

CLEAN OIL BASE MOST ESSENTIAL

It Should Be Taken Down and Deposits of Oil and Muck Removed Occasionally.

PREVENTS INJURY TO MOTOR

Accumulation of Carbon From Cylinders, Sand From Road and Other Particles Shortens the Life of the Bearings.

(By WILLIAM H. STEWART, President of the Stewart Automobile School.)
What a world of trouble you are storing up for yourself if you do not drop the oil base and clean it. Sediment and muck accumulate faster than you think, and sooner or later you will have a ruined engine on your hands. It is not sufficient to change the oil regularly, as advised by the manufacturer. The oil base should be taken down and the deposits removed occasionally.

The first time you do this you will be surprised at the nature of the accumulations. Small lumps of carbon from the cylinders, sand from the road, even particles of metal turnings left there when your car came from the factory, have all been found in the oil base. But worst of all is the thick muck of burnt oil and carbon which covers the bottom and sides. The grit and other particles are heavy and sink to the bottom, but the muck remains even after the base is drained of the old oil.

Usual Advice to Motorist.
The advice usually given to the motorist may be summed up as follows: "Drain out all the old oil. Replace the plug and fill to the usual level with kerosene. Run the engine not more

than 30 seconds and then drain the oil base. Repeat if thought necessary. This stirs up the muck and sediment which runs out with the kerosene. In this way the base and bearings are cleaned with a minimum of effort and without removing the crank case."
"Stir it up," as Hamlet says. Indeed, the grit, which should be dormant until scraped out by hand, is stirred up and splashed all around the crank case and also carried into the bearings. It forms a fine grinding compound which either shortens the life of the bearings or clogs up the oil holes, causing the bearings to run dry.

Injurious Results.
The result is even worse if the oiling system is one of the pressure type forcing oil through a hollow crank-shaft directly into the bearings. Right into the bearings, mind you! and under pressure, too! Can any one defend this method after realizing what this means? It is not a sufficient answer to say that the oil must pass through a strainer. The finest grit will always pass through and harm is done!
So while it is a dirty job and a disagreeable one to remove the crank case for proper cleaning it is the only way to give your engine the care it really needs.

MOST CONVENIENT TIRE TOOL

Little Wedge of Wood Can Be Slipped in Between Beads and Pulled Around Surface.

One of the most convenient little weapons for use in tire repairing is a little wedge of wood, three-quarters of an inch thick and three to five inches long, depending on the size of tires used. This wedge is slipped in between the beads and can be pulled around the entire circumference of the tire with one hand, while the other is free to hold the tire. This is much easier than trying to use both hands to force the casing open, while holding it on the shoulder.

IMPORTANT PART IS ILLTREATED

Owners Should Give More Attention to Universal Joints, Declares an Expert.

SHAFTS MOVING CONTINUALLY

On Account of Location Joint Is Neglected More Than Any Other Part of Car—Engine Is Blamed for Difficulty.

Pity the sorrows of the poor universal joint. Compelled to struggle on alone, out of sight and out of mind striving to overcome friction when neglected, shocked almost to the breaking point by contact of the rear wheels, with water bars and mud holes, wrenched unmercifully by sudden use of the clutch—still it stands up under the strain. Study its needs and attend to them, and you will be repaid a hundredfold, writes an expert in an exchange.

The purpose of a universal joint is to deliver power from one shaft to another when out of line or at a varying angle. The forward end is fastened to the spline shaft in the gear box and the rear end to the propeller shaft going to the differential and rear axle. Some manufacturers place another universal joint near the differential. The two shafts are rarely in line, so some sort of a flexible coupling is necessary, and the present high-grade joint has been devised.

Shafts Kept Moving.
The gear box rises and falls with the spring action, but the rear axle follows the contour of the road. Thus the two shafts are continually moving out of line and the need of a flexible joint is quite apparent. The angle is never very great, because any departure from a straight line loses power. When the car is properly loaded with passengers the line will be found to be very nearly, if not quite, straight.

On account of its location the joint is often neglected probably more than any other part of the car. It is a dirty job to grease or even to inspect it, and so it is neglected until the engine is unable to pull the usual hills on high gear. Frequently the engine is blamed for this, whereas the fault is entirely due to friction in the universal joint, gears, and differential. Long before this trouble arises the joint should be lubricated.

The old types were covered with a leather boot difficult to remove. But the present type is completely incased in metal with a convenient plug for greasing. Of course a grease gun must be used and the lubricant forced in at different angles. Use a light gear-case compound, one that will reach every part readily.

Avoid Cup Grease.
Do not use a cup grease, as it will not work into the joints, but will squeeze out and stay out. This also applies to the lubricant used in gears and differential. It must be of a consistency to run in between the gears as fast as it is forced out.
Now give a good look at the bolts

holding the flanges together and you may learn something to your advantage. Sometimes a bolt will loosen, throwing extra strain on the others. The joint loosens up and the bolts break. Put a wrench on them occasionally or, better still, have them secured by heavy ball wire. This will prevent them from turning.

Ended With a Solo.
It was Sunday morning in the choir of a large church. I was singing soprano in a quartet. At the end of the selection I was under the impression that we were to sing "Amen," but, not noticing closely that the other members in the quartet had seated themselves, I remained standing and started with the "Amen" ringing out in the silence of the church, without even the support of the organ. With the eyes of the congregation all turned on me, I sat down, amid the smiles of my fellow singers, wishing the floor might open up and swallow me.



Overland

(Two Recent Stock Car Records
4370 miles in high gear without a stop, in Oklahoma
Round trip between Oakland and Los Angeles, 947 miles, 28 hours 45 minutes, average 24.28 miles per gallon.)

Tests That Show What Owners Know

The fine appearance and comfort of the Overland Model 90 could not, alone, have won it the deep public appreciation it enjoys. It is the character of this car that lies beneath all of its popularity—character as demonstrated by consistent, efficient performance. The pride of more than 150,000 Model 90 owners is built upon the daily service their cars render under all conditions. Let us show you a Model 90.

PIONEER GARAGE COMPANY
PHONE 221 BEND, OREGON

Overland Model Ninety Five Passenger Touring Car, 1905 L. n. b. Toledo

Announcement

To the Owners of Dodge Cars

In This Territory:

We have opened a Dodge Service Station that is equipped in a manner that will enable us to give you the best service in all lines of repair work on your car.

Parts Carried in Stock

We do not confine our work to Dodge cars exclusively but solicit your repair work regardless of the make or condition of your car. Give us an opportunity to satisfy you.

All Work Guaranteed

A. W. Bontrager

135 Greenwood

Across from Walther-Williams Salesroom

ASK YOUR BOY

When the fighting was thickest—
When the suffering was greatest—

Where was the Salvation Army Lassie?

He'll say:—

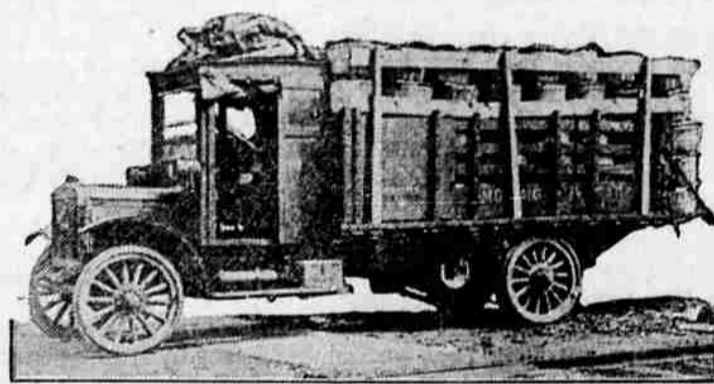
"She was right on the job"

And now, back home—in the byways and hidden places—where misery always lives, where a mother needs a home, where men, women and children are on the downgrade, she's still "RIGHT ON THE JOB."

Help Her to Carry On

The Salvation Army Home Service
Fund JUNE 22 TO 30

ESTABLISH RATES FOR MOTORTRUCK HAULING



The Peas in This Load Will Go Directly by Motortruck to the Dealer at a Market 15 Miles Away and Arrive in Fresh Condition.

(Prepared by the United States Department of Agriculture.)
The man who plans to operate a motor truck should have a good working knowledge not only of his engine but the entire machinery in general. The wages paid drivers vary in different sections of the country and for trucks of different sizes, ranging from \$2.75 to \$7.50 a day. Depreciation is one of the heaviest annual expenses with a motor, a loss of from 20 to 33 1-3 per cent of the cost of the truck each year being required to cover this charge.

Maintenance Cost.
Data collected by the bureau of markets show that the annual cost of overhauling and repairing the trucks ranges from \$100 to \$900 a year. Those truck operators who make it a point to keep their machines in a constant state of repair have relatively small charges to meet for annual overhauling. On the other hand, those who operate their trucks as long as possible with no regular repairs often have to pay a heavy overhauling charge at the end of the year. Tire expenses, garage rent, taxes, licenses and insurance, overhead expenses, repairs and equipment all swell the annual maintenance costs.

Rates for Hauling.
In some sections there are as many

different systems of computing rates and charges for hauling as there are motor trucks, each owner having an original way of figuring his transportation toll. There are several factors which should be considered in the establishment of rates in any district. The value and the fragility of the load bear a direct relationship to the rate that should be charged. Very valuable or fragile loads involve the greater risk on the part of the carrier and the tariff for the carriage of such goods should be sufficiently high to offset the risk involved. The length of the haul naturally is another prime consideration. Road conditions directly affect operating costs and hence must also be considered in establishing rates. The perishability and bulk of the load must be taken into consideration. Where complete delivery is made from the door of the shipper to the door of the consignee, and service is rendered which is not duplicated by the railroad, this additional service must be considered in fixing the rate. Practically no rates have been established on the basis of cost plus a reasonable profit. A satisfactory rate must be one which is low enough to attract business and high enough to offer a reasonable profit to the operator. Where conditions do not permit the establishment of such a rate, care should be exercised in starting a route.

You know as well as we do that Willard Batteries are good batteries.

NO BETTER TO BE HAD. YOU KNOW WHERE TO GET SERVICE ON



The Service You Want—The Service That Lasts.
You know where to get the Highest Grade Vulcanizing—Well, then go to—

BEST & HARRIS
VULCANIZING

PUT YOUR ORDER FOR IN

**Dodge Touring Car
Republic Trucks**

The WALTHER-WILLIAMS CO.
R. S. McCLURE, Representative
182 Greenwood



Electric Cleaner

Gets All the Dirt, All the Time. There is no periodical house-cleaning time, no dusting, or wiping up. The dirt simply disappears—all of it. All the housewife does is push the button and guide the cleaner. And it's done in one-fifth the time. THOR Vacuum Cleaners sold on easy terms.

Bend Water Light & Power Co.