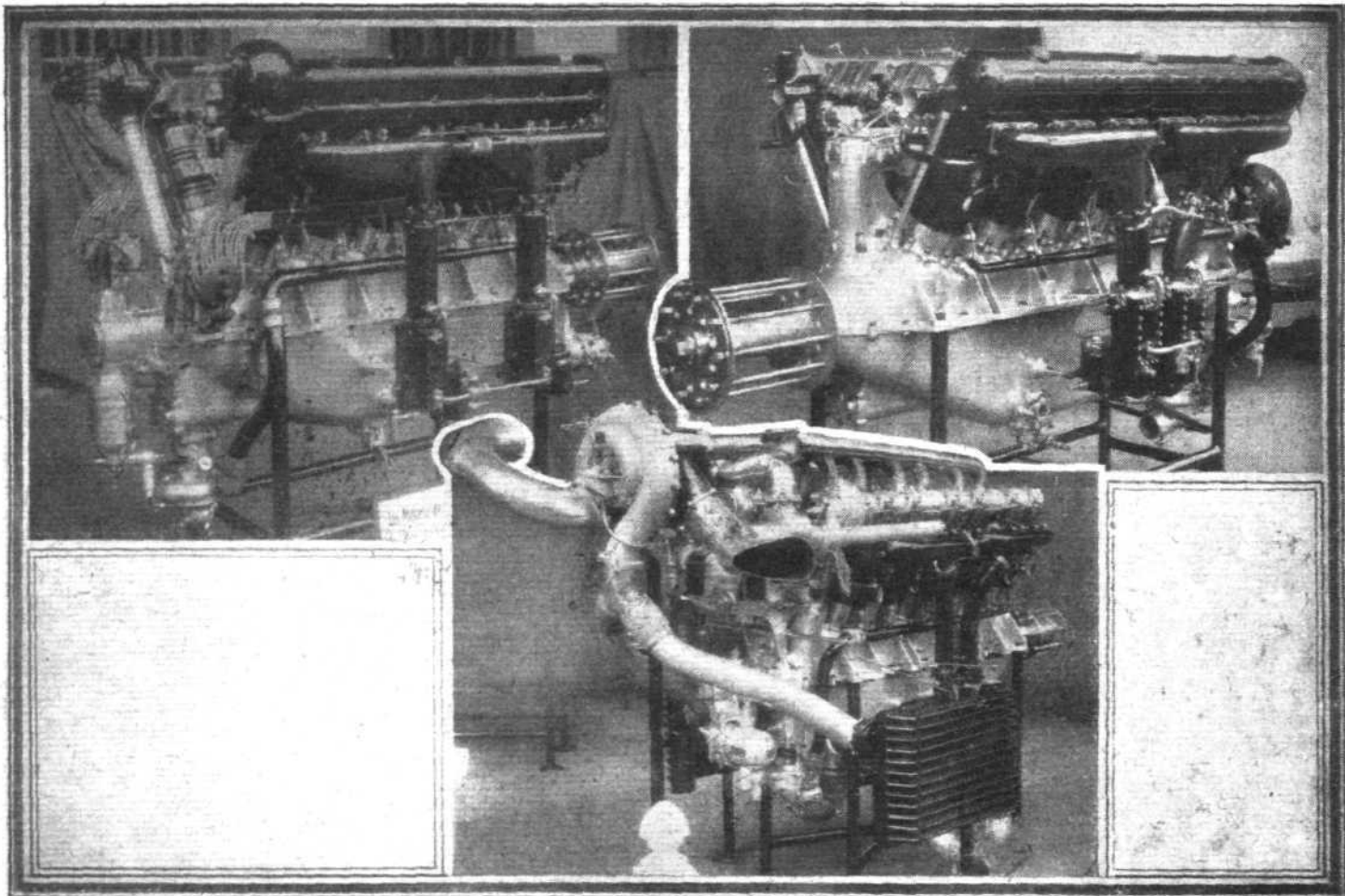


after the gruelling test, and the fact that the engine stood up without giving any serious trouble must for ever rest to the credit of the Lorraine-Dietrich firm and of their chief designer, M. Barbarou.

The 400 h.p. Lorraine used by d'Oisy is of the 12-cylinder V-type, with a bore of 120 mm. and a stroke of 170 mm. Direct drive is employed, and the compression ratio is 5.3 to 1. The normal speed of the engine is 1,600 r.p.m., with a maximum speed of 1,700 r.p.m., at which the engine develops 410 b.h.p. The weight dry is 400 kgs. (880 lbs.), or 2.2 lbs./h.p. The petrol consumption is given as 230 grammes per horse-power per hour (0.55 lb./h.p./hour). The 450 h.p. engine is of the W-type, with three banks of four cylinders each. The bore is 120 mm. and the stroke 180 mm. The maximum power is 470 b.h.p. at 1,860 r.p.m., and the normal speed is 1,800 r.p.m. The petrol consumption given is the

THE RENAULT ENGINES

An imposing show was made by the Renault firm, and space does not allow of dealing in any detail with all the different types. Our photographs show three distinct models, *i.e.* the 300 h.p. supercharged engine, the 480 h.p. model, and the large 600 h.p. type, all three of the 12-cylinder V-type. The supercharged engine is of the well-known model and requires no introduction. The supercharger installation (Rateau) appeared very straggly, and would be cumbersome to fit into a machine, but very good results have, we believe, been obtained with this engine. The 480 h.p. model has, it is stated, undergone the French type tests, and has run for 50 hours developing 500 h.p. The bore and stroke are 134 by 180 mm. and the compression ratio 5.3 to 1. The rated power of 480 h.p. is developed at a speed of 1,600 r.p.m. The weight dry is 500 kgs. (1,100 lbs.). The 600 h.p. engine has a bore



RENAULTS AT THE GRAND PALAIS : The upper left-hand photograph shows the 480 h.p. (rated) type, which has carried out a reliability run of 50 hours at 500 b.h.p. On the right the large 550-675 h.p. Renault. Below, the supercharged Renault.

same as that of the 400 h.p. engine, and the weight dry is 390 kgs. (858 lbs.).

PANHARD-LEVASSOR

The 500 h.p. Panhard-Levassor engine is of the 12-cylinder V-type, and is of the high-compression type, the compression ratio being 6 to 1. The bore and stroke are 165 mm. and 170 mm. respectively, and the rated power of 500 h.p. is developed at 1,550 r.p.m. The power, it is stated, remains sensibly constant up to about 3,000 m. (10,000 ft.). The weight dry is 590 kgs. (1,300 lbs.), *i.e.* 2.6 lbs./h.p. The second engine exhibited was a sleeve-valve engine rated at 450 h.p.

We were not able to ascertain whether or not this engine has actually been tested, but the makers state that it develops 450 h.p. at 1,500 r.p.m., and 525 h.p. at 1,800 r.p.m. The bore is 140 mm. and the stroke 170 mm., and the compression ratio is 5.4 to 1. The weight dry is given as 545 kgs. (1,200 lbs.). There are many who believe that the aero engine of the future will be of the sleeve-valve type, and the work in this direction by the Panhard-Levassor firm is therefore of more than usual interest. It is claimed, and probably justly so, that this is the first time the Knight sleeve-valve principle has been applied to an aero engine of such large size.

of 160 mm. and a stroke of 180 mm., with a compression ratio of 5.3 to 1, and develops 650 h.p. at 1,600 r.p.m. The weight is 725 kgs. (1,600 lbs.).

In addition the Renault firm have produced direct and geared V-type engines for the French engine competition, both being rated at 450 h.p. Two models of the W type are also being developed, one with direct drive and one with reduction gearing.

SALMSON

The usual range of radials was to be seen on the Salmson stand, but a new type, designed for light 'planes or touring machines, was exhibited. This is known as the type A.D.9, and is a nine-cylinder, radial, air-cooled engine, with a bore of 70 mm. and a stroke of 86 mm. It is rated at 40 h.p. The small three-cylinder Y-type was also shown. This engine, rated at 15 h.p., has a bore of 70 mm. and a stroke of 86 mm., or, in other words, the cylinders are interchangeable with those of the type A.D.9, as are also the pistons and several other parts.

THE NEW VASLIN

Reference was made to the new Vaslin light 'plane engine in our description of the Dewoitine light 'plane. This engine has 6 cylinders in line and is water-cooled. The cubic capacity is 2,000 c.c., and the weight of the engine dry is 62 kgs. (136.5 lbs.).