(the heads, in fact, are " Siamesed "), a further unusual feature being that the master connecting rods of each group of cylinders are mounted on a common crankpin, the crankshaft having one throw only, with balance weights fitted to extensions of the crank webs.

The arrangement of the valve gear is interesting; two inclined valves are provided in each head, the inlet and exhaust ports being located one at each side. The four rockers, two for each cylinder, all have their pivot brackets mounted on a common steel platform, which is supported clear of the head of the front cylinder by four long bolts, the inner ends of which are secured to a ring clamped around the lower part of the barrel, below the bottom fin. The effect of the cylinder " growth " on the tappet adjustment is thus reduced to the minimum. The rockers operating the valves of the rear cylinders are, of course, considerably longer than is usual. The characteristic horizontal coil valve springs (of a type somewhat similar to those known as the " hair-pin " type) peculiar to Salmson engines considerably reduces the length of the valve stems and hence the length of the cylinder, or the overall diameter of the engine. On the large engine the mixture is supplied by two separate duplex carburettors, one at each side of the auxiliary drive housing, to an annular induction chamber formed in the rear portion of the crankcase, from which the branched induction pipes lead between the cylinders to the intake sides of the heads. The common air intake for the two carburettors is exhaust jacketed. The exhaust pipes are led forward into a common collector ring. Ignition is provided by two Salmson H.T. magnetos, the two plugs of the front group of cylinders being fitted side by side at the front of the heads, whilst those of the rear cylinders are similarly arranged at the rear of the head. Lubrication is supplied by two gear-type pumps, one pressure and one scavenge. A gas starter distributor is fitted at the rear of the crankcase between the magnetos.

At the opposite end of the Salmson range, the 40-h.p. type 9 AD engine, perhaps comes next in interest. The overall diameter of this miniature nine-cylinder radial engine is 27 in. only. It has been adopted as standard by the builders of several Continental light 'planes and is now being supplied to the United States in large numbers. The weight is 154 lbs. and the normal output is attained at a speed of 2,000 r.p.m. The compression ratio is 5·6 : 1. One of the outstanding feats of this engine, accomplished three years ago, was a Paris-Warsaw non-stop flight. It also holds a number of French records for light 'planes. The design follows standard Salmson practice on a reduced scale. All the auxiliary drives are located at the rear of the crankcase, and on the engine shown one magneto only is fitted, this supplying one plug per cylinder, but for the British and American markets the makers are now producing these engines with two magnetos, each of approximately half the weight of the one at present fitted, thus providing the required dual ignition. A twin-choke carburettor is fitted directly to the induction casing.

The 9 AB type engine has a bore and stroke of 125 mm. and 170 mm. respectively, and a compression ratio of 5 or 5·4 : 1. It has a normal output of 230 b.h.p. at 1,700 r.p.m., the weight complete being 585 lbs. The construction is typical Salmson throughout.

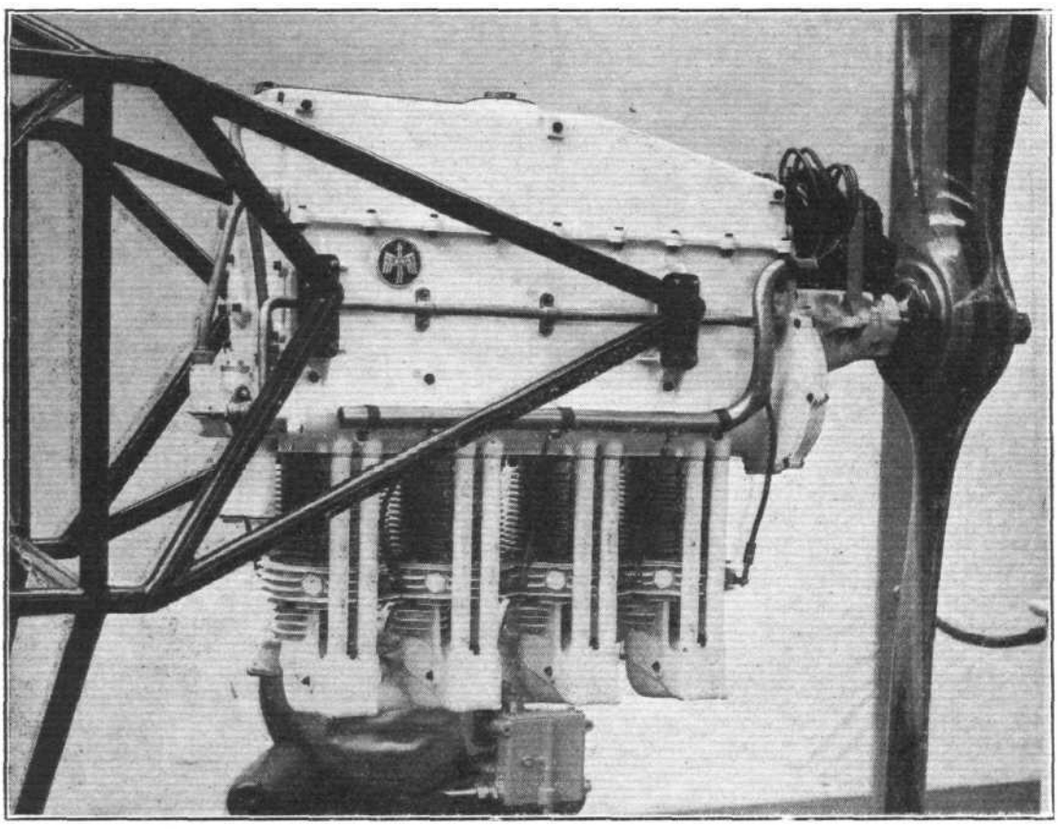
The 9 AC type has a bore and stroke of 100 mm. and 130 mm. respectively, with a similar compression ratio to the 9 AB, the normal output being 120 b.h.p. at 1,800 r.p.m. The weight is 373 lbs. complete. The 5 AC and 7 AC types are respectively five and seven-cylinder versions of the last-mentioned engine, the compression ratio being the same and the cylinders, pistons and all valve parts being interchangeable. The normal outputs are 60 and 95 b.h.p. at 1,800 r.p.m., the weights being 242 lbs. and 286 lbs. respectively.

GERMANY.

GERMANY is represented by two engine firms only, Argus and Mercedes-Benz, although two other German makes of engines are actually at the Show, installed in aeroplanes. The Argus firm are showing a light air-cooled four-in-line engine, whilst on the British Mercedes-Benz Stand are being shown one very large, 1000-h.p. engine and, by way of contrast, a 20-h.p. light 'plane engine. The other two engines referred to are a Siemens-Halske five-cylinder air-cooled radial of the Genet type, this being fitted in the little B.F.W. low-wing monoplane, and a 500-h.p. B.M.W. VI twelve-cylinder water-cooled V-type engine fitted in the Heinkel seaplane. Unfortunately, no details of these two engines are available. It was noted, however, that the small air-cooled engine was fitted with volute-type valve springs and that hardened rollers were fitted to the ends of the rocker arms in contact with the valve stems.

Argus

The Argus is a direct-driven inverted four-cylinder-in-line, air-cooled engine, and is the only one of its type at Olympia. One of the most interesting features of this engine is that it develops its full power at an unusually low crankshaft speed. The normal output is 75 b.h.p. at 1,350 r.p.m., whilst the maximum power of 80 b.h.p. at 1,400 r.p.m. may be maintained indefinitely without damage. The bore and stroke are 120 mm. and 140 mm. respectively, and the compression ratio 5·3 : 1. The weight of this engine is stated as being 247 lbs. which seems remarkably low in view of its robust appearance. The cylinders are of composite construction having aluminium heads bolted to steel barrels, the valve seats and guides being



The Argus 4-cylinder in-line inverted engine develops a normal power of 75 b.h.p. at 1,350 r.p.m.