

## ECONOMICS AND COSTS OF MOTOR TRUCK OPERATION.\*

By W. Howard Clapp.

**M**ANY things contribute to make southern California an ideal field for the motor truck: perfect operating conditions throughout the year, many miles of good roads, city streets out into the country, a population which has scattered out instead of congesting, cheaper fuel than can be had in any other truck country, and a labor market where intelligent, careful drivers may be had for a moderate wage. For many kinds of haulage, covering a wide range of operation, the motor truck is distinctly superior to any other method of transportation. Given an active service at full load, with a terminal not definitely fixed and a radius of operation up to 30 miles, it is an exceptional condition which will justify any other method of goods haulage.

Some of the especially active fields for the truck in southern California are goods hauling to and from Los Angeles harbor, interurban delivery service, road building and wholesalers' delivery. There are, however, special considerations which may have considerable bearing upon the employment of a truck. A committee of the Boston Chamber of Commerce, in a detailed report on street traffic in Boston, covering eighteen months of study, reported that "development of motor trucks will tend to relieve congestion by moving all merchandise in larger units and more rapidly," and that "the average speed of motor vehicles in getting into and away from railway terminals is from two to three times that of the horse." This is especially applicable to Los Angeles, which has nearly two miles of as congested streets as are to be found in nearly any city.

Another great advantage of the motor truck to the retailer is that he not only can supply his customers more quickly, but also because of the greater mileage range his territory is increased to about eight times what he could serve with a horse.

**Costs of Gasoline Trucks.**—Fig. 1 gives curves of cost, weight and horse-power (average values) for all classes of gasoline trucks as listed by publishers of motor truck publications. The noticeable feature of these curves is the sudden break of each for the lighter trucks of less than 1 ton capacity. These show that the demand for a light truck has been met by making a vehicle which is much lighter for the rated load than the heavier trucks. This is possible because of the higher enginespeed, a more simple final drive, torque and thrust taken through the vehicle springs, and by the generous use of special alloys and heat-treated steels. The curves suggest that these trucks are too light for the load that they are rated to carry. That this is true is abundantly proved by the records of many light trucks, which show that the average life of a light delivery truck is about 35,000 miles, whereas the heavier trucks, when properly driven and cared for, can be depended upon to give 80,000 to 100,000 miles, or even more for the better grade of trucks, if they are carefully driven and ordinary maintenance is kept up. It would seem that there is a real field for a more serviceable light truck which will at a little greater cost give enough lower depreciation and maintenance to be a profitable investment.

That there is a real field for such a truck not only for city service but also for use throughout the country is shown by the report of the U.S. government, which states that only 15 per cent. of the entire traffic of the

country is moved by railroads and steamships combined, the remainder of 85 per cent. being carried for the most part in wagons, and the greater part of it in lots of 1,000 lbs. or less. This field has only been touched by the motor truck as yet, and to fully occupy it would require not less than two million light trucks. This estimate makes no provision for hauling done on the farm.

Table I. is an itemized cost statement for various sizes of gasoline trucks under average service conditions on the roads of southern California. These costs are conservative. It is possible to find plenty of examples of lower costs and also of costs that are much higher, but these costs are easily realizable for ordinary truck work in this locality. With proper management an even lower cost per day should be realized. That these costs are somewhat lower than averages for other localities may be largely credited to good roads and an equable climate. In making this table three conditions of operation are assumed: the costs for each size of truck are computed for a daily run of 25, 50 and 75 miles, and for each condition the life of the truck is estimated, and depreciation is based on this life. Costs are given in dollars for the entire life of the truck. First costs are average chassis costs in Los Angeles.

In California, distillate is being used to quite an extent as a substitute for gasoline. The cost per gallon is

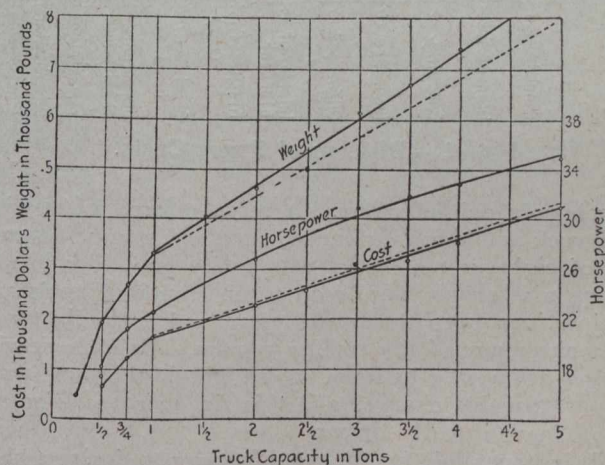


Fig. 1.—Averages from All Classes of Gasoline Motor Trucks.

about half that of gasoline at the present time, and the B.t.u. content somewhat greater. A local truck manufacturer has been very successful in equipping trucks with gasifiers by which the heat of the exhaust gases from the engine is used to heat the inlet air as it goes to the carburetor, and also to heat the mixture as it goes from the carburetor to the cylinder. A supply of gasoline is carried and used in starting. The consumption of distillate is about the same as that of gasoline. The success which has attended this innovation would seem to justify the claims of the manufacturer that the use of distillate does not increase carbon trouble. The question of a lessened volumetric efficiency is a negligible consideration.

Tires will outwear the manufacturers' guarantee at least 25 per cent. when used on the good roads of southern California. Smooth roads, dry surfaces and an equable climate all contribute to this result. Overloading and overspeeding are the things that shorten tire life. However, the important consideration is not tire economy, but economy of truck operation per ton of material carried; therefore, durability is only one factor that must be taken into account. Resilience, which prevents the wasting of truck power; cushioning effect, which keeps the main-

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