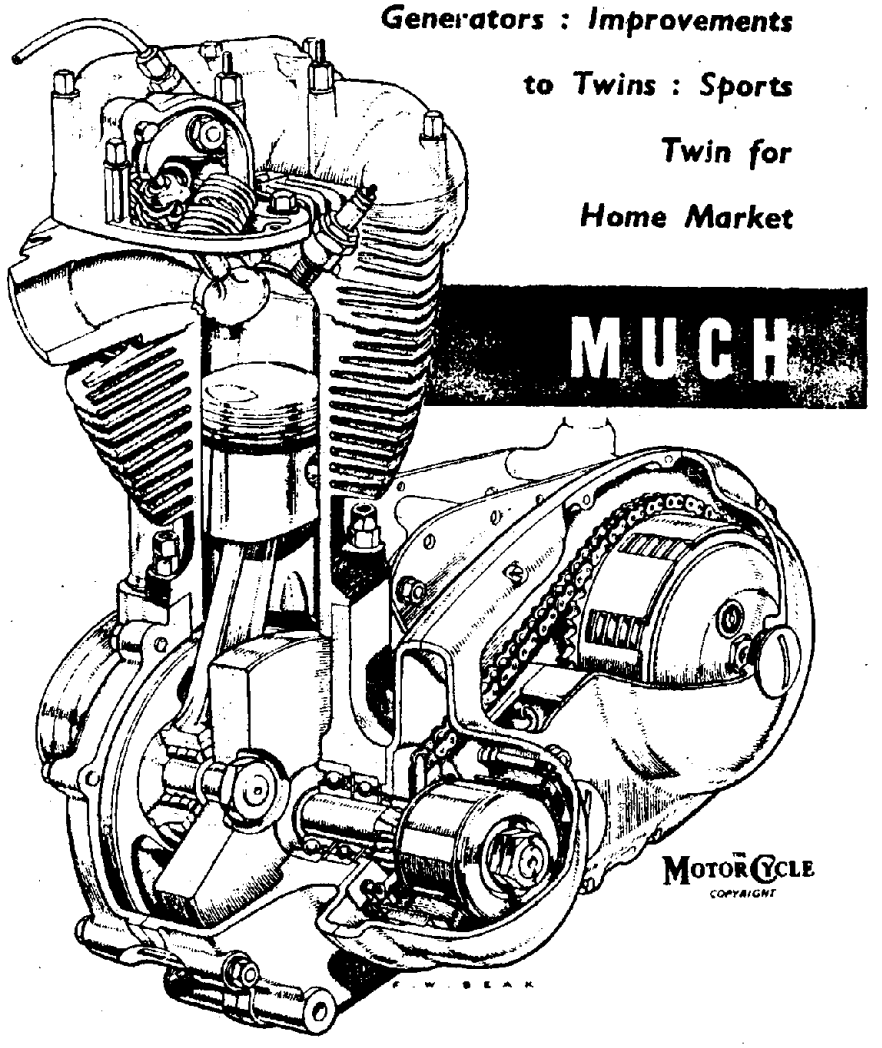
A.J.S. and Matchless Single-cylinder Roadsters Equipped with A.C. Generators : Improvements to Twins : Sports Twin for Home Market



PROGRESSIVES often complain that the only visible difference between one year's models and the next is in tank decoration or something equally superficial. That criticism certainly cannot be levelled at the A.J.S. and Matchless ranges for 1958. Appearance of the 347 and 498 c.c. roadster singles (respectively the A.J.S. 16MS and 18S and the Matchless G3LS and G80S) is radically changed by the adoption of an A.C. generator and coil ignition in lieu of the separate dynamo and magneto previously used. Not only is the right-hand aspect of the models tidied appreciably by elimination of the two instruments and the magneto drive but the left-hand aspect, too, is markedly altered. For instead of the familiar pressed-steel primary chaincase, a cast-aluminium case is used to provide a rigid mounting for the stator of the crankshaft-driven alternator.

The 498 and 592 c.c. parallel-twin roadsters (respectively the A.J.S. models 20 and 30 and Matchless G9 and G11) remain loyal to magneto ignition and a direct-current dynamo but feature a modified version of the new chaincase—the main difference is that the bulge on the crankshaft axis is less pronounced than on the singles since there is no generator to be accommodated.

No alteration has been made to the trials model which is produced only as a three-fifty (A.J.S. 16MC or Matchless G3LC). It will be recalled that the welded frame was modified considerably last year to increase ground clearance to 10in. Several minor improvements have been made to the scramblers—the 348 c.c. A.J.S. 16MCS and Matchless G3LCS and the 497 c.c. A.J.S. 18CS and Matchless G80CS. Finally, the high-output version of the 592 c.c. twin, hitherto reserved for America and other oversea countries, is now available on the home market as well. Virtually a convertible scrambler, the model is to be known as the Sportstwin and is designated 30CS in the A.J.S. range and G11CS in the Matchless list.

Mounted on an extension of the left-hand end of the crankshaft, the alternator used on the roadster singles is the Lucas RM15; it is similar to the well-known RM13 model in having a rotor of 2¼in diameter but is approximately ¼in wider. Three ¼in B.S.F. studs and nuts hold the stator in place in the dome of the chaincase outer half. Since the running clearance between rotor and stator is only 0.015in great care is taken to ensure co-axiality of the two parts. In the first place a spigot formed on the back of the chaincase inner portion registers in a hole bored in the crankcase left half co-axial with the main-bearing housing. Secondly two dowels in the chaincase inner portion ensure accurate location of the outer half. Both parts of the chaincase are clamped to the crankcase by a stud screwed into a boss just behind the main-bearing housing. Of ⅜in diameter, one of the dowels is hollow and fits over the stud; the other dowel is of ⅜in diameter and is pressed into the rearmost portion of the joint face.

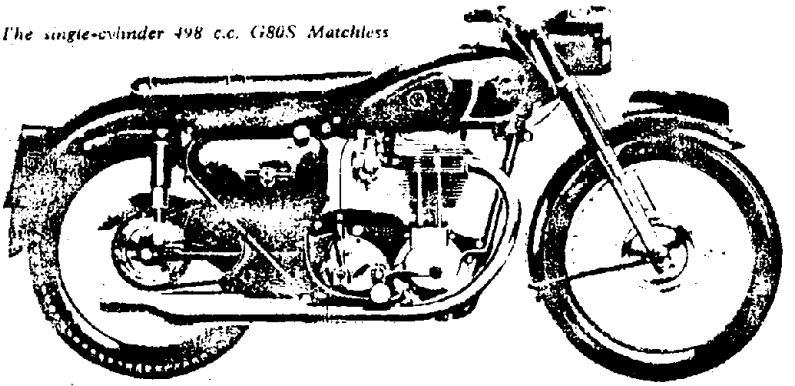
The chaincase is polished and the two halves are held together by 14 cheese-head screws threaded ⅛in B.S.F. Two flush-fitting plugs in the outer half incorporate milled slots to facilitate removal and replacement. One of the plugs provides for checking chain tension and filling the case with oil to the correct level; the other gives access to the clutch adjustment in the centre of the pressure plate.

In place of the old timing cover (which embodied the inner portion of the magneto chaincase) there is a deep, polished, light-alloy casting which houses the auto-advance and contact breaker. The housing is attached to the crankcase by five screws and the unit is driven by an extension of the inlet camshaft which is tapered and threaded to suit. Access to the contact breaker for adjustment involves removal of only two screws and an aluminium cover.

To offset the comparative isolation of the cylinder which results from elimination of the magneto, the depth of the barrel finning is increased on the three-fifties. Previously the space between the front engine plates was spanned by the magneto platform. To avoid unsightliness the plates are replaced by a channel-section member. In the absence of a dynamo, the ⅜in-thick rear engine plates are solid and are bridged by a modified clip-on cover which conceals the gear-box draw bolt.

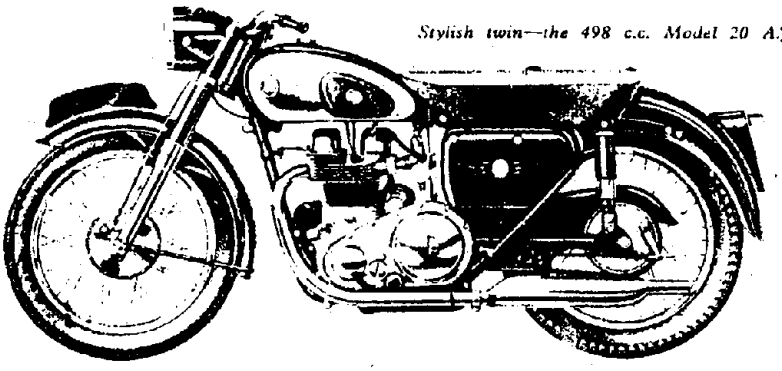
The electric cables from the stator pass through a synthetic-rubber grommet in the inner half of the chaincase and are led over the gearbox (where they are hidden by the engine-plate cover) and up behind

The single-cylinder 498 c.c. G80S Matchless

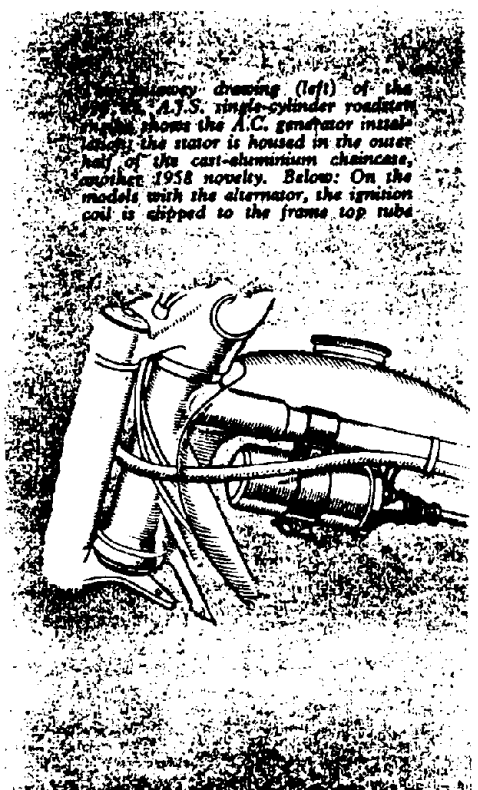


NEATER SINGLES

Stylish twin—the 498 c.c. Model 20 A.J.S.



Cutaway drawing (left) of the 1958 A.J.S. single-cylinder roadster engine shows the A.C. generator installation; the stator is housed in the outer half of the cast-aluminium chaincase, another 1958 novelty. Below: On the models with the alternator, the ignition coil is clipped to the frame top tube



the bulkhead which bridges the front of the oil tank (on the right) and the tool box (on the left). A four-way snap fastener at that point permits the cables to be disconnected if required.

Situation of the rectifier is beneath the seat nose, just behind the battery and inboard of the tool compartment to which it is attached by a bolt. (The battery is set transversely and protrudes into the front of the tool box.) Should it ever prove necessary, replacement of the rectifier is a simple task. First the seat is taken off after removal of its two rear securing bolts and slackening of the nuts holding the forked ears at the front. Then the leads are disconnected from the rectifier, a nut is undone inside the tool box and the rectifier lifted away.

Incidentally, tool-box capacity is increased by the absence of the voltage regulator previously housed there. As before, the horn is also mounted under the seat nose—on a bracket at the top of the seat tube. To the right of the horn is space for an air filter which is an optional extra.

A simple, figure-eight clip attaches the ignition coil to the underside of the frame top tube just behind the steering head; the short high-tension lead emerges from the rear end of the coil. A detachable ignition key fits in the middle of the light switch in the headlamp shell. As on all Lucas A.C. sets, an emergency-start position is provided; it directs the bulk of the generator output to the coil so that the engine may be kick-started even if the battery is discharged.

Generator output is said to balance the full lamp load at an engine speed of 1,400 r.p.m., which is equivalent to about 22 m.p.h. in top gear on the five-hundreds or 18 m.p.h. on the three-fifties. An incidental lighting modification common to all the roadsters is reversion from two separate pilot lights to the more general arrangement of one small bulb in the reflector.

A minor alteration on the smaller singles is that frame design is brought into line with that of the larger models by unification of the attachment lugs for the sub-frame and the rear of the petrol tank. All the roadster singles are of conventional general design. The engines have light-alloy cylinder heads with cast-in valve seats; the valves are Stellite tipped, chromium plated on the stems and closed by overlapping hairpin springs. Wire-wound, close-clearance pistons are used. Lubrication is on the dry-sump principle with a four-pint oil tank.

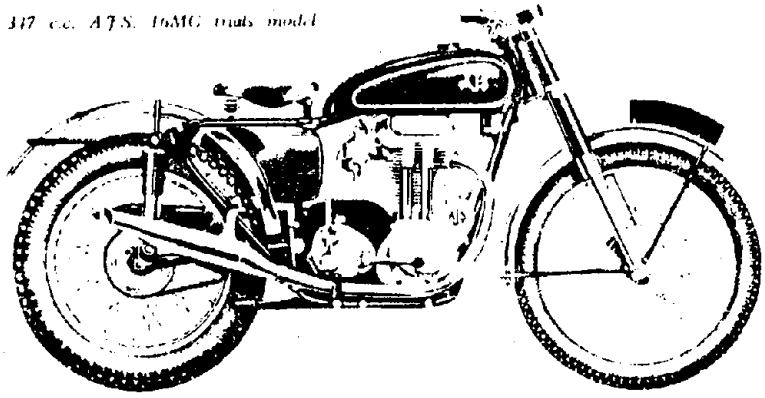
Introduced last year, an A.M.C. four-speed gear box is fitted. The gear change has been lightened by use of a lower-rate selector spring; this modification, of course, applies also to the roadster twins and to the competition models.

The frame is of brazed-lug construction with pivoted-fork rear springing; the front fork is of telescopic pattern. Hubs are full-width, ribbed aluminium castings. Two more small alterations applicable to the twins as well as the singles are a ½in lowering of seat height—as a result of shortening of the rear shock absorbers—and chromium plating of the middle of the wheel rims in addition to the sides.

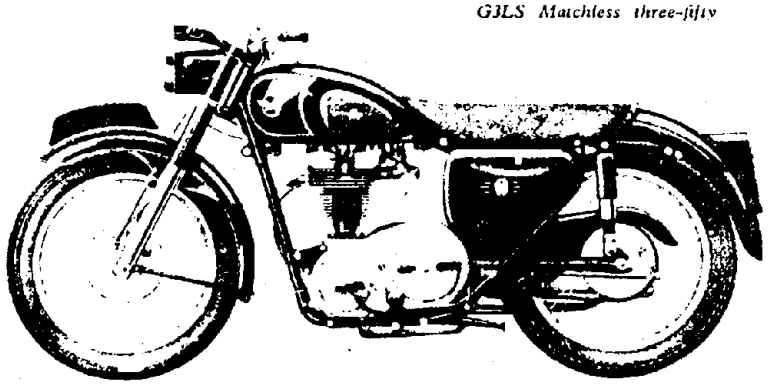
Apart from the minor changes mentioned and adoption of a light-alloy chaincase, the twins are virtually unaltered. With the exception of the power units and fuel-tank decoration they follow the same general lines as the singles. Whereas the tanks on the singles are enamelled black and lined by hand, those on the twins have detachable, chromium-plated side panels framed in plastic beading. (In both cases small plastic motifs are fitted.) The panels are attached to the tanks by the two screws which retain the motif and another two which fix the kneegrip plates in position. Each model has a distinct blend of tank finish and beading colour. Both five-hundreds have black enamelled tanks but the beading on the A.J.S. is light blue while that on the Matchless is red; the six-hundred A.J.S. combines a royal-blue tank with light-blue beading; the G11 Matchless has a dark-red tank and black beading.

A distinctive feature of the twin-cylinder engines is the use of a third bearing in the middle of the crankshaft; the bearing is plain and carried in a separate, cast-aluminium plate. The big-end bearings are also plain and the connecting rods are light-alloy forgings. Separate castings are used for the cylinder barrels and for the aluminium-alloy heads. Valve-clearance adjustment is effected by eccentric overhead-rocker spindles.

347 c.c. A.J.S. 16MC trials model



G3LS Matchless three-fifty



Basically the new Sportstwin is the scrambles model powered by a tuned version of the 592 c.c. twin-cylinder engine. The tuning involves little departure from standard practice and is confined to a rise in compression ratio to 8.5 to 1 and the use of a siamezed exhaust system. Both measures give an appreciable increase in power; the exhaust layout also enhances the quality of the note. As on the other twins, the new chaincase is used.

A slight alteration has been made to the scrambler frame cradle to accommodate the twin-cylinder engine and there is a lug on the front down tube for a cylinder-head steady; there are also lugs on the sub-frame for pillion footrests. Export models are fitted with a two-gallon petrol tank which, in common with the oil tank and small tool box, is finished in red. These components are black on the home model, on which a 3¼-gallon fuel tank may be specified if required.

Handlebar shape is upswept in "semi-American" style, a folding kick-starter is standardized and the plastic covering for the dual-seat is imitation pigskin. Standard tyre equipment is a 4.00 x 19in Dunlop Sports at the rear and either a 3.00 x 21in Sports or a 3.50 x 19in Trials Universal at the front. Roadster tyres are fitted if specified. Optional extras include a quickly detachable lighting set, battery, horn and speedometer.

The modified frame cradle of the Sportstwin is also used on the single-cylinder scramblers but not, of course, the lugs for pillion footrests or cylinder-head steady. Most of the other alterations have been made as a result of experiment on the factory scramblers. First, recoil damping in the rear shock absorbers has been markedly improved, with a consequent benefit in handling. Secondly, rear-wheel spindle strength is increased by a change in heat treatment. Effectiveness of the rear mudguard is enhanced by making it longer, wider and deeper. More legroom results from tucking the oil tank closer in to the right-hand side of the model and shifting the filler neck on to the top of the tank.

The final modification is in the engine and is aimed at reducing wear and tear in the valve gear. A slight change in the form of the hairpin valve springs results in a reduced build-up of pressure although seat pressure is unaffected.

Engines of the scramblers are not merely hotted-up versions of the roadster singles but are specially designed for high power. Most noticeable differences are the use of an iron-lined, light-alloy cylinder barrel which embodies pushrod tunnels, and the vertical disposition of the sparking plug on the cylinder axis. Not apparent externally are the higher bore/stroke ratios; figures for the 348 c.c. engines are 72 and 85.5mm (compared with 63 and 93mm for the roadsters) and for the five-hundreds 86 and 85.5mm (against 82.5 and 93mm).

The racing models—the 348 c.c. 7R A.J.S. single and the 498 c.c. G45 Matchless twin—will be subjected to the usual off-season development and details of modifications will be available later.

Makers of A.J.S. and Matchless machines are Associated Motor Cycles, Ltd., Plumstead Road, London, S.E.18. Prices (in which total price includes purchase tax, payable only in Great Britain) are as follows:—

Model	Basic Price £	s	Total Price £	s	d
A.J.S. 16MS and Matchless G3LS 347 c.c. o.h.v.	187	10	233	18	2
A.J.S. 16MC and Matchless G3LC trials 347 c.c. o.h.v.	195	0	243	5	3
A.J.S. 16MCS and Matchless G3LCS scrambles 348 c.c. o.h.v.	201	0	250	14	11
A.J.S. 18S and Matchless G80S 498 c.c. o.h.v.	198	10	247	1	7
A.J.S. 18CS and Matchless G80CS scrambles 497 c.c. o.h.v.	218	0	271	19	1
A.J.S. 20 and Matchless G9 498 c.c. o.h.v. twin	225	10	281	6	3
A.J.S. 30 and Matchless G11 592 c.c. o.h.v. twin	231	10	288	15	11
A.J.S. 30CS and Matchless G11CS 592 c.c. o.h.v. twin	240	0	299	8	0
A.J.S. 7R 349 c.c. o.h.c. racing model	335	0	417	18	3
Matchless G45 498 c.c. o.h.v. twin racing model	335	0	417	18	3
Lighting extra, competition models	8	17	6	11	1	6

On the alternator-equipped singles the contact-breaker for the coil ignition is driven off the end of the inlet cam spindle through a centrifugal automatic-advance coupling. The contact-breaker cover is secured by two screws