



## The 1931 Post-Vintage AJS S3 V-twin

**S**LUMPS followed booms throughout the history of motorcycle manufacture with the certainty of winter following summer. What to do when the market wilted was the big question. Go for a low-cost easy-to-produce job was one way to beat the freeze. Triumph did it in 1925 with the sensationally cheap Model P and BSA followed quickly.

The other method was the win-or-bust approach of producing a world beater of technical novelty. Regrettably I cannot think offhand of any manufacturer who rode out a slump on a super bike, all right perhaps as a loss-leader to boost the image of a bread-and-butter range but it was no panacea for all ills.

### A foolish venture

The old and respected family firm of A.J. Stevens and Co (1914) Ltd went for the technological way out when things became hard as the dodgy Twenties turned into the disastrous Thirties. I regret it ended in bust not win. Their beat-the-freeze bike followed the almost traditional road to ruin of the transverse twin. The ABC had pointed the way and the P & M Panthette had confirmed it.

Tempting of course to put either a flat-twin or a V-twin across the frame (AJS opted for a V configuration) so that the cylinders are equally cooled by the flowing breeze and to ditch the primary chain for a short shaft. The whole thing smacked of car practice which pundits argued was best. Faint heart could still use chain final drive and avoid the torque reaction, or so said the boffins.

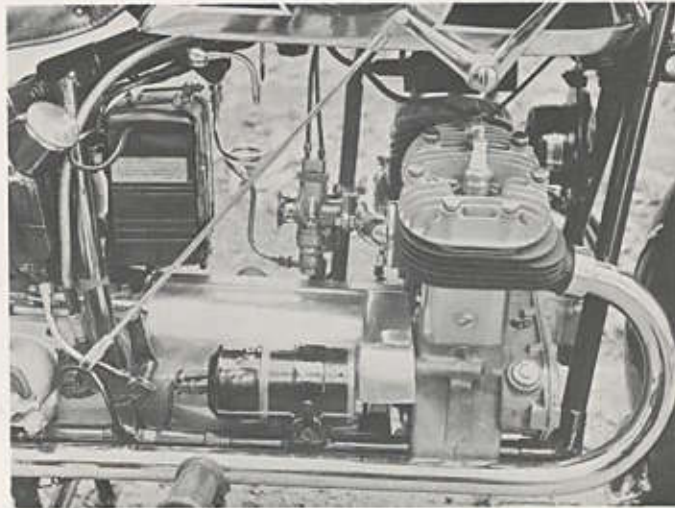
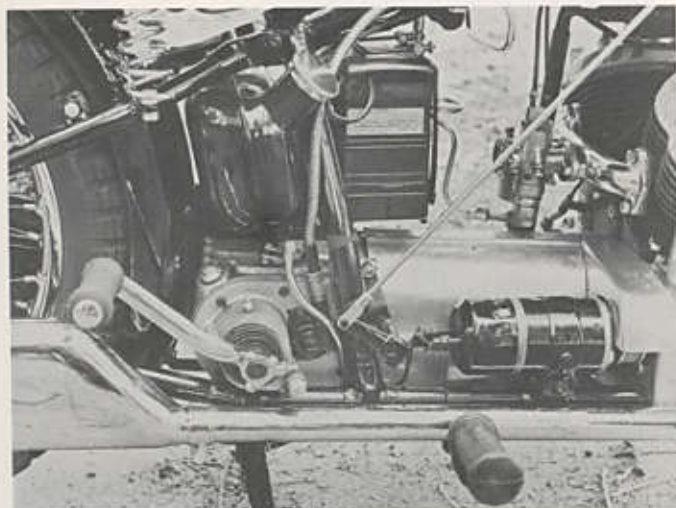
AJS had started the twenties in an unassailable position after pulling off the one and only TT Junior-Senior Double with one bike but had lost ground by supposing the saddle tank was a passing whim when it wasn't. They continued a year too long with flat tankers. Excursions into the manufacture of cars, buses and radio sets had not helped

and they needed a two-wheel winner. That was the background to the 1931 AJS transverse twin Model S3. It was a policy decision that could have put them back on top of the industry but instead it led to Carey St and the Official Receiver. The firm the Stevens brothers had founded long before the First World War went to their old rivals the Colliers of Plumstead, makers of Matchless motorcycles.

The transverse twin AJS deserved a better fate and might have fared better if it had been born in happier times. You would have thought that having long experience of conventional V-twins they would have used one of their tried and tested units but they started from scratch and designed a completely new one of 496 cc with a 50-degree cylinder angle, completely new because in the interests of accessibility they turned the cylinder barrels so the valve chests were on the outside. That meant two separate outboard camshafts. The problem of the inordinate distance of the shafts from the crankshaft was solved AJS fashion with an ohc layout using chain drives and Weller springblade tensioners. Otherwise the V-twin engine was conventional although detachable cylinder heads in light alloy were thought *avant garde* in 1931.

### Mutual grooming

Unlike most similar set ups, including George Brough's 1937 homespun variation on the theme, the clutch was not on the back of the engine but on the gearbox at the other end of the primary drive shaft, or on production models though not on the prototypes. "It was found that the weight of the shaft was just enough to prevent a really easy gear change so the clutch was transferred to the rear" quoth a company spokesman to a reporter at the time. "This is typical of the care which has been expended on the design throughout" added the reporter showing that the art of



publicity was not unknown in that long gone age.

In fact the clutch action is not the best part about the bike. On the test model there was enough drag to prevent clean gear changes and I gather from a onetime employee who worked in the AJS repair shops that clutch trouble was a common complaint. No, he did not know what the trouble was because clutches were passed to a man who specialised in them! But this little problem apart, the transverse twin does not seem to have given much bother. Few were made and most of them were exported I gather. The test one was still in regular use in the Fifties; I saw it regularly.

Reacquaintance after twenty years was quite nostalgic. Nowadays it looks much smarter than I remember and as a matter of fact it has been so beautifully rebuilt by new owner Norman Francis that it is probably smarter than when it was born....

It's better mechanically too, for an obvious weakness had shown up over the years in the gearbox endcover. The box is a fairly normal AJS sliding-gear three-speed design, one susceptible to premature dental trouble with middle cog; but, probably because a bevel wheel and pinion had been squeezed in to turn the drive at right angles, the endcover was unusually thin, just not strong enough to take the strain of kick starting. It had been broken and welded up several times in the past. Francis had a new endcover cast and doubled the thickness which is what the maker should have done. He had to have new gears cut for the middle ratio.

### Trumpet blowing

With a new look machine like this it's helpful to know what the manufacturer had in mind. I quote from the catalogue blurb:— "The AJS transverse twin strikes a new note in motorcycle design. It possesses every desirable quality such as Easy Starting, Silence, Flexibility, Accessibility, Rapid and Effortless Acceleration with a High Average Speed together with Perfect Steering and Road Holding Qualities." How does it show up in fact? Well it gets high marks for the first four features. The last four are rather a matter of opinion and need qualification.

It certainly does start easily. The coil ignition obviously

helps. It takes very little effort to kick a small V-twin over and, once over, this one chimes. Carburation is not happy (the owner hopes to improve it by attention here) and it makes the pickup rather dot and carry one. I am not surprised, for it has never been easy to feed a V-twin with its irregular firing intervals from one carburettor. The simple curved manifold used by AJS is hardly the scientific way to go about it.

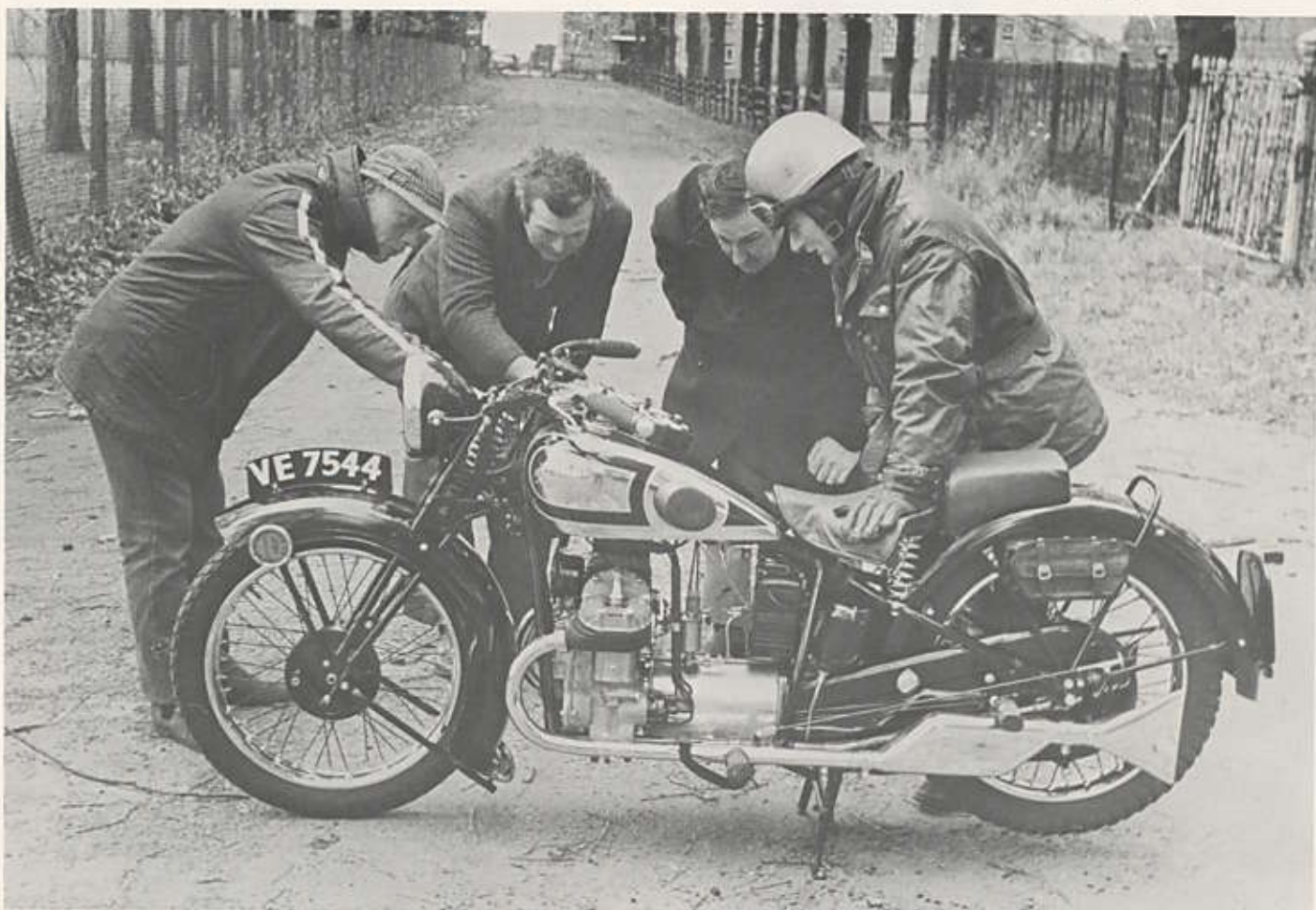
### Induction bias

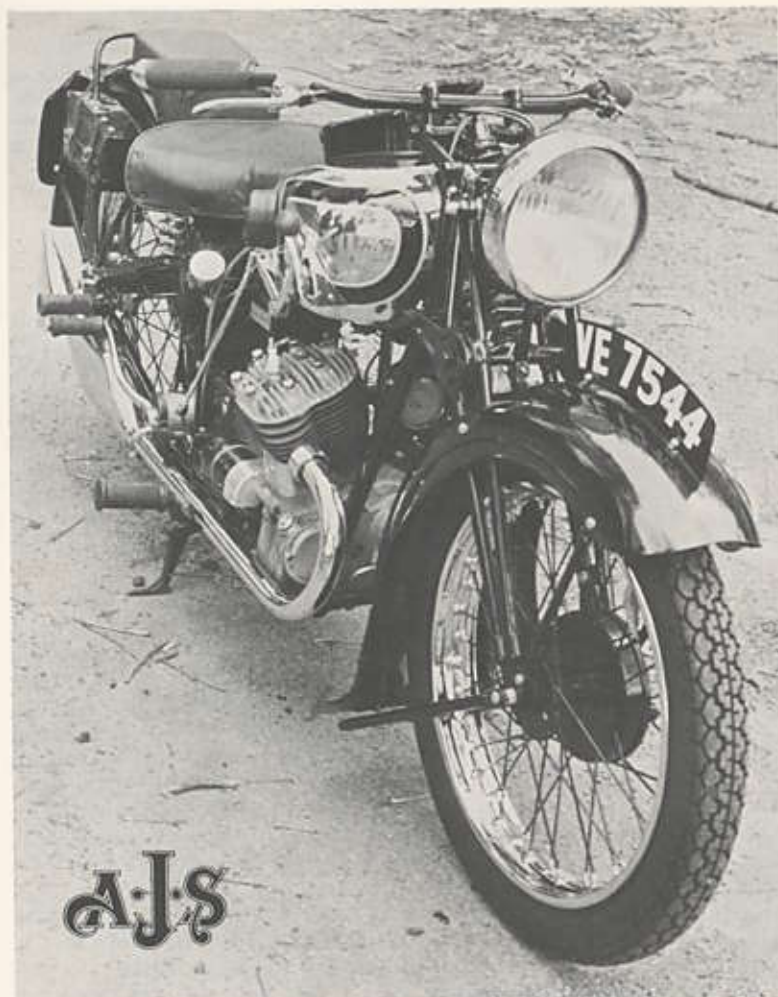
Once off the pilot stage both cylinders catch on but I suspect that one does more work than the other until the throttle is well open. Twin carbs would probably make a great improvement to that "Rapid and Effortless Acceleration and High Average Speed." So would a quicker-action twistgrip as well, for the nastiest thing about this machine to me is the much vaunted "clean" handlebar of the period. This handlebar set up, made by Amal, incorporated welded-on and thus non-adjustable abutments for the control levers plus a slow-action twistgrip calculated to take all the fun out of motorcycling.

### Transmission tribulations

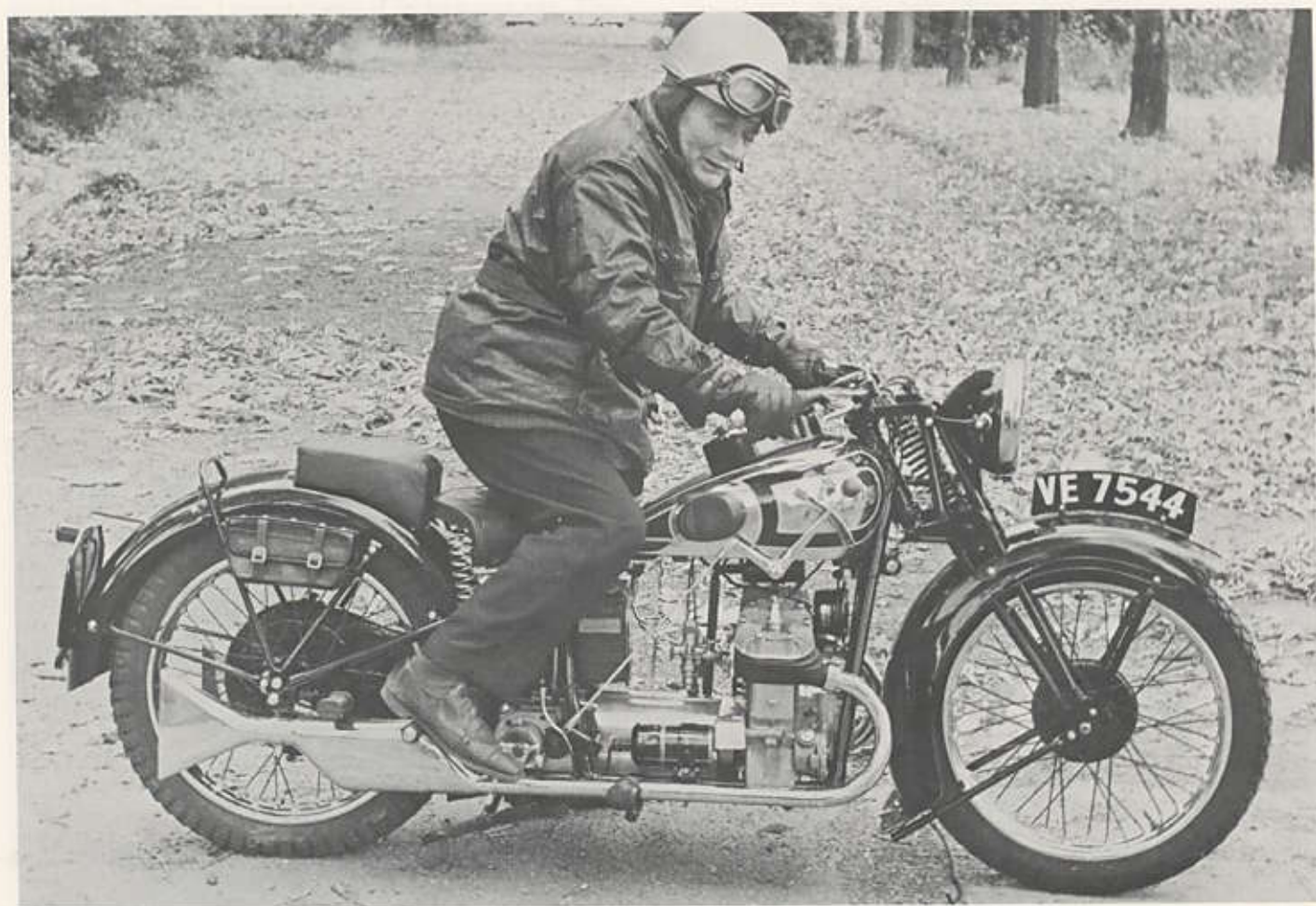
The engine has too much flywheel weight for flashing acceleration but is good for demonstrating the inertia reaction of transverse engines. Blip the throttle in neutral with the machine supported loosely between your legs and it will gently rock to and fro. It zooms away with a pleasant twangy exhaust note, one slightly reminiscent of Brooklands silencers. But the dreaded clutch drag inhibits the snappy change up. Changing down really demands double-declutch technique, or patience.

It is a luxury tourer, not a racer, and one should admire the way it drones along, sounding and feeling more like a four than a twin when it gets up into the fifties. Do not compare it with sports bikes. They were not exaggerating about the steering and roadholding. The steering is positive — you might call it heavy — and the machine squats down well, almost as if it had some rear springing which it hasn't.





(Above) The minimal protrusion of the cylinder groups is clearly shown. They foul neither the knees, nor, as on a flat-twin, the feet. (Below) Allen eases the S3 into life. Full electrics and a centre stand are fitted. Dynamo is by right footrest. Handchange works on the up-for-bottom pattern. VE is a Cambridgeshire index mark used from 1928 on



You sit very low, in it rather than on it. The riding position is easychair and because of that you are not tempted to fling it about. Very gentlemanly in its ways and enough personality to make you gentlemanly too.

Mechanically the engine is very quiet for its type and period.

The Weller tensioners for the camshaft drive chains were worn out and are now replaced with skid ones like modern primary-chain tensioners but there is no obvious sound from this department. The gearbox and final bevel drive are quiet too. The makers made the rather wild claim that the bevel gears were silent and indefinitely wear resisting and they seem to have got away with it....

They made much of the key feature of equally-cooled cylinders, knowing that in-line V-twins were noted for unequal cooling. The engine does seem to run quite cool. The cylinder heads are right there for you to check on the even cooling if you want to burn your fingers!

### Constant-loss dry-sump

They didn't say much in the blurb about the lubrication system except that it was automatic and the big ends were force fed from a mechanical pump. I am not surprised that they were cagey in this area for they had suffered a most unfortunate flirtation (on their other models) with the then new-fangled dry sump lubrication system which had cost them a fortune in warranty work replacing busted bigends. As a result they had devised a system which looked dry sump but wasn't. Devilish cunning too. There was a feed pipe from the oil tank under the saddle to the oil pump on the engine and a return pipe too. If you took the cap of the oil tank when the engine was running you could see oil returning which put your mind at rest. That was what the maker intended but the engine operated on the old-fashioned total-loss principle and was fed minute quantities of fresh oil. The oil you saw returning was bypassed at the pump to give a visual check that the system was working. Providing the feed was set correctly the engine seemed to thrive on regular doses of fresh oil for the test model was in much better condition after a large mileage than the average dry-sump sludge-circulating system of its day.

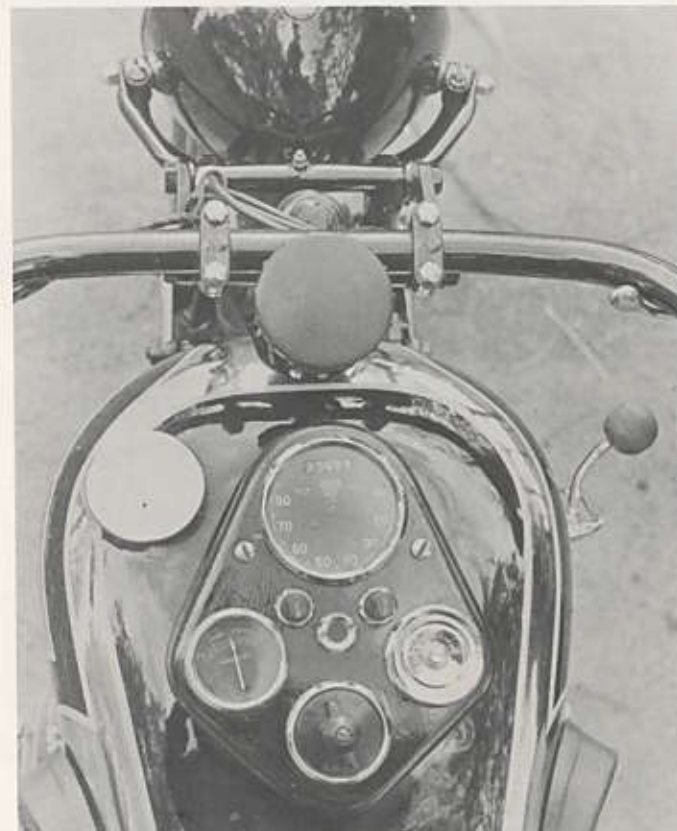
When you study the generous specification of the Ajay and set it against the moderate price of £65 — same as a two-port ohv Norton for instance — you wonder how it was done. Truth probably was that it wasn't done and the price was set low to get it off the ground. The tag included electric lighting, electric horn and the then-fashionable tank-top instrument panel housing switches and the options of speedo and clock. (The dynamo incidentally was driven by flat belt from a pulley on the primary shaft.) A rear carrier with twin, leather-faced pannier tool bags was standard, footrests were adjustable vertically as well as fore and aft, there was a central stand, a steering damper and a qd rear wheel. All contemporary sales points.

### Design difficulties

Clutch operation must have caused some head scratching. Most designers of transverse engine layouts put the gearbox in line with the engine mainshaft and were thus able to run the gearbox mainshaft out to the back of the gearbox and mount the clutch operating mechanism there. The AJS designer chose to put the bevels before the box which ruled out the usual clutch mechanism. Instead there is a clutch pushrod inside the hollow primary-drive shaft, operated by a transverse key and a ball race surrounding the drive shaft.

To sum up this machine of unusual interest I can do no better than quote the makers' words at the end of the sales catalogue:—"As a motorcycle it has a fascination about it which can only be realised by actual experience on the road. It possesses just that something different which places it in a class by itself."

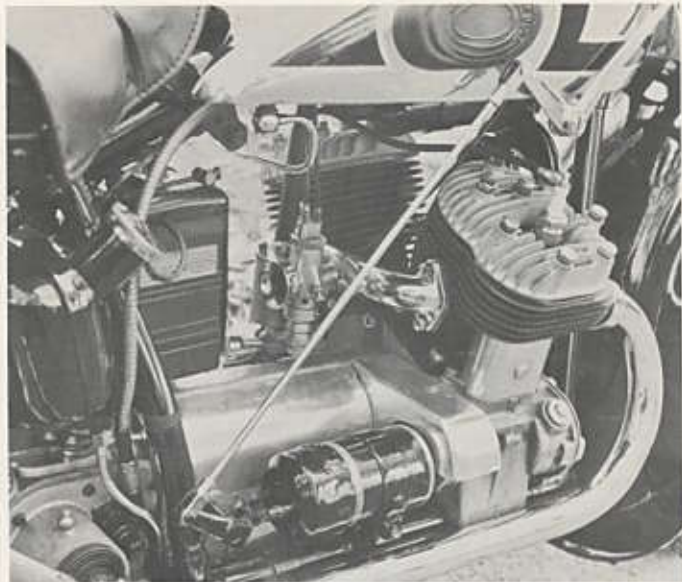
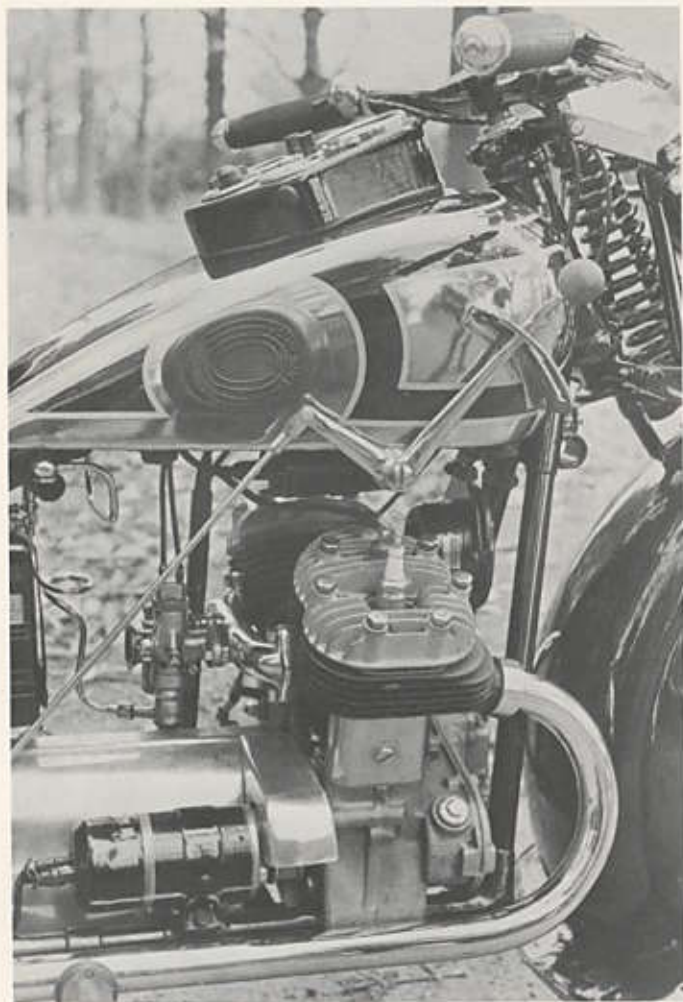
The few transverse models which reached the public resulted in requests for more power. So the Stevens brothers laid out a sports version with pushrod-operated overhead valves culled from their 250 cc single models. Photographs of this version exist but look very much like an artist's fake to me. I doubt if one was made.



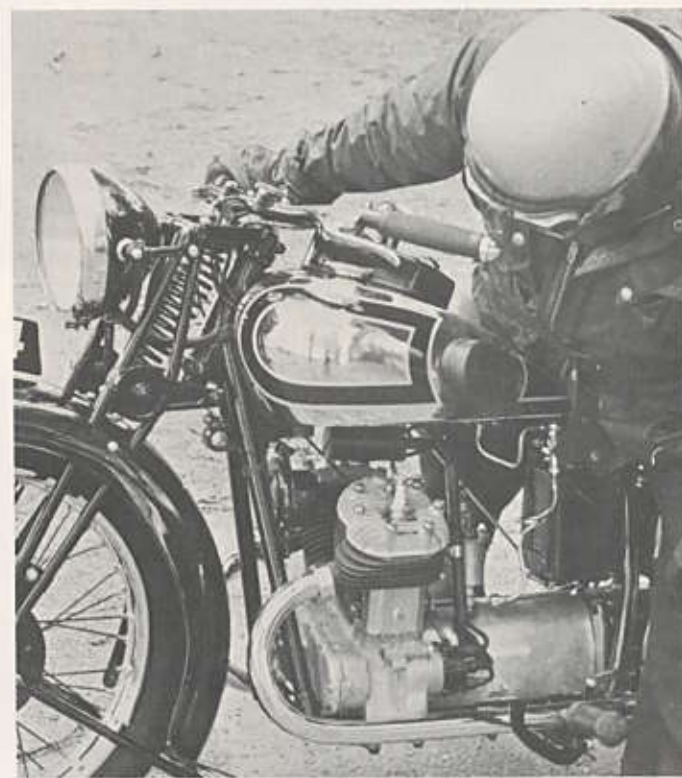
(Top) The non-adjustable abutments to the "clean" handlebars, so disliked by the tester. (Above) Smiths speedometer and Lucas electrical gear. The 3-gallon black and chrome tank is gold lined. (Below) Cylinder heads are light-alloy. The oil adjuster — see text for details — is seen at the front of the crankcase



more  
AJS  
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(Left) Twin camshafts to the sidevalves are chain driven at front of engine. (Above) A lengthy inlet manifold produces low-speed bias. (Below left) Generous steering lock so typical of the era and to be contrasted with modern superbikes. (Below right) Frame is of cradle type with duplex tubes. Sparks department by left footrest



## DATA

**Engine:** 496 cc AJS transverse aircooled fourstroke twin. 65 x 75 mm bore and stroke. Side valves enclosed in alloy covers. Detachable light-alloy cylinder heads. Light-alloy pistons. Caged-roller bigends mounted side by side. Ball main-bearings. Two, chain-driven camshafts.

**Lubrication:** Total loss system with adjustable feed pump on timing cover. Pump returns unused oil to tank as visual check on system.

**Ignition:** Coil ignition, contact-breaker driven direct from nearside camshaft.

**Carburation:** Single Amal carburettor feeding into T-manifold.

**Transmission:** Carden shaft to bevel gear in transverse-mounted gearbox with chain final drive in full chaincase. Primary shaft fitted with self-centring fabric universal joints at either end.

**Frame:** Duplex cradle with engine clamped to lower rails. Webb-type girder forks of AJS manufacture.

**Wheels:** Wellbase rims for 26 x 3.25-inch wired tyres. Internal-expanding brakes. Rear wheel quickly detachable, leaving chain in situ.

**Tanks:** Petrol tank of saddle type with instrument panel in top. Capacity 3 Imperial gallons. Oil in tank on saddle tube, capacity 1/2-gallon.

**Dimensions:** Saddle height 26 inches. Handlebar width 31 inches. Weight 330 pounds.

**Original Finish:** Black frame, wheels and mudguards. Chrome-plated petrol tank with black panels lined in gold. Chrome-plated exhaust system and small parts.

**Performance:** On top gear approximately 65 mph. On middle gear 35 to 40 mph. On low gear 15 to 20 mph. Fuel consumption 50 to 60 miles per Imperial gallon.