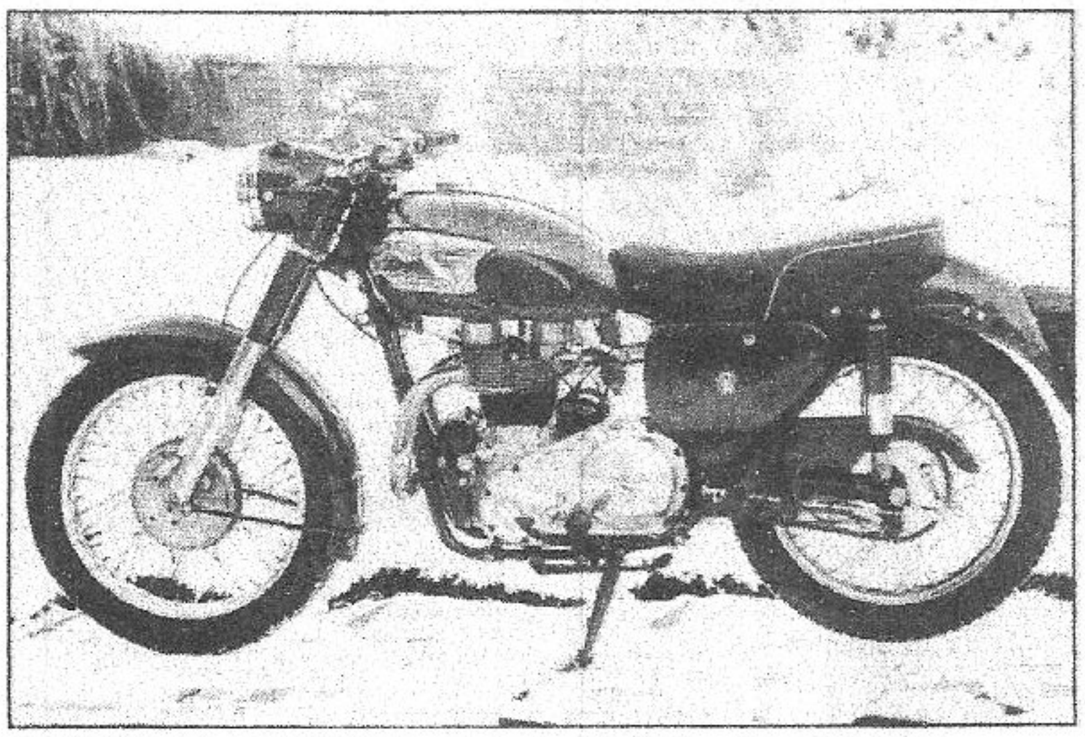
AJS & MATCHLESS TWINS

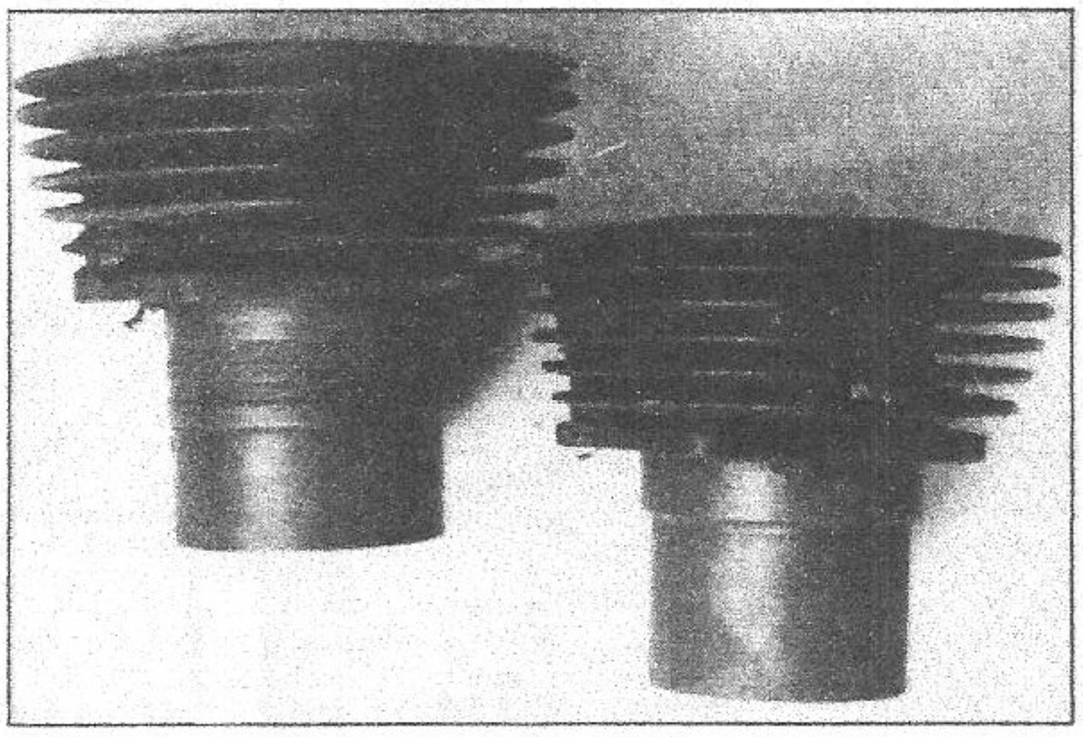
PART TWO

CONTINUED FROM DECEMBER 1988 ISSUE

ERNIE MERRYWEATHER HAS ESTABLISHED A REPUTATION SECOND-TO-NONE AS A DOCTOR OF THE AJS AND MATCHLESS TWINS. HERE HE SHARES SOME OF HIS ACCUMULATED WISDOM.



1962 Matchless 650 G12, with the "jukebox" tank badges.



Six fins mean 500cc; pre-60 (left, with "banded" lower spigot) and post-60 barrels.

BARRELS

The easiest way of telling which barrel you have is to count the fins; a 500 has six, a 600 seven and a 650 eight.

When the 500 was uprated by 100cc, Plumstead altered the barrels and crankcases by moving the stud centres outwards to accommodate the bigger bore. For this reason, it is not possible to interchange pre- and post-1956 heads and barrels.

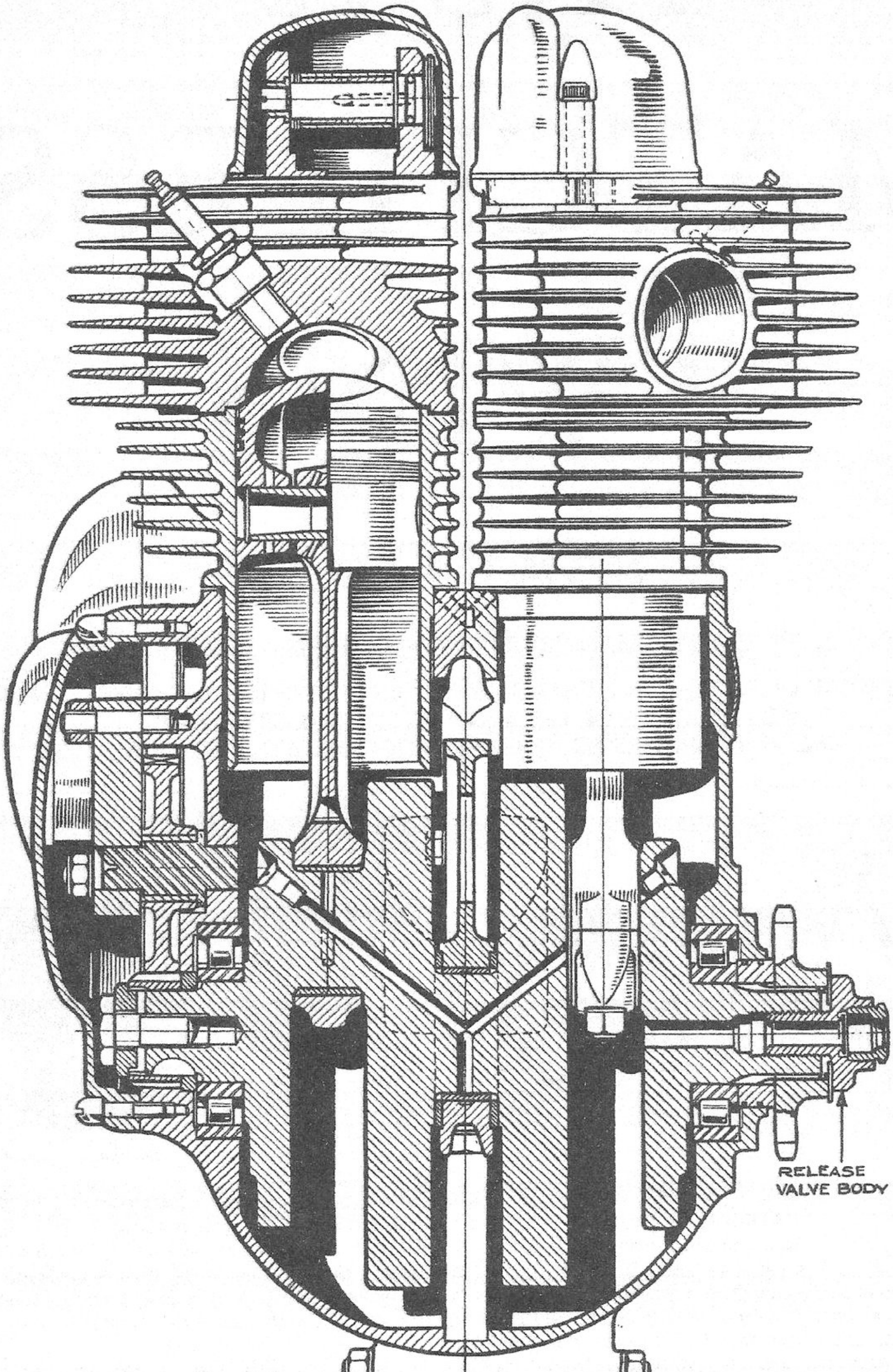
Another change came in 1960, since although the 650 was introduced in 1959, it was not until a year later that the engine was altered in any major respects. However, the barrels and cylinder heads were redesigned in 1960, with the former now incorporating a spigot and the latter a corresponding recess. Thus, it is impossible to use a 1959 head on a 1960 barrel, though it is possible to use a 1960 head on a 1959 barrel, provided that a 1959 head gasket is used.

Apart from the recess, the 1960-on cylinder head can be recognised by additional finning on the underside of the lowest fin. When compared with an earlier one, it can be seen that the combustion chamber is a different shape, too.

CYLINDER HEADS

500 and 600cc heads were identical in 1956, but in 1957 the valve head diameter was slightly enlarged, and the 600cc inlet port was increased to 1 1/16in.

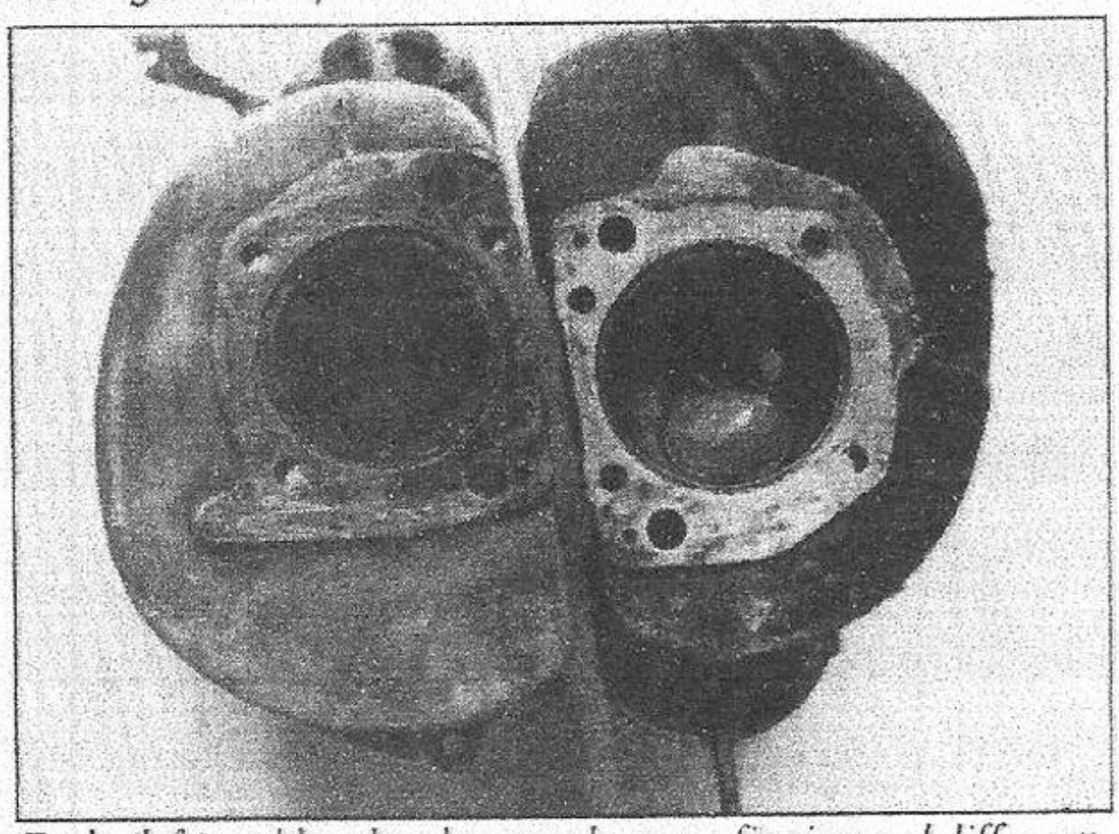
Ernie has an invaluable tip for ensuring long life for the cylinder head gasket. The head bolts must be torqued down to 22ft/lb (the books say 20ft/lb; very late – 1964 on – 650s use 25ft/lb, as the barrel/head studs were enlarged to 3/8in



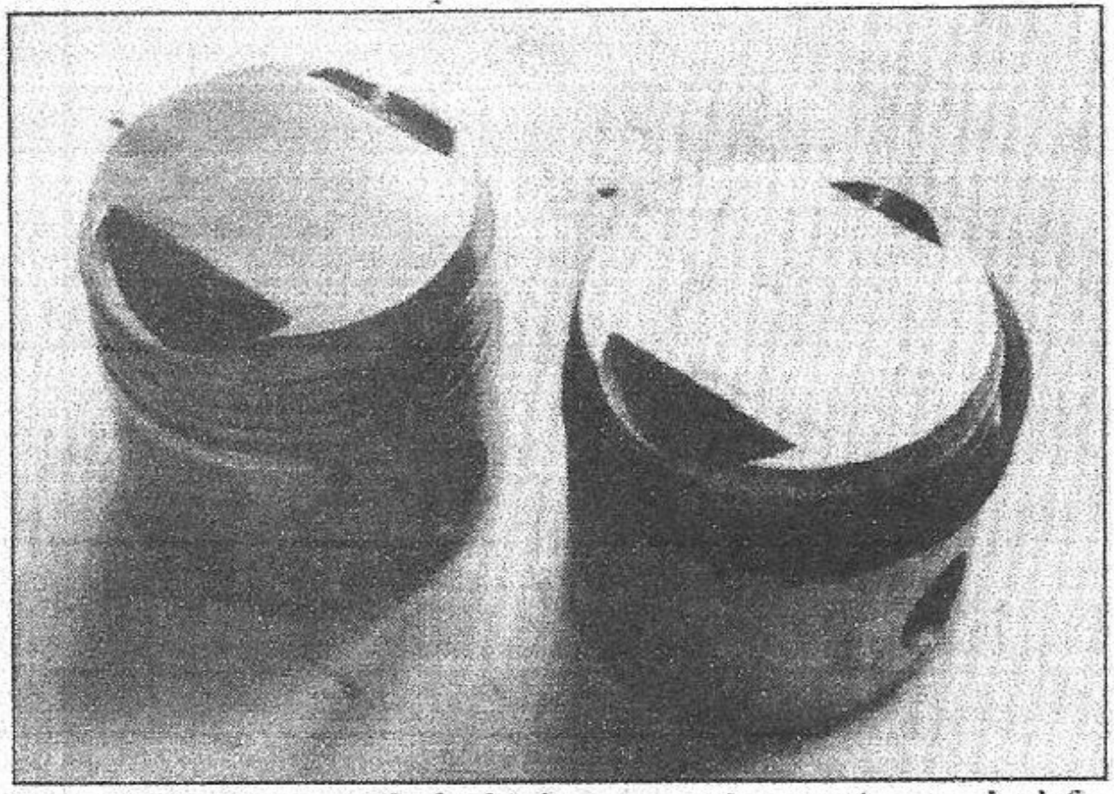
Cross section of engine showing oil galleries, oil passages, and release valve.

diameter from 5/16in), retorqued after 20 miles and then again at 100 to 150 miles. Do not leave it for 500 miles, or trouble will almost certainly follow.

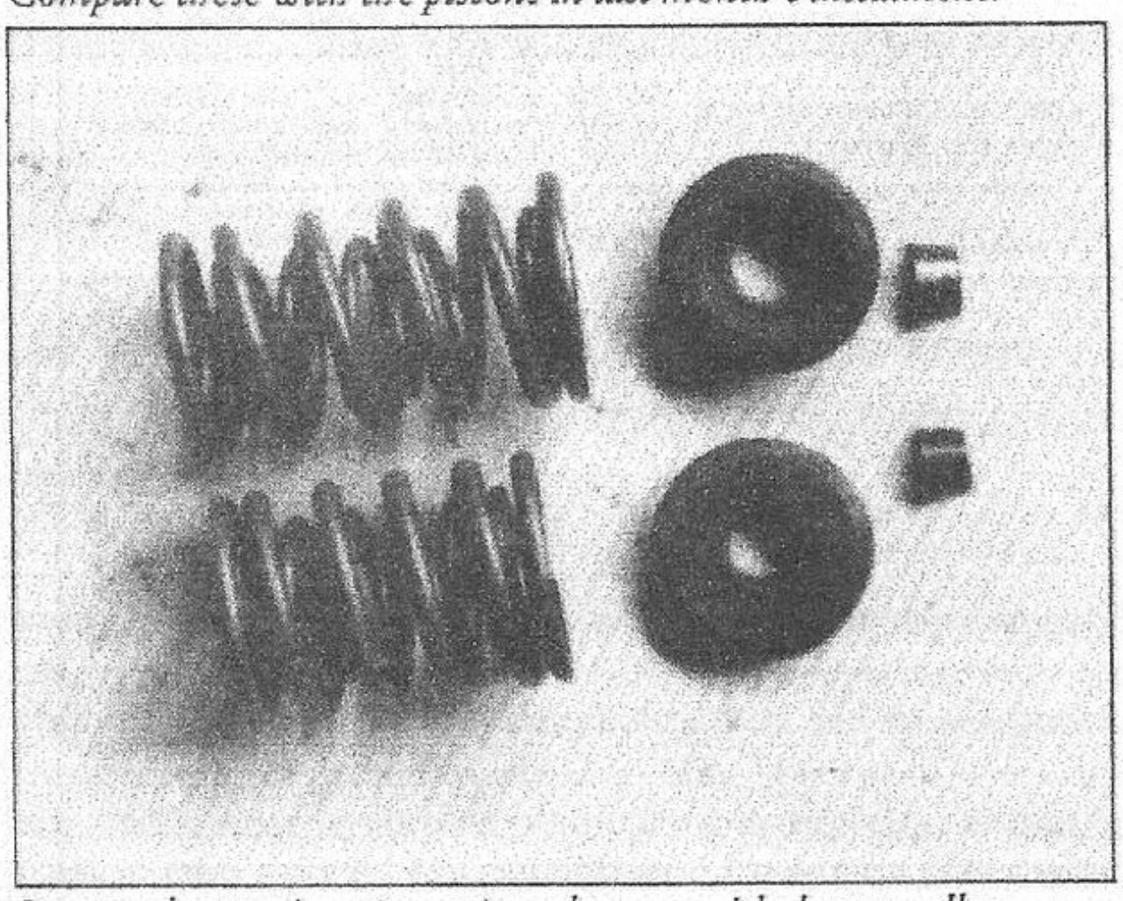
Most AMC twin cylinder heads were fitted with metering plugs, intended to reduce the amount of oil splashing round in the valve gear. The plugs were dropped for a couple of years (1959 to 1961), but Ernie Merryweather reckons that it is best always to fit them. If you are going to use heads purchased at an autojumble, for example, it is a good idea to ensure that the pair you intend to fit both have plugs in. They fit into the oil feed hole in the rocker post, and you will have to dismantle the rocker gear to inspect them.



Early (left) and late heads; note the extra finning and different combustion chamber shape.



Post-1960 pistons, with the high compression version on the left. Compare these with the pistons in last month's instalment.



Later valves springs (at top) are longer, with deeper collars.

VALVES AND SPRINGS

When the cylinder head was redesigned, the valves and springs were altered too. Before 1960 both were shorter, and the longer post-1960 items have correspondingly different collars and collets. It is just possible to fit the longer springs into pre-60 heads by mistake, but performance will be severely reduced, due to coil-binding.

The actual lengths are as follows:

Pre-1960 inner:1 19/32in; 7 coils; outer:1¾in; 6 coils;

Post-1960 inner 2.030in; 8¾ coils; outer 2.523in; 8 coils;

CARBURETTOR

Most AMC twins were fitted with single carburettors, though there was an option of twin carbs on the 650, using what the factory called distance pieces instead of the single manifold.

From 1955 to 1960, the 500 (including the 1959 CS) was fitted with a 376/6 Monobloc of 1in bore. Main jet 240 (1955–57) or 220 (1958–60) (230 or 210 if used with an air filter); pilot jet 30; throttle valve 4; needle position centre notch; needle jet .106 (.1065 in 1955/56).

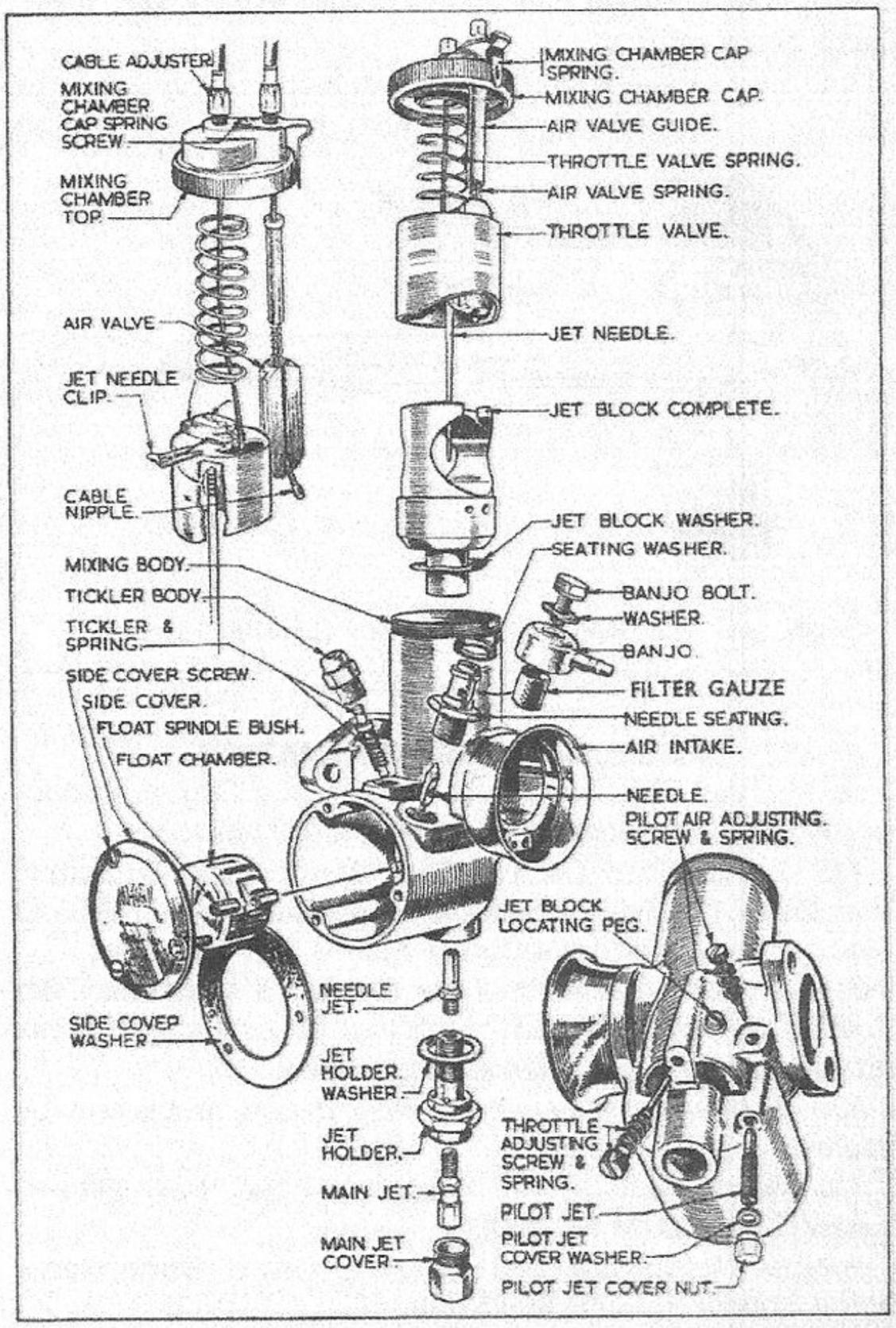
Later 500s used a 376/209; main jet 200 (180); pilot jet 25; throttle valve 4; needle position central; needle jet .106.

The 600 used a Monobloc 376/78 of 1 1/16in bore. Main jet 300 (1956) or 280 (1957–58) (290 or 270 with air filter); pilot jet 30; throttle valve 3½; needle position centre notch; needle jet .106 (.1065 in 1956).

1960 650 standard, 389/18 Monobloc; main jet 390 (340); pilot jet 20; slide 4; needle position 4th notch; needle jet .106.

1960 650 CSR, 389/22 Monobloc; main jet 450 (390); pilot jet 20; slide 4; needle position 4th notch; needle jet .106.

1961/62 650 standard, 389/50 Monobloc; main jet 390 (340); pilot jet 20; slide 4; needle position 4th notch; needle jet .106.



1961/62 650 CSR, 389/49 Monobloc; main jet 450 (390); pilot jet 20; slide 4; needle position 4th notch; needle jet .106.

Twin carbs, 389/49; main jet 280; pilot jet 25; slide 3; needle position 4th notch; needle jet .106.

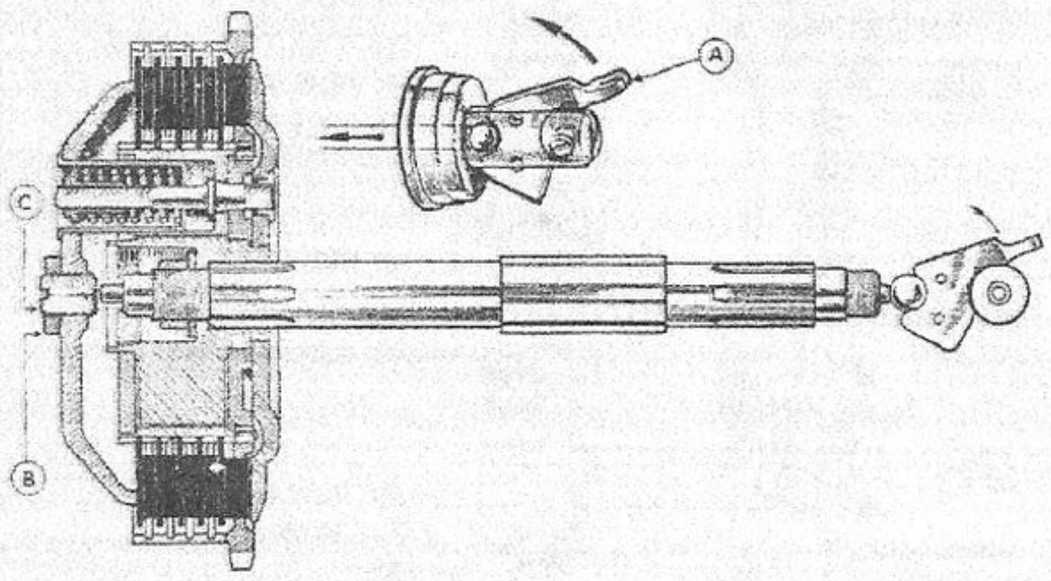
It is, of course, possible to update the carburation with a new Concentric, but care needs to be taken over choosing the jets. A direct replacement (ie a 450 main jet) will be far too rich, and Ernie Merryweather suggests that a 310 works well with a CSR.

CLUTCH

The three-spring, four-plate AMC clutch introduced in 1957 went through several changes. It was fitted with loose friction inserts at first (in both plates and body); in 1960 this was changed to bonded plates; and in 1962 a five-plate clutch was introduced for the CSR models. The latter can be used on all earlier models.

It is a straightforward clutch, but the usual precautions should be taken. Inspect all plates for buckling and wear on the tangs and friction pads; ensure that the spring cups are not fouling the holes in the pressure plate; and check the springs. New free length is 1 25/32in (1 11/16in for the five-plate clutch), and springs should not be used if they have shrunk by more than 3/16in. As with any clutch, it is essential to ensure that the pressure plate is lifting squarely, and this is adjusted by means of the springs and their screws.

Sealing the primary chaincase of earlier twins is something of a bugbear, but Ernie has found that sensible use of a modern silicon gasket compound, allowed to set for ten minutes before bolting up, does the job. Even the later alloy covers can give problems, and most of the leaks stem from overtightening, which causes the covers to bow and, eventually, take a set.



Clutch, gear box main shaft and clutch operating mechanism

MISCELLANEOUS INFORMATION

Ernie Merryweather, Northants Classic Bike Centre, 25 Victoria Road, Irthlingborough, Northants (0933 652155).

AJS & Matchless Owners Club, Membership Secretary, Brian Osley, Red Roses, Mathern, Chepstow, Gwent NP6 6JD (Membership is worthwhile for the Spares Scheme alone).

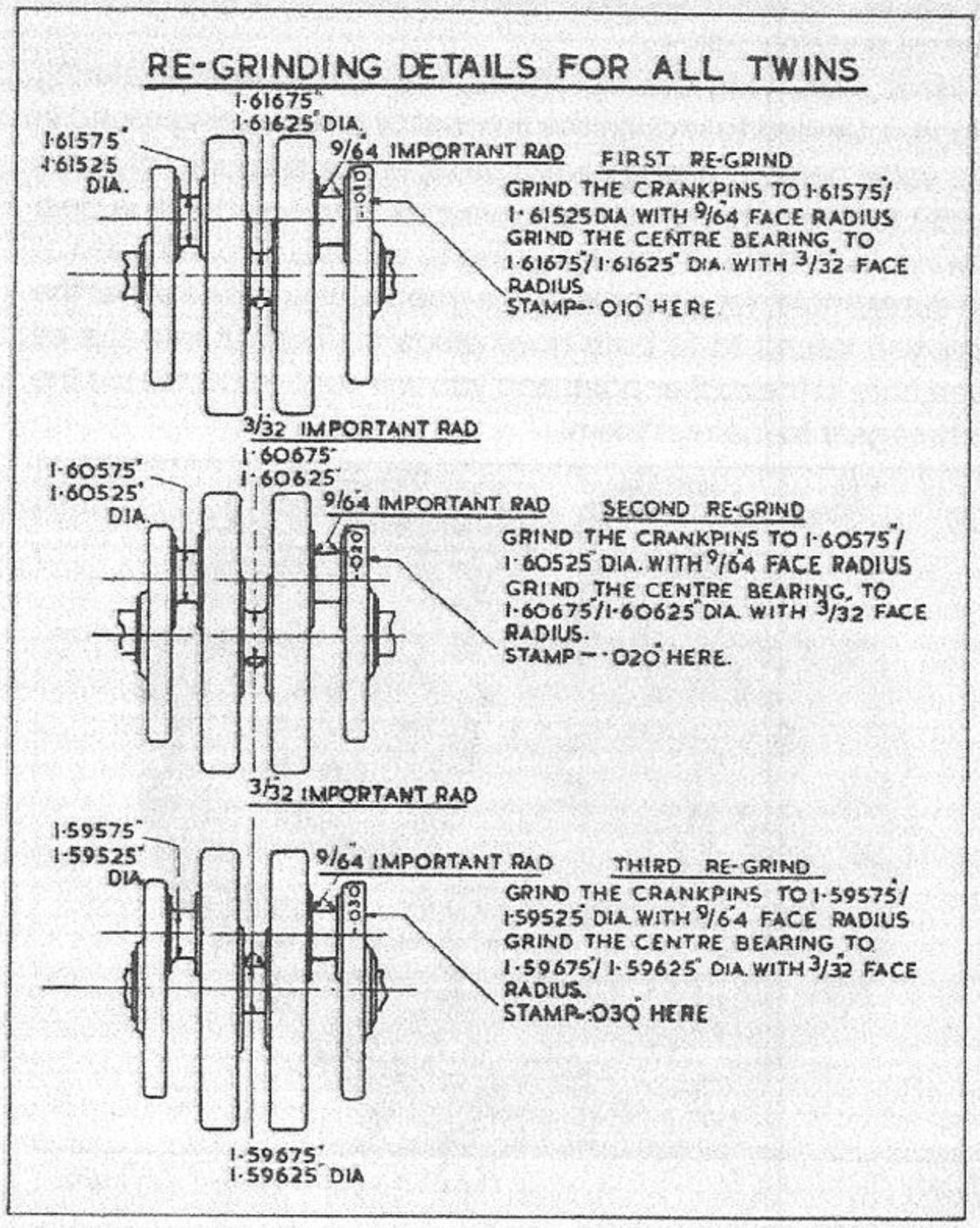
Service & Overhaul Manual For The AJS & Matchless Twin Motorcycles, by Fred Neill, published by Lodgemark Press Ltd (look out for this booklet at autojumbles).

AJS & Matchless Twins, by Roy Bacon, published by Osprey.

Joe Francis Motors, 340 Footscray Road, New Eltham, London SE9 2ED (01 850 1373).

Hamrax Motors Ltd, 328 Ladbroke Grove, North Kensington, London W10 (01 969 5380).

Russell Motors, 125–127 Falcon Road, Battersea, London SW11 2PE (01 228 1714).



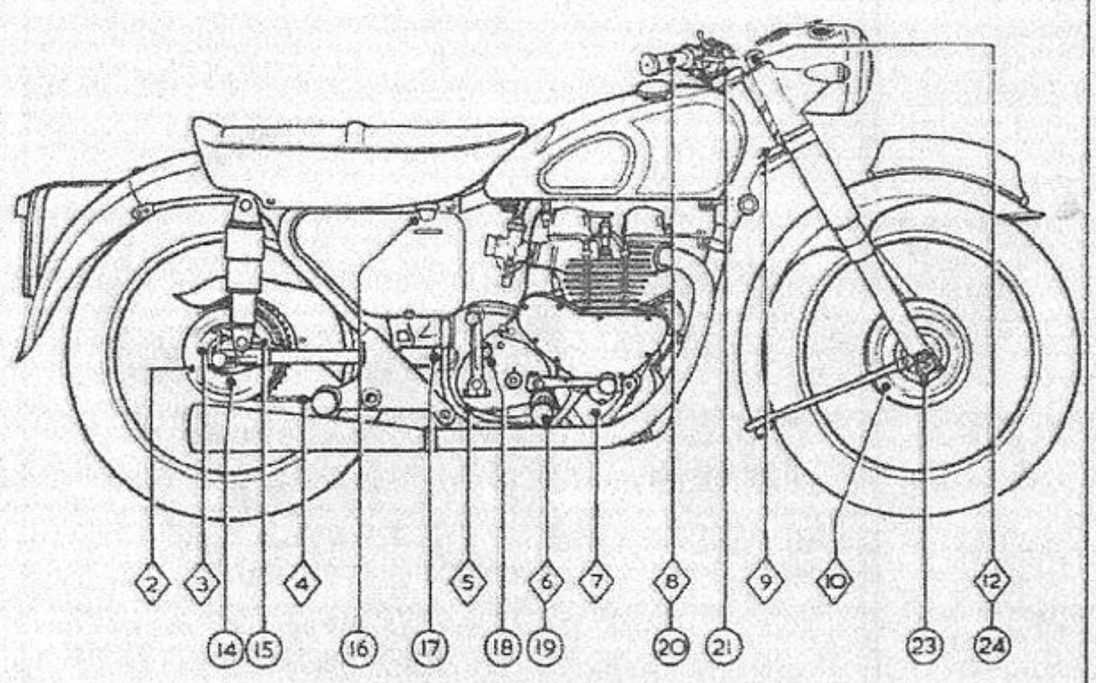


Illustration 10

Lubrication Chart

Engine Oil Locations

16 MAIN OIL TANK.
7 FRONT CHAINCASE.
8, 20 CONTROL LEVER MOVING PARTS.
2 BRAKE ROD JOINTS.
6, 19 CENTRE AND PROP STAND HINGE PINS.

Hydraulic Fluid Locations

12, 24 FRONT TELEDRAULIC FORKS.

Heavy Engine Oil Location

18 GEAR BOX.

Grease Locations

23 FRONT HUB.
14 REAR HUB.
21 STEERING HEAD TOP BEARING.
9 STEERING HEAD BOTTOM BEARING.
15 SPEEDOMETER GEAR BOX.
10 FRONT BRAKE EXPANDER.
3 REAR BRAKE EXPANDER.
5 BRAKE PEDAL SPINDLE.

Heavy Gear Oil Location SAE-140

17 REAR FORK HINGE.

Molten Grease Location

4 REAR CHAIN.

OVERHAUL INTERVALS

Ernie Merryweather is convinced, and has proved to his own satisfaction, that a well-built AMC twin engine can be as smooth as any of its comtemporaries. Put together properly and treated sensibly, one of these motors should see up to 60,000 miles before any major attention is necessary. With the superb club spares scheme offering everything a rider is likely to need, there is no reason why AJS and Matchless twins cannot be used as serious transport: the more that get used, the more bits will become available.