

Low Auto Prices From Factory Efficiency

With 1926 cars capturing the public's fancy, many motorists wonder by what ingenuity the American automobile factories are able to turn out such advanced cars at such low prices, and attention naturally is directed to the motor-car plants.

The motor-car factor of a few years ago has given way to new models which are as remarkable in their size as in their provisions for detailed and accurate workmanship. The parent plant of the Ford Motor Car Co. cover nearly 278 acres, 105 acres being under one roof. General Motors Corporation is spread out in factories located in 36 cities.

This is suggestive of the size to which the new model factories have grown, but of even greater interest to the car buyer are the new models in manufacturing and engineering processes. General Motors, for instance, maintains a proving ground in Michigan where cars are put to every conceivable test over all kinds and conditions of roads. There is even a giant ice box so that the engineers do not have to wait for Winter when they desire to try out some new idea in carburetion.

USE JAPANESE WORKERS
The ingenuity that goes into the work behind the automotive scene often eclipses many conveniences and novelties which are incorporated in the products of the automobile factories. The Hudson plant, where efficiency is the byword, offers an interesting illustration. In the final work on the crankshafts there is a certain job that requires the workman to hold his hands and arms in the air. It is exceptionally fatiguing work. The luckiest of workman would go at the job and bravely hold out until noon, when they would be obliged to call it a day. Visitors to the Hudson factory now find five Japanese workmen doing this work. Their well known muscles in the forearm are thus used to excellent advantage.

Not satisfied with the usual precision methods of measuring important parts, the Packard factory has adopted the system of measuring by light waves. It is the first motor company in this country to measure by light waves, though the system is the same as that employed by the United States Bureau of Standards.

This method means that in the making of Packard cars actual measurements to as close as one millionth of an inch are possible. The piece to be checked at the factory is placed under highly polished glass disks, the delicate waves of light or shadows being counted. Another advantage of the system is that it serves show up any defects in mate.

TEST WITH NATURAL GAS

Most car owners are aware that finished motors receive a certain amount of testing of the factories before being installed in the cars, but it is not generally known that at the enormous Cadillac plant natural gas is used for the operation of these motors, and not gasoline. This has been the rule at the Cadillac plant ever since the adoption of the V-eight principle.

Cadillac engineers say that were it not for the bulk of natural gas, and the natural difficulty of carrying it, it would have been the common motor fuel of the day. The manufactured gas is cleaner than gasoline, safer, and also more economical. Since being adopted by this company for engineers at many other motor car plants.

When the motorist boasts of efficiency in the operation of his car he may well reflect over the efficiency displayed in this Cadillac testing room. The blocks accommodate 110 engines at a time and each engine is required to drive a load of from 5 to 10 horsepower through being connected by a drive shaft to an electric generator. The current generated in the testing room is added to the main generator output of the factory and is used for lighting purposes. Not even the hot water from the engine blocks goes to waste. Some 65,000 gallons of this heated water are sent to the power plant boiler every day.

TEST BRAKES IN MACHINE

All this efficiency and precision is reflected in lower prices of better automobiles. At the Chrysler plant, for example, it is no longer necessary to burn in and test the brakes by driving the finished cars around the grounds. Owing to the invention of the Fennel testing machine the wheel

job can be done, and done accurately, right in the factory.

The Fennel device consists of six rolls mounted on heavy shafting and designed that front and rear rollers revolve in perfect union. In this way a car can be driven on its own power up to its maximum limit with and on danger of accident should be brakes not be properly set up or adjusted. The equivalent of three miles of road test is given each one with this machine. The brakes are burned in and adjustments are made as needed so as adjustment of brakes after cars, to relieve buyers of the customary

have been driven a few hundred miles.

The device in use at the Chrysler plant also serves to afford an excellent means of tuning up the motor quickly and of testing the whole car for precision of adjustment. The speedometer is, tested at the same time and any noise is quickly traced to its source. Another advantage, which results in lowered cost to the consumer, is the saving in salaries of drivers, since any shop mechanic can test the car with the testing machine regardless of his skill as a driver.

MANY NEW EXPERIMENTS
On the General Motors testing

ground near Milford, Mich., there are hills with grades ranging from 12 to 34 per cent. In this tract of 1,146 acres there are 8 miles of concrete and gravel roads. There are rock-ribbed meadow driveways and sharp turns that place every possible demand upon the cars being tested. Here one will often find well known General Motors cars with strange power plants and peculiar equipment, much of which may be available to the motorist in 1930, much of which may never be seen on any car.

Many of the rumors regarding new models of standard cars

originate at these proving grounds and in the engineering laboratories. The engineers are always way ahead of the game, and that is why the motorist can feel assured that anything offered to the public now is long past the experimental stage.

Studebaker uses six machines, costing \$90,000 each, for making crankshafts all in one complex operation. It is a sample of the sort of thing the factories are doing to obtain super-Johansson gauges exclusively, the results. Even the Ford plant employs standard of standards in the world. In the Ford plant there is no time to adjust parts that show discrepancies, so these marvelously accurate rectangular blocks of tool are used. One set, the only one in the world, is so accurate that it measures in steps of a millionth of an inch.