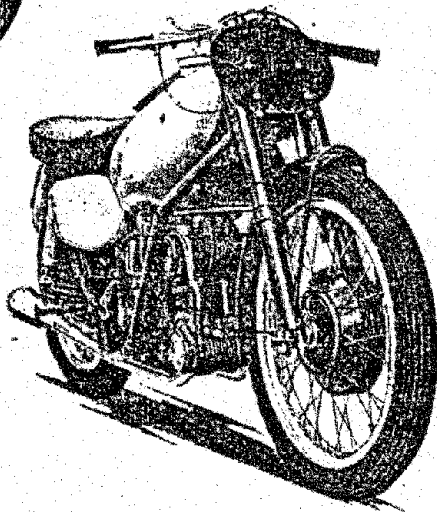


# THE A.J.S. RACING TWIN



IN a talk he gave to a party of clubmen some months ago, Mr. G. L. Hack instanced, as one reason why manufacturers should support racing, the stimulative effect which an interest in the firm's success in competitions has on the *esprit de corps* of a factory in general. Evidently Associated Motor Cycles, Ltd., subscribe to Mr. Hack's opinion, for when "Motor Cycling's" men visited Plumstead last Thursday to inspect the new A.J.S. racer, they were asked to "hang fire" for a few minutes because the machine was on view in the canteen! Around it were gathered the whole works staff, taking in the details of an assembled whole on which many had for months been working, preparing the bits and pieces but with no idea what the finished job would look like.

From the pictures you can judge for yourselves something of what they saw. Jock West's first remark, after we had absorbed an eyeful, was "What do you think of the beast?" And that word "beast" does somehow seem to fit it. There is an almost animal-like ferocity about it—something strongly reminiscent of a bull buffalo with his blood up!

## The Power Unit

But you want details, not comparisons. Very well, then, the engine first. It is a parallel, even-firing twin with the cylinders (68 by 68.5 mm., 499 c.c.) lying almost, but not quite, horizontal. They are held down, each by four long bolts that pass up through the one-piece, deeply finned, cylinder head to an enormously massive and rigid, box-like crankcase-cum-gearbox unit. The cylinder barrels themselves are surrounded by lateral finning radiating all round the bores with each fin some 2 ins. deep and 2½ ins. long. Iron liners are shrunk into the light alloy material which is used for the cylinder block, head and crankcase units.

The high-duty alloy connecting rods have split big-ends, with shell bearings which work on a one-piece crankshaft carried in three main bearings. The centre main is a plain journal and the outer ones are of the roller type. The nearside end of the crankshaft is geared direct to the gearbox mainshaft by plain, straight-toothed gear wheels and, as there is no idler wheel, this means that the engine "runs backwards," i.e., the crankshaft rotates in the opposite direction to normal practice.

On the timing side a train of gear wheels, contained in a Y-shaped casing, takes the drive to the two camshafts which lie across the cylinder head. Each pair of valves is set in a hemispherical combustion chamber at approximately 90 degrees. That is to say, there is one inlet and one exhaust to each cylinder.

The camshafts are housed in heavily finned chests that not only enclose the whole of the valve gear but also incor-

(Above) The horizontal disposition of the power unit enables the huge six-gallon fuel tank to be accommodated in a layout notable for its low overall height and centre of gravity. Observe the miniature "Tele-draulics" featured in the rear suspension. (Right) Imposing from any aspect the new racer is particularly impressive when viewed from this angle. The widely splayed dual down tubes permit an unobstructed flow of air to the cylinder head. The massive brakes are typical of this designed-for-a-purpose machine.

porate intricate oilways leading to metering jets provided to spray lubricant straight on to the working surfaces. In the drawing of the cylinder head a number of hexagon-headed plugs can be seen let into the camshaft casings; they are the outer ends of these jets.

Roller bearings with split cages carry the camshafts and short tappets are interposed between the cams and the valve stem ends. "Interlaced" hairpin springs are used.

At its crankshaft end a vertical extension of the timing case will be observed. This contains the gearing to a shaft which runs right across the engine to drive the main oil pressure pump, which is a most substantial and sturdily ribbed component. Midway along this shaft, gearing is provided for the B.T.H. magnet, which is placed forward of the oil pump and supplies a single 14 mm. sparking plug in each cylinder.

## Thorough Lubrication

The lubrication system is most comprehensive and thorough. Drawing its supply direct from the 1½-gallon tank, the main pump first passes all oil through a Tecalemit cartridge-type filter carried over the gearbox. Thence a pipe leads straight into the engine and, via internal oilways, to main bearings, big-ends, etc. Additionally, oil is fed under pressure to each camshaft. Surplus from the inlet camshaft chamber drains by gravity through a short pipe to the exhaust chamber where a scavenger pump returns it to the after end of the engine. Here another pump is at work scavenging the sump and returning oil to the tank. A drip feed control, located on the gearbox housing, supplies oil to an annular groove cut on one face of the driving sprocket. From this trough, which is kept filled by centrifugal force, drilled holes lead to the sprocket teeth.

All the clutch-operating mechanism is enclosed, as also is the foot gear change. An interesting feature is an outrigger bearing on the offside of the gearbox mainshaft, while the internals of the box, which of course provides four speeds, are straightforward and laid out to facilitate rapid changes of wheels to provide the desired sets of ratios for varying types of race circuit.

A most ingenious system of mounting the carburettors has been employed. The two mixing chambers, fed by a common central float chamber, are supported on a pair of bonded rubber induction pipes. Thus, the whole carburettor assembly, including the float chamber, is elastically mounted and can, in fact, be quite freely moved about by hand on its resilient supports.

The method of holding the power unit in the frame is simple. At the forward end two split clamps bolt rigidly round the cross tube connecting the lower ends of the duplex front down tubes. At the rear four bolts pass through a platform across the back of the frame into the gearbox casing.

The frame itself has as its backbone a big diameter straight-top tube and from below the steering head duplex members fork outwards and downwards to pass on each side of the cylinder barrels. From the head, to the point where they are joined by the engine-supporting cross tube, these members are elliptical in section, but rearwards, where they curve inwards and upwards and meet another cross member behind the gearbox, they are of round section. They then travel upwards, becoming elliptical again, to meet with a forked rear extension of the top tube, and at this juncture lugs are provided to anchor the upper ends of the two oleo-pneumatic suspension members which are part of the "spring bed." All joints in the frame make-up are gusseted and welded.