

# Fettling AJS and MATCHLESS Two-fifties

SERVICE-  
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No 13

UNLIKE their bigger brethren in the single-cylinder category, the AJS and Matchless two-fifty singles cannot claim ancestry going back over the years. In fact they first made their bow in 1958. Save for minor modifications they have remained unchanged.

*The tips which follow apply equally to the roadster and scrambles two-fifties and, to some extent, to the "light" three-fifties which are no longer in production.*

## Hidden Bolt

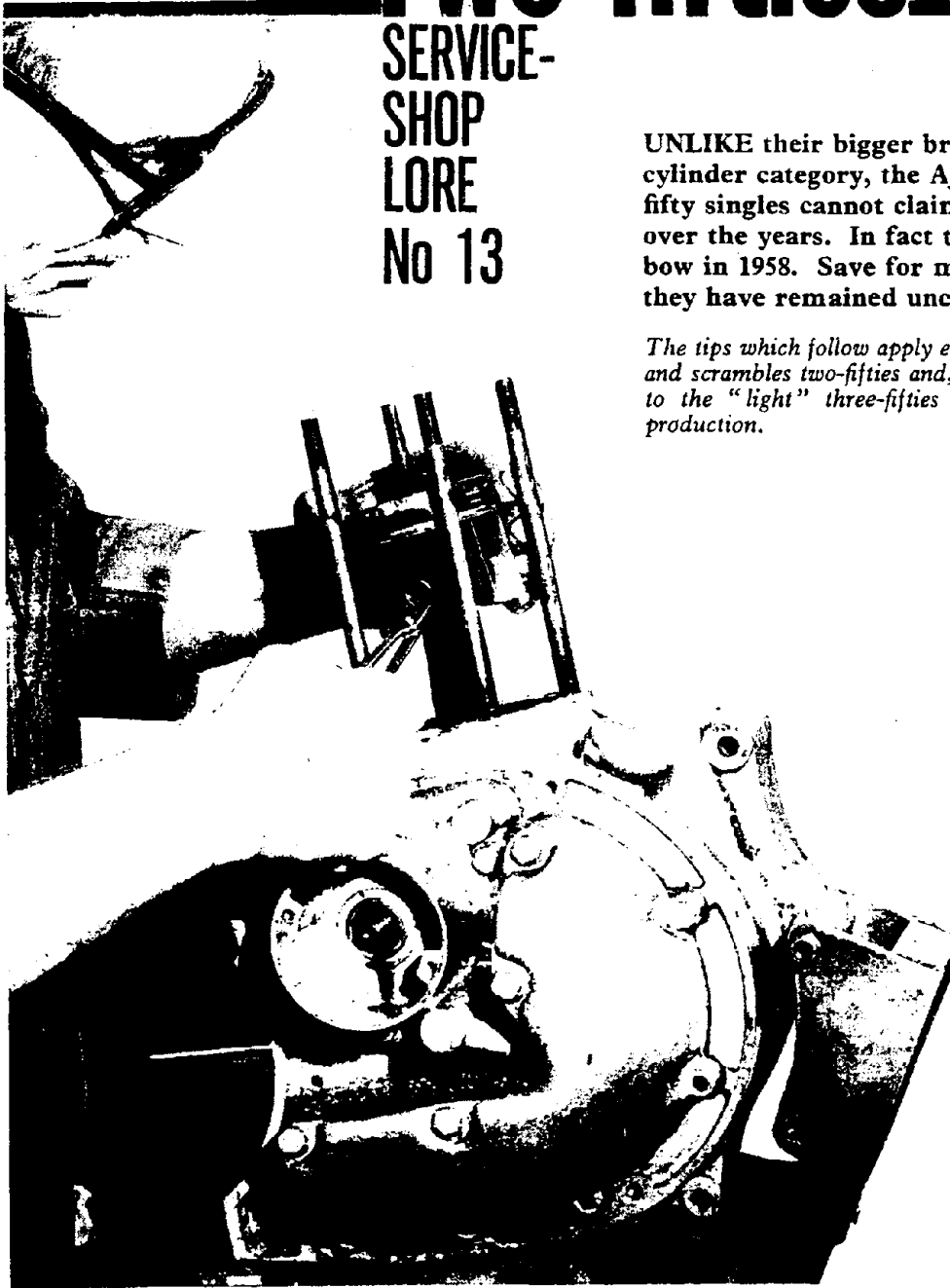
WHEN removing the rocker box set the piston at about top dead centre with both valves closed; and remember that one retaining bolt cannot be reached until the inspection cover has been taken off.

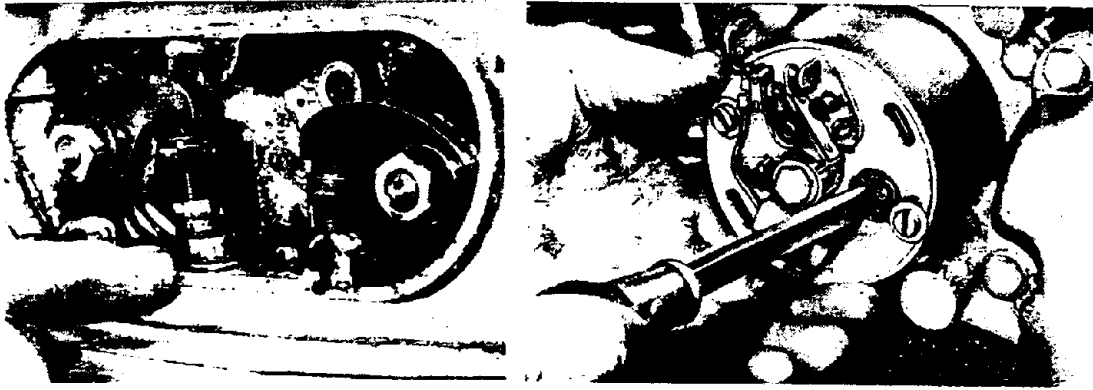
The cover is sealed by a length of rubber pressed into a groove round its periphery. A new length of rubber will be slightly longer than required. It should be trimmed carefully so that, when inserted in the groove, the ends just butt against each other.

If there is a gap the result is likely to be an annoying hiss when the engine is running.

A slight weep of oil from the spindle of the exhaust-valve lifter most probably will be caused by heat-hardening of the rubber seal which locates in an annular groove in the spindle. A new seal does the trick.

After replacing the rocker box see that the lifter adjustment is such that the valve is allowed to seat properly.





Left: Indicated is the rocker box retaining bolt which sometimes gets forgotten. The inlet valve is shown open. Both valves should be closed before attempting to remove the rocker box. Right: Before setting the timing, the bob-weights should be held in the advanced position

## Sparks

**A**LWAYS set the ignition timing with the automatic device in the full-advance position.

The bob-weights (and hence the cam) can be levered to full advance with a screwdriver passed through the hole in the contact-breaker back plate. But it is difficult to hold the weights in that position while setting the timing.

The drill, therefore, is to lock the cam on full advance. To do this you remove the securing bolt and thread on to it a 3/16in-thick collar counterbored to clear the spindle end and bear against the cam.

Then, holding the bob-weights at full advance with the screwdriver, you have only to tighten the bolt lightly to lock the cam against the spindle shoulder behind it.

Both hands are then free to move the back plate carefully in its slotted mountings until the points are just beginning to separate when the piston is correctly positioned in the cylinder.

Once the two screws retaining the plate have been tightened and the setting finally rechecked, the collar should be removed and the centre bolt refitted and tightened.

## Generator Leads

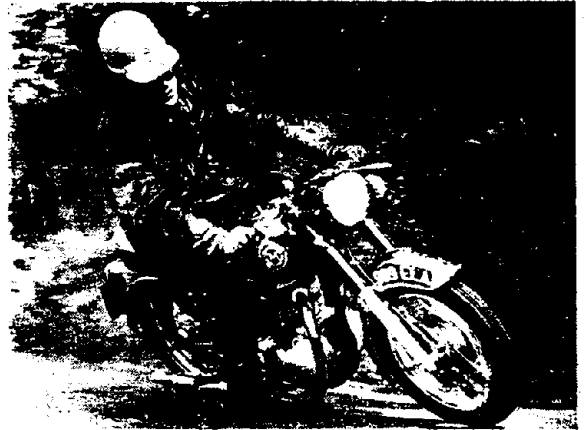
**I**F you have had the engine out of the frame there is an

important point to watch when reconnecting the leads from the alternator to rectifier.

These pass through the back of the primary chaincase and the three snap connectors lay on top of the gear box under the cover plate.

The leads should be routed so that they pass *under* the rear of the left gear box mounting plate.

If the leads pass over the



Left: The dark patches on the valve stem are the signs of burning caused by gas escaping between the stem and worn guide



top they can work into a position where they will be abraded by the rear chain.

## Rectifier Warning

**I**F for any reason the rectifier under the seat is removed it must be refitted in the standard position—this is with the leads uppermost. In any other position there is the danger of a short circuit—especially if the leads project towards the tool box.

## Guide Wear

**S**IGNS of burning on the valve stems usually are an indication that the guides are worn.

Both guides are retained by an external circlip. The drill is to heat the head gently and

tap each guide upward until the circlip can be removed from its groove.

The head should then be reheated and the guides driven out into the combustion chamber.

When fitting new guides, make sure the oil holes are correctly aligned.

## Petrol Off

**W**ITH the downdraught carburetors such as fitted to these models it is absolutely essential to turn off the petrol whenever the engine is stopped for any length of time.

If this is not done there is a chance that fuel will trickle down the induction tract into the combustion chamber.

Besides making the engine

difficult to start there have been cases where oil dilution has reached such proportions as to cause under-lubrication.

## The Barrel

**A** USEFUL tip when removing the cylinder barrel is to slacken the top two bolts holding the crankcase halves together.

This releases any tension between the holding-down studs and the barrel, and ensures that the barrel spigot is free.

## Oil Pump

**S**OME lubrication bothers can be traced to the oil pump. The pump plunger is driven by a worm gear on the timing-side crankshaft. Reciprocating motion is imparted

by a guide pin which engages in a profiled groove in the plunger. Wear on this guide pin, even to a very small degree, will affect the action of the plunger.

At the end of the housing in which the plunger is located there is a steel cap retained by a stud with a small pip of metal engaging in a groove in the cap.

There is no need to remove this stud when the pump is being dismantled. Some owners do so, however, and occasionally fail to engage the pip with the groove.

The result is that as soon as the engine is started oil pressure dislodges the cap, pressure is lost and the lubrication system fails.

## Plunger

REMOVAL of the pump plunger can be effected after undoing the cap at the rear of the crankcase on the right, having first taken out the guide pin.

The plunger is hollow and if suction is making it difficult to withdraw, here is the dodge.

A wheel spoke bent at right angles  $\frac{1}{2}$  in from one end is inserted up the middle of the pump plunger and the bent end engaged in a recess. A second spoke, with the end straight is then inserted to hold the first in place while the plunger is pulled out of its housing.

No attempt should be made to separate the crankcase halves without first withdrawing the plunger, otherwise the worm drive will be damaged.

When refitting the pump plunger, note that the relieved

end of the guide pin goes into the hollow retaining screw.

Turn the screw very gently until slight pressure can be felt. Then rotate the engine slowly until you can feel the guide pin drop in the profiled groove.

At the factory they put a drop of oil in the retaining screw before inserting the guide pin. This acts as an

strap. Also slacken the nut on the left-hand end of the gear box pivot bolt.

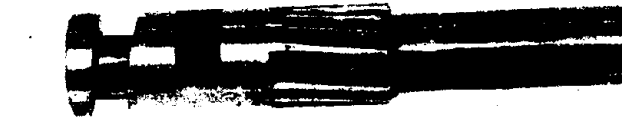
Now you can go ahead and set the adjustment. Correct slackness is  $\frac{1}{16}$  in at the tightest point. This can be checked after removing the inspection cap in the outer half of the primary chaincase.

After adjustment, re-tighten the pivot-bolt nut and clamp-

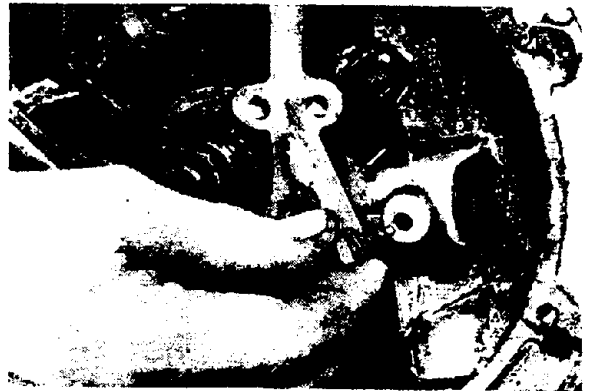
ing bolts, and recheck the chain setting to make sure nothing has moved.

## Cam Gear

EXCESSIVE wear on the cams and followers can be caused by repeated over-revving. If the followers have been removed they should be reassembled with the narrow



Left: Wear on the end of the guide pin which engages in the profiled groove of the pump plunger will cause loss of efficiency. Right: When dismantling the oil pump there is no need to disturb this stud which merely retains a blanking cap

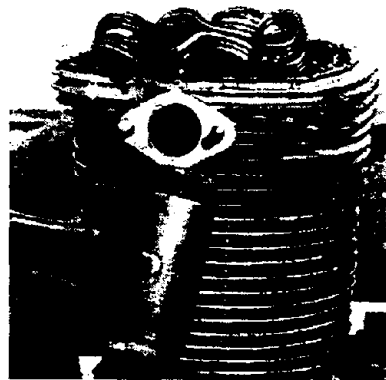


hydraulic cushion and minimizes the risk of damaging the edges of the profiled groove.

## Primary Chain

A COMMON fault on machines received by the AMC service department is incorrectly adjusted primary chains.

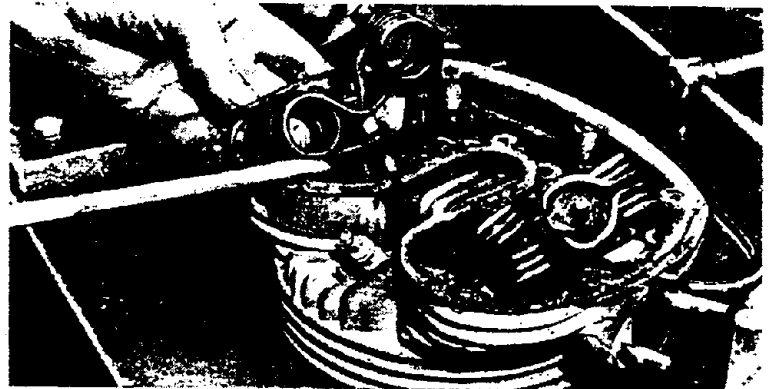
The drill is quite simple. Undo the two screws retaining the metal cover on top of the gear box. Slacken the two bolts (at the rear of the box) which tension the retaining

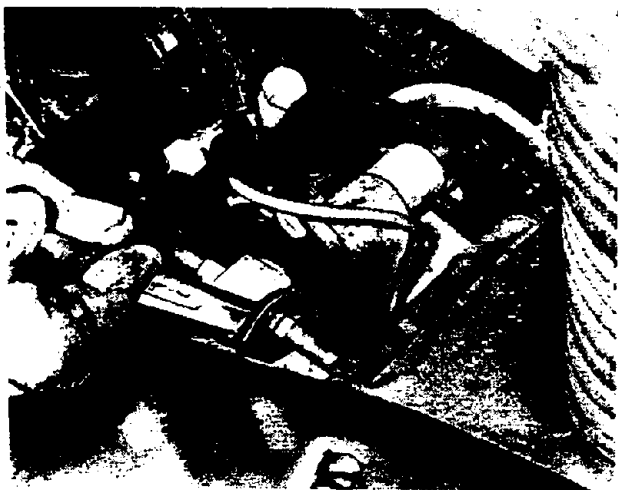


If the head is difficult to remove and it is necessary to use a hide mallet, the correct place is beneath the carburettor mounting flange



Above: Wear on the closed loops of the valve spring occurs where it engages with the collar groove. Compare the worn (upper) collar with the unworn collar below. Right: The hairpin springs are easily removed by prising them out with a screwdriver



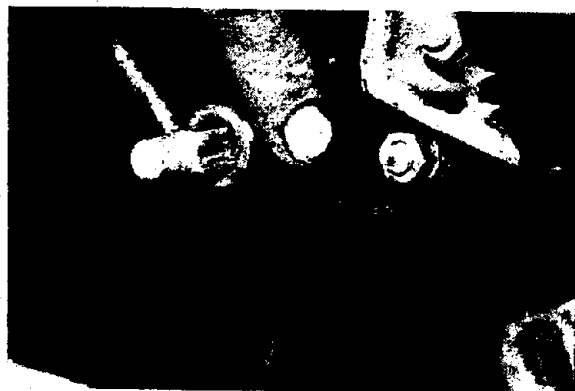


*Too liberal use of jointing compound at the cylinder-base joint can result in the oilway to the valve gear becoming blocked when the cylinder is tightened down*

*Primary chain adjustment is quite simple after removing the cover plate on top of the gear box. The two clamping bolts can be seen in the picture*



*The centre stand will not support the machine safely if wear on the stops for each leg permits it to move too far forward*



distance piece between them, and the wide one on the outside.

The engine will run if the order is reversed, but the pushrods will bear on the side of the tunnel in the cylinder barrel and will eventually break.

### Persuasion

TO free the cylinder head sometimes calls for a little persuasion with a hide or plastic-face mallet. Best place to do the tapping is under the induction tract.

This has plenty of metal supporting it and there is no risk of inadvertently clouting the cylinder-head or barrel fins.

### Hairpins

IN common with the other AJS and Matchless singles the two-fifties employ hairpin valve springs. These are removed easily by prising with a screwdriver.

Wear usually occurs at the closed loops and the collar grooves. Always examine both closely. If there is more than just a light wear marking on a spring, replace it.

The easiest way to check on collar wear is to make a comparison with a new one.

### Trade Marks

ONE of the things which tells the expert that someone unskilled has been working on an engine is the over-

generous use of jointing compound. Besides being unsightly, too much compound can cause trouble.

For instance, if the cylinder-base joint is smeared too liberally there is the risk of the oilway to the rocker gear being blocked by compound forced into it as the cylinder barrel is tightened down.

Another trade mark of the inexperienced is nuts with rounded corners and bolts strained through overtightening.

Two simple rules apply. Make sure you are using the correct spanner. If the spanner is too long, remember that the full leverage should be used only when necessary to undo tight nuts. When tightening, grip the spanner along its shank to lessen the leverage.

### Centre Stand

IF the centre stand will not support the machine safely it is probably because both wheels are touching the ground. This happens when wear on the stop for each leg permits the legs to move too far forward. The repair dodge is to build up the stops by welding.

### New Seal

A SLIGHT oil leak where the drive enters the contact-breaker housing is nothing to worry about. However, if the engine is being stripped for other work it is just as well to take advantage of the oppor-

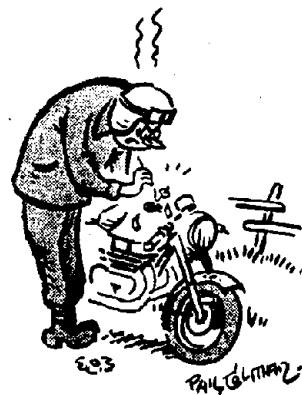
tunity to replace the spring-loaded seal.

### Pushrods

THE steel ends of the light-alloy pushrods should be checked for tightness and the rods themselves for truth. If they are defective on either count they must be replaced.

When refitting the rocker box, make sure the rocker arms locate correctly in the pushrod cups.

If one of the rocker-arm ends is not seating properly, rocker and pushrod could be distorted as the rocker box is tightened down.



Trading stamps in the petrol