The New Hermes IV Engine

DESIGNED and built by the Cirrus-Hermes Engineering Co., Ltd., Croydon Aerodrome, Surrey, the "Hermes IV" is a four-cylinder, in-line, inverted, air-cooled engine of 120 normal b.h.p. The new engine has behind it all the accumulated experience of hundreds of "Cirrus" and "Hermes" engines, and is of somewhat greater power than these, while at the same time incorporating a number of improvements and refinements which the past two years of research have shown to be desirable.

Type	Inverted, 4 cyl. in-line air-cooled.
Drive	Direct.
Bore	120 mm.
Stroke	140 mm.
Cubic capacity ..	6,330 cc.
Normal b.h.p. ..	120 at 2,000 r.p.m.
Maximum b.h.p.	130 at 2,200 r.p.m.
Compression ratio	5.1 : 1.
Petrol consumption	7·8 galls. per hour at 9-10ths full throttle.
Oil consumption	1 pint per hour.
Direction of rotation	Right-hand tractor.
Weight complete	300 lbs.
Length overall ..	1,077 mm.
Height overall ..	739 mm.
Width between engine bearer centres	540 mm.

The general design of the new "Hermes IV" has been planned with the object of giving an improved forward view, higher propeller thrust line, and greater accessibility for examination and maintenance. The particularly new features are the new design of cylinder head, and the totally-enclosed valve gear. As recorded in FLIGHT recently, the engine has passed the British Air Ministry's type tests (at the first attempt), and the first of these engines to be put on the market will take part in this week's King's Cup race, installed in the Percival "Gull" monoplane three-seater.

Constructional Features

Cylinders.—These are made from special centrifugally cast iron, and the fins are machined from the solid, thus ensuring sound castings and maximum rigidity and heat radiation. The cylinders are located in the crankcase by deep spigots.

Cylinder Heads.—Detachable aluminium cylinder heads, of special design and adequate cooling fin area, are held in place by long studs projecting from the crankcase and passing through the cylinder fins. Each head is fitted with one large inlet and exhaust valve; the aluminium bronze seatings are screwed and expanded into position.

Phosphor-bronze valve guides are force-fitted in the head, and two bronze adaptors are screwed into the head to take the sparking plugs.

Pistons.—The pistons are aluminium alloy castings of sturdy design, in which the importance of heat distribution has received careful consideration. The gudgeon pin, which floats in both the piston and the small end of the connecting rod, is located at each end by circlips.

Connecting Rods.—These are made from high-quality steel stampings, carefully machined all over, thus ensuring adequate strength with minimum weight and also a high degree of balance. White-metal-lined bearings are provided in the big ends, and movement is prevented by a dowel secured in the connecting-rod cap. A phosphor-bronze bush is tightly pressed into the small end of the rod.

Crankshaft.—This is a high-quality alloy steel forging carried in five die-cast bearings of ample dimensions, with a substantial journal ball-bearing fitted at the front to absorb propeller thrust, giving throughout perfect alignment, thus ensuring maximum smoothness in running.

Camshaft.—A one-piece camshaft, driven by a train of spur gears, is carried on five substantial bronze bearings fitted in the lower half of the crankcase.

Propeller Hub.—The engine is supplied with propeller hub complete, and valve timing is facilitated by a timing pointer on the propeller boss.

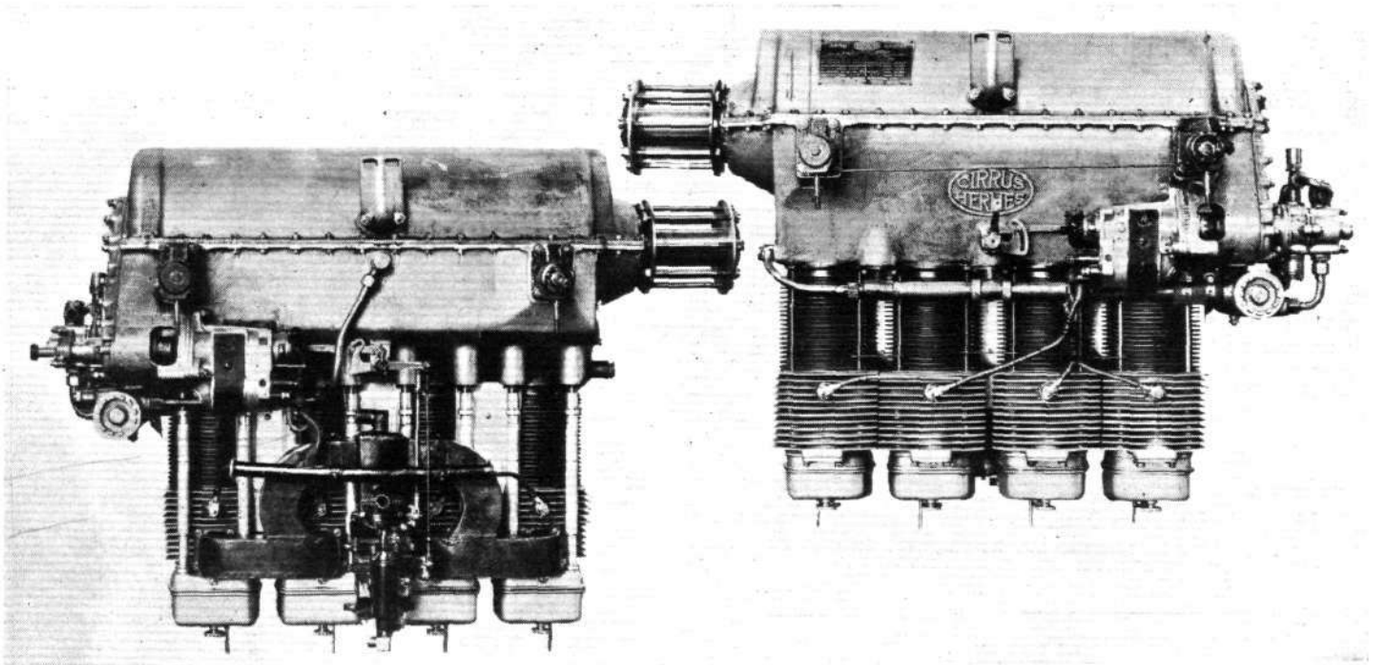
Carburation.—The engine is fitted with one Claudel Hobson type AV.48.D carburetter, which is equipped with altitude control for operation at high altitudes.

Valves and Valve Gear.—The valves, which are made of K.E.965 steel and interchangeable, are operated by the camshaft through the medium of tappets, tubular push rods and rocker levers.

The whole operating mechanism is completely enclosed in leak-proof and dust-proof casings, which are readily accessible for examination when required.

The rocker gear, working in a constant-level oil bath, ensures adequate lubrication to all parts of the valve mechanism.

Ignition.—Two magnetos, which are driven through the medium of vernier couplings to facilitate accurate timing, provide a dual-ignition system. One magneto is fitted with an impulse starter to ensure easy starting.



THE HERMES IV : Views of induction and exhaust sides.