

ENGINEERS CONSIDER MERITS OF TRACTORS

Paper by Edward R. Hewitt Is Discussed.

POWER QUESTION COVERED

Expert Believes Cost of Plowing Can Be Reduced to 60 Cents Acre With Power Machinery.

Appreciating the fact that one of the means available for reducing the cost of living is the growing of crops on an intensified plan, and realizing that this must be done with the least possible amount of labor, the Society of Auto-

as less than 7 per cent of the tractors needed by farmers in this country have been built to date, we cannot yet be expected to be master of every detail of the problem.

E. R. Greer, mechanical engineer of the Four Wheel Drive Auto company, Clintonville, Wis., is not convinced that the front-wheel drive should be abandoned, for he believes it has its advantages, considering that 89 per cent of the work of tractors is being done on hilly ground.

BIG SEAPLANE MAKES RECORD

Naval Aircraft Takes Flight, Carrying 50 Passengers.

All existing passenger-carrying records for heavier-than-air flying craft were shattered when the navy's new giant seaplane, NC-1, went aloft at Rockaway, N. Y., with 50 persons

CAR NO BETTER THAN FIRM THAT SELLS IT

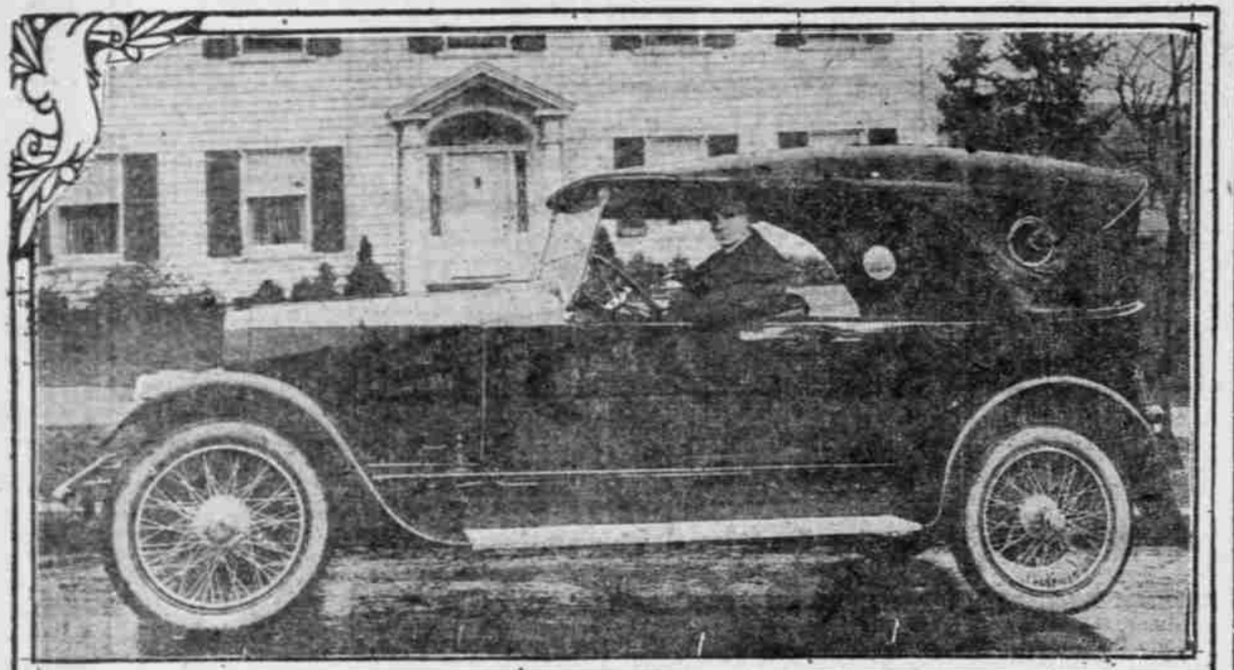
Reputation of Dealer Merits Buyer's Consideration.

REPUTATION WHAT COUNTS

Owner Who Has Car With Defective Axle, for Instance, Wants It Replaced Promptly by Distributor.

A change in the method of selling automobiles is gradually but surely creeping into the business. Perhaps it would be more correct to say that different arguments will be used by salesmen in convincing the prospect to de-

ANNIVERSARY APPERSON THOROUGHbred IN EYES OF OREGON MOTORISTS.



HARRY BYRD WAGGONER, APPERSON MOTOR CAR COMPANY'S LEADING SALESMAN, AT WHEEL OF POPULAR MODEL.

motive Engineers at its recent meeting in New York discussed a paper by Edward R. Hewitt entitled the "Principles of the Wheel Drive Tractor." The society has a membership of nearly 4000 in the United States and many members in other countries. Its membership includes experts in all the fields of application of the gasoline engine, viz. automobiles, tractors, motor boats, aircraft, in fact every kind of self-propelled vehicle or system of power locomotion.

Edward R. Hewitt, consulting engineer of the International Motor company, New York, discussed the question of size and capacity of farm tractors. He has been active in this field for over 12 years and acquired very valuable information from personal observation on a number of tractor-type machines.

Cleats Add Driving Power. Mr. Hewitt systematically determined the power required to move a tractor over different kinds of soil. He discovered that the drawbar pull, or pull available for drawing plows with the tractor on sandy ground, is equal to 20 per cent of the weight of the tractor, or at best 42 per cent on damp sandy ground. He found this could be improved somewhat by the use of cleats riveted to the faces of the driving wheels. If the "sterpillar" type tractor were not so expensive in maintenance, he said, it would be more advantageous than that having smooth wheels with cleats.

Mr. Hewitt shows that for maneuvering the power should be applied to the rear axle, but when going up an incline the danger of turning over is to be reckoned with, since the weight is in effect transferred still more toward the back.

However this construction gives the greatest possible pull for a given total weight. He found that with good design up to 81 per cent of the brake horsepower of the engine is delivered to the rim of the rear wheels.

The rolling friction on the ground absorbs an additional 8 to 20 per cent. The drawbar horsepower was 43 to 75 per cent of the power of the engine, when on soft ground.

Overloads Stall Engine. When running too near maximum load the chance of a momentary overload that will stall the engine is great. The engine is therefore run, as a rule, at but 40 to 50 per cent of rated capacity, in which case, unfortunately, the fuel consumption is materially greater per horsepower hour than at full load.

The author advocates large machines rather than small ones for the reason that either size requires one man for operation, which represents one-third the total cost, while the cost of maintenance and repairs is little greater; therefore the cost of operation, owing to the greater capacity of the big machine, is cheaper per acre of ground plowed.

He favors building as large machines as can be controlled by one driver, but not wider than 9 feet over all, to pass gateways and bridges, and with a total operating weight of 14,000 to 16,000 pounds. With this weight he figures that an eight-hp tractor could readily plow 2 1/2 acres an hour, while a two-hp machine could do but 0.5 acre an hour.

Farm Tractor Proves Worth. He believes it will ultimately be possible with a well-designed and constructed tractor to lower the total cost of plowing to about 50 cents an acre as against \$3 to \$4.50 with horses. Such a reduction would have a material effect on the food problem. The farm tractor has already proved a most valuable acquisition on many farms, although there is still much opportunity for improvement in its design and construction.

aboard, according to Popular Mechanics for February. This remarkable performance served to center international attention on the latest type of all-American plane, a machine, incidentally, that is the largest of its kind in the world and apparently pre-eminent in its field for the time being.

With a spread of 136 feet of 13-foot chord, and a boat body as large as a fair-sized launch, the new craft makes a most imposing appearance. When unloaded and without its crew, it weighs 13,000 pounds. Its flying weight is placed at 22,000 pounds. Its fuel capacity is 300 gallons. In official flights a speed of about 80 miles an hour has been developed.

Locking Nuts. In some locations and on some cars even spring washers do not hold the nuts in place for more than a brief period. By pouring molten tar all over the protruding threads of such nuts until they are filled it will be found that the nuts will be held securely for some time.

SMITH AGAIN IN CHARGE OF MITCHELL SERVICE.



Earl Smith, who has long been in charge of the local service department of the Mitchell, Lewis & Staver company, returns to his post after an absence of 14 months, during which time he was a sergeant in the 87th aero squadron. Smith enlisted in the aerial service in December, 1917, and soon after was sent to Kelly field, where he acted as instructor in the motor division. He says the experience he gained in the service will prove of great value to him, as he came in touch with some of the foremost automobile mechanics of America.

cide on the car under consideration, for that is really where the change is coming. Henceforth an automobile has been sold on the basis of speed, power, design and quality. The time is not far distant when the principal arguments will be centered on the reputation of its builders, coupled with the reputation of the dealer. Eventually the principle may be extended, or condensed, whichever way you want to take it, to the conclusion that an automobile or truck is no better than the firm that sells it.

Such is the opinion of W. J. McCallum, the new manager of the Northwest Auto company, whose opinion is based on the results of many years' experience in the selling game. "This statement may seem more or less radical at first sight," says Mr. McCallum, "but second thought will reveal many logical reasons in support of it."

Paris Often Sell Car. "The tendency has been, and is yet, for that matter, in selling a car to dwell upon the fame of the different parts which each manufacturer assembles from specially manufactured. For example, few, if any, motor car or truck builders make the carburetor, bearings, ignition and lighting system besides many other parts. These are made by separate manufacturers each of whom have so widely advertised their products that they have become familiar to the motor buying public, and the dealer and salesman have capitalized this fact to the extent that a car has often been sold more on the reputation these parts have attained than on any other fact. The design is, of course, a matter of the prospect's choice, the speed and power being a matter of demonstration.

"But when a car is purchased and, due to a defective part having got by the inspector, returns to the factory, for example, the rear axle gives way. Where does the owner look for redress? Does he take the matter up with the firm who made the axle, the factory who built the car or with the dealer? Naturally he looks to the dealer and right then he discovers that his car is, to a great extent at least, no better than the dealer who sold it.

Delay Lays Up Otto. "It sometimes happens that the dealer is not on a sound financial basis or that he does not care to take the responsibility of assuming the cost of making the axle good for the fear that for some reason or other the factory will not reimburse him. Consequently he gets around it by telling the owner that he "will take it up with the factory." This probably means a matter of a couple of weeks' time and in the meantime the car is laid up and the owner is out of the use of it. Again, the dealer may not assume this attitude merely from financial straits. He may be in sound circumstances yet short sighted enough to not realize the value of building up his reputation and establishing good will by standing squarely behind the article he is selling and for this reason pass the responsibility of adjustment on to the factory.

"The two weeks' delay may be extended by the factory replying that "they have taken the matter up with the axle manufacturers," while all this time Mr. Car Owner is out of the use of his car. The deal may even be prolonged until the owner finally becomes exasperated and orders the new axle put in at his own expense.

TIRES STANDARD MAKES 3500-MILE GUARANTEE. Table listing tire sizes and prices for Standard and Cord tires.

MALCOM TIRE CO. 82 N. Broadway, Portland, Or. Branches in All Principal Cities.

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The reason there are so many Ford cars in use every day is because the Ford car is the most useful utility in human activity today. If you want one, place your order with any one of the dealers listed below, as soon as possible, because the factory hasn't reached normal production since the war, and we are not getting as many as we want, and first come, first supplied. Runabout, \$500; Touring Car, \$525; Coupe, \$650; Sedan, \$775; Truck Chassis, \$550. These prices are f. o. b. Detroit.

- List of Ford dealers: Francis Motor Car Co., Palace Garage Co., Rushlight & Penney, Wm. L. Hughson Co., Robinson-Smith Co., Talbot & Casey, Vick Bros., Simpson Auto Co.

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supply the British as well as the American armies with oil. It is stated here that importations of oil from Mexico probably will exceed all but 3 per cent in reality came from the United States, which was obliged to

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