feeders will reach such ports as Nipe, Baracoa, Gibara and Manzanillo, connecting them with the interior and affording an outlet to deep water shipping points for the plantations along the lines.

The Cuba Company, as the Van Horne syndicate is known, has carried on its construction work in the face of many difficulties, not the least of which was found in an inability to secure a governmental franchise or even a permit for construction, and the consequent necessity of purchasing outright a private right of way. However, the same energetic tactics which characterized the construction of the Canadian Pacific Railroad were adopted, a working force which at times exceeded 6,000 men was employed, and at certain portions of the route the line was carried forward at a rate considerably in excess of a mile a day. The construction of this new railroad has been thoroughly in accord with the latest approved modern practice in every respect. Although it has been necessary to provide an immense number of bridges, owing to the volume of water which falls during the rainy season, steel construction has been employed exclusively, and the rolling stock and equipment is identical with that to be found on the most important railroads in the United States.

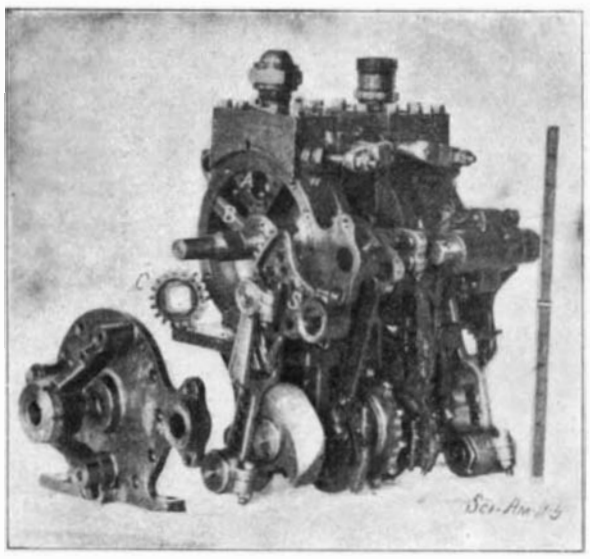
THE NICE-TURBIE RACE.

BY OUR PARIS CORRESPONDENT.

After the suppression of the Nice-Abbazia race, which was to have been the main event of the season at Nice, the chauffeurs had to fall back on the Nice-Turbie hill-climb and the Rothschild Cup to try their new racing machines which had cost so much labor in the preparation. The Turbie hill-climb is a severe test for the machines in more ways than one. The road starts from Nice and winds up the mountain side to the village of La Turbie, situated at the summit. Not only is the grade very steep but the route is unprotected by curbing on the outer side and is on this account quite dangerous. Several racing-cars met with accidents here, and one was smashed to pieces; however, no one was seriously hurt. The race took place in a heavy fog, which was a disadvantage, as it prevented the racers from making their best time. At the top were assembled a large party of chauffeurs about the chronometer station. The heavy-weight caravan had already climbed up the slope and the vehicles were drawn up in line to await the finish before descending to Monte Carlo. The start was chronometered by M. Tampier and the racers started at 3-minute intervals. The record was made by Mr. Stead on a 40-horse power Mercedes machine, which covered the distance of 15.5 kilometers (9.6 miles) in 16 min. 37 3-5 sec. Next came Gabriel on a 30-horse power Darracq, in 16 min. 50 3-5 sec. One of the engravings shows the Mercedes racing machine, mounted by Mr. Stead and in the second will be seen Gabriel in his light weight racer. The Mercedes and Darracq machines carried off the honors of the race, as three of the former made the best time in the automobile class, and six of the latter came first in the light vehicle class. Osmont, on a De Dion motocycle, held a very good place. The Mercedes machines are built at the Daimler works at Canstatt (Alsace), and these powerful racers continue to be formidable competitors to the French machines. The same holds good in the heavy weight class, where a Daimler hauling wagon made one of the best records in the Paris-Nice concourse. At La Turbie was noted a novel type of electric automobile made by Lohner & Porsche, of Vienna, which will be described later.

AN OSCILLATING COMPOUND STEAM ENGINE OF NOVEL DESIGN.

The compactness of the engine shown below is readily seen by comparing it with the foot rule standing beside it. Occupying as it does, less than one cubic foot, it nevertheless has abundant power to pull a 1,000-pound automobile out of a mud hole or send it quickly up a steep ascent; for although normally the engine develops but 4 horse power, by a simple changing of valves accomplished instantly by the movement of a special handle, the cylinders may both be made to take high pressure steam, thus more than doubling the power and enabling the engine to develop 9 horse power.



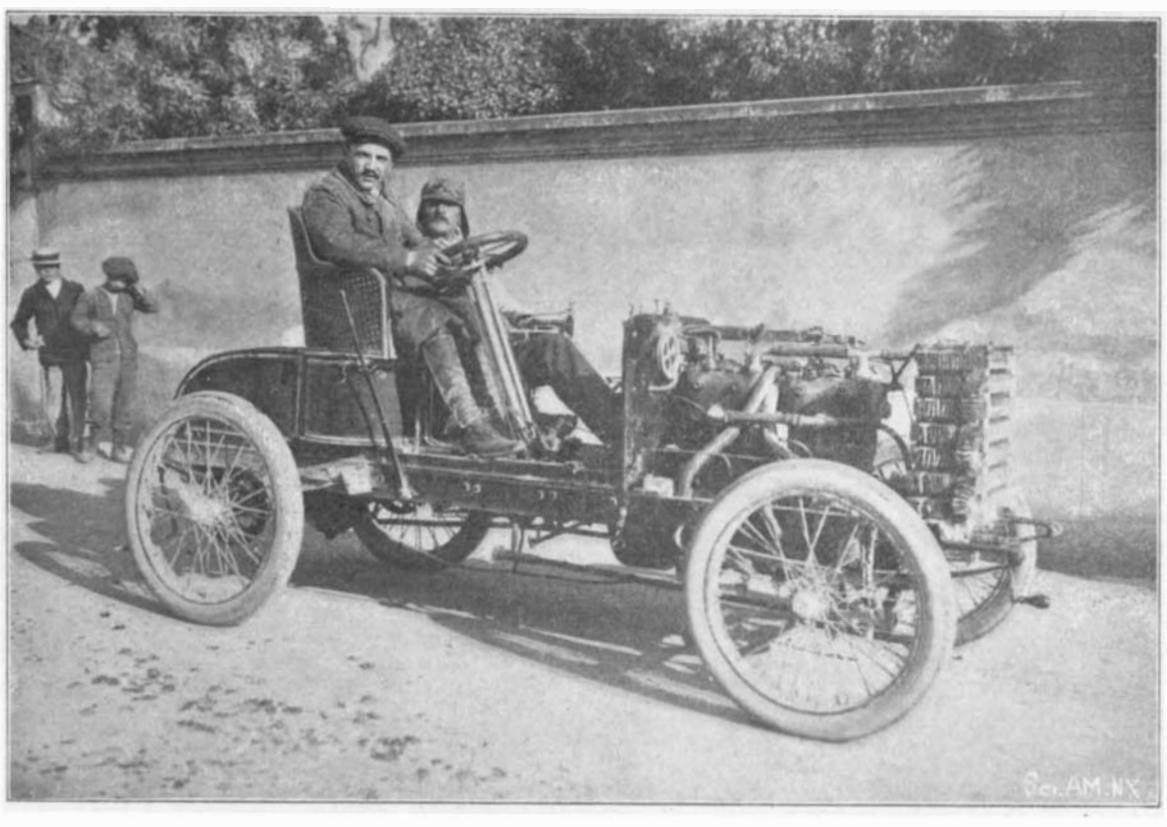
THE STOWELL OSCILLATING COMPOUND STEAM CARRIAGE ENGINE.

The illustration shows plainly the piston and cylinder construction. The engine is built on similar lines to most rotary engines as far as these parts are concerned. The piston consists of a flat blade, *B*, secured to the shaft and adapted to oscillate between the faces of the abutment, *A*, through five-sixths of a revolution. The steam enters through ports in the abutment not shown in the cut, which direct the jet upon the outer end of the blade, thus obtaining the greatest leverage possible from the initial pressure. The inlet and outlet of the steam is controlled through ordinary slide-valves, links and eccentrics. A special packing is employed on the valve stems, which causes little or no wear and assures a tight joint. The engine is protected against steam leakage at all points where such leakage could possibly occur, by spring-pressed metal packing strips. The blade, *B*, has two pairs of L-shaped packing strips, spring-pressed both sidewise and endwise; the abutment, *A*, holds a packing-strip in its lower face, which is pressed downward against the shaft; and two rings on the ends of the latter within the cylinder, make a tight joint between it and the cylinder walls. It will be seen, therefore, that steam leakage is effectually guarded against, even after the engine has been in use for some time and the parts have become worn.

The long stroke—8 inches—obtained in this engine is one of the main points gained by the use of the rotative principle followed in its design. It will be observed, also, that with this construction the amount of steam required to fill the exceedingly short ports is greatly reduced as compared with other slide valve engines of corresponding length of stroke, and the waste of steam is thus brought to a minimum. The 8-inch stroke of the piston is reduced to a 3-inch stroke on the crankshaft by means of the pinion, *C*, and segment, *S*, which are made of harveyized steel and phosphor bronze respectively. The pinion, as is seen, is squared on the shaft, while the segment and connecting rod are heavy and substantial, and abundantly able to transmit the power for which they were designed. Suitable counterweights on the cranks balance the piston, connecting rods and segments. The segments are pivoted on eccentric studs so that any wear of the gears may be taken up. The low-pressure cylinder is of the same diameter as the high-pressure one—5 inches—but is twice as wide, having a cross-section of 2 inches. The steam exhausts from the high pressure cylinder through the large hole in the center of abutment, *A*, whence it passes to the low-pressure cylinder. By means of the afore-mentioned transforming device for which patents are now pending, the low pressure cylinder is instantly available for high-pressure steam by a simple turn of a handle, thus giving a steam carriage equipped with this engine an advantage similar to that employed by using two gears, without the corresponding complications.

The compactness of the engine is such that it can be completely housed in the carriage body; and while on the road, should it be necessary to take it apart for examination or repair, the entire crank-

40-Horse Power Mercedes Machine (Daimler System)—Winner in Automobile Class.



30-Horse Power Darracq Machine—Winner in Light Vehicle Class.

NICE-TURBIE HILL-CLIMBING CONTEST.