

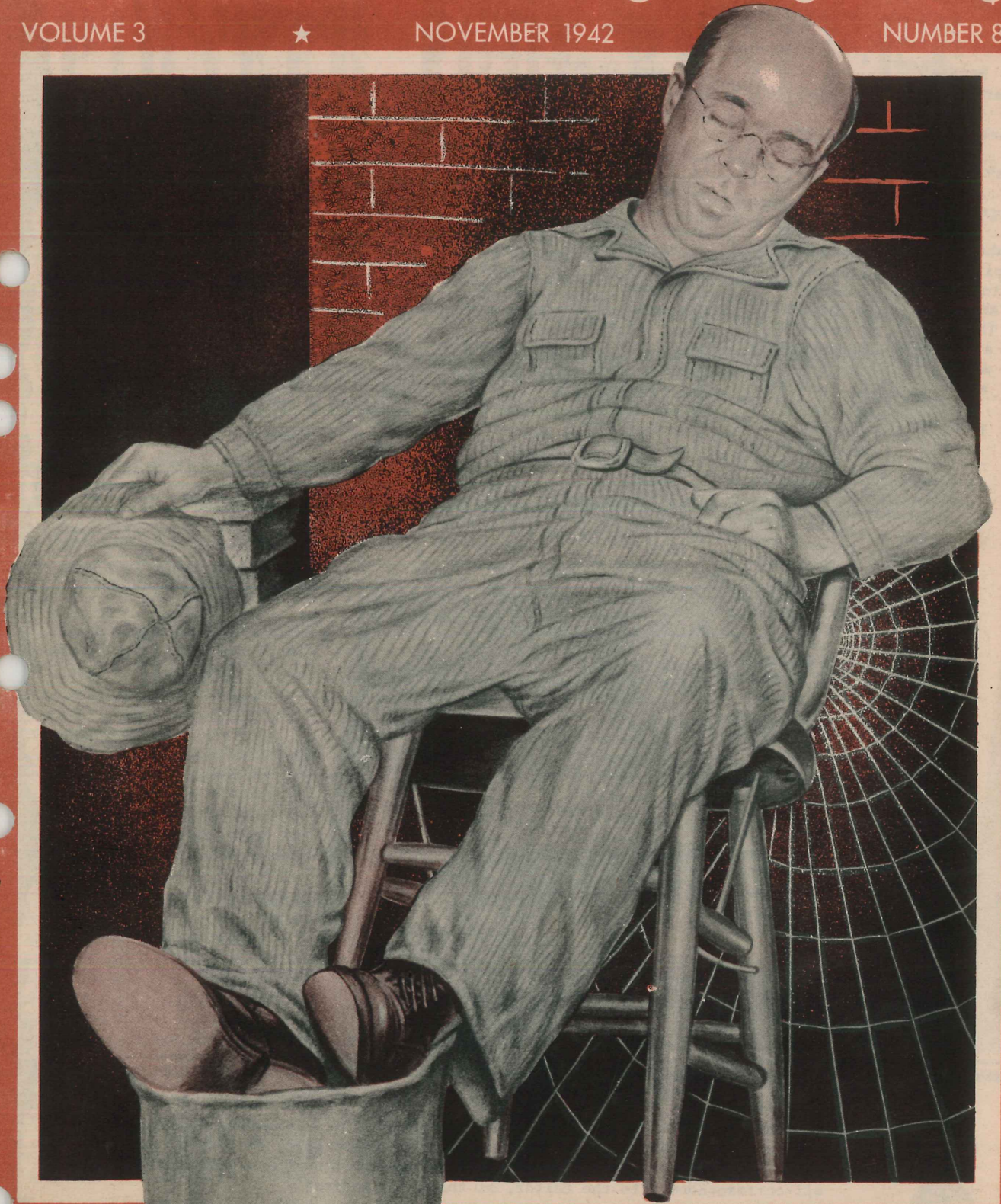
# ARMY MOTORS

VOLUME 3



NOVEMBER 1942

NUMBER 8



THE *First* 4th ECHELON MECHANIC  
TO GO OUT OF BUSINESS (see back cover)

# Steering Wheel

We've heard a lot of opinions in our day, but one we heard recently beats them all.

A man said we've got too many virgins in Motor Transport.

A first impulse was to blush deeply, and say, tsk, tsk, tsk.

But the way the man explained it, we're inclined to agree with him.

There's too many virgins, he said, too many drivers who've never used or had any experience with the various pieces of vehicle equipment on their trucks. The pioneer tools, for instance, the fire extinguisher, the pintle and the little wagon that hitches onto it - the trailer. The best driver in the world who's been driving a bobtail all his life becomes mostly thumbs when he tries to maneuver a trailer, semi-trailer, or a gun, in a small space.

The winch - how many drivers haven't had a minute's practice in the use of the winch since the time they took an examination for a driver's permit?

The blackout-driving equipment - blackout driving in a combat zone is a ticklish job. How many drivers have had enough rehearsal to develop the sixth sense and keen coordination it calls for?

And a simple thing like changing wheels and tires - how many drivers can change them as quickly and efficiently as combat conditions require? (We're still groaning over the reports of guys running big trucks and half tracks over combat wheels to knock the beads loose). A convoy winding over the wide-open North African desert bearing food and ammunition for the front lines can't stop and wait for a truck to have a wheel replaced or a tire changed. A lonely truck on the endless desert is like a small boat on the open sea.

Which brings us to the thought, how many drivers can navigate by the stars or compass? And what about map reading?

There'll soon be a Decontaminator, for neutralizing poison gases, on every truck. How many drivers will be drilled in the use of it? A first-aid kit is coming too - how many drivers will investigate the contents for the first time when somebody's blood is spilling freely?

Pardon us for waxing gruesome - but isn't it time some of us learned the facts of life about the trimmings on our trucks?

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ARMY MOTORS is published monthly in the interest of Preventive Maintenance by the Maintenance Engineering Unit\*, Holabird Ordnance Base, 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.

# An Improved PIONEER TOOL BRACKET



*Easier to mount, easier to work with,  
it promises to banish the headaches of  
the old bracket.*

**L**et the welkin ring and joy be unconfined — a new pioneer tool bracket (right) has just been perfected and will shortly take the place of the old bracket on vehicles now coming off production lines.

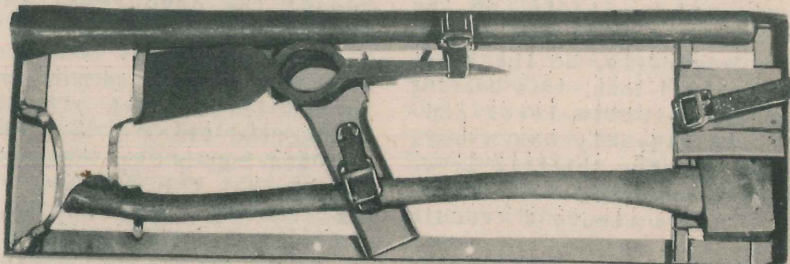
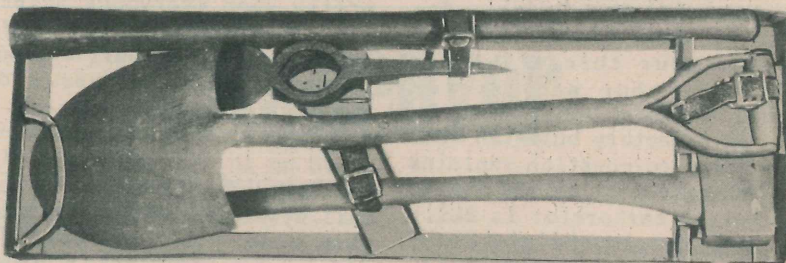
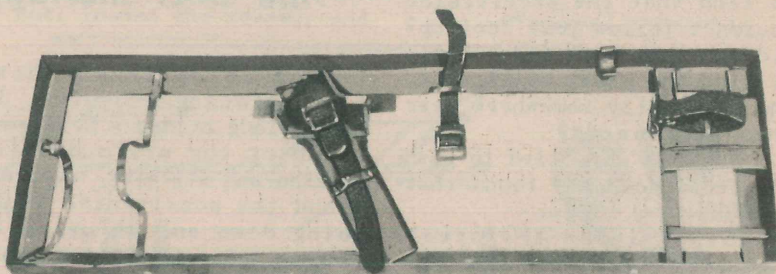
Developed to settle the slight dissatisfaction (haw!) with the old bracket, the new pioneer-tool bracket fairly sparkles with new improvements and advantages.

It's easier to mount on trucks, it allows each of the three tools to be dismantled separately, it uses the web straps that replaced the old leather straps some time ago, and it's smaller and lighter.

It won't, however, be furnished to the field to replace the old bracket already on vehicles. Our advice to those who are dissatisfied with the old bracket is to shop around the Contributions Department (page 215, October Army Motors) and select any one of the good bracket-reinforcement ideas described there.

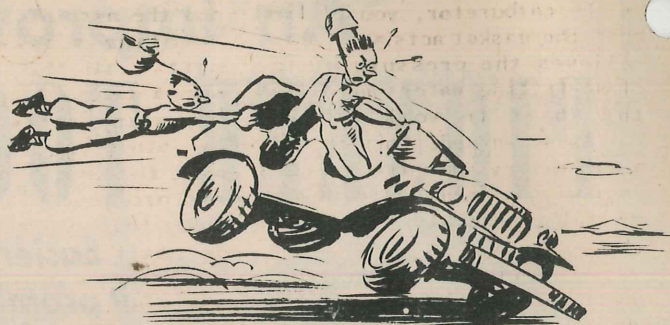
The new pioneer tool bracket is lighter by 5 pounds than the old bracket which,

(Continued on page 252)



*Top - the new pioneer tool bracket without tools.  
Center - the new pioneer tool bracket with tools.  
Bottom - because each tool is held by its own strap,  
each may be removed without disturbing the others.*

# Sticking Throttle Lever



While out driving your 3/4-ton Dodge recently, have you lifted your foot from the accelerator only to find that the accelerator wouldn't follow your foot up? Did you look down frantically to find the pedal still resting peacefully somewhere near the floorboards?

Or maybe you tried to push the pedal down and found that it wouldn't budge.

Blame it on the steel shortage — the steel shortage stole a few, little pieces of strategic metal from the Zenith, 29-series carburetor on your 3/4-ton Dodge. For lack of those little hunks of steel, your throttle lever sticks — your accelerator pedal doesn't behave.

As a factory bulletin from the Fargo corporation explains it, the governor on the Zenith 29-series carburetor is built as one piece with the carburetor, so the throttle arm — not being attached solidly to the throttle valve shaft — must ride solo, all by itself, on its own bearing.

Originally, on the first batch of 3/4-tons, this bearing in the throttle-lever-and-driver assembly was a ball bearing. The throttle lever worked smoothly and nobody reported a minute's trouble with it.

However, a monkey wrench was thrown into the works when the steel shortage came along and the factory couldn't get balls for the bearings. The only thing left to do was cross fingers, make a sign with a rabbit's foot and allow the arm to turn on a plain bearing.

**If the accelerator pedal on your 3/4-ton has been acting up lately, blame it on the steel shortage.**

But in spite of these precautionary measures, it wasn't long before a howl went up about the plain bearing seizing and sticking. Drivers found the accelerator pedal going down and refusing to come up. Forcing matters only bent the lever.

These facts came to the attention of the factory and pretty soon everybody agreed that the plain bearing would never replace the ball bearing on the throttle-lever-and-driver assembly.

The steel shortage having eased up in the meanwhile, it was decided to go back to the ball bearing. No sooner said than done. And to identify all carburetors with ball bearings from then on, the identification disc at the top of the carburetor was stamped with the letter 'B'.

Of course this couldn't affect the original carburetors in the first batch off the production lines — they had ball bearings but no identifying stamp. The only way to tell whether they are ball bearing equipped, is to take down the lever-and-driver assembly and look inside for the balls.

For vehicles in the field having carburetors with the unsatisfactory plain bearings in the throttle-lever-and-driver assembly, a replacement package was made up. We'll

tell you in a minute how to go about ordering it, and how to determine exactly which of your vehicles need it.

But in the meantime, you may find yourself in the middle of Urkutsk with a sticking throttle lever. And with a sticking throttle lever you are stuck — you cannot go places. So perhaps we had better let you in on a little secret — what they call a 'temporary expedient' — to help you get out of the middle of Urkutsk when a sticking throttle lever crops up on your 3/4-ton Dodge. We warn you now it's strictly a hammer-and-tongs temporary operation, and will not take the place of the replacement assembly you're to order.

Here it is: Remove the linkage from the lever, remove the mounting screws and take off the lever-and-driver assembly. Now you will be able to look inside and see if the unit is ball-bearing equipped. This — aside from the letter 'B' stamped on the very latest carburetors — remember, is the only way you can tell. Having made sure that there are no balls sandwiched between the two welded wafers around the lever shaft you break the tack welds holding the two wafers — or 'mounting plates' — together, and cut and insert a gasket between them.

When you return the unit to the carburetor, you'll find that the gasket acts as a shim, relieves the pressure of the close-fitting wafers and allows the shaft to work freely.

As we warned, this is only a temporary expedient - get your replacement assembly as quickly as possible and install it.

Answering the question, which vehicles require the replacement unit, remember we said that the first batch of vehicles off the production lines had ball bearings. And now that ball bearings are available, all the latest 3/4-tons have the ball bearings. It's those in-between vehicles that require the replacement. These vehicles have engine serial numbers between T-214-9000 and T-214-50672.

Check your 3/4-tons - if they have engine serial numbers that fall between the numbers above, if they don't have the telltale 'B' stamped on the carburetor, and if a looksee on the inside reveals no ball bearings, you can go ahead and order your 'Ball-Bearing-Mounted, Carburetor-Throttle-Lever-and-Driver Assembly', Part No. 925490, from the Fargo Motor Corporation, 7900 Joseph Campau, Detroit, Michigan. It'll be sent gratis, transportation prepaid. List your vehicles by USA Registration No. and by engine serial numbers; also list the name of your organization and any shipping instructions necessary.

You'll have to return your plain-bearing-mounted throttle-lever-and-driver assemblies to 'Dodge Brothers Corporation, Service Claims Dept., 7900 Jos. Campau, Detroit, Michigan.'

When you get your replacement units, install them this way: remove the linkage from the lever - the throttle will then move to the wide-open position at which point the idle-adjusting screw is away from the long-headed, mounting screw. Note that it's in the lower hole.

Remove the mounting screws and the assembly. Install the mounting screws in the new unit with the long-headed screw contacting the idle-adjusting screw.

Start the mounting screws with the long-headed screw in its original position in the lower hole and with the gasket in position.

Move the throttle lever to the wide-open position, push the assembly into contact with the carburetor body and tighten the screws.

Check its operation by closing the throttle and noting whether its springs open. If not, loosen the screws, and

reposition it as described in the preceding paragraph.

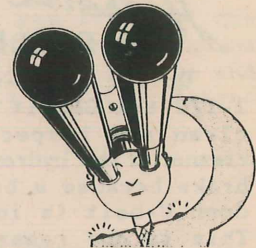
Finally, lightly center-punch the boss above the attaching stud - this mark will serve to tell whoever else might look at your carburetor, that the replacement has already been made.

Since we both agree that there's no vehicle like a dependable vehicle, why don't you make a date to check the carburetors of your 3/4-ton Dodges tomorrow and get those orders in quickly, like the fast-acting, keen-brained soldier that you are.

(Yawn.)

*Walter Thee*

# Colonel Thee Observes A Maneuver



When Colonel Walter Thee observes a maneuver, it stays observed - and shortly afterward, here comes Colonel Thee with all the horrible details. But we don't mind, horrible details are just what we need in our business.

At the Second Maneuver Area covering a period from August 27th to September 10th, this year, the good Colonel finds that trucks sent to the third and fourth-echelon shops suffered most from the following complaints in the following percentages:

1- Grease leaks at front and rear wheel bearings, transfer cases, and differential cover plates - 75%.

2- Mechanical failures due to wheel-bearing and universal-joint seals broken

or universal joints run dry - 20%.

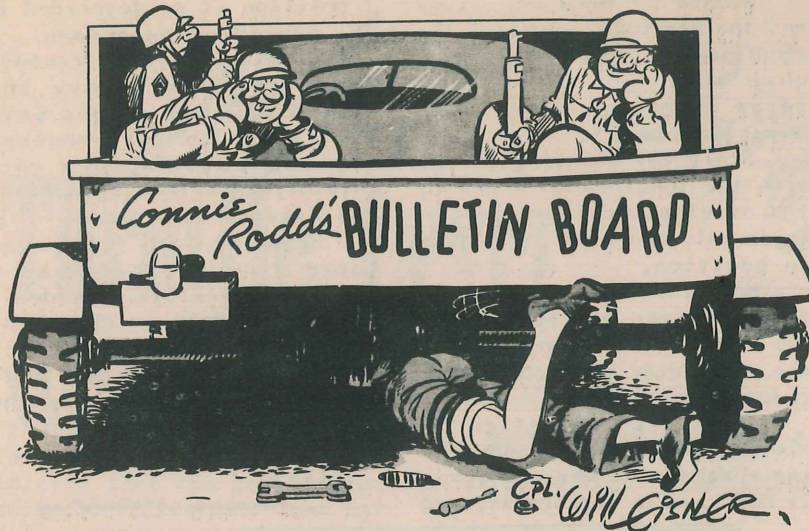
3- Accidents 1-1/2%.

4- Miscellaneous - whatever per cent was left over - figure it out for yourself.

With these facts and figures before us, it is only logical to assume that the same troubles will turn up in similar percentages in future maneuvers or actual combat. This being true, Colonel Thee presents preventive and repair suggestions - guaranteed remedies which point to the day when maybe only the 1-1/2% accidents figure and the unknown miscellaneous per cent will be the only thing to keep the repair units busy.

Here are the suggestions: To keep expanding lube from being forced through grease

(Continued on page 250)



## Hydrovac AIR CLEANER

On the short-wheelbase, 2-1/2 ton GMC it's hard to clean and inspect the air cleaner of the hydrovac booster brake because a body, hold-down U-bolt is in the way. This is one reason why air cleaners on the hydrovac have been so sadly neglected. (Another reason is that a lot of people never knew the hydrovac had an air cleaner).

Anyway to correct this condition, to make it easy to get to the hydrovac air-cleaner, GMC is relocating the U-bolt - moving it back about nine inches to the rear - on vehicles coming off production lines.

But that won't help your short-wheelbase, 2-1/2-ton GM's in the field. You'll have to relocate that U-bolt yourself. It's not hard. It doesn't require any drilling because the bolt goes around the chassis frame and body sub-frame - just move it back and be careful not to damage the rear-brake, hydraulic lines. These are joined to a 'T' just back of the original position of the bolt. The new position should be back of the hydraulic line 'T' to prevent interference and permit the line to be disconnected when necessary.

You can go ahead and make this repair with the blessing of the Ordnance Tank-Automotive Center in Detroit who asked us to pass it on to you.

## Celluloid WINDOWS

The old timers thought it was a lost science, but it's back with us again, so we may as well keep up with the new kinks being developed. It's canvas top and curtain work we're talking about, and what with all the open vehicles hitting - or about to hit - the field, all we can relearn about the old subject of repairing canvas tops and side curtains won't be a bit too much or too soon.

To those whose memory carries them back to the time when it was a yearly practice to take the family bus down to the top man, and have him replace the broken or discolored celluloid windows in the side curtains, a little short-cut we've dug up will come like a breath from the past. We got it from the instructors over in the Specialist Trades School at Holabird.

It seems that in sewing celluloid inserts to side curtains, it has been the

practice for 10 these many years, to use two parallel seams around the inserts. Nobody actually has anything against this practice of using two seams, other than the fact that it takes longer to install the new celluloid insert and remove the old one. Furthermore, try to simplify the operation by using one seam -- and the celluloid cracks out. It's for this reason, that the use of the two seams has come down to us like the sins visited even unto the seventh son of the seventh son

But nothing daunted, the instructors at Holabird began an experiment, and today have a scheme perfected so that they can install windows in side curtains with the use of one seam - and quickly too. Here's what they do: They stick several strips of 1-inch fabric (not paper) masking tape loosely to a board. Then they spray it with OD paint.



When dry, they remove the tape from the board, fold it all around the edge of the celluloid as a binder, and then sew the insert to the curtain with only one seam - the one seam following the center of the folded tape binder, so that the thread passes through the tape, celluloid and curtain.

The tape gives the necessary reinforcement and the insert will not crack out.

Wish my daddy had known this back in the '20s.

## Lube CONVERSION

No doubt everyone is by now thoroughly familiar with the lubricant bible, TC #32, no doubt. And from this familiarity has sprung the knowledge that here and there it is possible to find a unit on a certain truck, that can not use the specific lubricant pointed out by the bible. For instance if your GMC distributor has a grease cup on it, you know you will have to be a magician to put engine oil in and keep it in like the TC says. What to do about it? That's where our lubricant chart (below) comes in.

You have seen the implausibility of putting engine oil in a grease cup - so dutifully take out your maintenance manual to see what type of lubricant the factory recommends for the distributor. It tells you to use either this or that grease of a number you will not find on your grease cans. So you use our table.

The maintenance manual says use Army #2 in winter, and Army #3 in summer. Look in the 'Old Designations' column of the conversion chart - you'll find these old designations superseded by 'New Designations': "CG (chassis grease) #1 and WB #2." You have these greases on hand and you know they're right for the job.

So keep this little chart over your heart - and refer to it when a question of oil or grease conversion arises

to dismay you.

It's rumored to be a fact that War Department Lubrication Guides for Ordnance Transport equipment have been started, and guides for some models will be available in approximately six weeks. They will specify the Army standard lubrication point.

## G.M.C. PUSH RODS

A GMC field representative says he's found that a number of mechanics have made the mistake of trying to make the push rods of the GMC 256 engine fit the 270 engine - and vice versa.

Don't you try it - the push rods of these two engines are of different lengths and the sockets are of different sizes.

### LUBE CONVERSION CHART

LUBRICANTS	OLD DESIGNATIONS	NEW DESIGNATIONS
Oil, Engine, all purpose U.S. Army Spec. 2-104A	10, 10W, 20 SAE, 1042 Navy Symbol 3050, 2110, 1047	OE #10
	20, 30, 40 SAE Navy Symbol 1065, 3050, 3065 3080, 1080	OE #30
	50, 60, 70 SAE Navy Symbol 3100, 1100, 3120 1120, 1150	OE #50
Lubricant, Gear, Universal Federal Spec. VVL-761	Straight mineral oil EP Hypoid 80, 90, 140, 250 SAE	GO 80 below 32°F GO 90 above 32°F
Grease general purpose #0 USA Spec. 2-106 #1 USA Spec. 2-107	#0, 1, 2, Grease, graphite grease, NLGI 0, 1, 2 Petrolatum	CG #0 below 32°F CG #1 above 32°F
Grease general purpose USA 2-108 Grease wheel bearing Heavy Duty USA 2-110	Wheel Bearing Grease #3 NLGI	WB #2 Note: use WB #3 where leakage is experienced at high temperatures
Grease, water pump USA Spec. 2-109	Waterproof grease Water pump grease NLGI #4	WP #4

FIGURE 1

**KEY**  
 WB - Wheel Bearing Grease  
 CG - Chassis Grease  
 GO - Gear Oil  
 OE - Oil Engine  
 WP - Water Pump Grease  
 NLGI - National Lubricating Grease Institute

## Warm-Up

They never take an airplane off the ground without first giving it plenty of warm-up. And those fighters stationed at the hidden fields of England don't just hop off the ground at the sound of the alarm--they're intermittently revved up to keep warm.

The same goes for another air-cooled engine you're familiar with-- the motorcycle engine...especially the Model 841, shaft-drive-motorcycle engine which gets exceptional cooling since its cylinders are more directly exposed to the air stream.

Lack of sufficient warm-up these cold days leads to quick piston failure due to 'cold scuffing.' Cold scuffing is the result of putting a load on the engine before it has been thoroughly warmed-up.

Cold scuffing first appears on a piston in the form of small scratch marks. Small bits of aluminum roll up from the scratch marks and continue to build up until the piston seizes and the cylinder walls score. After that, goodbye.

But the danger of cold scuffing can be safely bypassed if the engine is allowed to work up a little heat in its bones before popping off down the road. You can tell when the cylinders are warm enough by feeling the cylinder

fins on the side of the cylinder farthest away from the exhaust port. After a while you'll know without feeling.

We don't mean to recommend a long idling period before taking off on a cycle-- that's bad too, since the motorcycle is air-cooled and needs the flow of air over its fins.

Just give it a reasonable warm-up.

## Rear Chain OILERS

Talking about motorcycles, Sgt. L. L. Phillips of the Holabird Motorcycle School trotted in here the other day with a tip on the rear-chain oilers of Harley-Davidson motorcycles.

Seems that in processing 300 new Harley 42 WLA's, just received at the school, it was discovered that the majority of the rear-chain oilers do not work properly. The trouble seems to come from trapped air in the line.

The line must be bled.

Bleed it by unscrewing the oiler adjusting screw about half way out and, with the motor running, allow oil to run out until no air bubbles show-- then turn the screw down to the tight position. If oil still doesn't drop out at the proper intervals, add a small shim to the washers under the head of the screw. If the oil runs too freely, use a smaller shim under the head of the screw.

## Storina VEHICLES

When storing vehicles for any considerable length of time, grease the constant-velocity, universal-joint housings on the front axle so they won't rust.

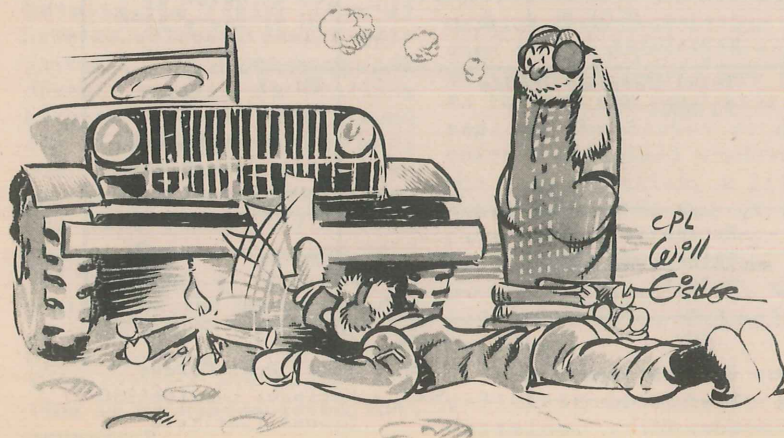
Also grease the winch power-take off slide shaft (shifter shaft) so it won't become rust-pitted and later ruin its seal. A little bit of brake fluid on exposed rubber parts will preserve them and keep them from deteriorating.

## Transfer Case GASKET

When working on the T76 transfer case, which is found on some models of the following vehicles: Autocar 4x4, Diamond T 6x6, Federal 4x4, Mack and GMC 4x4 -- here is a little information that should prove helpful.

January, this year, the manufacturers started using a new and thicker transfer-case cover gasket, Timken Parts No. 2808-A-365, and a new declutch gasket No. 2808-V-360. These new gaskets are approximately .030 of an inch thick-- the gaskets used in the earlier cases were only about .015 thick. The manufacturers consider these thicker gaskets better for the job, and they'll probably be the ones you get from the partsman on your next overhaul.

Since it is almost always necessary to readjust the bearings during a rebuild, anyway, you probably won't even notice the difference. But if it's just a gasket replacement or a minor job on those made before January, it must be taken into consideration and bearing adjustments will have to be made accordingly. The earlier units carry a shim pack of .038 to .058 to take care of the bearing adjustment, so you'll have plenty of leeway to compensate for a heavier gasket.







Last month we gave you a full and elaborate story on how to re-condition the old anti-freeze you stored last spring for re-use in your vehicles this winter.

We mentioned in the story that you probably wouldn't be able to get the re-inhibitor necessary to the process, right off the bat - that the supply depots might not have it when you were ready for it.

However, since freezing weather sets in early in some parts of the country, we told you to go ahead and install the old anti-freeze solution without the re-inhibitor -- then get the re-inhibitor at the earliest possible moment and add it to the solution.

However, now we hear - or rather we know definitely - that you won't be able to get the re-inhibitor for at least a month.

There was a hold-up somewhere along the line and the contracts were released a little late - so the chemical companies won't be able to deliver the re-inhibitor to the supply depots for, as we say, about a month.

But as it was explained to us, it's all right for you to go ahead and drive around with the un-inhibited old solution in your trucks - the stuff still has enough of the original inhibitor to carry you for about six weeks.

We're just passing this note along so you won't fly up in the air and cuss us out for so cheerfully telling you

to go ahead and do something with a material you won't be able to get pronto.

But stay on the safe side - test the old solution with an anti-freeze hydrometer - often

*And incidentally when you finally do get your re-inhibitor, add it to the old solution in your cooling systems this way: Drain about a gallon of the old solution out into a clean container, add the re-inhibitor at the filler neck - then pour the gallon of old solution in on top of it. This will guarantee mixing and will prevent the possibility of the re-inhibitor caking up at the filler neck.*

By the way, there will be two different kinds of re-inhibitor issued to different parts of the country - so if you should be traveling around and see an outfit pouring reinhibitor from great big cans into their cooling systems, and recall that you were issued a little, peanut-sized can, don't worry about it. Just follow the directions and use one can - no matter what size - to each four gallons of cooling system capacity.

By and by you'll be using more and more tires with sectional repairs in them. Here's a little warning: sectional repairs are very vulnerable to abuse - especially underinflation.

Sectional repairs are not as well-bonded to the rest of the tire as any other part of the tire - abnormal flexing due to underflation will soon pop the sectional repair like a cork out of a bottle.

Just about the same thing goes for recapped tires.

Keep your eyes peeled for anything suspicious about your re-processed rubber - and take good care of it so nothing suspicious'll crop up.

By the way, will somebody kindly tell us what good is a rear reflector that's painted over?

We've seen a couple of vehicles just after a repaint job with the rear reflectors well camouflaged with O.D.

The same effect is obtained by allowing the reflectors -- and tail lights for that matter - to go around heavily coated with mud or even dust.

Don't hide your lights under a bushel of dirt or a coat of paint.

We hear that experiments are now being carried out on a filter designed to remove lead and dye from leaded gasoline so that it can be used in blow torches, field ranges, lamps, etc.

It'll be a great day for the Irish and everybody else when this little thing is finally perfected.

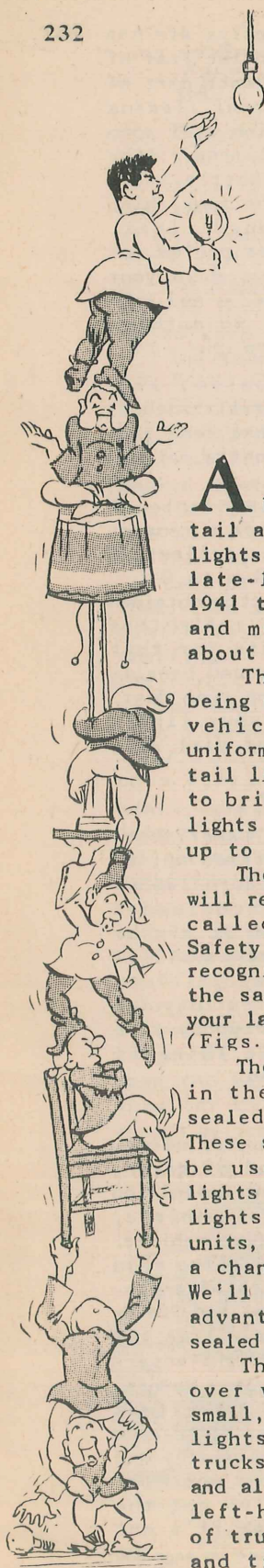
What this country needs, as we are so fond of saying is a good five-cent definition of (a) a tactical vehicle, (b) an administrative vehicle.

You're always being told that certain pieces of equipment will be issued for use on tactical vehicles - like the Blackout Driving Light advertised in the July Army Motors.

But what is a tactical vehicle? What's the difference between a tactical vehicle and an administrative vehicle?

We think we've got the answer. Although it's not

Continued on page 252



# Big, New LIGHT CHANGEOVER

Front-marker and tail lights on late 1940 and early 1941 vehicles to be replaced by "Combat Zone Safety Lights."

**A** big changeover of tail and front marker-lights on about 123,000 late-1940 and early-1941 trucks, trailers and motorcycles, is about to take place.

The changeover is being made so that all vehicles will have uniform front-marker and tail lights. (And also to bring the old-style lights on these vehicles up to date).

The new lights that will replace the old are called 'Combat Zone Safety Lights.' You'll recognize them as being the same lights now on your late-model vehicles. (Figs. 1 & 2).

The big improvement in the new lights is sealed units (Fig. 2). These sealed units will be used in the tail lights (the front marker lights won't get sealed units, of course, merely a change in 'doors'). We'll list some of the advantages of the new sealed units in a minute.

The coming changeover will affect the small, blackout-marker lights on the front of trucks and motorcycles and also, the right and left-hand tail lights of trucks, motorcycles and trailers.

If you'll look closely at the old-style lights on your late-1940 and early-1941 vehicles, you'll see that they are the 'blue-louvre' type of light (Fig. 3). As it happened, this blue-louvre type of light didn't quite measure up to military characteristics so they were superseded on production lines, beginning in mid-1941, by the improved 'sealed-unit' type of light - called officially, 'Combat Zone Safety Lights'.

The new Combat Zone Safety Lights make it possible for the driver of one truck to spot another truck from 800 to 1000 feet away in blackout driving 'on a dark and cloudy night.' With the old lights, visi-

bility was limited to about 500 to 700 feet.

In addition, the new 'sealed-units' offer complete protection against mud, water and sand.

The vehicles on which the changeover is to be made, are listed by USA Registration Numbers beginning on page 238. The list shows what kits to order for what vehicles. These vehicles, and these vehicles only, will be affected. Concerning older vehicles - vehicles delivered to the field before late 1940 - these originally had no blackout lighting at all but were later equipped with the new Combat Zone Safety Lights in accordance with OQMG

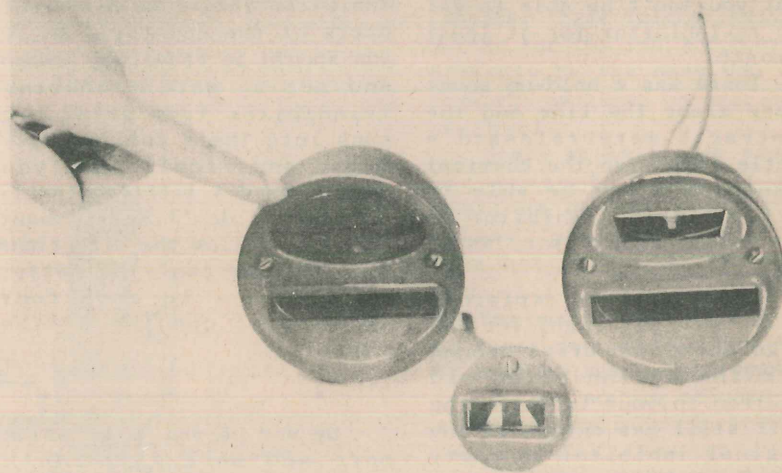


Fig. 1 - The Combat Zone Safety Lights after the changeover: the left and right tail lights and (center) one of the new doors for the front marker-lights.

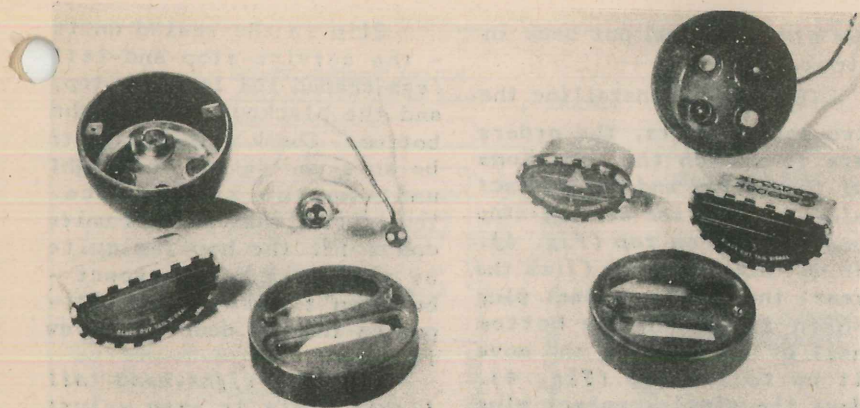


Fig. 2 - Inside the new lights. Notice the double contacts in the sealed unit and plug (left tail). The apertures in the new doors let the lens shine through.

Circular Letter 97 (May, 1941).

For this reason, it's not necessary to include them in the changeover.

The materials for the changeover will be furnished in kits. There will be six kits covering all the makes and models of vehicles the changeover applies to, and the kits may be requisitioned from the Holabird Ordnance Base only, sometime after Christmas Day. Here is the Federal Stock Number of each kit:

Kit No. 8.....8-B-900

Kit No. 9.....8-B-905

Kit No. 10.....8-B-910

Kit No. 10A.....8-B-912

Kit No. 11.....8-B-915

Kit No. 12.....8-B-920

Before sending in your requisition, be sure your vehicles fall within the chosen group. Check USA Registration numbers carefully with the USA Numbers in our list and include the following information in your requisition:

1. The correct nomenclature of the new lights: 'Combat Zone Safety Lights' and add the word 'changeover'.

2. The quantity of kits required: 20 kits, 30 kits, etc.

3. Which kits-- by number (Kit #8, 9, 10, 10A, 11, 12) and by Federal stock Number.

4. The make, type and USA Registration Numbers of the vehicles you're ordering the particular kits for.

Here's a sample requisition:

50 Combat Zone Safety Light (Changeover) Kits No. 9 for Dodge 1/2-ton, 4x4 Weapon Carriers. USA Registration Nos. W-25792 to W-211478, Fed. Stock No. 8-B-905.

Contrasting the new with

the old, the present 'old-style' tail lights on your late 1940 or early 1941 vehicles, are simply bare bulbs behind a lid or 'door' -- the door contains the lens and the louvres -- or slits -- through which the light passes. The new sealed units, on the other hand, are a complete unit of bulbs, housing and lens which slip right into the outer housing of the light and are held in by a door which has no lens at all -- just a couple of apertures through which the lens in the sealed units protrude.

The new sealed-units, furthermore, are scientifically 'controlled' -- that is, the bulb is a precisely-measured distance behind the lens. In this way the distance to which the light may be seen is carefully regulated. This is the answer to those thrifty souls in the field who think it's a shame to throw away the whole sealed-unit just because the bulb burns out. (Another reason is that the solder needed to reassemble the unit after the bulb is replaced, is on the strictly-critical list).

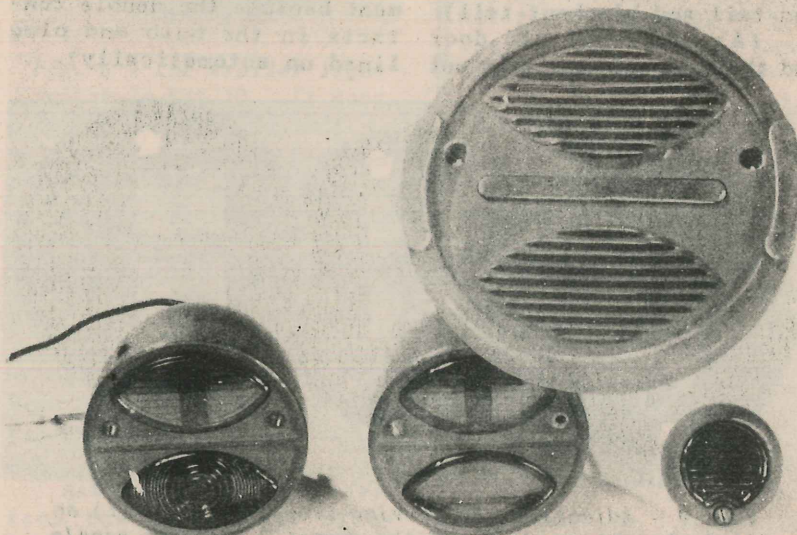


Fig. 3 - The old-style 'blue-louvre' lights. Their visibility was too limited and they let the dirt and water in. Inset - a closeup of the 'blue-louvres.'

The second big advantage of the new sealed units - the protection they give against water, mud and sand-- is of course necessary because military vehicles are expected to negotiate waist-high streams - the cleaning that unsealed lights require after such treatment is just too much trouble.

Certain alterations will be necessary in making the changeover. We'll describe these alterations kit by kit.

The first kit - KIT NO. 8 - contains two new 'doors' for the truck's front-marker lights. (Incidentally, all the kits have screws for the doors). Simply take off the old front-marker-light doors, chuck them into salvage and replace with the new doors. (The old door contains a heavy rubber seal - be sure to take it out and put it on the scrap-rubber pile!)

For the changeover at the tail lights, the kit contains four sealed-units and two doors. Two of the sealed-units go into the right-hand tail light and two go into the left-hand tail light.

To changeover the *left-hand tail light* (service-stop-and-tail and blackout-tail):

(A) Take off old door and throw in salvage; take out

the old bulbs and put back in stock.

(B) Before installing the two sealed units, the orders are to *switch the positions of the bottom and top contact plugs so that the service-stop and tail is on top* (Fig. 1). To do this, take out (from the rear) the double-contact plug which is now in the bottom half of the housing and move it up to the top (Fig. 4). Move the single-contact plug to the bottom.

One more thing: the double-contacts of the new plug have to be lined-up perfectly horizontal to match the perfectly-horizontal double-contacts in the sealed unit. However, chances are that your double-contacts won't be on the horizontal after you lock the plug in the socket. To fix this leave the plug in, loosen the set screw beneath the socket holding the double contact-plug, then put a pair of pliers on the socket and turn until the contacts are on the horizontal (again Fig. 4). Now tighten the set screw again. (You didn't have to worry about this in the old arrangement because the double contacts in the bulb and plug lined up automatically).

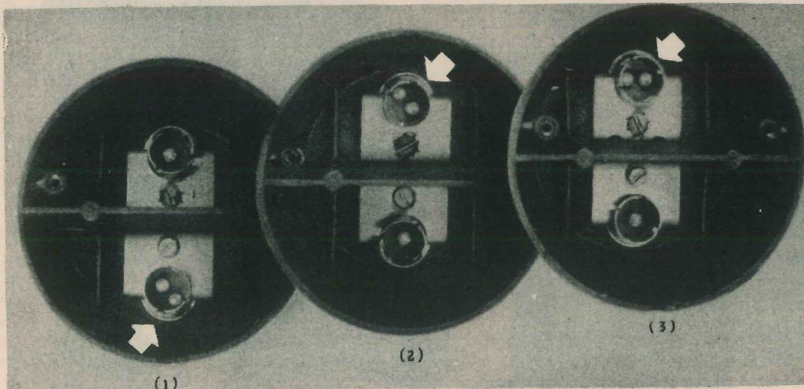


Fig. 4 - Adjusting the service-stop-and-tail: (1) as it looks when you take off the door; (2) pull the single double-contact plugs out the back and switch their positions; (3) straighten the double-contacts by loosening the screw beneath the socket and turning the socket with a pair of pliers from the back (with the plug still in) - then tighten up the screw again.

Slip in the sealed units - the service-stop-and-tail (egg-shaped red lens) on top, and the blackout tail on the bottom. Check with Fig. 1 to be sure you've got the right unit in the right place. You'll find that the new units don't fit the housing quite as snugly as you'd expect - but don't worry about it - put on the new door and screw it down.

(C) *The right-hand tail light:* This is easy - just remove the old doors and bulbs and replace with sealed units and the new door. The light should then look like the right-hand light in Fig. 1.

KIT NO. 9 - This kit contains exactly the same materials and exactly the same instructions apply as for Kit No. 8 - except that you'll find the new doors for the front-marker lights are a little smaller than in Kit No. 8. That's the only difference.

KIT NO. 10 - This kit contains 4 sealed units, 2 doors, a trailer switch and a double-contact plug - the Combat Zone Safety Light equipment for most trailers. At present your trailers have two identical tail lights you're going to change these over so they'll be exactly like the tail lights on trucks.

This will take a little doing. In the first place, orders are to rewire all the trailers that take this kit, in accordance with QM drawing 08675-X (Fig. 5).

Second, the kit contains a 'trailer blackout-light switch' (Fig. 6) which you will have to mount in a convenient spot on the bottom left-hand side or on the right side of the frame.

And last, you'll find a double-contact plug in the kit to be installed in the top half of the left-hand tail light.

After making these alterations, follow the instructions in (B) and (C) under Kit 8, to install the sealed units.

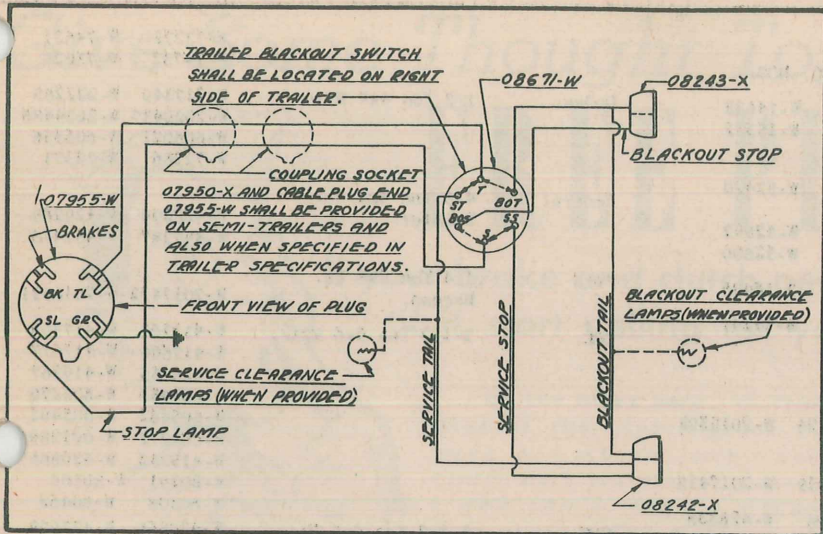


Fig. 5 - The trailers that take Kit No. 10 have to be rewired in accordance with the drawing above. A good electrician should be able to figure it out, we suspect.

**KIT NO. 10A** -- This kit contains 4 sealed units and two doors. It's for Nash 1-ton trailers only (Between the registration numbers listed on the table). You won't have to do any rewiring and you won't have to install a switch - this trailer is already equipped with the proper wiring and trailer-light switch. All you've got to do is move the double-contact plug up from the bottom to the top and line the contacts up horizontally - according to the instructions in (B) under Kit No. 8.

**KIT NO. 11** -- This kit takes care of Indian motorcycles. It contains four sealed-units, two tail-light doors and one front-marker light door. Follow the instructions in (B) under Kit No. 8 with two small exceptions: there's only one front-marker-light door to be replaced, and one tail light on this motorcycle, sits on top of the other. (The bottom light has the double-contact plug).

**KIT NO. 12** -- This kit is for Harley-Davidson motorcycles. It contains two sealed units, one door and one front-marker-light door. As on the Indian, there's only

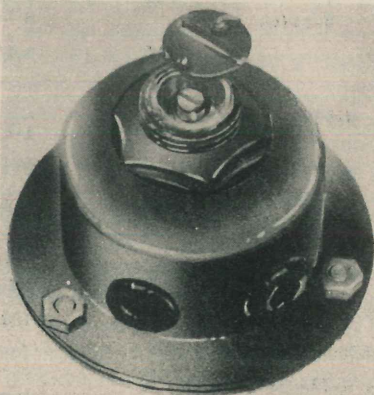


Fig. 6 - The trailer light switch in Kit 10. It goes on the left side or bottom.

one front-marker-light door to be replaced. On this motorcycle, you're to continue using the service-stop-and-tail already on the cycle - the little, red-ball light. However, the blackout-tail and blackout-stop must be changed: just remove the old door and bulbs and replace with the new sealed-units and the new door.

Although this changeover from the old-style, blue-louvre lights to the new Combat Zone Safety Lights may strike you as a lot of useless complication, it's neither useless nor complicated.

In the first place, as we say, it'll make all our vehicle lights uniform and much more effective; in the second place, all the apparent complication will disappear when you get your kits and start to do the job. The toughest part is rewiring those trailers that need rewiring - and that won't give a competent electrician any trouble.

Complication will only crop up if you send in half-hearted requisitions - so double-check against our list and make sure you're ordering only for the vehicles you see listed there - don't forget to include all the necessary information.

And remember, the kits will be available from Holabird only. And only sometime after Christmas day.

*More Light on  
B-O-Lights  
\*\*\**

If you've been wondering why our list (July Army Motors) of vehicles to get the Blackout Driving Lamp didn't include some of your 3/4-ton Dodges, we'd like to explain that the B.O. Driving Lamps for these vehicles are not ready yet but will be in about a month. We'll give you the dope on ordering them then.

And if you've been thinking about blackout lighting equipment (marker as well as driving lamps) for your administrative vehicles, the report is that kits containing complete blackout equipment for these vehicles are being made up. Don't try to order these kits now - they're not ready yet. Watch next month's magazine for full details.



KIT NO 8

MAKE	DESCRIPTION	U.S. REG. NOS.					
Ford	5 Passenger Light Sedans	W-13434	W-14633	Dodge	1/2 Ton 4x4 Misc.	W-73372	W-74631
		W-14733	W-15332			W-74733	W-75027
Mack	4-Ton 6x6 Prime Mover for AA gun	W-51761	W-52420	Federal	4-5 Ton 4x4 Tractor	W-217349	W-222265
	5-6 Ton 4x4 Tractor Ponton	W-52457	W-52592			W-2020437	W-2024486
	5-6 Ton 4x4 Tractor	W-52593	W-52600			W-606021	W-606356
Plymouth	5 Passenger Sedan	W-15499	W-16498	Ford	1/4 Ton 4x4 Lt. Recon.	W-72256	W-73371
Plymouth	5 Passenger Sedan	W-12267	W-13147			W-428590	W-429269
						W-457287	W-457476
						W-2017422	W-2018921
				GMC	2-1/2 Ton 6x6 Misc.	W-413767	W-417398

KIT NO. 9

American Bantam	1/4-Ton 4x4 Lt. Recon.	W-2015324	W-2015393			W-417600	W-417677
American Bantam	1/4-ton 4x4 Lt. Recon.	W-2015919	W-2017418			W-418851	W-419267
Autocar	2-1/2 ton 4x4 Misc.	W-428106	W-428338	GMC	2-1/2 Ton 6x6 Misc.	W-605456	W-605479
		W-428374	W-428588			W-605482	W-605491
		W-80568	W-80750			W-001272	W-001289
						W-419233	W-420865
Autocar	2-1/2 Ton 4x4 Tractor Trk.	W-417599				W-80291	W-80306
Autocar	5-Ton 4x4 Tractor	W-51313	W-51409			W-80308	W-80462
Autocar	5-Ton 6x4 Cargo	W-52754		GMC	4 Ton 4x4 Van Body	W-420866	W-427999
Corbitt	6-Ton 6x6 Prime Mover for 3 AA gun	W-51110	W-51312			W-80463	W-80567
Corbitt	6-Ton 6x6 Prime Mover for 3 AA gun	W-51561	W-51760	GMC	2-1/2 Ton 6x6 Misc.	W-418659	W-418850
		W-52648	W-52747			W-428589	
Chev.	1-1/2 Ton 4x4 Misc.	W-320560	W-328442	GMC	2-1/2 Ton 6x6 Dump & Cargo	W-001927	W-002851
		W-328951	W-331695			W-003678	W-003746
Chev.	1-1/2 Ton 4x4 Stake and Platform Trk.	W-328665	W-328768			W-605530	W-605879
Chev.	1-1/2 T. 4x4 Misc.	W-002852	W-003114	GMC	1-1/2 Ton 4x2 (K-18)	W-607386	W-607640
Chev.	1-1/2 Ton 4x4 Misc.	W-332064	W-338034			W-429270	W-457269
		W-339995	W-342977	Mack	6x6 Prime Mover for 155 MM gun	W-51556	
		W-607641	W-607642			W-51063	
Diamond T	4 Ton 6x6 Cargo	W-417678	W-418653	Walters Diesel	Prime Mover for 155 MM gun	W-51063	
		W-001310	W-001331			W-24615	W-25789
Diamond T	4 Ton 6x6 Cargo	W-457477	W-458854	Dodge	1/2 Ton 4x4	W-24615	W-25789
		W-003115	W-003621				
Diamond T	4 Ton 6x6 Cargo	W-458855	W-459000				
Dodge	1/2 Ton 4x4 Misc.	W-25792	W-215478				
		W-215536	W-216349				
		W-001332	W-001391				
		W-206951	W-2010500				
		W-2010913	W-2015297				
		W-605100	W-605304				
		W-71077	W-71973				
		W-71975	W-72249				
		W-206490	W-206950				
Dodge	1/2 Ton 4x4 Misc.	W-222266	W-230130				
		W-80766					
		W-231275	W-233206				
		W-003856	W-004123				
		W-003759	W-003788				
		W-2024487	W-2026129				
		W-230519	W-230621				
		W-2026644	W-2029143				
		W-606357	W-607383				
		W-607687	W-607943				
		W-2026533	W-2026643				

KIT NO. 10

Ben Hur (Lavine)	1-Ton 2 w. cargo trailers	W-039507	W-043006
		W-043540	W-045289
Lavine	2-W. 1 T. Cargo Trailers	W-09031	W-014238
Miller, A. J.	Auto Cruiser K-19 Communication	W-017539	W-017793
Superior	4-T. 4 W. Van Trailer	W-015449	W-015866
Trailco	2 W. Van Trailers	W-015437	W-015448
Trailco	2-W. Van Trailers	W-043048	W-043068
Travelcar	6T. 2 W. Semi-Trailers	W-039471	W-039510
Watson	2-W. Comb. Animal & Cargo trailer Semi.	W-018541	W-019220
		W-39409	W-39459
		W-039187	W-039223
Watson	2 W. Semi-Trailers	W-039244	W-039249
Nash	1 T. 2 W. Cargo Trailers	W-024139	W-029620
Nash	1 T. 2 W. Cargo Trailers	W-029620	W-033279

KIT NO. 10A

# Give Some Thought To FREE PLAY



If your brake and clutch pedals don't have enough of it, start yelling for your company mechanic.

They may call you 'silly boy' when you bend over and touch your brake and clutch pedals before starting out on a trip - but don't worry about it. They may even call you crazy or superstitious.

But when you check your pedals for free play this way, you're playing safe.

It's a good, little driver-trick and the best way to guarantee that you won't fail to get over a hill because of slipping clutch - or that your brakes won't lock up when you're in a hurry.

Free play is the pedal travel you get before any action takes place. It's kind of a safety margin and more than just that, it's your assurance that the linkage hidden beneath the floorboards, is in adjustment.

On the 1/4-ton jeep, for instance, the free play of the clutch pedal should be 3/4 of an inch. The clutch pedal should travel down 3/4 of an inch from its 'up' position before it makes contact and action starts. Less than 3/4 of an inch free play - or no free play at all - means trouble: the clutch throwout bearing may be in constant contact and you won't be able to fully engage the clutch at any time.

You won't get over that hill.

On the other hand, if free play of the clutch pedal is over 3/4 of an inch, the clutch won't release completely - you can't make a clean gear shift. The gears clash and have a hard time meshing.

They growl like a dog.

The brake pedal - free play of the brake pedal is just as important though not so well known. Some people don't believe in it, some ignore it.

But if the brake pedal doesn't travel downwards 1/2 inch (on the jeep) before the linkage makes the push rod engage the piston in the master cylinder, why, then when your foot's off the brake pedal, the piston may not be able to return to the full-release position where the cup clears the by-pass port in the cylinder. Some of the brake fluid in the lines won't be able to get back into the reservoir above the cylinder and you'll find your brakes dragging or even locking.

You'll go nowhere fast.

Now don't be hypersensitive (haw!), don't confuse true free play of the brake pedal with the travel of the piston in the master cylinder before the brake shoes make contact with the drum. This kind of pedal travel has to be adjusted at the brake shoes - true free play is all in the pedal linkage.

But in any case, whether you're driving a jeep or a tractor, your little game of tag with the pedals will

start your trip right.

(The free play specifications mentioned above, are for the 1/4-ton jeep; consult your maintenance manual for the free-play specs of other trucks).

## B.O.-DRIVING LIGHT

In July when we gave you all the dope on how to order the new Black-out Driving Light, we weren't able to give you the Federal Stock Nos. because they hadn't been assigned at the time.

Now we've got them - one for each of the 7 kits. Refer back to page 97, July ARMY MOTORS (those of you who haven't ordered them yet) for details of the light and how to order it.

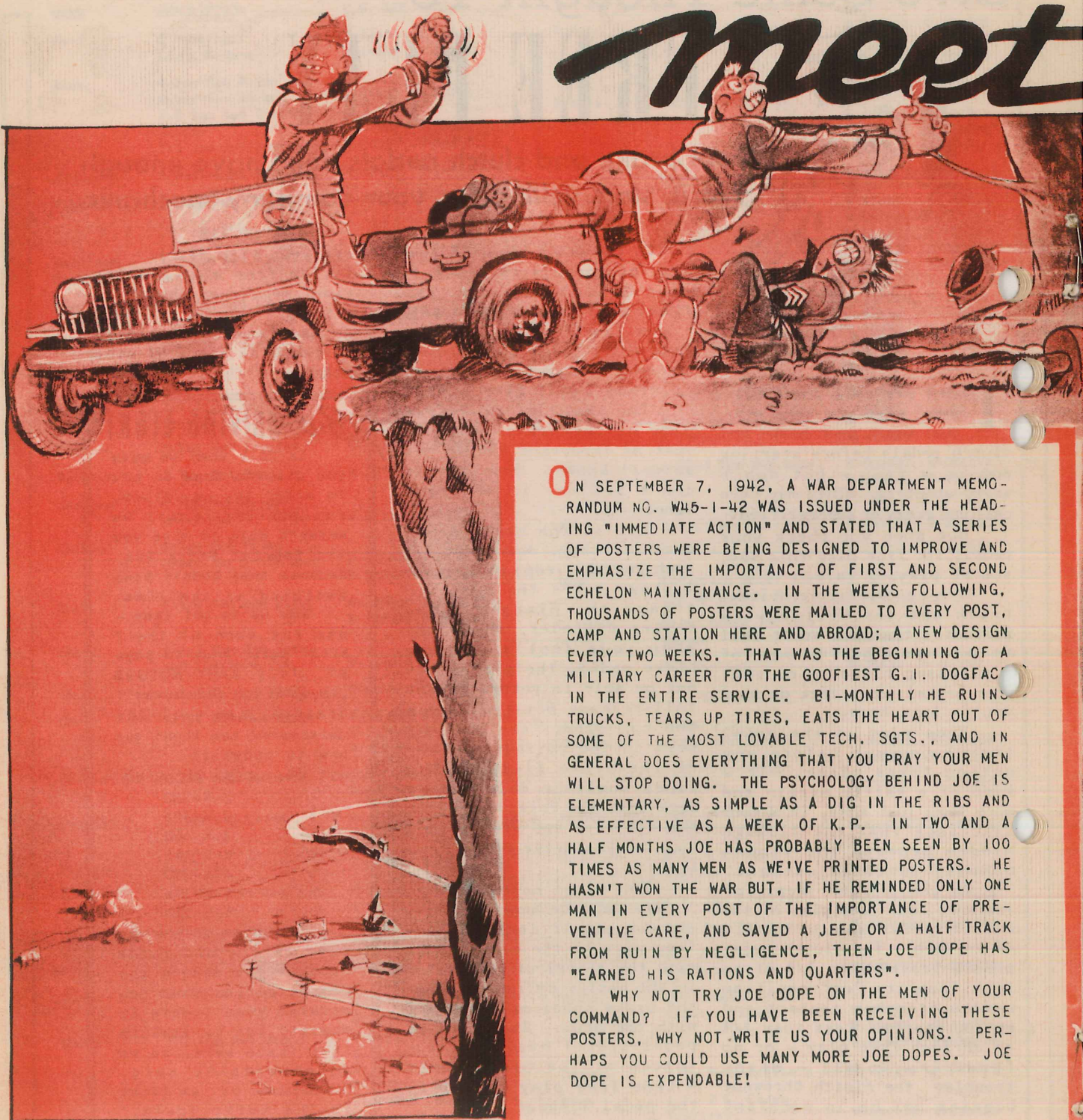
KIT NO. FED. STOCK NO.

1	8-K-350
2	8-K-355
3	8-K-360
4	8-K-365
5	8-K-370
6	8-K-375
7	8-K-380

For those of you who gave us the old razor because you didn't get prompt action when you ordered your lights in August, let us explain that there were, as we so cheerfully said, "thousands of 'em lying in the Motor Bases." Trouble was in most cases they hadn't been put up in kits.

So sorry.

# meet



ON SEPTEMBER 7, 1942, A WAR DEPARTMENT MEMORANDUM NO. W45-1-42 WAS ISSUED UNDER THE HEADING "IMMEDIATE ACTION" AND STATED THAT A SERIES OF POSTERS WERE BEING DESIGNED TO IMPROVE AND EMPHASIZE THE IMPORTANCE OF FIRST AND SECOND ECHELON MAINTENANCE. IN THE WEEKS FOLLOWING, THOUSANDS OF POSTERS WERE MAILED TO EVERY POST, CAMP AND STATION HERE AND ABROAD; A NEW DESIGN EVERY TWO WEEKS. THAT WAS THE BEGINNING OF A MILITARY CAREER FOR THE GOOFIEST G. I. DOGFACE IN THE ENTIRE SERVICE. BI-MONTHLY HE RUINS TRUCKS, TEARS UP TIRES, EATS THE HEART OUT OF SOME OF THE MOST LOVABLE TECH. SGTS., AND IN GENERAL DOES EVERYTHING THAT YOU PRAY YOUR MEN WILL STOP DOING. THE PSYCHOLOGY BEHIND JOE IS ELEMENTARY, AS SIMPLE AS A DIG IN THE RIBS AND AS EFFECTIVE AS A WEEK OF K.P. IN TWO AND A HALF MONTHS JOE HAS PROBABLY BEEN SEEN BY 100 TIMES AS MANY MEN AS WE'VE PRINTED POSTERS. HE HASN'T WON THE WAR BUT, IF HE REMINDED ONLY ONE MAN IN EVERY POST OF THE IMPORTANCE OF PREVENTIVE CARE, AND SAVED A JEEP OR A HALF TRACK FROM RUIN BY NEGLIGENCE, THEN JOE DOPE HAS "EARNED HIS RATIONS AND QUARTERS".

WHY NOT TRY JOE DOPE ON THE MEN OF YOUR COMMAND? IF YOU HAVE BEEN RECEIVING THESE POSTERS, WHY NOT WRITE US YOUR OPINIONS. PERHAPS YOU COULD USE MANY MORE JOE DOPES. JOE DOPE IS EXPENDABLE!



# JOE DOPE !!

...HE IS HELPING TO WIN  
THE WAR BY BEING THE  
DOGGONDEST FOOL IN  
THE ARMY!!!

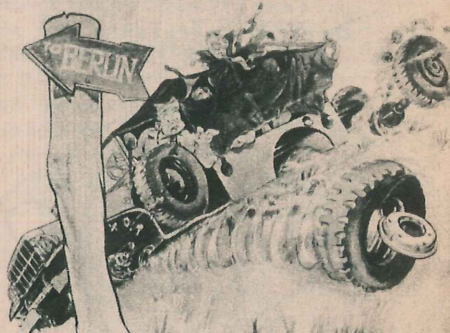
A NEW CHARACTER WITH A DESPERATE DESTINY DESIGNED TO CALL ATTENTION TO HABITUAL FAILURES IN MAINTENANCE OF ALL ARMY EQUIPMENT. HUMOR WITHOUT BITTERNESS BUT STINGING WITH ITS TRUTHFULNESS. JOE DOPE POSTERS WILL DRIVE HOME A POINT QUICKLY....AND WITH LITTLE OR NO PAIN!

*The next  
Joe Dope*

THIS IS THE NEXT JOE DOPE. IT WILL BE IN THE MAILED BY JANUARY 6TH. A NEW JOE DOPE POSTER APPEARS REGULARLY. DIRECT REQUESTS FOR CHANGES IN QUANTITY TO THE OFFICE, CHIEF OF ORDNANCE. ATTENTION SPOFM PREVENTIVE MAINTENANCE, WASHINGTON.

CPL.  
*Will FISHER*  
ORDNANCE DEPT.

The book says to run a car right  
You should keep every nut and bolt tight.  
But it's too much to hope  
That our brilliant Joe Dope  
Would obey - which produces this sight!



*Don't be a dope -*

**HANDLE EQUIPMENT RIGHT!**

# Scrambled GASKETS



**This one goes between the carburetor and the governor; this one goes between the governor and the manifold. Are you sure? No, you're not sure -- read the story.**

Every day or so lately, some highly indignant individual writes in and wants to know how come he finds the wrong gasket between the carburetor flange and the governor, and between the governor flange and the manifold.

And although in many cases we are able to pour oil on troubled correspondents by simply pointing out that a gasket other than the one put on at the factory is perfectly all right in these locations, the wrong type of gasket is often unwittingly used. The results are, of course, poor engine performance and poor fuel economy.

Changeovers of carburetors, governors and gaskets are sometimes necessary and when a mechanic in the field makes

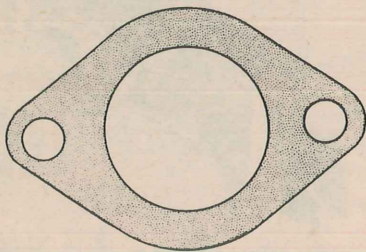


FIG. 1

*Fig. 1 - A simple gasket. Used between the carburetor and the governor.*

a repair to such a mixed-up assembly, he has to know why certain gaskets are used in certain locations and when substitutions can safely be made.

The simplest job of a gasket is to act as a seal between two mating surfaces. Take the carburetor to governor-flange gasket (Fig. 1): it has two holes to fit over the studs and a larger hole the same size as the bore of the governor and the carburetor. It leads an honest and uncomplicated life preventing atmospheric pressure from leaking by the mating surfaces of the carburetor and the governor.

But that is the lowest form of gasket life. In many cases, in addition to its sealing function, the gasket may be required to handle a more involved job - like forming a portion of the vacuum channel that operates the power jet in the carburetor.

When a carburetor with a vacuum-operated power jet is used directly on the manifold, it picks up its vacuum under the carburetor throttle valve (on a down-draft carburetor). If the vacuum is low in the manifold, as happens when the truck is hauling a heavy load up a steep hill, the power jet - which is held in check

by a normal or high vacuum - utters a fierce shout of joy and furnishes a richer gasoline mixture to the intake manifold. Then as the road levels off - and the engine load is decreased, the vacuum rises, and the power jet closes and leans the mixture.

It's an elemental process - basic as the law of the jungle.

But low vacuum is not always an honest indication

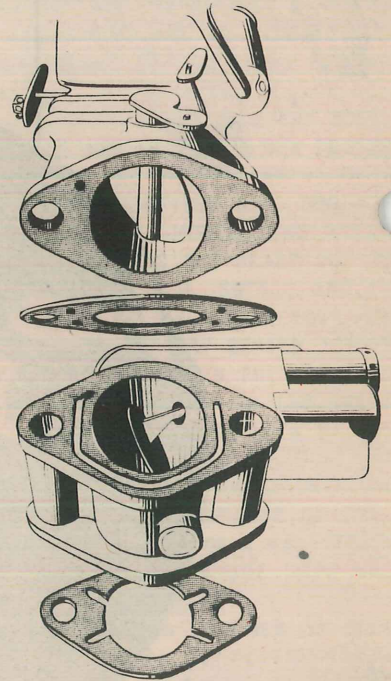


FIG. 2

*Fig. 2 - Use the gasket with four holes between the carburetor and the governor; the slotted gasket between the governor and manifold.*

that the engine needs more fuel.

This is illustrated when a governor is placed between the carburetor and the manifold. In this case, the carburetor must pick up its vacuum somewhere in the vital passage between the carburetor throttle valve and the governor valve (Fig. 2). And since the governor regulates speed by closing its valve and shutting off the flow of air through the passage, the vacuum in the passage above the governor valve is lowered. The power jet, having limited powers of discrimination, seizes the opportunity to furnish a rich mixture - thereby working at odds with the governor.

We have the sad spectacle of the governor cutting down the supply of air and the power jet stubbornly furnishing a rich mixture. The excess fuel pours into the cylinders and being without the correct proportion of air, not only is unable to burn completely but also tends to wash away the lubricating film on the cylinder walls.

That was the situation. Faced with it, automotive engineers agreed that the vacuum channel must bypass the vital passage between the two butterfly valves. This would keep the low vacuum, induced by the governor, from inviting a rich mixture from the simple-minded power jet - at a time when it was least needed.

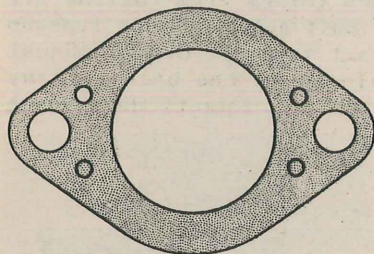


FIG.3

*Fig. 3 - This gasket used between the carburetor and the governor is part of the vacuum channel (note holes).*

So the engineers led the vacuum channel from the carburetor flange through the governor flange and to a point under the governor butterfly valve. Here it was allowed to enter the air passage.

This simple decision on the part of the engineers made the flange gasket between the carburetor and the governor, part of the vacuum channel. The gasket had a hole cut in it to allow free passage between the two flanges.

All was well and good except that in the course of time it was discovered that people were installing the gasket without bothering to make sure that the hole lined up with the channel openings - the result was a blocked channel.

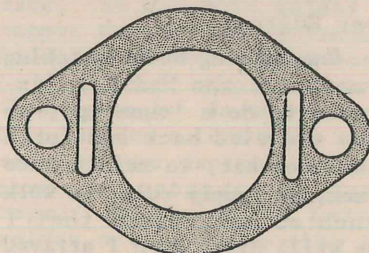


FIG.4

*Fig. 4 - The holes become slots - even if the flange holes don't line up, the channels are still joined.*

To take care of this, three more channel holes (Fig. 3) were cut in the gasket - put the gasket in this way, that way or the other way -- there was still a hole to line up with the channel. In some cases slots were cut to join the two holes at each side of the gasket (Fig. 4) so in the event the channel apertures were not in alignment, the vacuum channels would still be joined.

The net result was -- and is -- that these two gaskets can be used interchangeably between the carburetor and governor flanges. The only exception to this is that the gasket with the four holes cannot be used when the vacuum channels in the carburetor

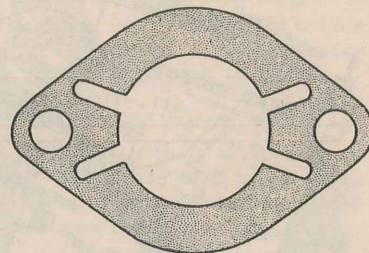


FIG.5

*Fig. 5 - The gasket with the four slots. Use it only between the manifold and whatever's placed next to it.*

flange and the governor flange do not match - and there is no channel cut across the governor flange to connect them. In this case, the gasket with the slots at either end must be used to pick up the channel at one side and carry it across to the other (Fig. 4).

But aside from that exception, these two gaskets - of the correct thickness and material - can be used in practically any position between any types of carburetor and governor combination where they fit.

The one place they won't always work has been the source of much trouble in the field. This one place calls for a third gasket -- a third gasket than can be used in this place and this place only.

The place is between the manifold and whatever unit is placed next to it -- either the governor or, when the governor is not used, the carburetor.

The third gasket (Fig. 5) has four slots that radiate out from the air passage to contact the vacuum passage in the governor or carburetor flange.

Somebody asked why this gasket - this four-slot gasket - couldn't be used between a carburetor with a vacuum-operated power jet and a governor without a vacuum channel. But it can't be - the slots in the gasket lead directly into the air passage

(Continued on page 252)



# 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.

## BARKSDALE FIELD, LA.,

...As huge bombers roar overhead at Barksdale Field, La., a 'Toonerville Trolley' crawls below as one feature of the field rubber and gas conservation program.

Built from salvaged rubber, steel and wood, the vehicle which resembles the sight-seeing trams of fairs and expositions, does the work of 10 to 15 jeeps and reconnaissance cars with a consequent saving of gas, rubber and general wear and tear.

Seating 40 persons, the solid-rubber-tired 'trolley' is pulled by a husky, little tug-truck over a 2-1/2 mile route. Messengers on hurry-up errands swing on and off the ever-moving vehicle as it travels along the main streets of the post. Soldiers and officers are carried to their destinations quickly and, within a few minutes, are on the return trip to Headquarters.

Barksdale Field is saving its gas and rubber for the big bombers upstairs. So far as we know, it's the first

*Below: The Barksdale Field 'Toonerville Trolley.'*

Army post to use a 'trolley' in the national conservation effort.

Dear Editor,

One morning while watching a mechanic who had been assigned to do a 'tune up', my eyes traveled back and forth from tool kit, to maintenance truck, to supply room, to work bench so many times that I was still dizzy when I arrived at the mess hall for the noon meal.

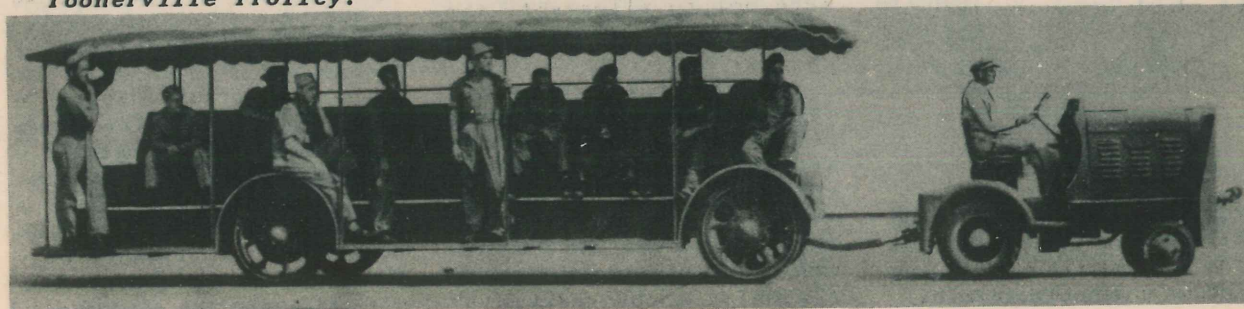
Since it is part of my job as Battalion Motor Sergeant to supervise, instruct and assist the mechanics, I tried to find a way to save time and shoe leather. All this wasted effort is more than a conscientious Motor Sergeant can take.

My little brain was bouncing up and down, playing 'tick tack toe' in its vacuum, when suddenly it jumped right in the middle of a two dollar word - 'Consolidation.' Why not consolidate all the #2-

tool-set tune-up gadgets into one compact unit, then add one trained mechanic?

I let a mechanic in on the idea, and the two of us visited all the salvage yards on the post picking up old sheet metal (old wall-locker parts), bed rails and some angle iron. Back in the shop we assembled a combination bench-table 3-ft. high, 4-ft. long, 1-1/2-ft. wide, with a full-length, full-width shelf about 2 ft. under the bench top, and the shelf. Tech. 4th grade, Angelo Paglusio, who is a rabid motorcycle fiend from Connecticut, grabbed his trusty '61 and was back from Sears and Roebuck with four 2" roller-casters before I could appropriate the light-gray paint to spruce it up with.

Now we have a light-gray bench with back and sides to keep things from rolling off or out; a copy of the tune-up chart from the G.M.C. manual painted on the back in case a mechanic forgets the correct



procedure; all the tools and equipment necessary, at a total cost of less than \$1.00.

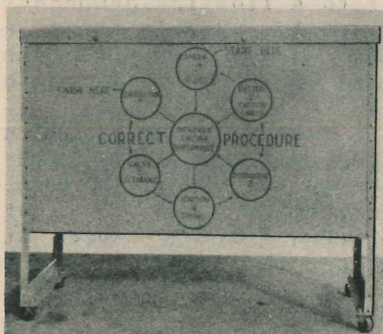
Next we raided the #2 tool set and stole the compression and vacuum gages, volt-ampere test set, low-voltage battery tester, hydrometer, blow torch for heating soldering iron to solder terminals, a trouble light (for dark places), a neon timing-light, feeler gages, miscellaneous small tools and don't forget some old salvage tenting for fender shields (to keep grease off the paint). And lo! we had dood it.

On the next tune-up Paglusio stood and stared, then mumbled something about this new gadget keeping him away from the Coca Cola machine.

Of course we can't take it with us but *the time it saves enables us to do more work here so we'll have less to do over there.*



*A lovely picture of teamwork and efficiency. You'll have to imagine the poses if they had been caught by surprise.*



*If they ever forget what end of the truck gets a tune-up, this diagram tells all.*

## LETTER OF THE MONTH

Dear Ed,

Your article in the August Army Motors on Drilling Gasoline Caps did only part of the job. While you were absolutely right to blast them for drilling the caps, you didn't say anything about testing them. I have made it possible to test the gasoline caps.

Take a neck off an old tank on which the cap will fit tightly. Solder the bottom of the neck closed. Drill three holes around the side. In one hole solder a copper tube to take a vacuum hose and pressure-gage hose (all second echelons have these gages). In the second hole, solder a tire-valve stem so that you can use a hand pump for pressure to test caps. In the third hole, solder a tire-valve stem in backwards so you can test the vacuum on the cap. It will take two hand pumps, - one for pressure, the other for vacuum. Reverse the plunger cups on the pump you use for vacuum. You can make the whole thing in two hours and save yourself a lot of trouble in the future.

Chas. C. Ruark  
Technical Advisor  
Camp Tyson, Tenn.

P.S. I have found some guys bending the prongs on the cap. Do they know this ruins the the system? I hope these suggestions will do some good.

Dear Editor:

Pfc. Cyril Sweeney, in our Company, built a handy little cabinet on one of our Chevies that I thought might be of interest to you. It proved to be very useful for carrying service materials where they

(Continued on next page)

Dear Editor:

My copy of Army Motors for August just reached my office and as usual, I very promptly proceeded to read it from cover to cover.

I was particularly interested in your article about Transfer Case oils, as it backs up my argument for the past year on the use of proper oils.

Before going any further I might explain that my knowledge of gasolines and lubricants was gained by working with them in civilian life, having been connected with one of the major oil companies in the East for nearly ten years.

Prior to my arrival at this Post there had been quite a few serious transfer case troubles, and the person in charge at that time decided it was the fault of the manufacturer and sent in a Z5 report which very soon resulted in inspectors and investigators arriving here from all directions.

Luckily, before their arrival I had torn a transfer case down and studied the thing, and after doing so I started checking it from the lubrication angle, and found four different types of oil being used including the 80-140 viscosity oil you have warned against using.

After getting rid of all these oils and having a conference with the officials of the company supplying my oils, in which I told them exactly what to ship me - and nothing else thank you - I haven't had a single transfer case develop trouble of any nature since January of this year.

I am using S.A.E. 90 regardless of weather conditions and this Texas sun gets pretty hot sometimes.

Thank you for reading this rather lengthy letter, and would appreciate your giving my thanks and congratulations to the person writing the article for your publication.

Lt. Carl R. Senkbeil  
Army Air Forces T.T.C.  
Sheppard Field, Texas

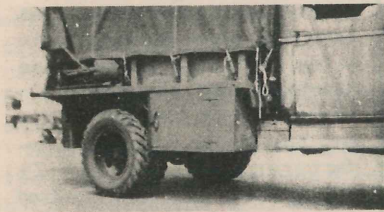
## CONTRIBUTIONS

(From page 243)

could be reached without unloading the truck, during the Maneuvers last year; and since it takes up waste space without reducing the road-clearance, I can't see where there could be any objection to it.

The sheet metal, and other material used in its construction, with the exception of the lock, were salvaged from the post scrap-pile.

Cpl. W.G. Huecker  
Co. A 504th M.P. Bn.  
Fort Sam Houston, Texas



inch angle iron between the rack and the end gate and you've got it. The angle iron gives the rack a more substantial foundation so it won't pull the metal out of the end gate.

Mr. A. G. McMasters, Automotive Advisor at Fort Eustis, suggests engineers at the jeep factory do something to prevent water collecting around the horn button. He says they rust and corrode in the summer, and freeze up in the winter. In either case the driver has to rely on his whistle rather than the horn.

Agreeing with our article in the August Army Motors about soaking oil seals before installing them, Captain Earl M. Gregg, Base Motor Maintenance Officer, tells us how they do it at Harding Field.

"We string seals of one size on a wire and store them suspended in individual oil-filled jars. The parts man can lift the wire, pick off a seal without soiling his lily-whites, and give it to the mechanic, oil-soaked and ready for installation. Since starting this system, there have been no reports of failures due to burned-up seals."

From an old, reliable contributor, M/Sgt. Daniel S. Warner, comes the solution to a mysterious knock in six-cylinder Fords. They thought, at first, that a bearing was at fault, but finally traced it to a floating dampener-assembly. Here's Warner's story of what they did in the 23rd Ca. Battalion shops to fix it.

"When we couldn't tighten it by drawing up on the crank-jaw nut, we removed the dampener from the shaft and cut a washer from 1/8" stock. We placed the washer over the shaft and key (between the dampener and the oil thrower) then drew up on the jaw, which held it tight and cured the knock."

## CONTRIBUTIONS dep't.

*Short 'n Sweet Division*

According to Major Harry N. Osgood, Automotive Officer for the Norfolk Region, E.D.C., there are still some mechanics who haven't heard of the practical trick of seating new lube-seals with an old one. Improperly installed seals are the cause of a lot of lube leaks, and it's next to impossible to install a seal with a perfect fit by hammering on it. If you don't have the proper driver to install a seal here's an easy way to position the new seal without distorting it.

After the housing seat, the shaft bearing-surface, and the seal itself have been properly prepared, place the new seal in position. Then place the old seal over it, and by tapping on the seal with a hammer (preferably rawhide) the seal will seat itself without damage.

This isn't by any means a new idea, but if you've never tried it before, you'll find it a tremendous help.

Stuck on a Hula island without the part he needed, Pvt. Harold H. Barrett used his fatigues to shim up an oil seal. It worked so well he thinks you ought to know about it:

"To stop a lube leak around the front-axle-steering-knuckle-flange oil seals on some of our 1/2-ton Dodges we shimmed the felt retainer up from the bottom with several strips of blue denim cloth cut the same width as the felt."

Lieutenant J. E. Winters at the Philadelphia QM Depot sends this home remedy for the jeep spare-tire-rack: Remove the rack, drill and bolt two 20 inch lengths of 1/2 x 1-1/4

# Sgt. "HALF-MAST" McCANICK'S Question Dept.



resilience of the tires, chassis springs, and the coil spring of the turn-buckles in the hold-down chains.

245

Load vehicles tail to tail, clearing each other in the center of the car by one foot and locate at least eight inches clear of the ends of the car. Use no wheel blocks or axle tie-down straps on railway cars equipped with Evans Loaders. And don't 'double-deck' jobs weighing more than 4,500 lbs.

When loading 4x4's and 6x6's on flat cars without special loading equipment:

1- The positioning of the vehicles is the same, the transmission is in neutral, and the brakes released, as before.

2- Use 12 standard wheel blocks - 4 in front, 8 in rear on 6x6's.

3- Tie axles to the floor with 4 metal straps to each axle.

4- Use wire cables of about 1500 lbs. tensile strength and pass cables from bumpers to stake pockets at the side of the flat car at an angle of approximately 60 degrees. Protect cables from sharp edges with steel plates, wood blocks - or what have you.

5- Run a steel pin through the cables (which should be used double) and twist until chassis springs are compressed to full-load position - then sink the steel pin (still in the cable) into the floor of the flat car.

These cables running diagonally outward take the whip out of the load (note that they are fastened above the chassis springs). The load is cushioned by the tires against the wheel blocks and by the chassis springs against impact.

Some of the factory engineers claim that very little - if any - damage is caused by the use of a brinneling bearing, and that there is little likelihood of a failure because of it.

I strongly advise that you take a look at the article on

Dear Half-Mast,

In shipping motor vehicles by rail we have found that the wheel bearings get 'flat spots' on them from the riding motion of the trip by flat car. This irregular movement has been causing much trouble and requires the replacement of many bearings.

Could you give us any solution to this problem?

Lt. J. McG.

Dear Lieutenant,

Your complaint has some little history attached to it. The flat spots in the bearing races are caused by brinneling, and it is not a new subject by a long shot. Automobile factories have been experimenting for ten years or so with car loading, finishing of bearings, and one thing and another to liquidate the trouble. And they had considered the problem licked, for they have had little or no complaint of brinneling from the domestic field for some time.

Basing our opinion on their experience, we came out in the March issue of Army Motors with an article called 'Motor Marching by Rail,' in which we said that so far as we could find, the brinneling of bearings in Army vehicles was a fairy tale.

Correspondence from the western area, however, assured

us that complaints of bearing brinneling did not belong in the realms of mythology, but was a gosh-awful fact. And our nose was rubbed into case after case of wheel bearing roughness in vehicles of all makes that had made the long trip across the continent by choo-choo.

So we again made inquiry into the matter and gathered scraps of information which, if they don't cure all cases of brinneling, are about the sum of all available information on its prevention.

Chevrolet cars and trucks are leaving the factory in rail cars equipped with Evans Car Loaders. Since these won't always be available in Army transport service, they suggest the following workable set of rules for loading with and without the Evans Loader:

#### WITH THE EVANS LOADER:

1- Use floor chains to hold vehicles in place.

2- Put transmission in neutral and release brakes.

3- Fasten floor chains to rear bumper and front bumper brackets. Chains should have an angle of approximately 60 degrees to the floor.

4- Tighten the turn-buckles until the chassis springs are compressed to 'full-load' position.

This makes a load which is not rigid, but which is cushioned against shocks by the

## ARMY MOTORS

Dear Reader,  
There just ain't any disputin' it - 'Half-Mast' is the man with the answers. The flood of letters - major-privates - all the way up to major-general - proves it.  
So if you've got something bothering you, stop fretting. Shoot your questions in to Half-Mast - he'll answer 'em all' technical, procurement, procedure. Shoot Half-Mast is the answer man, he knows which way is up.  
Ed

246 the subject of loading in the March Army Motors, and if there is additional information you need, let us know.

*Half-Mast*

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Dear Half-Mast,

We're operating in the sand - a long way from home. Here's our headache: our half-ton Dodges are breaking out their clutch hubs where the spline boss fastens to the disc itself. Don't blame it on the drivers because we've got the best. We've tried welding the discs for, as you know, parts are hard to get out here, but it won't hold.

M/Sgt. J.B.H.

Dear Sergeant,

Operating in sand is tough and something is sure to break sooner or later. If alinement of the clutch shaft (transmission drive pinion) is okey, if both bearings are in good shape, if the clutch disc was not distorted when the transmission was being put into place, and if the drivers are aware of the beating a clutch gets in sand, then you've got just about everything perfect mechanically. There is just one more important thing to do: Get and install the clutch disc with the springs painted orange. The Dodge part number is 921349. The partsman may have other type discs stocked under this number with either no paint, or red paint on the springs - but the one you want has orange paint on them. This should do the job for you.

*Half-Mast*

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Dear Half-Mast,

We've had a heck of a time trying to remove companion flanges and yokes from differentials, etc., on big trucks. As we have no puller large enough to remove them, we sometimes have to remove the

whole assembly and send it to the 3rd-echelon shop to have them pressed out.

The other day I struck on the idea of using the winch of our Diamond T wrecker to pull them. Just put the bumper of the wrecker against the bumper of the truck, slip a rod through the yoke, or bolt a piece of iron to the flange, hook the end of the winch chain to it, and turn on the power. It requires anywhere from a ton to a three-ton pull to get them off - so I don't think it will hurt the winch any.

This may not be a good idea, so I wanted your opinion of it.

T/S D.H.

Dear Sergeant,

In a war zone, to save abandoning a truck load of important material, a mechanic might be justified in attempting heroic measures to pull a flange - but otherwise I can't recommend it - and only with reservations even in an emergency.

Before applying a great deal of power or pressure to a unit in a truck, you want to analyze the situation a little. If you are exerting a force of a couple of tons or more in one direction, what's holding back on the other side? The chances are the brunt of the pressure is being applied to a bearing which was not intended to carry any such a thrust, and may be crushed or damaged in such a way that it will fail soon after. When using a puller, the screw is usually seated on the end of the shaft, and the hooks hold the flange. When you wind down on the screw, no pressure is transmitted to the other portions of the unit so the bearings are safe.

Another thing to take into consideration is the points of support of the unit you are pulling against with the winch. On an axle housing these points are so far apart that

it wouldn't take a great deal of power to spring the housing. Damage to the springs, torque arms or frame might result - all in addition to the fact that they are not giving you a rigid support for the pulling operation.

From where I stand, it looks like the risk is too great to make a practice of the scheme. Maybe you can get a little help from a blacksmith or machinist and make yourself a puller - if you have enough work of the sort to warrant one. Then you'll be on the safe side.

*Half-Mast*

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Dear Half-Mast,

Listen pal, I'm a guy what hates beefs, but I'm about to blow my lid - so how about a little of that free advice you've been handing out.

It looks like nobody can agree on the correct oil level in differentials and transfer cases. You'll say to read the regulations - but what does that get us? The inspectors don't check 'em at the time and place we fill 'em. We fill the gear cases to 1/2 inch below the filler plug when they are cold, the inspector checks 'em when they're hot, and they pour out in his face. What to do?

Another thing: this new detergent oil seems to expand when it's cold. You put in five quarts of oil and run it awhile, then check it, and it's okey. The inspector comes around, finds your oil too high on the stick, and wants you to drain out a quart or so. You know as well as I do that this is dam foolishness and a waste of oil. But what are we going to do? The inspector can do no wrong. Give me the dope on this, will ya?

Sgt. W.E.S.

Dear Sergeant,

Since there's a lot of griping on this subject of oil and lube, maybe a little dis-



cussion won't hurt. First, so far as I know now, there's no other rule than the 1/2-inch below-the-filler-plug rule in cold gear cases. Originally the oil level was at the plug hole. Then, because of unexpected lube expansion with heat, it was decided to fill to a point 1/2-inch under the plug hole. This allows for expansion, but since the shape of housings vary in different makes of vehicle, the percentage of space allowed for expansion in one housing will not be the same as in another. So naturally while the lube may expand to the level of the hole in one vehicle, it may go a little higher, or perhaps lower in another. Until some expert dreams up a better scheme - you've done about all you can here.

In the case of the engine oil swelling up on you after the engine cools down, I don't think you've got the right pig by the tail when you say the detergent oil expands with cooling, thus embarrassing you with the inspector. More likely your engine didn't drain clean, or somehow you put too much oil in at first, or the case on your oil stick slipped allowing it to enter the oil too deeply, or maybe you're getting a lot of dilution from some source. The oil level naturally raises slightly after the engine rests for awhile as the circulating oil returns to the reservoir - but this doesn't amount to enough to warrant draining it off.

Some difficulty along this line, I recall, was caused by putting 5 quarts of oil in jeep engines when the oil filter was not changed.

Another angle you want to look out for, is the position of the truck when you check the oil. It's surprising what a difference a few degrees of road grade will make in oil level in either gear boxes or engine.

*Half-Mast*

Dear Half-Mast,

Studying the oil-bath air-cleaner in class today, they told us that for maximum efficiency, the oil should be level to the line all around the cleaner. Yet the entire cleaner is mounted at an angle on the late-model GMC's, which makes the oil level uneven and makes one air passage higher than the other. This, as we understand it, defeats the purpose of the cleaner.

What do you think?

Sgt. W.A.F.

Dear Sergeant,

The oil-bath air cleaner was made so it could operate several degrees off the horizontal without any perceptible loss of efficiency. Cleaners of this type have been in general use for several years on all domestic vehicles used in the western part of the United States. A great many of these installations were made where the cleaner did not sit perfectly level, and no harm resulted. So there is no reason to believe they'll give us trouble on the GMC's.

The fact that vehicles using oil-bath air cleaners have to operate over all types of terrain and on sharp grades precludes the possibility of a cleaner sitting perfectly level at all times. In rough operation the cleaner sits at a much greater angle than its normal position on the engine in question. So don't worry about the angle of the cleaner on the GMC, it's within the safety limit.

*Half-Mast*

Dear Half-Mast,

My outfit's overseas - in a place where it gets hot in the day time and turns plenty cool at nite. Well, I personally check our tire pressures every evening when the trucks come in. But when the Battalion Motor Pool makes a surprise check in the morning they say our tires are under-

inflated, because of the contraction from the cool air. Wouldn't that beat you?

Then our Motor Officer who has read a book, makes us put 5 lbs. more in the tires than manufacturer's specifications call for. At Holabird where I went to school, they told us to stick to factory recommendations. Can you help me give him an argument.

H. H. B

Dear Private,

Maybe you're checking your tires too soon after the truck comes in - then they cool down (tire pressure drops) overnight, and when the Battalion Pool checks them in the morning, they find them underinflated. Check tires only when cool.

About what is the correct pressure - well, some of the manufacturer's recommendations have been raised by TM 31-200 and War Dep't Circular 316. So the difference of opinion probably lies in the fact that you're still riding along with the pressures in the manuals while the Battalion is using the new approved pressures.

I don't know why your Motor Officer is exceeding the new pressures by five lbs. - except if he's run across some localized terrain condition or something.

*Half-Mast*

Dear Half-Mast,

When vehicles are in the field and there are no better methods available for lubricating the constant-velocity joints - I agree that the grease gun is okey. But around here we prefer to check the lubricant in the housing by opening the lower steering-knuckle bearing cap, to see if the grease has been diluted with gear lube or water. If we find that it needs attention - we open it up and pack it by hand. To eliminate confusion, we remove the grease fittings from the

248 housings and replace them with plugs.

What do you think?

Sgt. J.F. O'Malley

Dear Sergeant,

You and me belong to the same school. I never could get enthusiastic about squirting a gun full of grease in some housing when I didn't know the condition of the grease that was already in there. They'll have to get up long before breakfast to beat the old hand-pack method of lubricating the joints.

But the very point you raise about the vehicles operating in the field would make me a little slow about removing the grease cups and installing plugs, even though the joints had been previously hand packed. If the vehicles should get into field operations where packing by hand is out of the question - the joint might be overlooked.

A lot of our procedure is admitted not to be ideal - but it's often because of compromise that it's laid out that way. We believe it's the best way possible - considering the circumstances we work under.

*Half Mast*

Dear Half-Mast:

I am the only mechanic in my outfit, and have been in foreign service for some time now. Your articles on short-cutting repairs and diagnosis have been a lot of help, but I would like to mention a couple problems you haven't covered.

The story about flat spots in jeep carburetors in the July issue was interesting, but I'm having the same trouble with the Zenith Carbs on the 3/4-ton Dodges - what to do about it? We have five of them and they all act that way.

A little complaint about the 1/2-inch-drive, flexible head-socket-wrench handle they

furnish in the mechanics tool set: (We used to call them break-down or flex handles in civilian life). It's only 10 or 11 inches long - which makes it impossible to get a good set on a 1-inch bolt or nut. Why don't they furnish them in the 18-inch length?

Another thing, the end of the grease gun that is issued along with the 3/4-ton Weapons Carrier will not fit the universal-joint grease fittings on the drive shaft. The 1/2-ton used to have adapters for the gun.

Sgt. D. J. C.

Dear Sergeant:

On page 186 of the September issue we had a contribution by Don Holbrook that I think may help you cure your flat spot in the Zenith. Be sure everything else is on the nose before you call it a job, that is, the timing, spark plugs, and everything that goes to make for a good tune-up. And then give the carburetor a real cleaning, being especially sure that the vacuum piston and pump and the vacuum cylinder have no gum deposits - causing the assembly to stick. A little alcohol or Bendix cleaner should dissolve varnish or gum in the assembly. Be sure the vacuum channel is neither carboned nor blocked nor has any leaks. As a matter of fact, inspect each part carefully to be sure it is functioning.

I agree with you that a 10-inch wrench-handle is pretty short to set 1-inch nuts. But since it has to be used on the smaller sizes too, and sometimes in close quarters, it was chosen as the best for all around service. But when more torque is needed you can either snap your off-set handle in the socket at the end of the flex handle for more leverage, or use a small length of pipe over it. Of course you know the danger of too much leverage on a small nut. In other words, you can use a short handle where you can't use a

long one, and you can make the short one long with an extension when necessary. The 18-inch handle comes in the 3rd echelon tool sets, but not the mechanics' tool set.

The tool sets in the 3/4-ton Dodges also have adapters for the grease guns, so you can lubricate the universal joints. If yours got lost maybe you can use one out of a jeep set, or some other vehicle. Sometimes they hide the adapter in the tool box so you have a time finding them, they put them in the oil can so they won't get lost.

*Half Mast*

### Erratic Brakes

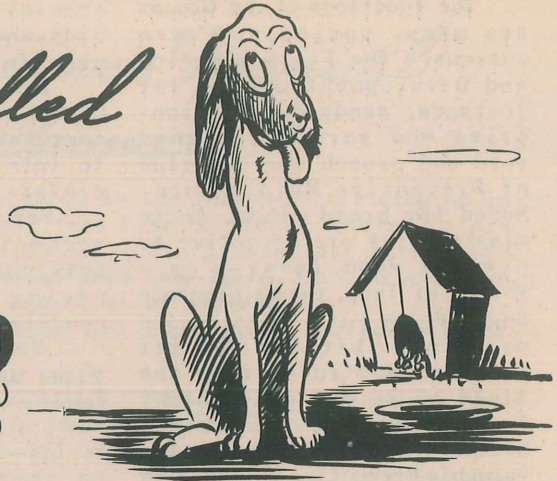
A couple months ago we got a letter about erratic brake action at the rear wheels resulting in pedal pumping on the Dodge Recon. Half Mast figured it was an eccentric drum causing the grief and advised truing the drum. Then came several letters from men in the field who had the same trouble, and discovered the cause to be balance weights on the inside of the front wheel which wouldn't clear the rear drum when the wheels were switched from front to rear. We ran a box in the September issue clarifying the situation, we thought, but - we said it could happen on the 3/4-ton vehicle.

The Fargo Company, however, advises that this trouble will not occur on the 3/4-ton, but can possibly happen on the 1/2-ton. The 1/2-ton has used two sizes of drum, and the balance weights on the early-production-vehicle wheels could interfere when used on the rear of the vehicles with the larger drum.

In other words, the balance weights may possibly interfere on the rear of the 1/2-ton, but will not do so on the 3/4-ton.

Everybody happy?

# What is this thing called The Maintenance Engineering Unit?



**L**ike art, religion, and women, Preventive Maintenance used to be a matter of taste. Mike had one idea, Willie had another idea, and Sgt. Pomeroy from Nebraska had a third idea.

And in most cases, none was the right idea.

But not any more — a happy thing has come to pass. A complete and comprehensive organization devoted to Preventive Maintenance and nothing else, has been introduced into the Army. Called the 'Maintenance Engineering Unit', the new organization is a unit of the Preventive Maintenance Section, Maintenance Branch, Field Service Division, Office of the Chief of Ordnance. It is located at Holabird Ordnance Base — and from the looks of it, Preventive Maintenance now stands a good chance of being guided into the right channels.

The question of whether Preventive Maintenance is any good or not, was answered the day a fellow named Etoain Shrdlu discovered that he could stop his dog Nellie from having puppies by the simple process of keeping her in the house.

Likewise someone in the War Dep't. recently delivered himself of the opinion that 'training in Preventive Maintenance is as important as tactical and combat training.'

With these things in mind,

## What do Nellie's puppies have to do with a new Organization in the Army?

the Maintenance Engineering Unit was set up to coordinate the good Preventive Maintenance ideas issuing from various sources — individuals and organizations — throughout the Army, with the goal of establishing a *uniform PM* program for all things that move on wheels and tracks and make a noise like thunder.

The first big, bright idea of the Maintenance Engineering Unit cropped up when the Unit — then known as the 'Technical Service Division' — was still dispensing technical information under the auspices of the OQMG. The idea was 'Preventive Maintenance Schedules.'

These PMS's broke Preventive Maintenance down into small, easy-to-take and easy-to-follow check lists printed in small leaflet form. For the 1st echelon there was a 'Before', 'During', and 'After-Operation' check list, and a 'Weekly' check list. For the 2nd echelon there was a 'Monthly' and a 'Semi-Annual' check list.

Prepared by a group of experts in conjunction with manufacturers and engineers, the PMS's overlooked nothing — just follow the simple lists and you'd never have a vehicle break down due to neglect or oversight.

Some more popular publications of the Maintenance Engineering Unit are 'The Driver's Manual' (TM-10-460); 'Motor Vehicle Inspections and PM Servicing' (TM 9-2810) which will shortly be completed; 'Automotive Troubleshooting, Tune-up and Adjustment' (TM 10-530); 'The Standard Fleet of Military Vehicles', and a host of others.

The strangest thing about the Maintenance Engineering Unit is that it never happened before. In all the long history of the Army, there has never been an organization set up to develop and establish Preventive Maintenance as a pure science. Hit-miss-and-maybe systems there have always been — but never anything like the present PM programs which have already established remarkable records in some divisions for cutting down repair and overhaul operations (see Army Motor's back cover for November on Why the 4th Echelon Went out of Business).

Responsible for the valuable work done by the Unit are the various groups within the Unit: the 'Engineering Group', the 'Field Research and Development Group', the 'Educational Aids Group', and the 'Publications and Films Group.'

The functions of the Groups are many, varied, and even curious. The Field Research and Development Group, for instance, sends out missionaries who spread the good word and preach the doctrine of Preventive Maintenance. Noted for broad minds, these missionaries are receptive to new and good ideas — as a matter of fact, the Maintenance Engineering Unit works on the principle that "we can get as many good ideas from the field as we can give them." In this way, the unit has become the clearing house for valuable Preventive Maintenance practices and methods.

The 'Engineering Group of the Unit,' consists of a number of horny-handed technicians who, when they aren't drinking beer, are usually to be found in violent discussion with the personnel of the nearest 4th or 5th-echelon shop or accepting, in conference, the cigars of manufacturer's representatives. It is in this group that Preventive Maintenance procedures and 1st and 2nd echelon tool and equipment needs are developed. Vehicle parts that frequently break down for no good reason that anybody can figure out, are also the special study of this group.

The PM sections of the maintenance manuals — as well as anything else that falls within the province of the 1st and 2nd echelon in the manuals — are edited by the Engineering Group, and last but not least, they develop lubrication plans and charts in conjunction with the Ordnance Fuels and Lubricants Section.

The Unit's 'Educational Aids Group' is an unselfish little group which is willing to share its wide knowledge and experience in Preventive Maintenance instruction with any of the schools and training centers flourishing throughout the Army. Upon request, it distributes material to aid in Preventive Maintenance training and even develops

special training curricula, aids, and assorted guides to make instruction painless.

The group coordinates the PM material supplied by manufacturers and passes same on to interested instructional centers.

For ambitious drivers and mechanics of all arms and services, the group is preparing PM correspondence courses.

The 'Publications and Films Group' in the Maintenance Engineering Unit turns out motion pictures and film strips — also posters designed to whet the appetite for Preventive Maintenance, and 'special field aids' like pamphlets, lectures, articles, etc.

Like a floating kidney in the body politic of the Publications and Films Group, is the rowdy-dowdy Army Motors magazine, which besides functioning as the mouth-piece of the Maintenance Engineering Unit, also has its own ideas on how the Army should be run (for a brief resumé of these ideas, tear off the head of your neighborhood grocer and send together with 10c to cover mailing costs).

Staffed and officered by men from every branch of the automotive industry, the Maintenance Engineering Unit has its ear to the ground and its nose to the wind. It has direct lines of communication to all Office-Chief-of-Ordnance agencies; Headquarters, Army Ground and Air Forces; Office of the Inspector General; Manufacturers; Engineering Societies; Equipment Operators, and special consultants in Washington, Detroit and points west.

Representatives of every mechanical industry beat a path to its door in order to have broadcast to the field, the special instructions and information necessary to the maintenance of vehicles and equipment.

Close by is the Engineering Division of the Holabird Ordnance Base whose Test

Section discloses its findings and runs special projects and experiments for the Unit.

All things considered, the Maintenance Engineering Unit stands as a 'higher authority' in things automotive — ready, willing, and able to answer the puzzling and often unprecedented questions of the personnel and organizations in the field. More than that, it introduces and keeps in good repair the practices of Preventive Maintenance without which, the Army is a house of cards built on a foundation of loose sands.

For which we say, long may it wave.

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### COLONEL THEE OBSERVES A MANEUVER

(From page 227)

retainers in differentials and transfer cases, keep the level 1/2 inch below the plug hole. Colonel Thee admits that some engineers object to this practice, but says that so far, no mechanical department he knows of has reported any trouble resulting from it.

Front-wheel-bearing seal leakage caused by poor adjustment of axles, scored seating surfaces, dry or poorly adjusted steering-trunion bearings was frequently observed. Further harm can come from neglecting inspections and adjustments at these points since differential grease that passes the retainer finally works its way into the wheel bearings and dilutes the wheel grease. The diluted lube may finally enter the brake drum and ruin the linings. Care and observance of maintenance manual instructions is the golden rule in this case.

Colonel Thee has a suggestion for curing a freak grease leak that has fooled a lot of people. In the maneuver area, when differential grease began showing up in the rear wheel bearings on Dodge 1/2 and 3/4 tonners, there was a lot of head scratching as to the route it took, since the outer re-

tainers were in good condition. Finally it was discovered that the grease was seeping along the milled keyway in the axle housing where the wheel-bearing lock-washer tongue is seated. By filling this keyway with water-pump grease when assembling the wheel to the housing, the differential grease is successfully dammed.

When differential covers leak, Colonel Thee finds that it is seldom the gasket at fault. In some few cases the cover is sprung so that it doesn't seat properly, but in most cases the screws are just not turned down tightly - allowing the grease to seep out along their threads. Tighten the screws, or remove them and cover the threads with gasket cement - then when they're replaced, draw them down evenly from left to right a little at a time. That will cure this type of leakage.

Universal joints come to grief for a number of reasons - all bad, and all avoidable. First off, too many U-joints are destroyed by simple neglect. Apparently the driver forgets to lubricate them altogether, or gives them a shot only when the fitting happens to stop on the underside where he can see it. Too much pressure is applied to some universal joints, causing the seals to be blown out, and here it seems that a low-pressure relief fitting or some judgment in lubricating the unit is the answer. This subject will bear a lot of consideration, for one unit was found to have 20% of its trucks laid up at one time from shot U-joints.

A couple miscellaneous causes for alarm are rust-caked, tractor fifth-wheels; and rusty, throw-out clutches and shafts on winches. These can be neatly disposed of by simply dopping their surfaces with water-repellent grease.

As usual Colonel Thee's suggestions are on the beam. Follow them and be happy.

## Maintenance Manual Corrections

To err is human - which is the reason errors crop up in the maintenance manuals from time to time. However, a new group of maintenance-manual editors have just been hired who appear to be something less than human. Naturally enough, from now on, you can expect fewer errors.

In the meantime, here are a couple of corrections for a couple of manuals.

INTERNATIONAL 5-ton, 4x2, Model KR-11 trucks: In the following manuals...

TM 10-1145 (Contract W-398-QM-10745, 10881 and Reg. Nos. W-53242 to W-53484, inc., and W-53494 to W-53522, inc.) Section 15 - Page 1...

TM 10-1337 (Contract W-398-QM-10973 and Reg. Nos. W-53696 to W-53750, inc.) Section 15 - Page 1...

TM 10-1383 (Contract W-398-QM-11401 and Reg. Nos. W-54910 to W-55159, inc.) Section 15 - page 1...

TM 10-1509 (Contract W-398-QM-11750 and Reg. Nos. W-55351 to W-55450, inc.) Section 14 - Page 1...

...change the steering-gear specifications to read as follows:

Steering-Gear Model (IHC) .....RT-70

Steering-Gear Model (Ross) (and number).....#T-74064

Steering-Shaft Diameter..... .....1-1/2"

Total Steering-Arm Travel (Used).....92-1/2"

Total Steering-Arm Travel (Available)...100"

Steering-Gear Ratio to 1.00 .....20: 18: 20

Steering-Post Diameter.....1"

Steering-Mast-Jacket Diameter .....1-3/4"

FORD 1/2-ton (2GC and 21C - closed cab with pickup body). Make the following changes in

TM 10-1436 (parts book, contract W-398-QM-11623):

Page 14

2GC-6000 change to 2GCS-6000F  
21C-6000 " " 21CS-6000B

Page 24

21C-7000 " " 21CS-7000B  
2GC-7000 " " 2GCS-7000B

78-7005 " " 01A-7005

022A-7017 " " 11Y-7017

21C-7052 " " 78-7052

21C-7061A " " 11Y-7061

Page 26

022A-7113A " " 67-7113A

68-7129B " " B-7129

68-7141 " " B-7141

DIAMOND T - make the following corrections in the following manual:

TM 10-1603 (Form 967-3) Model 967

Page 0-10

In paragraph on oil changing, crankcase capacity should be 16 quarts.

Page 0-13

Transfer-case capacity should be 10 pints.

Page 0-33

Cooling-system capacity is 48 quarts.

Page 4-9

Rod bearings have shims on one side only - main bearings have shims on both sides.

Page 4-22

Crankcase capacity should be 16 quarts.

Page 5-4

Clutch pilot bearing should be ball type.

Page 8-3

Cooling-system capacity is 48 quarts.

**RUMORS**

(Con't from page 231)

written in Army Regulations - or in anything else for that matter - we think we've got a good working definition to help you decide whether a piece of merchandise, specified for installation on tactical vehicles only, should go on any particular vehicle you can't make up your mind about.

Here it is: *tactical vehicles - or equipment - are any vehicles or equipment assigned to field organizations. Administrative vehicles are those assigned to posts, camps or stations or any other fixed establishment.*

Even though the intrinsic nature of a vehicle makes it look tactical - like a 2-1/2 ton, 6x6 truck equipped with blackout lights and everything else - it's not tactical unless it's assigned to a field organization, such as a truck company that's liable to be moved out to North Africa tomorrow.

Schools, of course, are a special case. A vehicle used for instructional purposes is a tactical vehicle even though a school is a fixed establishment. Say, the course involves instruction in the

operation and maintenance of tactical vehicles - then naturally, the vehicles used will be tactical vehicles - and as such will be entitled to equipment specified for tactical vehicles.

Use this definition, and we think you'll be on the safe side.

**GASKETS**

(Con't from page 241)

above the governor valve and the old trouble crops up again: the governor induces a low vacuum in the passage and the power jet rares up and furnishes a rich mixture.

(By the way, in the foregoing, there'd have to be an external bridge leading the vacuum to below the governor valve).

The rule is: use the four-slot gasket only between the manifold and whatever is attached to it.

All boiled down, the carburetor-governor-manifold gasket situation settles to the question, *which* of the three gaskets is used *where*?

As an answer to the question, we give you the deathless utterance of the almost-legendary Sgt. Half-Mast McCanick who, while in his

cup's the other night rose to the occasion with, "Don't put all your gaskets in one basket," and then slid under the table.

To which we solemnly add: Gaskets 1 and 2 can be used between the carburetor and governor only; gasket number 3 can be used at the manifold flange only.

And as a parting shot we give you a tip straight from the horse's mouth: any one of the three gaskets can be used in place of a plain gasket.

**PIONEER TOOL BRACKET**

(Continued from page 225)

you didn't know, weighed 15 pounds. It's also four inches shorter than the old bracket. This - together with the fact that instead of four holes for mounting, the new bracket has 16 holes - should make mounting easier. Not that all 16 holes should be used to mount the bracket, it's just that a greater choice is now available.

Each of the three tools may be dismantled separately because each tool now has its own strap. Thus the shovel may be removed without disturbing the axe and the axe may be removed without disturbing the pickaxe. (And the spot check inspectors may be removed without disturbing anybody.)

In addition to this, the three straps on the new bracket are now of the same size - 12 inches. The old bracket uses two sizes of straps - 12 inches and 20 inches. Only one size of spare straps will now have to be carried - a tremendous saving in space.

Answering the question now poised on the tip of every tongue - yes, the recent TSB X-7 (now being revised) still applies: The new bracket will be mounted according to the suggestions contained therein.

**LIGHT CHANGEOVER**

(Con't from page 236)

KIT NO. 11			
Indian	Motorcycle Solo	W-64940	W-65439
Indian	Motorcycle Solo	W-66648	W-67847
		W-68448	W-69047
Indian	Motorcycle Solo	W-69056	W-69277
KIT NO. 12			
Harley Davidson	Motorcycle Solo	W-64291	W-64939
		W-65443	W-65444
Harley Davidson	Motorcycle Solo	W-65448	W-66647
		W-67848	W-68447

# News Flashes

GOVERNMENT PRINTING OFFICE, WASHINGTON, NOVEMBER 28. Now rolling off the presses is War Department Circular Number 384, which rescinds all previous circulars on conservation, care, and maintenance of pneumatic tires. The new circular will give you a lot of the answers you've been confused about. The following are typical:

1. If your vehicle is designed to carry a spare tire — you'll carry a spare at all times.
2. If your vehicle is designed to wear dual tires — it'll wear dual tires at all times.
3. The circular prescribes mud-and-snow-type tires (if and when available) for all vehicles that can use them as soon as existing stocks of highway treads are used up.
4. The circular contains an official listing of all the latest approved tire pressures for all vehicles.

WASHINGTON, D.C., OCTOBER 14, 1942. If you've got any materiel or equipment you don't fully understand or know how to use, WD Circular 345 tells you how you can get an expert instructor sent out from the Office of Chief of Ordnance.

RADIOGRAM WA 595, OQMG, WASHINGTON, D.C. SEPTEMBER 2. The radiogram orders that motor vehicles turned in for salvage must not be further mutilated, but sold as is. In other words, no more scavenging — scavenger.

WASHINGTON, NOVEMBER 4 - Training Circular Number 80, on camouflage of guns and equipment with some patterns and colors, is now available for distribution. To obtain this information in connection with the prescribed work.

**FLASH! FLASH!**  
**T.C. 80 RESCINDED AT PRESS TIME. SEE T.C. 91 FOR LATEST INFORMATION.**

WASHINGTON, NOVEMBER 17 - You'll find the answers to hundreds of questions in TRAINING CIRCULAR 88, on RECOVERY AND EVACUATION OF ARMS AND OTHER EQUIPMENT BY COMBAT UNITS IN COMBAT ZONE. If you've had any doubts about your duties and limitations, watch the morning mail for this news-packed, four-page circular. We think it's a must.

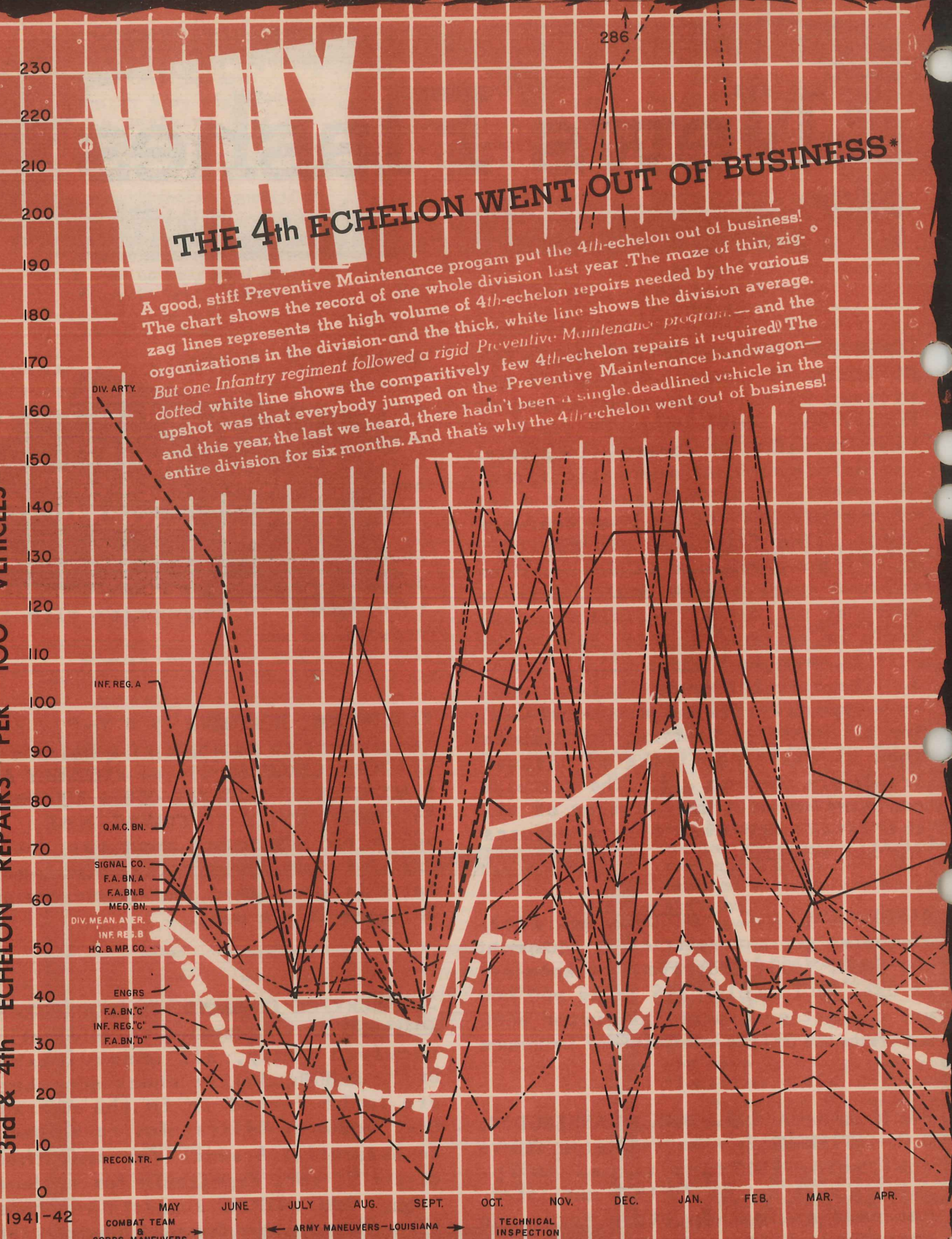
3RD SERVICE COMMAND, HEADQUARTERS, NOVEMBER 23 - According to information received today, all unserviceable Delco and Houdaille shock absorbers are to be turned in to the nearest Post Ordnance Officer for re-shipment to Watervliet Arsenal (or sent there direct if more expedient) for reclamation. ARMY MOTORS suggests you check with your Service Command Headquarters for correct procedure in your area.

# WHY

## THE 4th ECHELON WENT OUT OF BUSINESS\*

A good, stiff Preventive Maintenance program put the 4th-echelon out of business! The chart shows the record of one whole division last year. The maze of thin, zig-zag lines represents the high volume of 4th-echelon repairs needed by the various organizations in the division—and the thick, white line shows the division average. But one Infantry regiment followed a rigid Preventive Maintenance program—and the dotted white line shows the comparatively few 4th-echelon repairs it required! The upshot was that everybody jumped on the Preventive Maintenance bandwagon—and this year, the last we heard, there hadn't been a single deadlined vehicle in the entire division for six months. And that's why the 4th-echelon went out of business!

3rd & 4th ECHELON REPAIRS PER 100 VEHICLES



\* In one division