

Capt. Drew.

The 'A M M ARMY MOTORS



VOLUME I

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HOLABIRD QUARTERMASTER DEPOT
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THE 'AM



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Training men for the Army presents some peculiar problems, regardless of whether the men are being trained as aerial photographers, truck drivers or veterinarian assistants. The problems are these: trying to find square pegs that will fit into square holes; or, when that seems impossible, trying to train square pegs to go into round holes.

By the square-peg-square-hole we mean having a definite position that requires the services of a capable man and not having anyone to fill it. To solve this problem means finding, in a mass of recruits, a likely prospect, discovering whether he's had any experience, and then putting him to work and teaching him to adapt the elastic habits he has acquired in civilian life to the more rigid and standardized military routine. Of course, this solution to the training problem presumes a trained recruit with a mind flexible enough to grasp, remember and apply the important differences between civilian and military practices, and an instructor who knows, and is qualified to teach the recruit what to remember and how to apply it.

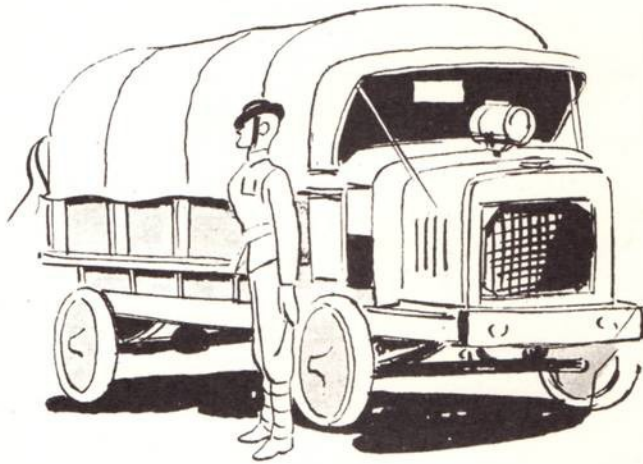
Time, or unfortunately the lack of time, is the factor that frequently prevents the ideal

solution; too often the problem becomes one of fitting the square peg to the round hole. Often it seems that the easiest solution for training of military motor personnel is to line the recruits up and say, "All even numbers are drivers and all odd numbers are mechanics. Now get to work!" and the devil take the hindmost. The men have been told "what" to do, but "how" are they going to do it? Half an hour at the beginning, telling how, will often save an hour's woe at the end.

Frequently the first job given a recruit in the Army is the first job he's had, be it punching a typewriter or changing a tire. His blank record complicates training still more, for those responsible for his training have no idea of his capabilities, and the recruit himself has no very clear idea of his desires, his adaptability or his inclinations.

How to solve all these training problems is beyond the province of THE 'AM. However, we've tried in this month's issue to give some guides that may prove of use not only in training the influx of recruits that are coming into the Army, but in showing them what the jobs are and how to tackle them. From there, it's up to the instructors and students.

THE *Old Timer's* WAR EXPERIENCES



"It was a truck drivers' war, all right."

"This here is sure a truck drivers' war," remarked Mike, the swamper on Joe Mullin's truck, as he looked up from the picture section of the evening paper. "Every picture you see is jam full of trucks, tractors, tanks and other dingbats that takes hack hands to run 'em. Betcha the reason Germany's won so far is they got a lot of good juice jockeys somewhere."

The Old Timer opened a sleepy eye. It was a hot night, and as we were waiting the signal to pack the bats and get out, nobody felt like any heated debate, and the conversation was dull. The Old Timer had been asleep, so far as any of us could tell.

He hunched himself up, and leaned his favorite chair forward so it stood on all four legs. Nobody said anything. Seeing he had plenty of time, and no competition, the Old Timer filled his

pipe with lots of deliberation, and warmed it up. After it was going good, he took it out of his mouth, waved it in the air, and said, "So was the last war, only the brass hats didn't know it."

"What d'ye mean?" said Mullin with as much heat as the weather allowed. "If that was a truck drivers' war, how come I wore my legs off to the knees trapesin' to hell and gone all over France and back again when the generals couldn't make up their minds where they wanted to have the next battle. If that was a drivers' war, there sure was a lot of walkin' to it."

"You infantry punks wouldn't know about it," withered the Old Timer. "You thought you was the flower of the army, when anybody knows that the infantry is just to carry things they don't want to send by truck. 'Sherman's mules' they called 'em in the Civil War. And that's

what they are. Wouldn't be surprised if in our new army we're fixin' up, each infantryman would have to carry a concrete block in his pack, along with the other junk, so when they stop at night they can fortify the camp. Those ancient Roman soldiers often carried two posts apiece in the march, and they made a stockade of 'em at night."

This insult to the infantry was properly resented by Mullin, who offered to take on the Old Timer and any three of his friends at once. We calmed him down and waited to see if the Old Timer had a yarn in his system. He had.

"It was a truck drivers' war, all right," he went on after calm had been restored. "Because everything the army used, from staff officers' bed socks to all the millions of tons of assorted hardware that got tossed at the Boch had to be rid in trucks at some time in its career.

"Were you in the motor transport?" asked one of the newer drivers who didn't know that the Old Timer has been in everything since the Spanish War.

"What do you think?" snorted the Old Timer. "You don't think I'd walk to any war, do you?"

Nobody answered, so he went on. "Of course I was in the Motor Transport, and I had some drivin' to do that would turn some of you kids' hair white. That's where any selfrespecting, patriotic hack hand would be, of course. I served my country in the place most important in winning the war."

"What kind of a growler did you drive?" asked Mullin, apparently content to listen.

"One of them blankety-blank quads-- the most cussed temperamental hacks that



"There wasn't a corner in northern France that didn't have a gouge out of it."

"Every ounce of food you bunion pounders ate, every doflicker and whammet that a modern army has to have, or some fool supply officer thinks it ought to have, had to go by truck. If the motor transport division had stopped for just one day, the Germans would have got to Paris about 22 years before they did, and the infantry wouldn't have had anything but bare fists to stop 'em."

was ever spawned by some lily-handed drafting room prima donna who never spun a thumb buster. I used to pray that a Boche shell would get it and blow it back to the devil that inspired it. But it had a charmed life. When the armistice was signed that old concrete mixer was still scaring the birds off their nests just about as serviceable as when it came off the production line.

"These babies drove and steered on all four wheels. When you turned the steering wheel right, for example, the front wheels turned right, and the back wheels left. Somebody's bright idea. Of course, the back turned a lot quicker than you expected, if you weren't used to it, and while you'd miss what you turned away from alright, you'd likely hit something on the other side. I'll bet there wasn't a corner of any kind in northern France that didn't have a gouge out of it from them trucks goin' around the corner too soon. And as for England, where you had to drive on the left side of the road, the wreckage was worse than from a blitzkrieg.

"Also, if you forgot and parked one up against a high curb, or a wall, you were sunk. No matter which way you turned the wheels, one end of that hack headed into the wall. You were there for the duration, or until another truck came along and pulled you out."

"Ever under fire?" asked Mullin.

"Of course, up in the Somme sector I had a run where one angle on the road had a whole Boche battery reserved for its special benefit. They had the range so accurate they could snip the top crate off a load without bustin' the truck if they wanted to. We used to chase trucks through there two at a time, hell bent for election. We'd get one pair through, then wait for the shell. After it came we'd try another pair. Two pair was the best we could do. After that we'd have to wait until the jerries got tired throwin' pig iron.

"But the main trouble with juice jockeyin' wasn't bullets or shell. Those are part of any war. The big headache of all time was from the fact that stocks of repair parts was figured for peace time. Nobody thought of the fact that wars knock hell out of equipment, and they use up parts like the

Germans use bombs. Every time a truck got busted up beyond repair, there was a general cheer, and a rush for parts left. In a few minutes the hack would be picked clean as a dead horse at a turkey buzzard convention.

"If you left your truck for as much as ten minutes, it would be a ruin when you got back. Not only tires, but everything else that could be unscrewed, or pounded loose would be gone. Many a time I've seen a truck that had been gone over, and there wouldn't be anything left but the motor block and chassis. They'd do it in a few minutes, too. The A.E.F. developed some of the most enterprising, fast working thieves the world ever saw. If any of them babies ever took up hill snatching as a profession, drivers nowadays would be lucky if they brought the trucks in, let alone the load.

"You never could get repair parts unless you stole 'em. You could requisition until you got writer's cramp, and nothing ever happened.

"The choicest language I ever heard in my life, and I've heard some good stuff, was one day when the skipper was notified that there was some 'maintenance supplies' back at the rail head. We went down and pried open the dinky little French freight car, and what do you suppose it was full of--believe it or not, that car was loaded to the eaves with body polish--something we had just as much use for as chair tidies. For months the skipper had been pleading for all kinds of repair parts up to and including replacement engines and they sent him body polish. He sat down on the ground and didn't say a word for three full minutes. The silence was like that just before a rip snorter thunder storm busts loose. Then he started. He began in a low earnest tone like an opera singer about to die for

his love. He worked up to a climax that blistered what was left of the paint on all the trucks in the park. It was magnificent.

"We got fixed up the day after that, though. That was the day for you. I'll never forget it. We worked like demons all day, or rather all night, and were happy as kids at Christmas over it.

I'll lam him in the jug long enough so he'll learn not to be so clumsy. The skipper is going out of camp overnight. I'm all wore out, and don't want my sleep disturbed by any hue and cry over stolen stuff.

"We could see by lookin' at Frank that that was what he had in mind. The



"I want it understood there is to be no monkey business in this outfit."

"It was just about dusk of an evening, when Frank Carter, (some of you know Frank, he's still drivin' in a fleet in the East)," there were nods,..."
 "Frank Carter came running into camp all excited and signalled the boys to gather around. We assembled, and Frank was just about to spill what was on his mind when we saw the top kick comin' with that look on his face he used when he wanted extra details. We started to scatter, but he called us back, and looked at us severely. He said, If this conference is about that new outfit parked about a mile east of here, and which hasn't sense enough to post a guard over its trucks, I want it understood there is to be no monkey business in this outfit. The commanding officer of this here outfit won't stand for any rough stuff. If any of you gets caught! (and he bore down on the word caught) stealin' anything,

top kick signalled me to go into the orderly room. When he got inside he said, 'The skipper needs a new pair of boots awful bad. If you found a pair around somewhere, size eight, you could leave 'em here, and he'd be very grateful. Also, I could use a new overcoat if you ran into one. Furthermore, I heard the other day of an outfit that was so low down and clumsy they stole a whole truck. It made an awful stink because they traced it by the serial numbers. It got 'em into a jam. Just parts wouldn't have been so troublesome!'

"Our directions were now as clear as if they had been done up in general orders—a lot clearer than most general orders I've seen. So I passed the word around.

"After supper we went over to visit

the new outfit as a friendly act to welcome them to the war, and also to spot the stuff we needed. There was other prospective thieves nosing around too, and we could see that we would have to work fast if we wanted to do any effective work. The new outfit had just come in, and were pretty well tuckered; they'd been cleaning up the trucks all day, and they were shiny as circus wagons.

"When we got back to our camp just before taps, I called a caucus meeting to get the raid organized. They were all rarin' to go but worried about the other outfits that had been buzzin' around. We finally decided to split into two gangs. One would do the heavy liftin', and the other--made up of the toughest fighters--would throw a cordon around the park to ward off interference.

"We even fixed up a pass word, so the scrappers wouldn't work on our own crowd. Right after taps the top kick did bed check himself. Everybody was in. He went on and turned in himself, and snored so loud we could hear him to the last billet. The fighters turned out and took up position first. After a half an hour, to give the newcomers chance to get to sleep, the rest of us got going. As we passed the fighter cordon they told us to hurry, as they were already having to drop scattered groups of earnest workers from elsewhere. Most of 'em had a skinned knuckle or two as early as that.

"We went on in and got to work. Not

only were there trucks and parts in plenty, but also a supply dump with clothes and things. We all got new outfits, and I found a swell pair of boots for the captain, and a dandy overcoat for the top kick.

"When we got through those trucks looked like they'd been through an air raid. There wasn't anything movable left on them. We stole so much we had a tough time hiding it all. One of the drivers even managed to get off with a couple of engines we needed. One of our mechanics had been in the auto stealing trade before the war, and knew how to fix up serial numbers. We rolled the engines home on wheeler jacks.

"The next afternoon after we had everything out of sight, the top kick called us into formation. After we were lined up, the skipper marched out and made us a speech. He told us very severely that there had been a raid on the neighboring outfit--that it wasn't patriotic or soldierly to do such things, and he was going to question us one at a time, and he wanted a straightforward, honest answer, as to whether we had stolen anything. He was solemn and serious as a hanging judge about it--went down the line, asked each man. Each man gravely answered no, he wouldn't think of such a thing.

"And all the time he was doin' it, the shiny new boots the skipper was wearin' were flashing in the sun. They were good boots--I had picked out the best for him."



DEMOUNTING and MOUNTING TRUCK TIRES ON SEMI-DROP CENTER RIMS

The semi-drop center RHP and LTS rims used on certain light trucks were designed to replace the full drop center rim to meet the requirements of certain tires with heavy bead construction and less pliability.

Such tires cannot be removed from or applied to semi-drop center rims in the same manner as truck tires are applied or removed from truck rims which have a flat base construction. The slight drop center feature of the drop center rim must be utilized. If an operator of a light truck is not familiar with the following details, he is likely to injure the bead in demounting or mounting a tire.

DEMOUNTING



This is the RHP rim; it has a continuous side ring

Type RHP—First remove valve core to completely deflate. Place tire and wheel on floor with side ring up. To loosen first bead, start at notch, inserting side ring tool with curved edge upward. Pry side ring down, progressing around entire circumference, forcing tire bead inward on tapered bead seat to a point where tension is released. Pry out and up on side ring, carefully but firmly. (Be careful not to bend side ring.)



This is the LTS rim; it has a split side ring

Type LTS—First remove valve core to completely deflate. With a tire iron, work both beads loose from bead seats. Place tire and wheel on floor with side ring up. To remove side ring, insert tool into breaking notch and pry ring up out of gutter.



Type RHP—Turn tire over and by means of tire tool loosen bead on opposite bead seat. This can be further aided by using foot pressure. Apply vegetable oil soap or paraffin to both beads—but never oil. Then turn tire back to original position as shown above. Force part of top bead into rim well and directly opposite this point start to remove bead with tire tool. Continue in short, progressive steps until top bead is free.



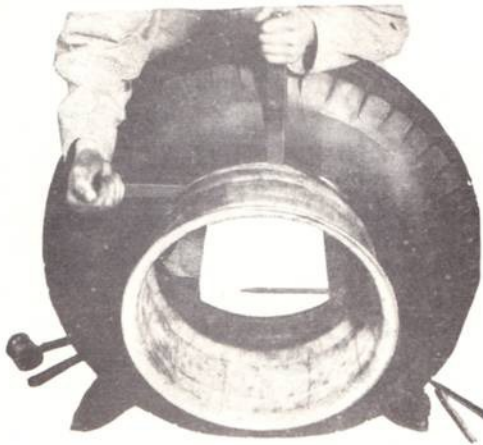
Type LTS—To complete removal of side ring draw upward by hand slowly until completely dislodged from base. Soap the beads and gutter of the rim, making sure the solution works well under both beads.



Types RHP and LTS—Push valve into tire and slightly shift tire and tube assembly on rim to keep valve away from valve hole. Stand or kneel on one side of tire, forcing upper bead into the well of the rim. Hold this position and insert the nose of a thin bladed tire tool under upper bead at a point opposite and pry bead over edge of rim. Then using a second similar tire tool, work the entire upper bead off the rim.



Types RHP and LTS—Before demounting the second bead remove the tube. Then stand the assembly upright and re-soap the second bead if necessary. With the solid rim flange side away from you, work the second bead entirely free from the bead ledge and across the rim face to a point adjacent to, but not in contact with, opposite bead ledge.



Types RHP and LTS—Make sure lower portion of second bead is still in the rim well, then pry upper portion of bead over edge of rim. This will free the tire from the rim. This procedure applies to tires either with or without flaps.



MOUNTING

After properly assembling tire, tube and flap, lubricate tire beads and rim with vegetable oil soap or paraffin—but never oil. Inflate until tube is barely rounded out. Caution: Too much air will make mounting difficult.

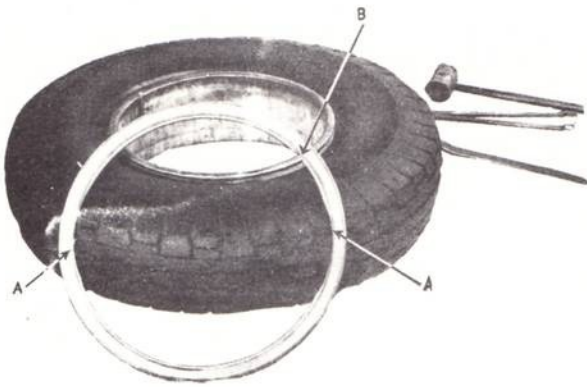
Types RHP and LTS—Place tire in such position that the valve is in line with valve hole in rim and insert valve through valve hole. Force first bead down into well of rim with aid of standard tire tools, progressing from each side of valve to a point approximately opposite valve. (Do not use tools longer than 16" in length. Longer tools may kink or break bead wires.)



Types RHP and LTS—Force remaining part of bead over rim by tapping lightly on bead toe with round or flat end of tool. (Pointed tool must not be used in this operation, as injury to bead toe will result.)



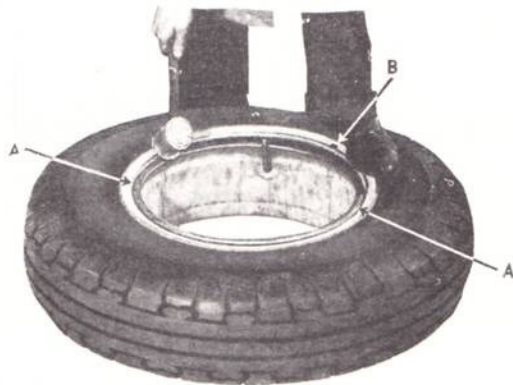
Types RHP and LTS—To apply second bead, start at point opposite valve and press bead toe over rim gutter and into rim well with knee pressure. Mount remainder of bead by means of standard tire tools. (See that bead fully clears rim gutter all around.)



Type RHP side ring application—Note that inner circumference of side ring is cut away for a short space at opposite points (at "A" and "A") to allow side ring to span rim gutter, and also has a prying notch (at "B").

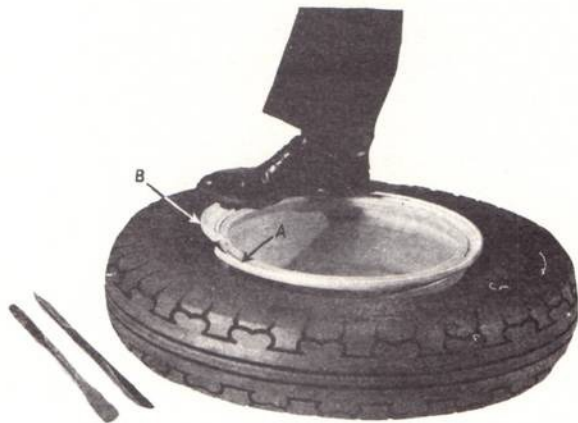


Type LTS side ring application—Place end "A" of ring in gutter of rim base.



Type RHP—Place half of side ring in rim gutter with cut-away portions in position as shown. Work other half of ring into place by striking side ring with mallet where it contacts outside of rim gutter, applying foot pressure on opposite side of side ring to prevent jumping out of place. (Use lead or wooden hammer, or place piece of wood on side ring if steel hammer is used.) Work by degrees away from starting point until side ring snaps into place.

Before inflating, be sure to properly adjust and center valve and side ring. When tire is partially inflated, it is good practice to tap side ring to insure that it is properly seated. Inflate to recommended pressure, making sure beads move into correct position on bead ledges so tube will not be damaged.



Type LTS—To complete application press remainder of side ring into place until end "B" is properly seated. Make sure valve is straight with valve hole and will not be twisted when inflated. Inflate, making sure beads move into correct position on bead ledges so tube will not be damaged.

HERE'S HOW

Military personnel who operate and maintain military motor vehicles are sometimes at a loss to know just what authority or reference to consult for details of their assignment. If you know where to look for what, it'll save a lot of time and woe. THE 'AM hopes to cover here the most important references. You'll probably find it convenient to keep this issue handy to cure that "lost" feeling that comes when you have a job to do and don't know how to do it or where to find the dope.

Reports and Blank Forms.- It's sad to think you can't run an army without forms, but since you apparently can't, it's a good idea for an operations or maintenance officer to secure the blank forms required for the operation of his office before he starts operating it. Necessary forms may be found in circular 1-17, OQMG, which also lists the reports on motor transportation and when they're due. AR 850-15 also covers the forms and reports required, but in a less general manner.

Motor Transportation - General.- The general policy of military motor transportation will be found in AR 850-15, which covers terminology, procurement, operation and the echelons of maintenance; while the outline for operations is in AR 30-1075. Circular 1-10, OQMG, enlarges on some of the data furnished by these regulations, giving the classification of motor vehicles and the economic repair limit; instructions for disposing of obsolete and unserviceable motor vehicles and other motor transport

equipment; motor vehicle service record, form QMC 248; statement of allotments and expenditures for regular army motor vehicles; estimates for gasoline and lubricants for administrative motor vehicles; cost and production reports; and allocation of repair jobs to the echelons of maintenance. Field Manual 25-10 may also be consulted in connection with the maintenance and operation of motor vehicles. It covers driver instruction and maintenance; types and technique of marches, traffic control, logistics, pioneer work and field expedients, military automotive maintenance, lubrication, inspection, records and repairs; and loading for movement by rail or water. Special Text No. 99 of the Army Extension School is another very good text which covers operations and the 1st and 2nd echelons of maintenance thoroughly.

Procurement of Motor Vehicle Supplies.- The 5 series of Army Regulations and Circulars 1-3 and 1-4, OQMG, cover the procurement of parts, tools, gasoline, oils and greases.

Storage of Motor Vehicles and Supplies.- AR 30-1055, AR 700-10 and Circular 1-5, OQMG, cover this subject in general.

Tables of Organization.- The following Tables of Organization cover in general the personnel and authorized allowances of motor vehicles and small arms:

10-25	QM Bn., Light Maintenance
10-27	QM Co. or Troop, Light Maintenance
10-41	QM Regt., Heavy Maintenance
10-45	QM Bn., Heavy Maintenance
10-47	QM Co., Heavy Maintenance
10-48	QM Co., Depot (Motor Transport)
10-51	QM Regiment, Truck
10-55	QM Battalion, Truck
10-57	QM Company or Troop, Truck
10-61	QM Regiment, Service (Labor Unit)
10-65	QM Battalion, Service (Labor Unit)
10-67	QM Company, Service (Labor Unit)
10-75	QM Battalion, Gasoline Supply
10-77	QM Company, Gasoline Supply
10-87	QM Company, Car
10-500-1	Headquarters, Motor Transport Service
10-500-2	Hq. Company, Motor Transport Service

Table of Allowances.- Tables of Basic Allowances describe the authorized allowances of equipment for units and individuals, except the equipment required for temporary use for special purposes.

These various allowance tables describe in general the allowances of equipment for posts, camps and stations. The equipment listed in Tables of Equipment, Posts, Camps and Stations, is not ordinarily taken with the unit into the field but is generally held on memorandum receipt from the post or station quartermaster. Circular 4, OQMG, contains descriptions of tool kits and their component parts authorized for issue in Tables of Allowances and Basic Allowances but only entered therein as single units.

AR 730-10 contains the allowances of

gasoline, oil and greases for motor vehicles and equipment when used for training purposes. It also details the method of computing allowances for motor vehicles and equipment.

Fire Trucks and Ambulances.- The general conditions governing the operation, control and maintenance of these vehicles are covered in AR 30-1580 for fire trucks, and AR 40-75 for ambulances.

Marking of Motor Vehicles.- Painting and stencilling of motor vehicles or otherwise marking for unit or branch identification is standardized, and outlined in AR 850-5.

Registration and Inventory of Motor Vehicles by types and classes is covered by AR 850-10.

Accounting for Motor Vehicles, Parts and Supplies.- The methods and procedure involved in accounting for property, are covered by:

AR 35-6520	Responsibility and Accountability.
AR 35-6540	Requisitions.
Cir.1-8 OQMG	Requisitions.
AR 35-6560	Receipt, Shipment and Issue.
AR 35-6620	Expendable Supplies
Cir. 1-5 OQMG	Motor Vehicle Parts
Paragraph 18	and Tools of a Value not exceeding \$10.00.
AR 35-6640	Lost, Destroyed or damaged property.
AR 20-35	Inspection for Disposition.
Cir.1-8 OQMG	Classification of Unserviceable Parts
AR 35-6680	Change of Accountability.
AR 35-6700 and	Accounting Records
Paragraph 18,	
Cir.1-5 OQMG	
AR 35-6720	Blank Forms used for property accounting.

Salvage.- Methods of turning property over to salvage; classification and segregation; methods of disposing, including by sale:

AR 30-2145, Circular 1-8 OQMG
AR 35-6640, AR 20-35.

Agent Finance Officers.- When an operating or maintenance organization goes into the field and does not have the services of an Agent Finance Officer, the Commanding Officer will appoint an Agent Officer for this purpose, who will be guided in his duties by AR 35-220, 35-320, 35-840 and in the preparation of vouchers by AR 35-1040.

Camp Sites and Rations.- The method of renting camp sites and procuring supplies and services, while on convoy or in the field, is covered in AR 35-6300. For the procurement or local purchase of rations see AR 30-2210.

Personnel Records, Military.- The personnel records normally used for the administration of military personnel is covered in the AR 345 series.

Components of Kits, Tool Sets and their spare parts and accessories as authorized by Tables of Allowances and Basic Allowances are covered in general by Circular 4, OQMG, and also in part by The Motor Transport Technical Service Bulletins.

Claims and "demands for payment... which do not arise under the ordinary operations entered into by the War Department or its purchasing agents in the procurement of services or supplies" are covered by AR-7000 series. In particular, these cover claims arising as a result of motor vehicle accidents.

Organizing A Quartermaster Truck Company.- Triangular division;
Training and Operations.- Quartermaster truck company;

Truck Transportation Of Supplies; Troop Movement By Trucks: These subjects are covered in the first four of the 1940-1941 series of group training problems issued by the Army Extension School as "Troop School Problems" Nos. 1, 2, 3 and 4. Each problem gives the requirements, an approved solution to each requirement and comments on the solutions.

Motor Transport School Texts.- A list of these texts was published on the last page of the October 'AM. One set will be supplied upon official request to the Editor, The 'AM, The Quartermaster Motor Transport School, Holabird Quartermaster Depot, Baltimore, Maryland. Requests for additional sets must be approved by The Quartermaster General, Washington, D. C.

Motor Transport Technical Service Bulletins.- These bulletins, which are revised and added to when necessary, give special details and technical information on the care, maintenance and repair of army motor vehicles. They are distributed to all military and civilian personnel engaged in the maintenance and operation of army motor vehicles either for guides or for training.

Field Operations.- FM 25-10, FM 101-5 and 101-10 which are the Staff Officers' Field Manuals, cover staff and combat orders; and organization, technical and logistical data.

Motor Repair Shop Regulations and Records 1940 gives the general provision; organization and management of plant; cost and property accounting; the use and purpose of blank forms and sample forms; echelon maintenance plan; and shop machinery equipment, tools and layout.

Index of Army Regulations by subject is given in AR 1-5.

Index Of Army Regulations by numbers, titles and current changes is given in AR 1-10.



The many letters received by the Motor Transport School certainly indicate that the Army is rapidly becoming "motor conscious", and at the same time almost "motor unconscious", in trying to solve the problem quickly. Apparently the crying need is for a general motor transport training program that is not confined to any particular type, make, or model of vehicle.

THE 'AM gives below a discussion of training from the operations and maintenance point of view. The first will be covered in this issue, and the subject of training for maintenance in the December 'AM.

Motor transport training naturally divides itself into three phases:

ADMINISTRATION

which includes a knowledge of the regu-

lations and forms in dealing with the procurement, storage, issue and distribution of parts; and the administration of specific motor transport details;

OPERATION

which involves the actual driving and knowledge of traffic rules and safety regulations, and the care of the vehicle and its equipment;

MAINTENANCE

which includes the driver inspection and maintenance as a part of the 1st echelon duties; inspection, minor repairs and adjustments made by the company, battery, troop, or other organization mechanics of the 2nd echelon; and the 3rd and 4th echelon work by Quartermaster and Ordnance maintenance organizations who perform unit replace-

ment, major repairs, general overhauls and the technical inspections required every 6,000 miles or six months of operation.

THE DRIVER'S TRAINING

The driver's training is normally limited to a knowledge of the specific make, model, or type of vehicle to which he may be assigned; however, it doesn't do any harm to learn the details of different vehicles.

2nd ECHELON MECHANICS

are also relatively limited by the authorized tools and shop equipment, by the time available for repair and maintenance work and by the stock of spare parts available.

THE 3rd ECHELON MECHANIC

requires a knowledge of a great number of different makes and models of vehicles, and his work is limited to unit replacement, tune-up and trouble shooting; however, under certain conditions, a 3rd echelon maintenance unit and its mechanics may be required to make major repairs.

THE 4th ECHELON

is practically unlimited in the work it does. It usually operates a fixed shop and has a great variety of heavy machinery and specialized equipment. Its mechanics are usually specialists who have a broad and detailed knowledge of motor repair work.

SELECTION OF DRIVERS

It's a far cry from the laboring, two lunged putt-putt of the old days to the slick, powerful, stream lined engine that rolls the convoys down the highways and across country. With its great power, with the strong forces exerted,

and with its capacity for high speed, the modern motor vehicle in the hands of the unskilled and untrained, or otherwise unfit driver, becomes a potential instrument of great destruction and an uncertain tool for accomplishment of work. For this reason, care should be used in the initial selection of candidates for driving instruction.

QUALIFICATIONS

Civilian test on a 12.3 mile run in down town Detroit showed that a passenger vehicle operator used his clutch 209 times and shifted gears 146 times, which is an average clutch operation of 17 times a mile in city traffic. All this gear shifting and foot pumping requires considerable physical effort and drivers must be of good physique to "take it". They should have exceptionally good eyesight. If glasses are required to correct eyesight for driving, War Department QMC Form No. 228, "U.S. Army Motor Vehicle Operator's Permit", should show "NOT VALID - unless holder wears glasses". Individuals having poor (or slow) time reaction in meeting road emergencies, or who show definite signs of inaptitude, or who lack ability to profit by instruction, should be eliminated as candidates for driving licenses. Candidates having an excessively large number of motor vehicle accidents or narrow escapes from accidents should be considered as "accident prone" and not qualified.

In an emergency, when the need for drivers is great, tentative selection of those with previous experience should be made. They can be quickly trained and, in turn, used to help in the development of others. To attain the ultimate goal, *i.e.*, the creation of motor transport units able to successfully carry out the assigned tasks without being a highway menace or a hindrance to other movements on the highway, it is important that driver training be methodical and standardized.

The training schedule for motor vehicle operators and the supervisory personnel should include conferences, lectures, demonstrations and practical exercise or work. The individual training should be terminated by a careful qualification examination.

TRAINING OUTLINE

The following briefly outlines the subjects to be covered in any program for the training of drivers. It may be changed slightly to meet local conditions and the amount of time devoted to each subject, naturally, must be adjusted to coincide with the available time. The following texts will prove useful reference and instruction material: FM 25-10; AR 850-15; AR 850-20; AR 35-7000 series; QMMTS Text Nos. 1 and 16; Special Text No. 99, Army Extension Course; and Local Fire Orders:

PERSONNEL AND THEIR GENERAL DUTIES

2 hours

FIRE PREVENTION

1 hour

ACCIDENTS

1 hour

MOTOR VEHICLE NOMENCLATURE, USE AND CHARACTERISTICS

1 hour

VEHICLE CONTROLS

Steering, brakes, spark, ignition, gear-shift and others. 1 hour.

DRIVING POSITION

(Engine Not Running) 1 hour.

DRIVING OPERATIONS

(Vehicle Jacked Up and Blocked. All Wheels Off the Ground) 2 hours.

RECORDS AND FORMS

Trip tickets, accident reports, daily operation records. 1 hour.

PRACTICAL VEHICLE OPERATION

Starting and stopping vehicle. 3 hours.

VEHICLE OPERATIONS

(Level Ground) 5 hours.

VEHICLE OPERATIONS

(On Grade) 3 hours.

VEHICLE OPERATIONS

Moving forward, back and turning - narrow spaces - designated halts. 5 hours.

VEHICLE OPERATIONS

Arm signals - inspections - loading and unloading. 3 hours.

VEHICLE OPERATIONS

Practice needed to give students confidence. 15 hours.

ROAD RULES AND TRAFFIC REGULATIONS

2 hours

DRIVING WITH TRAILERS,

Including Changes of Direction and Backing. 2 hours.

AIDS IN DRIVING

Skids, "clutch riding", use of engine as brake, and similar practices. 1 hour.

CONVOY FORMATION

(Day) 4 hours.

NIGHT DRIVING WITHOUT LIGHTS

4 hours

CONVOY FORMATION

All phases applicable to march movements - through congested areas, over country highways, day and night, with minimum time for halts, inspections and meals, simulating a forced march. 24 hours.

WRITTEN AND PRACTICAL EXAMINATION, and, after successful completion of final test, issuance of motor vehicle operator's permit to the individual. 2 hours.

MOTORCYCLE TRAINING

The motorcycle is perhaps the least understood and, for that reason, the most abused vehicle used in the military service. Efficient motorcycle operation, maintenance and servicing are only possible with well trained and disciplined motorcyclists. The training of the military motorcyclists should include the usual training given any other motor vehicle operator in rules of the road; safety and vehicle control under all conditions.

As a motorcyclist, the individual should be trained to know and appreciate the capabilities of the motorcycle; its nomenclature; the use of its controls; caretaking, servicing, lubricating, inspecting and 1st echelon maintenance of the motorcycle under all conditions.

As a motorcycle messenger, the individual should be trained in correctly receiving and transmitting verbal or written messages; the necessity of avoiding delays and for completing the assigned mission; and reading road maps.

As a motorcycle traffic policeman, the individual should be trained to be proficient in map reading; be able to recognize serious traffic blocks; be capable of anticipating, recognizing and taking protective measures against such hazards as march columns at railroad crossings, bad turns, sharp curves, dangerous intersections, bad detours, icy or slippery roads, steep grades, reckless driving, and heavy opposing traffic streams; be able to render first aid; and be cooperative and always keep traffic moving.

SCHEDULE

The training of a motorcyclist is based upon a course involving approximately fifty-four hours of instruction.

During each period, time should be spent in explaining the details of operation and the care and adjustment of various units using tools and actual practical experience needed by students to enable them to ride and to maintain their motorcycles in proper operating condition. The Quartermaster Motor Transport School Text No.9, "The Motorcycle", and the manufacturer's "Operations and Maintenance Manual", should be used as a source of instruction material.

THEORETICAL INSTRUCTION

MOTORCYCLE NOMENCLATURE

1 hour

USE, PURPOSE AND ADJUSTMENT OF CONTROLS

2 hours

INSPECTION

Daily and Periodical - 1 hour

MAINTENANCE

Servicing, adjustments, cleaning, lubrication, and daily care - 2 hours

USE AND PURPOSE OF MOTORCYCLE TOOLS

1 hour

ENGINE

Breaking in, starting and stopping, lubrication, principles of operation and adjustments - 2 hours

WHEELS AND BRAKES

Spokes, handlebar controls and adjustments - 2 hours

FIRST AID

2 hours

MAP READING

2 hours

MESSENGER AND COURIER SERVICE

1 hour

TRAFFIC CONTROL, REGULATIONS AND RULES
OF THE ROAD
2 hours

DRIVING INSTRUCTIONS

STARTING, STOPPING,
use of controls, shifting gears, driving
on turns - bounce - (1st speed only)
5 hours

DRIVING
The same as "Starting, Stopping", except
use of higher speeds - 2 hours

DRIVING
The same as "Starting, Stopping" and
"Driving", except adding decreasing
turning radius - 2 hours.

DRIVING
All grades, sharp turns, figure 8's and
in restricted areas - 3 hours

DRIVING
On good roads - 2 hours



The majority of occupational accidents involve both an unsafe and a mechanical or material cause, according to an analysis of 1,000 cases submitted by National Safety Council members and reported in the 1940 edition of "Accident Facts", published recently. An unsafe act was found in 87 percent of the cases reported, and a mechanical cause in 78 percent. Most of the unsafe acts were, in turn, it was found, based on some personal cause.

A hazardous arrangement or procedure was found in 34 percent of the accidents. Defective agencies were reported in 18 percent. Unsafe apparel was

DRIVING
On bad roads and cross country - 2 hours

PRACTICAL TRAINING

Including carrying of messages, traffic control, and convoy duty - 20 hours

MAINTENANCE

Training mechanics in motor maintenance largely depends on giving instructions in the basic principles and operating theories of the various units of the motor vehicle. This basic fundamental knowledge must be augmented by a large amount of practical experience covering every possible adjustment and by a knowledge of various clearances, tolerances and fits. The subject of maintenance training will be discussed in an article in the next 'AM.

listed for 15 percent, and improper guarding for 9 percent.

The most important unsafe act was unnecessary exposure to danger, which accounted for 26 percent of all cases. Improper use of tools or using unsafe tools was noted in 16 percent, non-use of safety devices in 15 percent and unsafe loading or arrangement in 10 percent of the accidents. Other unsafe acts appeared in 20 percent. Lack of knowledge or skill was the personal cause found in 48 percent of the accidents. Improper attitude was indicated in 31 percent, and bodily defects in 3 percent.



THE "GAS" ANALYZER

We haven't exactly been overwhelmed by your responses to the first contest - in fact we haven't been "gassed" at all. It may mean that you're not interested (hope not!) or that you're taking plenty of time to bone the replies and are going to come through with sparkling answers. However, we're not worrying about that just yet; the first contest doesn't close until January 1st, 1941, which leaves a good month and a half to get the replies in.

We're sorry it's such a long time between questions and answers, but we want everyone to have a chance of cracking these nuts, and mail from the Phillipines has a long way to come. After the December 15 issue, the question for the

new contest and the replies from an old will appear in the same copy.

By February of next year you should all have had opportunity of trying the new vehicles that are now coming into the army. So, for the next contest, we'd like to have your ideas on the new trucks. Are the engines powerful enough to pull them through? Is maintenance and lubrication too difficult? Do the pillars obstruct driver's vision? Are they too low for "gumbo" going? How do they handle? Go on from there and give us the dope on anything that appeals to you. The best answer will receive a year's subscription to THE 'AM; and the best questions sent in on any angle of army motor transportation will receive the same.

QUESTION NO. 2, NOVEMBER 15, 1940

The new vehicles for the fiscal year 1941. What do you think of them? Good? Bad? Indifferent?

RULES

1. The second contest will close February 1, 1941. The results, with the winning answers, will be published in THE 'AM for February 15, 1941.
2. The decision of the Editors will be final.
3. No replies will be acknowledged or returned.
4. Replies will be held confidential and published under a pen name if desired.

Notes



Here's what we think is a pretty complete engine tune-up procedure that may include some tips and methods you're not familiar with.

While the engine is at operating temperature:

Vacuum test to get quick check for clogged muffler, leaky gaskets, stuck valves, late valve timing, etc.

Run engine at about 20 or 25 m.p.h. road speed with set throttle and shut off ignition to check for preignition.

Compression test to find if valve job is necessary. An engine with uneven compression, burned or warped valves or blown head gaskets cannot be tuned to perform properly.

Put a tablespoon full of top cylinder oil in each plug hole and turn engine over several times to distribute to insure faster valve action.

Test battery with hydrometer and voltmeter.

Examine battery cables and clean terminals.

Test between battery and ground for shorts.

Clean and tighten battery cables to chassis connection.

Check voltage at starter switch and clean and tighten connections.

Check starter draw with current indicator gauge.

Check voltage at ammeter, ignition switch; check, clean and tighten connections.

Test coil with coil tester.

Check voltage at coil and clean and tighten connections.

Check voltage at distributor; check for shorts, clean and tighten connections.

Test condenser.

Check distributor pigtails for broken wire or shorts.

Remove distributor and mount in cam angle machine.

Check automatic advance and vacuum advance, distributor bearings, etc.

Check and adjust points; check cam angle and dwell.

Check rotor for leaks and short or cracked contacts.

Check distributor cap for cracks, leaks and burned contacts; clean out wire holes.

Check high tension cables for leaks.

Check heat range of plugs.

Test plugs under compression.

Clean and set plug gaps.

Set engine speed with R.P.M. Indicator.

Check and adjust timing with synchroscope vacuum gage or R.P.M. Indicator.

Clean fuel pump screen and bowl.

Test vacuum and pressure of fuel pump.

Check vacuum booster pump.

Tighten manifolds and carburetor flanges.

Clean air filter.

Check for full throttle opening.

Check choke operation.

Check and adjust carburetor with gas analyzer, also using vacuum gauge to check performance at this time.

Adjust fan belt.

Check generator and voltage regulator.

Check car for brake drag and clutch slip.

Road test the car.



REMOVING CYLINDER HEADS

Always be careful in removing cylinder heads. Carelessness may damage the machined surfaces and the block. If you are going to loosen the head by compression, remove all the stud nuts except the front and rear, which should be loosened or the whole head will be lifted off by compression when you use the crank or the starter.

INSTALLING CYLINDER HEADS

When installing a cylinder head, the importance of using a new head gasket cannot be over-emphasized. If you want to properly align the cylinder head to the cylinder block and keep the head in place and free from damage, it's a good idea to use two guide pins. The guide pins screw into the cylinder block, one at each end, and guide the head into the proper position.

DIGESTS-AND COMMENTS-OF CURRENT TECHNICAL MAGAZINES

BUS TRANSPORTATION October 1940

"How To Stop Braking Troubles". The second installment of a "sure cure" for braking ills.

"The Stockroom". The First Line Of Defense Against Delays. A store-

keeper tells what goes on in back among the shelves and bins.

"Carburetors". The first part of what looks like a comprehensive story on carburetion.

COMMERCIAL CAR JOURNAL October 1940

"CCJ Quiz". This one is all about the army and its trucks. It should be right down your alley, but you'd be surprised how many mistakes you'll make. Try it and see.

"Tiremen Trim Truck Sizes". Big changes are taking place in truck tires. The complex sizes and types are being simplified by eliminating tires that are practically duplicates, although masquerading under different markings. This gives you the dope on the passing of the high pressure tires.

"Balancing Brakes By Analysis". 70 to 90 percent of all air brake stops are made with 4 to 25 pounds of air. Here's how to make more and better stops in the low pressure range.

"Looking At Oil Through Specs". Some of you know nothing about oil specifications, others know a little and might like to know more. The specifications are easy to understand when you know how they are determined and what they are meant to convey.

FLEET OWNER October 1940

"Avoid Over-inflation". The evils of under-inflation have been pointed out many times, but over-inflation is equally bad for truck tires. There has been

a gradual swing from high pressure to balloons, but too many people are continuing to use high pressure inflations on low pressure balloon tires.

MOTOR AGE
October 1940

"Winter Service For The Cooling System". This article treats all phases of preparing the cooling system for winter driving.

"Private Life Of A Bad Brake". The inside story of what may be happening to the shoes and drums when you tackle one of those "hard to adjust" brake jobs.

"Mechanical Changes On The 1941 Cars". With illustrations and captions, this presents the major mechanical changes and new features on the 1941 models.

"Ounces Count In Wheel Balancing". Unbalanced wheels cause many tire and steering troubles. This article gives the fundamentals of wheel balancing and emphasizes the necessity of balancing wheels both statically and dynamically.

"Rayon In Tires". Herein is discussed one of the latest developments in the use of rayon cord in the manufacture of tires.

"Paint Masking Secrets--Unmasked". When touching up or completely spray painting a car, one of the preliminary jobs is masking. This illustrated study gives the details.

"Carburetor Tune-up". Another in the series of step-by-step pictorial studies giving the exact procedure for servicing the Stromberg AAV-2 carburetor.

"Universal Joint Overhaul". This gives detailed instruction for overhauling the Chevrolet universal joint.

"Care Of The Battery". Here's a picture story about what happens to a battery through neglect and abuse.

MOTOR SERVICE
October 1940

"Market Analysis". This gives the total estimated service jobs for 1940, broken down into units and assemblies. It's interesting because it gives you an idea of how much of what type of work you will probably be doing.

"Checking The Water Pump". This article gives detailed instructions for servicing water pumps on the Chevrolet, Ford and Plymouth.

"The Sisson Automatic Choke". Detailed servicing for the choke used on practically all current Chrysler

Corporation vehicles. An electro magnet and a thermostat automatically set the carburetor choke valve to meet all operating conditions.

"Adjusting Ford Truck Hand Brake".

"Shop Kinks" on a quick connection for emergency battery charging; eliminating steering wheel squeaks; removing Plymouth radiators; and an emergency gas supply.

"Fluid Capacity of Hydraulic Brake System". Capacities for the 1936 through 1940 passenger cars.

INDEX - APRIL 15 - SEPTEMBER 15, 1940

The following index, covering the first six issues, Volume 1, of THE 'AM, is given you with the hope that it will increase the value of THE 'AM by providing a quick method of finding useful information.

The articles have been indexed by the pertinent word of the subject. Cylinder head carbon, for example, appears under CARBON; torque indicating wrenches under WRENCHES, torque indicating.

The Editor will be grateful for notice of any errors that may be found.



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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 NECESSARILY MANY ARTICLES THAT COULD NOT BE USED, BUT IT IS HOPED THAT THOSE PUBLISHED HERE WILL STIMULATE INTEREST IN THE SOURCE MATERIAL.

"The Old Timer's War Experiences", page 182, was taken from "The Old Timer's War Experiences"--TIMKEN AXLE NEWS, Volume 8, No. 4. The Timken Detroit Axle Company, Detroit, Mich.

"Demounting and Mounting Truck Tires", page 191, was taken from SERVICE BULLETIN #14--The Rubber Manufacturers Association, Inc., 444 Madison Avenue, New York, New York.

"Accidents", on page 202, was taken from "Proposed Standard Helps Reveal Causes of Accidents"--INDUSTRIAL STANDARDIZATION, October 1940. American Standards Association, 29 West 39th Street, New York, New York.

The "Tune-up" procedure under "Help", page 205, was based on "What Price Motor Tune-up"--MOTOR SERVICE, August 1940, 549 W. Washington Blvd., Chicago, Illinois.

