

BIGGER Parallel Twins

MODELS OF 646 c.c. IN 1959

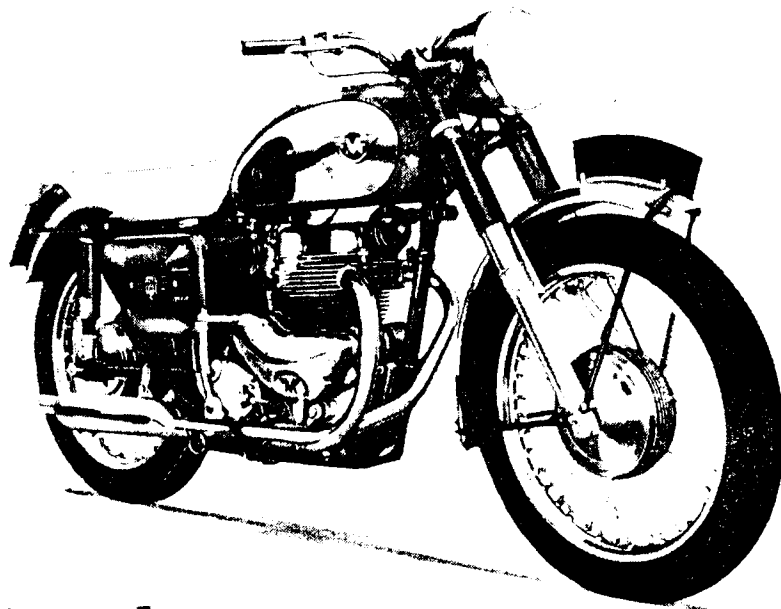
A.J.S. AND MATCHLESS

RANGES : MUCH MODIFIED

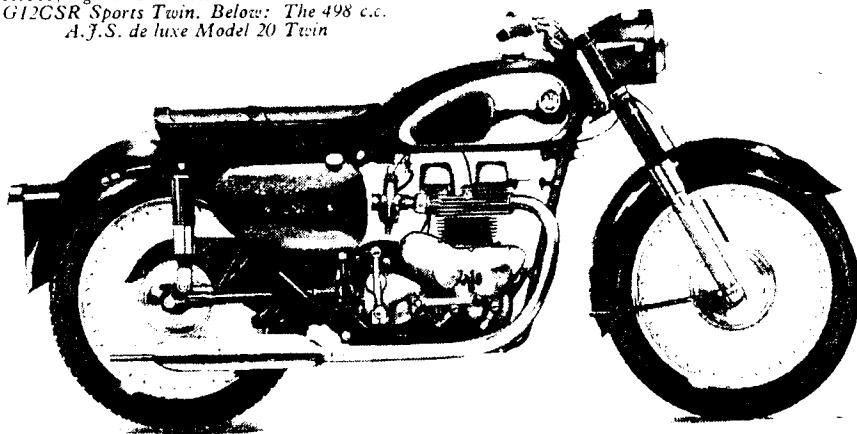
347 c.c. TRIALS

MACHINES AND NEW

TWO-FIFTY SCRAMBLERS



Above, right: The new 646 c.c. Matchless G12CSR Sports Twin. Below: The 498 c.c. A.J.S. de luxe Model 20 Twin



79.3mm and the increase in cylinder barrel length makes it practicable to use the current type of connecting rods and pistons. The Amal Monobloc carburettor has a choke diameter of $1\frac{1}{4}$ in, as against the $1\frac{1}{8}$ in of the six-hundreds.

On the standard and de luxe six-fifties the compression ratio is 7.5 to 1 whereas the two sporting versions of each make have 8.5 to 1 pistons. Power output is further increased on the SC and SCR models by a modification to the shape of the inlet tract. Development engineer Jack Williams has been responsible for this change, the benefit of which was proved by Vic Willoughby's 102.9 miles in the hour at M.I.R.A. last April on a 592 c.c. Sports Twin Matchless. Another feature of these machines is a siamesed exhaust system in place of the separate pipes and silencers of the other twins.

Following its successful introduction last year on the 347 and 498 c.c. roadster singles, a Lucas RM15 alternator is fitted to the 1959 standard twins, but separate magneto and dynamo continue to be employed on the remaining twins (lighting equipment is an optional extra on the scramblers). Installation of the generator is exactly as on the singles, with the rotor keyed to the drive-side mainshaft and the stator located by a spigot in a bulge in the outer half of the primary chaincase. The distributor takes the place of the magneto, behind the cylinders.

Features common to all the twins include a plain main bearing in the middle of the crankshaft—a detail which contributes in no small measure to the almost legendary robustness of these engines. Cylinders and heads are separate castings, in iron and aluminium alloy respectively, and the overhead rockers are pedestal mounted with eccentric bushes for valve-clearance adjustment. Connecting rods

EVERY motor cyclist—whether his enthusiasm centres on road work, trials, scrambles or racing—will find interest in the A.J.S. and Matchless 1959 programmes, for the developments embrace all four categories. The range of twins has been extended from three to eight, and use of a longer-stroke crankshaft has put up the capacity of the larger versions from 592 to 646 c.c., with a corresponding gain in power output.

Next, the very successful 347 c.c. trials machines have been made still more functional by shortening of the wheelbase and effecting a valuable reduction in dry weight to under 300 lb. So impressive has proved the performance of the o.h.v. two-fifty roadsters (introduced earlier this year) that the advent of scrambles variants is hardly unexpected. Finally, the prototype 496 c.c. single-cylinder Matchless racer has had such a successful first season that it is to go into limited production next year.

There are now four A.J.S. and Matchless twins in each capacity class and the

specifications of corresponding five-hundred and six-fifty models differ only in respect of the power unit and gear ratios. The four models comprise standard and de luxe roadsters, scrambler and Sports Twin—in effect a road-equipped scrambler. For the 498 c.c. machines the familiar G9 (Matchless) and 20 (A.J.S.) designations are retained, with the suffixes deL, CS and CSR for the de luxe, scrambler and Sports Twin variations. G12 and 31 denote the corresponding six-fifties with the same suffixes.

Not strictly new—because a few examples have gone to the U.S.A. during the past year—the 646 c.c. power unit closely follows the pattern of its predecessors. In fact, the only marked external difference from the 592 c.c. engine is that the cylinder barrels are longer and have an extra fin.

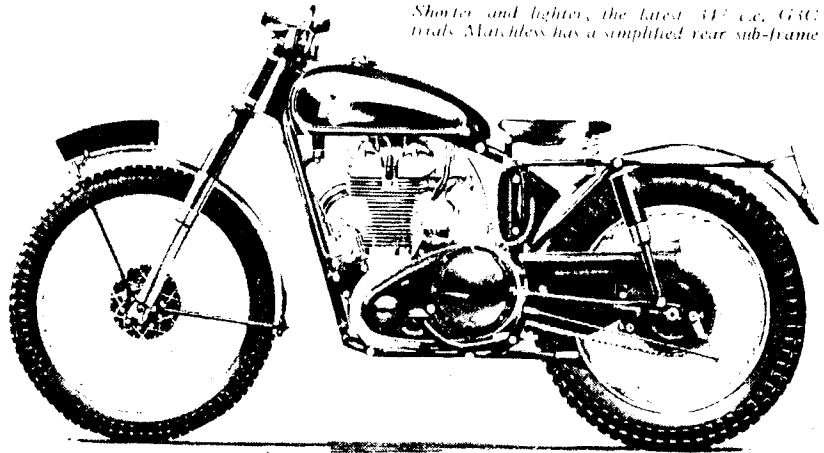
With the existing cylinder centres the limit on bore had, at 72mm, been reached on the six-hundreds, so the desired capacity enlargement has been achieved by lengthening the stroke from 72.8 to

are of light alloy and pistons are wire wound above the gudgeon pin to control expansion and so minimize the cold clearances necessary.

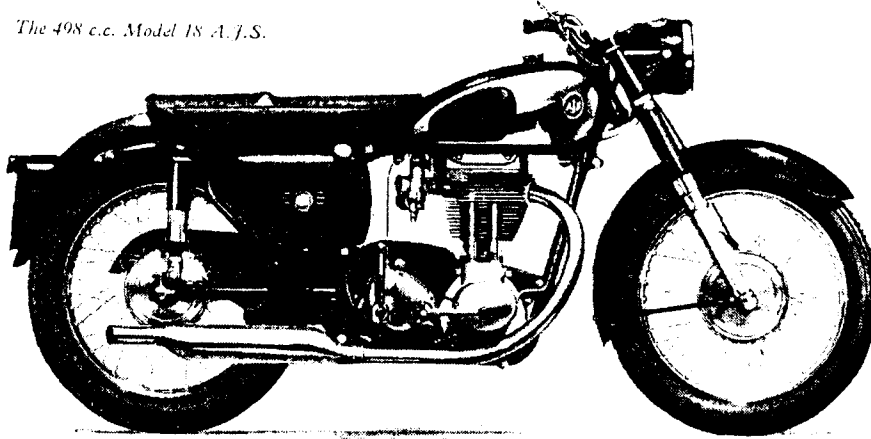
The 347 and 498 c.c. single-cylinder engines are sturdy and orthodox units, both of which have a stroke of 93mm; bores are 69 and 82.5mm. Again, cylinder barrels are in cast iron and heads in light alloy. Unlike the twins, the rockers are carried in the rocker box, while the contact breaker is driven off the end of the inlet-cam spindle.

Although of basically similar design, the engines of the single-cylinder scramblers have a shorter stroke (85.5mm) and bores of 72 and 86mm, giving capacities of 348 and 497 c.c. A light-alloy cylinder barrel, high-compression ratio and special cams are other specification differences. Breath-

Shorter and lighter, the latest 347 c.c. G.C.C. trials Matchless has a simplified rear sub-frame



The 498 c.c. Model 18 A.J.S.



replaces that of 3½ gallons previously fitted. The new tank differs in construction from the others in that the welded seam is on the centre line of the machine and not along the bottom edges. On the 347 and 498 c.c. roadster singles the 3½-gallon tank is retained and the scrambler variants have the two-gallon tank. Oil-tank capacity is four pints on all these machines except the SC and SCR groups on which a five-pint tank is fitted.

No changes have been made to the Teledraulic front fork or the pivoted-fork rear springing with its Girling hydraulically damped suspension units. The 7in-diameter brakes and full-width light-alloy hubs, too, are unchanged.

Appearance of the roadsters of 347 c.c. and over is much improved by the adoption of new one-piece mudguards of deep section, resembling those of the two-fifty models. Competition machines and the Sports Twins continue to have polished light-alloy mudguards.

Wheels of 19in diameter are fitted to all the road-going mounts of over 250 c.c. In each case the ribbed front tyre is of 3.25in section and the 347 c.c. models have a similar-size studded rear tyre, while on the larger models 3.50in is specified. On the scramblers the Sports tyres are 3.00×21in (front) and 4.00×19in (rear).

As did their predecessors, the latest A.J.S. and Matchless 347 c.c. trials mounts have a power unit similar to the roadster three-fifties but with a lower compression ratio, "softer" cams, a light-alloy barrel and magneto ignition. In other respects the machines have been considerably modified.

Wheelbase has been shortened by no less than 1½in to 52½in by the simple expedient of fitting a rear fork of different pattern. The previous type resembled that of the roadsters in having a massive malleable casting at the pivot with a bridge member ahead of the wheel. It is replaced by an unbridged fork which, as on the two-fifties, has one arm integral with the pivot spindle and the other clamped and cottered thereto. This modified construction has of itself contributed largely to the total weight saving (about 25 lb) and a further reduction comes from discarding the malleable-cast fork ends in favour of trapped ends to the tubes forming the arms.

The rear sub-frame, too, is entirely different and of much lighter construction,

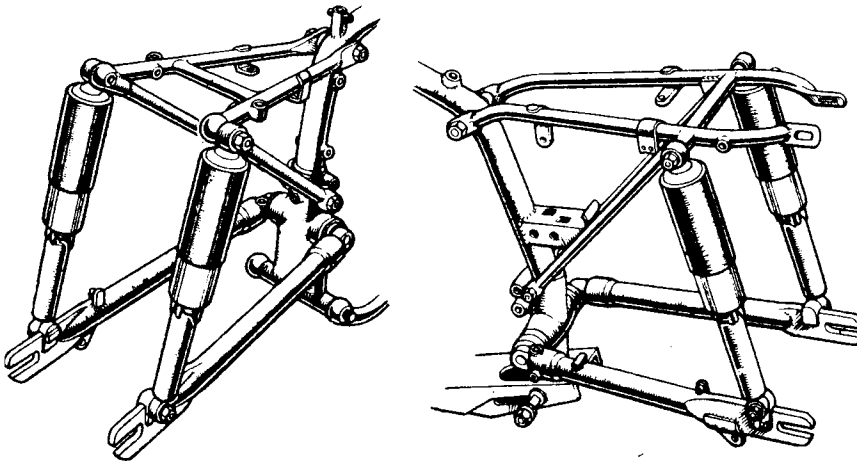
ing of the 1959 units has been improved by a modification to the inlet port (somewhat similar to that on the sporting twins) and a reduction in the diameter of the inlet-valve stem to ⅝in. For these models race kits are being prepared which will effect a considerable increase in performance; full details will be announced later.

In common with the three-fifty and five-hundred roadster singles, the standard and de luxe twins have a single-down-tube frame of brazed-lug construc-

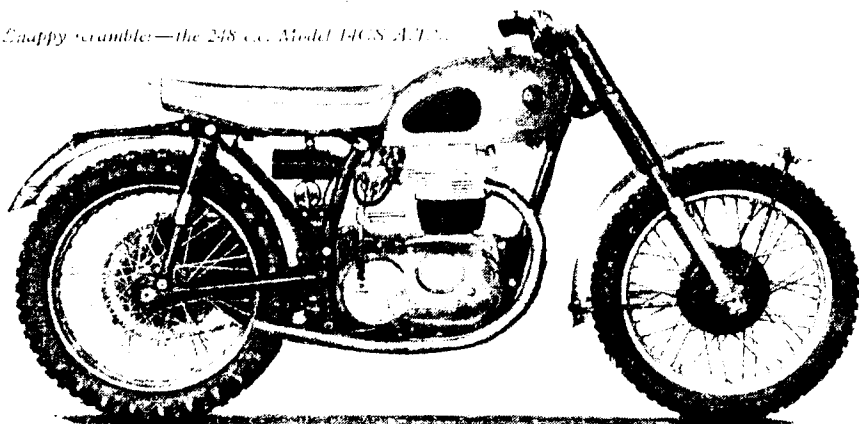
tion, with separate bolted-on engine-cradle and rear sub-frame loops. The frame fitted to the sporting twins and the three-fifty and five-hundred scrambler singles follows the same layout but has a heavier-gauge down tube; the cradle members are integral with the rear loops which are shorter and so result in greater inclination of the suspension units.

The scrambler twins have a two-gallon petrol tank as standard but on the remaining twins a handsome new 4½-gallon tank

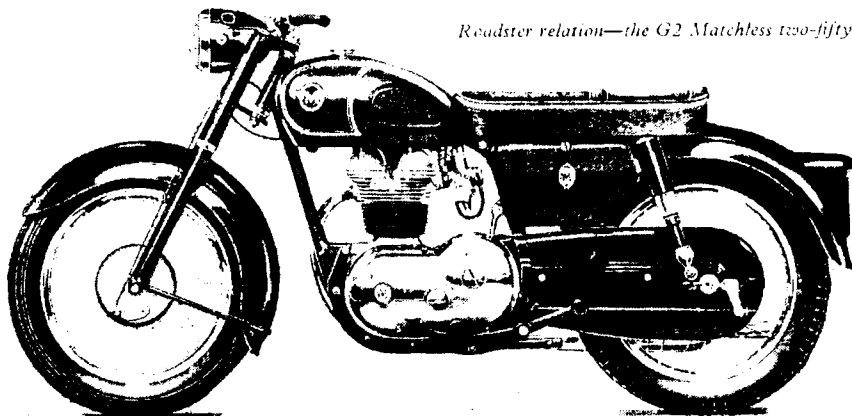
Similarity with a difference—the rear fork and sub-frame layout of the three-fifty trials machines (left) and the two-fifty scramblers (right). Girling suspension units are employed



Snappy scrambler—the 248 c.c. Model H.C.S. A.T. 17.



Roadster relation—the G2 Matchless two-fifty



again based on the two-fifty design. The diagonal struts bracing the horizontal tubes are bolted to the seat tube above the fork-pivot lug and the rear-suspension legs are inclined forward appreciably. Since the tubes are shorter it has been possible to employ smaller-diameter material without sacrifice of strength.

Of welded construction, with gussets at the steering head, the main frame is as before but the front fork has been lightened by the use of smaller-diameter stanchion tubes, heat treated to compensate for the reduced section. Yet more weight has been pared away by employing a near 2½-pint oil tank and fabricated steel hubs with 5½-in-diameter brakes in place of the full-width hubs and 7in brakes of the previous trials models.

Mudguards are in light alloy and the Dunlop Trials Universal tyres are of 4.00 × 19in and 2.75 × 21in section on rear and front wheels respectively. The high ground clearance for which these models are noted becomes still more effective, of course, with the reduction in wheelbase.

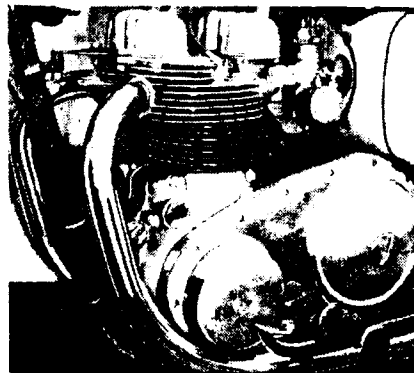
Described in detail in *The Motor Cycle* for March 13, the 248 c.c. G2 Matchless and 14 A.J.S. machines are compact overhead-valve models of very clean, modern appearance. The over-square (69.85 × 64.85mm) engine has many interesting features including a ¼in désaxé of the cylinder relative to the crankshaft, an obliquely mounted cylinder head, two-pinion timing gear with trailing cam followers and an oil container enclosed within the engine side cover. At 1½in, carburettor-choke diameter is

unusually large for a two-fifty and, with the 7.8 to 1 compression ratio, helps the engine to attain its high output of around 18 b.h.p. Ignition and lighting are supplied by a Wico-Pacy alternator. Although the gear box appears to be in unit with the engine it is in fact a separate assembly, for ease of overhaul.

Frame construction is orthodox save that the cradle portion is not tubular but is formed by two steel pressings. One passes beneath the crankcase, while the other boxes it in below the gear box and extends rearward of the seat tube to carry the pillion footrests and silencer stay.

As on the other models in the range, a telescopic front fork and pivoted-fork rear springing with Girling units are

The standard twins of both capacities feature an alternator installed in the primary chaincase



featured. The rear sub frame is almost completely concealed by the side cases which enclose the electrical equipment and house the tool kit. Deep-section mudguards fit snugly round the 3.25 × 17in tyres, and the wheels are equipped with 6in-diameter brakes; hubs are of full-width pattern. A pressed-steel chaincase is an optional extra.

Embodied in the new scrambler two-fifties are several specification changes to suit them to their arduous purpose. Raised compression ratio (10.5 to 1) and modified flywheels are the main engine alterations. In view of the higher power output a superior grade of steel is utilized for some of the gear-box internal components.

Only modification to the main frame is the use of heavier-gauge tubing for the front down tube. The same rear sub-frame tubes are employed as on the roadsters but, to permit 19in wheels to replace the standard 17in, the horizontal tubes are canted upward and the diagonals are welded to them further forward. Lengthened Girling legs are fitted to suit the altered triangulation. A stronger front fork which closely resembles that on the trials models is fitted. Mudguards are of polished light alloy. Tyre sizes are 3.00in front and 3.50in rear.

On all models the frame and forks are finished in black, and wheel trims, handlebar and exhaust system are chromium plated. The Matchless G2 and A.J.S. 14 have respectively a red and a blue finish for the fuel tank; the colour is repeated on a flash on each side cover of the engine.

Although a black tank is standard on the larger roadster singles and the standard twins, chromium-plated side panels—included in the specification of the deluxe twins—are available at extra charge. There are also two alternative, optional-extra schemes. On the Matchless models, mudguards, oil tank and tool box are in arctic white (instead of black) with the choice of an arctic white tank with chrome panels or a two-colour white-over-red tank. Blue forms the alternative A.J.S. colour, with light grey for the lower portion of the two-tone tank. A chromium-plated strip separates the two tank colours in each instance.

Black is specified for the tanks of the trials and scrambles machines, with the option of red (Matchless) or blue (A.J.S.). Finally, the road-equipped Sports Twins normally have the appropriate red or blue tank with chromium-plated side panels. The colour is repeated on the oil tank and tool box. The alternative gay finishes mentioned earlier are available on these models also.

Following normal A.M.C. policy, full details of the 349 c.c. (75.5 × 78 mm) 7R A.J.S. and the 496 c.c. (90 × 78 mm) G50 Matchless racing machines will not be announced until next spring. The G50 will be welcomed by private owners because, apart from its potentialities, it has so much in common with the 7R that a rider owning one of each will need the minimum duplication of spares and tools.

Makers of A.J.S. and Matchless machines are Associated Motor Cycles, Ltd., Plumstead Road, London, S.E.18. Prices had not been settled at the time of going to press but will be announced in the near future.