The ARMY MOTORS

VOLUME 2 JUNE 15 1941 NUMBER 3

THE HOLABIRD QUARTERMASTER DEPOT MOTOR TRANSPORT SCHOOL BALTIMORE MD.

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THE 'AM is primarily intended to cover all angles of military motor transportation. Heretofore copies have been gladly mailed directly to all organizations and units.

The subscription list has grown so large, however, that it is a problem, with the limited personnel available, to maintain accurate records and promptly deliver THE 'AM on the 15th of each month.

So, in the future, it will be necessary to send issues to regimental commanders, or in the case of SEPARATE battalions, squadrons, companies, troops or batteries, to the commanders of those units. Copies will be marked for the attention of the motor transport officer, and sent in the following amounts:

For a regiment.. ..... 15 copies
For a SEPARATE battalion or squadron..... 5 copies
For a SEPARATE company, battery or troop..... 3 copies

Due to the limited reproduction facilities available, and in order to have THE 'AM reach personnel interested and serve the purpose for which it is intended, it is suggested that the motor transport officer of the unit distribute the copies to best meet the needs of motor transport.

THE 'AM

VOLUME 2 JUNE 15, 1941 NUMBER 3

IF THE STREAM OF ACCIDENT REPORTS POURING INTO THE OFFICE OF THE QUARTERMASTER GENERAL WERE ACCOMPANIED BY SOUND EFFECTS, THERE WOULD BE A RHAPSODY OF BANGS, CRASHES, RATTLES AND GROANS THAT COULD BE HEARD FROM COAST TO COAST WITHOUT BENEFIT OF NETWORK HOOK-UPS. THE ARMY IS PLACING VEHICLES INTO OPERATION DAILY AND WITH THE INCREASED NUMBER OF CIVILIAN CARS ON THE ROAD, TRAFFIC CONGESTION IS GETTING WORSE AND WORSE. THE NUMBER OF BUMPS AND CRASHES THAT ARE TAKING PLACE CONTINUOUSLY MAY BE A REPAIR MAN'S DELIGHT, BUT IT'S NO INDICATION OF GOOD MILITARY DRIVING. IF WE'RE GOING TO HAVE ANY TRUCKS LEFT TO ROLL TROOPS AND SUPPLIES, SOMETHING HAS TO BE DONE ABOUT THE CONTINUOUS STREAM OF VEHICLES GOING INTO THE REPAIR SHOP.

"DO'S" AND "DONT'S" DON'T DO

THE FIRST AND VERY NATURAL THOUGHT OF EVERY NEW MOTOR OFFICER IS TO DRAW UP A LIST OF "DO'S AND DON'TS" AND TRY AND STUFF THEM DOWN THE THROAT OF EVERY NEW DRIVER. THAT WOULD BE FINE AND DANDY IF EVERY ACCIDENT WERE CAUSED BY THE SAME THING AND HAD THE SAME RESULTS; BUT IT SO HAPPENS THAT EVERY CAUSE IS SLIGHTLY DIFFERENT FROM EVERY OTHER CAUSE, AND EVERY RESULT VARIES FROM A BROKEN THUMB NAIL TO A BROKEN NECK. SO THE "DO'S" AND "DON'TS" ARE ONLY GUIDES, AND MANY TIMES NOT PARTICULARLY INTELLI-GENT ONES AT THAT.

GIVE THEM SOME WHY AND HOW

SAYING "DO" OR "DON'T" WITHOUT TELLING "WHY" OR "HOW" IS USELESS INFORMATION THAT STIMULATES LITTLE OR NO DESIRE ON THE PART OF THE DRIVER TO BECOME ACCIDENT CONSCIOUS AND IN MANY CASES ACTUALLY CREATES ANTAGONISM TO SAFETY. IN OTHER WORDS, THE DRIVER HAS TO BE "SOLD" ON THE IDEA THAT HE, AS WELL AS THE SERVICE, IS GOING TO GET SOME-THING VALUABLE FROM SAFETY. "O. K. — BUT WHAT'S IN IT FOR ME?" OR "SO WHAT?" IS THE NATURAL REACTION OF THE DRIVER WHEN HE IS TOLD THAT SAFETY IS ONE OF THE VITAL FACTORS IN NATIONAL DEFENSE. NO REASONABLE PERSON WOULD SUGGEST THAT A DRIVER GO OUT AND BUY A PIECE OF LAND IN FLORIDA BECAUSE IT'S GOOD FOR HIM WITHOUT FIRST TAKING GREAT PAINS TO TELL HIM HOW AND WHY IT WOULD BE GOOD FOR HIM. THE PROBLEM OF MILITARY SAFETY IS VERY SIMILAR. YOU CAN'T SELL SAFETY UNLESS YOU STIMULATE A DESIRE FOR IT. POSTING A-LOT OF STUFFY WARNINGS AND SUGGESTIONS WILL NEVER BRING SAFETY HOME TO THE DRIVER.

MANY MEN POINT PROUDLY TO THEIR REPUTATION OF "BEING ABLE TO DELIVER THEIR LOADS INTACT WHERE AND WHEN EXPECTED". "LET JONES HAUL IT, HE ALWAYS GETS THROUGH", IS THE SORT OF THING THAT APPEALS TO ANY MAN'S PRIDE. KNOWING HIS VEHICLE AS A CAVALRY MAN KNOWS HIS HORSE, DETERMINATION TO GO THROUGH, HONEST RESPECT FOR OTHERS, ALERTNESS,

A BROAD ANGLE OF VISION AND CONTROL OVER TEMPER ARE QUALITIES WHICH WHEN DEVELOPED THROUGH PRACTICE GAIN SUCH REPUTATIONS. THAT'S "SAFETY" AND "GETTING THERE".

THE REAL FIFTH COLUMN

DURING THE SPANISH CIVIL WAR, THE GENERAL IN COMMAND OF THE TROOPS ATTEMPTING TO TAKE A TOWN WAS ASKED WHAT FORCES HE HAD AVAILABLE FOR THE CAPTURE. "FOUR COLUMNS ON THE OUTSIDE", HE ANSWERED, "AND A FIFTH COLUMN ON THE INSIDE". HE MEANT, OF COURSE, BY THE FIFTH COLUMN, THE SPIES AND TRAITORS THAT HE HAD PLANTED WITHIN THE ENEMY CAMP. AND SO THE WORD "FIFTH COLUMN" CAME INTO POPULAR LANGUAGE MEANING ANY FORCE OR PERSON WORKING FROM WITHIN TO HINDER NATIONAL DEFENSE. ACCIDENTS ARE THE "FIFTH COLUMN" THAT WE HAVE TO CONTEND WITH TODAY.

EVERY MAN OFF DUTY BECAUSE OF AN ACCIDENT IS ONE SOLDIER LESS TO WORK FOR NATIONAL DEFENSE. EVERY TRUCK IN THE SHOPS FOR REPAIRS IS ONE TRUCK LESS TO GET MEN AND SUPPLIES "THERE". A SICK TRUCK NEEDS MECHANICS THAT COULD PROFITABLY BE USED ELSEWHERE. SOLDIERS IN THE FRONT LINES ARE PREPARED TO GET WOUNDED OR KILLED, BECAUSE NEVER MIND HOW CAREFUL THEY ARE, THEY CAN'T DUCK A BOMB OR A MACHINE GUN BULLET.

BUT IN SHOPS YOU *can* BE CAREFUL AND YOU CAN *prevent* ACCIDENTS. YOU CAN TRAIN THE DRIVERS TO DUCK ACCIDENTS AND KEEP AWAY FROM THEM BY TEACHING THEM THEIR JOB, SHOWING THEM WHAT THE HAZARDS ARE AND TAKING EVERY PRECAUTION TO SEE THAT THEY DON'T LET **those hazards become potential sources of accidents.**

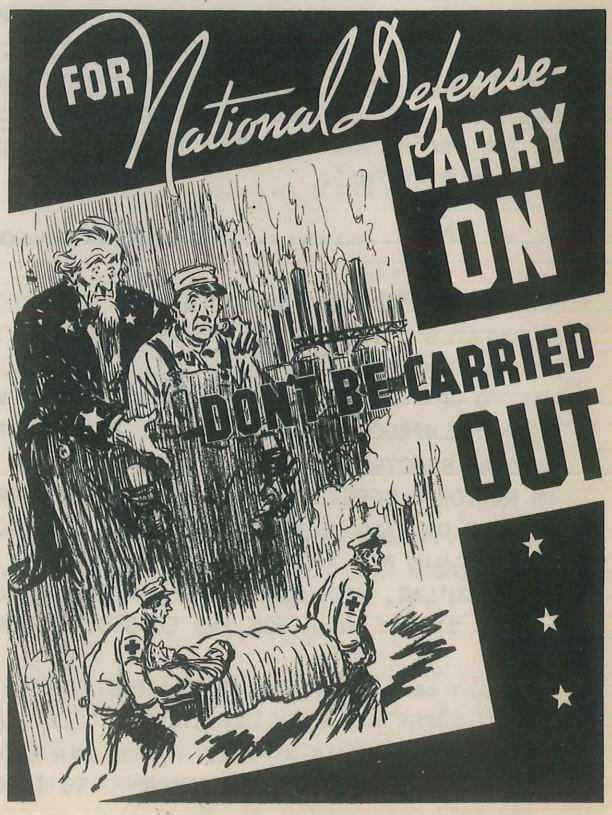
Shop safety is too long a subject to go into here, but we are going to give you some tips on driver safety.

EYES ON THE ROAD

It is reasonable to assume that a large percentage of the traffic accidents happen when the driver momentarily lifts his eyes from the road to gaze at the sunset or a blonde, or something. During this brief interval the vehicle in front of him stops, or another vehicle cuts in from the side, and the accident occurs before he knows it. Thus, a *determination* to keep the eyes on the road at all cost would undoubtedly avoid a host of troubles.

SPEED

If every driver kept his "eyes on the road" it would eliminate many accidents. If drivers can develop a consciousness of of *braking distance* for all kinds of road surfaces and loads, another major accident hazard would be licked. The brakes and highway condition, not the throttle, must control the speed of the vehicle. It may be perfectly safe to travel 50 miles an hour on a dual highway that is clear to the front and sides, but it is very dangerous to make 10 miles an hour on a crowded city street. In each case the driver must possess a *determination* to be able to stop his vehicle unexpectedly, and he must know



in exactly what distances he can stop under all conditions.

RIGHT OF WAY

The right of way is a useless thing. It is even positively dangerous. Drivers must give it away to anyone who will take it. The courts are full of cases in which the accident occurred because each driver thought he had the right of way. But the man who had it before the accident always wishes, after the accident, he had given it to the other driver. It is better to let anyone who wants it have it, and good riddance. Be tolerant and you will last longer, live happier and get there on time.

DETERMINATION NOT TO HAVE AN ACCIDENT

How do you manage it so that your own car does not become involved in any accident? Your answer, if you fully analyze your reactions, is that you have developed a strong and steady *determination* that you will not allow your car, under any circumstances, to become involved in any accident whatever because you know darn well it's going to cost you money. Walking down a crowded street with a loaded and cocked shot gun under your arm, pointing it down the street ahead of you with your finger on the trigger is no more dangerous than driving a heavy truck down the same street with your toe on the throttle. Can military drivers be trained to develop a high degree of this determination? Yes, undoubtedly, if there were a way to make each driver realize that an accident would cost him money, just as it will cost you money, if you have an accident with your own personal car.

In addition to charging drivers for accidents, there should be a reward for those who drive so many miles without an accident. Give them a badge similar to a marksman's medal, and possibly a specialist's rating with an increase in pay. Make "unsafety" expensive and "safety" profitable — and watch the accident reports dwindle.

RED LIGHTS AND STOP SIGNS

In convoy travel perhaps the greatest danger of collision is in driving through

red lights. The driver, imagining himself to be in convoy, when he has actually slipped too far behind still to be "in convoy" plunges through intersections, disregarding the red light or stop sign, striving to keep his distance and thinking he has some sort of immunity and special privilege by being in convoy and with a police escort. The motorcycle policeman is usually far up front or far to the rear. A person coming from the side, seeing the green light and thinking that the truck will stop, proceeds through the intersection with the law on his side. The driver tells the investigating officer, "I figured I was in convoy and could run through the red light".

The question arises, "Should a vehicle in convoy ever pass through a red light or stop sign when there is no traffic officer or soldier standing in the intersection to wave him on? The answer is NO, unless the interval between trucks is so small that civilian vehicles wouldn't attempt to cut in between.

The term "accident prone driver" is simply another expression for an indiffer-

ent, careless, worthless driver who should probably have been grounded after his first and certainly after his second offense.

THE CAUTIOUS DRIVER

Some persons will argue that if you talk too much about the danger of accidents, the driver will become over accident-conscious, over cautious, full of fear and lacking in aggressiveness. Perhaps this is true, and if so what more can be desired in training drivers for highway travel? Aggressiveness can be taught later for cross-country or combat travel. However it has been argued that the driver must be on time, and therefore he should be aggressive, even at the expense of a few bumps. On the other hand, if he allows himself to become involved in an accident, *it will be impossible for him to be on time,* and in fact it is quite possible that he will not get there at all. Furthermore, he will have to make out an accident report and cause one more delay. Many pages of investigation reports and affidavits will have to be prepared by someone else, wasting time and causing plenty of annoyance.

All drivers should be trained to avoid fatigue. It is a poison that blots out mental alertness. Every opportunity for rest must be seized. When driving in convoy, or driving independently, a sleepy driver is a menace that must not be tolerated. The driver must be instructed in advance to recognize this tendency and, when he senses it, to pull to the side of the road, drop out of convoy if necessary, and walk around the truck or take other measures to shake off the feeling of drowsiness and the danger of his lapsing momentarily into unconsciousness. Early to bed and a cat nap here and there as opportunity offers are the only cures.

ACCIDENTS ARE NOT ACCIDENTAL

Probably 95% of the accidents are avoidable; they are not accidental; they are voluntary. It is true there will be about 5% of exceptional cases, but when the driver hits something in front of him when moving forward, or behind him when moving backward, it is 95% certain that he could have avoided the bump had he been alert to all hazards.

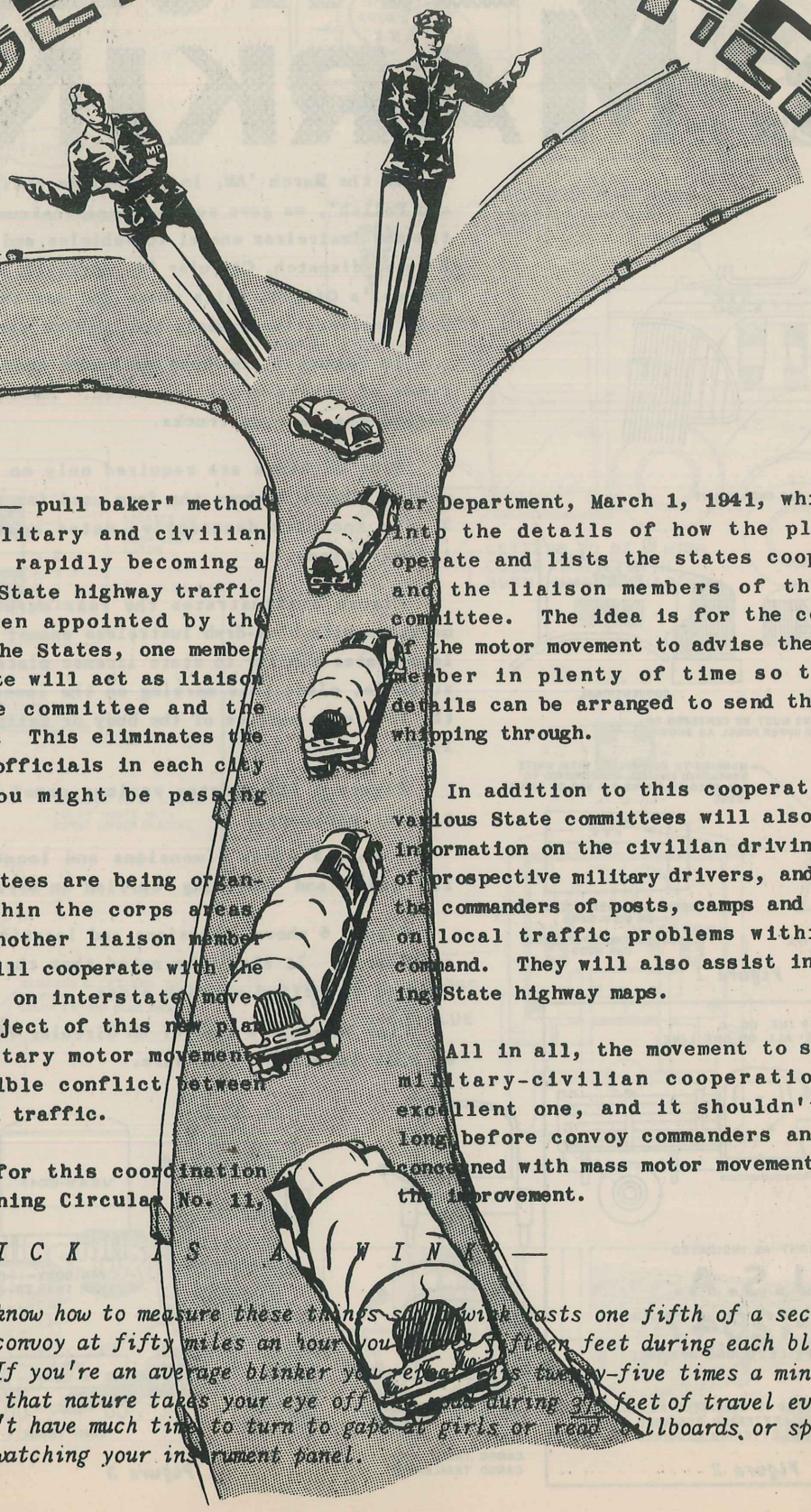
—NEXT MONTH—

THE GERMAN SECRET WEAPON
Approaching an old mystery from an angle which has apparently been overlooked. You'll find much thought provoking information in this timely article.

SAFE WINCH OPERATION
An authoritative yarn which should give you a working acquaintance with power winches. This article won't make you a graduate rigger but you will learn how to get the best and safest service out of your equipment.

PROPER USE OF POWER RAMS
A portable power ram is no better than an ordinary screw jack in the hands of an inexperienced workman. This feature presents some expert advice on how to make light work out of seemingly impossible cold straightening jobs by intelligent use of a hydraulic pusher and its adapters.

LET'S GET TOGETHER



The "pull devil — pull baker" method of coordinating military and civilian traffic control is rapidly becoming a thing of the past. State highway traffic committees have been appointed by the governors of 42 of the States, one member which in each state will act as liaison member between the committee and the military authorities. This eliminates the necessity of seeing officials in each city and county that you might be passing through.

The State committees are being organized regionally within the corps areas and there will be another liaison member for this group who will cooperate with the corps area commander on interstate movements. The whole object of this new plan is to expedite military motor movements with the least possible conflict between military and civilian traffic.

The whole plan for this coordination is outlined in Training Circular No. 11, War Department, March 1, 1941, which goes into the details of how the plan will operate and lists the states cooperating and the liaison members of the State committee. The idea is for the commander of the motor movement to advise the liaison member in plenty of time so that all details can be arranged to send the convoy whipping through.

In addition to this cooperation, the various State committees will also furnish information on the civilian driving record of prospective military drivers, and assist the commanders of posts, camps and stations on local traffic problems within their command. They will also assist in procuring State highway maps.

All in all, the movement to stimulate military-civilian cooperation is an excellent one, and it shouldn't be too long before convoy commanders and others concerned with mass motor movements notice the improvement.

H O W Q U I C K I S A W I N K ? —

People who know how to measure these things say a wink lasts one fifth of a second. Travelling in convoy at fifty miles an hour you travel fifteen feet during each blink of your eye. If you're an average blinker you blink this twenty-five times a minute. So considering that nature takes your eye off the road during 375 feet of travel every minute you don't have much time to turn to gape at girls or read billboards or spend too much time watching your instrument panel.

VEHICLE MARKINGS

In the March 'AM, in an article entitled 'Goodbye to Spit and Polish', we gave some general instructions on how to apply the new lustreless enamel to vehicles, and mentioned stenciling. A later dispatch, Circular 74, April 17, 1941, from The Adjutant General's Office, tells where and how the new markings of the U.S. registration symbols and numbers are made.

In Figure 1 the hood markings necessary on the various types of trucks are illustrated. Reconnaissance trucks are marked the same as trucks.

Side markings are required only on vehicles assigned to units. Figure 2 shows the form used for these markings. Figure 2 also includes descriptive notes applicable to the other illustrations.

Figure 3 illustrates the rear markings. Stencil these markings with blue-drab lustreless enamel on olive-drab lustreless plates similar to state license plates. If plates are not suitable, place this marking on the lowest space available on the left rear surface of the body or tailgate, whichever is the lower.

Figure 4 illustrates various panel, sedan delivery, and trailer markings.

Figure 5 shows dimensions and locations of the various insignias and lettering carried on service ambulances.

Figure 6 shows dimensions and location of roof insignia on ambulances. It should be noted that the outer surface of the hood is stenciled on both sides.

Find yourself a copy of WD Circular 74 and read the details on this important procedure.

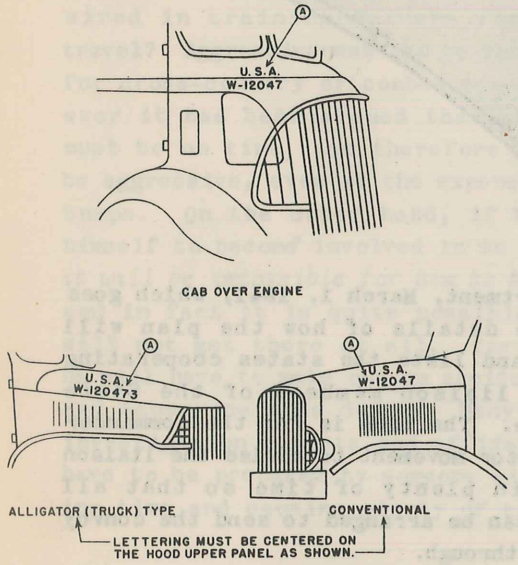


Figure 1

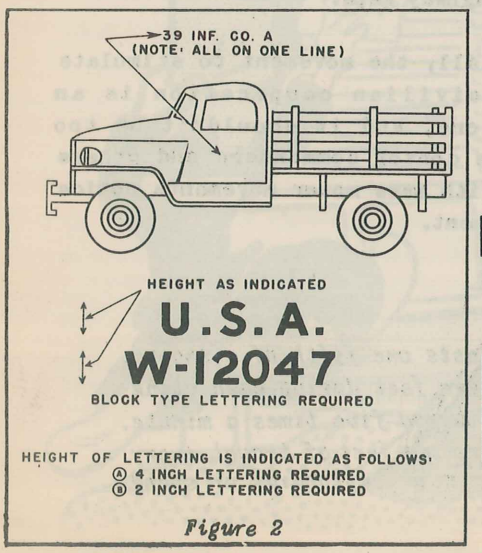


Figure 2

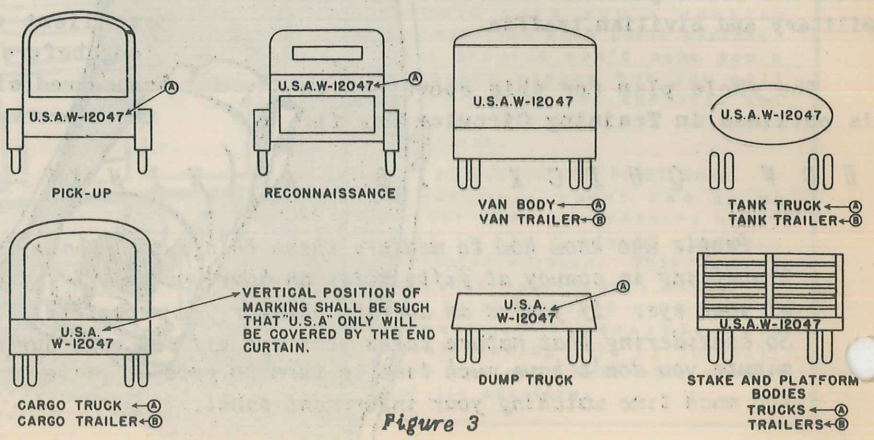


Figure 3

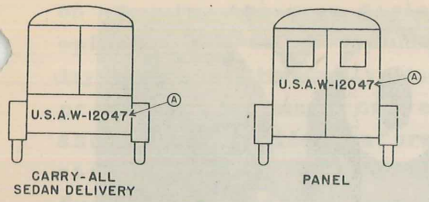
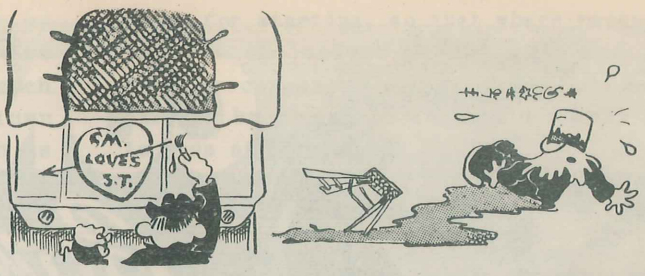
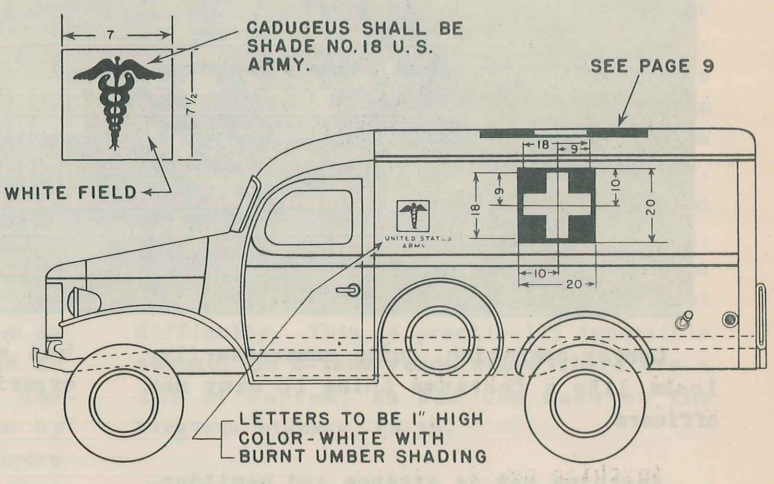


Figure 4





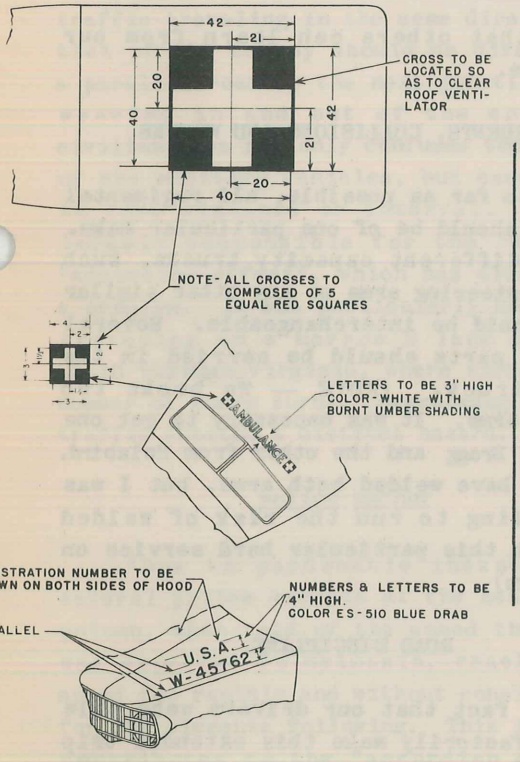


Figure 6

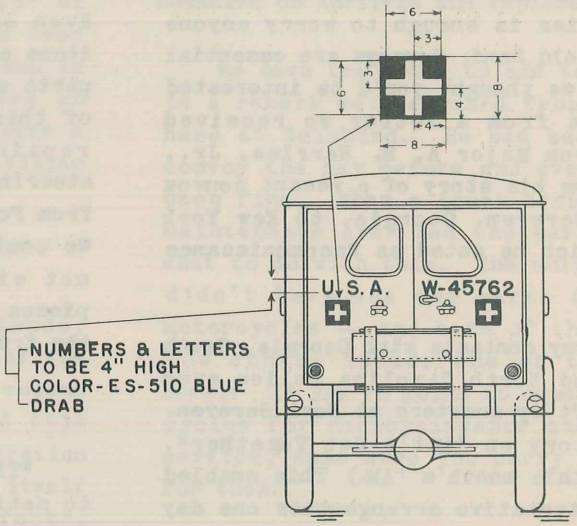
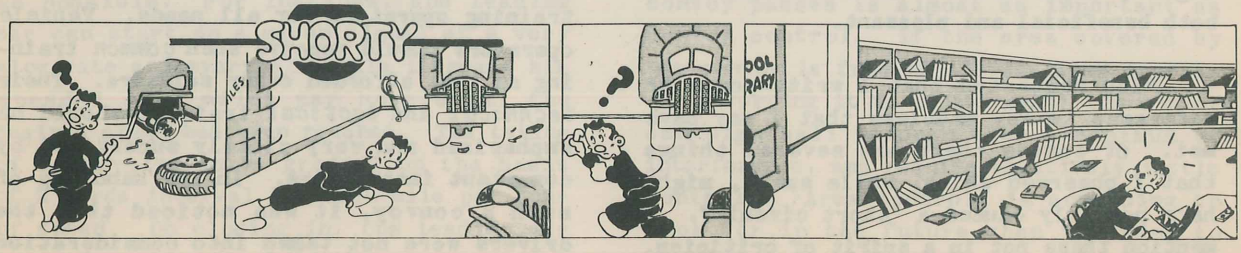


Figure 5



JUNE

Convoy operation, quite unnecessarily, looks like a fearsome thing to many new officers.

Anything new is strange and bewildering — and the thought of herding a flock of Army trucks down the highway and through crowded cities is enough to worry anyone but an old, old hand. Convoys are essential though, and we thought you'd be interested in excerpts from a letter we received recently from Major A. H. Harriss, Jr., C. A., giving his story of a recent convoy from Fort Screven, Georgia, to New York city, on which he acted as Reconnaissance Officer.

"I made my contacts with Georgia, South Carolina and North Carolina police even before I left my quarters at Fort Screven. (See the story on "Let's Get Together", page 61 of this month's 'AM.) This enabled me to make tentative arrangements one day ahead of my own reconnaissance. The thought was to work in complete harmony with the highway departments. I found this to be both beneficial and pleasant.

"You requested that I write you with reference to any problems that I may have met. Of course there are several things that I observed which, while small, might have possibly caused a "short circuit". I mention these not in a spirit of criticism, but so that others can learn from our experience.

ACCIDENTS, COLLISIONS AND WRECKS

"In so far as possible, all regimental vehicles should be of one particular make. Even on different capacity trucks, such items as steering arms or any other similar parts should be interchangeable. Several of these parts should be carried in the repair truck. (NOTE — We broke two steering arms. It was necessary to get one from Fort Bragg and the other from Holabird. We could have welded both arms, but I was not willing to run the risk of welded pieces in this particular hard service on the trucks).

ROAD DISCIPLINE

"The fact that our drivers were able to satisfactorily make this extended trip on terrain, which was different from anything they had ever trained upon, shows conclusively the wisdom of constantly training operators for all needs. Vehicle operators should receive such *common* training as that afforded other soldiers. Their *technical* and *tactical* training should be emphasized and very closely supervised by competent instructors. In the handling of such a convoy, it was noticed that the drivers were not taken into consideration

on planning the next day's march. In my opinion, any march planned for the next day should be thoroughly discussed and such problems that may confront the column should be remedied before the march is started. Each truck driver should be furnished a marked map. It is highly possible that a driver will get on the wrong road and he should be able to get back on the proper road and reach his destination at a given time.

"It would be a very fine thing to have a front and rear escort furnished by each State Highway Police Department. The public should be notified of the following recommended regulations: On 2 lane highways, civilian traffic passing in the opposite direction should be halted until the convoy passes. If consistent, civilian traffic traveling in the same direction as that of the convoy should be diverted to a parallel road at the next junction. The weaving in and out of the column by civilian cars not only confuses the drivers of the military vehicles, but causes them to lose distance or interval. This is largely responsible for the "whip" or "accordion effect", which has always been a problem. It was particularly noticed in traveling on a narrow 2 lane drive on US-15 through Virginia, where there were a number of sharp turns. Overcoming civilian traffic created a distinct hazard.

POLICE ESCORT

"Due to pardonable inexperience, several police escorts at the head of the column, when told of the speed the column was expected to maintain, reached this speed too rapidly and without consideration for the elements following. This in itself contributes to the "accordian effect". Experience has taught that the column should start off as nearly simultaneously as possible. For instance. the leading car can start on a given signal at a very slow rate and every 1/16 mile increase his speed 1 or 2 miles per hour until the desired speed has been reached. The taking of intervals can be gradual on the basis of 2 yards interval for each mile per hour of speed. On closing in, the leading car can reduce his speed in the reverse order shown for starting, so that where necessary to halt the column before arriving in a town or congested area, the column would already be closed in and would merely have to mass at the halt.

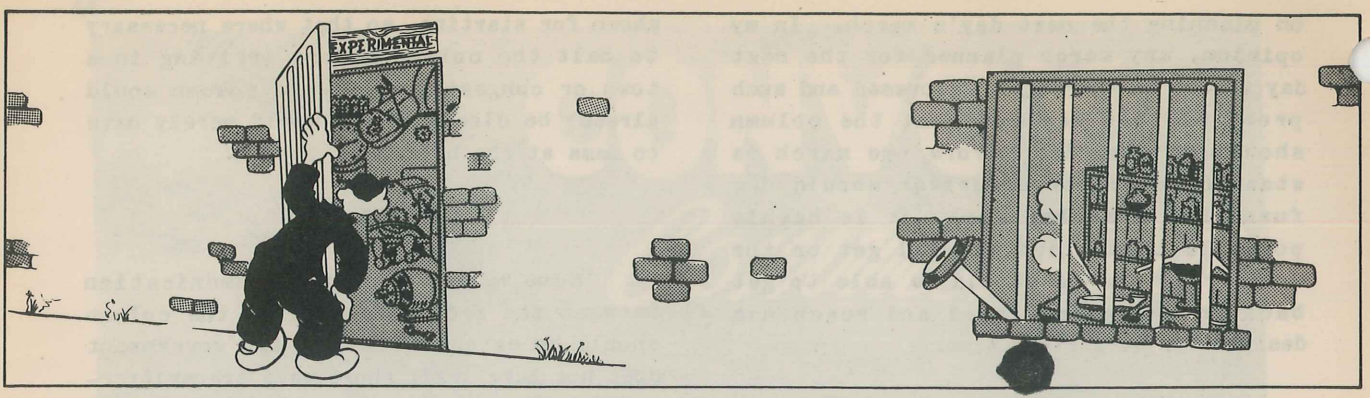
COMMUNICATIONS

"Some means of rapid communication between the front and rear of the column should be established. If the government does not have small short-wave transmitter-receivers so that communications may be had between the front and rear of the column, this communication should be made available in the highway patrol cars, which chould be adjacent to the front and rear military vehicles. On wide roads, motorcycles can transmit messages from the front to the rear of the column without difficulty. This is practically impossible though, on 2-lane roads where there are a lot of curves, as was the case on the Virginia highway, US-15.

"All vehicles made the march except one damaged vehicle, which was towed to Holabird on April 24 and replaced in kind."

We have two notes to add to this. One is a remark we overheard from an officer here at Holabird. He had been out on a convoy the day before and everything had been fine. When a truck broke down, the maintenance crew had the parts and knew what to do with them. The only thing they didn't have was any parts for the two motorcycles — and both of them finished the convoy inside one of the trucks. Moral: If you're going to depend on motorcycles for reconnaissance and messenger service, make sure you carry spare parts for them.

The second note is the thought that control of the area through which the convoy passes is almost as important as convoy control. If the area covered by the convoy is free of all civilian traffic (by diverting it to other roads) the convoy can high ball through with a minimum of interference, and require relatively little control. "Area control" is something to look for in the future when it comes to mass motor movements. .



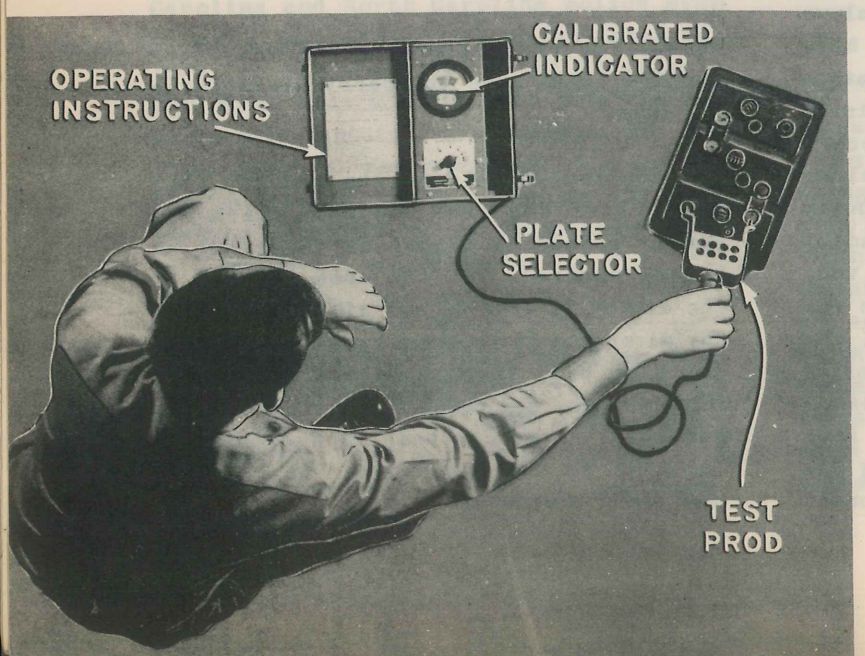
BATTERY TESTER

We gave you a yarn on fast battery charging on page 328 of the March 'AM. Here's the dope on how you can check the condition of the battery by using something more definite and more revealing than a hydrometer test.

Tests on a pilot model of a universal battery tester have been completed by the Engineering Section. Intended primarily for field service, the tester is constructed to "take it" under the toughest treatment, and continue to give you an exact reading on the condition of your battery.

A hydrometer reading tells you only whether a battery is charged or not — it indicates nothing about the capacity of a battery to receive a charge, or to stand prolonged discharge. The tester is designed to tell you the internal condition of batteries quickly and accurately without opening or tearing them down.

You can make two types of tests on a battery, depending on its state of charge. One test gives the *condition* of the battery by testing for short circuits and separator failures. The second test examines the *capacity* of the battery. If a battery fails to pass either or both of these tests, you can't depend on it. You might just as well get another one.



ILLUSTRATES CONVENIENT SIZE OF PORTABLE BATTERY TESTER WHICH WEIGHS ONLY ABOUT 3 POUNDS

Tests for the battery condition are made before charging, that is, when the specific gravity of the electrolyte is less than 1.225 to 1.265. If the specific gravity is less than 1.225, the battery should be recharged before attempting any kind of test.

The test for battery capacity is made *after* charging, or when the electrolyte reading has been brought above 1.225 and the battery has been idle for at least six hours to equalize the chemical condition of the plates and electrolyte.

The tester is based on the principle that when a predetermined, fixed voltage is placed across one cell of a battery, the terminal voltage maintained will depend upon the internal condition and capacity of that cell. The tester consists essentially of a cell prod connected by an extension cable to a sensitiye voltmeter capable of measuring accurately the terminal voltage of a battery cell.

A fixed resistor is mounted between the legs of the prod, and when applied to the cell, gives the predetermined discharge. A rheostat placed in series with the tester meter allows the test circuit to be calibrated for batteries of various sizes (11 to 23 plates). The test circuit has a temperature compensator inserted which takes care of any temperature changes.

As soon as THE 'AM gets wind of procurement data on this new tester, of course it will be passed right on to you in the hope of helping you knock another question mark off your maintenance problems.

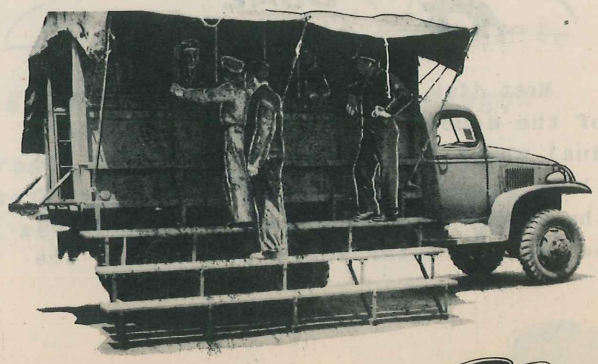
The call in this case is not for chow and the odd looking vehicle shown here is not a new type of field kitchen. It is something that will gladden the heart of every man who has ever longed for a chance to buy a pack of smokes, a pair of shoestrings, or a clean towel when his outfit was far from home base. For a long time there's been a need for something that would provide most of the luxuries of post exchanges to outfits beyond their reach. The thing started out by installing some cabinets and shelves in a standard 2-1/2 ton cargo truck. After a little experimenting, some steps and a few awnings devised from the truck cover were added to the gallopin' corner store, and finally they had the job you see in the picture.

The experimental model of the mobile canteen is touring the east coast on a sample selling jamboree and should come back with lots of ideas on the demand for various items to be carried in stock.

The set of cabinets will have over 300 bins divided into four sections, holding about 80 separate items of merchandise placed according to the rapidity of the turnover of each item. Merchandise will be dispensed over the counter by four attendants, each of whom will have identical wares at his fingertips.

One very good feature of the whole rig is its simple assembly which will enable the crew to set it up and "open for business" in about fifteen minutes. This means, of course, that even on short halts during a march you can "come and get it". Candy, smokes, the makin's, and other extras will be welcome breaks on the long hauls.

Don't expect to see this cross country canteen roll into camp tomorrow or next day, but take our word that work is being rushed on this job to get 'em out soon.



There seems to be some doubt in the field as to the correct tire pressure to be carried on vehicles using front dual wheels. We have heard of some cases where, for example, if the single front tires were carrying 55 pounds, the pressure was changed to 27-1/2 when duals were used. This may sound like a reasonable procedure, but it is wrong.

We received a letter the other day from some tire manufacturers which said in part:

"When Army vehicles are operating on soft or boggy terrain, it becomes necessary to reduce the inflation pressure. In order to obtain added support, a *minimum* pressure of 35 pounds is recommended for tires mounted on flat base rims; and for tires mounted on drop center or semi-drop center rims, 25 pounds is recommended as minimum. This applies to *single* or *double* wheels.

"As a matter of explanation, all truck tires applied to wheels having a diameter of 17 inches or larger are on flat base rims. Those on 16 inches and 15 inches diameter wheels are drop center or semi-drop center rims.

"All passenger car tires are on drop center rims."

Remember, too, always reinflate tires to their normal pressure as soon as the need for lower pressure is over.

Tire pressures are a mystery to a good many drivers and they are apt to pay little attention to the tires until they go flat. This procedure will leave you stranded on the side of a road someday with a blow-out and you'll have no one to blame but yourself. If you have been reading THE 'AM since last year, you may remember an article on page 145 of the September 1940 issue, "Bleeding Can Cause Blow-outs", which showed you that the old-fashioned idea of letting air out of the tires on long trips in hot weather was about the worst thing you could do. There was another article on page 157 of the October 'AM that told you "An overloaded vehicle with underinflated tires is like driving and drinking — they can only cause woe".

Check back on these articles and remember: A truck drives on a cushion of air, and if that cushion goes flat, well — you don't drive that's all.

Most disk wheel duals now produced are of the double cap nut type. The inner dual wheel is individually held by the sleeve-shaped inner nut, which in applying the wheel, must be mounted and tightened before the outer wheel is put on. The outer wheel slips over the inner cap nuts, and is independently held by the outer nuts. The front, or single wheels, are held by a single set of nuts.

TIGHTENING NUTS

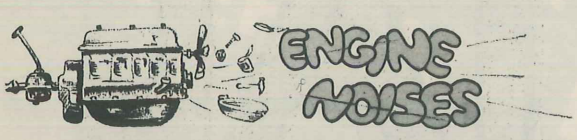
Should be done with the truck jacked

up. Retighten all cap nuts after running approximately 50 miles under load the first installation, or after wheel change. Outer cap nuts must be backed off at least two full turns to tighten inner nuts, *which must not be neglected.* In mounting wheels or tightening nuts, proceed in a crisscross fashion and not around the circle.

Do not use an extension on the regular wrench handle. The ordinary pressure exerted in tightening cap nuts with the handle is sufficient to drive cap nuts home without use of an extension.

Occasionally check the nuts for tightness, especially soon after a tire has been changed. Properly installed, they should remain tight indefinitely.

Mount wheels with valve stems opposite, whether disk or spoke type to permit easy inflation of tires.



Modern high compression engines require closer tolerances which in turn frequently result in noisy engine operation when the vehicle is first driven.

This noise sometimes sounds like a power knock, and is frequently incorrectly diagnosed as excessive engine bearing clearance. If you make the wrong guess on this and tear down the engine, you will find the bearing clearance is okay, and nobody is going to say "Thank you" when you've taken the trouble to rebuild the engine.

New engines should generally have at least 2500 miles of operation before any major repairs or tear-downs are attempted, unless, of course, there is obviously something wrong. In most cases, you will find, after this mileage, that the disturbing noise has practically disappeared.

By DANIEL S. WARNER, St. Sgt., 23rd C.A.

Probably all Motor Transport Sergeants handling 1-1/2 ton Chevrolet Cargo trucks (4x4) G-4112 series are experiencing breakage of the Red Reflex Reflectors on the rear of these trucks, especially if these vehicles are backed up to a high loading platform where the tailgate does not have to be dropped down.

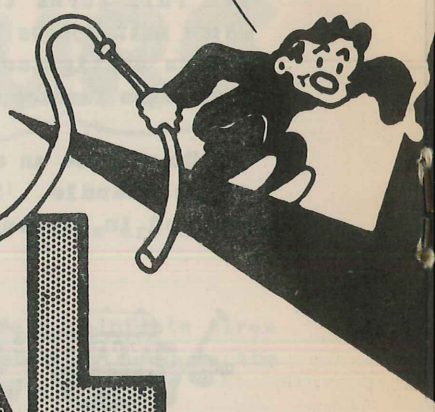
The cause of this breakage can be laid to the fact that the tailgate chain hangs directly over these reflectors and upon backing up to the high loading platform the tailgate chains come in contact with the edge of the loading platform and crush the reflectors.

For information to the using service, I have overcome this trouble by attaching these reflectors to the rear mud deflectors of the rear wheels. They should be attached to the mud deflector at a point where the iron braces are bolted to the mud deflector.

HOW DO YOU TURN YOUR VEHICLE ON A BUSY THOROUGHFARE?

Do you pull into a side road and back into a stream of traffic? Think how much safer it is to back into a side lane or alley so you can see what's going on when you drive out.

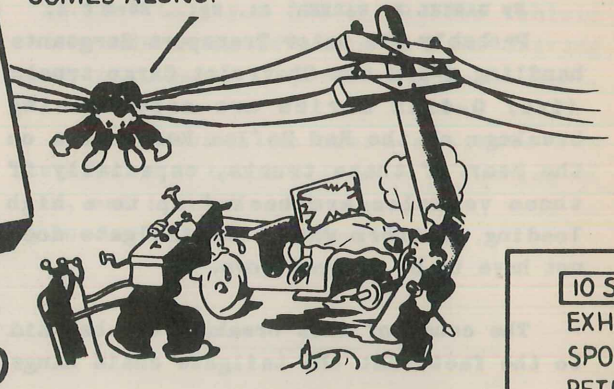
SHEET METAL SHRINK



SYNOPSIS:

SHORTY AND SPORTY, OUR ALL ECHELON MASTER MECHANICS, ENCOUNTER A BASHED FENDER AND PROCEED TO SHOW THEIR VAST 'A.M. AUDIENCE HOW TO SHRINK STRETCHED SHEET METAL BACK TO NORMAL. OUR SCENE OPENS WITH SHORTY AND SPORTY LOOKING OVER THE JOB.

NEVER COULD FIND OUT HOW THEM DERN DEMONS GET THE PHONE POLES OUT IN THE MIDDLE OF THE ROAD SOON AS A PURTY GAL COMES ALONG.



1

SHO
REV
ING
SPO

2

10 SECONDS LAT
EXHAUSTED FRO
SPORTY SINKS IN
RETEMPERS TH
METAL WITH A
SPONGE.

WHILE SPORTY ATTENDS TO GOLD-BRICKING, HIS OVERWORKED BUDDY SMACKS THE HOT SPOT A FEW QUICK BLOWS TO SHRINK THE METAL. NO DOLLY NEEDED HERE.

4

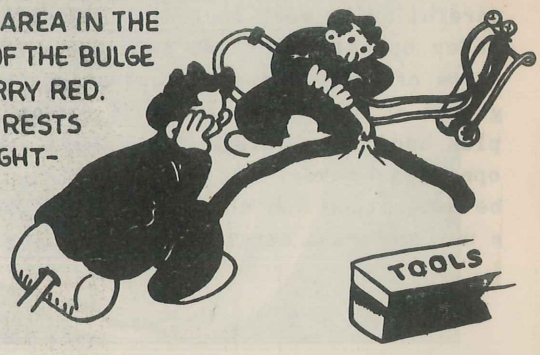
5

SHORTY AND SPORTY SHOOT THE BROMO TO A FENDER ON A BENDER

KING

HORTY PUTS HIS WHOLE 98 POUNDS BEHIND THE MALLET, EVERSING THE DENT IN THE STRETCHED METAL BY ROUGH- NG IT OUT TO GET CIRCULAR PRESSURE AROUND THE BULGE. PORTY LIKES TO SUPERINTEND.

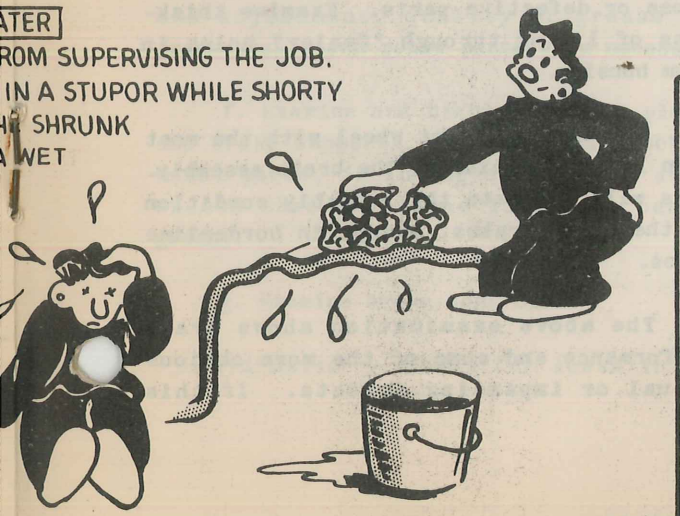
WITH A NUMBER 2 OR 3 TIP ON THE TORCH OUR UNDERSIZED PAL HEATS A ONE INCH AREA IN THE CENTER OF THE BULGE TO A CHERRY RED. (SPORTY RESTS AFTER LIGHT- ING THE TORCH.)



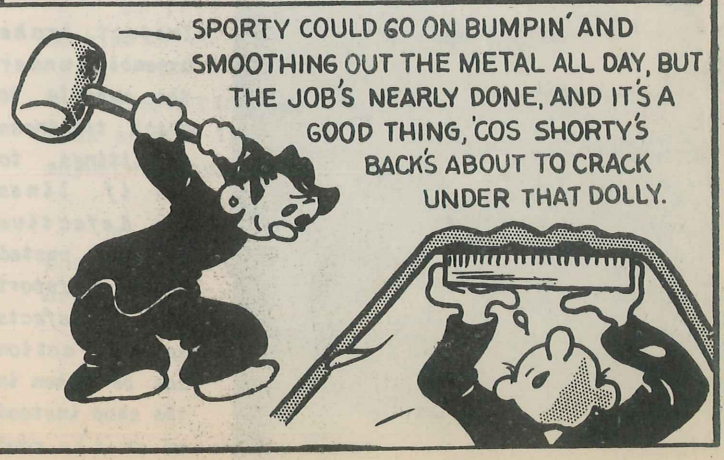
3

ATER

ROM SUPERVISING THE JOB. IN A STUPOR WHILE SHORTY HE SHRUNK A WET

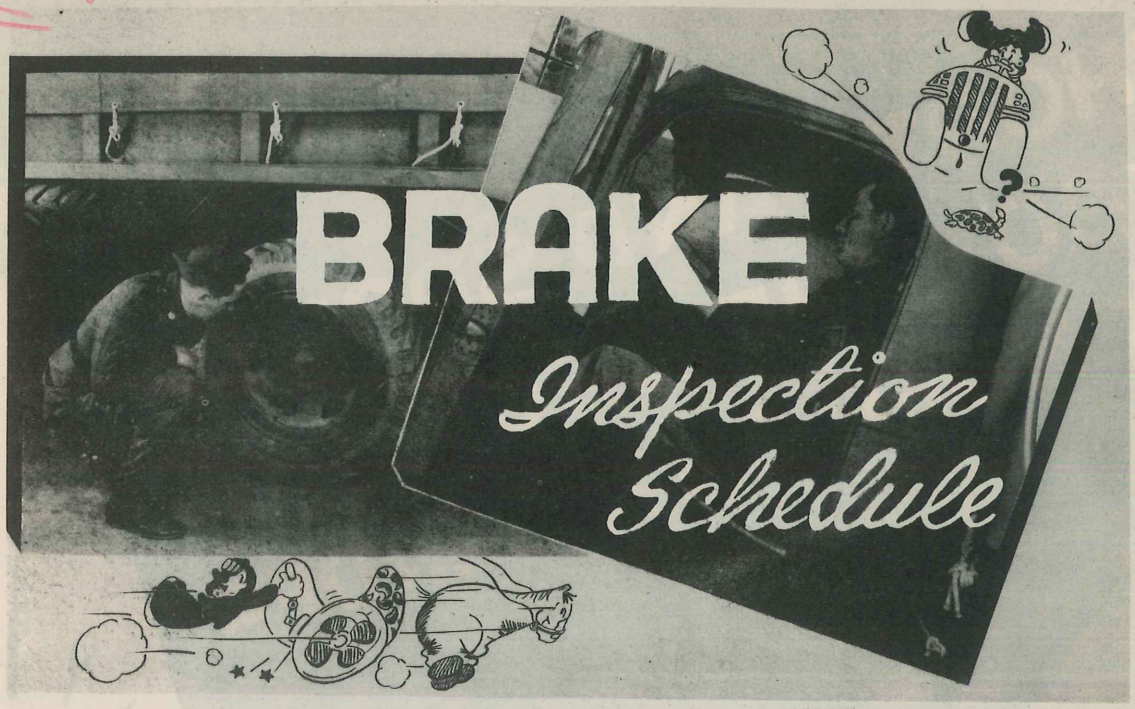


SPORTY COULD GO ON BUMPIN' AND SMOOTHING OUT THE METAL ALL DAY, BUT THE JOB'S NEARLY DONE, AND IT'S A GOOD THING, 'COS SHORTY'S BACK'S ABOUT TO CRACK UNDER THAT DOLLY.



6

Complete battery to be taken



What is believed to be the first standard brake service schedule ever compiled by an independent agency has been completed by the National Safety Council, Chicago.

The schedule is essentially a checklist of the mechanic's operations, designed to provide a common knowledge of what careful brake work includes, and to insure safer operation of the vehicle. It consists of a preliminary examination and two groups of operations in brake maintenance, plus additional steps for vacuum and air operated brakes. It is simple enough to be understood and should serve to provide a uniform brake servicing standard.

Inspect brake assembly under the vehicle to check tightness of fittings, to see if lines are defective or have rusted. Make a report of all defects so that action can be taken in the shop instead of on the road.

The Council emphasizes that the schedule does not replace official inspection standards, but adds to them. The complete schedule follows:

1. PRELIMINARY EXAMINATION.-

a. Test both service and hand brakes with brake testing machine if available, or drive the vehicle on the road to determine the brake "feel", pedal pressure, deceleration, and tendency to swerve in sudden stopping.

b. Place vehicle on lift, if available, and examine brake control system for loose or defective parts. Examine thickness of lining through "feeler" holes in drum housing.

c. Pull the front wheel with the most worn lining and examine the brake assembly. This will indicate the probably condition of the other brakes, except in borderline cases.

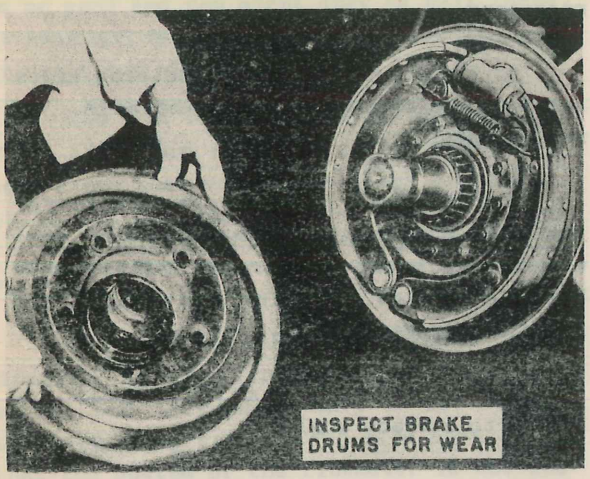
The above examination shows brake performance and some of the more obvious actual or impending defects. If this

inspection or the driver's report indicates unbalanced braking, excessive wear, or borderline conditions, proceed with the proper inspection, adjustment and balanc- as outlined below.

2. INSPECTION, ADJUSTMENT AND BALANCING.-

a. Pull all wheels.

b. Examine linings and shoes for loose rivets, improper contact with drum, worn or greasy linings, and worn or damaged shoes. Estimate possible mileage before relining will be necessary.



c. Clean drums, backing plates, and brake shoes, removing all grease, dust and rust.

d. Examine brake drums for wear, scoring, eccentricity and correct thickness. Tighten brake drums to hub bolts. Resurface or renew drums when necessary and reline as specified in Step No. 3.

e. Examine wheel bearing condition and adjustment, quality of grease and grease seal, and renew parts when necessary.

f. Examine and tighten backing plates and brake support. Lubricate all rubbing metal parts, including cables, but avoid excess that may cause lining to become greasy.

g. Examine brake controls.

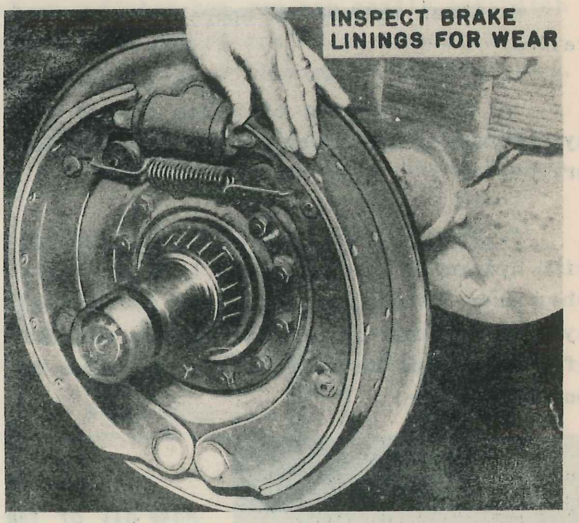
Hydraulic — Check for leaks in any part of the system. Tighten the wheel cylinders to the backing plate. Examine the level and condition of the fluid in the master cylinder, making sure that the fluid conforms with recommended standards. Check clearance between master cylinder piston and pedal links.

Mechanical — Examine the cables and conduits (lubricate if necessary) and tighten the conduit brackets. Check the angle of levers and freedom of movement of parts and setting of equalizer bars, if used. Replace worn or frayed cables or conduits.

h. Examine springs and tighten spring clips if used.

i. Examine and adjust hand brake.

j. Make complete adjustment of brake shoes; also of foot pedal links and master cylinder push rod in case of hydraulic controls, or cables, cross shaft levers and foot pedal position in case of mechanical control.



k. Test brakes with brake testing machine or on the road.

3. INSPECTION, RELINING AND BALANCING.- This should include inspection and major adjustments under Step No. 2 plus:

a. Reline brake shoes or exchange the shoe and lining assembly. Check lining to drum contour.

b. Adjust so that lining makes correct contact with drum surface. This will probably require resetting of anchors.

c. If hydraulic fluid shows gumminess, or contamination with dirt or other foreign matter, flush and refill with standard grade.

The foregoing applies primarily to the braking system. For vacuum, air, and electric brakes, the following procedure applies in addition to the above:

4. VACUUM BRAKES.—

a. Check entire system for leaks.

b. Examine pipes and hoses for kinks, wear or collapse. Check trailer hose and connections when used.

c. Examine power cylinder and make certain that piston does not bottom in cylinder. Lubricate piston type power cylinder.

d. Check vacuum and operation of all valves.

e. Check timing of relay valves for synchronization between tractor and trailer brakes.

f. When vacuum is used in conjunction with hydraulic system, check line pressure; when used in conjunction with mechanical system, examine lever setting for maximum efficiency and measure effective force of power cylinder.

Make all of the inspections with utmost care and precision. Check the brake lining clearance with a feeler gauge as shown in this picture. Check each drum for excessive heat after normal run.

5. AIR BRAKES.—

a. Check entire system for leaks.

b. Examine pipes or hoses for kinks or wear. Check trailer hose and connection if present.

c. Drain all reservoir tanks and in cold weather install approved anti-freeze in tanks or examine and fill alcoholizer if present.

d. Check compressor: check governor for cut-in and cut-out range. Adjust if necessary.

e. Check braking effort between axles and between wheels of the same axle. If not correct:

f. Check air pressure required for one inch diaphragm rod movement of each wheel. If pressure varies, disassemble brake chambers, examine diaphragm, and install correct springs.

g. Adjust slack adjustors or cam levers to correct angles.

h. Check relay valves for synchronization between front and rear axle and between tractor and trailer brakes.

i. Adjust brakes and again check braking effort.

6. ELECTRIC BRAKES.—

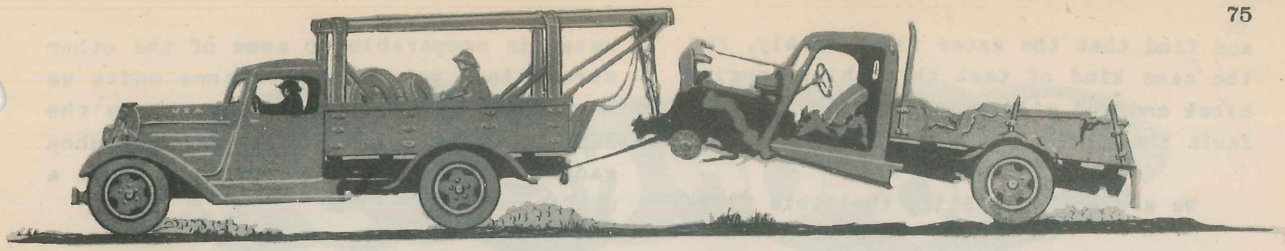
a. Examine all wiring and connections on tractor and trailer.

b. Check amperage for each brake.

c. Check timing and braking effort between trailer and tractor, adjusting foot controller if necessary.

d. Examine safety break-away chain and safety switch. Check emergency battery.

TURN TO PAGE 84



HELP!

The prime reason for having a radiator in a truck is to cool the water circulating around the engine, and circulating the water is to keep the engine cool. Now if that water can't circulate, your radiator is no good and you might just as well throw it away and heave the engine after it 'cos it won't run when overheated.

There are various ways of testing the flow of water through a radiator, but here's one that you in the shops can easily build and use whenever you have doubt as to the efficiency of the vehicle cooling system:

The gadget is called a flowmeter. The dimensions we have given here are not exact, and they don't have to be. About the only thing you want to make sure of is that the bottom of the flowmeter is not too far below the inlet of the radiator; preferably it should be on a level or slightly higher, so the water can flow freely. The tank should hold about 75 or 80 gallons, and be tall enough to leave sufficient room between the calibration marks, each of which should indicate at least a fall of 5 gallons in the tank. A gauge glass, approximately as long as the tank is high, can be attached as shown.

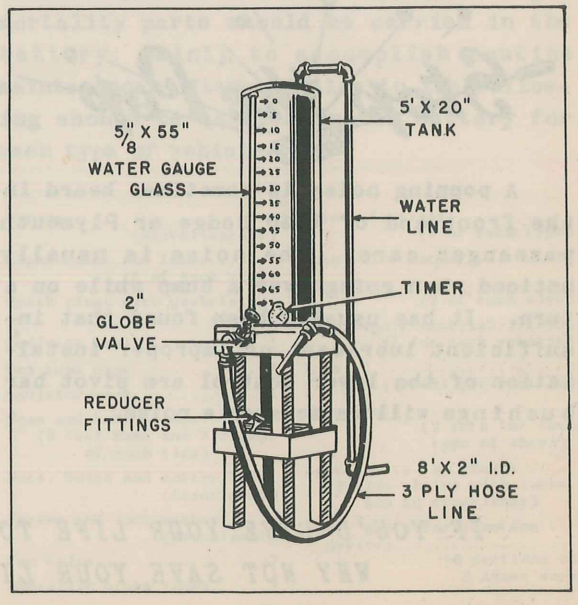
A 2 inch valve at the bottom of the tank and 8 or 10 feet of 2 inch I.D. hose will give you plenty of gravity flow. A set of reducer fittings for connecting the hose to various sizes of upper radiator inlets should be kept handy.

To mark the tank, fill it full of water, and make a zero mark at the top of the water level. Then draw off exactly 5 gallons and make your 5 mark. Continue to draw 5 gallons at a time, making your mark until the tank is empty.

To use the flowmeter, disconnect the lower radiator hose and block the opening; block the overflow tube, then fill the radiator to a point level with the filler neck opening. Fill the flowmeter tank to the zero mark and then plug the lower radiator hose opening and open the meter valve so the water can flow. Control the valve so that the water in the radiator is up to the neck opening all the time, but don't let it overflow. Time the flow in minutes so that the amount indicated by calibration marks on the flowmeter tank can be read in gallons per minute.

We haven't any figures on how long it should take the water to flow through a clean radiator, but you can easily establish your own standard and keep a chart alongside the flowmeter showing the various times.

If a truck comes to you with complaints of overheating, and you test the radiator



DRAWING OF A HOMEMADE FLOWMETER

and find that the water flows freely, run the same kind of test through the engine block and you will probably find that the fault lies there.

We are not suggesting that this flowmeter is comparable to some of the other streamlined mobile maintenance units we have been showing you recently in the Experimental section. It is purely a shop gadget, but we think you will find it a useful one.

The lock and door handle on the rear door of semi-trailers may seem an insignificant thing to get worried about when you compare it with the complicated mechanisms of the transmissions and engines. We admit it is a small thing, but a rear door that keeps on flapping open can be a dangerous nuisance. Here are some tips on how to keep on the right side of trailers' rear doors:

The door handle which contains the lock cylinder and plunger, together with a square shank, slips through a square hole in the inside lock mechanism.

This assembly is retained by a set screw on the inside of the door. This set screw may be shaken loose by vibration, so check it regularly at the monthly or 1000 mile maintenance. However, it is a small thing and you are apt to forget it, so here's another idea:

The square shank of the handle may be slightly peaned over on the inside of the lock plate, which makes it impossible to pull the handle and shaft out from the outside of the door. Of course, this makes it difficult to remove the lock handle assembly, but since ordinarily you wouldn't remove the assembly unless it were broken, there is more advantage than disadvantage to this method.

If you want to pean over the end of the shaft, remove the two cotter keys and the flat spring on the inside of the lock. This reveals the end of the square handle shaft which is to be peaned over. If you are fitting a new handle and shaft assembly, a new shaft will come in a standard length which is longer than that required. So after the set screw is tightened up, saw off the shaft, so that 1/16" protrudes beyond the lock plate. Pean the 1/16th over and replace the spring and the two cotter keys.

A popping noise is sometimes heard in the front end of 1940 Dodge or Plymouth passenger cars. The noise is usually noticed when going over a bump while on a turn. It has usually been found that insufficient lubricant or improper installation of the lower control arm pivot bar bushings will cause such a noise.

When difficulties of this nature are encountered, the control arm bushings should be thoroughly lubricated with the load off the wheels, and the position of the lower control arm pivot bar in relation to the bushings should be carefully checked. The lower control arm and pivot bar must be assembled correctly to avoid the possibility of one end of the pivot bar bottoming in its bushing.

IF YOU'D GIVE YOUR LIFE TO SAVE YOUR COUNTRY,
WHY NOT SAVE YOUR LIFE TO SERVE YOUR COUNTRY?

KEEP 'EM ROLLING

The following is the introduction to an interesting article on Motor Maintenance in the May FIELD ARTILLERY JOURNAL. The whole article is naturally written from the Field Artillery point of view, but all maintenance units will find it worthwhile reading.

Existing regulations specifically state that the operations which may be performed in the various echelons of maintenance are limited by the personnel, the tools and equipment, the supplies and the time available in the echelon. The using services should make every effort to have a reasonable supply of parts and units on hand before commencing the scheduled maintenance services which involve disassembly. The following list of necessary unit assemblies should be sufficient to sustain a motorized field artillery unit in the field provided prompt third echelon service is available. the third echelon should exchange unserviceable units upon presentation. The reserve of units is thus maintained for emergency use and for the immediate repair of any vehicle. When a unit of this list is installed, it should be replaced at once from the third echelon. A minimum of one of each item should be carried for each type of vehicle.

Item	*Number of items per 100 vehicles of each type*
Distributors	4
Generators	4
Regulators	4
Starters	2
Ignition coils	4
Batteries	4
Brake master cylinders	2
Wheel cylinders	8
Air brake chambers	4
Carburetors	6
Fuel pumps	6
Gas tanks	2
Windshield wipers	4
Water pumps	2
Spark plugs (6 sets with gaskets)	
Breaker points	4
Condensers	4
Rotors	2
Distributor caps	2
Bulbs and fuses (of each size)	8
Wiring harness	1
Miscellaneous wiring (Reasonable assortment)	
Separate starter switch	4
Ground straps, battery cables and terminals	6
Brake parts (Reasonable assortment)	
Brake shoes, lined	2
Fan belts	2
Fuel lines and connections	4
Gas tank and radiator caps	5
Tie rods	1
Drag links	1
Propeller shafts	2
Springs	1
Steering gears	1
Ammeters	1
Horns	1
Governors	1
Heat indicators	1
Oil gauges	1
Ignition, light and black out switches	3
Speedometer	1
Viscosimeter, tachometer and air pressure gauge	1
Radiators	1
Winch shear pins	300
Thermostats	1
Tires and tubes	2
Auxiliary fuel strainers	5
Sediment bowls	8
Radiator hose and clamps (Reasonable assortment)	
Gaskets and grease seals (Reasonable assortment)	
Bolts, nuts and washers (Reasonable assortment)	
Universal joint parts	2
Wheel bearings	1
Trunnion bearings	1
Steering gear arms	1
Spring leaves (main)	2
Wheel studs and nuts (2 sets for each type of wheel)	
Valve springs	1
Chain and traction-device parts (Assortment according to nature of operations)	

NOTE: This list will vary with the condition of the vehicles and the type of operation. In addition to the repair items listed, a reasonable assortment of items such as tape, tubing, solder and cleaning and preserving materials should be carried.

The bulk of the accessories and parts should be carried in the battalion. In addition, a reasonable supply of high-mortality parts should be carried in the battery, mainly to accomplish routine maintenance. Items similar to the following should be carried in the battery for each type of vehicle.

Wiring (Miscellaneous)	
Light bulbs and fuses (5 of each size)	
Spark plugs with gaskets (1 set)	
Sediment bowls	1
Gas tank caps	1
Radiator caps	1
Hose and hose clamps (3 feet hose and 2 clamps of each size)	
Nuts, bolts and cotter keys (Assortment)	
Screws and lock washers (Assortment)	
Fan belts	1
Hydraulic brake tubes	1
Shear pins	25
Grease fittings (6 of each type)	
Tube valve cores	12
Tubes (2 of each size)	
Tube repair material (1 for each vehicle)	
Tape (1 roll per vehicle)	
Wheel nuts (2 sets for each type of wheel)	
Spare parts for chains (2 side chains with locks and 50 crosslinks)	
Spare parts for traction devices (4 sections of 3 shoes each)	

Ninety percent of troubles experienced under normal operating conditions can be corrected quickly if the items listed above are available immediately.

RESPONSIBILITY FOR MAINTENANCE

The responsibility for vehicle maintenance rests primarily with the battery commander. He therefore must maintain the means and institute a system to accomplish his task effectively. Higher commanders are responsible for the supervision of motor maintenance and for assuring the availability of supplies, parts, tools and equipment.

The system of maintenance is prescribed generally in AR 850-15 and more specifically in FM 25-10. In garrison its accomplishment is rather simple. Time can be allotted for the service, parts and supplies are relatively easy to procure, stocks are easy to maintain and working conditions are more or less ideal. In the field or on the march, another picture presents itself. Time usually is limited, supplies and replacements on occasion are difficult to procure, working conditions vary from fair to poor, and the tactical situation may demand a constant state of readiness. In spite of all these difficulties, vehicles must move without delay and without numerous fall-outs, and the organization should arrive intact except for battle casualties. Any system based upon "repair after failure" is destined to fail.

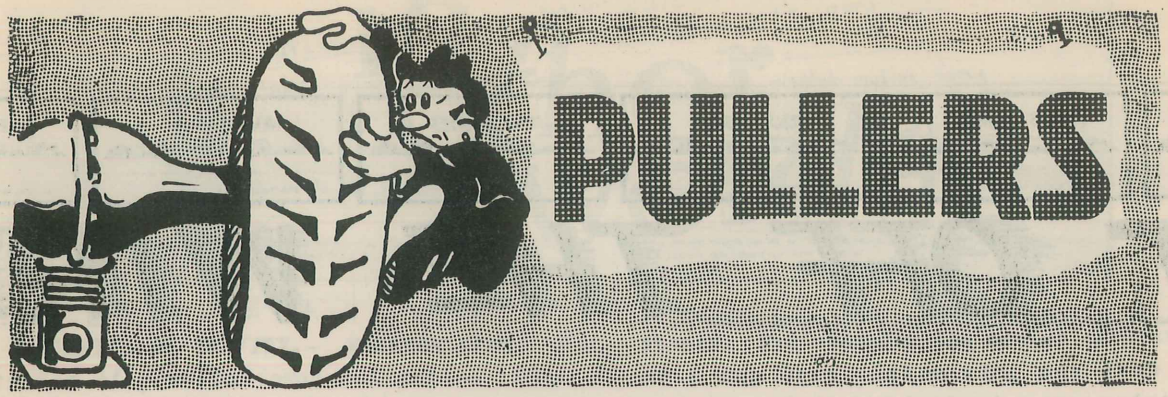
KEEP THEM ROLLING

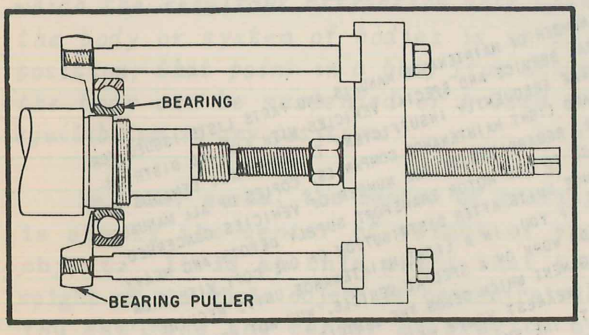
The maintenance system as now laid down provides that the battery perform the monthly (1,000 mile) maintenance service and the battalion perform the semiannual (6,000 mile) maintenance service. This division of work should afford battery and battalion commanders ample opportunities to schedule vehicles for maintenance services, without impairing the efficiency of their organizations in the field. Each service is divided into groups of operations which are not dependent necessarily upon one another, and therefore it is possible to perform these services by increments according to the time available. For example, the brake system may be placed in proper operating condition without regard to the steering system. It is possible, therefore, to work on the brakes at one time and the steering system at another, or on both simultaneously.

Work should be limited to those parts or units which actually need repair, cleaning, or adjustments, and thus reduce materially the time required to perform the services. A complete monthly (1,000 mile) service thus can be performed in from four to seven hours, and the vehicle should function properly for one month, or 1,000 miles of service, without further detailed mechanical attention other than normal driver maintenance. Therefore, a commander should investigate thoroughly each roadside failure to determine whether it was the result of poor maintenance.

CHECK THE RECORDS

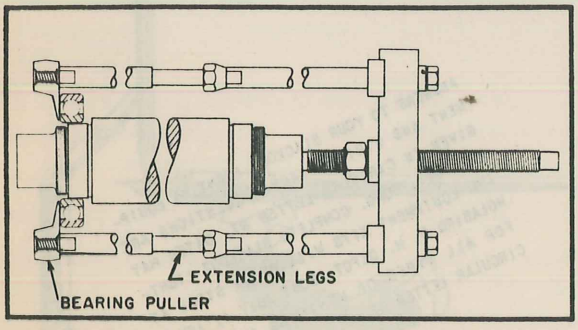
Before any maintenance service is started, the vehicle records should be checked carefully to ascertain what work has been done on the vehicle since the last maintenance service. The officer in charge then can decide what work is necessary. Every effort should be made to avoid repetitions. A study of the records should indicate whether the mileage is sufficient to warrant a complete service. Again, the good judgment of the officer in charge is relied upon for a proper decision. The type of vehicle operation is the determining factor in most cases. For example, continued operation through mud and water necessitates very careful inspection of the running gear and power-transmission system; certain portions of the maintenance service may be needed even though the mileage may be small since the last maintenance service.



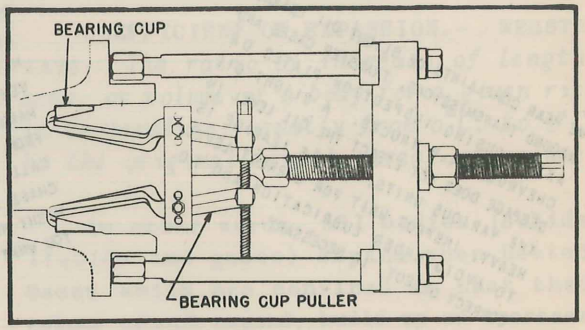


REMOVING BEARING ~ The illustration above shows clearly the method of removing bearings without damage. This drawing shows a push-puller used in combination with a bearing pulling attachment removing a bearing from a shaft. It will be noted that the force of the pull is exerted upon the inner race of the bearing thus eliminating any possibility of breaking the part.

This is a typical application and this same combination can be used to pull gears, pinions, pulleys and other closely fitted parts.

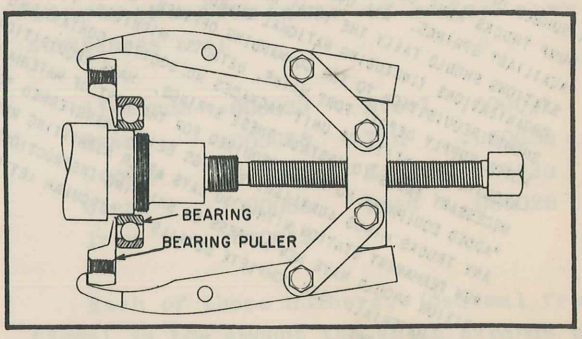


REPLACING BEARING ~ The drawing above illustrates another typical application. In this instance two lengths of legs are joined together to provide the reach necessary to work from the opposite end of the shaft to replace a bearing by pulling.

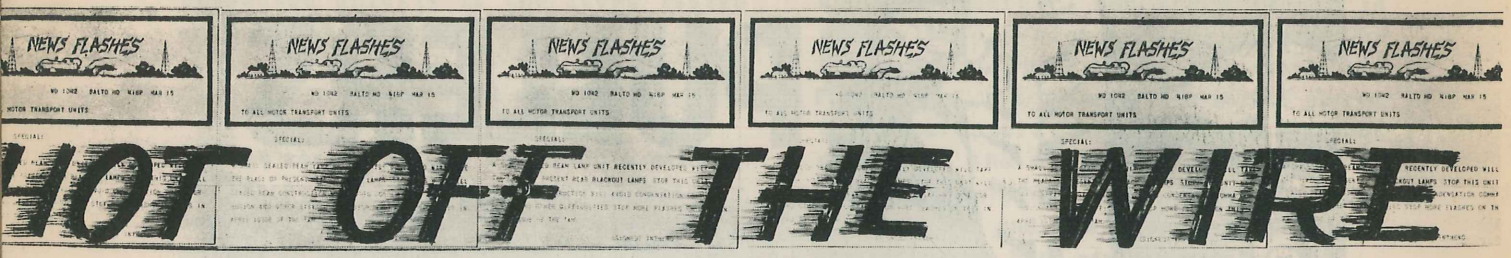


REMOVING BEARING CUP ~ Another attachment is shown in use with the push-puller removing a bearing cup from a housing. This also is a typical example of the work possible with this combination.

It is particularly difficult to remove bearing cups from blind holes and on jobs of this kind it is possible to save a great deal of time. In addition, the bearing cup can be removed without damage and the housing left intact.



REMOVING BEARING ~ In this drawing a bearing puller attachment is illustrated in use with a grip type puller to show another typical application.



WE HEAR COMPLAINTS OF SLIGHT OIL LEAKAGE AROUND TRANSMISSIONS, TRANSFER CASES AND AXLE HOUSING INSPECTION PLATES ON CHEVROLET 4x4 TRUCKS. A SLIGHT OIL SEEPAGE DOES NOT EFFECT THE OIL LEVEL IN THE VARIOUS UNITS; BUT IF LEAKAGE IS HEAVY, INSPECT UNIT FOR CORRECT LEVEL TO AVOID UNDER LUBRICATION AND TO CORRECT DEFECT, IF NECESSARY.

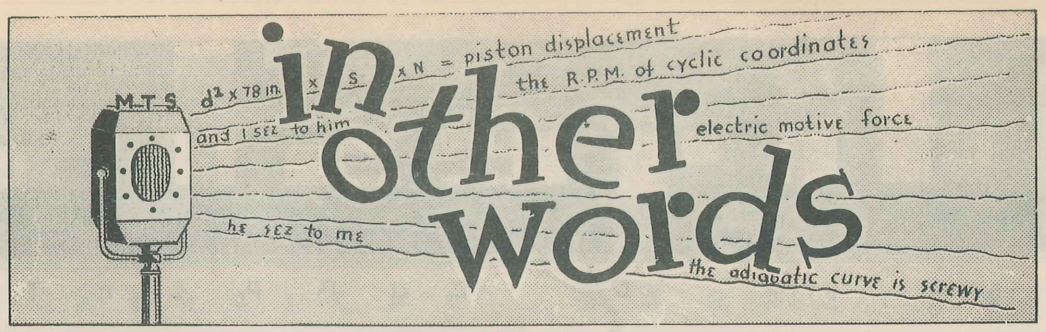
THE NUMBER OF MAINTENANCE MANUALS AND PARTS LISTS ISSUED FOR GENERAL SERVICE AND SPECIAL VEHICLES WITH LIMITED DISTRIBUTION ARE FREQUENTLY INSUFFICIENT TO COVER ALL DEMANDS OF HEAVY AND LIGHT MAINTENANCE COMPANIES. COPIES OF ALL MANUALS, HOWEVER, REGARDLESS OF THE NUMBER OF VEHICLES CONCERNED, ALWAYS GO TO THE MOTOR TRANSPORT SUPPLY DEPOTS AND HEAVY MAINTENANCE UNITS AFTER DISTRIBUTION OF ONE COPY WITH EACH VEHICLE. IF YOU, IN A LIGHT MAINTENANCE UNIT, REQUIRE A MANUAL TO DO WORK ON A SPECIAL VEHICLE, WHY NOT BORROW ONE FROM THE REGIMENT WHICH SENDS THE VEHICLE IN FOR REPAIRS OR CALL ON THE NEAREST HEAVY MAINTENANCE UNIT RATHER THAN CHASE ALONG TO THE SUPPLY DEPOT OR SOME OTHER PLACE WHICH MIGHT NOT HAVE IT OR WHICH MIGHT TAKE TWICE AS LONG TO GIVE YOU WHAT YOU WANT?

SUMMER OPERATION REQUIRES LOWER GENERATOR CHARGING RATES THAN WINTER OPERATION, SO PASS THE WORD ALONG THE LINE TO REDUCE THE GENERATOR CHARGING RATE ON VEHICLES NOT EQUIPPED WITH VOLTAGE REGULATORS TO RELIEVE THE LOAD ON THE GENERATOR AND LESSEN THE DANGER OF DAMAGING THE BATTERY BY EXCESSIVE TEMPERATURES.

EXAMINE ALL G M C MODEL CCKW-353 2-1/2 TON 6x6 TRUCKS TO SEE IF PROTECTIVE SHIELD IS ON THE FUEL LINE AT THE FUEL TANK. MANY TRUCKS WERE SHIPPED MINUS IT. PARTS PACKAGES WITH COMPLETE INSTALLATION INSTRUCTIONS ARE STOCKED AT FORT WAYNE Q. M. DEPOT. READ CIRCULAR LETTER 98, DATED MAY 26, 1941, OQMG, FOR COMPLETE REQUISITIONING DETAILS.

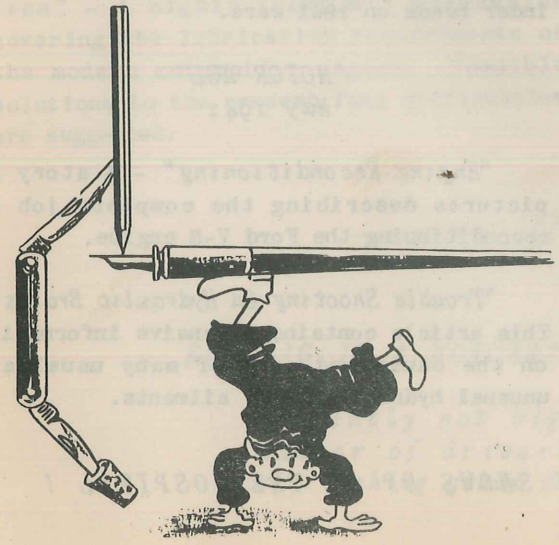
A NUMBER OF MODEL G-4112 SERIES, 1-1/2 TON 4x4, CHEVROLET DUMP TRUCKS HAVE BEEN PRODUCED AND SHIPPED WITHOUT REAR AUXILIARY SPRINGS. ALL QUARTERMASTERS OF POSTS, CAMPS AND STATIONS SHOULD TALLY THE TOTAL NUMBER OF THESE TRUCKS WITH ORGANIZATIONS (INCLUDING NATIONAL GUARD) AT THEIR STATIONS. SUBMIT REQUISITION TO THE COMMANDING OFFICER, QUARTERMASTER MOTOR SUPPLY DEPOT, FORT WAYNE, DETROIT, MICHIGAN, FOR THE REQUIRED QUANTITY OF UNIT PACKAGES NO. 806170, CONTAINING NECESSARY PARTS TO INSTALL THESE SPRINGS. MARK REQUISITION "ADDED EQUIPMENT, NO FUNDS REQUIRED FOR THE COST OF MATERIAL". ANY TRUCKS MINUS AUXILIARY SPRINGS BEING TRANSFERRED TO A NEW PERMANENT STATION WITHIN 30 DAYS AFTER SUBMITTING REQUISITION SHOULD HAVE NEW ADDRESS ON SHIPPING INSTRUCTIONS FOR NEW MATERIAL. SEE COMPLETE DETAILS IN CIRCULAR LETTER 93, MAY 21, 1941.

ANSWERS TO YOUR BLACKOUT LIGHTING EQUIPMENT AND WIRING DIAGRAM QUESTIONS ARE GIVEN IN CIRCULAR LETTER 97, DATED MAY 27, 1941, OQMG. COMPLETE BLACKOUT LIGHTING EQUIPMENT KITS WILL BE IN STOCK AT HOLABIRD Q. M. DEPOT ABOUT JULY 1, 1941, FOR ALL TYPES OF VEHICLES LISTED IN CIRCULAR LETTER 97.



CENTER OF GRAVITY.- WEBSTER SAYS: *A center of gravitational attraction; that point in a body or system of bodies through which the resultant attraction acts when the body or system of bodies is in any position; that point in a body from which the body can be suspended or poised in equilibrium in any position.*

In other words, the center of gravity is simply the center of weight of any object. It is at this point that the weight of the whole object is concentrated. You can find the center of gravity by balancing an object on a thin edge, such as balancing your pencil on a knife edge. This point of balance where the weight is exactly the same on every side of the object, is the true center of gravity. If the shape of the object is simple and regular such as a small steel rod, you can expect the center of gravity to be in the geometric center. Most objects, however, such as wrenches, chairs, a piston ring, or a cup, are irregular in shape. In such cases the center of gravity may not be in the geometric center or even in the object itself. For example, the center of gravity of a cup or a piston ring may even lie outside of the object at some point in the space within the ring or the cup. Can you find the center of gravity of the pen knife in the illustration? (P.S. we can't).



COEFFICIENT OF EXPANSION.- WEBSTER SAYS: *The ratio of increase of length, area, or volume of a body for a given rise in temperature, usually from 0°C. to 1°C. to the original length, area, or volume.*

In other words, all bodies (solids, liquids and gases) expand when heated. Gases which are confined so that their volume cannot expand, build up an increased pressure as a result of trying to expand. The coefficient of expansion then is taken as the amount any body expands in volume, area and length in relation to its volume, area and length before the application of one degree centigrade of heat. It is often more convenient to measure the increase in length of one edge of an expanding solid than to measure its increase in volume. The ratio between the increase in length per degree rise in temperature and the total length is called the linear coefficient of expansion of the solid. The linear coefficients of a few common substances are:

Aluminum	.000023	Steel	.000011
Brass	.000018	Tin	.000022
Copper	.000017	Zinc	.000029
Glass	.000009	Lead	.000029
Iron	.000012		

Each of these numbers, (decimal fractions) is the amount the solid expands per degree centigrade per unit of measurement. If, for example, you are measuring in inches, steel will expand .000011 inches for every degree of heat centigrade.

digests of CURRENT

"COMMERCIAL CAR JOURNAL"
May 1941

"Practical Points On Paint" - Discussion of the effects of polishing and cleaning upon various enamels.

"Experts Tangle On Gas And Oil" - Vehicle builders, operators and refiners discuss high-output engine failures and each group expresses its viewpoint.

"Proof That P. M. Pays" - Do you ever feel like going "once over lightly" on a preventive maintenance inspection. Here's proof in black and white that conscientious preventive maintenance pays big dividends.

"AUTOMOBILE DIGEST"
May 1941

"Sludge And Its Parents" - Sludge, that illegitimate offshoot that coats the sides and bottom of the crankcase. This article discusses the various ways that this nuisance is formed and gives some practical suggestions for its removal.

"Servicing Shock Absorbers" - This article explodes the myth that the servicing of shock absorbers is strictly a specialist's job. It gives simple, easily understandable directions for shock service on the standard line of cars.

"Pointers on Glass Replacement" - Here is a clear concise article; freely illustrated, on how to lick that next glass replacement job in short order.

"MOTOR"
May 1941

"Army Shops On Wheels" - This article contains some vital statistics concerning the Army's automotive expansion. Also included are some interesting shots of mobile maintenance trucks and shop scenes at Holabird.

"Metals For Murder" - Just how great is our need for natural metal resources, and how will the Army's tremendous demand for automotive machinery effect the manufacture of automobiles? Interesting and informative reading.

"Water Pumps On All 39-40 Cars" - A complete digest of the important facts concerning the water pumps on all late model automobiles. What information this article doesn't contain "ain't worth knowing"

"How To Tighten Cylinder Heads On All 1941 Cars" - Illustrative diagrams showing the correct procedure in tightening cylinder heads on 1941 cars.

"MOTOR AGE"
May 1941

"Engine Reconditioning" - A story in pictures describing the complete job of reconditioning the Ford V-8 engine.

"Trouble Shooting On Hydraulic Brakes" - This article contains extensive information on the cause and cure of many usual and unusual hydraulic brake ailments.

A SHOW-OFF AT THE WHEEL OFTEN SHOWS UP AT THE HOSPITAL !

comments

TECHNICAL MAGAZINES

"Tuning Ignition Distributors" - A few simple hints on procedure to make it easier to do a faster, more accurate job of tuning distributors.

"Glass Replacement" - A step-by-step picture story of replacing windshield glass in a 1941 Plymouth.

"FIELD ARTILLERY JOURNAL"
May 1941

"Motor Maintenance" - Here are detailed instructions for automotive maintenance by the using arms and services. This study is up-to-date, and will apply until appropriate field manuals are published. A handy issue to have around for quick reference.

"S. A. E. JOURNAL"
May 1941

"Engine Design Versus Engine Lubrication" - A highly technical discussion covering the lubrication requirements of the modern automotive engine. Possible solutions to the present fuel difficulties are suggested.

"FLEET OWNER"
May 1941

"I.C.C. Reports on Brake Tests" - Here are the results of a nation wide series of brake tests conducted by the Interstate Commerce Commission. Do the brakes on your trucks come up to these standards?

"Why Rear Ends Fail" - A comprehensive analysis of the various types and causes of rear end failure.

"How To Install Glass" - Has the installation of glass been causing trouble around your maintenance shop? Herein are outlined ten basic steps in setting glass that even a novice should be able to follow.

"ARMY ORDNANCE"
May-June 1941

"The Armored Force" - We've been reading a lot about the tremendous striking power of German armed forces, but what about our own mechanized units? Here's an article by Maj. Gen. C. L. Scott, Commanding General of the First Armored Corps, that clarifies our present development and expectations.

HOW BIG IS A BOXCAR?

Evidently not big enough, according to the number of drivers who pile into them when approaching grade crossings at night.

Acknowledgments

The editors wish to thank the following publishers for their courtesy in allowing The 'AM to make use of articles and illustrations from their publications. There were many articles that could not be used, but it is hoped that those published here will stimulate interest in the source material.

"Dual Disc Wheels", page 68, was based on an article appearing in FOUR WHEEL DRIVE BULLETIN, published by The Four Wheel Drive Truck Company.

The CHRYSLER SERVICE REPORTER was the source of the article: "Engine Noises", on page 69.

In the HELP section the data on the Flow-meter was taken from the April issue of MOTOR SERVICE.

"Keep 'em Rolling," Page 77, was digested from "Motor Maintenance" in the May issue of FIELD ARTILLERY JOURNAL, 1624 H St., N.W., Washington, D. C. $3.00 per year.

We are indebted to the Virginia State Police for the Safety Slogans used throughout this issue of THE 'AM.

"Wheel Pullers," Page 79, is extracted from a bulletin issued by the OWATONNA TOOL CO., Owatonna, Minn.

BRAKE INSPECTION SCHEDULE

Continued from page 74

e. Check braking effort between wheels on trailer axle. If necessary to make further examination or adjustments:

f. Remove wheels and examine magnet connections and face, bronze support bearings and lugs.

g. Examine armature, spring tension and support bolts.

h. Adjust armature depression.

i. Adjust brakes and again check braking effort.

Pending their issue as War Department Technical Manuals, the publications below can be obtained from The Editor, THE 'AM, Holabird Quartermaster Depot, Baltimore, Maryland, as follows:

T/M NUMBER	M.T.S. TEXT NO.		REMARKS
		BASIC MOTOR TRANSPORT SCHOOL TEXTS	
*10-510 (10/1/40)	1	THE MOTOR VEHICLE - (Automotive Nomenclature - Terminology Military Motor Vehicles - Vehicle Units and Assemblies).	1/1/41
*10-570 (2/4/41)	2	THE INTERNAL COMBUSTION ENGINE - (Principles of Operation - Types - Parts and their Functions, including Engine Lubrication and Cooling).	1/1/41
*10-550 (12/27/40)	3	FUELS AND CARBURETION - (Fuels - Fuel Systems - Physics of Carburetion - Principles - Types of carburetion - Intake and Exhaust P stems - Super-chargers and Governors.	8/31/40
*10-580 (1/29/41)	4	AUTOMOTIVE ELECTRICITY - Principles of Electricity and Magnetism - Storage Battery - Battery Ignition - Magneto Ignition - Starter and Generator - Lighting System - Horn - Electrical Accessories).	1/1/41
10-585	5	AUTOMOTIVE POWER TRANSMISSION UNITS - (Power Transmission - Clutches - Transmissions - Propeller Shafts and Universal Joints - Rear Axles).	1/1/41
10-560	6	CHASSIS, BODY AND TRAILER UNITS - Frames - Springs - Front Axles - Steering Gear - Wheel Alignment - Wheels, Rims and Tires).	2/15/41
*10-565 (3/8/41)	7	AUTOMOTIVE BRAKES - (Principles - Mechanical - Hydraulic - Air - Vacuum - Electric).	1/1/41
*10-540 (12/26/40)	10	LUBRICATION - (Principles and Practices).	9/30/40
*10-545 (12/30/40)	11	INSPECTION - (Command, Preventive and Technical).	9/30/40
10-590	12	HAND, MEASURING AND POWER TOOLS	2/1/41
10-530	13#	TUNE-UP AND ADJUSTMENT - (Trouble Shooting).	To be revised.
10-525	15	ECHELON SYSTEM OF MAINTENANCE - (Organizational and Service Maintenance).	2/1/41
10-505	16	MILITARY MOTOR TRANSPORTATION - (Organization - Principles - Supply & Maintenance). Section on "Principles of Operation"	Being revised. 9/30/40
10-555	21	SHOP SCIENCE - Arithmetic - Algebra - Geometry - Physics - Mechanics - Blue Print Reading - Metallurgy). *REVISED*	To be published about 6/30/41
10-360	22#	FIRE PREVENTION, SAFETY PRECAUTIONS, ACCIDENTS	To be published about 6/30/41
		SPECIAL MOTOR TRANSPORT SCHOOL TEXTS	
10-575	8#	DIESEL ENGINES AND FUELS - Principles of Operation - Types, including Semi-Diesel - Parts & their functions, including Lubrication and Cooling-Fuels & Fuel Systems).	To be published about 6/30/41
*10-515 (12/13/40)	9	THE MOTORCYCLE - (Nomenclature - Operations - Inspection - Maintenance - Driver Training)	Revised 9/30/40
		COURSE OF INSTRUCTION AND GUIDE IN MOTORCYCLE OPERATION (Supplement to Text No.9)	Published 6/1/41
10-520	14#	MAINTENANCE AND REPAIR - All Units and Assemblies of the Motor Vehicle)	To be revised
10-440	17	THE BLACKSMITH AND THE WELDER *REVISED*	To be published about 6/30/41
10-450	18	THE RADIATOR REPAIRER AND THE SHEET METAL WORKER	Being revised
10-445	19	THE MACHINIST *REVISED*	To be published about 6/30/41
10-455	20	THE BODY FINISHER - (Carpenter - Upholsterer - Painter).	Being revised
		SUPPLEMENTARY INSTRUCTIONAL MATERIAL	
		MOTOR REPAIR SHOP MANUAL, OQMG	2/1/41
		MOTOR TRANSPORT SUPPLY, OQMG	3/25/41
		TENTATIVE GUIDE AND REFERENCE FOR QMC LIGHT MAINT. UNITS (MOTOR TRANSPORT) OQMG	1/1/41
		TABLES OF ORGANIZATION AND FUNCTIONAL CHARTS, MOTOR TRANSPORT SERVICE	3/15/41
		TROOP SCHOOL PROBLEMS, ARMY EXTENSION COURSE:-	1/1/41
		(1) Organization of a Truck Company, Triangular Division;	
		(2) Training and Operations, QMC Truck Company;	
		(3) Truck Transportation of Supplies	
		(4) Troop Movement by Truck.	

Not available for issue.

* Date following T/M No. indicates publication as a War Department Technical Manual.

Holabird Quartermaster Depot, Baltimore, Maryland

May 15, 1941

Motor Transport School texts are furnished on the basis of three sets per organization or per headquarters; and other material on the basis of one each per military unit. Requests for quantities in excess of these amounts should be explained in detail.


Accidents
YOUR WORST ENEMY