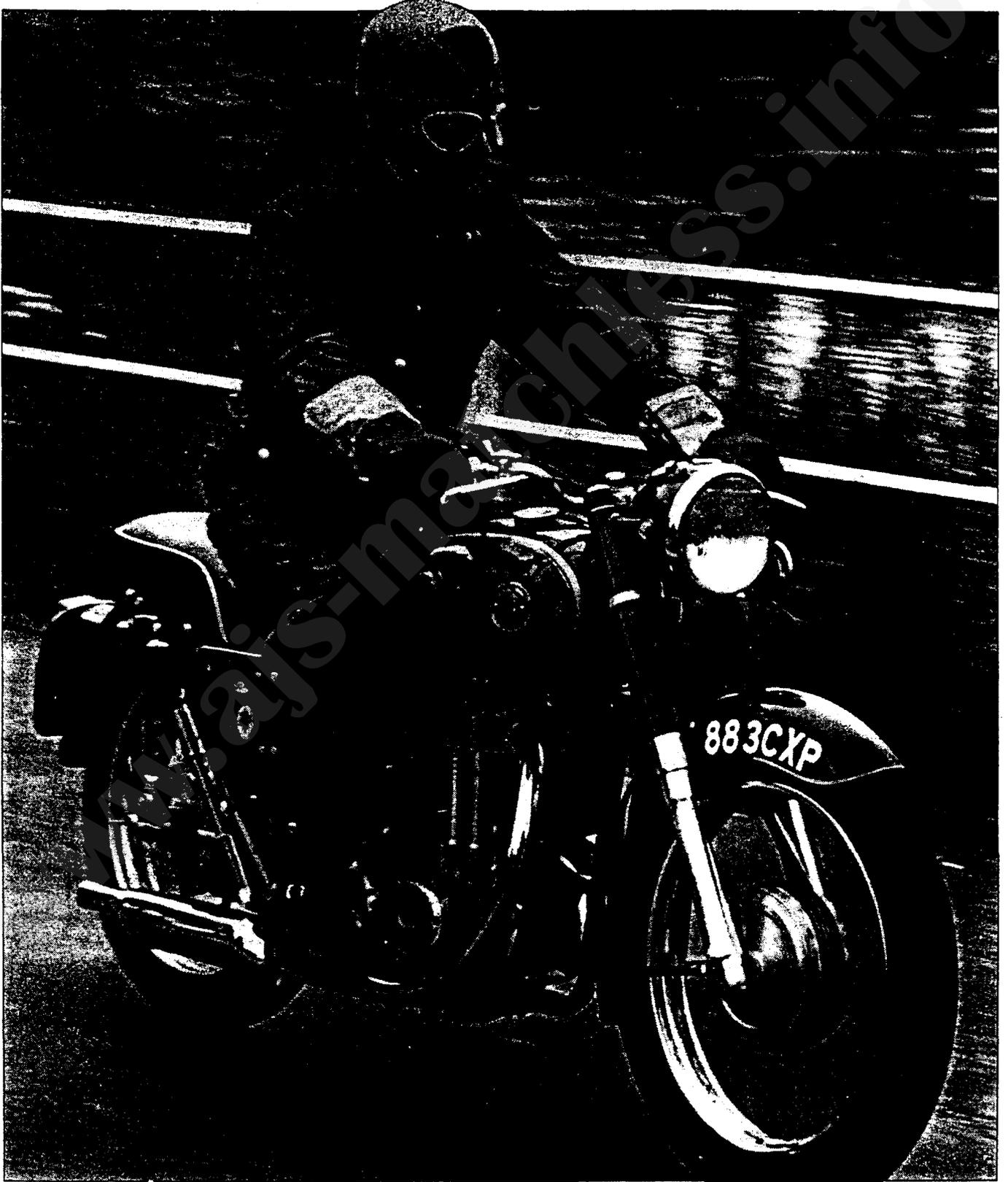


# CLASSICS TO BUY

## 350 and 500cc AMC heavyweight roadster singles



**AMC's sturdy plodder is the archetypal British go-to-work bike, but it also makes a practical classic. The range offers forties-, fifties- and sixties-style machines: choose according to your taste**  
**Mick Duckworth**

**A**JS and Matchless 350cc and 500cc heavyweight singles embody many of the virtues that once made British-built motorcycles the world's favourites. They are sturdy, simple to maintain, economical to run and can be extremely reliable.

The two-marque model range sold by Associated Motor Cycles from the end of the Second World War to the mid-sixties was ultra-conservative in concept. Yet a huge number of mostly minor changes were made throughout the machines' production life to make them tidier-looking, more practicable — and heavier. The basic model codes are AJS Model 16 and Model 18, and Matchless G3 and G80, applied to 350 and 500cc ohv models of each make respectively.

The rider who puts longevity and economy ahead of performance is well advised to go for the 350 size. The smaller capacity machines' engines are less stressed, but they are mostly installed in chassis of the same strength, and with the same brakes as the 500.

However, it is arguable that given a choice of two motorcycles with similar cycle parts, it makes sense to plump for the one with the most powerful engine. Punchier performance can be an asset in today's road conditions, too, making the 500 more attractive to the frequent rider.

Thanks to AMC's policy of badging similar machines as both AJS and Matchless models, differences between contemporaneous singles from each marque are few, and mostly cosmetic. Choosing across the timespan of both makes' production is much more complex. Machines from the forties and late fifties have a rugged demeanour harking back to pre-war tradition, whilst products of the sixties tend towards stodge and blandness. Early models have cruder suspension, electrics

**Left: 350cc AJS Model 16 with alternator electrics being roadtested for *Motor Cycling* in 1961**

and transmission components, however, so buyers might find that the ideal of style and function is offered by singles of the late fifties.

Machines from 1958 on with alternator electrics are a wise choice if you are concerned about having the best possible lighting, especially as these models are easily modernised from six to 12 volts. They could also be the easiest to restore: some earlier singles' cycle parts are now rare, and there seem to be few examples of roadster singles from the post-1962 era running in the UK today.

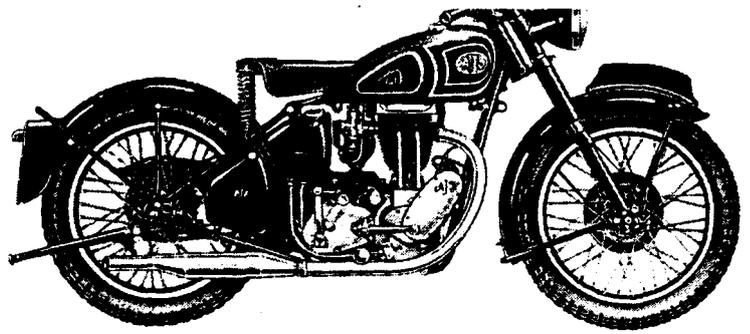
Prices are very reasonable for the products of leading British marques. A 350cc roadster in sound condition can be bought for between £1000 and £1500. But the 500s are more likely to fetch £2000.

This guide does not cover the unloved Model 8/G5 350cc 'lightweight' singles (which are actually rather heavy) of the 1960-62 period, or the Rotax-engined 500cc Matchless of recent years. AMC's competition machines, coded C and CS, which were sold in road-legal form for export, are only touched on briefly. These sought-after machines will be the subject of a future *CB* article. When ascertaining a machine's exact date, note that AMC often released a new model months before the start of its nominal year.

## Up to 1952

All AMC's postwar heavyweight singles are descended from the Matchless G3L military machine. First supplied in 1941, the telescopic front fork-equipped 350 was the clear forces' favourite and it formed a natural basis for the peacetime range announced in 1945. Many ex-services machines passed into civilian use, and the G3L makes an excellent mount for the military vehicle enthusiast.

Singles of 347 and 498cc were available from 1945. The smaller engine had the G3L's bore and stroke of 69 x 93mm, while the larger-capacity unit was a big-bore version with an 82.5mm piston. These dimensions were un-



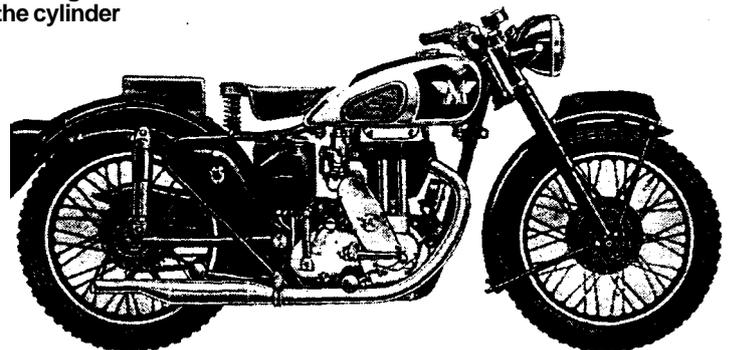
altered on roadsters until the sixties.

Not surprisingly, many 350s have been boosted to 500cc over the years, a straightforward conversion requiring a top-end swap, re-balancing of the crankshaft, and larger bores for both carburettor and exhaust pipe. Top-ends were of cast-iron up to 1951, when alloy cylinder heads were introduced on the road models.

At that time, AJS and Matchless engines became visually similar. The Matchless's Lucas magneto, which had traditionally been sited behind the cylinder, was moved ahead of it, in AJS style. This makes access to the dynamo, which is situated in between the crankcase and gearbox with a chain drive from the crankshaft inside the primary drive case, less of a maintenance nightmare.

The first post-war models were built without rear suspension, which became available for 1949, creating the 16MS, G3LS, 18S and G80S variants. The rigid option lived on until 1955, but with a new frame sharing the swinging-arm chassis' front section. Sidecar lugs were introduced at this point, too. Before AMC's famous Jampot rear suspension units arrived for 1951, inferior dampers nicknamed 'candlesticks' were fitted.

**Early Matchless models like this 1950 G80 springer have the magneto mounted behind the cylinder**



Front suspension components were also modified, banishing an irritating clacking noise which the early Teledraulics make when worked hard.

Front and rear brakes were improved by enlargement from 5.5 into 7in in 1948. The small drums are popular with builders of trials versions, although genuine C-coded AMC trials irons changed to 7in brakes at the same time as the roadsters.

## Up to 1957

The Burman CP four-speed gearbox, identifiable by its prominent filler cap, was replaced by the sturdier B52 type of the same make in 1952. At the same time, an inspection cap was provided in the pressed-steel primary chaincase, which makes clutch adjustment simpler.

An even better arrangement, with the whole domed section of the case covering the clutch made detachable, is found on models made from 1954. The most obvious cycle parts change that year was to full-width wheel hubs, although the brake shoes inside them are no wider than those in the half-width type. Wheel bearing wear is worth checking: until 1964, AMC used taper-roller units which should only allow about 0.002in of play at the rims.

Automatic advance/retard ignition control arrived on the 500s in '54, and on the 350s the next year. Its presence is ▶

# CLASSICS *to* BUY

Well-rounded or bland? 1960 500 with the heavy duplex frame and a redesigned fuel tank

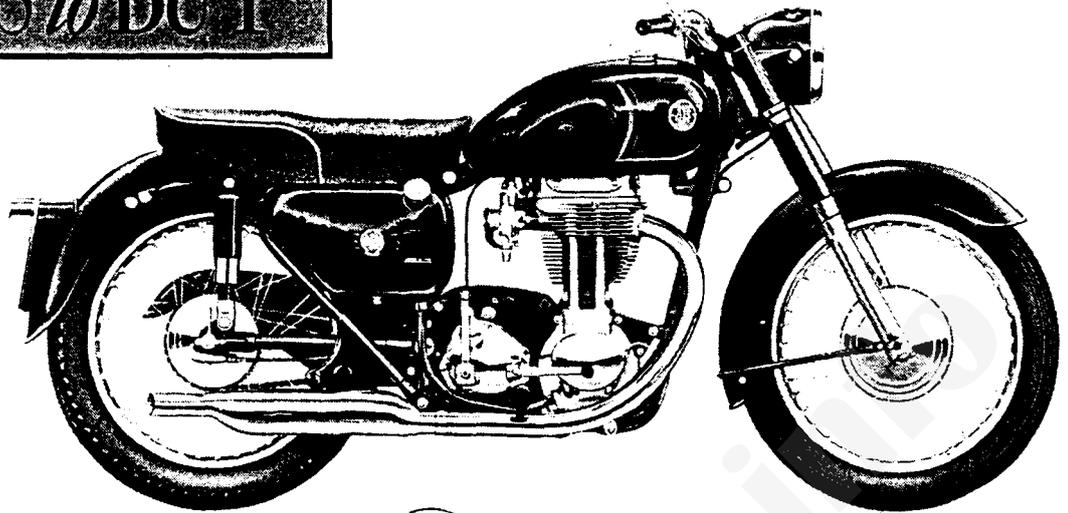
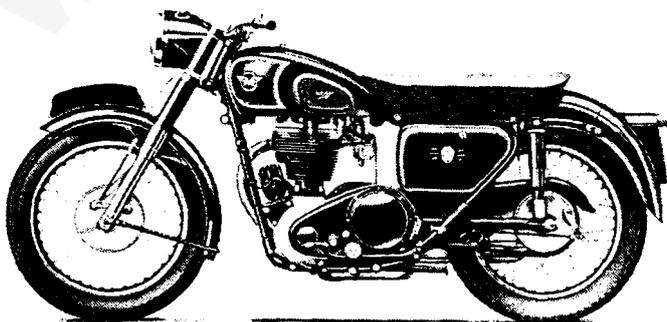
indicated by a bulge at the upper end of the magneto's chain-drive casing. Machines with this facility should also have the Lucas SR1 rotating-magnet magneto, widely held to be a superior instrument to the earlier rotating-coil type.

The timing-side mainshaft and its plain bush main bearing were increased in size from 1954, starting with the swinging-arm machines only. It is questionable whether this change actually prolongs the life of the bush, according to AMC single engine specialist Ken de Groome, who provided much of the information for this guide.

Machines from 1955 should have an Amal Monobloc carburettor, rather than the two-piece type fitted previously and for which spares are more difficult to trace. Monobloc bore sizes on roadsters are  $1\frac{1}{16}$ in for the 350s and  $1\frac{5}{32}$ in for the 500s. Cosmetic changes in '55 included merging the speedometer head into the headlamp shell and new slightly-barrelled full-width hub castings.

Cleaner styling was achieved by fitting large slab-sided oil tanks and toolboxes from 1956, but the long, slim-line oil tank can be tricky to clean out, and may even have to be cut open during restoration. The unified pressings accompanied the introduction of a completely new swinging arm frame, shared with AMC's twin cylinder machines. A subtle change to the cylinder head casting was made for 1956, resulting in shorter pushrod tubes, reaching up only to the head joint.

**Lucas SR1 magneto, Amal Monobloc carburettor and removable clutch cover on '56 Matchless 500**

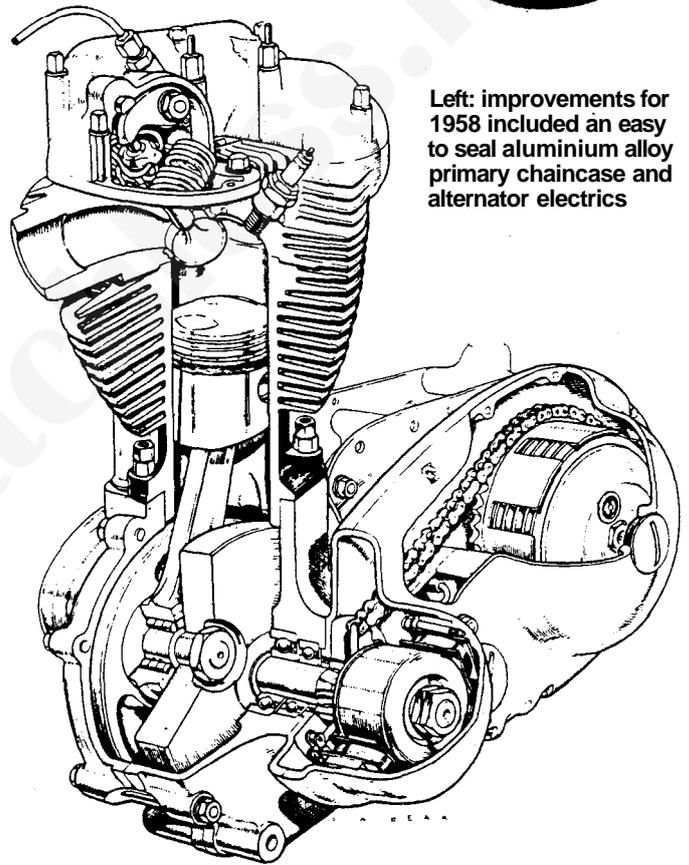


## Up to 1962

AMC's own Norton-AMC gearbox was incorporated on AJS and Matchless singles from 1957, along with a new three-stud clutch. Both items were evolved through the Norton arm of AMC, improving the product. Jampots were finally dropped in favour of Girling rear units, adapted to mate with AMC's single-lug swinging arm mounting points.

The primitive and leaky pressed-steel primary drive cover was replaced by an alloy casing in 1958. Inside it was a Lucas alternator, eliminating both the inaccessible dynamo and the archaic magneto. Points for the coil ignition system, which should provide easier starting, are in an oval timing cover which lacks the pleasing shape of the old magneto drive housing.

Further cylinder head changes were made to the 500s in 1960, easily detected if you look for uninterrupted finning around the spark plug. Although this head shares its combustion chamber dimensions with the scrambler, it doesn't have the competition machine's bigger 86mm bore. So there is a mushroom-shaped area above the



**Left: improvements for 1958 included an easy to seal aluminium alloy primary chaincase and alternator electrics**

piston, which is far from ideal for efficient performance. Whilst the competition machines were developed to improve power output, roadster engines made only marginal advances in horsepower over the years. Figures for mid-fifties roadster singles have been given as 19bhp at 5750rpm for the Model 16S and G3LS, and 25.5bhp at 5500rpm for the Model 18S and G80S.

A much heavier frame with twin downtubes is found on post-'59 machines which also have the more generous mudguarding brought in for 1959. Gearbox ratios are

more closely spaced, but the difference this makes to the ride is negligible.

Listen for a dull knocking from the timing side of the crankcase, signifying wear in the timing-side main. AMC singles have suffered from a reputation for premature big-end failure in the past. The engine's crankpin diameter is more suited to a 350cc unit than a 500. Even so, any competently-restored motor should be trouble-free. In a stripped engine with pre-1964 cast-iron flywheels, be wary of a one-piece crankpin. Contemporary and more recent pattern components are in two parts — a pin and a

hardened sleeve pressed onto it. This design has proved more durable than the all-in-one type.

You can save yourself an expensive engine rebuild by a careful examination of the timing-side crankcase casting. Look for cracking on the projecting boss that carries the feed and return oil line connections.

## The final years

The 348cc Model 16 and G3 launched for 1962 represented a major shake-up of the roadster single. Its engine dimensions are 74 x 81mm like the earliest version of the ohc 7R racer. The cast-iron crankshaft flywheels used since G3L days were kept, however. Outwardly, the engine changed in having its pushrods enclosed in tunnels cast into the iron barrel. The short-stroke 350s were sold in G3S and G80S sports versions, though alterations from touring specification seem to have been purely cosmetic. Buyers seeking the plunk of a traditional long-stroke engine will prefer the earlier units, but the rare interim 350 offers snappier acceleration.

Large cast-alloy 'knee-knocker' tank badges used from 1962 are frowned on by purists, but they have a nice period style. Wider shoes improved the front brake from 1963, although all alloy-backplate front drums need to be checked for cracks.

Norton front forks and wheel hubs mark out machines from '64 on. These are the final versions of the road models. And while they

**347cc (69 x 93mm) singles**  
*AJS 16M* 1945-55  
*Matchless G3L* 1945-55  
*AJS 16MS sprung frame* 1949-63  
*Matchless G3LS* 1949-63

**348cc (74 x 81mm) singles**  
*AJS 16 & 16S* 1962-64  
*Matchless G3 & G3S* 1962-64

**348cc (72 x 85.5mm) singles**  
*AJS 16* 1964-66

*Matchless G3* 1964-66

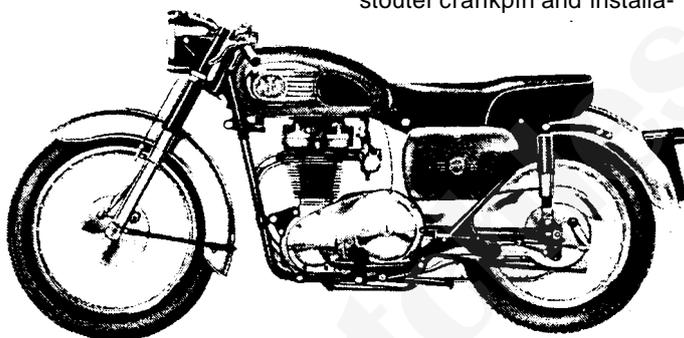
**498cc (82.5 x 93mm) singles**  
*AJS 18M* 1945-55  
*Matchless G80* 1945-55  
*AJS 18MS sprung frame* 1945-55  
*Matchless G80S sprung frame* 1949-63

**497cc (86 x 85.5mm) singles**  
*AJS 18M* 1964-66  
*Matchless G80* 1964-66

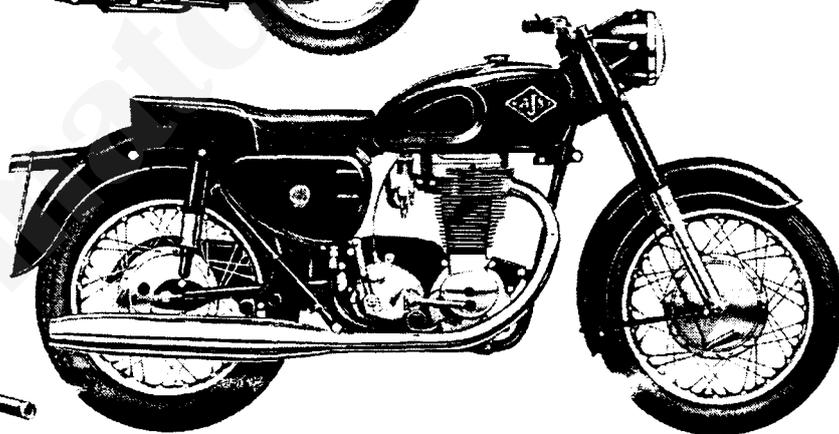
may not appeal to marque die-hards, handling is fine, and Norton's 8in front drum is a useful brake. Shorter riders may welcome the change from 19in to 18in for both wheel rims that year.

Roadster engine design

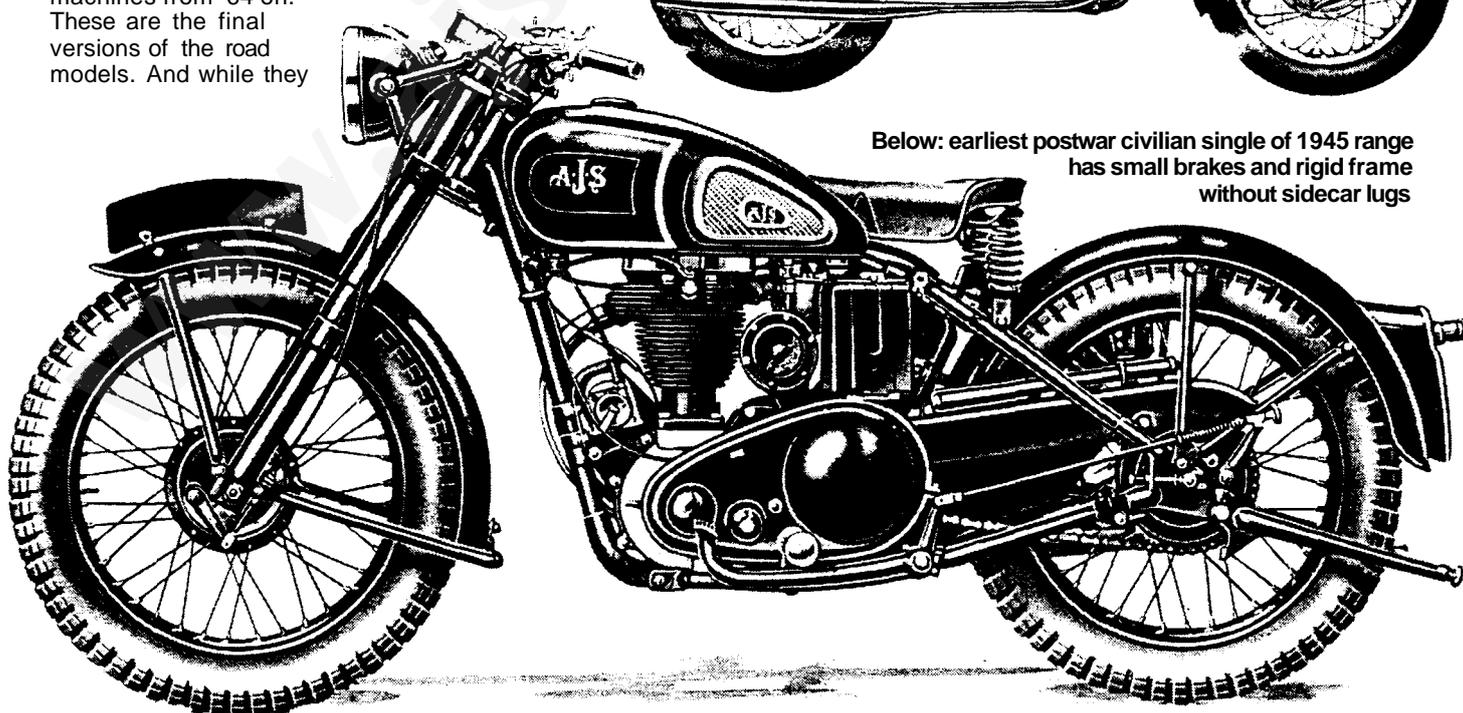
**Below: short-stroke AJS 350cc 16S introduced in 1962. A lively mount - if you can find one**



**Right: 1965 Model 18 with Norton fork and hubs, steel flywheels and the motocrosser's internal dimensions**



**Below: earliest postwar civilian single of 1945 range has small brakes and rigid frame without sidecar lugs**



tion of a Norton oil pump were also worthwhile hop-ups. All engines from '64 have integral pushrod tunnels in their cylinder barrels, although the latter are of iron, and not alloy as used on competition machines from 1950.

A limited quantity of export-style road-legal G80CS models was sold on the British market in 1967. This is a highly desirable street scrambler, so you can expect to pay over £3000 if you find one. Re-imported G80CS models from the US are also quite popular and should come a little cheaper.

The spares situation is quite healthy, with traditional AMC shops Joe Francis, Hamrax and Russell Motors all still going strong in London. The AJS and Matchless club has an extremely useful parts scheme, too. If originality is what you seek, you are advised to do some research before you part with money: Roy Bacon's books on AMC machines (published by Osprey) detail the multifarious minor alterations made to the ranges year by year.