard, or harden it.

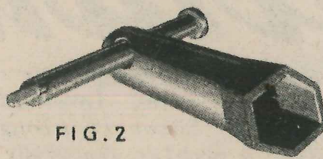


FIG. 2

Dear Editor,

I read a little item in your ARMY MOTORS telling me that if I would submit a good idea, I might receive a personal subscription.

Here is the idea. I find that the GPW 6727 oil drain plug that's used on the jeep and the General Motors oil drain plug, GMC 2135921, are identical. Either of these plugs can be used to replace the Chrysler oil drain plug 50722.

I also find that the jeep or GMC oil drain plug is a much better oil drain plug for the Harley Davidson Motorcycle than the Harley Davidson plug 2326-36. Inasmuch as it has a few more threads, and screws into an aluminum crankcase, it is not so apt to strip the aluminum crankcase when tightened down.

Lt. Walter E. Dutton
St. Louis Ord. Depot
St. Louis, Missouri

Dear Editor,

Some time ago we made this 'A' frame (Fig. 1 and 2) and the boys have asked me many times to send the suggestions to ARMY MOTORS. We have used the frame often under various conditions for the past year and know its value.

The 'A' frame is made of channel iron; the sides are 6 feet long - one having a cross member with a wooden block bolted to the channel to prevent injury to the chain.

The base is 6 feet long with an up-right welded 1 foot from each end. The thing is put together with 4 bolts, 2 at the top of one leg and one at the foot of each leg. An old log chain binder is used to draw the legs together. In the case of real soft ground, a mat of saplings can be placed under the base.

Lt. Alfred E. Bonnabel
351st Field Artillery
Camp Livingston, La.

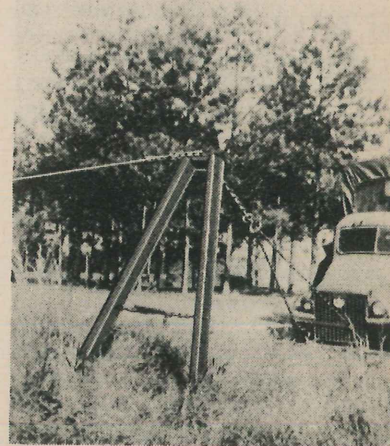


Fig. 1 - The 'A' frame at work helping pull a truck out of a tight spot.

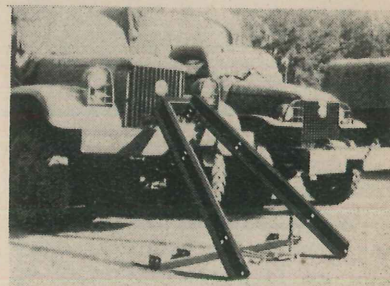
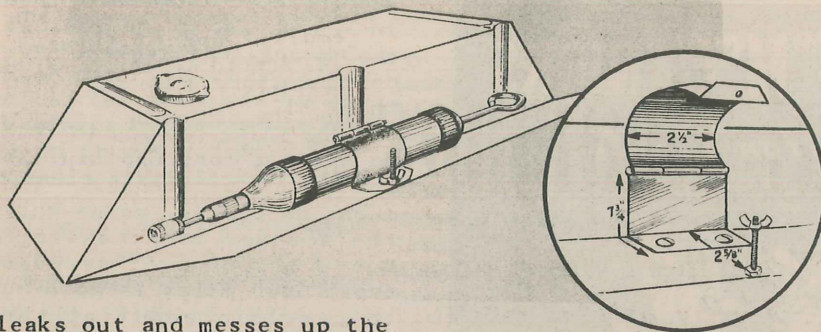


Fig. 2 - Close-up of the 'A' frame lying nonchalantly across a truck bumper.

Dear Editor,

In order to have grease available for use on a 1/4-ton Ford, the gun must be filled with the grease. To get the grease gun into the tool compartment it must be compressed. As a result, grease in the gun



leaks out and messes up the compartment. If the gun is kept empty in the tool compartment, often there is no grease to be had when needed.

Another thing, compressing the gun, in order to make it fit the small tool compartment, often forces the nozzle out of alignment with the pump handle, making the grease gun useless. And still another thing, the gun, being in the compartment, is out of sight: out of sight, out of mind it often isn't used when it should be.

After discussion with other mechanics, I found material which, with a little labor, answered all these problems.

Dear Editor:

Perhaps this tip for inserting tubes into truck tires, which I learned at the Good-year School in Akron, Ohio, can be of benefit to the tire monkeys.

When inserting the tube into the tire, fold tube into a figure eight and insert each end of the tube into each side of the tire and work into place. This will save much stress and strain on the fingers and do the job in quicker time.

This is especially adaptable for combat-type tubes where no power spreader is available. Also when mounting or dismounting tires, place a valve tap over the valve stem to prevent damage to the threads.

Corp. Samuel S. Borten
A.A.F.T.T.C.
St. Petersburg, Florida

The accompanying drawings will give you an idea of how it works. It's made entirely of 18 gage scrap metal, 2-1/2" wide and 7-3/4" long, with a 2-3/4" piece of welding rod for a hinge pin and two philister 1/4" screws and a 3" screw with a wing nut. The whole thing is mounted between the radiator and the brush guard in the little splash shield.

The grease gun is then in plain sight, does not have to be compressed and can be kept full of grease at all times.

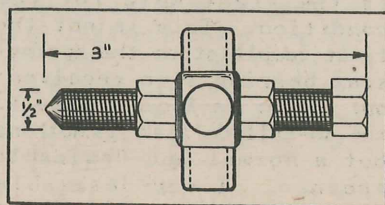
M/Sgt. N. W. Dobbins
Bn. Mtr. Sgt. 812th TD Bn
Camp Bowie, Texas

Dear Editor,

Here's an idea for a puller to remove companion flanges (the part of the universal joint that is splined or keyed on to its adjoining member, such as center bearings and pinion shafts).

Find an old journal in the salvage pile (the spider-the part with four protruding arms where you mount the needle-bearing assemblies).

With a torch, cut a hole through the center of the spider large enough for a 1/2-inch bolt three inches long to slide through. Thread a nut on the bolt, slip it



through the hole and weld it fast to the journal. Thread another nut on the opposite side and weld it fast to the journal. Unscrew the bolt out and point up its end so it will center in the shaft you wish to remove the companion flange from.

All you need to do then is connect the journal to the flange you wish to remove (the same as if you were to install a universal joint) and tighten up on the bolt which acts as a puller. Fig. 1 shows this home-made flange-puller.

Lt. C. W. Converse
27th Sig. Const. Bn.
Camp Bowie, Texas

Dear Editor,

How about using that valuable space in the rollers up front on half-track vehicles as an oil container?

The way these half-tracks use oil after they've been in operation for a while, indicates a definite need for such a scheme. The driver could carry a can and whenever he needed oil, instead of waiting for or looking all over creation for the maintenance truck, he could hop out and milk the roller of all the oil he needed. The roller has a capacity of 12 gallons but only about 5 gallons would be sufficient for the vehicle's emergency needs - this way the roller wouldn't be overburdened and the weight of the oil bouncing around inside the roller wouldn't cause the oil to leak.

Psst - I'll letcha in on a little secret - I saw this little idea tested on a maneuver I was on in 1940, and it worked to everybody's satisfaction.

You don't even have to take the roller off to fix it for carrying oil: it can be drilled, tapped and cleaned out thoroughly while still on the vehicle.

S/Sgt. Andrew L. Gall
11th Armored Division
Camp Polk, La.



What Half-Mast doesn't know you could put in a gnat's ear and, by the same token, what a gnat doesn't know you could put in Half-Mast's ear. Half-Mast is the answer man, he'll answer all those questions - technical, procurement, procedure - that have you up a tree. Write "Dear Half-Mast," Maintenance Engineering Unit, Holabird Ordnance Depot, Baltimore, Maryland.

Dear Half-Mast:

For the love of 'Connie Rodd', answer this one. As you know, the load of the 4-ton Diamond T is carried by the rear springs, anchored at the center to oscillating spring seats which in turn are mounted by means of a bronze bearing on a connecting tube.

This bronze bearing is designed to be lubricated with gear oil, which is satisfactory if it can be kept in. Gaskets are provided for this job, but therein lies the trouble. These gaskets are made of rubber. Now we thought everyone knew that oil and rubber don't go well together - however there seems to have been an oversight in this instance. About every two or three months it becomes necessary to tear down the unit and replace the gaskets. This doesn't help much because the gaskets

supplied by parts depots are - rubber.

Would it not be possible to make these gaskets out of a Neoprene-coated fabric or other material which will not deteriorate when in contact with oil?

Capt. A. J. S.

Dear Captain,

First thing, I doubt whether those gaskets are really rubber because as you say, it's unsuitable for the job and because it's scarce. Second, I wonder if 'leak' is the right word for the condition. This is not the first complaint on the spring-seat bearing I've received; but as far as I can discover, the so-called 'leak' is nothing but a normal and desirable seepage. I say desirable seepage because if oil is

seeping out, dirt can't seep in -- and that's the idea at the spring-seat as well as a couple other places I can think of.

The thing for you to keep an eye out for, Captain, is the amount of seepage. Too much, of course, means that the seepage is 'leakage.' But a 1/2 pint of seepage every 1000 miles is nothing to complain about at the spring-seat bearing.

(And by the way, I sure wish everybody writing in here about 'leakage' would give me an idea of how much lube is leaking - that way, I could prog-nos-ti-cate more closelier.)

Half-Mast

Dear Half-Mast,

I'm motor sergeant of a Service Battery and am teaching 1st-echelon lubrication in a division motor school. I'm following the poop sheet issued by the division and would like a good explanation to the following questions:

Why should grease appear around each journal of a universal joint before it's properly greased when there's a relief hole on a GMC 6x4? How many shots of grease should a propeller-shaft slip joint have from the gun issued to the truck? Why is there no grease fitting on the clutch and brake pedal shaft? When and why was the cargo rating of GMC 6x6 and 6x4 changed from 2 1/2-ton to 5-ton?

S/Sgt. D. R.

Dear Sarge,

Take it easy, and I'll answer you one at a time.

You'll find that lubrication instructions approved for field use recommend that universal joints be greased regularly every time you grease the chassis. Be sure to use a hand-operated, low-pressure gun and the new chassis grease

approved by the engineers.

If grease appears around the bearing journals or propeller-shaft slip joints, brother, the seals are blown. And using a high-pressure gun will do it every time. When the seals start leaking, the only thing to do is replace them. Most of the joints have a spring-loaded relief hole in the trunnion so you can see when the joint is full. If you happen to run into one without a relief hole, it's easy to tell when the joint is full by the pressure necessary to operate the gun. As soon as it shows signs of increased resistance, stop jamming more grease in the joint. This same principal applies to the propeller-shaft slip joints.

According to some authorities, the bushings in the clutch and brake pedals are supposed to be made of material that is self-lubricating and therefore needs no greasing. Hence, no grease fittings. I don't agree. I'm going to suggest through channels that grease fittings be installed at these joints because I get complaints right and left that both the clutch and brake pedals seize and bind. The only way out I can see is to pull off the pedals and tap them out for fittings.

About the GMC 6x4 cargo rating - it was never changed to 5 tons - it was always rated at 5 tons.

Half-Mast

Dear Half-Mast,

We've had a little trouble with front wheel bearing of the 1/4-ton Ford getting dry. The wheel-bearing nut is a 'loose threader' but the 1/6-of-a-turn you leave for play takes up when the lock nut is tightened. So we leave it another 1/12 of a turn looser than usual. How about it?

Lt. E.R.K.

Dear Lieutenant,

Why all this difference of opinion on wheel-bearing adjustments? The term '1/6-turn' is general and should not be taken literally. The good old method of feeling the wheel after the jamb nut is tightened will tell you when the inner nut is too tight: It should be set so there's no drag when the wheel is rotated and no end play between the wheel bearings.

If you turn to page 305 of the January ARMY MOTORS, you'll find an article called 'How Tight is Tight?' which emphasizes the importance of 'feel' in tightening. It's a pretty good article. I wrote it.

Half-Mast

Dear Half-Mast,

We're pretty well pleased with the new Pioneer tool kit, and we think the system of mounting them so that each tool can be removed separately is a pretty smart idea and a welcome improvement over the old system. The only trouble is we didn't get any instructions on how and where to mount them on the truck. Of course, we could probably get them on, but soon as we did we'd get some instructions to put them in certain places which would no doubt be a little different from where we thought they ought to be.

M/Sgt. A.H.J.

Dear Sergeant,

We think you'll find the how and where of mounting Pioneer tool equipment fully explained in Technical Service Bulletin X7.

The not-very-good reason for your failure to get complete instructions along with your new brackets, is simply that all printed copies available had to be rushed overseas at the last minute. Then, after the Technical Service Bulletin was released it was

considered unnecessary to send out separate instructions with the bracket kit.

Half-Mast

Dear Half-Mast,

Our boys have been tearing their hair over the number of snapped rear axle job orders on 1 1/2-ton Chevrolets, Model ZP, 1941.

They blame it on the hairy-eared Engineers attached to our outfit (for repairs only) who drive their Chevies in a gear range which is wrong for the loads they haul, which, incidentally, are probably over a ton and a half. In my mind's eye, I can see one of them now, in 4th gear, heading toward a nice, muddy road with a load of gravel and giving the engine the gun to get through. Tsk! Tsk! Front-wheel drive and 2nd or 1st gear would probably do the job. I am wondering also whether the axles themselves are strong enough to stand the strain of a 1 1/2-ton load bouncing along this way.

One of the Engineers parted his whiskers and allowed this thought to escape: 'Metal fatigue is the cause of the axle's snapping in half.' By the way, both the short and long axles have the tendency to come to a parting of the ways and usually right where the axle is splined.

Any suggestions?

Lt. F.H.W., Jr.

Dear Lieutenant,

You can go too far with a useful thing. As a girl friend of mine who shakes it up at the local burlesque says, "Disaster often results when I place an unexpected strain on my G string."

Letting out the clutch suddenly is a swell way to untie a drive axle. Driving a truck into a mud hole in fourth gear with the throttle wide open is another. Still another is double clutching

into a lower gear when coming down steep grades at a fast clip, which throws the weight of the whole vehicle against the drive line.

Front-wheel drive, used when going gets tough, will save the rear axle to run another day. Metal fatigue is the answer because axles, like human beings, get tired of being jerked around.

I got no suggestions, Lieutenant, you answered your own question.

Half-Mast

Dear Half-Mast,

Can you give me some dope on the availability of a rubber paint or synthetic rubber coating which would be applied to stored or spare tires to prevent checking and cracking due to weather?

Lt. G. McG.

Dear Lieutenant,

As Connie Rodd says in her pages of the January ARMY MOTORS, there ain't no such thing as a suitable synthetic rubber coating or paint. The new TM on Maintenance and Care of Pneumatic Tires and Rubber Treads now being revised will not suggest that stored tires be painted.

You just want to remember these few things about storing tires (some of which are included in our 'Dead Storage' article in January): Unmounted tires and tubes should be stored under cover in a cool, dark room, away from excessive heat, strong air currents, dampness and dirt. Don't store tires in a room or building where generators or battery chargers are at work. By the way, I find that heavy wrapping paper makes the best covering.

Tires will not be stacked in piles higher than 12 feet, since most of our men are under those dimensions. Another reason is that the bottom tire flattens out under the weight and pressure of the

tires on top causing the rubber to check and the fabric to stretch. All this weakens the sidewalls and weak sidewalls cause blowouts. Another reason for not piling tires higher than 12 feet: The bottom tire of an extra high pile might collapse at an oblique angle, causing the top tire to bounce off the head of any bystander, followed quickly by three other tires, all perfect ringers.

Half-Mast

Dear Half-Mast,

The QM Model 1-42 Low Voltage Circuit Tester is very fickle about its zero. Set it and a minute later it fails to return to zero. Set it again, and after using it a little, maybe it will and maybe it won't.

After exhaustive research, we found the window in this meter easily picks up a positive electrostatic charge from the fingers. In fact if you give it a good brisk rub with dry fingers on a dry day, the needle will jump up and point at three or four volts without a volt to be seen anywhere in the vicinity. Since your hand is now positively charged, it will cause the needle to drop back somewhat should you bring your hand back near the window of the meter. But the needle will continue to point at three volts or four volts or whatever it is pointing at, until you have discharged the window.

The explanation - just to prove that we know - is simply that a charged body will attract an uncharged body (the needle). Fact is that the window has a charge of a potential much greater than three or four volts, but who cares?

At any rate, discharge the window by touching (not rubbing) it with the fingers before zeroing the instrument. If the fingers are damp so much the better.

But as we say, check the zero on this instrument or you may be setting the closing

voltage of your cut-out relay at 7.1 volts instead of 6.5 volts mebbe.

Right, Half-Mast?

Lt. V.R.S.

Dear Lieutenant:

Right. But you can discharge the window even easier by simply blowing on it. After that adjust the meter if you find it necessary.

Half-Mast

Dear Half-Mast,

While instructing my men in Motor Transport, I said that the hood side-covers on our type trucks should never be removed to aid cooling facilities.

No soap-box orator ever came any closer to starting a riot than I did in making that statement. With my back to the wall, I dug up every training and maintenance manual available on this post, and I have yet to find a suitable explanation. The nearest thing was in a manual which simply stated that removal of the side-covers would corrupt the cooling system as it was intended by the manufacturers. The next question was, "Why?"

I still have been unable to pacify the men on this question, but they have all agreed to accept your explanation.

Lt. S.C.T., Jr.

Dear Lieutenant,

The answer is very simple. Because equal distribution of air around the engine is desired, side panels should never be removed from Army vehicles. If the side panels are removed, the cool air entering from the front is not properly directed around the engine. Result: hot spots.

If your motor overheats, investigate and find out what the trouble is; removing the side panels is not a remedy for overheating and may do more harm than good.

Half-Mast

DRIVER SELECTION AND TRAINING

Funny thing...for months we've been beating the drums for the new 'Standard Preventive Maintenance Schedules' (PM operations broken down into easy-to-follow lists) developed in the Maintenance Engineering Unit at Holabird. We've promised you'd see them in a sensational new manual called 'Motor Vehicle Inspections and Preventive Maintenance Servicing' soon to appear.

I But now all of a sudden what happens? In through the back door pops another manual TM 21-300, 'Driver Selection and Training,' edition of November 10, 1942.

And what's in it? Complete schedules for 1st echelon preventive maintenance on wheeled and half-track vehicles, as follows:

- After Operation (PMS #2)
- Before Operation (PMS #3)
- During Operation (PMS #4)
- At Halt (PMS #5)
- Weekly (PMS #6)

In addition, you'll find an outline of the schedules for 2nd-echelon monthly (1000-mile) PM operations, and semi-annual (6000-mile) PM operations.

Aside from the Preventive Maintenance Schedules TM 21-300 is a very useful publication in its own right. As its title indicates, it gives complete information on the selection and training of drivers.

It gives you the kind of tests you'll need (and some extras just in case you like to give tests) to determine which men have the kind of eye sight, reactions, aptitude, and intelligence that Army driving requires.

It includes a Snellen eyesight-testing chart that you can tear out and mount on the wall.

It contains the latest word on official Army hand signals.

It tells how to read maps, how to tie loads, how to

news from the - Training Front

change tires and wheels, how to use a winch, how to break-in a new vehicle, how to handle a trailer, how to use the various official 1st-echelon forms (such as operator's permit, trip ticket, and accident report), and how to drive both in and out of convoy.

Best of all, the whole business is organized into a course which an enterprising motor officer can use, either 'as is' or with modifications. Suggested lectures are written out word-for-word (though you'll probably prefer to use them only for ideas in working out your own).

Thoughtfully enough, the whole manual is keyed to the driver-training aids already available - notably, the Driver's Manual (TM 10-460), the vehicle maintenance manuals, and the driver-training films (TF 11-551 to 11-559).

It's obtainable from the Adjutant General's Office through the local service commands.

P.S. - Don't get us wrong about 'Motor Vehicle Inspections and Preventive Maintenance Servicing' - the manual we were plugging in the first place. It's still on the way, though its TM number has been changed from 10-545 to 9-2810. When it finally appears, it will contain complete 2nd-echelon preventive maintenance, as well as 1st. It'll also include procedures for technical, command, and spot-check inspections.

TRAINING FILMS AND FILM STRIPS

So you wanna see moom pittchez? Training films for classroom use - to drive technical subjects into your

haid. Only you don't know where to get the films, the projectors, or the screens. You don't even know if you're entitled to see them. Well, your days of worrying and wondering are over. Here's why.

A 'Guide to the Use of Training Films and Film Strips for Ordnance Troops (Revised)' has been issued by the Training Doctrine branch, Military Training Division, Office of the Chief of Ordnance, dated December 7, 1942.

This guide lists the films and film strips available, tells what equipment is needed, how to get the films and strips and how to use them for training purposes. Let's break it down for you step by step.

LISTS OF TRAINING FILMS AND STRIPS

You'll find FM 21-6 (July 1, 1942), 'List of Publications for Training - Including Films and Film Strips,' a mighty handy little book to have around. It gives the Serial Number, year of release, number of reels and running time, as well as a brief description of the subject matter. Other lists are issued from time to time by: 1) Office of the Chief Signal Officer, Army Pictorial Service, Washington, D.C., 2) Signal Property Officer of the Service Command, 3) Training Doctrine Branch, Military Division, Office of the Chief of Ordnance, Washington, D.C.

PROJECTION EQUIPMENT NEEDED

First of all, for moom pittchez you need projection equipment. If you have a 35mm sound projector as part of your camp theater equipment, well and good. If not, you can use a portable 16mm pro-

jector. A 35mm film-strip projector is also available for showing film strips. For use when records are played with film strips, you'll need a reproducer, Signal Corps designation PH 364.

The basis of issue for both projectors and reproducers is one of each to a Battalion Headquarters, procured from the Signal Property Officer of the particular post, camp or station involved.

HOW TO GET TRAINING FILM AND FILM STRIPS

Now that you've got the projection equipment, how do you get the films and film strips for showing?

Make a request of the

Signal Property Officer on your post, camp, or station who will indicate the nearest training film library. Training film sub-libraries supply films and film strips at most troop-training centers. Where there is no local sub-library, write to the Signal Corps Property Officer of your Service Command or Overseas Department. DO NOT send your requests for films to the Chief of Ordnance.

USE OF PROJECTION EQUIPMENT

When your equipment shows up, read and follow the instructions on its adjustment, operation and maintenance. Protect your projector from moisture, and oil it when

necessary, being careful to keep oil away from film. Also keep dirt away from sprocket teeth, aperture plates and lenses. Don't get funny and run films backwards, and don't stop the projector just to keep looking at any particular frame that happens to tickle your fancy (the heat from the light in the projector will start the film burning).

USE OF TRAINING FILMS AND FILM STRIPS

To show your films, use your camp theater, especially if it has a 35mm projector. If there is no camp theater, use the recreation room, mess hall, or any other room having curtains and power outlet. Good ventilation is slightly essential, especially for a darkened room.

A good substitute for the G.I. screen can be made by painting fibre board with three coats of flat white (not glossy) paint. Even though you might have to enforce it with a baseball bat, seat your audience six feet back from the screen. The bottom of the picture should be one foot above the eye level of the seated audience.

Check your lenses to make sure they're clean, and keep an extra lamp handy. You'll need two assistants; one for projections, one to regulate room temperature and ventilation. Place the loudspeaker near the screen on a chair or table, and make a few sound tests before showing the film - sound shouldn't be too loud. Keep a few paper clips around to mend broken film. Naturally, you will return the equipment and films in good condition when you're through with them.

One great advantage of using training films is that large scale demonstrations can be shown without having to move troops to demonstration areas. Another is that films show the operation of usually hidden mechanical parts.

When accompanying the film strips with a lecture,

Drivers' & Mechanics' Award

That "Motor Vehicle Driver and Mechanic Award" (see Fig.) which so proudly we hailed back in August, is now, according to the front office, ready for delivery to the depots. (Authorized by War Dep't Circular #248, July 28, 1942.) You can start submitting your requisitions (just like any other requisitions) for them now.

The Award, which is worn on the left chest below any medals or service ribbons, will be awarded to qualified drivers and mechanics with the appropriate bar:

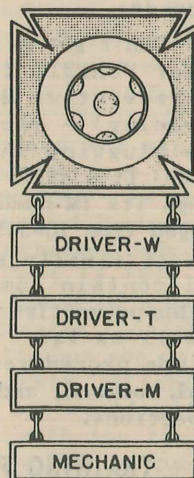
- "Driver-W" for wheeled vehicles,
- "Driver-T" for track or half-track vehicles,
- "Driver-M" for motorcycle,
- "Mechanic" for automotive or allied trade mechanic.

To qualify for the award, a driver must have passed the aptitude and standard driver's tests (in FM 25-10 for drivers of wheeled vehicles, FM 17-5 for track-laying vehicles); performed his duties for at least three months without accidents or traffic violations and with a rating of excellent, and be assigned to a vehicle as a driver or assistant driver. Mechanics must have completed a standard mechanic's course with a rating of skilled or have enough past experience to be rated skilled, and must have worked as a 2nd echelon or higher mechanic for 3 months with a rating of excellent.

The award of the new badge will be made by the CO of a regiment, separate battalion, or separate organization upon the recommendation of the immediate organization commander.

As we once said, it's not the red hat with the striped ostrich feathers which we originally recommended as a Driver's and Mechanic's award, but it sure shows the front office is thinking in the right direction.

Wear it proudly lads.



don't read the printing when it is clearly visible...most men can read, the others will just nod like they understand, anyway. Allow plenty of time for each picture. Preview film strips before using. You don't need a dark room for this - a shadow box with a sloping white top and black sides.

Two good things about strip film: it gives large illustrations of small objects and single frames may be held fixed for any length of time, for discussion.

INSTRUCTING WITH TRAINING FILMS

General - Films are intended to supplement lectures, discussions and manuals, not to take the place of them. Use them at the right place in the training schedule - not as fillers-in. Twenty minutes is the best length to show films - if necessary, you can go to a half-hour. Occasionally it's a good idea to show a film over again, immediately after it's first running.

Before you decide on showing a picture, see it yourself, and use only those films which are suited to the knowledge and experience of the men seeing them. Be sure to assemble and test all equipment before using it.

Showing the film - Before you flash the title on the screen, tell the men what it's about, why it's important, and above all, stress its battle application. Link the film closely with what the men have been doing and what they are going to do; tell them what important points in the picture they should watch for closely. Not that it'll do any good, but you might warn them of a test on the content of the film after the showing.

After showing the film - Give them either an oral or written test (see, we weren't kidding in the sentence above) on the important points covered in the film. See par. 26, FM 21-6 (July 1, 1942) for suggested method of testing.

Explain the connection between what the film has just shown and what the men are going to do in the future. Allow some time for a free-for-all discussion.

Advantages of using films - Films show only what is important. Approved methods are performed by experts. Films make it possible for the easy repetition of demonstrations, especially those which require large numbers of troops. Films offer the

same instruction to large numbers of troops at the same time, and often provide a quick review of a subject. Two don'ts: 1) don't show several films without interruption, and 2) don't show films on different subjects during the same period.

Use your training films often - everybody likes movies. And to pack 'em in on a dull Wednesday matinee, give away dishes.

Hercules Waterpump

(See back cover)

You can't teach a new grease-ball old tricks. Or can you?

While you're mulling over the answer, we'd like to try by pointing out (as mentioned on the back cover) that even though the odometer indicates only 1,000 miles, the engine may have run anywhere from 7,000 to 10,000 miles, due to the difference in the turning ratio between the wheels and the engine (in the lower gears required by military operation.)

So it takes intelligent judgment on the part of the driver to tell when any particular unit needs a "1000-mile" preventive-maintenance servicing.

As we also pointed out, one typical place where intelligent judgment is needed, is in the lubrication of the Hercules engine waterpump.

There are two grease cups on the Hercules waterpump. Each holds one ounce of waterproof pump grease. The lube chart in the maintenance manual calls for filling the cups with grease every 100 miles and adds the note, "Turn down cups slightly from time to time," that is, between lubricating periods.

But remember, the 100 miles referred to are odometer miles, not engine miles. Although your wheels have gone 100 miles, your waterpump shaft may easily have traveled anywhere from 350 to 500 miles during this same period.

For this reason, good logic would suggest that the waterpump lubricant be checked about every 30 miles as registered on the

odometer. In other words, check the lubricant in the waterpump grease cups before and after every operation.

As the case of the Hercules waterpump indicates, the proper way to read your odometer is with a grain of salt.

* * *

While we're on the subject of waterpumps, we might as well mention that this particular pump on the Hercules engine is one with adjustable packing nuts and packing 'glands.' The packing nuts squeeze a sleeve or 'gland' against the packing and the packing prevents leaks along the waterpump shaft.

But packing glands are only human after all, and are liable, under certain circumstances, to drool.

It's the business of the driver to watch for these drools - or leaks - and stop them by tightening down the packing nuts.

Tighten the nuts 1/4 turn at a time, until the leak stops. then start the motor. If the nuts heat up quickly, the packing is too tight against the shaft and is liable to score the shaft. Loosen the nuts a little and try again.

If finally you have to jam the nuts too tight to stop the leak, give up - the packing is either worn out or the shaft is scored. In that case, you need a mechanic. He'll inspect the packing and examine the shaft.

No charge for the extra information - we just thought we'd throw it in for good measure.

RADIATOR CAPS

(Continued from page 329)

the cooling system, a vacuum should develop, the intake valve in the radiator cap opens up and allows atmosphere to be drawn in.

That's all there is to it. However, in order for the pressure-control cap to do its job, it must fit perfectly against the seal in the radiator filler neck. Inspect this seal once in a while, and if it needs changing, change it. Don't be bashful.

And remember what we said about radiator caps for Dodge: carry two kinds - Part No. 923006 for the earlier 3/4-tons, and Part No. 927692 for all other Dodge vehicles.

OLIVE DRAB BLUES

(Continued from Page 338)

Funny thing about paint: every new batch you mix up, comes out a slightly different shade. Nobody knows why, but since it does, the best way is to mix up enough paint in any one batch to take care of an entire vehicle.

Answering the complaint of those who say they get a streaky, mottled effect in repainting over an old painted surface (in good condition), the Chemistry Dep't strongly advises - as a matter of fact, they insist - that a coat of 'Refinishing Primer' (see box for Fed. Stock No.) be applied to the old painted surface before lustreless olive-drab is put on. The old O.D. paint is porous and rough and won't let the new paint flow on easily. The result is a paint job liberally mottled and streaked.

To close the painting lesson for today, we'd like to tell you of a little incident - or rather series of incidents - that happened in a certain shop whose name is non-essential. Seems that complaints were continually coming in from non-essential to the effect that there was something in the Army's paints that was making the painters

sick. Painters were reported dropping like flies.

When enough painters had dropped to make the situation urgent, a master mind was dispatched from the Holabird Chemistry Dep't to see what the hell was going on.

What he found was that the paint shop of this certain camp was a small closed building well-protected against the entry of fresh air. The effect on painters working in this building was the same as the effect of rich, rare Havana perfectos on ambitious small boys.

Moral: Ventilate your paint shop - not only to protect painters but also so that the paint will dry properly on your trucks. Besides keeping it well-ventilated, keep your paint shop clean. There's a definite danger of fire by spontaneous combustion in scraps of paint-soaked rags or in accumulations of spray dust in nooks and crannies (see box for Fed. Stock Nos.).

SPECIAL OFFER

The Holabird Chemistry Dep't, which was largely responsible for the development of a good many of the Army's paints considers itself admirably equipped to answer any and all questions on paints and their application. Anybody who would like to argue this point is invited to submit questions.

RUMORS

(Continued from page 323)

You may have been a bit confused by a couple of directives that slipped out in December. One is 'Change 1' to AR 850-15, dated December 17th. It omits commanding officers at Ports of Embarkation from the list of those responsible for 3rd-echelon maintenance.

Then came the second directive:

War Dep't Circular 418, dated December 24. This circular defines 'Motor Transport Responsibilities' and tells who is responsible for doing what. And what to our wondering

eyes did appear in this circular but a paragraph placing upon the shoulders of Port Commanders, 'Operation of, and 1st, 2nd and 3rd echelon maintenance of military motor vehicles assigned to Ports of Embarkation, staging areas and reconignment depots.'

In this case, if the C.O. of P.O.E. is to follow the letter of the law, he will both do and not do 3rd echelon maintenance.

Well, we don't have any decision for you at the moment - we've just brought the little discrepancy to the attention of the responsible agency in Washington who thanked us kindly and said:

'Tsk, tsk.'

We'll let you know later.

* * *

LUBE LEVEL

(Continued from page 319)

saw just how much oil will cling to the gears, by cutting the cover plate of a differential in half (Figs. 1 and 2).

Figure 1 shows the oil drained neatly down off the gears. Figure 2 shows the oil clinging to the gears after they've been turned two or three revolutions. The level has dropped more than an inch.

This is also a good reason why you should never move your truck before checking the oil in the morning. The oil will climb up on the gears, lower the level and give you a false reading.

But as we see it now, and as we said last month, the biggest source of trouble with the level of lube in gear cases, is the guys who check it. If they'll only realize that the oil in the gear cases of a truck that's been in operation - especially hard operation in all-wheel drive - expands 'way over the original volume, we'll all live happily ever after.

That is, until the next big argument comes along.

Meanwhile, the password is, 'Plug level to 1/2 inch below, is the proper operating range for oil in gear cases.'

News Flashes

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

Musts for field maintenance outfits are three new maintenance publications officially known as Training Circular #2, (1-6-43); Ordnance Field Service Bulletin #6-11, (12-15-43); and War Department Circular #13, (1-8-43); and their titles, in the same order, are: "Desert Operation of Motor Vehicles," "Cold weather Lubrication and Service of Combat and Automotive Equipment," and "Automotive Disability Report."

* * *

Watch for Ordnance Field Service Technical Bulletin (OFSTB) 800-2 on the General Officers' Flag Staff.

1/4-TON TRAILER LIGHT SOCKET

The "Trailer Lighting Cable and Receptacle," that will enable you to hook up the tail lights on the 1/4-ton trailer when it's being towed by the 1/4-ton jeep, is about ready for issue.

Together with the "Safety Chain Eye Bolt," it will shortly be available from Ft. Wayne Motor Supply Depot. Ordnance Field Service Modification Work Order G503-W-2 is now in preparation to tell you how to put the receptacle and safety chain on those of your jeeps not so equipped.

Although we can't promise you definitely that the material is ready at this very moment, you might as well start sending your requisition in to Ft. Wayne. Order by:

Federal Stock Number 8-K-400, "Kits, Trailer Lighting Cable, Receptacle, and Safety-Chain Eye Bolt."

Pending revision of last issue (July 1, 1942), Training Circular 98 dated December 1,

1942 lists all publications to that date which do not appear in FM 21-6.

* * *

If you are one of the people sending reports on vehicle registrations to Washington instead of Tank and Automotive Center, Detroit, then you need to straighten yourself out by reading Change #1, Nov. 3, 1942 of AR 850-10.

* * *

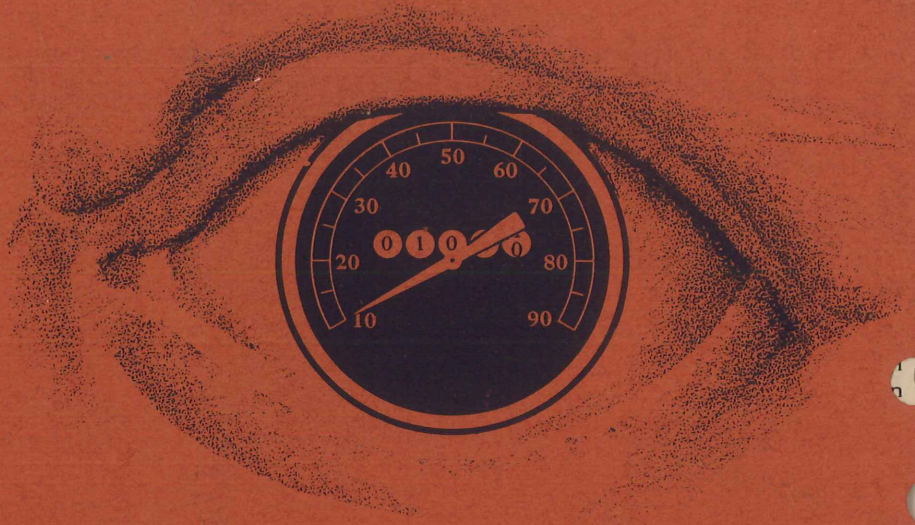
Washington, January 15, 1943. War Department Circular No. 21 lists your rights, privileges, authority, and responsibilities as a commanding officer outside the continental United States.

* * *

War Department Training Circular #6, released pending revision of FM 24-5, gives complete instructions for correct adjustment of radio stations to their respective assigned frequencies. The information is primarily intended for field radio operations.

* * *

As this issue goes to press we have late word from Major Kenneth R. Holmes, Chief of the Training Doctrine Branch, Military Training Division, that a new field manual, FM 21-7 dealing exclusively with films will be issued shortly. Similar in scope and purpose to the existing Field Manual 21-6, the new book will be kept up to date by listings in War Department Circulars. Major Holmes also sent us the second of a series of supplements that are being issued every month to keep your Guide to the use of Training Films up to date. The Training Doctrine Branch, Military Training Division, Office of the Chief of Ordnance, Washington, D. C., will welcome your correspondence in reference to the guide or its supplement.



IT'S A LIE !

You can't always believe your odometer!

Even though it indicates that your *wheels* have gone 1,000 miles, your engine has actually traveled anywhere from 1,000 miles (in high gear) up to 7,000 or 10,000 miles (in military operation).

Every greaseball knows that since military vehicles run in a gear lower than high most of the time, it follows naturally that the engine is turning over in proportion to the ratio of the lower gears. For this reason your *engine* travels 7 *times* as far in high-range low gear, as it does in high-range, high gear!

And every greaseball worthy of the name knows that it's engine *wear* that determines when certain lubrication and other Preventive Maintenance functions must take place.

If you're looking for a good example of why intelligent judgment is needed, you'll find it inside in the article on the adjustment procedure of the Hercules water pump.

Keep an eye on your odometer...it's a nice gadget to have...but remember, it doesn't tell the whole truth about your *engine!*