

# Army Motors

Volume - 3

December 1942

Number - 9





# Steering Wheel

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Although we must confess that letters like these are a rarity (thanks to the Classification System), we do get frequent letters from men who want to switch from one branch of motor transport to another. For instance, if we run a story describing a machinist course at one of the schools, we'll get a couple of requests for information on how to get into that school. Or when we run an article like the one on the 'Mobile Tire Repair Shop', we get half a dozen letters from mechanics who want to brush up on the latest repair and retread techniques.

All of which leads us to wonder whether the officers in charge lend a sympathetic ear to the ambitious wishes of their men. We don't say they don't - we just wonder if they do. We hope they do.

And then there's the case of a recent letter from overseas complaining about the misplacing of men in a division.

"John Q. was a truck driver in civilian life. Being mechanically inclined, he passed his preliminary training with excellent marks in nomenclature, care and cleaning of weapons. The leader of an infantry platoon spots John's record and requests that John be placed in his platoon. The transportation sergeant learns of John's driving experience and rushes in to ask for him too. And then the war is definitely on.

"Nearly all the men in service harbor the desire to drive an army vehicle. They go to any lengths to convince the harassed transport non-com that they are indeed God's gift to trucks. Sorting them out, finding the real drivers and training them to the Army way is a tough job. But convincing platoon and company leaders that these men would be best placed on trucks, is practically impossible.

"I don't say that the ranks should be robbed of the best men to feed the motor section, but I do feel that the driver personnel is often slighted - due to its minority - in a heavy weapons company.

"Sharp-eyed, intelligent gunners are of first importance to any Army - but they are useless without the ammunition, food and mobility offered only by experienced, dependable drivers.

"I say, the training of drivers would be simple if someone would rectify the sins of selection."  
No comment - we just offer it as food for thought.

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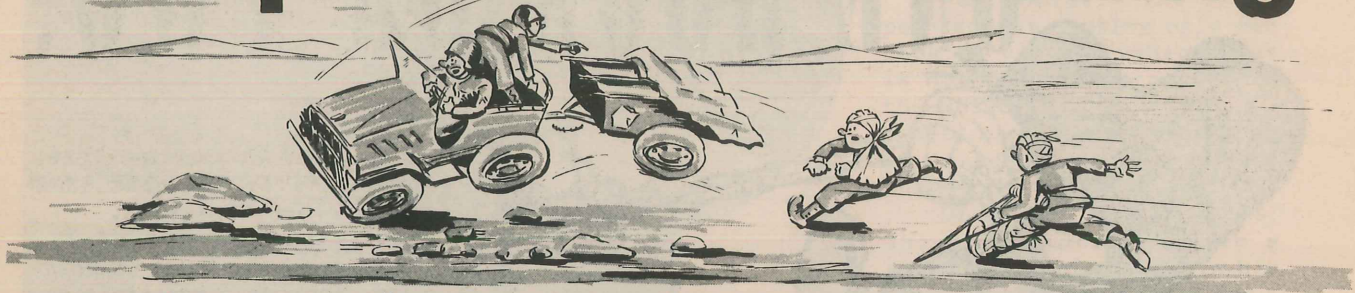


ARMY MOTORS is published monthly in the interest of Preventive Maintenance by the Maintenance Engineering Unit\*, Holabird Ordnance Base, Baltimore, Maryland. Your contributions of ideas, articles and illustrations are welcome. Address all correspondence to the Editor, at the above address.

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# Keep 'em From Rolling



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**T**he new 1/4-ton jeep trailer, as we indicated in our article in August, has a certain medicinal value—that is, it is designed so that two stretchers may fit comfortably over its gunwales.

But riding high up on the gunwales this way, the occupants of the stretchers are prone to bounce off when the little trailer is being towed over rough or sloping terrain. And the spectacle of two wounded fellow-creatures dusting themselves off and rushing to catch up with the trailer time and time again, is a little too much for even our callous stomach.

Thus it was with a distinct feeling of relief that we heard a suggestion from the Holabird Engineering Dep't, on a guaranteed way to make the wounded stay put when being transported in the 1/4-ton trailer.

It is ingenious and like many ingenious things, it is simple. It consists merely of using the tarpaulin that comes with the 1/4-ton trailer as a 'hold-down sheet' (Fig. 1).

When the two casualties have been settled comfortably in the stretchers and the necessary blankets have been arranged over them, the tarpaulin is drawn up over the blankets and made firm with the tie-down ropes which fit into the hooks provided on the

trailer. In this way, the casualties are prevented from sliding little by little toward the rear until they finally drop off, and at the same time are prevented from flipping sideways and overboard.

The tarpaulin also reduces the effect of the rhythmic bounce of a trailer riding over rough roads which might fling the wounded high in the air and aggravate injuries to limbs or other parts.

When the rains come, the  
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*Fig. 1 - Keep 'em from rolling off the 1/4-ton trailer by tying the tarp down.*



*Fig. 2 - Even on an extreme slope, the wounded won't roll. It's wetproof.*



*Fig. 3 - A severe case of hangnail being rushed to the rear by 1/4-ton trailer (notice the tarpaulin). Scene: the beautiful marshland bordering Schultz's creek.*



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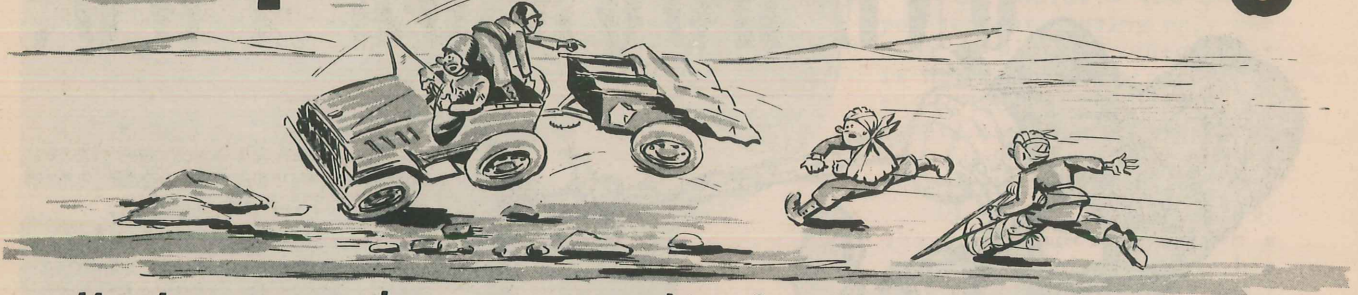


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# ONE HOOK OR TWO?

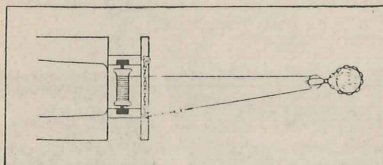


**If you place the tow line over both bumper hooks of a stuck truck, you're making a mistake.**

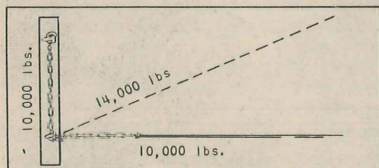
Some time long ago, a certain peculiar notion joined the Army and for some reason just as peculiar, it has never been thrown out.

So deeply entrenched did this notion become that it found its way into at least one recent training film and even got itself written into a technical manual.

The notion is that a tow chain must be passed over both of the hooks on the bumper of a vehicle being towed (Fig. 1).



**Fig. 1 - Wrong: passing a tow chain over both hooks of a truck to be towed.**



**Fig. 2 - Why it's wrong: 10,000 lbs. strain along each of the lines indicated resulting in 14,000 lbs. strain on the diagonal.**

Let a truck be stuck in a ditch and as surely as God made little heads, it will be winched out with the tow line passed around one hook and fastened onto the other.

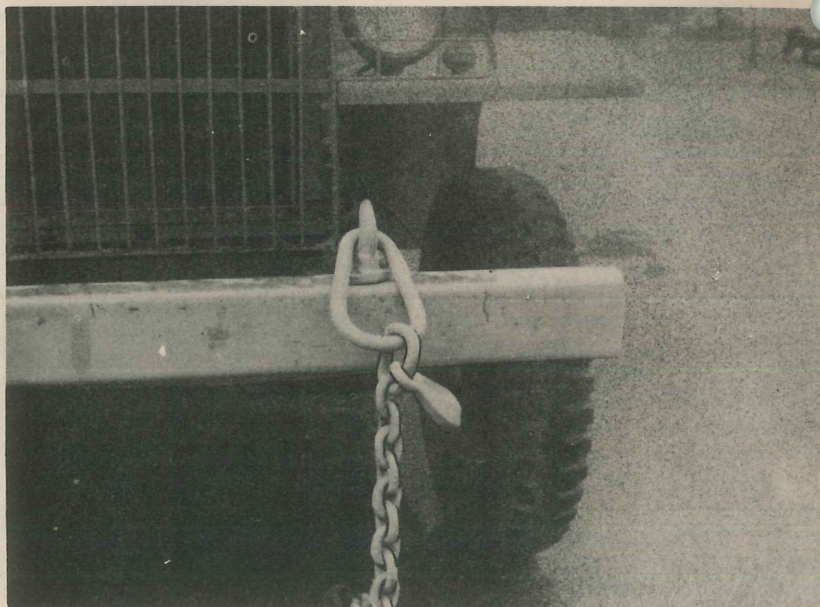
The little notion is written in black and white on page 68 of TM 10-460 'The Driver's Manual,' and

can be seen at your neighborhood theater the next time they screen TF 11-555.

When the chief of the Engineering Division at Holabird, who was responsible for writing vehicle specifications including the specification for the tow hooks, heard about the practice, he opened his mouth and made strangling sounds.

He didn't like it. He said absolutely and by Jupiter, the tow chain should be fastened on only *one* of the hooks on the bumper. Passing the tow chain over both hooks was ruinous. He could prove it was ruinous, mathematically as well as physically. And before we could make a move to stop him, he did.

He drew up the little diagram in Figure 2 and said that first there's a 10,000-



**Fig. 3 - The test: With the tow chain over one hook, the truck suffered no damage when winched out. For what happened when two hooks were used, see Fig. 4.**



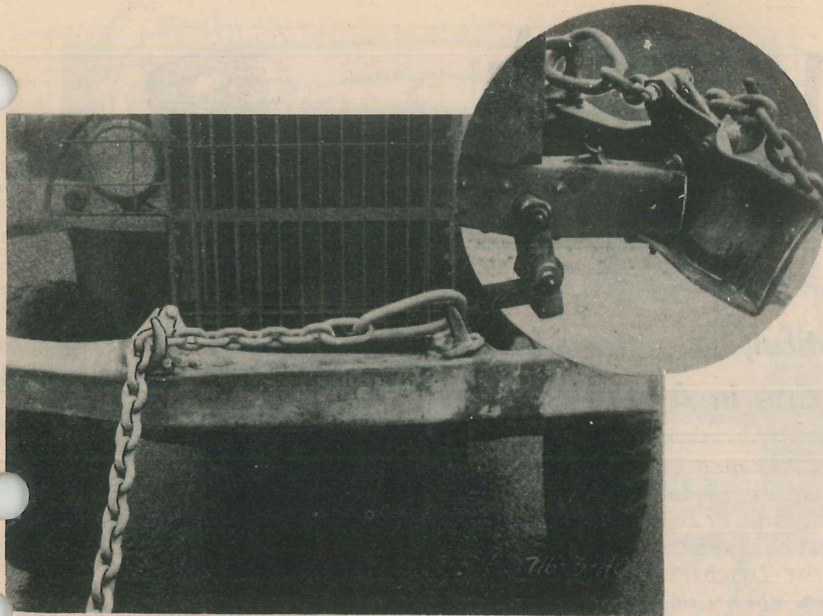


Fig. 4 - The sad result of wrongly using two hooks in towing. The hooks weren't mounted to take strain in any direction but the 'straight ahead' direction.

pound pull along the line from the towing vehicle to the first hook; and second, there's an additional 10,000-pound pull in the line across the two hooks on the bumper of the towed vehicle. You multiply these two together, add a cup of flour, take the square root and you get a resultant pull of 14,000 pounds in the diagonal direction between the two lines.

"This 14,000 pounds," said the chief, "is a strain in the wrong direction. The tow hook was never built to take such a

strain in such a direction." The result, he insisted, is that the hook on the bumper bends and distorts.

To further illustrate his point, he ran a little test that very afternoon. A vehicle was stuck in the mud and then winched out, first the right way and then the wrong way.

When winched out with the tow line attached to only one of the hooks, everything went off dandy (Fig. 3). But when winched out with the tow line passed over both hooks, the

bumper of the towed vehicle suffered a severe case of the bends and the hooks themselves were wrenched and sadly distorted (Fig. 4).

"Of course," the chief pointed out, "using only one hook to winch a vehicle out is not the best practice in the world either. What you should use is a spreader bar to divide the pull equally between the two hooks (Fig. 5)."

Of course, we point out, the driver doesn't have a spreader bar included in his tool set. However, we'll admit it's simple enough to pick up a stout hunk of lumber or pipe somewhere and manufacture a spreader bar to be kept in the box along with the other 1st-echelon tools at all times.

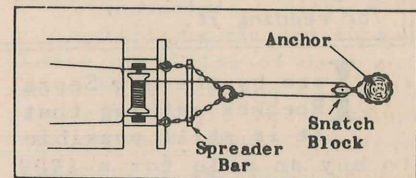


Fig. 5 - The best way to use the tow line: over both hooks with a spreader bar.

But in any case, the bad habit of passing the tow line across both hooks must go and (hoarse whisper) confidentially steps have already been taken to publish a circular calling attention to all training aids that say otherwise.

## WHICH MANUAL FOR WHICH TRUCK?

**B**efore September 1, 1941, when a man wanted a maintenance manual or a parts list for a GMC, he simply picked up a big thick book with an orange cover on it and went ahead and looked up the information he wanted.

But more often than not, the information the man got

out of the manual selected by its orange cover, was out-of-date or didn't apply to his vehicle. If it was a parts list, the numbers he picked out got him parts from the depot which couldn't be put on his truck with a sledge hammer.

The trouble was he hadn't selected the right manual or parts list for the vehicle.

With contracts flying around thick and fast, and with design changes being made every hour on the hour, it was a rare manual that could serve satisfactorily all the vehicles

of one make and model, manufactured under one contract or two contracts or three contracts.

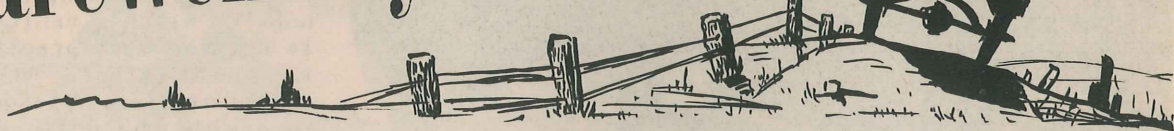
The result was that every batch of vehicles had to have its own manual and parts list.

Line up 50,000 vehicles on a field and though all might be 2-1/2-ton, 6 x 6 GMC's, no one manual or two manuals or three 2-1/2-ton, 6 x 6 GMC manuals would do for all. You had to have a particular manual for each particular batch of vehicles.

Now if you were fortunate  
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# Farewell My Lovely



**We reprinted this beautiful, little story from the New Yorker magazine in April 1941 ...**

*We're re-reprinting it now because our circulation then was only a fraction of what it is today. It's the kind of story we wouldn't want any driver or mechanic to miss. It's full of the bittersweet flavor of the early days of the automobile - or 'machine' as they used to call it - and of the times when 'motoring' was a bright adventure. You'll be a better driver or mechanic for reading it.*

I see by the new Sears Roebuck catalog that it is still possible to buy an axle for a 1909 Model T Ford, but I am not deceived. The great days have faded, the end is in sight. The last Model T was built in 1927.

It was the miracle God had wrought. Mechanically uncanny, it was like nothing that had ever come to the world before. As a vehicle, it was hard-working, commonplace, heroic, and it often seemed to transmit those qualities to those who rode in it.

The Model T was distinguished from all other cars by the fact that its transmission was of a type known as planetary - which was half metaphysics, half sheer friction. Because of the peculiar nature of this planetary element, there was always, in Model T, a certain dull affinity between engine and wheels, and even when the car was in neutral, it trembled with a deep imperative and tended to inch forward.

In its palmy days, the Model T could take off faster than anything on the road. The reason was simple. To get

under way, you simply hooked the third finger of the right hand around a lever on the steering column, pulled down hard, and shoved your left foot forcibly against the low-speed pedal. These were simple positive motions; the car responded by lunging forward with a roar. After a few seconds of this turmoil, you took your toe off the pedal, ease up a mite on the throttle, and the car - possessed of only two forward speeds - catapulted directly into high with a series of jerks and was off on its glorious errand.



The driver of the old Model T was a man enthroned. The car, with top up, stood seven feet high. The driver sat on top of the gas tank, and when he wanted gasoline, he alighted, along with everything else in the front seat. The seat was pulled off, the metal cap unscrewed, and a wooden stick thrust down to sound the liquid in the well. Refueling was more of a social

function then - the driver had to unbend, whether he wanted to or not.

Directly in front of the driver was the windshield - high, uncompromisingly erect. Nobody talked about air resistance, and the four cylinders pushed the car through the atmosphere with a simple disregard of physical law.

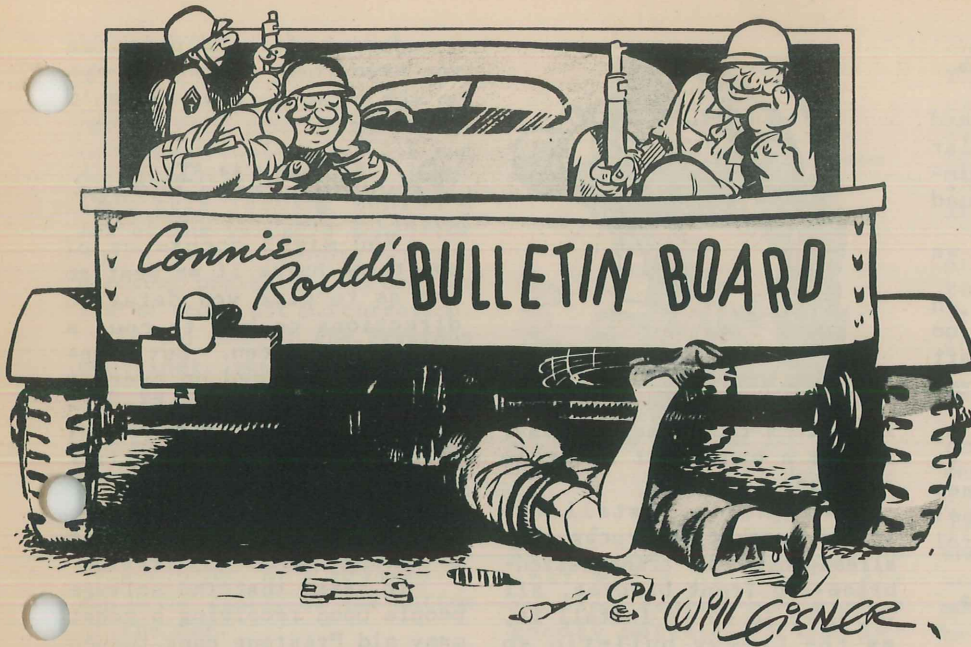
There was this about a Model T: the purchaser never regarded his purchase as complete, finished product. When you bought a Ford, you had a start - a vibrant, spirited framework to which could be screwed a limitless assortment of decorative and functional hardware.

A flourishing industry grew up out of correcting Model T's rare deficiencies and combating its fascinating diseases. You bought a radiator compound to stop leaks, a clamp-on dash light, a sun visor, and a fan-belt guide to keep the belt from slipping off the pulley. Persons of a suspicious turn of mind bought a rear-view mirror; but most Model T owners weren't worried by what was coming from behind because they would soon enough see it out in front. They rode in a state of cheerful catalepsy.

After the car was about a year old, steps were taken to check the alarming disintegration. A set of anti-rattlers was a popular panacea. You hooked them onto the gas and spark rods, the brake pull-rods, and the steering-rod connections.

During my association with Model T's, self-starters were not a prevalent accessory.





## GMC Free Play

In November we gave you the suggestion of a couple of GMC factory representatives that the one-inch, clutch-pedal free play of the GMC 270 be increased to a two-inch minimum, two-and-a-half-inch maximum. This new adjustment prevents the clutch diaphragm spring from excessive movement especially when the clutch facing is new. Excessive movement tends to make the nine retainer bolts in the clutch spring bottom in the slots and eventually fracture the spring.

However, in order to change the pedal free play as above, the adjusting nut must be backed off almost to the end of the threaded rod and it is possible that some fearful mechanics will hesitate to do this after installing new clutch facings as very little room remains for future adjustment.

So for the sake of the timorous let us explain that it is not necessary to maintain the 2" - 2-1/2" free play in the clutch pedal after the facings have started to wear - because the spring compensates for this wear by

moving outward and thereby eliminating any chance of the retainer bolts bottoming in the slots of the spring.

Therefore, let this be your guide: the 2" - 2-1/2" free play is necessary only when new clutch facings have been installed (new trucks at the factory are being given the 2" - 2-1/2" free play). Later when the clutch facings have started to wear, one-inch free play is enough.

## Dirt

Dirt, as you have been told a million times, is the death of your engine. Dirt entering the carburetor on the air stream and dirt finding its way into the engine oil.

To prevent the possibility of dirt entering through the carburetor, should the lower section of the air cleaner become distorted, GMC started installing a new type of air-cleaner seal on all 270 engines, beginning October 15. This seal is located under the air-cleaner attaching clamp.

The new seal prevents air (and dirt) by-passing the oil bath air cleaner and, together with a properly maintained air

cleaner, just about shuts the door on any dirt, dust, or even fine sand, riding into the air stream.

One of the biggest reasons for dirt in the engine oil is careless handling - which is the reason our new lubricant program went in so strongly for small, individual containers of lubricants.

However, field inspectors still point with alarm at thoughtless handling of lubes, especially in dusty regions where dust and the atmosphere are as one. Another little thing bothers field inspectors - dirty oil-filler caps and tubes.

Loose particles of dirt and dust build up and cling to any excess oil left around the cap and tube. Then when engine oil is replenished, these dirt particles fall on down into the pan. Remedy: wipe the filler cap and the top of the tube clean before installing oil. And at all times, beware, take care - dirt is the death of your engine. (Where did we hear that line before?)

## Replacement Clutch

Here's a little warning which shouldn't concern more than a handful of mechanics in the field, but it may save that handful some trouble.

GMC reports that the (Lipe) service replacement clutch assemblies of the AFKX 804 (which is a 4-ton GMC, 4x4) are being completely covered with an anti-rust treatment. This anti-rust treatment would be detrimental to clutch facings if it came in contact with same. Therefore, maintenance shops where these vehicles might happen to be serviced, should be sure to wash all the anti-rust from the replacement clutch assemblies with kerosene or Stoddard solvent, before installation.



## Cracked Manifolds

A quiz kid from GMC asked us, "What's the most popular formula for cracking and ruining exhaust manifolds around Army camps?"

We yawned and said we didn't know.

"Spraying cold water on hot manifolds - which for no good reason, seems to be part of the ritual in washing vehicles."

Another reason, which we pointed out in October, is running around all summer without making the proper adjustment of the heat-control valve.

## Chevy Bracket

A little bracket, cursed with the name 'hand-brake and transfer-case shift-lever bracket,' is now being put on Chevrolet 1-1/2 ton, 4x4 trucks coming off factory production lines. At the same time, the bracket, Part No. 3672086, is being stocked at supply depots for service use on vehicles in the field.

According to a recent Chevy bulletin, the little bracket (C in Fig. 1) attaches to the right side of the transmission case and does yeoman service by connecting and bracing the emergency brake and two transfer-case-shift-lever fulcrum bolts. In this way it prevents distortion of the shift-lever linkage, not to mention looseness and breakage of the fulcrum bolts.

The new, little bracket is used in conjunction with two other little hunks of iron which were put on most 1942 Chevy 4x4's beginning in February, 1942. These little hunks of iron are (1) a revised transmission-brace-rod front bracket, Part No. 3667703 (B in picture) and (2) a hand-brake-lever fulcrum bolt, Part No. 3667705 (A in picture).

Now since you may be called upon to install the new, little bracket, on certain Chevy



1-1/2 tons that come your way, here's a couple of notes to remember.

First, to install the little bracket on trucks that already have the transmission-brace-rod front bracket, all you have to do is install it, as the Chevy bulletin so cutely points out. You don't need any extra parts. Just follow the picture.

But to install the little bracket on trucks that don't have the transmission brace-rod front bracket or the fulcrum bolt, you'll have to get these two little missing parts (Part Nos. above) and install them along with the new, little bracket and a 7/16" lock washer and 7/16" - 20 hexagon nut.

Just order the parts as you need them, keep your eye on the picture, and you can't go wrong.

## Pouring Anti-Freeze

You might accuse us of splitting hairs if we went so far as to give you detailed directions on how to pour a liquid from a can. But something that turned up over at the Holabird Salvage Department reveals that a lot of people are totally unfamiliar with the fine art of pouring from cans. And because of that, a lot of trouble - not to mention waste - is brewing.

It seems that the salvage people upon receiving a great many old Prestone cans turned in for scrap, found a more or less thick, syrupy mess still remaining in the cans. Being of a curious turn of mind, they investigated and discovered that the syrupy stuff was Prestone that hadn't been completely poured from the can.

But more than that, they discovered upon reporting their findings to the Chemistry Lab, that the thick residue contained a large portion of

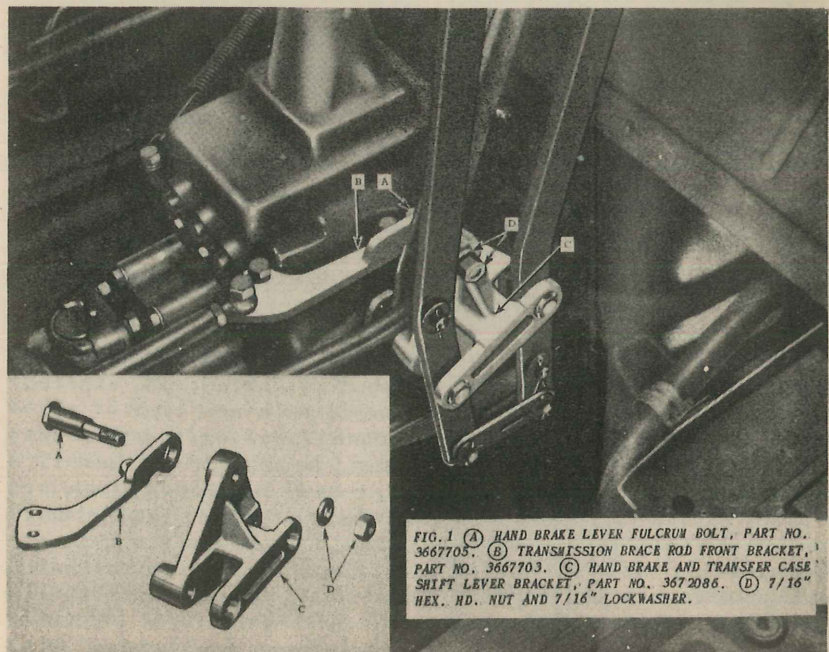


FIG. 1 (A) HAND BRAKE LEVER FULCRUM BOLT, PART NO. 3667705. (B) TRANSMISSION BRACE ROD FRONT BRACKET, PART NO. 3667703. (C) HAND BRAKE AND TRANSFER CASE SHIFT LEVER NUT BRACKET, PART NO. 3672086. (D) 7/16" HEX. HD. NUT AND 7/16" LOCKWASHER.



the inhibitor belonging to the Prestone solution.

In other words, a lot of people were pouring Prestone into their cooling systems and due to a little misunderstanding, were leaving behind a lot of the valuable inhibitor which is the important ingredient protecting the cooling system from rust and corrosion.

If you look at the Prestone container, you'll see at the top of the can, two little places at diagonal corners marked, 'Vent here', and 'Pour here'. Now if you'll turn the can over so that the label is upside down, you'll see in the bottom of the can, what looks like a plug, or a pressed-in cap in the center of the bottom of the can.

If you're like a lot of other forthright guys in the field, this pressed-in cap on the bottom of the can will mean only one thing to you: a place to pour from — in spite of the two places marked 'vent' and 'pour' on the top of the can.

So you go ahead and knock out the plug and pour. But you can't get the entire contents of the can out through this hole. The result is that you leave a certain amount of the Prestone in the can — and that certain amount is composed largely of the valuable rust inhibitor without which, your anti-freeze will do only half its job.

Of course, you might ask why in the hell was the pressed-in cap put in the bottom of the can in the first place? The answer is, that's where the manufacturer filled the can at the factory — and any similarity to pouring vents is strictly coincidental. It was never intended to be used for pouring.

So far this all might sound to you like something right off the end of the pitchfork, and hardly worth mentioning. But when we tell you that the salvage people discovered valuable 'leftovers' totaling 50 gallons (and at this one depot, remember)



you'll begin to understand that a lot of trucks are running around now with a goodly portion of the inhibitor that should be in their cooling systems, still reposing on the inside of the cans they threw away.

It might be a little late in the season for us to be telling you all this, but if you're in a climate where you haven't had to install anti-freeze yet, you might remember this when your turn comes.

And the next time you pour anything out of a can — especially a Prestone can — follow the manufacturer's directions: 'Vent here', and 'Pour here'. And to be on the safe side, flush out the can with water and pour the flushings into the radiator.

### Tightening Spark Plugs

If you've never given much thought to the importance of

correctly tightening spark plugs, we've got a little chart (below) that ought to shake you up a bit. It contains the results of a test involving six plugs taken fresh from stock.

Correct tightening consists of giving the plug one-half turn after it has seated itself against the gasket. This gives a good seal but does not crush the gasket completely.

As the chart indicates (column 3), when the plugs were tightened correctly, the gaps were changed very little if at all — which is as it should be. But when the plugs were tightened in the head as much as possible (as they might be by somebody who didn't know his plugs from a hole in the ground), the gaps were altered considerably (column 4). They stayed altered considerably even after being again removed from the cylinder head (column 5).

This shows clearly how a citizen of the 1st or 2nd echelon might go quickly crazy trying to obtain (and retain) the proper gap in his spark plugs. He'd pull the plugs out, painstakingly give them the proper gap, and then when he'd install them again, in the full blossom of his ignorance, he would discover the gaps all out of kilter again.

Take a lesson from the chart, give your plugs the proper gap as prescribed by the maintenance manual and tighten them in one-half turn after they've seated against the gasket. (By the way, this

(continued on page 284)

GAP TEST ON 6 SPARK PLUGS				
Plugs	Gaps When Taken From Stock	Plugs Tightened In Head $\frac{1}{2}$ Turn	Tightened In Head as Much As Possible	After Removal From Cylinder Head
#1	.023"	.023"	.026"	.025"
#2	.026"	.027"	.033"	.026"
#3	.023"	.024"	.034"	.032"
#4	.025"	.025"	.031"	.030"
#5	.026"	.026"	.033"	.033"
#6	.025"	.025"	.029"	.029"





**W**e hear that in some places, vehicles stored on the outside are being covered with tarpaulins as the next best thing to storing them in the 'covered or closed buildings' suggested in AR 850-18.

However, from a field representative comes the opinion that in the places where he has seen the tarps covering vehicles to protect them from the dampness, the tendency is for the tarps to hold the moisture in rather than keep it out.

Moisture, you know from reading 850-18, is one thing we're taking elaborate precautions against when storing vehicles. It breeds rust and corrosion and generally speeds up deterioration.

So we question the practice of covering stored vehicles with tarpaulins.

In 'salty-spray' areas where rust and corrosion is rapid, we don't believe that tarps help much because they alone won't keep out the salty atmosphere. Of course, in a very dusty area, tarps might help — but we'd rather store our vehicles away from the place where dust is being kicked up.

But you know your own circumstances best — we just thought we'd warn you about the dampness and condensation under a tarpaulin.

\* \* \* \*

From an inspector's report, we hear that samples of ring gears and pinions removed from Parts trucks and Machine Shop trucks show heavy wear on both

the coast and drive side of the teeth. People who should know, blame (1) front-axle engagement on hard-surfaced roads: Since there's no differential between the front and rear axles, the difference in the rolling diameters of the wheels (see Army Motors back cover for August) causes 'axle fight' which promotes heat and high unit pressures on gear teeth.

(2) Blame overloading. Although in most camps, vehicles are kept scrupulously within their rated capacity, the tendency is to overload them on the march or in maneuvers — something that regulations definitely frown upon.

(3) Blame improper or insufficient lubricant. Lube that is lost through the pinion oil seals or through oxidation as a result of heat — generated by 'axle fight' — quickly causes scuffed gear teeth.

\* \* \* \*

An inspection was made recently to find out why so many temperature gages were going on the blink. And what do you think the inspectors found?

Keeping in mind that high temperatures usually ruin the gages, they found that vehicles were being loaded on and off of box cars under their own power without any water in the radiators. This got them so hot in just a little while, that the temperature gages just naturally petered out. (We don't like to think about what else might be happening

to these overheated vehicles).

Another thing is that the temperature gage is often removed from the cylinder head (we can't guess why) and placed on or near the exhaust manifold while the engine is running. The heat of the manifold ruptures the calibrated unit of the temperature gage quicker than you can say, "Oh fuff!"

\* \* \* \*

Talking about overheating, Lt. E. J. Burns, 58th Signal Battalion, Fort Ord, Calif., wrote us a hot letter describing how a "brand-new, Willys 1/4-ton driven by a civilian" changed to a stop in front of me. Immediately another civilian in a 3/4-ton Dodge decided to try pushing the 1/4-ton. The poor Willys was so bound up it wouldn't move (it was in gear). I flew out of my car in a hell of a hurry to see what the hell was going on there and found that the Willys had been driven almost three miles without any water in the cooling system. The paint was burnt off the head and, to make me even madder there was a large, red tag dangling in the civilian's way warning, 'Do not start engine without filling radiator with water'. I'll stop now before I start tearing the hair out of my head."

\* \* \* \*

The fast-action boys have been screwing up the works at the supply depots by marking every requisition they send in, 'Rush', 'Ship Immediately', 'Expedite'. This rumor comes from War Dep't. Circular 331 which also goes on to say that every time the supply officer gets a requisition marked that way, he's got to break up the priorities line (first come, first served) and go to a lot of extra expense, extra labor — and delay other shipments which might really be important.

That being the case, War Dep't Circular 331 declares, "Requisitions will be prepared long enough in advance to



allow for normal delivery. When this cannot be done or when an unexpected demand for supply items arises suddenly, the requisitioning officer will state the specific date on which he wants the shipment to arrive, by the use of the following remarks: 'Ship to arrive (date and time).' If this is impractical he will give the depot accurate information as to the seriousness of the need (such as stating the priority of the unit for which the supplies are being ordered)."

But in any case, everybody will please refrain from the use of the words, 'Rush', 'Ship Immediately', 'Expedite' or similar expressions.

\* \* \* \*

There's a report of considerable trouble with electrical equipment due to rust and moisture. Most of the trouble has been traced down to improper use of steam and vapor cleaners.

According to a source which we consider unusually reliable (and good for loans up to two dollars), electrical pieces like the voltage regulators, generators, starters, distributors, etc. should be removed before the parts of the vehicle containing this equipment are steam or vapor-cleaned. (And don't forget to plug up the holes from whence you removed them.)

A coming Ordnance Field Service Technical Bulletin will tell you all about this. But in the meantime, be careful.

\* \* \* \*

We hear that cannibalizing of Harley-Davidson Model XA shaft-drives has been going on something fierce. It better stop right away - there's enough parts at supply points to keep this cycle in running condition and in the first place, it was never intended for the shaft-drives to be eaten up bit by bit and kicked around until they finally disappeared.

Get your requisitions in for those shaft-drive parts and keep them in good shape. The Inspector General who has a warm spot in his heart for shaft-drives, might drop in soon.

\* \* \* \*

S/Sgt. Morris L. Finch has a little item he wants to pass on to other outfits that might run into the same trouble.

He says, "We've found that most of our latest shipments of jeeps have their wheel bearings packed with the wrong type of grease. This grease is too heavy and stiff: The bearings cut a groove in it and although the hub is full of grease, the bearing will run dry on the axle or housing. I'd just like to pass it on to other organizations so they can correct this fault before they run into a lot of burned-out bearings."

Hmmm - this'll bear looking into.

\* \* \* \*

You may have been left hanging in mid-air by a couple of lines in AR 850-15 which say (on page 26, B (5)) that "Detailed instructions covering maintenance inspections for wheeled vehicles are contained in TM 10-545."

But there ain't no such animal as Technical Manual 10-545. That is, there ain't no such animal yet - the TM is still being prepared and will be out shortly.

And when it does come out, incidentally, it won't be called TM 10-545. It will be called TM 9-2810 to show that it's an Ordnance publication.

\* \* \* \*

By the way, from a close reading of AR 850-15, it appears that the old X,Y,Z, classifications of vehicles have been dropped. There's no mention of X,Y,Z anywhere in the AR.

As you remember, 'X' vehicles were vehicles suitable (or which could be made suitable for service with tactical

organization in the field. 'Y' vehicles were vehicles unsuitable for such service (either by design or condition) but still usable for administrative purposes. And 'Z' vehicles were junk - not fit for any service.

Now AR 850-15 gives us only two classes of vehicles: Serviceable vehicles (and 'economically repairable' vehicles that can be made serviceable); and unserviceable ('obsolete and uneconomically repairable') vehicles.

\* \* \* \*

The AR goes on to describe how unserviceable vehicles are exchanged for serviceable vehicles and what happens to the unserviceable vehicles.

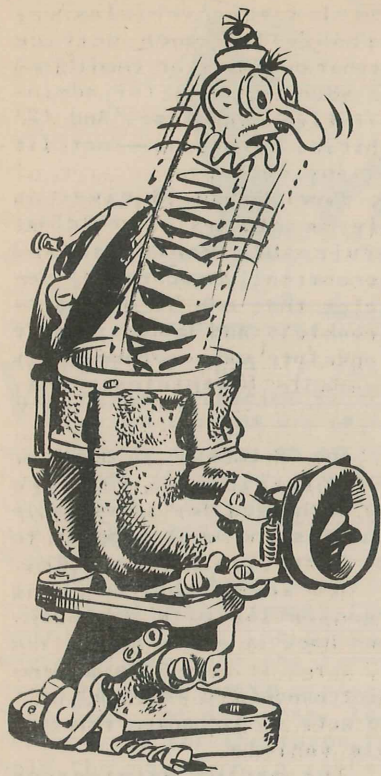
It seems that a using organization with a broken-down hack it wants to get rid of, turns it over to a medium-maintenance (3rd echelon) unit and gets in exchange a serviceable vehicle.

The medium maintenance unit gets the vehicles it thus so freely (?) distributes, on requisition from the vehicle pool of the appropriate army depot or supply company, motor-transport district or service command.

The medium-maintenance unit turns over the old hacks it collects to a heavy-maintenance (4th echelon) unit, a motor-transport district or a service-command repair shop. In any place but a theater of operations, such vehicles must be accompanied by (a) the tools and equipment originally on the vehicle (when available); (B) W.D. QMC Form 260 properly certified by a technical motor inspector; (c) W.D. QMC Form 434; (d) 'Report of survey' or a certificate showing that the vehicle has been inspected if the unserviceability is due to anything but fair wear and tear.

Finally, when a 'special inspector' gives the nod, the poor, old hack is given repose in the boneyard (or wherever else the 'I and I' specifies).





**T**here's nothing that can happen to an engine that can't be blamed on the carburetor, be it a fouled plug or a thrown con-rod. Everybody knows there's a carburetor under the hood, that it's a busy little B, and that it's the direct cause of everything.

Because of this common knowledge, the carburetor has a snowball's chance in hell when anything goes haywire. And the funny thing is that despite all the unwelcome attention it gets, a clear majority of the guys who work on carburetors, don't always know just exactly what they are doing.

If they can demolish it and then get it back together without having a few parts left over, they figure they're experts.

But the ability to take a carb apart, and put it back together again is only half the battle. If the carburetor's really understood, as often as not, it won't even be

# The New ZENITH CARBURETOR

**The "29-Series" on the 3/4-ton Dodge is full of surprises and perfect for high-angle operation.**

touched when engine trouble develops, and when trouble is actually traced to it, the righteous mechanic will know what to look for when he tears into it.

The most important thing to know about a carburetor is that it's a precision unit. A guy who wouldn't think of tying into a dollar alarm clock will whip out his tools and rip a carb apart so quick you'd think it was cheese cake - little suspecting that tolerances are closer on a carb than on a lady's fine watch. Calibrating a carb is only simple - when you know how.

Carburetor 'know-how' consists of three things: Knowledge of what the carburetor does, how it does it, and what to look for if a certain function is not up to snuff - as can be determined from the operation of the engine.

Not all carburetors work the same way, but they do operate enough alike so you can figure out almost any of them if you really understand one.

And there's no more interesting carburetor than the Zenith 29 - series carburetor which graces the manifold of your 3/4-ton Dodge. Since it has several new and startling features, by contrasting it with any of the older types, you can get a working knowledge of them all.

The easiest way to learn about carburetors - is to consider - and work on - them in CIRCUITS. There's the float circuit, the main-jet circuit, the power circuit, the accelerating circuits, etc.

If you jumble all the circuits up in your mind or on the bench, you'll never know exactly what you're doing.

The first thing you'll notice on the Zenith 29, is that the air intake is at the side, rather than on the top, as on other downdraft carburetors. Follow the inflow of air and you see that first it passes the choke plate, the pitot tube, and then makes a right-angle bend to enter the carburetor bore through the venturi - then on past the throttle plate and into the manifold and cylinders. During this trip in, through, and out of the carburetor, the air picks up gasoline. How, we'll come to later.

After the air enters the carburetor, makes its right-angle bend and heads downward toward the manifold, it squeezes by the double venturi. The venturi (19) (see Figs.) measures the air that passes through the carb and forms a low-pressure area at its narrowest point. The low-pressure sucks gasoline down from the float bowl into the air stream. That's the function of any carburetor - to allow a measured amount of gasoline to mix with a measured



amount of air before it enters the manifold.

But the Zenith 29 carburetor does its mixing a little differently. The main discharge-tube outlet (17) is located centrally and directly above the venturi, as in other carburetors. But the difference is in the location of the metering well (9), which is in the center of the fuel bowl and completely surrounds the upper part of the discharge tube. This construction allows a steady flow of gasoline to be delivered to the carburetor bore in extreme high-angle operation.

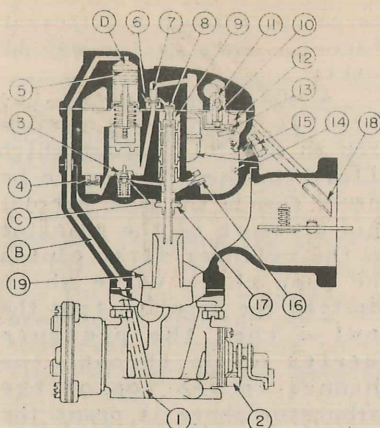
Let the truck try to stand on its head and still the gasoline flows steadily. The mixture isn't too rich on hills or too lean on downgrades or vice versa.

That's the trouble with most ordinary carburetors. Tip them and you tip the level of the gasoline in the float bowl. The narrow-minded float follows the dictates of the tipped gasoline level and delivers too much or too little gas to the bowl. The metering well is either starved or flooded. This doesn't matter much in a truck operating over smooth, graded roads - but in rough, hilly country, it's something else again.

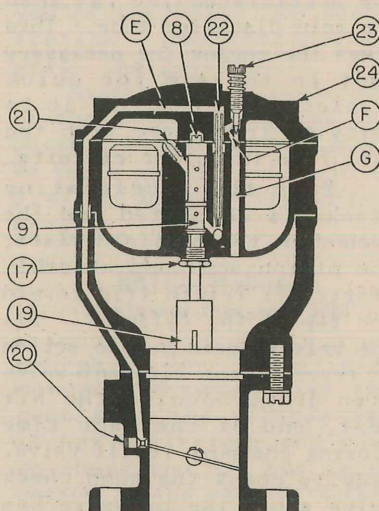
Before we start tearing into the circuits of the Zenith 29, there's one little general rule we'd like you to keep in mind. The pulling - or suction - power of the air streaming through the carburetor gets stronger as the passages it squeezes through, get narrower. The simplest example of this is the venturi - and you will see the rule is applied in the idle circuit.

**Fuel Supply System.** Having traced the air flow through the carburetor, it's only fair that we do the same for the gasoline.

The fuel reaches the carb from the fuel pump, where it enters the float chamber by passing through the fuel valve seat (11). When the fuel level rises the float (14) is lifted,



*The anatomy of the New Zenith Carburetor.*



*Another view.*

moves on its axle (13), and when the proper level is reached, pushes the needle valve (10) into its seat, and shuts off the flow. All the circuits draw their supplies from this controlled supply of fuel. The big difference here, in the Zenith 29, is that it has a round bowl and uses a double float.

**Main Jet System.** The main jet circuit is probably the least complicated and the most used circuit. Its control is through the float level, the air pressure, and the size of certain apertures.

When the throttle valve is opened, the main-jet system goes to work. A bigger stream of air comes squeezing through

the venturi - a low-pressure area is set up at the end of the main discharge tube, and gasoline is sucked over from the metering well.

The metering well, by the way, is a little sleeve that fits over the upper part of the discharge tube, and has a series of holes drilled through it, like a tiny flute. The chamber into which the well and tube extend is vertical and sits in the center of the fuel bowl with an opening at the bottom that leads from the bowl. This opening is the main jet (16) and the gasoline from the bowl enters the chamber and seeks its level, up near the top of the tube. The flow characteristics of the gasoline from the tube are determined by the size and number of holes in the well. Air is admitted to the outside of the tube from the float chamber through the well vent (21) near the top of the chamber.

In case you're wondering how enough air can be taken from the comparatively small float chamber without setting up a vacuum, think back to the beginning where we traced the air flow into the carburetor. It passed the pitot tube (18) remember - it's through this tube that the air reaches the fuel bowl. The idea of venting the bowl from inside the carburetor throat, is to be sure it gets filtered air.

When quick acceleration or more power and speed is called for, some other part of the carburetor has to pitch in and help the main jet system in the delivery of fuel. That's where the power jet and accelerating systems come in: Although in this carburetor they are somewhat combined, we'll consider them separately to make things clearer.

**The Power Jet System** is sometimes called the *economizer system*. It's an 'economizer' unit because it allows the engine to operate with a leaner mixture under normal part-throttle operations. It's a power jet because it delivers



a richer mixture when the throttle is opened wide or the load is increased.

The unit is a piston and cylinder arrangement operated by the manifold vacuum which drops with load and open throttle, and rises with normal operation at part throttle. A spring-loaded, power-valve jet (3) sits at the bottom of the cylinder. The spring holds the valve against its seat, closing off a channel that leads into the metering well, like the main jet, so that the main jet charge is supplemented by the additional flow from the power jet when the power jet is opened.

Moving in this cylinder (D) is the vacuum-piston-and-pump assembly (5). This assembly stays at the top of the cylinder, away from the power jet, when vacuum is high: A channel (B) leading from the carburetor throat, below the throttle plate, carries manifold vacuum to the closed top of the cylinder and holds the piston assembly up, when vacuum is high. It allows it to drop, when low. When it drops, it settles down on the power-jet needle, opens it and allows an extra volume of gasoline to flow into the metering well to join the main jet flow. The engine gets a rich mixture for as long as it's needed. When normal operating conditions return, the vacuum rises and again lifts the assembly to the top of the cylinder — the power-jet valve is closed by its spring, and the economy mixture is all that reaches the engine.

**Accelerating System.** To those accustomed to seeing the accelerating pump as a separate and distinct circuit mechanically operated, this carburetor will come as a surprise. For the same vacuum-piston-and-pump assembly that operates the power jet also operates the accelerating system. It picks up its charge from the same source — the float bowl — past the pump check valve (4), but dis-

charges it through a different channel. This is the way it works:

A quick opening of the throttle produces a sudden drop in manifold vacuum which allows the pump piston to be forced down by the pump spring. This pressure on the gasoline in the cylinder first closes the pump check valve which admitted the gasoline from the bowl — then the pressure carries on up through the channel to the top of the carburetor where it opens the refill check-valve (7), closes the air-vent check valve, and discharges the fuel through the accelerator jet (8) into the main discharge tube. This gives the engine the necessary shot in the arm for quick acceleration, enabling it to carry on from there with the fuel from the other circuits.

When the accelerating stroke is completed and the vacuum in the manifold rises, the piston-and-pump assembly starts its return trip toward the top of the cylinder. All the valves again go into action in reverse, the air-vent-valve disc drops, opening the air vent, and at the same time closing the pump refill valve. Gravity opens the pump check valve since the pressure has decreased — and permits a flow of fuel to refill the cylinder on the upward stroke of the assembly — so it will all be set for another quick acceleration.

If you're curious about the air-vent valve (7) at the top of the channel — it opens the air channel from the float chamber to break the suction on the accelerating-jet system the instant the vacuum piston starts to lift the pump assembly. Otherwise, this suction would draw fuel from the main discharge tube on the upward trip of the piston in the cylinder.

The size of the accelerating jet (8) determines the rate at which the fuel is discharged, and the length of the stroke determines the amount of fuel that will be

discharged.

Which brings us to the on remaining circuit:

**The Idling System.** At idling speeds the throttle plate is almost closed, thus a very high suction exists at the side of the throttle plate where the air is squeezing past (just like the restriction of the venturi-increased suction). The priming plug or idle-discharge orifice (20) is located at this high-suction point.

If we trace the idling channel (E) leading from the orifice into the carburetor, we see that it runs up through the carburetor body to the top, turns, and crosses the top to a point just past the center, and then makes a right angle turn downward and runs parallel to the metering well. Here the idling-jet assembly (22) slips into the channel and extends on down almost to the bottom of the metering well, where the channel turns and is joined to the metering well. From this you can see that the fuel for the idling system, like the main-jet system, is drawn from the metering well. The gas entered the well originally through the main jet from the float chamber.

This takes care of the source of fuel supply for the idling system. But the idling system also needs air — so we find another channel (G), an air channel this time, running parallel to the metering well and extending into the air chamber below the float bowl (so that the air is filtered). It's closed at the top by an adjustable idling screw (23) and is joined to the idling channel by a short channel. This short channel intersects the air channel at a point just above the idling-screw seat, and joins the idling channel just below the top of the idling jet.

Thus, as the idling screw is backed away from its seat, more air is allowed to pass into the idling channel. Turn the idling screw down towards



the seat and you reduce the air passage.

Everything works fine now, unless the passage of fuel-air mixture into the carburetor throat from the orifice, does not stop when the throttle is opened, but syphons on over, and continues pouring the mixture into the manifold even after the main-jet system has taken over. To stop anything like this happening, one more very small channel (F) is provided. It extends from a point below the adjusting-screw seat in the idle air channel and enters the short, bisecting channel at its center. It thus by-passes the idle screw and seat with a small amount of air that will break the syphoning tendency. For the fine work it does, this very small and short channel is known as the 'permanent bleed.'

Those are the various circuits in the Zenith 29. They form the various gasoline and air mixtures and deliver them to the engine. They are, furthermore, your cue to action.

When a failure occurs in any of the circuits, a complete understanding of the circuits will enable you to isolate the failure and make the correction.

The alternate - or dunder-head - method of demolishing the entire carburetor into a mess of scrambled parts will only drive you crazy (you have to be a little crazy to try it in the first place).

Do it this way: Make sure you know what the trouble is and that it's in the carburetor; try to isolate it in one of the circuits and examine that circuit thoroughly to check your diagnosis.

If this doesn't bring the trouble to light, go on to the other circuits one at a time. Trace each one through, keeping its parts together from beginning to end. Sooner or later you must find the failure. This is the scientific method.

You've probably noticed on this carburetor that the

governor is part of it, and not a separate unit. The throttle valve is actually opened by the governor. When you push down on your throttle the throttle arm moves ahead without any connection with the throttle-valve shaft. The governor attends to that little chore. It opens the throttle to the point where you stopped the throttle arm - unless you stopped it too far open. In that case it opens it to the limit allowed by the governor adjustments. The only time the throttle arm has positive control over the throttle valve is in closing it. When it comes to deceleration - you're the boss. On acceleration - the governor is, well, the governor.

Assembly and disassembly of the Zenith 29-Series Carburetor is another big story. We think you'll find it in the 3/4-ton Dodge maintenance manual.

### WHICH MANUAL?

(Continued from page 255)

enough to have the original manual and parts list that came with the vehicle when it was delivered, you could go ahead and use the information in the manuals without fear of error.

But if you had to depend on a file cabinet full of manuals, you go swiftly crazy trying to figure out which manual went with which vehicle. There was no one, positive system of identification.

Well, with this kind of horseplay going on and with widespread confusion in parts supply channels, something had to be done. And something was done: Beginning Sept. 1, 1941, 'Publications Plates', listing the manuals that went with the vehicles, were placed in a convenient spot in the cab or under the hood. Just get the maintenance manual or parts list with the TM number listed on the Publications Plate and you couldn't go wrong.

However, this didn't - and still doesn't - apply to vehicles delivered before that happy September morn.

For this reason, we have gone into deep discussion with the people who handle maintenance manuals and have wormed from them, the secret of identifying which manual goes with which vehicle (manufactured before Sept. 1, 1941). Here it is:

1. Check the *Model Number* of the vehicle.

2. Check the *Manufacturer's name* and the *USA Registration Numbers* (shown on the front cover of the publication).

3. Check the *Engine Serial Numbers* (which may appear on some of the first pages of the publication).

Compare these numbers found on the vehicle with those found in the manual. However, we warn you now, you may not be able to find all the numbers listed above - but if either of the above numbers plus the vehicle model number appears on the publication, it may be safely assumed in most cases, that the publication is the right one for the vehicle. But here's another exception: trucks for which this publication was written may have been manufactured in two different lots, each lot using different assemblies. Then you've got to thoroughly check the Engine Serial Numbers, which in cases of this kind will always be listed in the manual. (You'll run into this condition particularly on GMC's).

Finally as a double-check against receiving the wrong part, include on any requisition you submit, the manufacturer's name, the model number of the truck, the model year, the USA number and the engine serial number. This'll help the requisition editor check the parts number in his parts reference.

But at any rate, check and double-check and be sure you've got the right manual for the right vehicle. There's too many mistakes being made.



# Don't Repair SEALED TAIL-UNITS!

The two letters opposite are typical of many in our mail basket. The names of their authors have been withheld because "they knew not what they did." They thought they had a good idea - it was a clever stunt - and ordinarily Army Motors would pass it along to you without comment, the same as any other contribution from the field - but since this one is loaded with dynamite and likely to backfire, you'll be glad you learned better before you get the same idea and maybe bust up a whole convoy in a blackout.

There are a lot of reasons - all good - why you shouldn't try to replace burned out bulbs in the sealed-unit stop and tail lamp assemblies. In the first place, to do it the way Exhibit A explains it is more expensive in time and materials used than the cost of a new one. It takes more time than it did on the assembly line, and it uses up a lot of critical solder. Solder is a mixture of lead and tin - one of which comes from China - the other from a dwindling salvage pile.

But the main objection to the practice of doctoring up these units is that your chances are only about one in a thousand of replacing the bulb correctly. When the unit

was built at the factory, the bulbs, screens, and lens were located in the housing with slide-rule precision. Without the proper jig, you wouldn't get them back in their original position in a thousand tries.

You've heard, no doubt, how long it took the engineers to design a light to send out the beam pattern in Fig. 1. It looks kind of simple now that we've got it, but you could heat your house all winter on the blueprints and tracing paper they used to get the right answer.

In blackout operations, the man in the truck behind you depends on this beam pattern to tell him how close he is to your truck. You

don't have to be told that it's important for him to get the right signal. If the bulb or the lens are moved so much as a 64th of an inch out of their normal relationship to each other, the beam pattern may be entirely different from that shown in the diagram.

As long as you're in the continental United States, you aren't doing yourself a favor to use makeshifts when supply channels aren't working. As long as you don't gripe for things you need, nobody'll know you're in trouble. But if you send in a deadline report, after you've used up all the normal channels, somebody will pretty soon see that you get what you need.

However, on this particular



*It looks easy but there's a half dozen reasons (all good) why you shouldn't try to fix them.*



item (if it will make you feel any better) here's why it's tough to get sealed-units from the depots. These lights are high on the high-mortality list - they're being used up almost as fast as they're shipped. Especially overseas. So if your requisition is in the same mail with one from a staging area or port of embarkation, nobody tosses a coin to see who gets put on the waiting list.

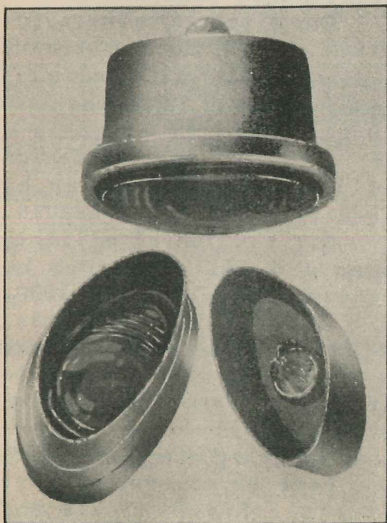
The writer of Exhibit B in paragraph 2 says in the last sentence: "Fourth, recrimp the lens." When these lens holders are crimped at the factory, they make sure the unit is completely watertight. It's quite possible when you do this in the field, you'll never know it isn't watertight until you ford a stream and fill up your blackout lamps with mud and sardines. Once muck gets in them, it isn't long before they won't light at all.

Then, too, when they are factory sealed most of the air is vacuumed out of them. This is done to keep condensation from forming in the lamp house during changes of temperature.



Fig. 1

(Continued on page 284)



Motor Base

Dear Editor,

As you no doubt know, Ford tail lights are pretty well clamped up so you cannot remove the lens without breaking it. Therefore, whenever a bulb burns out, it was necessary to replace the whole lamp assembly. However, they can be saved. Cut the body of the lamp in half with a hack saw. Remove old bulb by heating the solder that holds the bulb. Insert new bulb and re-solder. Solder up the body where it was sawed apart and the assembly is as good as new again.

Yours truly,

Motor Pool

Dear Ed.,

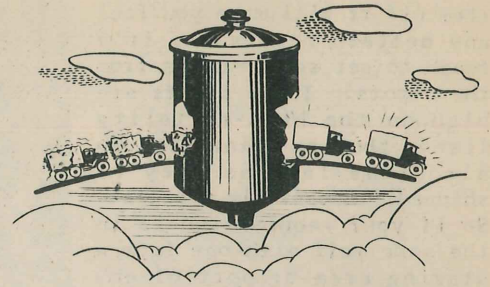
We have had lots of trouble obtaining stop and tail light units for replacement of those burned out and figure other units are confronted with this problem.

Instead of trying to replace these units which delays proper operation of the vehicle through inability to secure replacements, we have had good results repairing the old one. By being careful, it can be done as follows: First, uncrimp them and take the lens out; second, unsolder the bulb and remove it; third, solder a new bulb in place of the burned out one removed; fourth, recrimp the lens. We believe the above idea a good one, worthy of publication.

Yours truly,



# News and Views on OIL FILTERS



The Ordnance Tank-Automotive Center in Detroit sends word that Federal Stock Numbers have been assigned to the three 'military standard' oil filters (Fig. 1) and informs us that the filters (the whole assembly) will soon go into the Parts Common Manual. Following are the Federal Stock Nos. -

*Junior Military Standard Oil Filter - 8-F-1330*

*Base-Mounted Senior Military Standard Oil Filter - 8-F-1335*

*Strap-Mounted Senior Military Standard Oil Filter - 8-F-1440*

The oil-filter situation has been a little confused for some time - so, with a few well-chosen words, we will now make things clear for you.

In the first place, there will be no general changeover to the 'military standard' oil filters listed above. Those

## New Federal Stock Nos. for the "Military Standards" and a couple of tips besides.

vehicles in the field that have other makes and models of filters will continue to use them - and a stock of replacement elements and parts will be carried for them.

However, in the event that a replacement oil filter is needed, one of the new military standards will be requisitioned and put on the engine in place of the old filter. For instance, if your present filter wears out, gets broken, lost, etc. - then you will order and install the proper military standard filter for your engine.

How do you know which of the three military standard filters you need?

The piston displacement of your engine will tell you.

Light and medium vehicles - like the Dodge 1/2-ton - use the Military Standard Junior oil filter. These vehicles have engines with a displacement up to 224 cubic inches.

Vehicles with engine displacement between 225 and 300 cubic inches take the Strap-Mounted Senior Military Standard filters. Engines with filter bases use one or more Base-Mounted Senior Military Standard oil filters. In this class fall engines with a single filter base and between 225 and 334 cubic inches; engines with a double base and between 335 and 709 cubic inches; and engines with a triple base and between 710 and 799 cubic inches.

The cubic-inch displacement of the engine in your particular vehicle is noted very clearly in the vehicle maintenance manual.

The filter element situation on the three military standard filters is pleasantly uncomplicated. When you need an element - or elements - for either of the two Senior filters, simply order by Federal Stock No. 8-E-1010.

For the Junior military standard filter, order by Federal Stock No. 8-E-1000.

In addition to all this, we have for you a chart which will make it easy for you to order the proper filter element for oil filters other than military standards which you have on so many of your trucks. See Figure 2 and hooray for us.

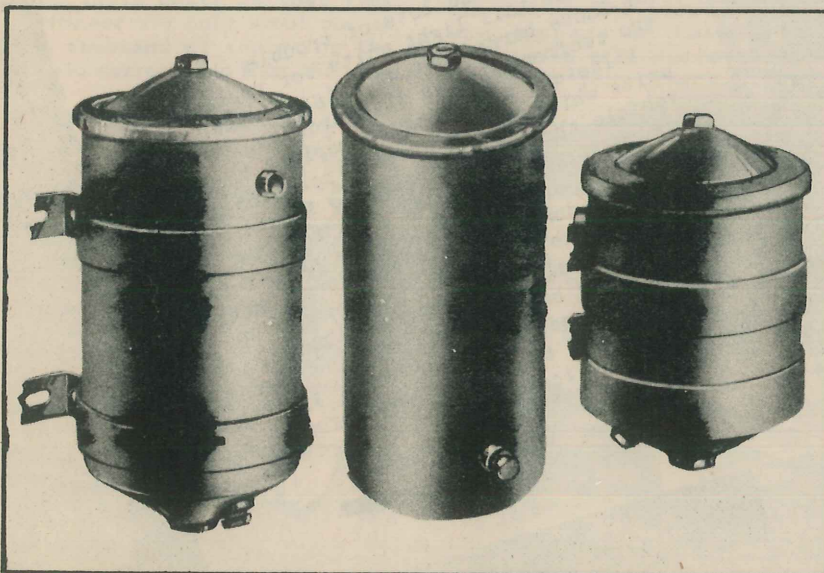


Fig. 1 - The 'Military Standard Oil Filters' - Senior (Base-Mounted), Senior (Strap-mounted) and Junior.



Now that we've given you this wonderful chart, use it. Don't try to get away with using anything but the right filter element. You'll only run into trouble.

And incidentally, there's been a lot of trouble because some people are still putting elements in wrong. Follow our diagrams (Fig. 3) as a rough guide to installing elements in military standard filters. For other makes of

filter, follow the instructions in the package.

How often do you change oil-filter elements? See the War Dep't Lube Guides, Training Manuals, and Ordnance and Field Service Bulletins for each of the various types of vehicles.

For instance, turn to the 'Lubrication' section of the 3/4-ton Dodge maintenance manual and you'll find directions to 'install a new cart-

ridge every 6000 miles or when the oil appears excessively dirty.'

But there's a rub — we're using detergent oil in our vehicles now, and, as we pointed out in an article recently, detergent oil has the peculiar habit of breaking down the impurities in the engine and carrying them in suspension. This means that after only a couple of hours in the engine, the oil gets black and looks dirty.

According to who you are, the oil, in this case, may or may not 'appear excessively dirty.'

So the best thing we can tell you is, set a definite schedule for changing elements (the 3/4-ton manual says 6000 miles, you notice) and let it go at that.

But in any case, remember that a dirty, clogged element won't give you any advance warning. It'll just by-pass the oil and let it go it's own dirty way.

And finally, always check the oil level after changing elements and add more oil if necessary. The element, as we may have mentioned above, drinks up a quart of oil for itself. And you can multiply this by the number of elements in your truck filters.

# FEDERAL STOCK NUMBERS OF OIL FILTER ELEMENTS

WHAT ELEMENTS TO USE IN WHAT FILTERS

Parts Common or Federal Stock No. of Element	MAKE AND TYPE OF FILTER USED IN		REPLACEMENT ELEMENTS						
	Make	Type	AC Element	Briggs Element	De Luxe Element	Fram Element	Michiana Element	Purolator Element	W.G.B. Element
8E-1000	All	Military Std. Junior	S-16			C-21		PD-51 Series	
8E-1010	All	Military Std. Senior	S-12			C-31	SA-12800	PD-50 Series	
8E-1020	AC	L-1	C-11 L-11			C-100		N-37	
8E-1030	Puro	N-1600 Series	C-11			C-131		N-16	
8E-1040	Fram	F-4 Series	C-11			C-4		PD-34	
8E-1050	AC	S-1	C-10 S-11			C-101		N-36	
8E-1060	Puro	N-1900 Series	C-10			C-133		N-19	
8E-1070	Fram	F-35	C-12			C-30		N-35	
8E-1080	Puro	N-1500 Series	C-14			C-130		N-15	
8E-1090	W.G.B.	S-100	C-44			C-142			S-108
8E-1100	W.G.B.	C-100	C-41			C-141			C-108
8E-1110	De Luxe	SSB 87	C-33		SD				
8E-1120	De Luxe	CU	C-32		CU	C-121			
8E-1130	Puro	N-1700 Series	C-24			C-132		N-17	
8E-1140	W.G.B.	T-100	C-43						T-100
8E-1150	Briggs	G-400	L-24	G-4		C-112		PD-52	
8E-1160	Michiana	10750 3450	C-74				SA-5453		
8E-1170	Michiana	15100	C-10				SA-15117		

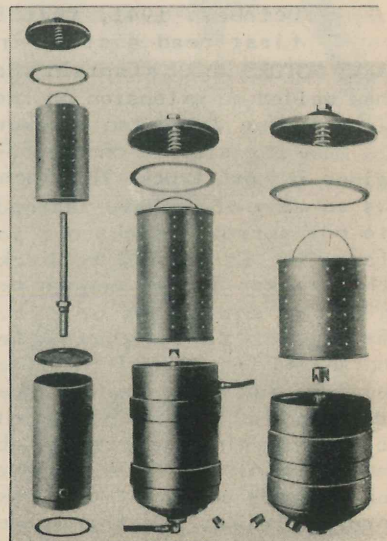
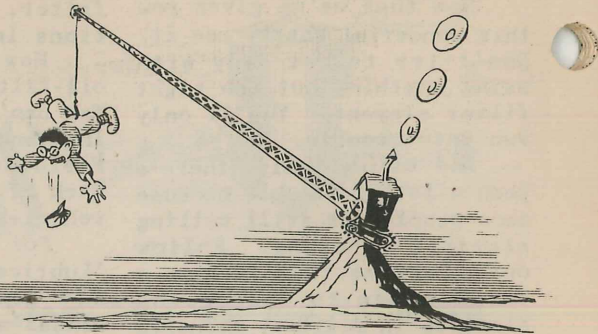


Fig. 3 - The Military Standards (exploded view).



# "The Little Hoist"

By Capt. William H. King Jr.



**They never could find a better name for it than "The Little Hoist." It was little and it was a hoist and it did a job, under the most grueling conditions, that no other piece of their equipment could match. . .**

*When the outfit went overseas, the boys decided they'd rather leave one of their 4-ton wreckers behind than The Little Hoist - of course, they didn't have to and The Little Hoist was sawed up so it would lie flat and quiet in a crate. As the boys say, it meets the need - that so many light-maintenance outfits have discovered - for a hoist that'll lift out or emplace motors without tying up a big wrecker that's usually needed urgently elsewhere, and it'll do the job as no wrecker can do it. It's made entirely of scrap and the mechanics who work with it, would like to see it G.I. and issued for use on a 3/4-ton Weapons Carrier in Motor Maintenance units.*

*Read what Captain William King has to say about it.*

I think it was back in October, 1941, that I first read a story in ARMY MOTORS about a Captain who had welded an extension on the I-beam of a 2-1/2-ton wrecker to make it easier to change engines in a 6x6 truck. The winch, as so many of us have learned to our sorrow, sticks out so far that it's hard to back the wrecker in far enough to get the engine in or out. Well, not to congratulate ourselves too much, I think we have in our Light-Maintenance company a little piece of equipment that does this job and a lot of others - a piece of homemade equipment that has proved itself, as far as we are concerned, the best and most useful item in our shop. But not to get too far

ahead of my story, the whole thing started out something like this:

A few days before war was declared, I was given command of a Light-Maintenance company and on December 9th, our Division moved out of camp and took up defensive positions guarding a section of coastline.

On our first day we marched something over 250 miles and that night found ourselves encamped in a gully on the side of a mountain in a blinding rainstorm. We had six engines to change. Well, with a 2-1/2 ton, 6x6 wrecker to furnish the hoist, I don't have to tell you what went on - the backing around to line up the engine and the jockeying to get it to go into

its mounts was, to put it mildly, a pain in the ear. Somehow we did our job, but it wasn't easy.

The same kind of situation cropped up time and again, and necessity being the mother of invention, pretty soon an idea began to emerge from the fog. It wasn't more than three weeks later that it took shape - and 'The Little Hoist' (Fig. 1 and 2) was born. We've tried to nickname it a dozen times since then, but no soap - the first name stuck and when we were ordered to a port of embarkation, the name, 'The Little Hoist' could be seen stenciled on the crate.

I am writing this somewhere at sea and I give you my word. that since using it my men would rather have parted with one of their 4-ton wreckers than leave The Little Hoist behind.

Following are some of its advantages:

Since the hoist is fastened on the bumper, the driver can see exactly what's going on. He can aim and emplace an engine without a thousand shouted directions and without

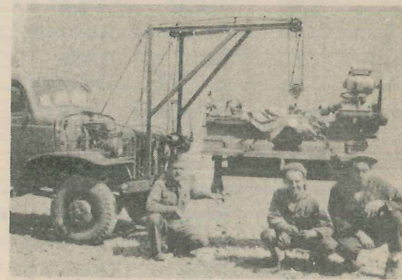
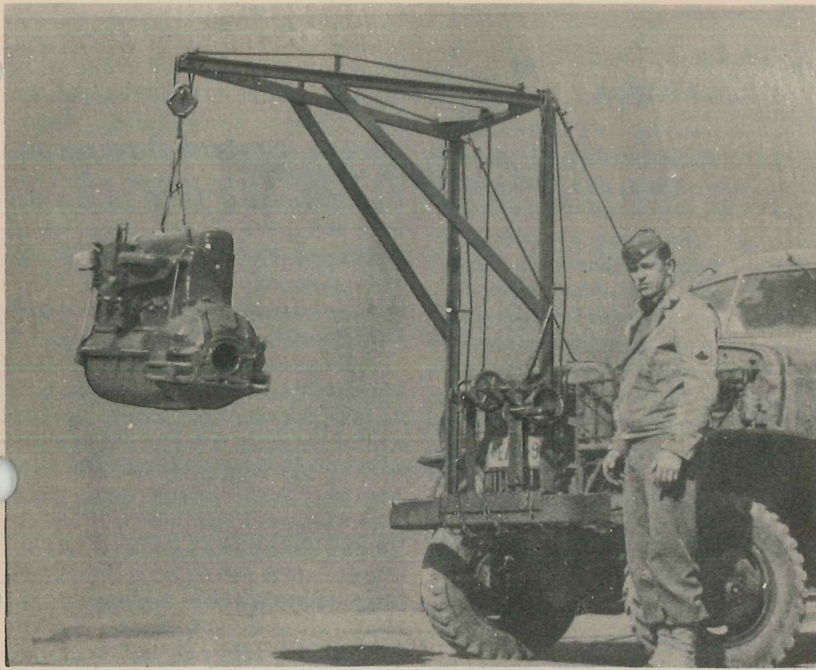


Fig. 1 - The Little Hoist's designers: Sgt. Stonich, Sgt. Nissen and Capt. King.





*Fig. 2 - The Little Hoist handling an engine with the greatest of ease. The driver can see what he's doing - and the hoist releases a wrecker for other duties.*

all the difficulty entailed in doing a job 'backside backwards' - if you know what I mean.

The Little Hoist can be mounted on any standard tactical vehicle - command car, ambulance, pick-up, weapons carrier, 4-ton wrecker, etc. It releases wreckers for duties other than engine changes - and conversely, engine changes need not be held up for lack of a wrecker.

It can be mounted or dismounted in about 30 seconds. The stay cables merely hook around the rear engine hangars and the angle-iron base rests on the bumper. On the new 3/4-ton weapons carrier, the lower ends of the stay cables hook onto the windshield pivot brackets. The top end of the stay cables terminate in 18 inches of chain which are hooked on the top of the hoist and make adjustments for various types of vehicles possible.

The hoist is completely mobile. In the field, it is especially valuable because it allows a 3rd-Echelon unit to be widely dispersed without losing efficiency. A replace-

ment engine can be picked up from a parts truck and ferried a couple of hundred yards down the road where a crippled truck is hidden in the brush awaiting an engine change. The old engine is as easily returned.

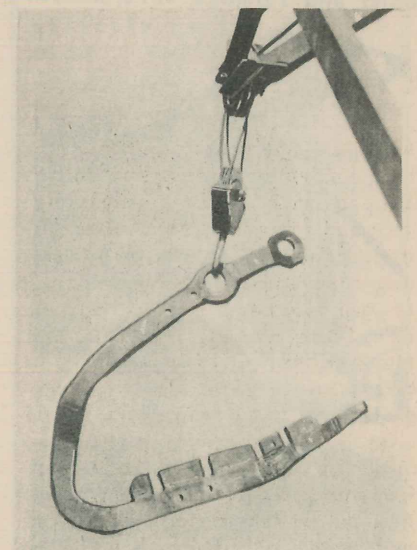
In the same way, heavy replacement units can be moved from a parts truck and hidden in various places - allowing the men in the parts truck more room to work in. Even so, the mobility of the organization is not impaired since the units can be as quickly recovered and reloaded on the parts truck. Little things like this add greatly to the efficiency of any field shop working under combat conditions. Our six months of working with the hoist convinced us.

The hoist is a great help in assembling crated vehicles when crated units have to be constantly moved about. It's handy in loading heavy units in and out of cargo trucks as Figure 1 shows. That's a 1000-pound lathe on the end of the hoist being moved from one truck to another. (Incidentally, the three of us in

Figure 1, Sgt. Stonich, machinist; Sgt. Nissen, welder, and myself, conceived, designed and built The Little Hoist).

The hoist will reach the engine in any make or model of truck regardless of winch. And a transmission can be removed by simply lengthening the stay cables so that the hoist tilts forward. You can then reach right into the cab of a 6x6 and pluck the transmission out bodily. Let's see you do that with a 2-1/2 ton wrecker! It'll do minor jobs like picking up the front or rear end of a 1/4-ton jeep, and by means of a boom attachment which goes on the base, it can lift transfer cases up into place. In other words, it can do everything but cook (maybe it can cook too - we never tried).

A very special item used with the hoist and which stands upon its own legs as a first-class, homemade feature, is our engine hook (Figures 3 and 4). We use it to great advantage to swing engines from here to there and back again. It'll take care of L-head or valve-in-head engines with equal facility. The picture shows the hook swinging a valve-in-head engine. Slip it under the



*Fig. 3 - The homemade engine hook - great for swinging L-heads or valve-in-heads.*



manifold, and that's all. If you're wondering about those two eyes on the hook - the forward eye will just balance an engine with transmission, the rear eye will just balance one without.

The Little Hoist, as I have said, is constructed so as to fit any tactical vehicle (with a bumper on it). The base of the hoist is a piece of angle iron 1/2 x 3x3 inches and 28 inches long. The sides and boom are two-inch channel iron, 1/4 inch thick. The truss rods are 1/2 inch.

The hoist is 68 inches from base to top and the boom is 64 inches long. It was built originally to fit a 1/4-ton Dodge pickup but it fits the new 3/4-ton Weapons Carrier even better.

The gearing arrangement (look closely at Fig. 5) consists of an overrunning clutch - which you can't see - taken from an old starter motor. The shaft was pressed out of the armature so the gear-overrunning-clutch and spline shaft could be used intact. An old brake drum from a drive-shaft brake, picked up in a junk yard, was welded to the housing of the overrunning clutch and the band and linkage were added.

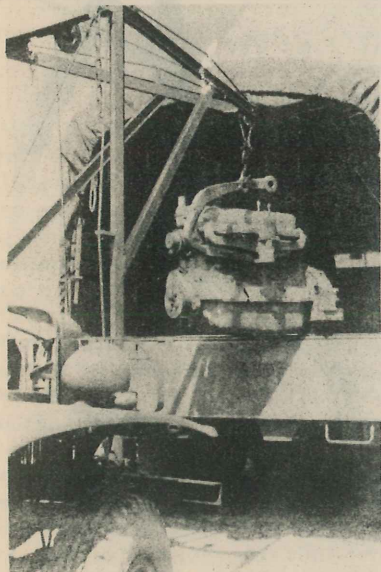


Fig. 4 - The Little Hoist and the engine hook swinging a valve-in-head engine.

### 3/4-ton Ambulance Litter Bracket

Concerning the litter-bracket replacement (Page 168, Sept. Army Motors), we hear some outfits aren't making the replacement because they find the metal litter fits the bracket as is. However, in the field, the wooden litter (which doesn't fit the present bracket) may have to be carried. Better be safe: order and install the new bracket.

The unit was then mounted on the frame of the hoist with the small gear-shaft driving the large gear which is part of the cable drum. (These gears are salvaged Diamond-T timing gears). A flexible wire rope, 1/4-inch in diameter, serves as a cable and the pulleys were turned out of 1/2-inch boiler plate.

This is the way it works. The brake drum keeps the over-running clutch from turning when the brake is set, so that the shaft which passes through the center can turn only one way - up. In other words, no ratchet is necessary to hold the load. The brake is set and the load is cranked up

freely. When the desired height is reached, the crank handle is released, and the clutch prevents rotation in the other direction, thus holding the load wherever it is stopped.

When the load is to be lowered, the brake is slowly released and the brake drum, overrunning clutch, and all, revolves and allows the load to descend.

To give you an idea of how sensitive the gearing on our hoist is, we can lower a 600 pound engine to the floor by merely putting pressure on the inside of the brake drum with the finger tips and allowing it to drop rapidly. It's under such complete control that it can be brought to rest an inch from the floor this way (although, of course, we don't recommend it).

As a final advantage, the whole hoist weighs only 150 pounds, and can be easily mounted, dismantled, and operated by one man.

This organization, man and officer, thinks that 'The Little Hoist', or a reasonable facsimile, should be G.I., and the basis of issue should be one to a Motor Maintenance Unit to be used on a 3/4-ton Weapons Carrier.

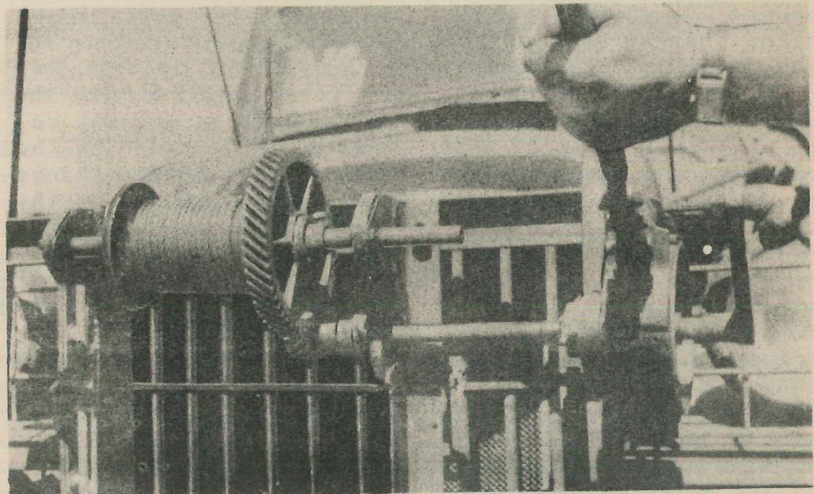
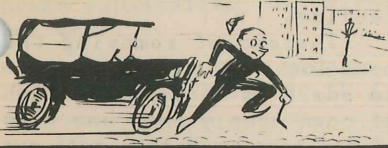


Fig. 5 - Close-up of the gearing arrangement of The Little Hoist. Although everything's made of scrap, it's so sensitive that a 600-lb. engine can be lowered quickly to within about an inch of the ground with complete control exerted by the finger-tips alone.



Your car came equipped with a crank, and the first thing you learned was how to GET RESULTS. The trick was to leave the ignition switch off, proceed to the animal's head, pull the choke (a little wire protruding through the radiator), and give the crank two or three nonchalant upward lifts. Then, whistling as though thinking about something else, you would saunter back to the driver's cabin, turn the ignition on, return to the crank, and this time, catching it on the down stroke, give it a quick spin with plenty of THAT. The engine almost always responded -- first with a few scattered explosions, then with a tumultuous gun-fire, which you checked by racing to the driver's seat and retarding the throttle. Often, if the emergency brake hadn't been pulled all the way back, the car advanced on you the instant the first explosion occurred and you would hold it back by leaning your weight against it. I can still feel my old Ford nuzzling me at the curb as though looking for an apple in my pocket.



Most everybody used the reverse pedal quite as much as the regular foot brake -- it distributed the wear over the bands and wore them all down evenly. That was the big trick, to wear all the bands down evenly, so that the final chattering would be total and the whole unit scream for renewal.

The lore and legend that governed the Ford were boundless. Owners had their own theories about everything; they discussed mutual problems in that wise, infinitely resourceful way old women discuss rheumatism. Exact knowledge was scarce, and often proved less effective than superstition. Dropping a camphor

ball into the gas tank was a popular expedient; it seemed to have a tonic effect on both man and machine.

The Ford driver flew blind, the dash-board of the early models was bare save for an ignition key. He didn't know the temperature of his engine, the speed of his car, the amount of his fuel or the pressure of his oil (the old Ford lubricated itself by what was amiably described as the 'splash system'). He learned not through instruments but through sudden developments.

The timer was one of the vital organs about which there were ample doctrine. Some people, when things went wrong, just clinched their teeth and gave the timer a smart crack with a wrench. Others opened it up and blew on it. There was a school that held the timer needed large amounts of oil; they fixed it by frequent baptism. And there was a school that was positive it was meant to run dry as a bone; they were continually taking it off and wiping it. I have had a timer apart on a sick Ford many times, but I never really knew what I was up to -- I was just showing off before God. I remember once spitting into one; not in anger, but in a spirit of research. You see, the Model T driver moved in the realm of metaphysics.

A Ford owner had Number One Bearing constantly in mind. This bearing, being at the front end of the motor, was the one that always burned out, because the oil didn't reach it when the car was climbing hills. (That's what I was always told, anyway.) That bearing was like a weak heart -- you could hear it knocking, and that was when you stopped and let her cool off. Try as you would to keep the oil supply right, in the end Number One always went out.

Springtime in the heyday of the Model T was a delirious

season. Owning a car was still a major excitement, roads were wonderful and bad. The days were golden, the nights were dim and strange. I still recall with trembling those loud, nocturnal cries when you drew up to a signpost and raced the engine so that the lights would be bright enough to read destinations by.

I have never been really planetary since.

I suppose it's time to say good-bye.



## Steam Cleaning \* COMPOUND \*

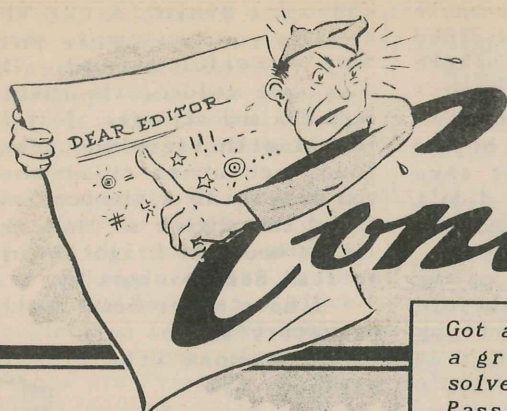
There's been some question as to what cleaning compound to use in the 4th-echelon steam-cleaning gun -- the "Hypressure Jenny" steam-cleaning gun. We even hear that some of the boys have been running up to the corner grocery for a batch of their favorite -- but untested -- mix.

This procedure is strictly on the dubious side. The Hypressure-Jenny gun allows the compound to flow through the steam-generating coils and the compound used must be able to stand extreme heat. The stuff you buy may not be able to. Local purchase is also unnecessary since we have a steam-cleaning compound in our Parts Common manual.

Turn to page 3, class 51 in the Parts Common manual. There, under "Compound", you will find listed, "Cleaner, QMC Tentative Spec E.S. 542" and the following Federal Stock Nos.

51-C-1568-250	-	1 lb. Can
51-C-1568-300	-	25 lbs.
51-C-1568-310	-	125 lbs.
51-C-1568-320	-	425 lbs.





# Contributions

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

Dear Editor:

A nice warm shop with all the equipment isn't always at hand when a vehicle decides to shimmy. On the Chev. 1-1/2 and GMC 2-1/2 ton, a temporary steering-knuckle adjustment can be made without removing the brake hose which, of course, would mean a brake-bleeding job. Although I don't recommend my suggestion as permanent or an alternative for the approved operation, it does save the brake-bleeding operation which isn't always easy when done on the road.

Because of the length of the studs it is impossible to lift the upper steering-knuckle trunnion and cap without removing the brake hose. My method is to remove three of the studs and swing the trunnion around so that the shims can be removed. I saw one of the nuts in two to make two thin nuts, start one of them on a stud, add a flat washer, and then screw the other nut down on the washer. By turning the locked nuts, it is possible to back out the studs.

After the necessary shims have been removed to tighten the adjustment on the bearing, the studs are replaced, and a new nut is used in the place of the two thin ones.

Pvt. Herman J. Stavanja  
Ser. Co. 145 Inf., APO #37  
c/o Postmaster,  
San Francisco, Calif.

## MMM Club

First of the breed to do anything of the kind, as far as we know, the motor sergeants and mechanics of the 2nd Field Artillery Observation Battalion at Camp Bowie, Texas, have organized a motor maintenance club. Full credit for the idea of the club goes to Don H. Holbrook, Automotive Advisor, who describes some of the club's aims and activities:

"We meet one night a week on our own time to discuss mechanical problems, bulletins, and anything else that will promote better cooperation among the men and better vehicle maintenance in the battalion.

All types of sound and silent films and film strips are screened and discussed at the meetings.

The members contribute a small fee at each meeting to provide for refreshments."

Mr. Holbrook thinks clubs like his would be a good thing for all maintenance battalions. We're sure he'll be glad to correspond with anyone interested in setting up a branch of Mechanics Motor Maintenance Club, tell them how it's run, and help them get started.

After trying everything but cutting their feet off, Automotive Advisor John F. Stranahan lit on this sure cure for clutch riders.

He replaces the regular clutch pedal-return-spring with a spring about nine times stronger. After a few days of

back-breaking clutch operation in heavy traffic, Joe Leadfoot crawls in and begs for his old spring back. Stranahan says they aren't burning out clutches at Fort Adams anymore.

Dear Ed,

I got some good tips from your article, 'Handling the Combat Wheel' in the August issue. But here's a little improvement - a little short cut that saves time, eliminates the springing of the bead lock, and is good for that tired feeling.

Instead of removing the bead lock - which you'll have to admit is no pipe - I push it down deeply into one side of the tire, and then pull out the upper half of the tube. Then I change the position of the bead lock and pull out the other half of the tube. The bead lock can then be shifted about to inspect the tire section by section. Juggling the bead lock may not be in the book, but it sure eases up the job.

Sgt. Joseph J. Truffini

Dear Ed,

Better late than never is my motto, so if you will hearken back to the June issue, page 89, Half-Mast, where sand and abrasives are reported to be getting in brake drums and playing hob with the linings,



I'll give you our solution to the trouble.

Oyster-shell dust, plus moisture, forms an abrasive 'cement' that cuts brake lining to ribbons - that is what we had to contend with on the Mississippi Gulf Coast. Not to be outdone, the 2nd echelon under Captain N.K. Reinhard struck two grease-balls together and this spark flew out: all trucks were jacked up, the wheels were removed, the backing plates and un-machined drum-surfaces were cleaned and given a thin coat of paint - primer, red lead or what had we. The assemblies were all thrown back together and our troubles were over.

We figured, no rust - no moisture collection. No moisture - no cementing of dust.

Incidentally, as far as we can see, the paint on the un-machined part of the drum doesn't affect heat dissipation or operation of the brakes. For when we removed the drums on later occasions, we found them clean and factory fresh. In rough mountainous country where the drums get hotter from hard brake application this might not work.

Capt. L.M. Gross,  
Atlantic City, N.J.

The ingenuity of two of its privates provided the 46th Engineers with a fine piece of stevedoring equipment for their heavy duty loading and unloading somewhere down under. We don't know whether or not it's the equatorial heat, but Army Motors has been getting an unusual number of fine contributions from outfits in the tropics.

Anyhow, Pvts. Etchecurry and Steven built this 'A' frame for a 6-ton Corbitt 6 x 6 out of a few lengths of 3-inch pipe and 3/8-inch sheet metal.

Lt. William B. Allen, Regt. Motor Officer, sent us the story along with the following comments: '....The

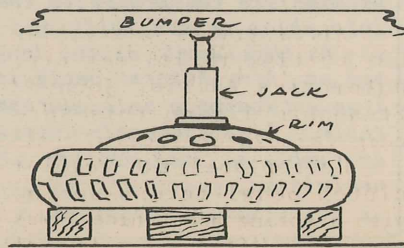
unit is very strong -- capable of supporting a load of 7,000 pounds. In [redacted], where equipment for loading our heavy baggage is limited, the winch powered 'A' frame is very useful.



He got tired of seeing rims and tires chewed up with sledge hammers, so Cpl. Robert L. Donaldson of the 7th Motorized Division taught the boys in Headquarters Company a little trick. He cut four 15-inch blocks out of 8-inch square lumber, placed the blocks in an open square beneath the bumper of a 2-1/2 ton truck, put the tire on the blocks after removing the lock ring, and centered a hydraulic jack between the center of the wheel and the bumper. Then with a few quick jacks on the jack handle he showed them a safe, painless way to drop the wheel away from the tire.

Cpl. Donaldson says the idea wasn't really appreciated until they had 150 flats in one day on desert maneuvers - then he got all the free beer he could hold.

We're told the Fort Benning authorities liked the idea well enough to include it as standard in the tire section of the F course there.



A two-year personal subscription to Army Motors goes to Lieut. Paul R. Benjamin of the 407th Medical Battalion for this month's best contribution. We've put ourselves on short rations for thirty days because we didn't think of it first - it's so ingenious, so clever, so simple, so, so...

Well, we'll leave it up to you -

When he'd call a driver's attention to something neglected, Lieut. Benjamin's ears were too often annoyed with, "My sergeant didn't tell me," or "I don't have a manual, sir." So this quick thinking Medico squeezed a couple of Japs into an empty bucket and started throwing yellow paint. Now every truck that comes into his 2nd echelon shop, gets a dab of yellow paint wherever there's a grease-fitting, nut, bolt, drain plug or other item charged up to 1st-echelon maintenance. Now, says Lieut. Benjamin, the only excuse for sloppy maintenance is color-blindness.

(We guess as long as you don't smear paint where it will interfere with the official color scheme, there's no objection to your trying this on your first echelon. ED)

Mr. H. H. Pfeiffer, civilian automotive advisor at Fort Logan, says he's never seen any instructions on what to do when an engine won't start because it's flooded...so he thought he'd write some.

To give the engine enough air to remove or atomize the excess gas that's flooding it, hold the accelerator all the way down to the floor or pull the hand throttle-lever all the way out. But, never, never pump the accelerator pedal because that'll flood it more. Never, never, pump the pedal.



## Sgt. Fortin's Corner

Sgt. Robert Fortin, Service Co.  
5th Infantry Regiment

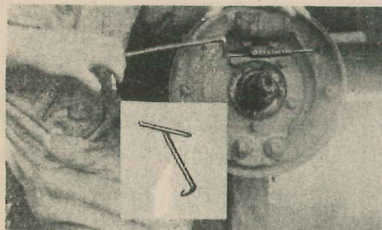
When Sergeant Fortin contributes, we see double, or triple. The excellent ideas below are his - and while it's quite unusual to print more than one idea from each reader in the same issue, these are unusually practical and timely.....

"The 2nd echelon tool kits don't include brakespring pliers. A few bruised knuckles made Corporal McCurry and me dope out this tool.

We shaped a 3/8" brake rod into what you might call an off-set button hook with a 'T' handle for leverage (see cut).

The bend on the tool is 2-1/2 inches and the length is 8 inches.

As an added attraction, this tool can also be used to replace the fan belt on GMC (CCKW-353A1).

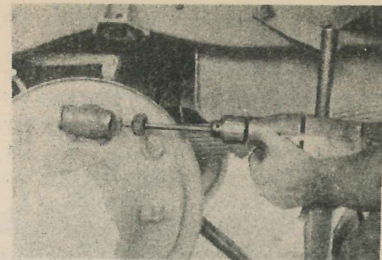


Many times, when I do a brake job, I find the wheel cylinders to be gummy and sometimes slightly rusted. Polishing these cylinders with croesus cloth was hard on my fingers and besides it took me too long.

Here's a photograph of a tool I made to do this polishing job. First I cut the head off a six-inch bolt to make it fit into a drill chuck. On the other end I fastened a few pieces of felt, (cut circular and with holes centered) with two nuts and two flat washers to hold them in place. The felts are slightly larger

than the diameter of the wheel cylinders and smeared with fine, valve-lapping compound. By passing this tool through the wheel cylinder a few times, I get a swell polish job - and fast.

It works equally well on step wheel-cylinders."



## Letter of the Month

Day in, day out I see a sight that causes me to add new cuss words to my already elaborate vocabulary of epithets and tear the few remaining strands of my rapidly disappearing hair.

The sight is an Army truck driver tooling along a busy street between thirty and thirty-five miles per. Approaching within sixty feet or so of an intersection without slackening his speed, he sticks his left elbow out of the window, signals a left turn and plops a few added pounds of weight on the accelerator. Throwing 'er into neutral, and with a roar of the engine like the noise of a couple P-39's doing a power dive, he shifts to third gear and with another swift kick on the poor belabored accelerator, releases the clutch; The driving wheels do a hop-skip-jump, the engine, transmission, transfer case and differentials howl like a legion of lost souls, and he negotiates his left turn. Then with the same over-acceleration he shifts back into high gear and quick as you can say Jack Robinson, is doing the same 35 mph before he reaches the third number in the new block. If you'd ask him, he'd tell you he was 'dropping to a lower gear to use the engine as a brake.'

Having made my debut into the Army Motors Game in those ancient days when such things as storage batteries and starter-motors were practically unknown, and when magnetos and hand cranks were the order of the day, I learned that the means of controlling vehicular road speed were the accelerator and brake (except in descending steep grades). Since that era I have graduated from a pair of Army Motor Transport Schools, have been compelled to keep abreast of developments and improvements, have read (repeatedly) every Text, TM, etc., that came my way. But I haven't found anything contrary to the original instructions governing the control of vehicle speeds.

It's still the accelerator and the brake.

I raise the very Old Harry, I am not averse to an occasional bopping of the above-mentioned type of driver, and always I try to hammer home one fact. A shift to a lower gear should not be attempted (except on a grade) until the speed of the vehicle is well below the maximum speed permissible (according to the 'Caution Plate') of the gear into which we are shifting.

As this 'beef' is too lengthy to be printed, and I never see an 'Army Motors' until it's at least three months old, I am enclosing a self-addressed, stamped envelope for your reply. I am sincerely interested in finding out whether I am right, or just another old fossil who has outlived his usefulness.

James R. Crawford, W.O., 45th QM Reg't. (Trk)



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



**ARMY MOTORS**

Dear Reader,  
There just ain't any disputin' it - 'Half-Mast' is the man with the answers. The flood of letters - from privates all the way up to major-general - proves the way up to 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. Half-Mast is the answer man, he knows which way is up. Ed

Training Section of the Army Ground Forces was sufficiently stirred up by your complaint to start a series of tests designed to determine in exactly what circumstances the light may be used. The findings will probably appear soon in the Army Motors as well as in a Training Circular.

*Half-Mast*

Dear Half-Mast,

The letter in September Army Motors about the chattering Ford-6 clutch should have read 'chattering transmission' for that is where we finally found the trouble. We opened the transmission and found that the ring synchronizer Part No. 81A-7107-B, was badly worn. We replaced it with a new one, and the chatter is gone.

C.J.B.,  
Automotive Advisor

Dear C.J.B.:

Thanks for the dope on the chatter - I'll add it to my list of chatter-causers - and it may come in handy for some of the boys in the field.

*Half-Mast*

Dear Half-Mast,

In the June issue you had a story about torque wrenches which included a table of pounds-foot torque to be used on a few bolts of various sizes with standard threads. Now, I would like to have a table with the torque data on bolts of all sizes with both standard and SAE threads, do you have one?

2nd Lt. E.C.D.

Dear Lieutenant:

No can do, Lieutenant. That little table was for use on Timken axles for the majority of the capscrews and studs of those sizes in Timken units. We gave the wrong impression, if you took it to mean that the designated pounds-feet of torque for

Dear Half-Mast:

We have a fleet of assorted vehicles ranging from jeeps to 1-ton wreckers each equipped with the new blackout driving lamp. It seems to me that we have mounted these lamps incorrectly or have omitted something in the installation. From my own observation the lamp does not serve the purpose as we have them mounted.

On several blackout convoys, I have been in the position to watch the column as convoy commander and the whole column is plainly seen for quite a distance because each blackout lamp lights up the rear of the truck ahead, even at the distance of about 25 or 30 yards. If you can tell me where my trouble lies, it would be greatly appreciated.

Lt. S.C.T., Jr.

Dear Lieutenant:

I don't think you can blame the mounting of your lights for the condition you describe, and I don't think you've omitted anything in the installation.

Your trouble - and plenty of others are in for the same trouble - lies in the fact that the use of the blackout driving lamp is not fully understood.

The blackout driving lamp was never intended to be used as a 'combat' light, that is, it's not foolproof under all combat conditions the way a

genuine piece of combat equipment would be. It's a light and like all lights, it has a certain amount of visibility in certain circumstances.

These circumstances determine the proper use of the light. For instance, the light is visible from the air at distances up to 5000 yards, under ordinary conditions. Therefore, if the enemy has control of the air in your particular area, you don't use the light.

Another thing is that the light will throw a reflection up against the back of the truck ahead of it in a convoy -- as you pointed out. For this reason, the blackout driving light on every truck should not be turned on. It is sufficient for the first truck in the column to use the light. Since it is leading the way, all the other trucks have only to follow it - and following the lead of the first truck is easy since each driver in the column has the blackout marker lights on the truck up ahead to guide him.

Sorry, lieutenant, that I can't tell you that our blackout driving light was made so that only good guys can see it. Unfortunately, it's visible to the evil eyes of our enemies. So you'll simply have to teach your drivers to mix discretion with the use of the light.

By the way, you might be pleased to know that the



capscrews of given diameters could be used to tighten capscrews regardless of where they are used.

Capscrews are made of different materials, and they are used in places where a wide variety of force may be required to hold the parts that they happen to be joining together. For instance a hardened 3/8" capscREW can handily take a stress that would twist off an ordinary steel capscREW of the same size. While it is frequently necessary to use one torque reading for a capscREW of one size in a certain location, that same torque reading would play havoc if applied to the same identical capscREW where more delicate parts are involved.

If your manual doesn't give you the torque setting for the particular job you are doing, you will just have to use your head and 'feel'.

*Half-Mast*

Dear Half-Mast:

In operating GMC 6 x 6's and Chev 4 x 4's in wet and swampy terrain, we find that the front-axle universal drives are taking on bilge water. This makes a mess out of their lubricant which swells up and works its way into the brakes. Our other vehicles haven't given us this trouble.

We don't know at what point the water gets in, because no water shows up in any of the gear boxes — transmission, transfer case, or the differentials. But the emulsified lubricant messes up the constant-velocity joints and the wheel bearings something terrific.

Capt. E.E.P.

Dear Captain:

Water finding its way into the various units of vehicles driven over wet terrain is a serious problem, as you have discovered. But

here's a curious fact: one regiment reports one make of truck, say GMC, to be the sole offender while another regiment says their GMC's are fine — it's the Dodges that give them trouble in wet terrain.

All of which leads me to suspect that one medicine won't cure all trucks. The only thing left to do is track down the individual leaks on the individual vehicles.

The first place to look is at the outer-end seal or the ball-housing seal. This seal is in a spot where it gets a lot of wear and abrasive action because the ball housing surface it rides over gets roughened with rust or picks up sand and abrasives. Don't hesitate to remove and inspect it (the seal, I mean). On page 212, October issue, we have a little dope on making a waterproof grease dam behind this seal and at other suspicious points where water may enter or by-pass seals and other close-fitting parts. Use water-pump grease for the dams. Of course, you're not to mix the water-pump grease with, or use it instead of the other lube (don't make that mistake, for Pete's sake!) Just use this grease for a dam.

Whenever you do find that water has crept into the units, don't add lubricant until the parts have been removed and have been cleaned thoroughly. And inspect them carefully for damage to bearing surfaces. A good hand-pack job with the proper lubricant — a waterproof dam here and there — new retainers where needed, a little boy's prayer, and she should be seaworthy. Most people don't know how serious the consequences of water in mechanical units can be. Don't pull your punches in stopping it.

*Half Mast*

Dear Half-Mast,

Army Motors is a 'must' on my reading list, so I noticed in the October issue that some of the boys were having trouble with leaky breathers in transfer cases on Chevs and GMC's which allow water to get in the grease.

I've found that the differential breather is effective for waterproofing this housing if you drill a hole through the valve, so pressure won't build up.

Maybe the idea will be help to others having the trouble.

Sgt. S.S.

Dear Sergeant,

Almost anything is a better idea than the original breather on that particular transfer case, when it comes to keeping water out — and not too much pressure within.

But at last it looks like they've got around to making a breather that will do the job adequately without a lot of make-shifting on the part of the mechanic.

The new breather is Part No. 2140049 and the GMC factory says it's okay to use it in place of the former two types furnished. It has, they tell me, a new spring-loaded valve that opens with 8 ounces of pressure — this they consider okay for the transfer case. I hope it will do the job.

*Half-Mast*

Dear Half-Mast:

After much discussion over whether grease seal (GP-1177) should be soaked in oil or not, we decided to ask your advice.

Our mechanics claim the old seals used to come through coated with wax. Now they are being used so fast that they don't have any coating of wax due to rapid manufacture.

We have also found a grease seal with what appears to be a fiber counter. We



would like to know if these seals need to be soaked.

Thank you very much for any information and help you can give us.

Lt. S.K.W.

Dear Lieutenant:

As you say, changes in production might make a change in the material used in oil seals — so I won't try to give any set rule for any certain seal. But if you'll remember that a lubricant of some kind must be used on any material to keep friction from burning it, I think you will be safe.

Any leather seal should be soaked in engine oil for 30 minutes or more so it'll be soft and pliable, thus guaranteeing good contact with the bearing surface, and also for lubrication so that friction won't burn it up.

Felt seals too, must be lubricated. But they soak up the oil quickly, so just a shot of engine oil from your oil can should fix them up okay. (Some of the factories use glycerine).

Those fiber seals, I think you'll find, are made of an oil-repellent material, so that lengthy soaking won't do any good. Just give them a shot from the can and call it a day.

I don't know just where the wax coating comes into the picture on leather seals. If the seal had been previously soaked and the wax was used to seal oil in, then they probably only need a surface treatment. But if they are dry, and wax coated — they should have the wax removed and be soaked.

*Half Mast*

Dear Half-Mast:

In the October issue of Army Motors, page 194, my lamps focused on the front view of the new open-cab truck. I immediately got in an argument with myself. First I wanted to know why the direc-

tional treads on the front wheels were turned wrong. I answered myself back by saying maybe it was all set for foreign service. No that couldn't be, was my come-back, for the organization number is on the bumper.

Now, if you can fender off that one, Half-Mast, maybe you can tell me why, in the accompanying picture on the same page, does the vehicle number not conform to an order which specifies making the size of the numerals 2" high on all vehicles, whether they are to be used over here, under there, or rite' cheer?

Just as a parting shot — how come no new diffused blackout lights? I'll just sit around and wait for your answer in the next issue.

Lt. H.S.P.

Dear Lieutenant,

Now ain't you the bright-eyes. And it shows that you know your regulations. However, one answer'll do for all the questions. In a frenzied effort to get certain little bits of information to the men in the field who need it, before the war is over — we don't wait for every little bit of refinement to be added to the subjects of our stories and pictures. The truck you see in the picture is not a vehicle ready for service, but a pilot model that is used for experimental purposes. When its little brothers come off the lines — they'll be in closer accord with the regulations. But we just couldn't wait to tell you about 'em, so we showed you the old girl in her undies.

Keep your eyes open, though, lieutenant, maybe we won't have such a pat alibi for the next one.

*Half Mast*

Dear Half-Mast:

In the August issue, page 132, you tell us the 1/4-ton trailer is to get the juice

for its tail light from a socket that is to be provided. Now — where and when can we get said socket?

S/Sgt. R.B.C.

Dear Sergeant:

It won't be long now: the engineering department is preparing a little dope on the socket, and they should be ready for the field in a few short weeks, maybe sooner. We'll let you know as soon as we hear about them.

*Half Mast*

The Dodge service representative who always snaps savagely at the hand that's beating him, points out that if any 3/4-ton Dodge ambulances burn up from shorted battery cables between the body and frame — he'll eat 'em. The battery on the ambulance, he points out triumphantly, is under the hood. The carryall and command car with the 12-volt systems are the only ones with the battery on the running board and the only ones with a long cable that can get caught between the frame and the body.

I mentioned shorted battery cables as a possible cause of ambulance fires reported in October by Private B.R., and I haven't fed the Dodge representative any ambulances yet, because as indicated above, he's right.

But in the case of the commands and carryalls, if yours are over #81540806 you don't have to worry about them, for the factory has been placing a clip on all vehicles following that number. The clip holds the cable away from the tight spot so the body can't pinch it. If you have commands and carryalls before #81540806 — you might make and install a clip on the frame to do the same job.



# 4 Trouble Shooters

## The Sun never sets on ARMY MOTORS' correspondents.

With this issue, Army Motors climbs to first place among all magazines by hiring the largest crew of reporters ever contributing to any publication.

When you've recovered from the stunning effect of this pronouncement...when the fanfare has stopped ringing in your ears...get up and dust yourself off and we'll tell you what's behind it.

For a long time now, you've been sending us letters almost more than we could keep up with. Our staff has been kept busy answering your questions, investigating your complaints, checking up on the raft of swell ideas you've sent us.

In fact, sometimes when we get a letter from a fellow who's having trouble over some little thing we happen to know about, we stop and figure how nice it would be if we could be right out there beside him to set him straight. Maybe it's a little adjustment he doesn't know how to make and we've got the step-by-step instructions straight from the manufacturer. Maybe it's a part he's been waiting for and we know what depot has plenty of them in stock. Maybe it's a special tool he needs and we

happen to know it was just added to second-echelon set No. 2.

Sometimes we sit down and talk it over—sure, we get a lot of letters, and we solve problems for a lot of people; but how many guys are out there in the field who never sit down and write us a letter? How many guys are there who don't have time to wait for the right answer? Yes, how many?

We've decided to find out. Here's how we're going to do it.

As fast as good men can be located, the Ordnance Department is assigning them as civilian automotive advisors. They are going to be right out there with you, helping you find out the right answers. A lot of them already are. In addition to helping to solve your problem, they are going to pass the news to us, so we can tell the next fellow about it. Maybe the same thing that has you stuck is bothering him—maybe he doesn't have a civilian automotive advisor standing by to help him out, but by reading all about it in Army Motors he gets the answer too.

It's sort of an endless belt arrangement: you get in a jam and your advisor helps you out—he tells us about it, and we tell the world. Maybe the next mail brings us a let-

ter from the other side of the globe, and there's a guy who knows a better way of doing the same thing—then we tell you.

And so it goes.

For guys who can understand charts better than words, Figure 1 traces the flow of Army Motors octopus-like plans of field service. In other words, we want every one of you to let your hair down—and don't spare the mailman. We want to know everything that goes wrong, and we want to know when it goes right, too. Tell us about some short cuts you discovered, tell us about an easy fix you figured out that goes the manual one better. Tell us about your monthly bottle-necks, tell us about the TBA that cuts you short of your requirements. Tell us about that grease fitting your adapter won't fit, and tell us about a special tool you think would help you do a better, quicker, job.

Before you start mumbling in your three-day growth, that this is one time Army Motors has bitten off more than it can masticate, read the story of the Maintenance Engineering Unit on page 249. There's the whole answer. It's the Service Department, and Army Motors is its voice. Broken right down into words of one syllable, the Maintenance Engineering Unit is three hundred guys who either know the answers or are willing to find out, and then we'll shoot it



back to you in time to win a war.

In order to make it as easy as possible for you, there's a form on the next page that does everything but fold itself and lick the envelope. It's exactly like the form that's just been sent out to all the civilian automotive advisors in the field. They'll use it too, to tell us what goes on. Here in five easy stages, is the way it works:

1. In the space marked 'Condition', you write down what the trouble is — or maybe it's something good — in either case, you write down just what it's all about. And you don't have to be a Shakespeare, or have had four years in a journalism school. But in your own misspelled words, be sure to list all the facts; if it's an air cleaner that doesn't work right, don't just say 'My air cleaner won't work.' State what's wrong with it, what kind of air cleaner it is, what kind of truck it's on, the make, model, serial number, engine number, W number, or anything else you can think of that will help us give you the answer.

You can get a lot of help in filling out your forms, by studying the sample report in Figure 2. Maybe you won't always be able to supply information as complete as that shown, but do the best you can put down all you do know.

2. In the space marked 'Cause': write down what you think started the trouble — what you believe made your air cleaner stop working. Here again, be as complete as you know how, and don't leave out anything because you think it sounds silly — it doesn't sound silly to us — Army Motors never laughed at anybody and never will.

3. Effect: If your air cleaner isn't working right, what has happened because of it? Is your crankcase oil all gummed up, are your valves sticking, is your radiator cap hard to get off? In other

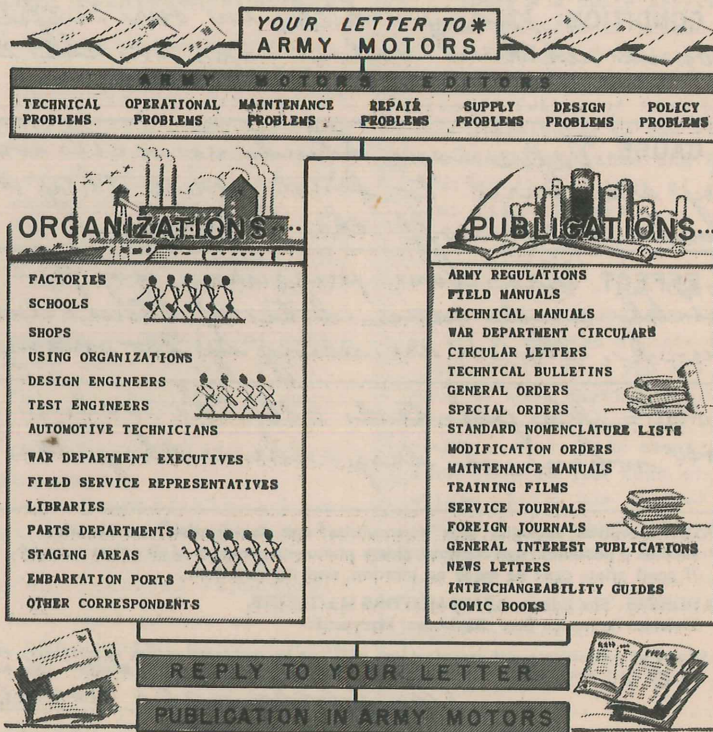
words, don't leave out anything. Even if the conditions don't seem to you to have anything to do with each other, tell us about it anyhow. You may not be able to write anything at all in this space, (or in some of the others) but if you have even the faintest idea of what will remedy the condition, write it down. Here again don't hesitate — even if we disagree with your correction, we respect your ideas — and in a lot of cases you'll really have the right answer.

And if you need more space which you probably will, use separate sheets of paper; mark them according to the space in which you need more room; (A), (B), (C), (D) — but in any case write the whole story.

Although there's space in the magazine for only one of these forms, there are plenty more where it came from. When you send this one in, you'll get a note of thanks and some more forms by return mail. If you have a number of things to report right away, don't

wait for the forms, use this one for a guide and make some yourself, using one side of plain paper. If there's no paper where you are, pick out a fairly clean spot on your undershirt. In any case, Jackson, shoot us the action.

Don't get the idea this is all something somebody thought up to get you in trouble. Nobody is going to put you on the spot for telling Army Motors what it's all about. You have our gold-plated assurance, that nothing you say will be used against you. We've got our commander's word, as an officer, that your confidence will be respected. If you'll look on the bottom of the form, you'll see the following: Names of individuals and organizations will not be used in any way unless specifically requested. That means — unless you tell us we can use your name, or the name of your outfit, nobody but Army Motors will ever know who or what you are (or where). And we swallow the key to our files every night.





**Contributor's Tip Sheet - ARMY MOTORS MAGAZINE**

Write neatly or type.

**A CONDITION:**

**B CAUSE**

**C EFFECT**

**D CURE**

ADD: anecdotes, analogies, gags, personalities\*, unit identification\*, case histories.  
 Include if possible: High contrast, glossy photo enlargements of all points covered.  
 If good prints can't be made on location, send the negatives.

ADDRESS: The Editor, ARMY MOTORS MAGAZINE,  
 Holabird Ordnance Base, Baltimore, Maryland.

\*Names of individuals and organizations will not be published unless specifically requested.  
 If you want your name or the name of your outfit to appear in ARMY MOTORS - sign here:

TEAR ALONG THIS LINE

**Contributor's Tip Sheet - ARMY MOTORS MAGAZINE**

Write neatly or type.

**A CONDITION:** *Many vehicles in our outfit are running around without valve caps on the tires*

**B CAUSE** *Valve caps blend so well with the ground they are hard to find when they drop out of your hand or roll off the fender.*

**C EFFECT** *Tires lose pressure, go flat, wear out quickly and cause lots of other damage to the truck. Also we are using up too many replacement caps.*

**D CURE** *We painted all the valve caps red, and now when we drop them they are easy to find.*

ADD: anecdotes, analogies, gags, personalities\*, unit identification\*, case histories.  
 Include if possible: High contrast, glossy photo enlargements of all points covered.  
 If good prints can't be made on location, send the negatives.

ADDRESS: The Editor, ARMY MOTORS MAGAZINE,  
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 If you want your name or the name of your outfit to appear in ARMY MOTORS - sign here:

*1/4 Zachariah Doe. Co R, 890th Ord Bn.*



# news from the - Training Front

*This department, new with this issue, will review publications and training aids of all kinds, but only if they are prepared with your specific maintenance needs in view.*

There's a completely revised TM on 'The Motorcycle' (TM 10-515) just released by the AGO which will be a joy to motorcyclists, motorcycle mechanics, and motorcycle instructors.

Like most books on motorcycles, it begins with the remark that the motorcycle is the 'least understood and most abused' vehicle in the Army. The special contribution of this book, however, is to provide the understanding which will help to prevent that abuse.

In this manual you'll find the information on location and use of controls which you expected, together with suggestions on how to ride. But, more than that, you'll find a complete unit-by-unit explanation of the construction and operation of chassis, power train, engine, fuel and exhaust systems, electrical system, and accessory equipment.

With the help of many photographs and diagrams, the manual explains exactly what makes each part of the vehicle tick - also how Indians differ from Harleys and shaft-drives from chain-drives. Most important, it indicates what Preventive Maintenance a motorcycle requires. This makes it easy to understand little things - like why a motorcycle shouldn't be allowed to stand longer than a few moments with its engine running, and why it's highly important to get oil of the proper viscosity into the clutch of a chain-driven Indian, whereas other motor-

cycles require no clutch lubrication at all.

Appendices containing the motorcycle first-echelon tool sets, and the minimum requirements for securing motorcycles to railway flatcars will, we expect, be frequently used for reference.

We wish this manual had included complete preventive maintenance schedules on motorcycles for daily, weekly, monthly, and semi-annual checks instead of merely a summary of their purpose and intent. But you can't have everything, and anyhow these schedules are expected to be included in the forthcoming revision of TM 10-545, 'Motor Vehicle Inspections and Preventive Maintenance Servicing.'

Here's an important 'missing link' for you 3rd and 4th echelon officers and non-coms who've been wondering just what repair jobs your outfits are expected to perform.

The new Army Regulations 850-15 prescribe, in par. 24a (1), that "repairs to motor vehicles will be performed in the lowest echelon of maintenance consistent with:

- (a) Availability of suitable tools.
- (b) Availability of necessary parts.
- (c) Capabilities of mechanics.
- (d) Time available
- (e) Tactical situation."

It's that factor of 'time' that has caused many a gray hair. It takes a shrewd guesser to know how to select jobs which can be done within

available time, and to refer the rest of the jobs to higher echelons.

The 'Unit Replacement and Repair Time Guide,' a recent publication of the Maintenance Engineering Unit, takes away most of the guesswork. It contains average repair time and average unit-replacement time for practically any part or assembly you can name, on practically any type of vehicle rolling.

And here's where it answers the \$64 question. It tells how to use teams effectively for speedy unit-replacement jobs; how many men to include in the team, what each should do, and how long it will take the team to do the work.

*A limited number of these guides are available to those in charge of 3rd and 4th-echelon operations only, from the Maintenance Engineering Unit, Holabird Ordnance Base, Baltimore, Md.*

If you haven't yet won the Order of the Bolt with Crossed Threads for expert trouble-shooting, maybe all you need is a little brush-up on technique.

There's a whole series of motion pictures in production on "Automotive Trouble Shooting" - 22 installments to be exact. Twelve of them have been distributed to the field and should be gathering G.I. dust on the shelves of your post film-library.

The latest installment we've seen is:

TF 10-300 - The Clutch. There isn't a Lubitsch touch in all 27 minutes of this film - but it'll show you all you have to know about the clutch on G.M.C., Chevrolet, and Dodge trucks - what to do about that worn look on the face of the driven plate, how to find the cause of that death rattle in the clutch assembly and how to get rid of it, and what to do about gears that gnash each other's teeth.

Next Month: The Drive Shaft and Axle, or, the Whirling Dervish Under the Chassis.



**CONNIE RODD DEPT.**

(from page 259)

one-half turn holds only for new gaskets. If, unfortunately, you have nothing to use but an old crushed gasket, tighten the plug in snugly - and no more - with a short-handled wrench).

In this way you'll avoid the hard starting and poor engine performance that goes with improperly-gapped spark plugs.

**Leaky Center Bearing**

GMC also reports that in order to prevent oil seepage at the keyways in both ends of the propeller-shaft-center-bearing shaft, (you used to call it a 'pillow block') they are now using in production, some permatex on the small cork seal (Part No. 33654R - two pieces, 5/8" long) which is inserted in the keyways between the end of the shaft and the keys. The corks are treated and placed in position after the keys are installed but before the oil seals and flanges are put on. This little trick, they declare, effectively seals the propeller-shaft-center-bearing assembly.

**KEEP 'EM FROM ROLLING**

(From page 253)

top part of the tarpaulin, which is folded down as shown in the illustrations, can be arranged tastefully over the heads of the wounded to keep out the wet and at the same time allow space for breathing.

All in all, it looks like a good idea for reducing the discomfort of those who are being transported back to blighty - and upon closer scrutiny, it looks like a good place to sleep when the ground is hard and wet. Simply remove wounded and place in underbrush, settle self comfortable beneath covers, sigh contentedly and off to beddy-bye you go.

**SEAL TAIL UNITS**

(From page 267)

Getting condensation in them is another good way of shorting out the bulb and being without a tail light when you need it.

This ought to be enough to convince even the wildest sceptic. If it isn't, we can always beat you over the head with AR 850-25, Par. 5:

"The chiefs of using arms and services are responsible ... that no changes are made in approved military characteristics without the approval of the Secretary of War.

Not that we're hide bound - you know better than that. But, as we said before, it's bad medicine.

**SGT. HALF-MAST'S DEPT.**

(From Page 279)

Dear Half-Mast:

The other day we got some new vehicles and lo and behold, the tire chains were covered with some lacquer-like substance to prevent rusting. What is it, and is it available for use on the chains of our old vehicles?

Lt. W.J.G.

Dear Lieutenant:

Holabird's Chemistry Lab is using 'Gloss, Clear Varnish for rustproofing chains.

Of course, your chains have to be clean and free of rust before you put the varnish on.

That means that you need three materials: (1) the Gloss, Clear Varnish; (2) thinner to cut it with; and (3) a metal cleaner.

The Gloss, Clear Varnish is a new varnish that replaces the old 'Spar Varnish' listed in the Parts Common Manual. And so far as I know, it hasn't yet been given a Federal Stock No.

So I'll tell you what you do: you go up to your Supply Depot and tell them to whip out their copy of 'General Specification on Protective Coating Materials, HOMB ES-No. 680a', and look for 'Gloss Clear Varnish under class

35. If they don't already have a supply of the varnish on hand, ask them to take the spec down to the paint manufacturer who's been awarded the 'Indefinite Quantity' contract in your zone (it happens to be Sherwin-Williams in your zone) and have him make up a batch of the varnish just like a druggist would make up a prescription for you.

Now as it happens, the varnish is a little too thick to use as is, and must be cut 50% with thinner. If your Supply Depot doesn't have supply of the thinner listed in 680a, tell them to have a batch of that made up for you.

As for the metal cleaner fortunately that has a Federal Stock No. It's in the Parts Common manual under 'Acid' and is called 'Phosphoric Metal Conditioner'. In one-gallon containers, the Federal Stock No. is 51-A-1302; in five-gallon containers, the Federal Stock No. is 51-A-1303.

Anyway, after you get your materials, here's what you do: first, you cut the varnish 50% with the thinner. Then you clean your chains thoroughly with the metal conditioner, then let them dry and dip them into the varnish. In order for the varnish to do its best job, it has to be thoroughly dry and hard - and that takes about a week.

When you again use your chains, you're going to find in pretty short order the varnish will be pounded off that part of the chain that makes contact with the road. However, this doesn't matter too much, since it only amounts to a small part of the chain - the rest of the chain will be protected from rust by the varnish. Furthermore, the part of the chain that contacts the road is a rust-resistant steel.

As complicated as this sounds, it's the best way to get your materials.

*Half Mast*



# News Flashes

HOLABIRD ORDNANCE BASE, DECEMBER 15TH. Tire pressure gages should be deleted as an item of issue from your Tables of Basic Allowances, since they will now be supplied by the vehicle manufacturers as 1st Echelon equipment. In other words, the gage will stay on the truck along with the jack, the crank, and the rest of the driver's tool set, but it will be dropped from the allowances as a vehicle accessory.

FIRST SERVICE COMMAND HEADQUARTERS, NOVEMBER 30TH. Pending the establishment of a depot to supply parts for vehicles issued before 1940, address your requisition for such parts like this: Deputy Chief of Ordnance, Tank and Automotive Center, Detroit, Michigan, ATTENTION: Parts and Supplies Section, Supply Branch.

DETROIT, MICH., DEC. 12. The following is extracted from a wire received today from the Fargo Corporation:

RE STORY 'STICKING THROTTLE-LEVERS' NOVEMBER ARMY MOTORS, PLANS REVISED ON RETURN OF OLD BEARINGS. REQUEST FIELD BE INFORMED TO KEEP OLD UNIT IN LOCAL SALVAGE AFTER INSTALLING NEW BALL BEARING.

In other words, don't send Fargo the old unit as the article told you, but throw it into your own, local salvage pile.

WASHINGTON, DEC. 12. A bulletin on mounting the 1½-quart poison gas decontaminator is now being reviewed and will be issued to the field in the very near future. Meantime, if you don't expect to have to use your decontaminators right away, Army Motors would be inclined to suggest, (very delicately of course), that you leave them in their boxes instead of putting them on the trucks in the wrong places and then have to move them later.

WASHINGTON, DEC. 4. To further national conservation of critical material, WD Circular 393 lists directives on use, and responsibility for gas, oil, coal, and other fuels. While there is no intent to limit the normal use of fuel, the circular deplors wastes like pedal-patting and needless engine-idle.

OCTOBER ARMY MOTORS listed 511 136-85 as stock No. for Inhibitor, Anti-Freeze. Wrong! it should have been 51-I-136-85.

*Congratulations  
and Apologies*

TO HOWARD C. GUHL —recently upped to warrant officer in the office of G4, 82nd airborne division— because we left his signature off a description of the tune-up truck on page 242 of November Army Motors. Also, thanks to Major John M. Sword for passing us the contribution.





... THIS MAN IS EXPENDABLE!!

Every 2 weeks 20 thousand JOE DOPES are mailed out to battle negligence in maintenance of Army equipment. To use these posters effectively, they must be placed in the most prominent spots. Put them all over the place. Hang them where your men

congregate most, where they work, where they sleep. Joe Dope does a job. JOE DOPE IS EXPENDABLE. For changes in the quantity of Joe Dope posters you receive, write to: Office Chief of Ordnance SPOFM Preventive Maintenance, Washington.