

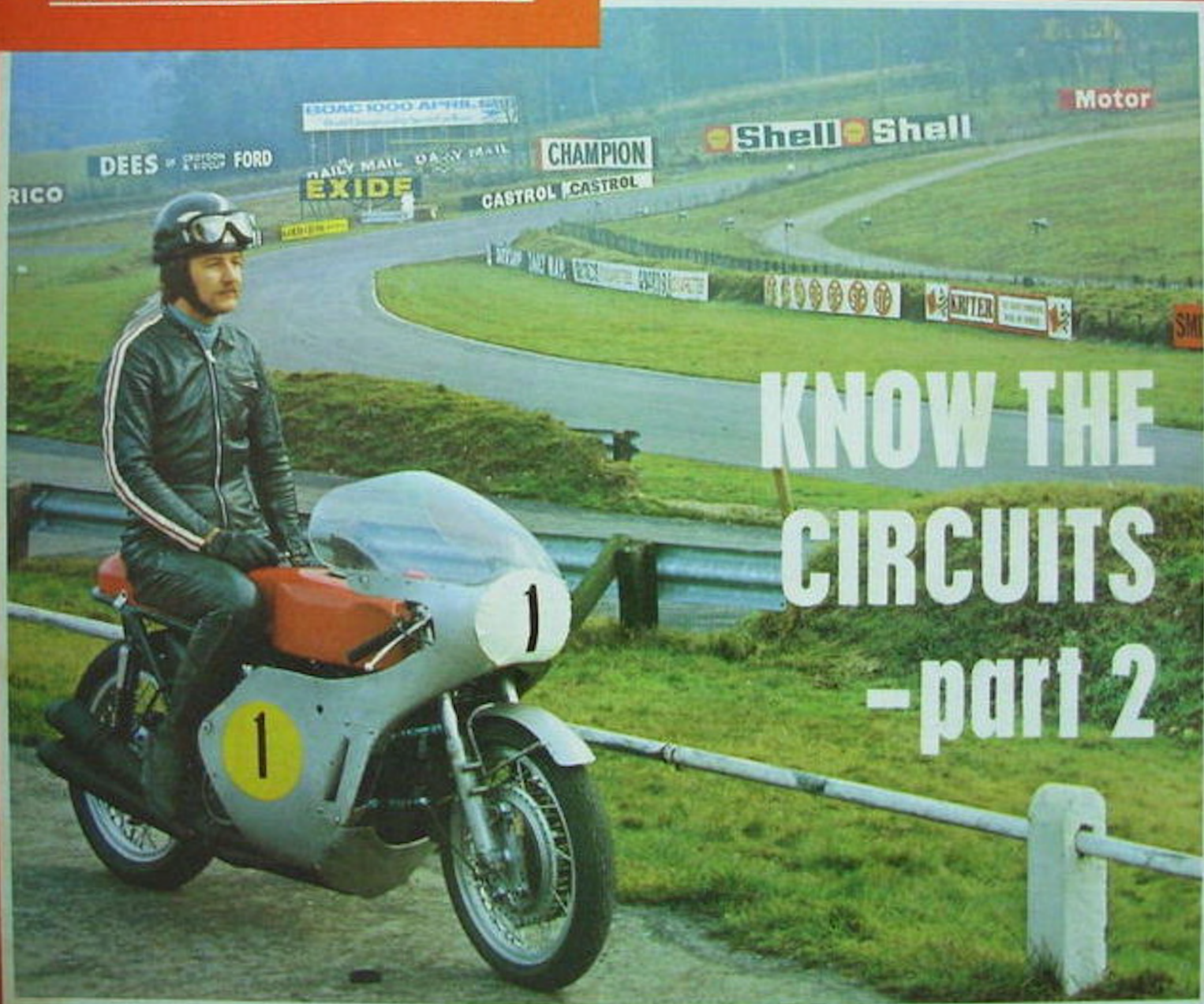
APRIL 1970

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MOTORCYCLE **SCOOTER & THREE-WHEELER** **MECHANICS**

LARGEST SALE

A TO Z **BIKE BUYING**



**KNOW THE
CIRCUITS**
-part 2

- **PETROL GUIDE : KNOW HOW TO READ YOUR STARS!**
- **ROAD TESTS : TRIUMPH 250 ; LAMBRETTA GP 200**



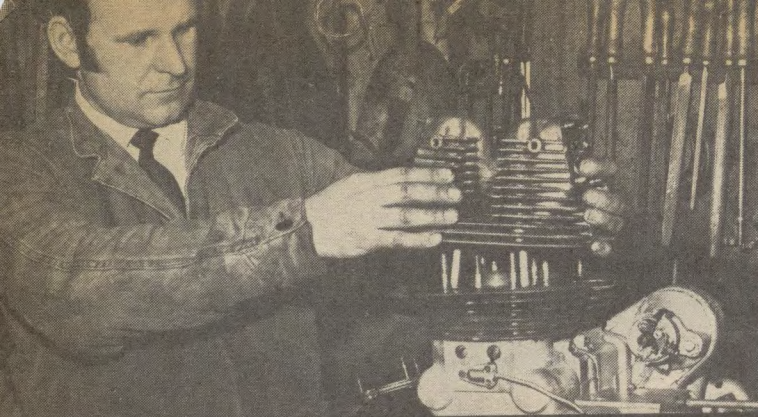
OVERHAUL A METEOR

**BILL BRANTON OF GANDER
& GRAY, REBUILDS THIS
ROYAL ENFIELD 500 TWIN**

▶ The big Enfield twins look formidable motors, but they are surprisingly simple to work on. In fact the only special tools necessary to strip one down are the crankshaft extractor and clutch hub extractor.

There are other special tools available if you strip Enfields for a living, but the average owner will find that he can get by with the above-mentioned two tools.

We went along to Gander & Gray, of 594 Romford Road, Manor Park, London, where we watched Enfield specialist, Bill Branton rebuild a Meteor Minor . . .



METEOR OVERHAUL

● Start by checking the crankshaft for ovality. Up to $1\frac{1}{2}$ thou is permissible. If all is well, the shells can be examined for scuffing and rods refitted. Always fit new big-end screws as they will have stretched and may break if left in. They should be torqued up to 23 lb. ft.

There are two Allen-headed oil plugs in the crankshaft. These should be removed and the oilways cleaned out thoroughly.

THE CLUTCH

The operating mechanism of the early Enfield clutch is of somewhat unconventional design. But once you see how it operates, it causes no problems.

The two outer steel plates are dished, the centre plate is flat. When reassembling, remember that the dished parts point inwards towards the flat plate. In other words, if the centre metal plate and the two bonded plates which go either side of it were removed from between the two dished plates, the two plates would rock against each other if replaced correctly.

Do not forget the cush rubbers, three distance tubes and retaining plate before fitting the pressure plate assembly. The distance tubes must be fitted over the pins which secure the outer plate to the clutch centre. The six springs should be in their correct positions between front and pressure plates. The pressure plate screws are tightened as far as they will go.

To get final adjustment the control cable should be slackened from the handlebar end and the pressure plate withdrawal pin turned by a screwdriver in its end slot until the mechanism has about $1/32$ in. free movement. Anti-clockwise will take up clearance, clockwise will increase it. Tighten locknut and recheck for free play.

It must be understood that if there is insufficient clearance

on the clutch mechanism the clutch will slip even though there is clearance on the cable.

USEFUL DATA

Meteor Minor engine. Points gap 15 thou. Ignition timing $1/32$ in. before tdc fully retarded, or $\frac{3}{8}-\frac{7}{16}$ in. before tdc fully advanced. Tappet clearance with engine cold is nil on both inlet and exhaust.

When mounting timing pinions the marks on the two top ones must face each other and the line on the bottom pinion must point downwards. As the pinions are on keyways incorrect timing is impossible if the marks are lined up correctly.

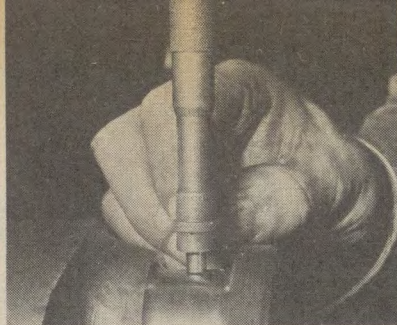
Be sure to get the chain tensioner with its large lobe downwards. By slackening the nut which holds the quadrant, the tensioner can be moved to the left or right to slacken or tighten the chain. Correct adjustment is $\frac{1}{4}$ in. up and down movement.

So that the chain will not be strained in tight spots, turn the engine over and check movement all round. Take up all backlash in the quadrant in the tightening direction. Tighten tensioner nut and recheck.

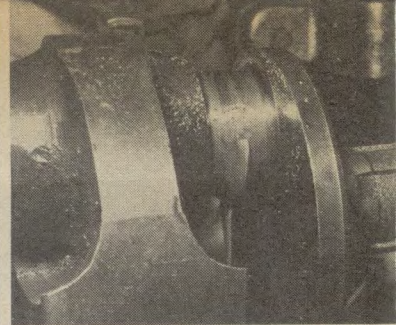
ALTERNATOR FITTING

The rotor is keyed on to the crankshaft end and great care must be taken to see that it runs evenly, as the air gap between rotor and stator poles should be 20 thou in all positions.

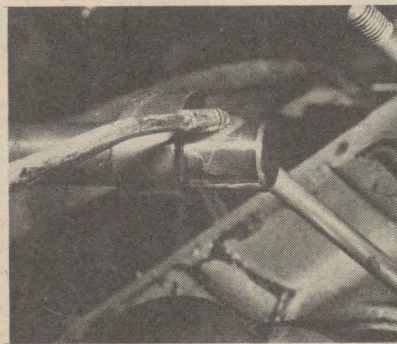
Fit rotor to shaft, do up holding nut and bend tab washer back. Then fit the distance pieces over the three studs and put stator in position with leads in the 12 o'clock position on the inside. With the nuts and shake-proof washers which secure the stator done up finger-tight, insert six strips of non-magnetic material $1\frac{1}{2}$ thou in thickness and about $\frac{1}{8}$ in. wide between pole pieces and rotor. Tighten the nuts and withdraw strips.



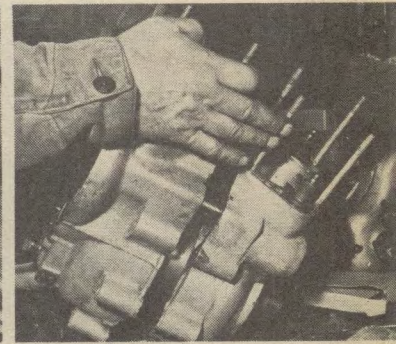
The first step is to check crankshaft for ovality with a micrometer. If measurements vary by more than $1\frac{1}{2}$ thou crankshaft must be reground



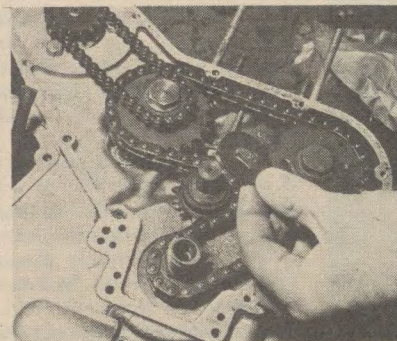
Make sure oilways are clear by squirting oil through pump-worm side of crankshaft. After a time it should pour out of the big-end feed holes



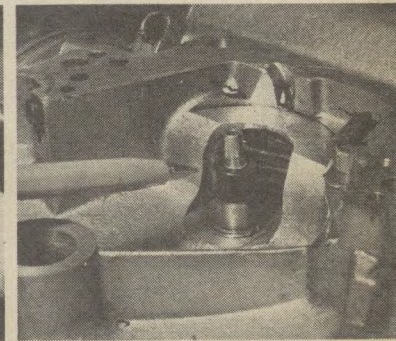
Examine cam follower faces for signs of wear or cracking. Lightly oil cam spindles and insert shafts in their correct positions, exhaust to front



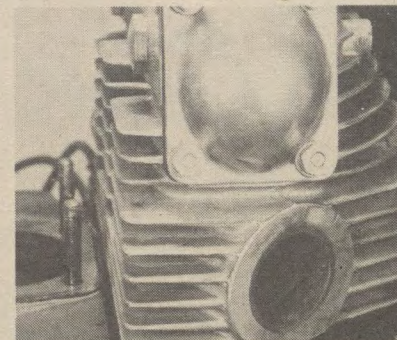
Heat timing-side case with outer roller race and drop it over crankshaft. While doing this, make sure to lift the tappets clear of cams



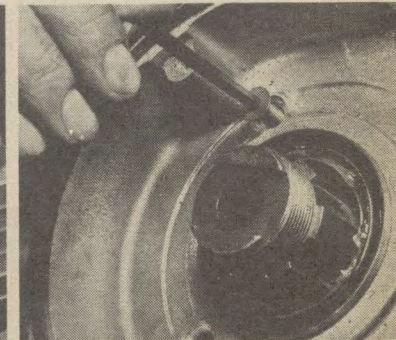
All the pinion nuts have left-hand threads. Chain tension is set by moving tensioner to the left to tighten. Don't forget to replace washer



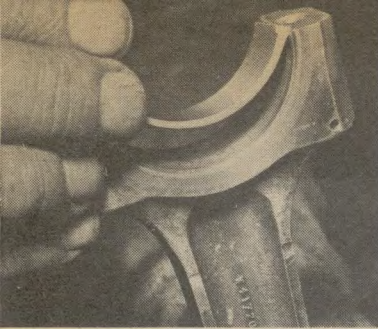
All oilways in the crankcase must be absolutely clean. The neoprene seal indicated here controls oil feed to the big-ends and must be renewed



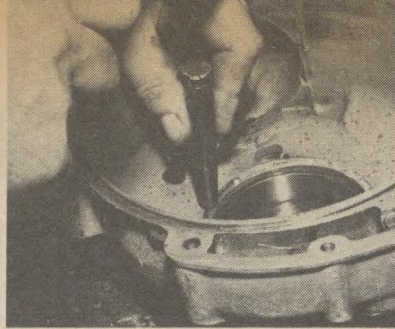
See that dowels are in position in the barrels and push-rods are right way up. Coat both sides of copper gasket with compound and slip head on



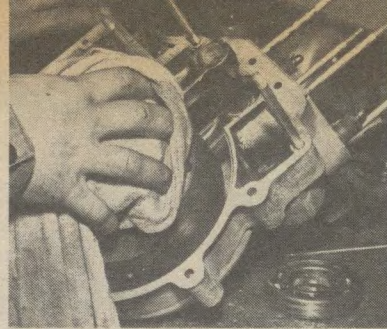
Renew oil seals in primary chaincase and grease them liberally. The case can now be screwed to the engine by its 3 countersunk Allen screws



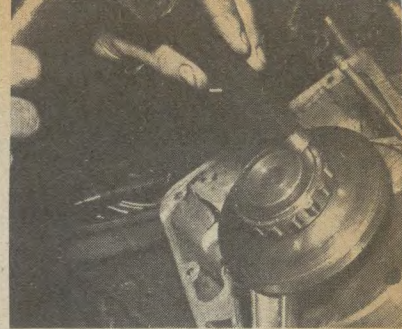
Big-end bearings consist of white-metalled steel liners. These are available in various sizes which must be quoted when buying new ones



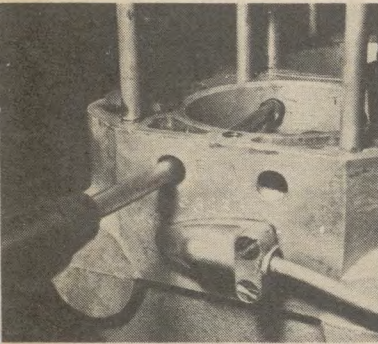
The drive-side case must be heated to allow main bearing outer race to enter its housing. Keep race square with bore and drift it into place



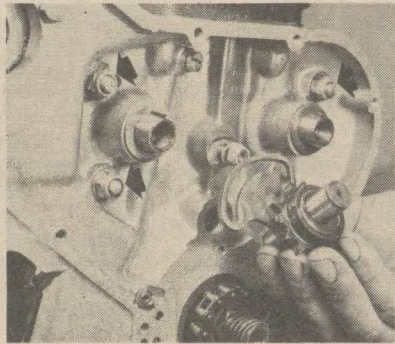
Drive inner race on to shaft until just flush with end. Insert distance piece. Warm up case and bearing outer race before dropping crankshaft in



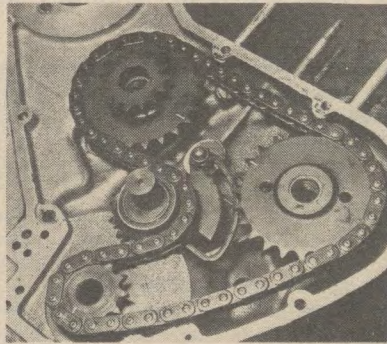
Heat inner race of timing side main bearing and tap it gently on to the shaft. The timing-side bearing is ball and the driving side roller



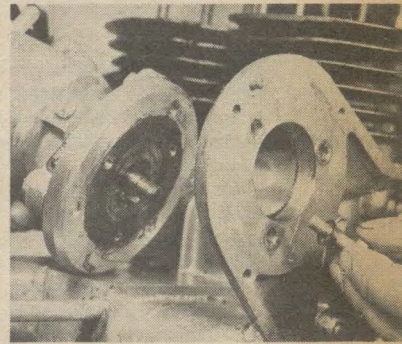
Do up the two inside screws using a screwdriver through the holes provided. When re-plugging these holes, smear jointing compound on threads



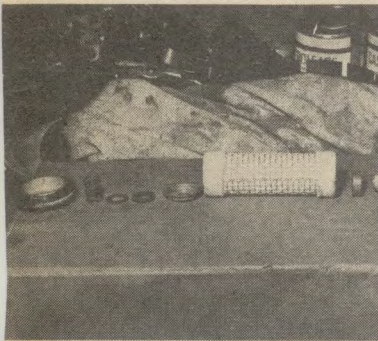
There are 3 Simmons nuts in the timing case. Do these up first. Note the thrust washers and Woodruff keys in position on the camshaft ends



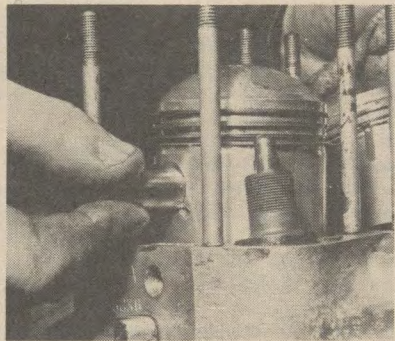
Fit pinions with their timing marks in the positions indicated above. When positioning the chain tensioner, the large lobe goes to the bottom



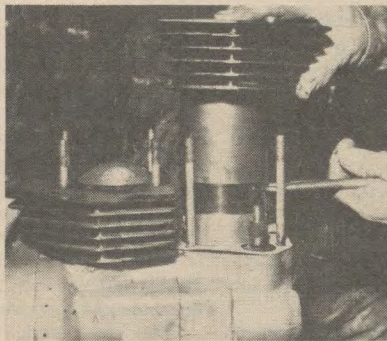
Smear jointing compound on to the magneto and connect it to timing case by its 3 bolts and shakeproof washers. Be sure threads are sound



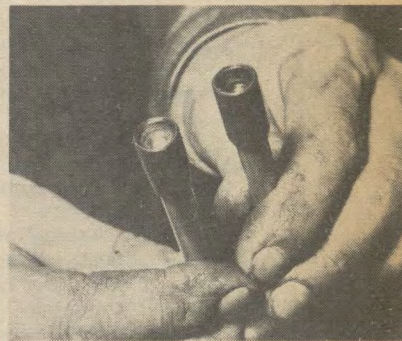
A new oil filter element should be fitted every 5000 miles or sooner. Be careful to replace the components in the order shown in the picture



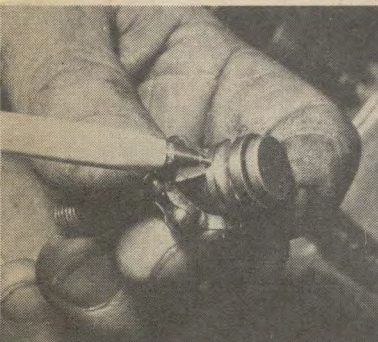
Having cleaned and lubricated small-ends, heat pistons and fit to rods. Renew rings if gap exceeds $\frac{1}{16}$ in. Clearance in grooves is 1-3 thou



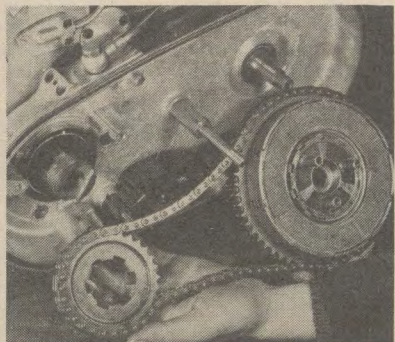
Use 2 base gaskets when replacing barrels, one on crankcase and the other on the barrel. A piston ring clamp can be an asset for this job



Examine push-rods for straightness or damage to cup ends. You will notice that one end is deeper than the other. Fit deep end downwards



On the older type clutches there is a clutch thrust bearing which should be examined for wear before replacing. Look especially for pitting on track



Fit primary chain slipper tensioner into the bottom of chaincase. Then the clutch and engine sprockets together with primary chain follow



Grease the balls which go between the torque arm and clutch operating lever when front plate is in position. Don't forget washer on bearing



With stator and rotor fitted and all nuts tight, inspect the chaincase rubber joint, clean off both surfaces and put outer case into position