A Four-Cylinder

Novel 500 c.c. Overhead-Camshaft Vee-Four : High-Efficiency Machine Designed for Fast Road Work and Racing : Separate Camshaft for Each Cylinder, Two Magnetos and Two Carburetters

A MATTER of little more than hours before the Olympia Show opens comes the news that on the A.J.S. stand will be a machine fitted with a vee four-cylinder engine of outstanding design.

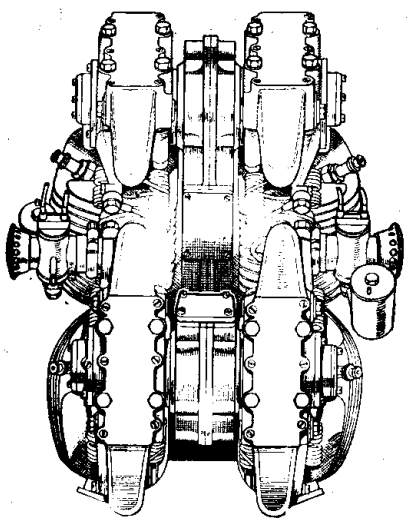
In many respects the new engine follows the most up-to-date trend of racing design. The object of the makers has been to evolve a four-cylinder machine giving the maximum possible efficiency from each cylinder.

An inspection of the new engine reveals that it consists, virtually, of four separate singles mounted on a common crank case.

There are four separate cylinders, arranged in double-vee formation, the two banks making an angle of fifty degrees. Each cylinder has its own detachable head and overhead camshaft gear—the latter being removable without disturbing the timing.

The capacity of the engine is 495 c.c. (bore 50 mm. × stroke 63 mm.). Each cylinder is heavily finned and is held in place by four long studs, which pass through the cylinder head. Both barrels and heads are of cast-iron.

Wide-angle valves, fitted with hairpin valve springs, enable a hemispherical type of combustion chamber to be used—the engine is designed to run on a compression ratio of 7.9 to 1. There is one 14 mm. sparking plug to each cylinder.



This plan view of the new unit shows the four separate cam boxes. The camshafts are driven by a continuous chain, which is contained in a vee-shaped casing between each pair of cylinders

Possibly the greatest interest centres round the extremely novel valve gear. Each cam box is mounted on the cylinder head and secured by four bolts. The camshafts operate duralumin rockers, which in turn bear on short tappets. Tappet adjustment is simplicity itself, the rockers pivoting on eccentrically mounted bearings with a micrometer control readily accessible on the outside of each case.

Following normal A.J.S. practice with the camshaft type of engine, there is an exhausting oil pump mounted on each box, which draws off oil from the bottom of the box. Although only two pipes are visible, there are four which lead up from an oil "gallery" running across the top of the crank case. This "gallery" is fed from the main oil pump and supplies oil to the cam boxes *via* the four oil pipes already mentioned. It also feeds the annular rings round each cylinder base. The scavenging pumps on the cam gear return the oil *via* the cam chain case.

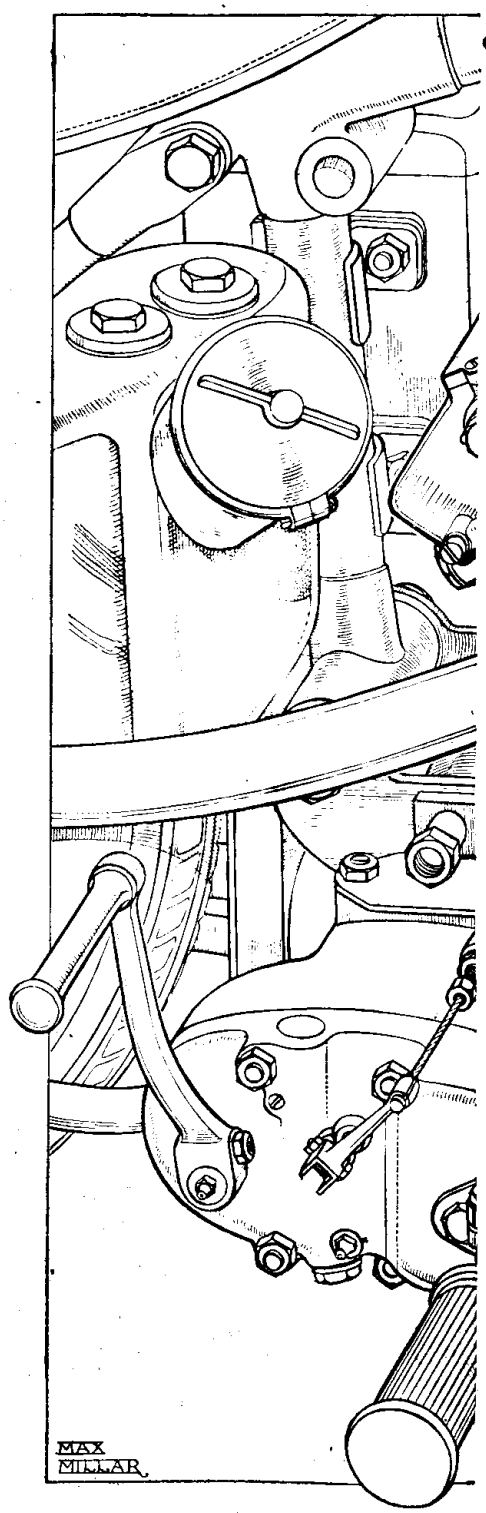
Chain Driven

The camshafts are driven by one continuous single-roller Weller-tensioned chain. The chain runs in a vee-shaped casing. At the tops of the V are two sprockets, each mounted on two bearings carried in the casing. The shafts on which these sprockets run have sliding jaw couplings into which the camshafts fit. The chain receives its drive off a half-time gear pinion and runs up the lower arm of the V to the front cam sprocket; then down on the inside of the V to an idler sprocket, which has a micrometer device for major adjustments of the chain.

From the idler sprocket the chain passes up the inside arm of the V to the cam drive sprocket for the rear cylinders, and from there down to the driving sprocket again. The Weller tensioner is mounted on the under-side of the front case, and under all normal conditions maintains the chain at the correct tension.

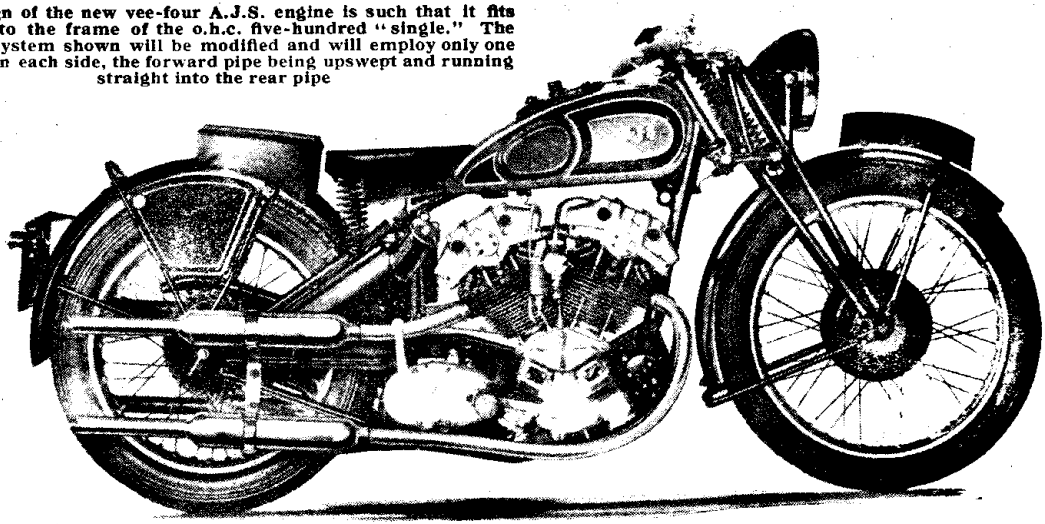
Two Amal carburetters are fitted, one on each side of the engine. The inlet pipes are short and T-shaped, and link the front and rear cylinders as in a vee-twin. At the moment the machine is fitted with four separate exhaust systems, but this arrangement will be modified on the model exhibited at Olympia.

The crankshaft assembly is extremely



A.J.S.

The new vee-four A.J.S. has an o.h.c. 495 c.c. engine incorporating many highly original features. Each cylinder is separate from its neighbour and has an independent and readily detachable cam box. Two magnetos are employed, the drive being by means of a short vertical shaft



The design of the new vee-four A.J.S. engine is such that it fits snugly into the frame of the o.h.c. five-hundred "single." The exhaust system shown will be modified and will employ only one silencer on each side, the forward pipe being upswept and running straight into the rear pipe

sturdy. The hollow two-throw crankshaft runs in five ball and roller bearings. One connecting rod on each throw is forked to give a central thrust. The drive to the primary chain follows normal practice, but on the other side of the crankshaft —commonly known as the timing side— is a bevel gear which drives a vertical shaft at engine speed. This shaft is very short, and drives both the main oil pumps (inlet and scavenging) as well as the twin B.T.H. racing magnetos.

The magnetos are skilfully "built-in" to the crank case, and receive their drive from the top bevel of the vertical shaft.

The neatness of the new engine will be realised when it is mentioned that, but for one slight alteration to the seat tube, it fits into the same frame as the well-known single-cylinder o.h.c. engines. In fact, the chain line is the same, although the engine is only slightly offset, while the weight distribution is practically identical. Of course, the engine plates are different—the front pair house a dynamo. However, the dynamo will be replaced, for those who desire it, by a supercharger.

The new model is intended primarily as a high-efficiency road machine with an alternative racing specification.

The price, including electric lighting, but unsupercharged, is £89 5s. The specification includes a 26 × 3.25in. rear tyre and a 26 × 3in. ribbed front tyre, two large flush-fitting tool boxes, dynamo lighting, a 3½-gallon petrol tank, with lighting panel, and an oil tank holding three-quarters of a gallon.