

# ARMY MOTORS

VOLUME-3



MAY 1942



NUMBER-2



A *New* MILITARY VEHICLE see page 33

# Steering Wheel

## SHOESTRING OPERATORS

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We're thinking particularly of a captain in charge of a motorcycle school out in Atlanta, Georgia, and the captain of a motor transport company at Holabird.

The gentlemen from Georgia, charged with the training of motorcycle operators, grew a little sick of the abuse suffered by both riders and machines and set out to prove a few things to himself. He believed 'the rider and his motorcycle isn't such a bad sort, and a little more interest on the part of the unit commanders... could offset the stigma and misunderstandings...'

He figured the best place to start would be a motorcycle test-course. But where to get one? It isn't the sort of thing you can order from a supply base and they're not provided for in the TBA's. Out came the old shoestring and he built one - four miles, complete with 'rust, dirt, mud, streams, steep hills, deep gullies, sand traps, woods, roots, plowed ground, brush and narrow bridges.' For training-vehicles, he got discarded and condemned vehicles, sicked his students on them and before anybody in the crowd could say, jack robinson, his boys had whipped them into shape and were learning all about how to handle motorcycles out on the homemade test course.

The results of this enterprise are a nine-months record of accident-free and trouble-free performance, with junked motorcycles and newly-trained riders. Plus a deep appreciation by all concerned, of the maintenance needs, limitations and abilities of the motorcycle in the modern army.

And what was it done with? A shoestring - no ready-made plans and equipment, just ingenuity, imagination and good common-sense.

So for conspicuous industry above and beyond the call of duty, we present to the captain from Georgia, the 'Order of the Aluminum Shoestring' - and a poppyseed-roll on the drums.

Our second hero, the captain of a light maintenance company at Holabird, drew back in fear and amazement when the Army presented him with 126 greenhorns only five days in uniform. Without even basic training! He looked first at them and then at the brand-new expensive vehicles and equipment they were to man - then swore a mighty oath that never the twain would meet. Never, that is, until the greenhorns had been properly conditioned.

But how? How give them basic training and at the same time make them skilled mechanics without sending them full-time to school?

A few rapid conferences with brother officers and the captain strode forth with a gleam in his eye. The next day, ipso facto, the greenhorns were marched down to the salvage dump. In the weeks following, they tore down parts and rebuilt them, tore down battered trucks and rebuilt them...all the while sandwiching in their basic training. They reached the peak of their glory when they dragged three broken down rat-traps from the dump and without spending a cent, got them into good enough shape to work as administrative trucks around the post.

"Good? Damn right they're good," said the Captain, "these boys learned by doing! Of course they don't know everything yet, but every once in a while we break something on the old trucks and tell 'em to go ahead - find it and fix it. These boys - they'll be all right."

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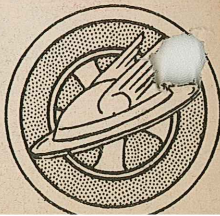
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ARMY MOTORS is published monthly for the Motor Transport Service by the Technical Service Division, Holabird Quartermaster Motor Base, Baltimore Md. Your contributions of ideas, articles and illustrations are welcomed. Address all correspondence to the Editor, at the above address.



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The old 1/2 ton, she ain't what she used to be - ain't what she used to be. They took the old buzzard into the Holabird beauty saloon and gave her the works. She's a 3/4 ton now.

Harkening to their slogan, 'Onward and Upward - and Let's Have a Beer At The First Joint We Come To,' the engineers have improved and revised the 1/2 ton 4x4 Dodge so much that you'd never recognize her.

You can see the latest pictures of her in Figures 1 and 2. She's a 3/4 ton now, a snub-nosed, short-tailed, ground-hugging little truck. She looks tough and is tough, reminds you of a bulldog.

Following the lead of the 1/4 ton jeep, she's another 'strictly military' vehicle for the Army.

A 'strictly military' vehicle, you say, what have we been driving up 'til now, pinball machines?

No, not quite - but with the exception of the jeep, the

in using are commercial trucks, they're trucks with military uses. They've been used for a long time for approach and transport of four-wheel trucks - but all these trucks are under the same roof as the jeeps and vans and trucks that are used over the top of the world, see, and in the mountains - they were commercial

the Army's 'commercial' on -15 says, 1 vehicles les will be s produced commercially by two or more competing companies." TM 10-510 says, "The using arm or

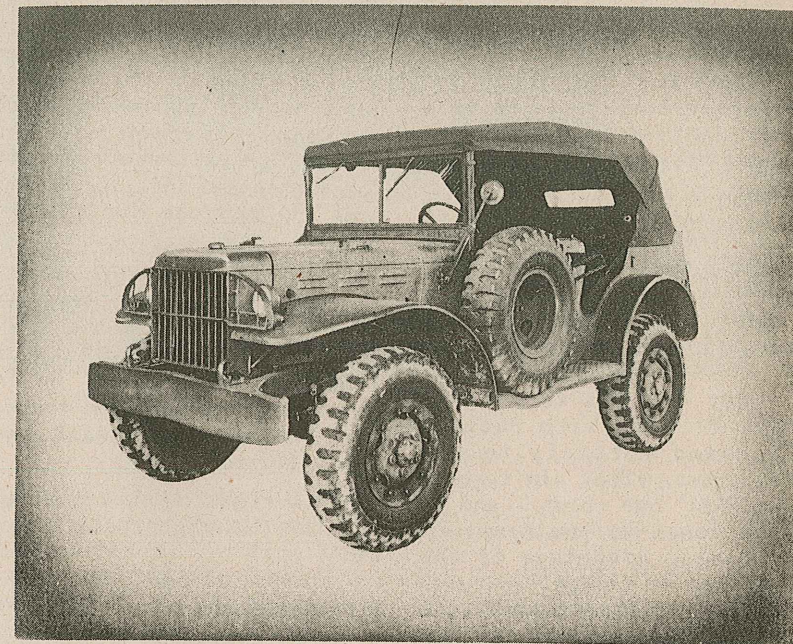
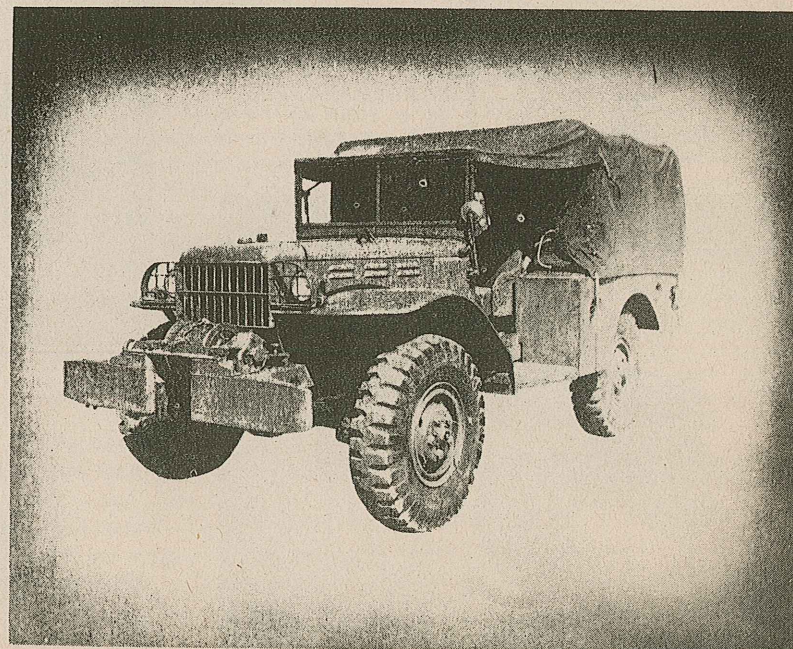


Fig. 1. The new 3/4 ton Command Car.

Fig. 2. The new 3/4 ton Weapons Carrier.



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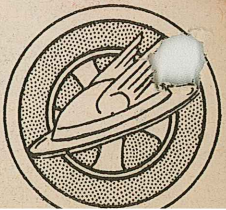
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A 'strictly military' vehicle, you say, what have we been driving up 'til now, pinball machines?

No, not quite - but with the exception of the jeep, the vehicles we've been using are - broadly speaking - commercial vehicles. That is, they're commercial vehicles with military characteristics. They've got the high angle of approach and departure, the four-wheel drive, the winches - but all in all, they're sisters under the tin to the moving vans and fish wagons running over the highways. They're good, see, but, they're hybrids - their father and mother were commercial jobs.

Don't worry - the Army's been buying 'commercial' on purpose. AR 850-15 says, "Procurement of all vehicles except combat vehicles will be limited...to models produced commercially by two or more competing companies." TM 10-510 says, "The using arm or

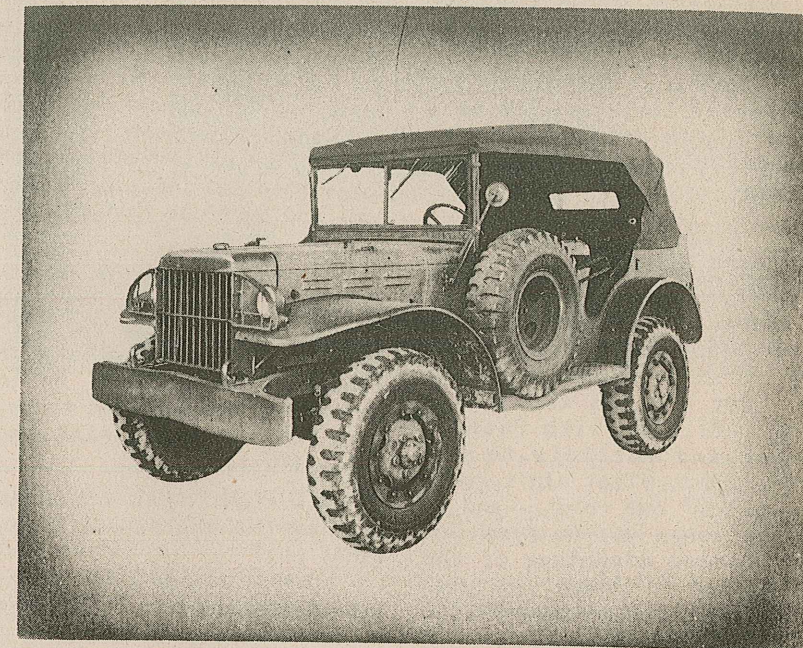
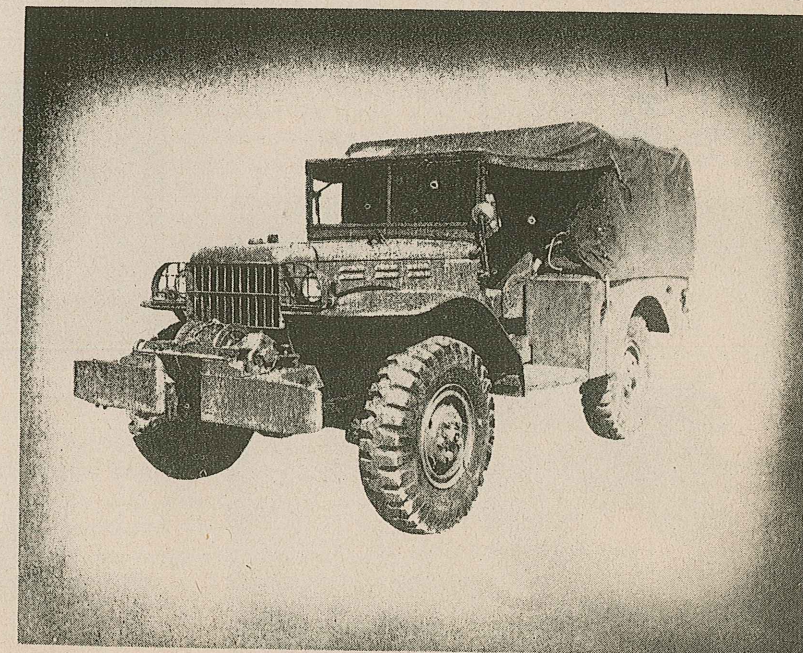


Fig. 1. The new 3/4 ton Command Car.

Fig. 2. The new 3/4 ton Weapons Carrier.



service must plan its military characteristics with minimum deviation from standard commercial chassis."

The reasons are that vehicles bought this way, are a lot easier to get, can be turned out faster than home fries - the same production lines making commercial vehicles, can be used to make Army vehicles.

Looking at it coldly, you might say Army vehicles were by-products and the Army was in the position of little Rastus.

Little Rastus looked at little Rufus eating a big, red apple and said hopefully, "Save me de core?"

And little Rufus looked down his nose and predicted, "There ain't gonna be no core."

But how the times have changed! Now with Detroit converted entirely to war production, "There ain't gonna be nothin' but core" - and it all belongs to the Army.

Taking advantage of the new state of things, and with the enthusiastic cooperation

of Detroit, the engineers have redesigned the 1/2 ton to a new 3/4 ton. Feast your eyes on those strong, squat lines in Figures 1 and 2 - sturdy as a work shoe.

The new 3/4 ton comes in the same four body types as the 1/2 ton; Command (Fig. 1), Weapons Carrier (Fig. 2), Carryall (Fig. 3) and Ambulance (Fig. 4). Although our pictures show a winch on the Weapons Carrier only, winches will be optional equipment on the Command as well according to the wishes and feelings of the Arms and Services that get the trucks.

There's plenty of interchangeability between the parent 1/2 ton and the offspring 3/4 ton and plenty of room for comparison. So in describing the improved truck, we'll contrast it with the 'old' 1/2 ton.

All right, what's the new 3/4 ton got that the 1/2 ton ain't got?

Lots of things...but principally, (1) the low silhouette

on the new job - which makes it less of a target on the horizon, (2) the short wheelbase - which makes it as negotiable as one of the Colonel's checks and, (3) larger tires which give it better 'flotation' and the ability to travel over unbelievably rough ground.

The low silhouette is as desirable in a truck as the ability to crawl on his belly in a soldier. "If you can't see 'em, you can't hit 'em." That's the way it is with the new trucks - they're low to the ground. The specifications say, "The height or silhouette of the Command and Weapons

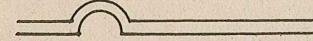
Carrier trucks fully equipped and loaded, shall not exceed fifty-three (53) inches over hood and cowl (less windshield)."

Lowering the silhouette posed a problem: How to get everything down closer to the ground and still retain the necessary clearance to avoid rocks, stumps, etc.?

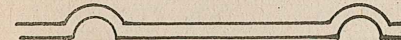
Buster Barracuda over at the Holabird Engineers, chew-

ed fiercely on the cigar he was enjoying for breakfast and said, "Did it with a double-drop frame."

We stared pleasantly and idiotically at him until he explained, "A straight frame is aaaahhhh...straight - made like this:



...with what you might call a single drop. A double drop frame is like this:



the 'drops' make room for the axle, housing, and so forth at the front and rear.

"Uncanny!" we said in a hoarse whisper.

"Of course," continued Mr. Barracuda, "certain units had to be altered because of the new low silhouette. The shock absorber design had to be changed. You know you can't put the conventional type shock absorber on a job like this.

"Uh-uh!" we agreed, shaking our shaggy head gravely.

"And the transfer case housing," said Mr. Barracuda, "although the internal parts are the same as the 1/2 ton, the housing had to be redesigned."

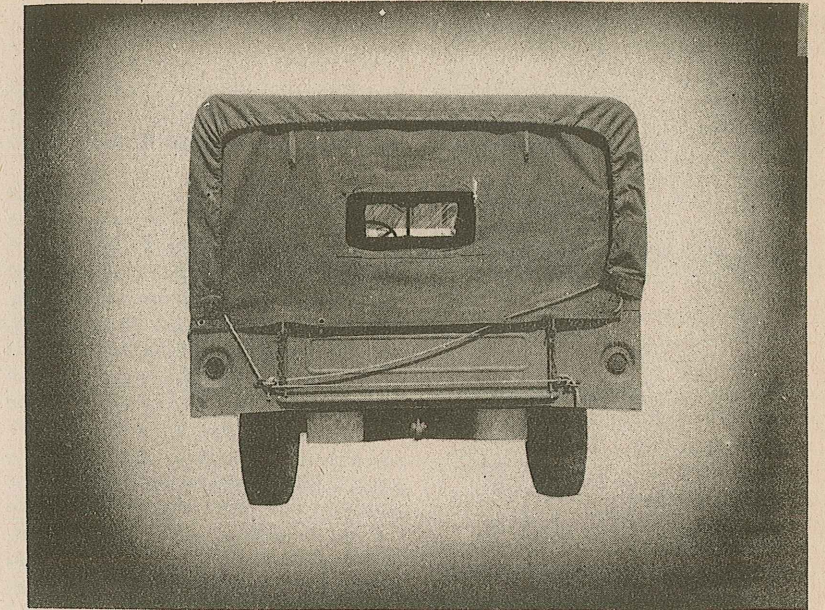
"What about interchangeability with the 1/2 ton's transfer case, then, Mr. Barracuda," we said, "what about that?"

"What about what?" asked Mr. Barracuda abstractly.

We mopped our forehead, "What about interchangeability with..."

"Oh, that!" Mr. B. rolled the cigar deliciously around in his mouth, "well, as I say, the internal parts are interchangeable - but the housing, well, that requires special brackets to allow you to put it on the 1/2 ton. They'll be putting these brackets up in special replacement kits for just that purpose."

"And talking about inter-



changeability, you might remember that the component parts of the universal joints are all interchangeable with the 1/2 ton."

"The short wheelbase, Mr. B," we asked, setting off on a different tack, "everybody knows the advantage of a short wheelbase - but just playing with words, what does the short wheelbase do?"

"Makes the truck more tractable, easier to maneuver," said Mr. B. "For one thing the turning radius is improved - you can turn around on a dime. For another thing, you can go in and out of holes or rough spots without scraping the belly of the truck like a sausage hound. After driving the short wheelbase job, any other truck feels as long as a hook and ladder fire engine."

"Pretty good, huh?" we put in.

The specifications reveal that on the 3/4 ton Weapons Carrier and the Command Car, the shortened wheelbase is 98 inches as compared with 116 inches on the 1/2 ton. On the Carryall, it's 114 inches as compared with 116 on the 1/2

Fig. 5 - The wide, wide body of the new 3/4 ton Weapons Carrier.

ton Carryall. On the Ambulance, it's 121 compared to 123 on the 1/2 ton Ambulance.

The body width of the new 3/4 ton, like the reports of Mark Twain's death, has been greatly exaggerated. Especially in the case of the Weapons Carrier which, going away, looks like our favorite stenographer (Fig. 5). The entire body width including the part over the wheels has been utilized. The width of the 1/2 ton is 74 inches - the 3/4 ton has grown to 82 3/4 inches. Fat!

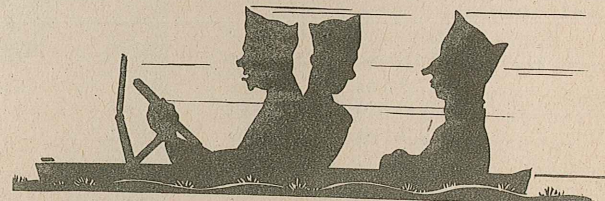
Although the body width of the Ambulance is the same as in the 1/2 ton, the Carryall and the Command Car are up to 77 3/4 inches from 74 in the 1/2 ton.

An especially remarkable feature in connection with the wider body, is the fact that the front wheels and back wheels are spaced equally wide apart (run in the same track). On the 1/2 ton, the front

Fig. 3 - The Carryall - next of kin to the Ambulance. Also tough enough to go any place the others will go.



Fig. 4 - The new 3/4 ton Ambulance. Though its contours are somewhat different from the body models on the preceding page, it's just as rough and rugged.



THE LOW SILHOUETTE OF THE NEW 3/4 TON

wheels were a couple of inches closer together - narrower than the back wheels - an old commercial practice. But under the new dispensation, the back wheels will ride in the tracks broken by the front wheels and won't have to blaze a trail of their own.

The third big improvement on the new truck, is the large tires. These are 9.00x16 - up from 7.50x16 on the 1/2 ton. (The QM Engineers with fingers crossed against a worse rubber shortage in the future, provided for fitting the smaller 7.50x16 tires on the new truck - just in case).

The 9.00x16 tires tremendously increase the cross-country ability of the new truck. Big tires increase the ground clearance - gives the kind of improved traction that grips the earth like a caterpillar.

Furthermore, the wheels are the 'runflat' or combat type (Fig. 6) with split rim and beadlock (ARMY MOTORS, August, 1942). With their standard tires shot flat by bullets or shrapnel, the combat wheel will keep a vehicle running long enough to take it out of danger.

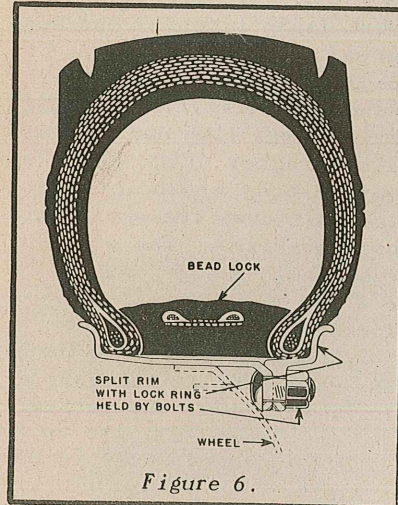


Figure 6.

Because the 9.00x16 tires allow the truck to travel over tougher terrain, the rest of the truck has to be proportionately strengthened to stand the harder shocks. The new 3/4 ton's got it - the

steering gear is heavier and stronger, the steering arm is thicker and stronger, the tie rod size is increased.

Grinding over the rocks and rills where the larger tires will take the truck, calls for increased torque - more horsepower. For this reason, the gear ratio has been increased to 5.83 on the 3/4 ton; up from 4.89 on the 1/2 ton. In simple language, this means the number of teeth on the ring gear compared to the number on the pinion gear has been increased - the pulling power is stepped up.

However, the engine remains the same as on the later model 1/2 ton - a 230 cubic inch engine. As you know, the engine in the 1/2 ton had been progressively stepped up from 201 cubic inches to 217 cubic inches to the present 230. Now the 230 cubic inch engine is in the 3/4 ton.

Speaking of strengthening parts and assemblies, the size of the constant velocity drive joints, and the size of the 'front' rear propeller shaft has been increased on the new 3/4 ton.

All this goes along with the greater capacity of the new truck - after all it is 3/4 ton - 1500 lbs. - compared to the 1/2 ton - 1000 lb. - capacity. (The towed load remains at 1000 lbs. as on the 1/2 ton). For this reason the springs are heavier.

The large brake that blossomed out on the rear wheels of the late '41 model 1/2 tons, will be on both the front and rear wheels of the 3/4 ton. No doubt the larger load capacity has something to do with this.

Speaking of brakes, the new job has readily removable brake drums which allow you to clean the brakes without disturbing the wheel bearings. (Fig. 7)

Mr. Barracuda had a few things to say about the electrical system of the new trucks, "Twelve volt coil on

all the Command Cars and Carryalls, 55 ampere system, negative ground, antenna supports and junction boxes, he looked around cautiously, "to provide for radio installation by the Signal Corps."

"Hey!" we responded excitedly.

"Uh-huh," said Mr. B. "and complete radio suppression in accordance with..." he took off his hat and scrutinized a tiny piece of paper that he pulled out of the hatband, "...U.S. Army specification 71-1303 and 71-1305."

"Wheeee-ew!" we said.

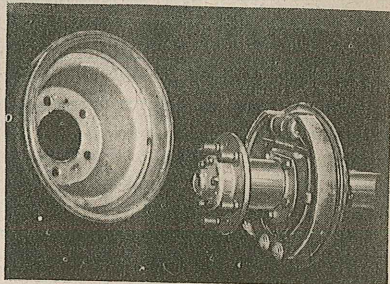


Fig. 7 - This easily removable brake drum allows you to clean the brakes without disturbing the wheel bearings.

"There's a voltmeter up on the dash of all the 12 volt jobs."

"Some class," we said.

"Of course," he cautioned, carefully flicking the hot ashes of his cigar on our knee, "The Ambulance and Weapons Carrier have only 6 volt systems, - no radio you know."

No," we said sadly.

Mr. B. pulled another one out of his hat in revealing that the generators on all the 3/4 ton's have a sealed bearing construction that does away with oiling of the generators.

"Probably no more generators burned out for lack of lubrication!" he declared.

"But don't forget - the generators on all the other trucks still need that couple drops of oil every thousand miles in the hole on the com-

mutator end plate."

Blowing his nose vigorously, he also disclosed that the 6 volt truck - The Ambulance and the Weapons Carrier - have electrical sockets for trailers - the 12 volt jobs do not. "The best we could do was put the wiring in," said Mr. B, "so the sockets can be installed if needed. But no sockets on factory delivered 12 volters.

"No sockets," we echoed.

A fascinating little arrangement that proves engineers and automotive designers are slightly human, is the gas tank filler neck on the new truck. Designed to enable you to fill the gas tank from a 5-gallon can, without a funnel, it's bigger than the filler neck on the 1/2 ton - 3 9/16 inches compared to 1 7/8 inches.

In the second place - hold on to your hat - it's got a telescope or extension arrangement that allows you to pull the neck out to fill it!

Also they didn't forget to put a pressure-type cap on the gas tank...which incidently, now holds 30 gallons compared to the 25 gallons of the 1/2 ton.

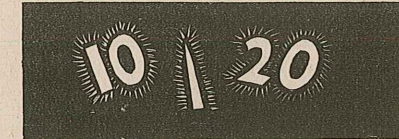
A new 'concentric-float-chamber' type of carburetor (with a built-in governor) guarantees good carburetion at high operating angles. Roughly speaking (that's how we always speak), this means that the float chamber

completely surrounds the venturi tubes instead of just lying off to the side (Figures 8 and 9). You can take steep angles with the truck without flooding (Fig. 8-B) or starving (Fig. 8-C) the engine.

However, this is by no means a feature exclusive with this truck only.

The rubber crisis has shorn this truck of its rubber mat (except in the ambulance) and latex seat cushions. In their place, we have fancy 'dressing' stamped in the metal of the floor and cotton padding in the seat cushions.

Two other things to interest the driver: There's luminous paint on the speedometer needle and on the numerals '10' and '20' (swell for blackout driving); and the winch controls are easier to get at.



Also, as we mentioned before, there's a voltmeter up on the dash of the Commands and the Carryalls to enable the driver to check the condition of the battery and know the engine must be run to compensate for radio set current-drain.

\* \* \* \* \*  
Just as we were about to wind up this article - call it a day - we stepped over to the

Fig. 8 - The ordinary or 'eccentric' type of carburetor. (A) as it works on the level; (B) and (C) the flooding and starving that occur on steep angles.

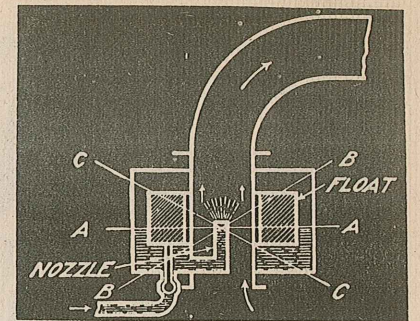
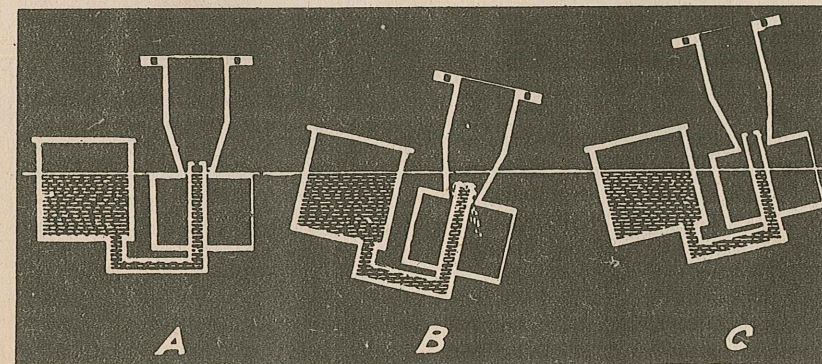


Fig. 9 - The concentric type of carburetor. The float chamber completely surrounds the venturi - allows the truck to take steep angles without flooding or starving. The level at the nozzle remains constant A-A, B-B, C-C.

Engineers' test garage where the pilot models for experiment are brought in. What to our amazement did we see, but another of the new 'strictly military' vehicles just being driven in for test.

We were thunderstruck, words failed us. If there can be beauty in an implement of war, this truck had it. In its lines, in its equipment, in the very way it stood there - it shone with efficiency.

Here was the designer's dream of a military vehicle - not overdone or 'queer' to give it a military 'look' - but solid, squat and compact, every last bolt in there to do a job.

Deep into the uttermost bone in our head we were shaken by the profound envy of every soldier who got to drive one of these...into whose charge it was given to care for and maintain.

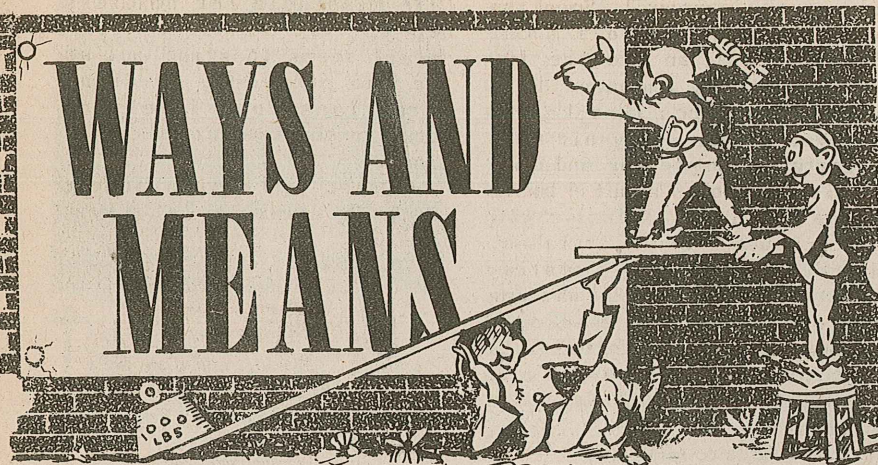
We thrilled, we filled our eyes with this vision of loveliness, clenched our fists and toasted the wave of the future.

"Gees," we said and went home.

Issue . . .

The 3/4 tons went into production May 15. Don't ask us who's going to get them or when.

# WAYS AND MEANS



## Potpourri

Sgt. Mike Laputka over in the Vehicle Test Section at Holabird, had a few things to say about Interchangeability of parts the other day.

"I got 'em marked right down here in my little black book," said Sgt. Laputka, "little interchangeability items I notice not many guys are familiar with."

The Sergeant leafed through the greasy pages until he came to one with a short note on it, "Here's one...." he screwed his eyes up to the page, "... kinda hard to make it out, page is dirty...ummm, well, let it go....wish I could make it out though, looks important..."

He turned to another page. "Aaah, here's an item," he said, "on the one-ton trailer, all the wheels are interchangeable with the vehicle that tows them. That's a good thing to remember. And talking about trailers, I had a Lavine one-ton trailer laying around here with broken springs for a couple of months until one day I discovered that some Ben Hur trailer springs I had, would fit it."

The engineer who draws up specifications for trailers, agreed that trailer springs are interchangeable but pointed out that earlier model trailer springs are lighter than later model trailer springs. "Be sure in replacing springs to

get matched pairs - that is, either two of the earlier springs or two of the later, heavier springs. Don't use one of each on the trailer."

"...wish this page wasn't so smeared," mused Sgt. Laputka trying to read the dirty first page again, "oh well, here's something: how many guys do you think know that the reflectors - the reflex reflectors - on trucks are parts common? And how many remember that the two jeeps - the Ford GPW and the Willys MB - are 100% interchangeable on parts?"

"And keys," said the Sergeant, "saves a lot of trouble if you remember that besides all ignition and tachometer keys being interchangeable, the ignition keys will also fit all the padlocks on the truck."

"Doggone," he said glancing back at the dirty first page again, "sure wish I could make out what this says."

"You know, last summer I was driving a big Corbitt up from maneuvers and the fan belt broke. Didn't have a spare - so I walked into the little southern town near there, but all the guy in the garage had, was a couple of Dodge fan belts. Well, I'll try anything once, so I put two of them Dodge belts on - and you know they worked fine. That's six months ago and they're still on that truck. You can write that in an emergency, two Dodge fan belts will work fine on a Corbitt - or a White.

"Shucks," he said, straining his eyes over the first page again, "wish I could make out what this note says... Here," he passed it over to us, "see if you can read it."

We adjusted our eyeglasses and examined the dirty page closely. "Ahem," we cleared our throat and started to read, "ummm...Mamie Hooligan, Nebraska 0460 - if a man answers, hang up."

## Inflation

Our 'Make Life Miserable For Soldiers Dep't' came through with an idea on inflating tires 'after operation'!

As they explained it with much waving of hands, tactical vehicles on the march in the field, have to be ready to go at the drop of a hat. Among other things, this means the tires have to be properly inflated. Keeping tires properly inflated means you've got to check them religiously after any prolonged run. But there's the rub: immediately after a long run you can't gage tires accurately - the heat of the run has swelled them up so that the tire pressure is increased out of all proportion.

You're between the devil and the deep blue sea - without any oars.

Of course, if you reach your destination in the afternoon and have nothing to do when you've completed your 'after operation' checkup, you can lay around on the grass for three or four hours until the tires have cooled down and dissipated the false heat-pressure.

But what if you reach bivouac late at night, way past your bedtime? What are you supposed to do, scratch yourself for four hours til the tires cool down - then check them?

Who, you? Not you. You're tired, you're sleepy.

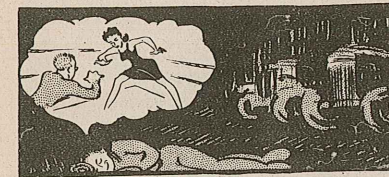
But it's got to be done - and you can't wait until morning because, as we said before, you've got to be all set to

go at any time - maybe even during the night.

Well, then, what are you going to do?

As we said before, our 'Make Life Miserable For Soldiers Dep't' has an idea. You won't like it, you'll say bitter things about it, but deep down in your secret heart you'll know that it's just about the only thing you can do.

In brief, here's a picture of what they recommend: Arriving at bivouac, everybody gives the trucks the old 'post operation' checkup, eats, then staggers away to a soft spot and sleeps like a stone for three or four hours. At the end of that time when the tires have cooled down and you've come to that part of the dream where Hedy Lamarr offers to wrestle you 3 falls out of 5, the sentry comes along and wakes up a detail.



Wakes up a detail to go around with gages and the air compressor, checking and inflating the rubber goods.

Oh, heart of stone, oh poisoned mind....

But what else can you do?

A bunch of frantic people leaped into the breach with other suggestions to stave off this fearsome procedure - but to date they've all got holes. One fellow said, let's just assume that the tires have lost five or so pounds during the day's run and add that much during post-operation checkup to be on the safe side. Then in the cool of the morning, let the driver take a minute with a tire gage and if he finds that the pressure is excessive, bleed it out.

But do you know how long it takes to inflate every tire

in a truck company? Speaking very roughly, there's about 500 tires in an average 100 truck QM truck company. Figuring 30 seconds to take off the valve cap, apply air with a portable compressor and move on, it would take about 4 hours to do the job.

And the 4 hours it takes, is not the only rub - statistics show that you'd be wasting 90% of the time because only an average of 10% of the tires need air after the day's run (under average military conditions).

Maybe we shouldn't have said 'only' 10% of the tires - 50 tires (that's what 10% comes to) is a lot of tires in any man's truck company. But it does point out that you'd be wasting a mighty lot of time - 90% of 4 hours every fighting day. Too much.

The Midnight-Tire-Detail on the other hand....

Well, the boys working with the portable air compressor would only take about 25 minutes to inflate that 10% of the tires (50) which we have discovered are all that need air on any given day. The other 90% could easily be split up between 7 or 8 guys with tire gages - they could do it in a half hour.

The picture would be one of 7 or 8 sleepy-eyed bozos wandering from truck to truck in the night, occasionally giving a yell or making a chalk sign on the tires, for the 3 or 4 guys manning the air compressor.

Being realistic about the whole thing, we realize that there are certain other factors to be considered. Maybe your trucks will take it easy for a couple of days - then you can skip one or two nights checking. Maybe you've got an air-brake truck with a compressor on it to help your portable compressor inflate tires. Maybe you've run across a couple of other things.

But at any rate, according to the facts, figures and fulminations from our 'Make

Life Miserable For Soldiers Dep't,' the *midnight-tire-detail* seems to stand out as the one procedure covering situations most likely to occur in the theater of operations.

Or do you have a better idea? Or opinion? Let's hear from you.



M/Sgt. Jack P. Reilly stalked threateningly into the office the other day with a spring bar (Fig. 1) cocked in his good right hand, "Who's responsible for this?" he roared as though he was bigger than us (which he is).

"What?" we chattered peering out from the lower right hand desk drawer whence we had fled.

"This here spring bar for testing spring shackles," he growled, "out of the 3rd echelon tool set. The opening is only an inch wide. If it was an inch and a quarter wide it would fit any truck from a jeep to a Diamond T." He bared his fangs at us as though he could eat us up at one bite (which he can).

"W-we don't know who's responsible, sir."

"Waal, you just mention to the field that they ought to widen the opening to an inch and a quarter - any blacksmith can do the job." He spit on our shoes to drive home his point.

"Yes sir," we said, smiling gratefully as though we enjoyed having him spit on our shoes.

"Well, all right," he snarled walking out the door - without bothering to open it.

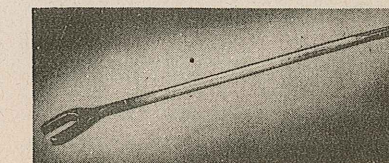
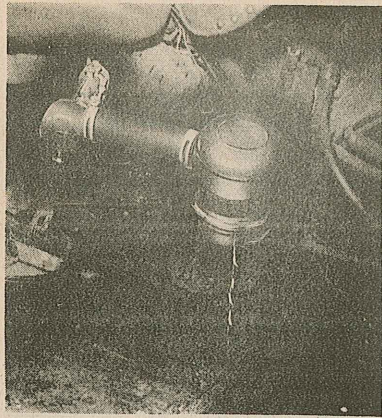
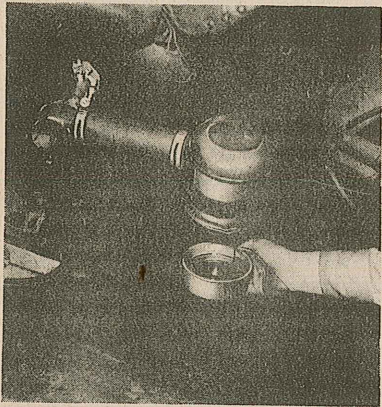


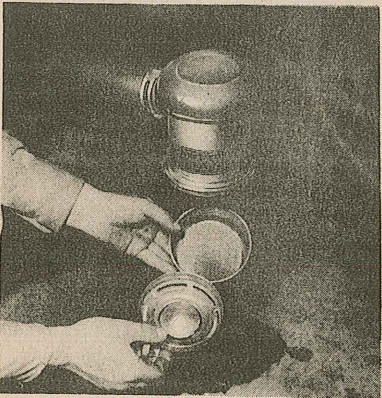
Figure 1.



Gasoline runs into the bowl and chases out all the oil.



A gasoline-filled bowl isn't a very good dust catcher.



Gasoline evaporates, gives dust and dirt free passage.

## Motorcycle TROUBLE

Two little things on a motorcycle can start a train of events leading straight to ruin. One is a bad habit and the other is a bad adjustment. They both make for a bone-dry oil-bath air-cleaner. It goes without saying that a bone-dry air-cleaner lets dirt and dust sneak by to ruin the engine.

The first, the bad habit, is that of allowing your Harley-Davidson WLA 45" to park at an excessive angle. Maybe you park it on the side of a hill, maybe you park it so the jiffy stand is in a hole or mud or sand. Anyway, setting the motorcycle at an excess angle, causes the carburetor to overflow. Gasoline spills into the hose and flows down to the air cleaner, and then your troubles begin. The gasoline fills up the oil cup and either dilutes or completely washes out the oil.

It splashes around in the pan for a while and shortly afterwards, evaporates. Results: the oil pan is as dry as your throat before pay day, your air cleaner is non-compos-mentis... and your engine suffers the consequences of cylinder walls and pistons scratched and scored by dust and sand, bearings die like a dog from dirt in the oiling system, etc.

The second trouble - the bad adjustment - does exactly the same thing in the same way: by washing the oil out of your oil-bath air-cleaner.

It's bad adjustment of the float in the carburetor. The float being the gadget that regulates the level of gasoline in the carburetor, improper adjustment - or sticking - of it causes the level of the gasoline to rise to flood tide and slop over. Where does it go? The engine's not running so the easiest place for the gasoline to go (on the WLA 45" is down the hose and into the air-cleaner.

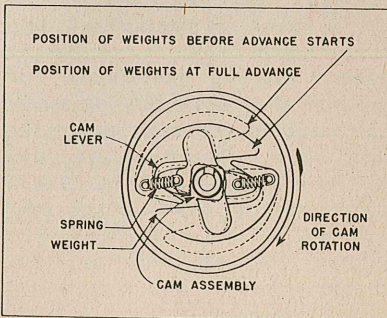
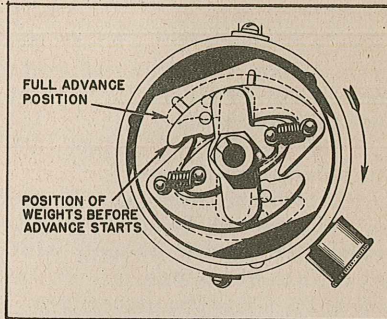
The oil pan is dried out as before.

The thing for you to do is whistle up an authorized motorcycle mechanic and have him check the carburetor float level (1/4 inch from the top of the bowl); see that the float is properly off-center to prevent sticking (3/64" to 1/16" off-center), and while he's at it, see if maybe the trouble is being caused by a bad needle valve and seat.

But at any rate, if motorcycling's your business, remember the two little things: the bad habit and the bad adjustment. Break one and fix the other.

## Fram

Figure 5-2 on Page 25 of the Delco-Remy Electrical Equipment Handbook has a slight error - but instead of a long-winded explanation, we'll make it easy for you (and easier for us), by letting these illustrations show what we mean. The 'BEFORE' is the incorrect illustration as it appears in the Handbook. The 'AFTER' is the correct illustration.



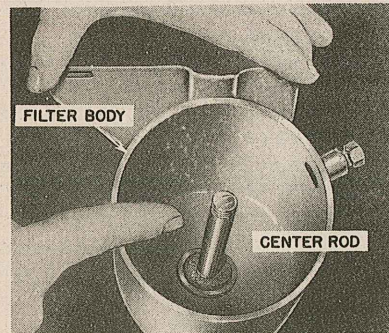
# Oil Filter CARTRIDGES

"Pooley... that coffee tastes terrible, why don't you watch what you're doing... how you expect a guy to drink that poison when it's fulla grinds? What kind of strainer you got in that urn - chickenwire?

With a few final coarse remarks to the counterman, our hero wiped his mouth, and slammed out of Pete's Diner.

Three miles and three minutes later he drove in at the gate, showed his trip ticket, and headed for the garage. But he only headed.

A strange man, with a gleam in his eye and a bar on his shoulder hopped on the running board, "Pull over there under that tent, Bud. Spot-check inspection."



Under the shade of a tree the chief inspector opened a cage and released a wild-eyed bunch of little inspectors. Swarming like flies over the truck, one of the first items they snared were the two Military Standard oil-filters. Both had replacement cartridges. Both cartridges were too small. Dodge cartridges in a GMC filter. Like putting B-B's in your .45 - they just don't fit. They let the muck-laden oil by-pass and run its dirty course back into the engine, where it doesn't do nobody no good.

Remembering that this driver is the very same guy who blew his top about the cup of coffee back in Pete's Diner, we think he's strictly to blame for not saying anything about the dirty oil in his crankcase. Unless he never checked it. In that case... ten lashes.

The lieutenant who grabbed him for a spot-check wasn't just picking on him. It's all part of a big oil-filter investigation. Seems that everybody's all mixed up about what cartridge goes where and how you put it in when you get the right one.

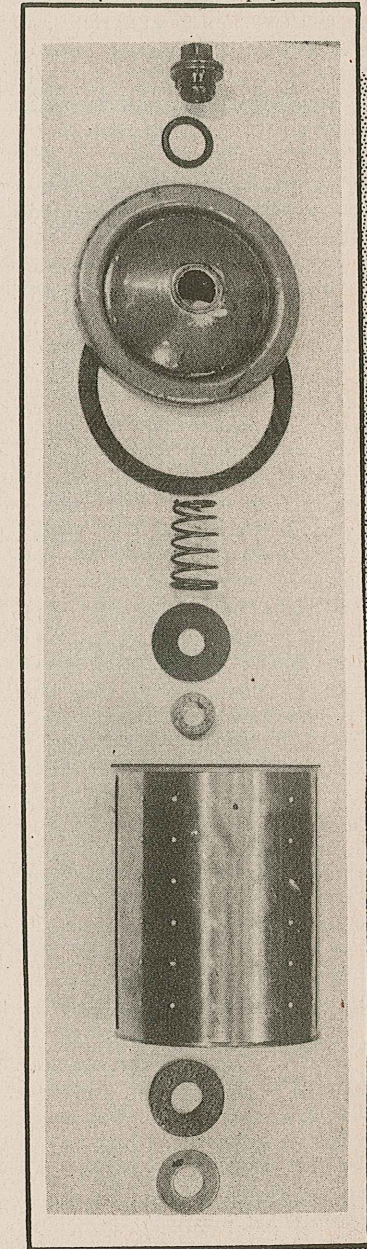
It's easy to get the right cartridge if you'll give the boys in the stockroom half a break. Because an awful lot of vehicles streamed off the assembly lines in '41 and '42, and had lots of different kinds of oil-filters, you've got a better chance of getting the right one if you tell 'em a few facts. Some manufacturers used a Military Standard Senior, some used a Junior; some used an AC, some used a Fram; and so on, and on and on.

It wasn't that they were trying to fool anybody by all using different filters. It's all part of the same big story that when your Uncle needed trucks, he took what was coming off the assembly lines, and he took 'em like they were. Gradually, as you know, efforts to standardize are being pushed harder and harder until sometime soon, maybe all accessories will be interchangeable.

The point is, you can't get the right replacement cartridge just by asking for a Dodge filter replacement. Nor can you get it by telling

the parts man you want a Briggs cartridge. It's not as simple as that.

But it is fairly simple. (Continued on page 55)



...on the rod in this order.

# WINCH

## Care for it now — It'll care for you later

It sits up there in front of your truck. You don't bother it and it doesn't bother you. But there will come a day, an emergency and there will be only one thing in the world for you - and that will be your winch, your lifeline.

Recently there came to our attention a couple of problems, a couple of pointers on the care of the winch. They had mostly to do with lubrication and water in the gear case.

In the first place, winch lubrication works this way: (Fig. 1). The gear is supposed to pick up oil from the worm - which is riding in oil - and like an old millwheel, bring it up and dump it through a couple of holes to the shaft where it makes its way to and lubricates the bushings.

Simple enough, but for some strange reason this action doesn't begin until a couple of minutes after the winch has been in operation. The gear refuses - just won't pick up the oil and distribute it to the shaft bushings. Without oil and if there's a load on the winch for these first couple of minutes, the bushings have a swell chance of burning out.

What are we going to do?

To us and to a guy named Prahadjok who stands out at the main gate with a sword in his mouth, the answer is obvious, "Run the winch without a load for the first couple of minutes - give the gear time to spill some oil into the shaft bushings."

Exactly right! Run the winch without a load for the first couple of minutes to give the oil time to circulate. Furthermore, rotate the winch back and forth about

five times. Why? Well, the gear distributing the oil has a tendency to pass out the oil to the left hand bushing only. Rotating the winch back and forth distributes lube to both sides, overcomes this favoritism.

Gar Wood recommends a rather heavy oil for his winches. As far as we can see, this only aggravates the above condition. So the best thing you can do, is drain the old oil out of your winches and refill to the plug level on the side of the winch, with class 90 oil.

Somebody thought they could get around this lube trouble by overfilling the gear case a couple of pints. Somebody else objected. Objection sustained. There's a churning motion inside the gear case during operation and too much lubricant will start a pumping action. Pumping action pushes oil all over the place and the first thing you know: Trouble.

Don't overfill - fill with oil to the proper level only.

In some cases, underfilling is the trouble. At one motor base we know of, trucks were delivered with the oil level too low in the winches. Needless to say, this leads to serious underlubrication

burned out bushings and a scored worm assembly.

Check the oil level in the winches of trucks freshly delivered.

Check also for water in the gear case. This may strike you as pretty peculiar. "How would water get into the gear case on a truck fresh out of the factory?"

Well, for one thing, one manufacturer said they'd been injecting lube into the case by means of compressed air - and that this led to the formation of water in the gear case because of condensation in the air-compressor tank.

Water gets in another way: carelessness in washing. There's enough space at the shaft ends on the winch to allow water to penetrate when a hose is aimed at or near it. Then again, on the Gar Wood winch there's two vent holes underneath the name plate through which water might enter at the time of washing.

Keep your high-pressure hose - any hose - away from the winch housing when you're washing the truck.

The ordinary breathing of the winch case and the condensation that accompanies it, contributes to water in the gear case. The best solution we can think of for this, is

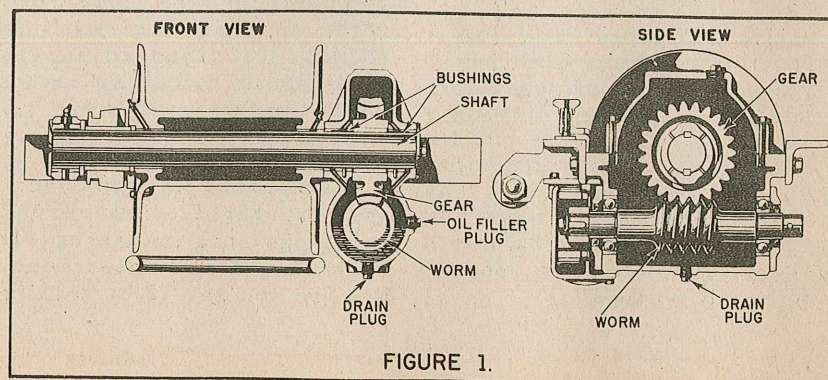


FIGURE 1.

keep the vent holes open to allow the proper ventilation.

At any rate, frequent inspection of the gear case keeps you on the safe side. When you do find water in the case, carefully open the drain plug at the bottom until all the water has drained off and oil appears. Somebody suggested that the heat generated in the case during operation of the winch would evaporate any water off. But if we were you, we wouldn't depend on this. We'd drain it out through the plug.

\* \* \* \*

Summing it all up, we'd say that the following six commandments ought to take care of the winch troubles described above.

1. Operate the winch in both directions before applying a load.
  2. Check the oil level regularly.
  3. Use class 90 (New General Schedule, Class 14, page 44) in place of whatever lube is now in the gear case.
  4. Check for water in the gear housing; drain if any is present.
  5. Be sure the vent holes in the gear housing are open.
  6. When washing the truck be careful not to direct hose at or near the winch housing.
- Of course kicking around the field, you've maybe come up against a winch problem we haven't touched on.

Let's hear from you.

### Oiling \* WINCH CABLES

Our sources close to the White House suggest that winch cables occasionally be run through old oil. Besides rustproofing and lubricating them, the oil will make them easier to wind and unwind and, replenish the oil in the fiber core that some winch cables have.

## A Coast \* Artilleryman \* ON SUPPLY \* \*

Although other duties have interrupted my association with motors, the two letters, 'Newtimer and Oldtimer', under 'Contributions', in the April issue renewed my old interest. From 1934 to 1941, I was with units that had from 300 to 1200 vehicles. There was only one such unit in 1934.

We never had any trouble getting parts. Of course trouble is a relative term, and our friend, 'Newtimer', will note that the thousand odd pages of the catalogues he named contain many rare items, (shipped from our factory at Shangri La). He won't get those on 24 hour notice. In the old days, when the motor manufacturers all spoke different languages, you ran into such a mess you couldn't expect 24 hour service. But that's all straight now.

Whenever I heard a whimper about lack of parts, I asked the following questions:

1st- Did your motor sergeant ask for all the parts he needed for the job? Were they all listed properly on one requisition? (They soon learned that wrong answers led to loss of stripes, because I knew that improper requisitioning held up jobs more than anything.)

2nd- Why do you need that part? (The answer, nine times out of nine, could be traced to lack of preventive maintenance. A man can't figure on having to furnish a new cab or a new set of bearings for a truck with 500 miles on it.)

3rd- How many trucks do you have deadlined for lack of parts? (I'd generally find out that in outfits doing good preventive maintenance it was a few or none. In outfits whose preventive maintenance was poor, it was just the opposite.)

A good bit of the trouble results from the practice of putting general-purpose trucks to some special use contrary to about twenty regulations. Many such vehicles are broken down from overwork. Trucks must be used only for the job they are designed to do.

Here's why we never had what we could call trouble on the parts situation.

1st- We requisitioned the way the book said to do it and then carefully edited all of our requisitions.

2nd- We never asked for anything we didn't need.

3rd- We kept a perpetual frequency-chart (using 3x5 cards) on all parts requisitioned. This served a triple purpose:

- a) We never had to look for a part number twice.
- b) Prices for jobs were instantly computed.
- c) The rate of movement of parts was known.

To illustrate how well this worked, a new outfit with 300 trucks came to us for help and advice. They had a few good men in the key positions but of the rest of their men about 80 per cent were recruits. We supervised their operations for six weeks, and on the basis of the data obtained, were able to give them a complete stock of parts for \$1200. Using only these parts on the trip, they took more than 300 trucks (manned by green drivers) a distance of 500 miles over three separate routes without a time-eating breakdown. Many of those trucks were 1940 Dodge recons and our frequency-cards predicted the water pump and brake failures exactly. This outfit arrived at its destination with no trucks in tow and with a well selected stock of common parts.

We kept lists of all interchangeable parts and used universal coils, batteries and generators, etc., whenever possible. This was especially helpful in the case of fittings and lines before the present standardization went into effect.

We followed the letter and the spirit of the regulations as to how much you can spend on an old jalopy.

Another small point missed by 'Newtimer', is that in a zone of operations you're not going to need spare parts.

They'll be lying in every ditch.

(This letter, from a Lieutenant Colonel of Coast Artillery who is unnamed as its author for well-understood reasons, points the way to better parts supply in unmistakably clear terms. His was no easy job under 1934 conditions. His outfit consistently ranks tops for maintenance. His story is only too well supported by statistics gleaned from maneuvers. ARMY MOTORS predicts it will be further backed-up by actual post-war figures. ARMY MOTORS says again - REQUISITION CORRECTLY AND YOUR REQUISITIONS WILL BE FILLED CORRECTLY - and if you don't know how...try asking somebody.)







# ARMY MOTOR TRANSPORT

Development and Maintenance Of **Maj. Gen. Edmund B. Gregory**  
Our Chief Military Vehicles

Quartermaster General, U. S. Army.

In reprinting General Gregory's excellent article from the last issue of ARMY ORDNANCE, we hope to furnish a comprehensive cross-section-picture of modern motor-transport-vehicles to the many new readers of ARMY MOTORS.

THE world's greatest battles have been won by the armies that transported their men and supplies the fastest—got there "fustest with the mostest men." The wheel—the device that gets the men there today—was known in Europe centuries before the birth of Christ, but it was unknown in the Americas when they fell before the onslaught of European conquerors. Despite this initial ignorance, America today has brought the wheel to its highest development in the motorized and mechanized forces that will preserve our civilization.

Army motor transport is depending on the thirty-three years' experience of the Quartermaster Corps to start and keep it rolling. An experimental truck was studied by the Army as early as 1907. In 1916 it was decided that motor transport might be useful to General Pershing in his campaign against Villa on the Mexican Border, and the first truck company was organized.

Automobiles and trucks were coming into their own when the United States entered the World War of 1917, and the Army emerged from that conflict with a huge motor-transport program involving some 216 different makes and designs of vehicles, many of them foreign. We learned a lot about maintenance, repair, and parts replacement in that war—learned it the hard way—and were convinced that probably the most important key to efficient operation is standardization.

The Quartermaster Corps is now procuring trucks and passenger vehicles to meet the requirements of an Army of over 1,800,000 men. However, the current program has sufficient flexibility to permit further expansion.

The Quartermaster Corps has made the Army the largest fleet operator in the country. It buys all the general-purpose vehicles such as ambulances for the Medical Corps, radio cars for the Signal Corps, small-arms repair trucks for the Ordnance Department and truck-tractors for the Corps of Engineers. The Quartermaster Corps itself operates and maintains every kind of motor transport from motorcycles and passenger cars through a wide variety of trucks ranging from the ¼-ton "jeep" to the massive 6-ton jobs which can pull an 8-ton load, like a gun or trailer, in addition to carrying their rated payloads.

The majority of our vehicles are trucks, of course, which do most of the Army's hauling. Briefly, Quartermaster Corps vehicles fall into the following categories (Such designations as "4 x 4" mean that the vehicle has four wheels and that all four wheels are power-driven.):

*The ¼-ton, 4 x 4, truck.*—This vehicle, known as a "jeep," has almost unlimited uses (Fig. 1). Primarily, however, it is a light-weapon and personnel carrier for the Infantry. It may be used as a combat vehicle since it can tow into action the 37-mm. antitank artillery weapon weighing approximately 800 pounds. It also is used as a command-reconnaissance car.

*The ½-ton, 4 x 4.*—This vehicle is fitted with a wide variety of bodies to serve as a command, reconnaissance, pickup or radio truck, as an Infantry weapons carrier, or as a cross-country ambulance (Fig. 5). It also can tow a 37-mm. gun.

*The 1½-ton, 4 x 4.*—This is a general-purpose truck which may be used as a prime mover for 75-mm. field guns (Fig. 6).

*The 2½-ton, 6 x 6.*—This vehicle is the basic Army truck (Fig. 2). It is manufactured in two wheel bases as a general-purpose vehicle, cargo carrier, gasoline tanker, and prime mover for the 75-mm. field gun and the 105-mm. howitzer.

*The 4-ton, 6 x 6.*—This vehicle is used primarily for tow-

ing 155-mm. howitzers and as a wrecker or general-purpose vehicle (Fig. 7).

*The 6-ton, 6 x 6.*—This vehicle is the prime mover for the mobile 3-inch and the 90-mm. antiaircraft guns (Fig. 8).

*The 4-5-ton, 4 x 4, tractor-truck.*—This vehicle is used for towing semitrailers, such as fueling units for the Air Corps, combination cargo and animal carriers for the Cavalry, and trailers loaded with spare parts for Quartermaster companies (Fig. 3).

*The 5-6-ton, 4 x 4, tractor-truck.*—This vehicle's semitrailers carry various bulky loads such as the Corps of Engineers' topographical unit and ponton trailer unit. The tractor is shown in Fig. 4.

DESPITE their widely divergent uses, all these trucks have certain things in common. Each embodies certain specific military characteristics, including maximum ground clearance, careful balance between gross weight and tire-contact area, and angles of approach and departure of about forty-five and thirty degrees, respectively. The Army truck produced for tactical purposes must be prepared to go wherever the troops go—across country, swamps, shelled areas, anywhere—to get men, guns, food, and ammunition wherever combat troops and artillery may be located.

To meet such conditions, several important and fundamental characteristics have proved essential to military motor vehicles. First and foremost is the adoption of all-wheel drive. Even the tiny "jeep" has this improvement, which gives traction on every wheel and has just about eliminated the familiar World War picture of an Army truck stuck in the mud. To prepare for the rare occasion when they do get bogged, the trucks are equipped with power-driven winches which will pull them out by their own bootstraps. All Army tactical motor vehicles with all-wheel drive have a front-axle declutching device which permits the front-axle drive to be disengaged when operating on dry, hard-surfaced roads where the extra traction is not necessary. A 6-wheel vehicle can have three power-driven axles and ten tires on the ground, which number can be increased to twelve by using dual front wheels.

Another early commercial development adopted by the Army is the "bogie" axle, a device which allows each axle to act independently, thereby relieving structural strains by compensating for uneven terrain. The bogie axle, of course, is most important to the larger trucks, such as the big 6-tonner.

To keep Army trucks moving through deep sand and mud where traction is most difficult, they are equipped with traction devices on the rear wheels which get a grip like a

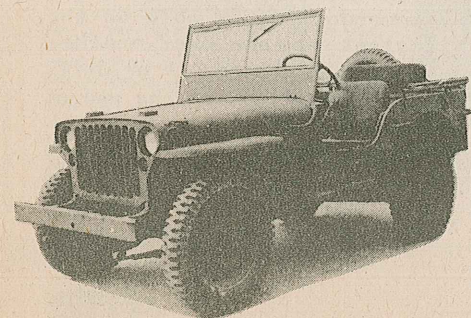


FIG. 1. ¼-TON, 4X4, TRUCK ("JEEP")

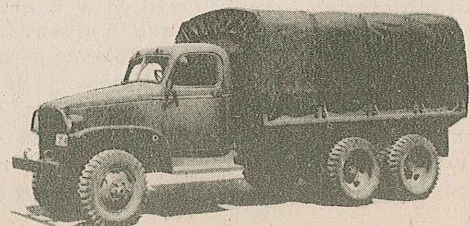


FIG. 2. 2½-TON, 6X6, TRUCK

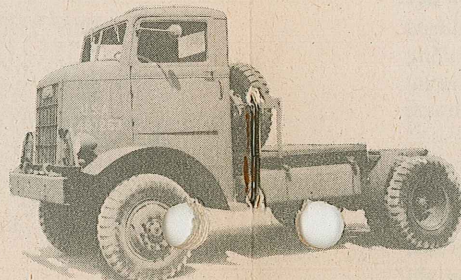


FIG. 3. 4-TON, 4X4, TRACTOR

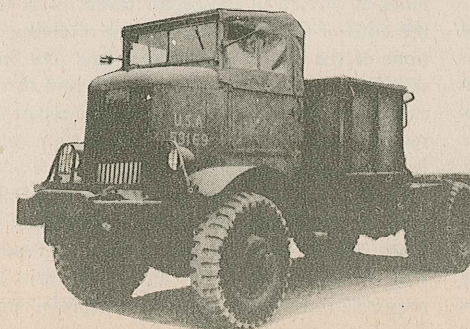


FIG. 4. 5-TON, 4X4, PONTON TRACTOR

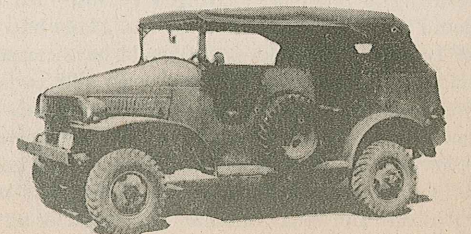


FIG. 5. ½-TON, 4X4, TRUCK

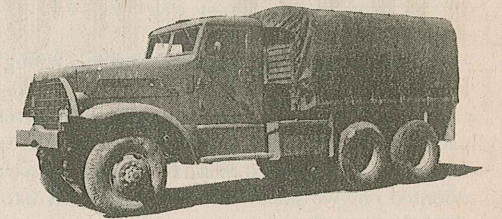


FIG. 8. 6-TON, 6X6, TRUCK

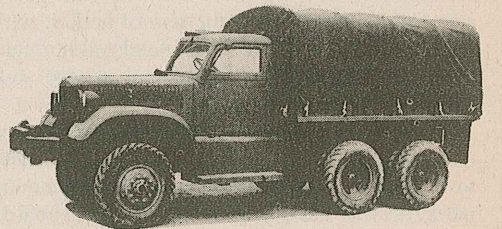


FIG. 7. 4-TON, 6X6, TRUCK

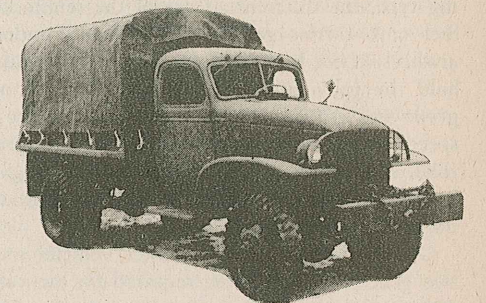


FIG. 6. 1½-TON, 4X4, TRUCK

tank and carry the truck just about anywhere the law of gravity permits. Other military requirements include adjustable windshields, radiator and headlight brush guards, towing hooks and pintles, special front and rear bumpers, series-parallel switches, and special spare-tire and fuel-tank mountings.

In order to be somewhat more specific, it might be well to describe two of the widely used Army trucks—the ¼-ton, 4 x 4, "jeep," and the 1½-ton truck. The ¼-ton has a payload allowance of 800 pounds, including the operating personnel and military supplies. It can tow a 1,000-pound load mounted on two pneumatic-tired wheels. It has a maximum wheel base of 80 inches, a 4-cylinder water-cooled engine with a minimum piston displacement of 110 cubic inches. The tires are 6.00 x 16 inches. The trucks have a maximum speed of 50 miles an hour and a level-road minimum speed of 3 miles an hour. They can ford water at least 18 inches deep at 3 miles an hour. The transmission provides three speeds forward and one in reverse. The 2-speed transfer case has a high range of 1.0 and a low range of 2.0 to 1. Other features include spiral-drive rear axle with gear reduction of 4.75 to 1, 4-wheel hydraulic service brakes, with hand-operated parking brake, and battery and coil ignition. The "jeep" is designed specifically for tactical service and has a base mounting for a machine gun.

The 1½-ton model has a payload capacity of 3,300 pounds including the operating personnel and military supplies. It tows 4,000 pounds on a single-axle trailer mounted on pneumatic tires. It has a wheel base of approximately 145 inches and uses 7.50 x 20 tires on its single front and dual rear wheels. A 6-cylinder engine, with a minimum piston displacement of 235 cubic inches, gives this vehicle a maximum speed of 45 miles an hour and a minimum of 2½ miles an hour. The transmission provides four speeds forward and one in reverse. The front and rear axles are of the full-floating type, the differentials are of the semilocking type. The fuel tank carries gasoline for several hundred miles. The 4-wheel service brakes, hydraulic with a vacuum booster, can hold the fully equipped and loaded truck on a 65-degree grade and bring it to a complete stop within 25 feet from a speed of 20 miles an hour on a dry, hard, approximately level road. This chassis is for use with either a cargo, dump, panel, or delivery body, or a fifth wheel may be mounted on it for use as a truck-tractor.

General-purpose Quartermaster vehicles are divided into two general classes: those required for tactical purposes and those required for administrative purposes. Tactical vehicles usually have all-wheel drive; administrative vehicles may have two or three axles, but they generally have rear-wheel drive only. The passenger car obviously has a limited use, and the motorcycle with sidecar, though a speedy and economical means of transportation, is rapidly giving way to the "jeep."

Many a battle has been lost in the past, and the course of history has often been changed because men and supplies could not get across a river or sea. Moses and the children of Israel, for example, never would have escaped the Egyptians if Pharaoh's chariots had been able to float after the waters of the Red Sea had closed in. All this indicates the need for a vehicle that will travel in water as well as on land—an amphibian. Such a vehicle is now undergoing tests. An amphibian eliminates delays for loading and unloading on each bank and thus minimizes the danger of air and artillery bombardment. The amphibian, which can enter the water immediately, propel itself across, and then climb right out

with its load, may be the Army's answer to this age-old military problem.

COMBAT and administrative vehicles are not, however, the only product of the Army motor transport service. Mobile shops are among the latest developments. Almost every type of repair-service equipment is now mounted on a truck or trailer and can follow troops right into the field. Motor-repair shops that can handle any kind of a breakdown and mobile service trucks are outstanding types. Army clothes are now washed in mobile laundries and Army personnel in mobile shower baths. Army appetites are satisfied by food prepared in mobile kitchens and bakeries, and Army clothes, shoes, and equipment are repaired in mobile tailor and cobbler shops. A combination commissary and post exchange on wheels now gives the soldier his smokes and candy as easily on maneuvers as he can get them on the post. This unit is mounted on a 2½-ton standard Army cargo truck equipped with cabinets, shelves, steps, and an awning. The cabinets have 250 bins divided into 4 sections and hold about 60 separate items of merchandise. With 4 specially trained attendants, each truck is able to handle the needs of approximately 8,000 men. During halts on the march it can be set up in 15 minutes.

It will not be surprising if the Army's growing fleet of shower baths on wheels proves to be the greatest morale booster yet developed. In these mobile units the soldier can take a shower while his clothing is being "deloused" with steam under heavy pressure. Walking out after a refreshing bath and donning spick-and-span clothing he should be in a frame of mind to meet all comers. We estimate that a sterilization and bath company can take care of about 2,500 soldiers daily.

The new wheeled laundry is made up of small independent units which can be rapidly dispersed and concealed during air attacks. If the individual units are disabled, the remaining ones can continue operating, or companies may be broken up if desirable to serve widely scattered troops. It is estimated that 16 of the new individual units can service approximately 16,000 men a week. These units are mounted on semitrailers. The laundry equipment receives electrical power from a motor generator, and an oil-burning boiler provides necessary steam.

The basic operating unit of the mechanized cobbler and tailor "shop" which travels with the troops is a section of three separate mobile units—one for repairing shoes, one for clothing, and a third for textile equipment such as mosquito bars, blankets, and tentage. A company of 12 trailers will look after about 48,000 men. A gasoline-driven generator provides power for the electrical repair machinery, all of which, with the other necessary equipment, including two tents, is carried in the repair trailer. The tents are set up at the ends of the trailer to serve as receiving and shipping sections of the repair unit. The repair unit itself is a standard semitrailer with doors at both ends and three windows along each side. To balance the weight, repair equipment is installed along both sides, and supplies are carefully distributed in cabinets and under benches.

Similar thought was given to weight balance in all other mobile repair and service units operated by trained men. They include extremely heavy machine repair shops equipped with power-driven lathes and wide varieties of tools which require careful mountings and especial attention to weight distribution.

Such mobile facilities as these are essentially a development of the gasoline era and were unknown in previous military history. While less spectacular than the dive bomber and the tank, they represent fully as advanced a military achievement. Like everything else on wheels, however, their value depends on their ability to keep moving. It is the task of the Quartermaster Corps not only to furnish the Army with motor-transport service but to keep the Army's vehicles rolling. That means supply and maintenance, both of which involve some ticklish problems in these days of swift-moving warfare over all kinds of terrain.

THE motor-transport supply problem is essentially one of getting fuel, lubricants, and spare parts to the motor vehicles wherever they may be. Supply is being tackled from every angle and the Army believes it has solved the problem. Most of the Army vehicles have large fuel tanks to begin with, and a recently developed 5-gallon container can be mounted in convenient places on a truck to augment the fuel supply. Naturally, however, it is impossible for any Army motor vehicle to carry enough gasoline for an indefinite period. This disadvantage must be offset by a rapid supply system that can deliver fuel to the field promptly enough to prevent delays.

Whenever feasible, the Army uses tankers for transporting fuel by water and railroads for transporting fuel by land. When neither is practicable, tank trucks are used, and when tank trucks have gone as far as possible, 5-gallon containers carried on trucks are employed. Sometimes, of course, it is not possible for a truck to get over the terrain with the necessary promptness. To overcome this obstacle, the Quartermaster Corps is testing a portable pipe line that will carry fuel over hills, down dales, and across rivers, where trucks would be virtually helpless. Portable pipe lines can shuttle gasoline between the base course of supply and convenient distribution points with less exposure to air and artillery attacks than other fuel carriers. The pipe lines come in self-contained half-mile units, each complete with a centrifugal pump driven by a 20-horsepower gasoline engine. They are capable of delivering gas through swamps, forests, over mountains or across water at a rate of approximately 200 gallons a minute.

For ship-to-shore service, one of the new developments is a 5,000-gallon floating gasoline tank which is especially designed to assist in setting up an initial fuel storage supply on a shore. This tank may be floated ashore either empty or full. It may be used in conjunction with the portable pipe line.

The maintenance problem is just as complex as supply. When tens of thousands of trucks and cars are operating in the field, a tremendous organization is required to keep them rolling. The Quartermaster Corps is building such an organization both behind the lines, in great motor maintenance and repair centers, and in the field of operations where the mobile repair units are constantly proving their value.

The center of the vast organization that procures, maintains and operates Army motor vehicles is the Motor Transport Division of the Office of the Quartermaster General in Washington. Spreading out from the Washington headquarters are the eight motor supply depots scattered throughout the United States to furnish motor supplies and spare parts, the depot companies that carry parts to the field, the light and heavy-maintenance companies that maintain the vehicles, the truck companies that operate them, and the various repair shops, training schools, and other facilities.

Proper maintenance necessarily requires trained drivers, skilled mechanics, and a supply of tools and spare parts. The Army has them all and is getting more continually. Vast numbers of motor-transport specialists are being trained at the motor-transport schools at Holabird, Md.; Fort Normoyle, Tex.; Fort McPherson, Ga.; Stockton, Calif.; Fort Wayne, Mich., and at the Quartermaster replacement training centers at Camp Lee, Va., and Fort Francis E. Warren, Wyo.

The emphasis on standardization has anticipated and thus far forestalled many motor difficulties commonly encountered in the past. The resulting interchangeability of parts has simplified repairs and replacements and is keeping road delays and repair tie-ups to a minimum. Gasoline and oil have been standardized, too, so that only one type of gasoline, three grades of engine oil, two types of greases, and one type of gear lubricant are needed for all kinds of operation.

The supply and maintenance organization and the standardization program represent steps we have taken before the Army motor vehicles even start to run. Prior to procurement, prospective models are tested exhaustively over grueling proving grounds at the Holabird Quartermaster Depot that expose any potential weakness. Faults must be remedied by the manufacturer before the final product is delivered to the Army. Consequently, military vehicles are the toughest, ablest, and strongest the combined talents of the Army and the motor industry can produce.

THE Army's theory is that the best way to keep trucks rolling is to make every one along the line, from top to bottom, do his part. Consequently, motor-vehicle maintenance is divided into four echelons, starting, logically, with the duty of the driver and assistant driver.

First-echelon maintenance means driver preventive maintenance. Every driver must see that his vehicle is correctly loaded, properly operated, adequately lubricated, fueled, and in good repair. Careful driving to avoid unnecessary wear and tear and to conserve fuel is a natural accompanying responsibility.

The second echelon is organizational preventive maintenance. It includes minor adjustments, seasonal check-ups, small replacements, and supervision of first-echelon maintenance. The company mechanics handle this work with the aid of light repair trucks equipped with air compressors, tool kits, and parts cabinets.

The third echelon specializes in unit replacement, which means replacing a faulty unit with a good one rather than taking time to repair it. This puts trucks back into operation in the shortest possible time. It keeps the second echelon supplied with parts and operates a mobile motor repair shop on wheels. The primary function of the third echelon is to collect crippled vehicles and return them to their organization in a serviceable condition or replace them as soon as possible.

Fourth-echelon work is performed by heavy-maintenance companies in stationary or semimobile shops. They can tear down and repair unit assemblies; repair, rebuild, reclaim, and salvage vehicles, and store and issue parts and supplies. These companies have specialist mechanics of various types necessary for the heaviest repair work in the Army.

Briefly stated, this is the plan of the Quartermaster Corps for Army motor transport: To buy better motor vehicles than any other army; to have more and better trained drivers and mechanics, and, by effective supply, operations, and maintenance, to "Keep 'em rolling!" An Army so equipped can win.

# New Oil Bath AIR CLEANERS

## HELP THEM FIGHT ENGINE "SILICOSIS"

Go out on the road and stop any five automobiles coming along. If the drivers get excited, explain that you are a rich old eccentric looking for vital statistics.

Open the hood of the automobiles; and if the drivers holler that you won't find any under there, smile secretly to yourself and proceed to remove the carburetor air-cleaner.

*In three cases out of five, you'll find that the air-cleaners on civilian automobiles are either totally clogged or badly clogged.*

"Very interesting, Roscoe, very interesting," you say. And it would be very interesting if almost the same statistics didn't hold for Army vehicles. That makes it tragic. Air-cleaners on Army vehicles choked with dirt, dried out and dust lined.

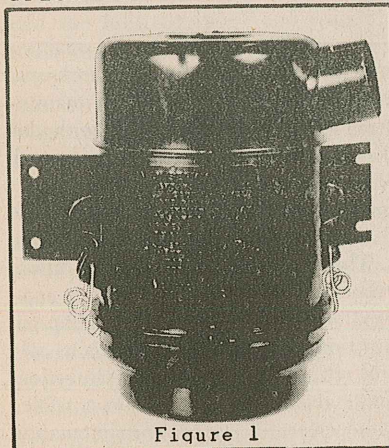


Figure 1

From the Western grainfields comes the tractor-type, oil-bath air-cleaner to keep the Jeep's nose clean. Assembled above. Exploded at right.



Figure 2

It all goes back to the screw American tradition that automobiles were built to be punished. "Drive 'em hard, and drive 'em fast - tear the heart out of them for two years then trade them in! Like many and many other cockeyed civilian tradition, this one joined the Army.

As we say, one of the prime victims of this tradition of neglect is the carburetor air cleaner.

The carburetor air-cleaner - what is it? "Come, now" you say, "Is it that important? Must we get our kidneys in an uproar over the dirty thing?"

Must we? You're damn well right we must. Remember seven or eight years ago when a terrific scandal exploded over a dreadful occupational disease called 'silicosis'? Men working down in the quartz mines, breathed in the silica

dust, the dust settled in their lungs and shortly afterwards they died a horrible strangling death.

Well, you should excuse the expression, the same thing happens in a truck engine. The mixture that is burned in the combustion chambers is a combination of gasoline and air. If the air isn't cleaned of its heavy quota of road dust and grit, the dust and grit settles around the cylinder walls and chews the pistons as they rush up and down. In no time at all, the cylinder walls are worn, the piston rings are ruined, the pistons are scuffed and scarred. Fine grit easily works past the pistons into the crankcase oil, travels with oil into the con rod and main bearings and finishes them off in short order.

It shouldn't happen to a dog.

Col. X.X.X. of the Holabird Engineers reports that tests show, 'engines with the air-cleaner not in good working order, wear as much as .0009 in two or three thousand miles.

This is equivalent to walking your legs off up to the knees on a short haul of maybe twenty miles.

"Grit getting sucked into a motor past a dirty air cleaner is a motor's worst enemy," declared the Colonel, "Works like a fifth column. It doesn't have any noticeable effect on the performance of the vehicle, the pulling power and all is the same - then suddenly round about ten-twelve thousand miles, the

engine wears out. Fine thing for an outfit located way out in the middle of tomorrow, to lose their transportation like this."

Like a weary amen to the Colonel's lament 4th echelon repair shop figures show a vast parade of engines old and worn before their time, engines ready for the boneyard with only 15, 20, 25 thousand miles of life behind them.

Not only neglect but also the severe conditions of military usage make life a miserable thing for the carburetor air-cleaner. Exposing the engine to the dirty air of the ordinary hard-surfaced road is one thing - running a line of trucks over dry, dusty desert areas is another.

With the picture of weird desert locales before them where a handful of dust thrown into the air hangs like smoke, the Quartermaster Engineers have been hard at work developing air-cleaners - efficient, foolproof and practical for military vehicles.

They started with the Oil Bath Air Cleaner which long ago proved to be the best air conditioner in the business.

For a long while there have been oil bath air cleaners on Army trucks. But a manufacturer could put on any kind he pleased. The upshot was a dozen different kinds of oil bath air cleaners blossoming out on vehicles - each calling for a different kind of servicing. Some good, some not so.

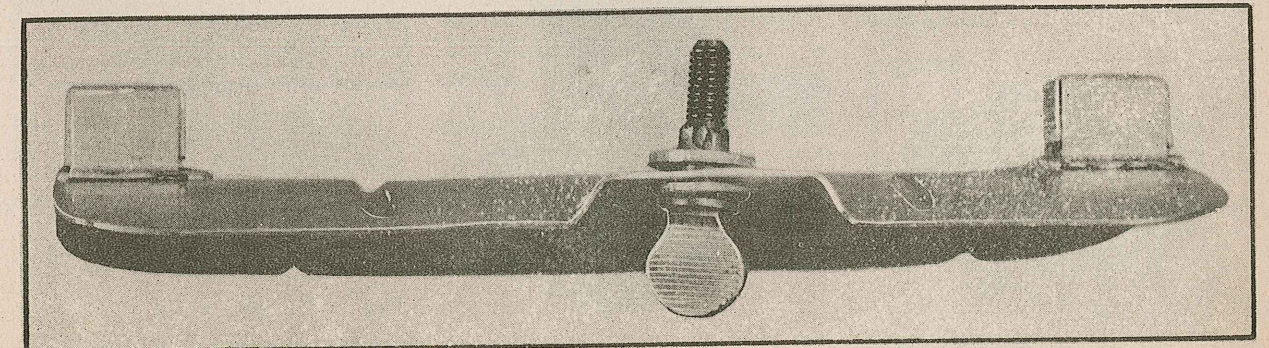


Fig. 4A (Below) The screw on the baffle plate is a "captive" screw - you can't lose it.

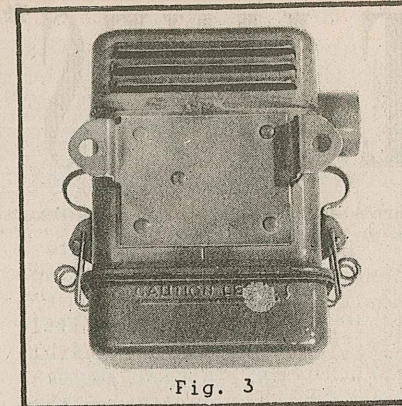


Fig. 3

Rear view - the motorcycle air cleaner. Note the louvres and caution level. Exploded at right: The double element makes it easy to service.

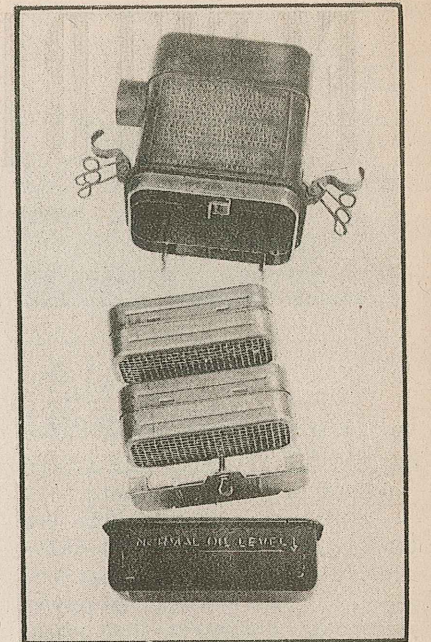


Fig. 4

baffle plate halfway up the filter element. The trip through this splashing oil and up through the element, launders the air and sends it on to the carburetor bright and clean.

But now the engineers are standardizing. Keeping in mind the fact that "an air-cleaner is only as good as the ease with which it can be serviced and inspected" (and a fig for the careless lowlifes in the field) they've already selected oil-bath cleaners for three vehicles: the 1/4-ton jeep, the new 3/4-ton truck (story on page 33) and the motorcycle.

The air-cleaner for the 1/4-ton (Fig. 1 and 2) is the tractor type - so called because it was borrowed from the tractors working in the grain fields of the West, where men are men and dust is dust. Air enters this cleaner through the louvres (located at the backside out of the dust stream) and swirls down to the oil pan where oil is leaping and jumping around the

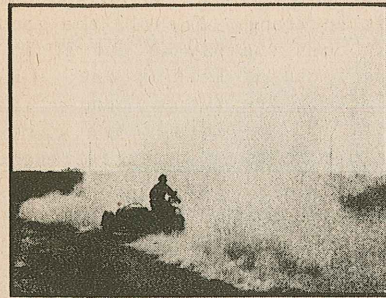


Fig. 5. Dust gets in your eyes but not in your engine. Testing the new air cleaner.

the oil must be changed.

This arrangement kills two birds with one stone: it tells the driver when to change the oil - in so doing, it saves unnecessary changes that would waste a lot of oil.

The call of the caution level should be strictly observed - for although there is no imminent danger, neglect will allow the oil to rise to flood tide and probably spill over into the carburetor - dirt and all.

To prevent this and also, of course, to replace the dirty oil, the driver unclamps the clamps and drops the oil pan. He dumps out the old oil, wipes out the pan and refills it to the normal level with the same grade of oil as used in the engine.

It's even worse if the oil

The air cleaner for the new 3/4 ton - now going into production. The filter element is welded to the cap; the oil is carried in the middle pan.

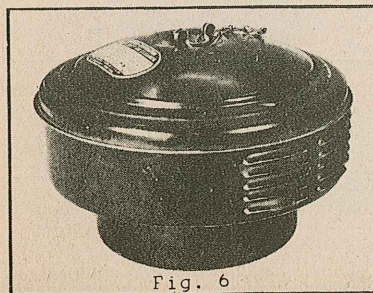


Fig. 6

isn't up to the 'normal' level. In this case the air skims past the oil, shoots up the dry element and dives into the carburetor loaded with pollution.

Without the proper oil level the oil-bath air-cleaner is just an ornament.

A smart driver will check the level and condition of the oil in the cleaner every day. Every thousand miles (or less depending on driving conditions) he'll loosen up the captive screw at the bottom of the filter element, take the element out and swish it clean in cleaning solvent. Then replace it without dipping it in oil.

So efficient are the new oil-bath air-cleaners, that hardly a single grain or speck of dust will ever get into the engine, if this simple maintenance procedure is followed. The new cleaners are declared to be 98% efficient.

This was proved by ultra-severe test given the cleaner designed for motorcycles (Fig. 3). A motorcycle with one of the new cleaners on it was thrown violently first right and then left into a pile of loose sand - with the motor wide open! Not a drop of oil was spilled out or

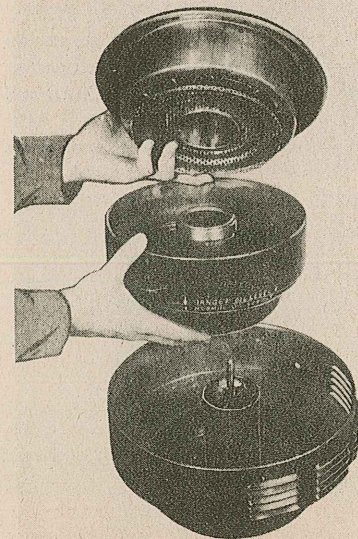


Fig. 7

sucked over - nothing worth mentioning in the way of dirt, entered the engine.

Out on the dry test course at Holabird, a motorcycle rode for a hot seven hours in the clouds of powdery silt; the dirt and dust filtered out of the air going to the carburetor raised the oil level from normal to caution mark - but practically nothing had gone over into the engine.

This is a good indication of just about how often the air cleaner has to be serviced. Although, of course, the dust cloud stirred up for the test was so thick you could plant corn in it. Probably the dustiest of actual riding conditions would require servicing only once a day.

The air cleaner for motorcycles is also designed to do away with the loss of oil in spills and crash falls. Tests show that the oil will not spill out even if the cycle lays flat on the ground.

The cleaner for motorcycles is more compact than the old round-type. It protrudes 2 1/2" less out the side - making it a lot less susceptible to breakage.

The double element is easy to remove. It would be like pulling teeth, in some cases, to get a single long element out of the cleaner because of the engine design on certain motorcycles. So in the new one you take the element out in two trips.

Another little feature you can clap-hands about is the non-losable lock-screw on the baffle plate. (Figure 4A) Keeps the kind of people who lose tooth paste-tube caps out of the doghouse.

Figures 6 and 7 show the oil-bath air-cleaner designed for the new 3/4-ton truck that is just about to go into production. The cleaner is sometimes called the 'hat' type and works on just about the same principle as the other two cleaners described.

The air enters the louvres at the back, goes over the lip of the cup (middle piece in Fig. 7) splashes around in the oil - then travels up through the filter and down into the carburetor.

You take it apart by unscrewing a clamp on the top (you can't see it in the pictures) and removing the cap, which has the filter element welded to it. If the oil in the cup is over the Caution level, change it - or if it's time for the 1000 mile cleaning, swish the filter element around in some cleaning solvent.

As with the others, a daily inspection and oil at the proper level will keep all dirt, dust and ruinous grit out of the engine.

PROOF!

WARPLANES NEED GRASSY FIELD

Washington, May 14 (AP) - Senators Nye (Rep. N.D.) and Holman (Rep. Ore.) won an appropriation of \$50,000 for "turf grass investigation" after presenting an estimate that a lack of grass cover on a single military airfield had caused motor overhauling costs of more than \$320,000 because of dust getting into engines.

Nye told fellow-senators that at army fields, dust had "decreased the efficiency of airplane motors ninety per cent., due to wear on the cylinders."

With all the topnotch efficiency of the new cleaners, there's still one thing left to be done.

To call attention to the fact that that ugly thing perched near the carburetor, needs a driver's loving care, we are going to recommend that it be painted a bright red and

white. Or maybe a tasty polka dot arrangement with sleigh bells might do.

Or better yet, a 'Rube Goldberg' complete with midgets would do the trick. Some kind of contraption that would reach out and deliver the driver a few lusty whacks over the noggin everytime the cleaner needs servicing.

Sure we're crazy - but who wouldn't be, with desperately needed transportation dying like dogs, of silicosis.

No kidding.

### OIL FILTER CARTRIDGES

(Continued from page 41)

All you have to put on your requisition to be sure you get the right filter cartridge, is the: vehicle nomenclature, make and model of filter, and the Federal Stock Number...if you know it. If it's a Military Standard - say so, also whether it's a Junior or a Senior. In other words, tell all you can, and you stand a good chance of getting the right thing. (That goes for all requisitioning).

Then with all the facts right in front of him, your order-taker looks in his interchangeability book for the dope on the cartridge to fit your filter. Maybe he doesn't stock the one called for by the manufacturer. But that's still OK if you've given him the right data, because his big book shows him what other cartridges will fit your filter.

Now where does that leave us? We've put in our requisition (with all the facts we can give about the vehicle and the filter); the parts man has looked in his book and found that he can give us a Fram universal-replacement cartridge instead of the regular AC-type we asked for. He didn't happen to have an AC in stock. So we go back to our truck and put in the Fram.

But what do we do - we and

our thick head? We go and put it in wrong. For all the good it does the way we put it in, we could of left it out. Oil filters are funny things...if the oil by-passes the cartridge it doesn't get filtered. (Like the coffee - if you pour it beside the strainer instead of through it, you get grinds in your cup.)

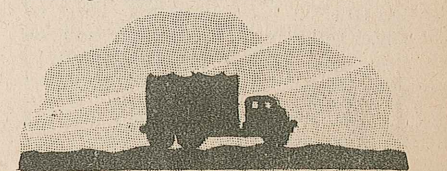
So you've got to be sure when you put in a replacement cartridge that fits a lot of different filters, to put on all the gaskets and washers that go with it. Make it right and tight if it's clean oil you want in your engine.

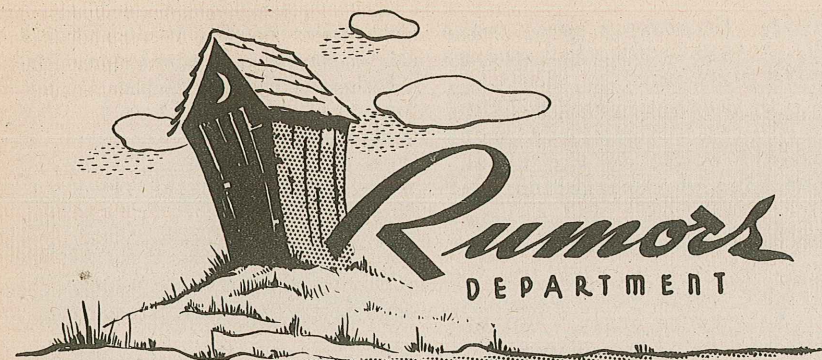
There's only one thing to watch out for...bad directions, poor instruction sheets. It's easy to get confused by the vague or incomplete details in some of the parts packages we've seen. You've got to use some common sense. If the instructions aren't clear - that's the manufacturer's fault. If you can't understand them and put things together wrong - that's your fault. So when you're in doubt, ask somebody; if you can't find the guy with the answers - write us...if we tell you wrong you've at least got somebody to blame.

The pictures show, in one-two-three order, exactly how the Fram cartridge should be installed. The finger is pointing to the rod that runs up the center of the filter. The parts (laid out in the other picture) go on the rod just as you see them; the little cork-gasket that goes on top of the cartridge, fits neatly in a little depression in the can - make sure you put it there.

Also make sure you get a tight seal.

Make sure the coffee goes through the strainer.





Last Monday two wrecked trucks were towed into the deadline of a certain post. We particularly noticed that the tires on the front wheels of these trucks were twisted under on the rims so that the full weight of the front end rested on them. Now although the trucks were pretty well banged up, there wasn't a thing wrong with the tires outside of being flat. But on Tuesday and Wednesday when we passed the deadline, the flat tires were still twisted and tortured under the rims. Thursday and Friday the same thing. Today is Tuesday of the following week and those perfectly good tires are still being mashed and distorted beneath the wheels of the trucks.

If we walk out tomorrow and see those tires still in the same condition, we are going to publish an unretouched photograph of the person responsible on the back cover of our next issue. (Then we're going to run like hell).

\* \* \* \*

Here's a hot one: One of our favorite M/Sgts. came tearing onto the post not so long ago, in a jeep. He finished whatever business he had and was about to rush off again when he discovered he'd lost the key to his jeep. He raced around like a madman trying to find another jeep of same make and model to borrow its key so he could get his started.

He wound up finally trying to put another ignition lock

in the jeep!

Now we've got too much respect for this particular M/Sgt. to call him a dope, so we'll just chalk it up to lack of news in the field on interchangeability of parts.

Keys, it seems, are interchangeable on all trucks - from jeeps to supermen, from swamp buggies to ambulances - have been from about July 1, 1941. As a matter of fact, to convince ourselves we took a half dozen different keys and went around trying them in the ignition locks of a tasty assortment of trucks laying around the post. Perfect fit in all of them. By George, just as we're about to knock off for the afternoon, we spotted a Russian truck. We walked over and tried the keys in the ignition lock. Daggone if it didn't fit!

Remarks: Ignition keys are interchangeable in all trucks (1941 up) - including the Russian.

\* \* \* \*

Talking about tightening cylinder heads - one of the sharpest inspectors we know reports that the heads of over-head-valve engines are being tightened in many cases but that the valve clearances are not being adjusted.

"Tightening the heads in over-head-valve engines usually throws the valve clearances out of wack," said this inspector, "they've got to be readjusted or you've got the valves half open all the time. Result: burned up engines."

For the sake of this particular inspector who has

always been good to his mother, adjust your valve clearances when you tighten the heads of over-head-valve engines.

Please.

\* \* \* \*

What's a good mechanic need to make repairs on any truck?

Answer: his good common-sense and experience, his tools and a maintenance manual.

Without any one of these he's a bum in the park.

Well then, will you tell us why we're continually getting reports of maintenance manuals being closely hoarded by Supply room personnel? Like this report from a GM-man:

"In checking maintenance manuals, find they're in the Supply room locked up, and none of the shop personnel has seen them. Went into this as a matter of schooling and suggested they have at least one manual available for the shop personnel."

"Checked with the technical sergeant. He said that Lt. ... was very tight on shop properties and was afraid somebody wouldn't return the manual and he'd be charged with it."

Get those manuals into the hands of them as needs 'em, you supply room guys. And if somebody does steal an old copy on you, you can always write and get a new copy. (Pg. 352 of the March ARMY MOTORS carries a complete list of TM's and how to get them).

\* \* \* \*

Saw a bloke the other day driving a 2½ ton GMC with the starting motor and battery. He just put the truck in gear, kept his foot on the starter button and ground along as nice as you please. Swell way to save gas. Wonder what the condition of the starting motor and battery was when he was through with them?

Number of the truck was 497732.

\* \* \* \*



# REVIEWS of Current Magazines

INFANTRY JOURNAL, April, 1942 - "The Colonel Inspects His Motors" - It goes without saying that you won't want to miss this second installment outlining the training and maintenance program the Colonel finally set up after casting his suffering eyes upon the condition of Motor Transport in his regiment. Three locomotives and a tiger for this one.



SAE JOURNAL, April, 1942 - "Soldier Motor Vehicle Drivers Are Made - Not Born" - excerpts from an address by our own Col. Edwin S. Van Duesen on the training problem of making 1/3 of the Army motor-minded. Col. Van Duesen offers accident statistics that prove the drivers of the new Army brought the bad habits and carelessness of civilian driving into camp with them. That our drivers are already well on the way to shedding these bad habits, is strongly indicated by the huge, new scientific driver training program rolling through the Arms and Services.

"Symposium - on Lower Octane Fuels" - Those of you who have always kept in mind the fact that efficient and economical engines are possible only because of the progress in fuel development, will benefit from this series of arguments on the effect of 'lower quality' fuels on commercial vehicles. Because of the needs of the Army and aviation in particular the civilian driver will get second-best gasoline: the probable effects of all this

and much valuable technical dope on fuels, highlight these articles.



MOTOR AGE, April, 1942 - "Brake Lining" - A good runover on preventive maintenance of the braking system; a series of checks, examinations and repair tips to keep 'em holding.

"Check the Electrical System" - The electrical system is the nerve system of the motor vehicle - and we might add, the part of the vehicle most likely to fail. You can't read too much about checking up on the vital points in the system. Handy trouble-shooting tips too.



MOTOR SERVICE - April, 1942 - "Tuning Cars For Fuel Economy" - A prize-winning letter that goes thoroughly into tune-up, by a gentlemen who evidently knows whereof he speaks. A good wholesome discussion on checking every part of the vehicle that influences fuel consumption - and, as you and I know, every part of the vehicle influences fuel consumption: from the jokers at the wheel to the tires on the wheels. Clip it and put it in your hope chest. "Hydraulic Principle" - Another of those good little articles for the youngtimer and oldtimer on the basic principles behind common automotive equipment.

The omission of the book-review page, which ordinarily accompanies this magazine digest, was necessitated in this issue because of the unusual amount of vital maintenance material demanding space.

AUTOMOBILE DIGEST, April, 1942 - "Features of Military Vehicles" - A well-informed article on Army Motor Transport complete with a bit of historical data, the story of vehicle purchasing and testing, types of vehicles and comparison with commercial vehicles. A lot better than a few others we've seen.



FLEET OWNER, April, 1942 - "Valve Servicing" - Get any three oldtimers together and throw in the question, is hand grinding with compound any good in valve seat grinding? Immediately, you'll have a three way argument. Ask about valve seat inserts and you get the same results. This article has some interesting statistics on how some 250 large commercial fleet owners feel about these and a lot of other questions. They can teach Motor Transport personnel something of valve servicing.



THE AMERICAN AUTOMOBILE, April, 1942 - "Ever Think of Your Tools?" - When was the last time you cleaned and lubricated your jack? How about a coat of paint for some of your jigs? This article reminds you in a general way, and gives you, the methods of maintaining vital tools. Remember, you're only as good as your tools.



# CONTRIBUTIONS

Got a good idea? Have you invented something lately? Got a gripe? Jot it down and shoot it along to the Army Motors. Maybe you've solved a problem everybody else is worrying about. Pass it along to us and we'll buck the news to the rest of the boys in the field. You'll get a personal subscription to the Army Motors if we like your idea - you lucky stiff.

Contending that drivers are forgotten men when it comes to their barracks bag, Captain Smith suggests taking up a hammer and saw to remedy the situation.

He notes that while on field duty, the drivers can't safely leave their stuff in the body of the truck when carrying personnel, they can't tie it on the outside, and there's usually no room in the cab.

He claims it would be an easy matter to provide a compartment under the truck bed on the side opposite the gasoline tank. There, under lock and key, the driver could store all his personal belongings with perfect safety.

Who wants to read Superman after it's all dogeared?

Captain Elbert H. Smith,  
Camp Joseph T. Robinson, Ark.

Although it serves no useful purpose, since a final compressor-design has been chosen (page 61) the following idea by Lieutenant Paul Gilmont was so interesting and so strikingly simple, we thought you'd like to see it too.

Says Gilmont, "A commercial fire extinguisher (Lux) using liquid carbon-dioxide... replacing the Pyrene-type on motor vehicles... could be adapted for use as a tire inflator by the addition of a reducing valve. Carbon dioxide is not harmful to rubber, and being carried in liquid form, an unusually large gaseous volume is avail-

able in a comparatively small cylinder of the liquid material. For recharging the extinguishers in the field, dry ice, used as a refrigerant, could be used, especially since it can be shipped and stored with comparative ease.

Lieutenant Paul Gilmont,  
Chemical Engineer, Fort George  
Wright, Washington.

THE RESPONSE to our request for air-compressor suggestions was splendid. Some of the ideas were more practical than others, but most were workable. While we printed as many as we could, a number of designs had to be omitted or Army Motors would have looked like a pamphlet from the Patent Office. For those we used and those we didn't, to all who responded so enthusiastically, we are most grateful.

EDITOR.

Why, oh why, did the 'powers that be' approve the assembly of these administrative vehicles without blackout lights? Recently in San Francisco following the outbreak of the war, it was up to the Ninth Corps Area Motor Pool to move various troops up and down the coast. A number of these movements had to be made during the blackout and necessitated the Motor Pool installing their own blackout lights. This was accomplished by the removal of the parking light lens and the placing of a piece of blue cellophane paper on the inside of the lens before replacing it.

Here's the way we did it:

We cut a piece of black paper to fit the tail-light lens and cut a slot in it (the black paper) 1/2" x 2". Then we assembled the lamp in one, two, three order... blue cellophane, black paper, lens. Of course, next came the frame and screws and we were all set to move these vehicles during a blackout.

Captain E. J. Neuteboom,  
9th Coast Artillery,  
San Francisco, California.

A quick, easy way to take out frozen or broken studs without using a stud remover sounds like a myth.

Not so, says Sergeant Jarvis, and tells us how to do it.

Say you run across a stud or bolt broken off about a sixteenth above the surface of a flywheel. You take a nut that's just a little larger than the stud, lay it over the projecting end of the stud and weld it to its exposed surface. Now you can forget it's a broken stud - slap a wrench on it and turn it out just as you would any other cap screw.

Jarvis tips us off that an arc-weld tops acetylene for this job because it keeps weld metal from running into places it isn't wanted.

Sergeant Harold D. Jarvis,  
26th Ordnance Company (MM),  
Fort Lewis, Washington.



There's G.I. presses, borrowed presses, stolen presses, and all kinds of presses, but when we wanted one we had to make it."

And without further quibbling, the boys in the I.R.T.C. motor pool at Camp Roberts, went out to the salvage pile, got them a handful of scraps and made them a bee-o-o-tiful hydraulic-press like in these pictures.

Here's how they did it.

Cut four 34" lengths of 1/2" angle-iron for uprights. Cut two lengths of 2 1/2" angle-iron for the headpiece (they couldn't find any heavy channel-iron), weld them together and then to the uprights. Two 16" lengths of 2 1/2" angle-iron and a piece of strap for reinforcement formed the base and completed the structure. Then the table, made from a piece of 2" x 5" channel was mounted on pins, through holes in the uprights, so it could be raised and lowered.

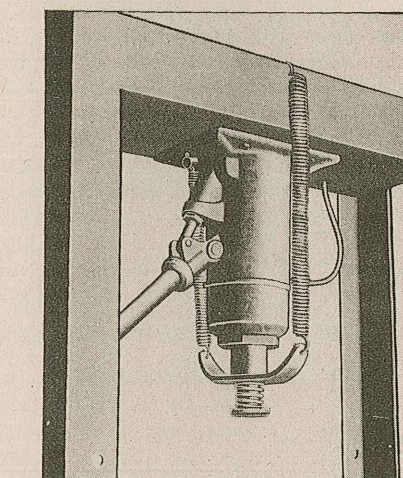
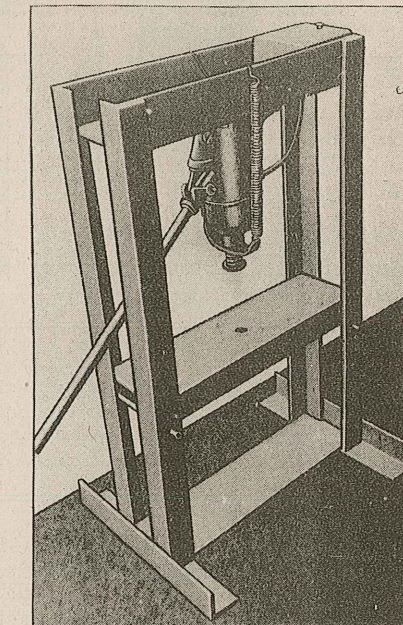
For power, they mounted an issue eight-ton jack with 3/8"x1 1/2" machine bolts in an inverted position on the head-plate. To make it work upside down - which is quite a trick with a truck jack - they built a reservoir 5"x5"x3", found a filler-screen-hole fitting of the right size on a standard bleeder-hose (salvage), soldered it to a length of copper tubing and connected it from the reservoir to the jack, after, of course, they bled the air out of the jack.

With the addition of a couple retracting springs they bought in town for fifty-two cents, the boys had their press. They gave it the toughest workouts they could think of and it came through with not a bone broken. Even if they say so themselves. And from the looks of it, we're inclined to agree... it's a right, tight, fightin' little press that anybody can make and it's a handy gadget to have around.

The thing we like best about these fellows is the way they wound up their letter -

they want you to look over the pictures and write in any suggested improvements or adaptations they haven't thought of.

THE MAINTENANCE CREW, I.R.T.C.  
MOTOR POOL, CAMP ROBERTS,  
CALIF.



Leery of a motor-maintenance outfit staffed by medical men, one of the field inspectors thought he'd find plenty to write home about when he contacted the 65th Medical Regiment.

He wrote plenty, but it was all praise.

"Before I made this contact," said the inspector, "Captain X.X.X. stated that the Medical Reg. would probably need plenty of my attention because the Regiment Motor Pool is necessarily under direction of doctors or dentists and they can't be expected to know anything about motor maintenance.

"However, to the contrary, I found this Regiment operating 240 vehicles, in the most efficient manner, in fact, it is the best unit I have contacted anywhere thus far. The officer in direct charge is Major X.X.X. (a dentist) and under him is Lieut. X.X.X. (a pharmacist).

Two-hundred and forty vehicles continued the inspector, and not one of them on the deadline in over two months. Not a vehicle on the deadline in over two months.

And the men in charge of maintenance and repair personnel of the outfit officered by a dentist and a pharmacist!

Maybe it's not so surprising after all - required to turn their talents to the maintenance and operation of a fleet of motor vehicles, their logical procedure was to adapt well-learned medical lessons to mechanical anatomy. The prescriptions differed a little, but the method was the same. Check...check...check, diagnose and examine frequently.

Statistics too, proved to them that vehicles as well as humans will live to die of old age if they're not neglected, or treated violently. All they needed was the right method.

They turned to automotive technicians for help in designing the proper preventive-maintenance check sheets and were given a simple, efficient little book that could be mimeographed and placed in the map compartment of each vehicle. A typical page (of which there are thirty-one in the booklet covering essentials of inspections) is on the next page. The book offers something new and different for the drivers and maintenance men every day



because the tasks it lists vary from day to day.

Men responsible for the services are in turn responsible to the motor sergeants who check on the proper performance of the assigned tasks and initial the proper page each day.

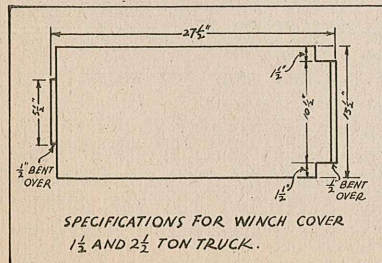
Carrying his preventive-mindedness to logical ends, the commanding colonel of the 65th appointed a detail that scours the grounds regularly, picking up everything in sight that might possibly cause trouble.

FIRST DAY OF MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE
A. CHECK FUEL LEVEL						
B. CHECK OIL IN CRANKCASE—LEVEL AND COLOR						
C. CHECK WATER IN RADIATOR—ANTIFREEZE						
D. INFLATE TIRES TO CORRECT PRESSURE						
E. CHECK GROUND UNDER VEHICLE FOR LEAKS						
F. CHECK FIRE EXTINGUISHER FOR CHARGE						
G. TIGHTEN WHEEL HUB NUTS						
H. OIL OUTSIDE OILER ON DISTRIBUTOR—DODGE 1/2 T						
I. OIL HOOD CATCHES						
J. OIL HOOD HINGE AND LATCHES						
K. CHECK DRIVERS INSTRUCTION CARD AND ACCIDENT REPORT AND PLACE IN GLOVE BOX						
L. INSPECT TOOLS, CLEAN AND REPLACE ANY MISSING						
M. OIL HAND BRAKE AND TRANSFER CASE SHIFT LINKAGE						
REMARKS:						
DATE:						
DRIVER'S INITIALS:						

Says the inspector, "I saw in his office, a carton containing over ten pounds of rusty nails and small metal fragments...he expects fewer punctures from now on."

To the 65th Medical Regiment we present our badge of merit, the 'Order of the Aluminum Shoestring' (see editorial inside front cover).

**L**ieutenant Donald C. Carner is fond of calling his boys' ideas 'brain storms'. Accordingly, Sergeant Joanitis's latest brain storm is a snappy little winch cover for 1½ and 2½ tonners.



FUNNEL FOR DRAINING RADIATOR OF 2½-TON GMC'S

Directions:  
Remove the radiator core lower baffle. Place the funnel between the radiator guard and core, with the opening "A" facing the core. The lower part of the pet cock rests on the bottom of the opening.

FUNNEL FOR DRAINING RADIATOR OF 2½-TON GMC'S

Directions:  
Place the funnel over the pet cock between the oil line and the block.

Dear Ed,

In the article 'Save Your Old Anti-Freeze' in the April issue of ARMY MOTORS you say, quote, "Drain the solution out of the radiator and engine, then filter it, etc."

Drain the solution. Sounds easy, but did you ever try to catch it in buckets, pans, spittoons or what have you? It's almost impossible.

There may be many gadgets on the market for draining the radiators and blocks of GMC's and Studebakers but I have neither heard of nor seen any. Therefore, I figured there was room for a little ingenuity.

To drain the radiators and blocks of 2½-Ton GMC's we have but to open the pet cocks - but the liquid would splatter from all angles before we could catch it. On Studebakers the liquid would flow straight down from the radiator pet cocks but it would strike the front axles. The position of the jets on Studebaker blocks does not present a problem. I have improvised three types of funnels to cope with the situations involved. Because I am not an inventor, my gadgets look like 'Rube Goldberg' inventions. However, they do the trick and are guaranteed not to lose a drop. The cost of making the funnels is negligible; any handy man can construct them from scrap sheet metal and some solder.

Attached are diagrams and specifications for the funnels.

LT. ARTHUR N. ARENSON, 4TH PROVISIONAL CO., CAMP LEE, VA.

*Brainwork, pure brainwork. Lt. Arenson, we can hear your cerebellum functioning from here. You guys with trucks of other makes and models, go ahead and design coolant catchers for yourselves. Unless, that is, you think a length of rubber hose would do just as well. (Ed.)*

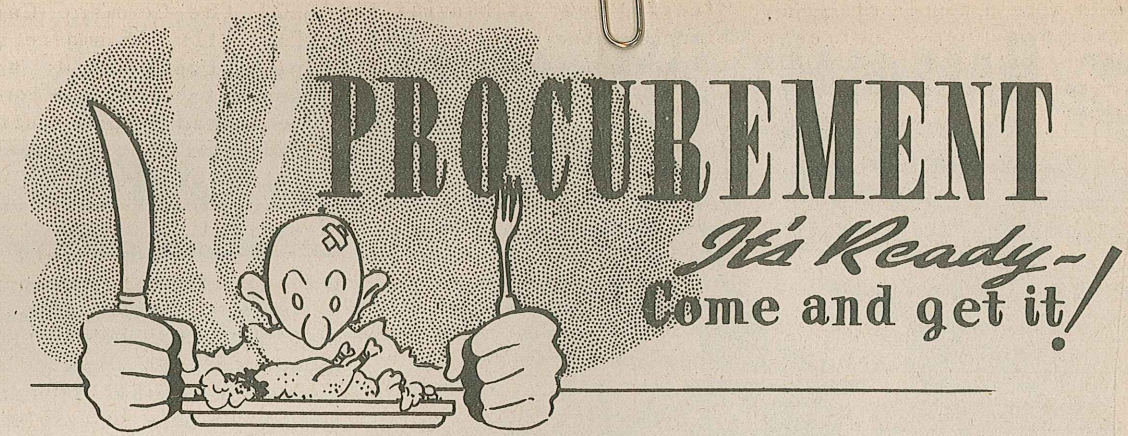
He went out to the dump (salvage pile) and picked him out some heavy sheet-iron scraps, cut them like in the drawing, and rounded them to fit the winches.

Before putting the covers on, Carner says they wrap the winch in oil-soaked burlap.

Also, he tips us off, they had to warn everybody not to stand on the covers when making inspections. They bend easy.

The paint shop will gladly spray them O.D.

M/Sgt. Joanitis, 68th Medical Regiment Motor Sergeant, Camp Forrest, Tenn.



## Dispenser

It's just getting dark. The enemy's been pushed back and our advance forces are mopping up the town. Forward units are driving through the streets, making the most of the foe's utter confusion.

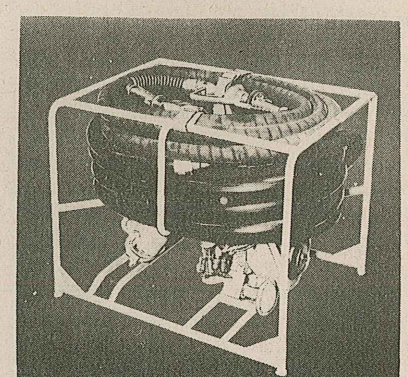
Light tanks flit about like angry bees, darting in and out, stinging the enemy rear. Their larger brothers, the juggernaut M3's lumber not far behind - smashing down barricades, poking their big noses in and out newly evacuated trenches.

Nothing stands in the way...it's a rout. Only obstacle to greater gains tonight is fuel shortage. The monsters are using precious gallonage at an alarming rate. Their huge reserve-tanks are nearly empty. It's too bad they can't follow up a hard fought advantage.

But wait, what's going on over there in the shadow of that half-crumbled wall? Two men have unlimbered a queer-looking contraption and are sticking what appears to be a hose in one of the enemy's abandoned tanks.

It is a hose. And the queer contraption is the Quartermaster's latest contribution to blitz warfare.

It's a new portable fuel-dispenser that pumps out thirty gallons a minute of liquid ammunition: Its light weight (190 pounds) makes it a two



man affair; the two soldiers we saw back in the shadows had taken it from a corner of an ammunition-supply truck.

Let's watch it at work: One of the men goes from vehicle to abandoned vehicle, dropping the thirty-foot suction hose in fuel tanks of first one and then another. Until the tankers move up, he's scavenging fuel from demobilized enemy equipment. His teammate, meanwhile, operates the dispenser and moves it from place to place.

Tanks roll up, two at a time, and their crews each take one of the twenty-foot lengths of discharge hose to their own fuel tanks for a quick refill. Thirty gallons a minute - a fuel tank in ten or twelve. It's easy to fill two at a time because of the foresighted 'Y', connecting two discharge hoses to the dispenser by a third twenty-foot length.

Is it all a dream... something we dug out of our

overheated heads? Don't even whisper it, bud, Holabird fuel-engineers promise them in July. And one of 'em's yours. They'll be stocked at all the Motor Bases and your gas-supply detachment can have one for the asking.

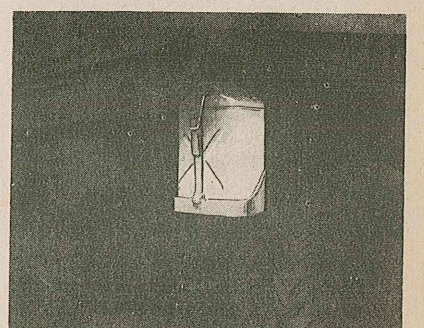
## Bracket

Let's look at number one in a large list of handy, efficient war tools available to the world's best-equipped mechanical corps.

It's the long-heralded, much experimented with gas-can bracket.

Deliveries have started and it'll be only a few weeks until your nearest supply base has enough for all your vehicles.

While the basis for issue is still under consideration, you'll probably get one bracket for jeeps, two for most other vehicles, and more for special



A typical gas-can bracket installation. Bolted to the mudguard of a cargo truck

(Continued on page 64)

# Sgt. "HALF-MAST" McCANICK'S

Question Dept.



Dear Half-Mast:

The 1942 quarter-ton Fords and Willys we have in the division are equipped with caps on the front and rear of the under side of the gas tanks. There seems to be an outer shell to the gas tank, but we find that water drains out when we remove the caps. Kindly tell us what this is all about.

And another thing, are the wheels of the one-ton Lavine and Ben Hur trailers interchangeable with those on the 2½ ton G.M.C. trucks?

Captain T.A.M.

Dear Captain:

Among other things, your new jeeps are seaworthy: the underparts are sealed against water and those caps (plugs) you discovered, are on an outer shell surrounding the gas tank. This shell is a sump or drainage device to take care of rainwater or water that sloshes in over the gunwales. The water runs down in outlet under the seat and into the shell - you take out the plugs and the water spills out.

Are trailer wheels interchangeable? Yes, trailer wheels are interchangeable with the wheels of the vehicle towing them.

Ask me another.

*Half Mast*

Dear Half-Mast:

We're having quite a bit of trouble with our new quarter-ton Willys Jeeps pulling to the left when brakes are applied. Nobody seemed to know what was causing the trouble or what could be done to remedy it, so after trying everything we can think of (including an additional spring on the left-front-wheel shoes) we're asking you for the right answer to the problem.

Lieutenant W.W.M.

Dear Lieutenant:

You're not the first one to have steering geometry trouble. Bughouses are overflowing with engineers who tried to develop the perfect front-end.

What you've got in your Willys jeeps is a close compromise to perform satisfactorily under all conditions of military use. For example, the jeep one-piece axle was revised to reduce the possibility of bending and breaking under severe strains, shocks and bumps.

Anyway, in rigging the front end to do the best possible job under rough-and-tumble conditions, the jeep came through with a slight tendency to pull to the left. After months of experimenting, the engineers adopted a slightly altered torque-arm and are having them made as fast as possible.

They'll be stocked at Fort Wayne. I'll let you and the rest of the boys know soon's they're ready.

*Half Mast*

Dear Half-Mast:

Since reading your department and noticing how you've been batting 1.000 on this answer business, I thought you may be able to tell me how to overcome some trouble we've been having on Chevrolet transfer-cases.

The rear bearings on the transfer-case main-shaft-extension are going out for no apparent reason. We've replaced two of them in the past few weeks and have run across a number of similar cases in the third-echelon shop.

It's our opinion that unless the lube level in these transfer cases is raised above the point specified by the manufacturer the rear bearings get little if any lubrication. However, we don't want to try anything like that on our own hook. Can you give us the answer?

Lieutenant D.C.C.

Dear Lieutenant:

Your kind words about my batting average goes straight to my vanity. Up until your letter, I admit I was doing pretty good, but you stuck me. You also stuck the Chevy people.

I wrote them right away, thinking to get you an easy answer. But they ain't quite sure of the answer themselves. As a matter of fact, they got a lot of men out in the field trying to find the answer.

When they find it, maybe they'll tell me.

Then I'll tell you and everything'll be jacob.

But one thing they are sure of, (they and a lot of experts I consulted): The lube level in those transfer

cases is plenty high enough ...maybe even a little too high. Please don't add any more oil than you already got in there - it ain't safe! Any more oil will make you think the trouble you got already is just a bingo party. You'll probably have gears, shafts and oil seals blown all over the lot.

So try and be a little patient (as the doctor said to the midget) and I'll get you the answers as quick as I can.

*Half Mast*

Dear Half-Mast:

I've got a suggestion. Maybe good, maybe not. Anyhow, I think you'll be able to tell me what I want to know.

Those battery-kits supplied to organizations don't have any battery terminals, bolts or nuts. These items are often needed for replacement, and I think they ought to be added to the kits. At least, if they can't send them to organizations having kits already, why doesn't the manufacturer add these parts to future kits.

T/Sgt. R.H.

Dear Sergeant:

Good of you to write. It's my own personal opinion that a guy with something on his chest besides hair should write his gripe down on a old candy wrapper (like you did) and send it to somebody. Even if it's me.

About those kits: The high muckety-mucks say no. They'd be too heavy, too big - and an awful nuisance to carry around. Besides you can get all the terminals, nuts, bolts, and anything else you need in that line, from the parts-common truck, and stick them in the kit yourself. If, of course, you want to lug all that stuff around.

Maybe the muckety-mucks are right. Think for a second

what it might lead to if the manufacturer started adding more paraphernalia to what's already in those kits. If he put in nuts and bolts and terminals, he might go a step farther and put in ground straps (of which there are plenty different sizes); then too, he might put in cables, cradles, jars of distilled water - there's no telling where he would stop.

Let's forget it, huh Sarge?

*Half Mast*

Dear Half-Mast:

I'm writing in reference to those driver's hand-signals you had in a cartoon strip on page 366 of the March Army Motors. I don't know who's right and who's wrong, but somebody's got his signals mixed.

Your little comic driver, hands out three signals that don't jibe with FM 25-10, Paragraph 29, which says: "There is as yet no standard set of driver's arm-signals."

Would it be possible for the Technical Service Division at Holabird to set up a standard set of such signals for the Motor Transport Service?

Lieutenant H.A.H.

Dear Lieutenant:

You win.

As you say, the cartoon doesn't jibe with FM 25-10, or in fact with any other manual you ever saw. But the little guy in the strip is making signals that do jibe with a manual. You just haven't seen it yet. It's called the 'Driver's Manual' and it's got all the arm signals you asked for plus a few more which'll come in handy.

You see, when Private Wienert drew up those cartoons for Lieutenant Carner to paste in his trucks, he hadn't seen the new manual either. He just drew up a set of signals that would be uniform, that would help keep the boys from taking

nicks out of telefome poles. When the boss was ready to put the strip in the magazine, he figured they might as well be right, so when the new manual (to be listed as TM 10-460) comes out sometime in June, all the boys who cut out our set of signals and paste them in their cabs will be wigwagging exactly according to the book.

One reason I didn't bother to explain that the switched signals were from a new manual, is that soon's you mention anything new around here, everybody and his Uncle Morris writes in and asks for it.

But now that the cat is out of the bag, you might as well know that the name of the new manual is "Driver's Manual!"

But don't write in here to me for it - every driver'll get one through automatic distribution fast as the GPO can print 'em.

*Half Mast*

Dear Half-Mast:

In regard to your article on 'Decals' in the February issue, I ordered some decals last November 3rd and haven't gotten them yet. We have the same trouble getting lusterless green, buff, and black paint for oxygen and acetylene tanks.

What's the matter, are we too far out in the wilderness?  
S/Sgt. R.A.H.

Dear Sergeant:

I took your question up with the boss and he says you misunderstood the article. It stated, *decalcomanias have been discontinued*, and in place, paper mask-stencils and lusterless enamels will be used. All depots stock the paper stencils and mucilage, but you'll have to get the lusterless paints on the indefinite quantities contract.

*Half Mast*

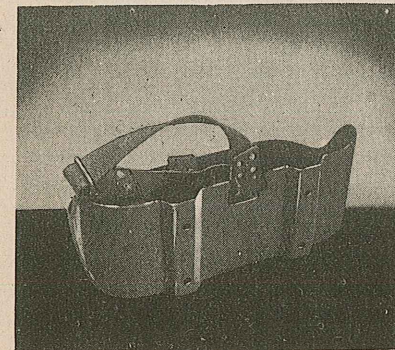
# PROCUREMENT

(From page 61)

jobs according to the type work the truck has to do.

Be sure to follow the uniform-installation instructions (furnished with the brackets) so your cans will be in the same relative position as those on all other trucks.

In case you didn't see the article last August and have never seen the bracket itself, here are some pictures.

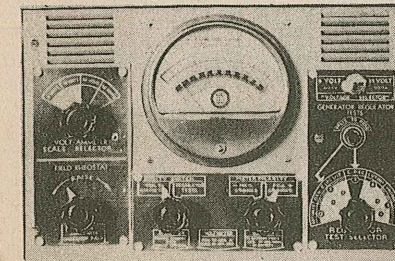


Rear view of the new bracket showing holes for mounting and straps for fastening.

## Tester

The low-voltage circuit tester, engineered to an engineer's nicety, is as versatile as a bubble dancer. Tests it can't make can't be made, and all with the same connections. No changing of basic connections for different tests.

It'll stow away wherever you can pack a pair of army shoes (size 12), and its fourteen-pound weight belies



Another Rube Goldberg to the unknowing, troubleshooters will welcome this tester.

its efficiency. Its drive-in connections at the end of a nine foot battery-lead make it quick to hook up. The voltmeter lead is eight feet long with terminals marked ARM & GRD; the ammeter lead is six feet long with a shunt end for easy attachment to voltage regulators and others; the field rheostat lead stretches five feet and terminates in two two-foot lengths for speedy electrical troubleshooting. All of which is very good stuff in a combat zone - speed, brother, speed.

A list of its functions looks like a patent-medicine spiel; its various tests show the condition of the entire generator-battery circuit including the battery, voltage loss in the regulator ground, voltage loss in the generator-battery ground circuit, voltage loss in charging circuit, cut-out relay, voltage-regulator resistance load, and voltmeter tests.

The allowances will provide one of these testers for second-echelon sets #1 and #2, third-echelon set #1 and fourth-echelon set #2. If you're entitled to one according to this list shoot a requisition to the nearest supply base.

Electricians, hear me shout, "Peace, it's wonderful."

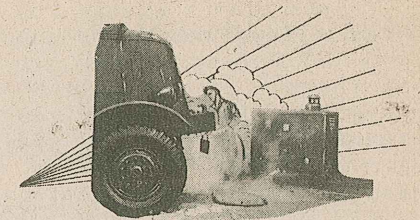
## Cleaner

Next item on the procurement list, a portable, steam-cleaning-machine, is a sure cure for those 'Cross Country Blues,' or I don't wanna drive in that muck because I'll hafta clean it.

Now, you can take the high road or the low road, then trot out this oil-burner-on-wheels to remove the evidence.

It's got everything your old oaken heating plant's got plus a few extras, and all boiled down to four-hundred pounds.

The cleaner is compact, rugged, and entirely automatic.



Not only does a bang-up job of cleaning, but it's rough and tough for rapid transit.

The type provided for shop use has an electrically driven pump, and an oil-fired pressure-atomizing burner with automatic electric-ignition.

A twelve-gallon tank holds the concentrated cleaning solution that's injected into the steam line in controllable, metered quantities. The cleaner-laden steam, generated from 120 or more gallons of water an hour, can be squirted at muddy, greasy undercarriages, engines (or what have you that's dirty?) at pressures up to two-hundred pounds.

They're stocked at all motor bases, and you're entitled to one if you're entitled to fourth-echelon set #2. You'll get it complete with plenty of water hoses, steam hoses, extension cords, nozzles and operating instructions.

They tell us the steam cleaner works very fine for guys that follow the instructions.

Otherwise - maybe not so good. Ketch?

## PODDONUS

The captions for figures 5 and 6 on page 346 of the March issue were switched.

\* \* \*

Gasoline, the triple threat, on page 6 of the April issue was continued on page 32.

\* \* \*

Transmission filler-plug on page 5, figure 7 of the April issue should be transmission drain-plug.

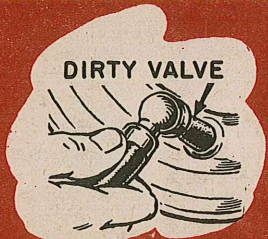
NICE WORK  
If you can do it!



Anybody can be a Tarzan with a tire iron. The trick is to be gentle. Tube bruises don't leak right away - they wait until you're roaring along at sixty.

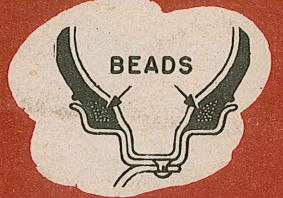


Remove the sand, pebbles, and immaterial material. Like bunions, they make your tire walk funny and eventually wear a hole in the tube.



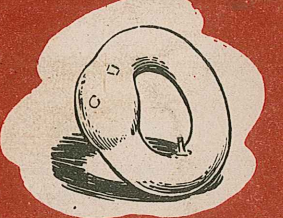
**DIRTY VALVE**

They laughed when you sat down and let some air out. Laugh last - show them you're cleaning out the valve core. You'll send 'em away beet-faced.

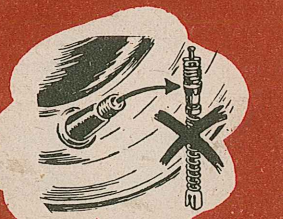


**BEADS**

Beads aren't made to pinch the tube - let them strangle it. Seat them properly. On the Chrysler safety-rim two popping noises tell when they're in place.



Playing with balloons is strictly kid stuff. Ballooning inner tubes stretches and permanently weakens rubber. Weak spots rapidly become porous.



The guy that said 'penny wise and pound foolish' was talking about valve cores. Why put back an oldie that's done many thousand miles of duty? A couple pennies buys a new one.

**B**ut you can't. You're not a magician and nobody expects you to be. All you can do is make the most of what you've got. Make your equipment last. Keep it rolling instead of deadlined.

But you can't do it by waving a little stick and saying SKINAMAROOCH. Take tires for example - there's no more magic in caring for tires than in making new ones.

Glance over the tips on this page. Did you know them before? Did you know, for example, that ballooning inner-tubes is bad? In other words, do you know all you should about your job - and if you do, do you put the other fella wise whenever you get the chance?

Make good maintenance your business. Get books, get manuals, talk to experts, pry good tips out of the old-timers. Don't sit around waiting for somebody to do it for you. No one will. Everybody's got his job to do. Everybody's too busy now.