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# Electric-Transmission Automobile

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The Mechanical Engineering Department has just received by gift from R. Tom Sawyer B.E.E. 1923, M.E. 1930, a 1927 Jordan coupe in which he installed an electrical transmission of his own design and manufactured by the General Electric Company while he was in their employ. This transmission consists of a direct-current generator directly connected to the engine crankshaft and a motor that is mounted back of the generator with its shaft geared to the rear axle.

The engine drives the generator and produces electrical energy which is delivered directly to the motor to drive the automobile. In this way there is no direct relation between the engine speed and the car speed at any time. The variation in the generator output for starting and high speeds is controlled by automatic field switches operated by the variation of pressure in the engine intake manifold.

The automobile is controlled by the accelerator and a three-position switch in the motor field circuit. The central position is neutral while the others are forward and reverse. The engine and generator speed depends upon the power required to operate the car. The performance is very unusual as the engine operates at a high speed when starting, due to the great amount of power required at that time, and tends to slow down after the car gets under way so that if it is traveling at a speed of fifty miles per hour the engine will turn slower than in the average car; if it is traveling down grade, it will turn much slower; while if going up grade, the engine speed will increase and be somewhat similar to normal second-gear operation.

The starting is very smooth with only a slight variation in power as the automatic switches operate and there is a noticeable lack of vibration at high speeds due to the comparatively lower engine speeds. The rate of acceleration when starting is much less than the conventional car and seems to be less than it actually is, due to the high engine speed when the throttle is opened.

This was the first pleasure car of this type and the forerunner of several custom-built automobiles, many taxicabs, and the gas-electric buses that are now commonly used in many cities. The fact that this construction has never been commonly used is due mainly to the additional cost of \$1000 to \$1500 and the 20 per cent increase in weight.

This automobile offers a very simple and accurate means for studying road performance in as much as the measurement of the power required can be made at any time while driving by reading the voltmeter and ammeter. The rolling resistance of different roads as well as wind resistance can thus be studied. At the present time wind tunnel models are being made of possible body designs for this chassis with the hope of making comparative tests of full-size bodies on the road.