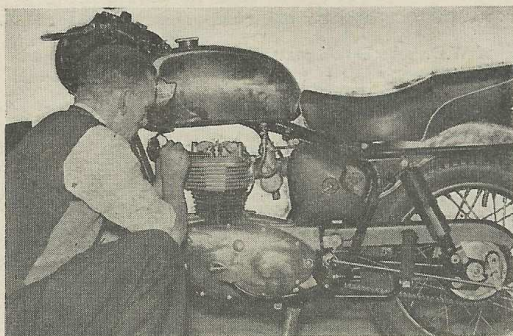


**EASIRAY TUNE-UP** ..... **No. 10**



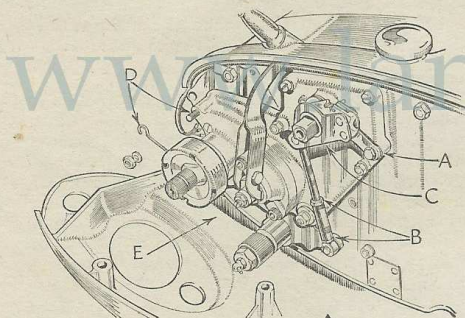
**BERNAL OSBORNE**  
**Advises on Keeping Fit a**  
**Popular 250 c.c. o.h.v. Model**

**The Royal Enfield**  
**"Crusader"**

**M**ANY of the 247 c.c. single-cylinder, unit-construction, quarter-litre units introduced for the first "Crusaders" have now been in use for some three years, which means that fairly extensive overhauls may be imminent. In general, the information set out below applies equally to the power units of the basic "Crusader," the 1958-1959 "Clipper" and the "Crusader Sports" which was first introduced in 1959. This last-mentioned machine has an increased performance obtained largely by the introduction of modified valve timing. Valve clearances, measured cold, for the standard engine are .004 in. inlet and .006 in. exhaust but for the "Crusader Sports" these dimensions are reduced to .002 in. and .004 in. respectively. Further, the "Crusader Sports" is fitted with a 15/16-in. choke carburetter and a larger main jet is used, otherwise carburation details are similar to those of the standard engine with a 120 main jet. The engine is easy to maintain and, although some of the illustrations depict the unit as it is seen when removed from the frame, this has been done for the sake of clarity, when, in fact, all the work described can be carried out by the average owner, using the toolkit supplied, and with the engine normally *in situ*.

**2. SPARKS AND LIGHTS**

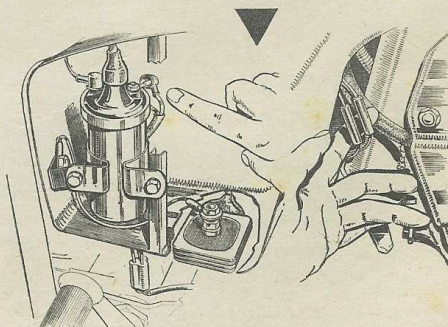
**C**ONTRIBUTORS to trouble under both headings are the rectifier and h.t. coil. Early "Crusaders" carried the circular fin-type full-wave rectifier with light green, dark green and purple leads connected to terminal tags. This has been displaced by the square-fin type with a shrouded connector and wires running into a single lead. In both cases the rectifier body is earthed to the metal of the machine—see the special earthing lead—and make sure to keep this connection clean and secure. Rubber insulator caps protect the low-tension connections at the coil; periodically inspect for loose nuts or fraying wires. One of the main plug connections is located below the coil compartment and another (see right) at the lower "casquette" opening.

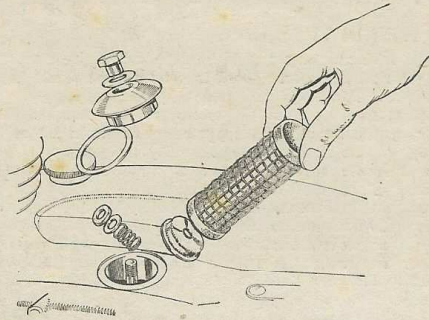


**1. ON THE OFF SIDE**

**S**LACKNESS in the gear-pedal and pawl-linkage results from fair wear and tear, and so does breakage of the kickstart return spring. Access to these parts is by taking away the off-side crankcase cover (five screws). The complete clutch arm and thrust-rod adjuster is now revealed, though normal checks can be made without removing the cover. Slacken the locknut and turn the slotted pin "E" clockwise to cure drag; anti-clockwise to cure slip. Tighten the lock-nut and finally adjust the cable. The pin "A" locks a backplate, movable to centralize the pawls. Lock-nutted at "B" a turn-buckle adjusts rod length. Rotate the square-ended shaft to third gear and adjust to get 3/8-in. clearance between lower pawl "E" and third-gear ratchet tooth. "D" shows the k.s. spring location.

A32



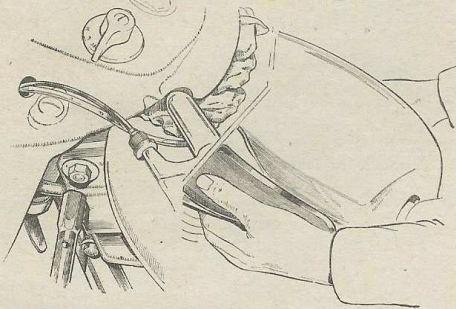


**5. TAPPETS O.K.?**

OVERHEAD-VALVE engines dealt with previously in this series have all had clearance adjustment carried out by means of an abutment pin screwed into the rocker arm and secured in the required position by a lock-nut. The "Crusader" range obtains the same effect with tappets screwed into the top of each pushrod. Slackened outwards, or tightened, the tappets extend or shorten the effective pushrod length as required, the final setting being secured by a lock-nut. Incorrect clearances, the cause of poor starting, mediocre performance and high fuel consumption, are put right by simple routine. Hold the pushrod (bottom hexagon) and slacken the lock-nut as shown inset. Adjust the top hexagon, measuring at the valve cap with a feeler gauge. When correct, retighten the lock-nut. Work at piston t.d.c. on the compression stroke.

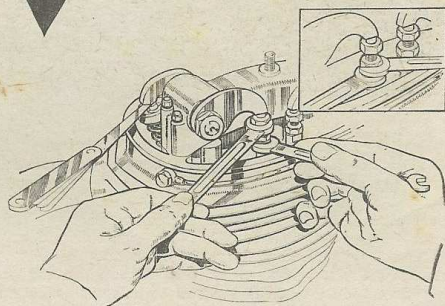
**3. CLEAN OIL**

SUPPLIES are replenished through the aperture in the off-side crankcase casting, a dipstick indicating the level. Oil is drawn from this reservoir to the pump and back to the centre of a fabric filter (in the nearside casting). Percolating the fabric, lubricant builds up in the filler chamber from which it is expelled, still under pressure, to the big-end journal. Residue drops to the sump to be picked up by suction to the return pump. It is routed back to the reservoir compartment with an offshoot to the rockers. Clean oil all round largely depends, therefore, on the condition of the filter. It should be taken out and washed in petrol at 500 miles (new machines), and each 2,000 miles and renewed at 5,000 miles.



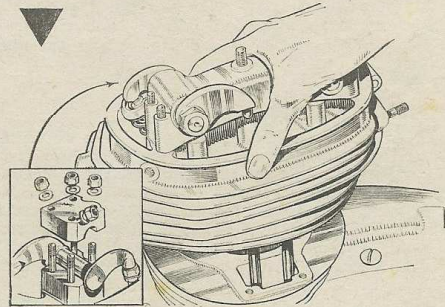
**4. CLEARING THE DECKS**

LACK of clearance makes it desirable to dismantle as much of the upper works as possible, leaving the rocker cover completely accessible. One tool, a tubular spanner to fit a  $\frac{1}{8}$ -in. hexagon, is called for. This slackens the single tank bolt, located at the front flange. Disconnect the petrol feed and ease the tank upward to free the clip-fixing at the base. For a brief job, such as tappet adjustment, this will provide adequate clearance but take the precaution of stuffing rag between the rear rim of the "casquette" and the top of the tank to avoid impact. By lifting bodily the complete tank comes away (see drawing).



**6. HEAD OFF**

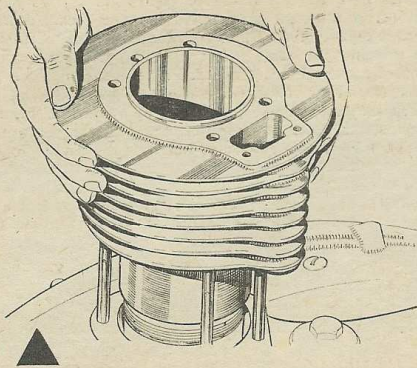
CURRENT rocker gear is carried in a one-piece body secured to the head by studs and nuts—two small ones at each end and a bigger one in the centre. With nuts removed, the rocker gear can be lifted away, freeing the pushrods which can also be withdrawn. Steel washers beneath the nuts will scatter and fall down the pushrod tunnel unless each is carefully taken off. Disconnect the cylinder-head oil feed; remove the carburetter and exhaust pipe; slacken the five main head nuts and the two Allen screws by the pushrod tunnel. (When assembling tighten the Allen screws first.) Rocker and head assemblies are shown here together and compared with (inset) the earlier form of rocker in component parts. Normally this pattern is left intact and removed with the head.



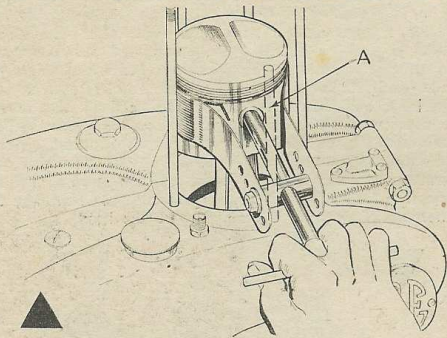
**MORE "EASIWAY" TIPS OVERLEAF**

**Easiway Tune-up No. 10**

Continued

**7. BARREL RENOVATION**

**P**ISTON rings, measured when new in the unworn ridge at the top of the barrel should have a gap—tested with a feeler gauge—of between .011 in. and .015 in. Renew when the gap exceeds .0625 in. ( $\frac{1}{16}$  in.). The makers offer two grades of oversize rings but, when these have run their course, a service replacement cylinder, complete with piston and new rings, of course, is the best way to regain lost performance and good fuel consumption. Much of the cost of having this job done by a repairer is mechanics' time and, usually, the bill can be reduced by 75%, or so, if the owner tackles his own dismantling and assembly work. This deeply spigoted cylinder is held by five studs and is simply pulled up and withdrawn.

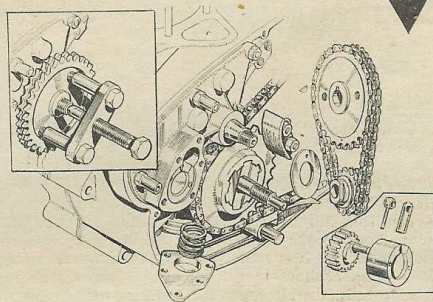
**8. PISTON TACTICS**

**A** SNAG occurs when taking off the piston—a job which is necessary if barrel and piston are due to go in for service replacement. The fifth, and shorter, cylinder stud (A) gets in the way. The makers recommend their special gadget E 5477, but in the absence of this tool, it is easy to take out the obstructive stud and apply one of the proprietary extractors as illustrated. Two cylinder-head nuts, tightened together on the stud form a jury-rig "bolt-head" hexagon giving spanner grip. Avoid temptation to tap the pin out with a hammer and soft drift; the plain big-end bearing assembly, unlike the roller-type, has no "shock tolerance" laterally. Round-wire circlips are fitted. Mark the inside of the piston as a guide, for it must not be assembled wrong-way around

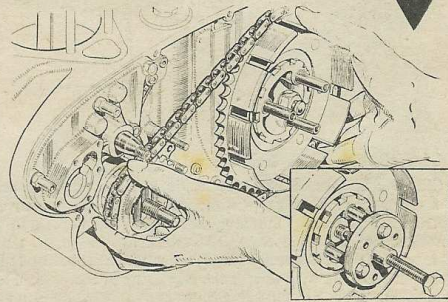
A34

**9. WITHIN THE CHAINCASE**

**T**HE drive-end parts are shown detached to give a "behind-the-scenes" aspect not obvious from the maker's instruction book. Two insets show (left) a special tool for pulling the camshaft sprocket from the shaft taper end and (right) the component parts of the oil pump, which works under light spring pressure in the housing normally enclosed by the cover. The chaincase cover is necessarily removed to adjust the primary and camshaft chain tensioners. It is freed by taking off the nearside footrest and ten screws. Note that the long crankshaft extension locates with an oil seal pressed into the chaincase. Renew a damaged seal and fit up the parts with grease. The cover also carries a Neoprene seal and tube which fit up to the base of the oil-filter component.

**10. CLUTCH DETAILS**

**E**ARLY-BATCH "Crusaders" may by now need attention to the primary chain and clutch. Clutch insert plates are retained by three springs and bolts screwing into studs extending from the clutch back-plate. The assembly is easily dealt with when the chaincase cover is removed. Because an endless primary chain is used it is necessary to draw off the clutch and engine sprockets together in order to remove and replace the chain. Cork clutch inserts have long been standardized by the Enfield Company; this friction medium works well in oil and suits the "Crusader," in which a chaincase oil level is automatically maintained. Inserts worn flush with the metal, or burned, should be renewed—and attention given to the cause of the wear—usually it is bad clutch adjustment. Inset is the application of the clutch-body puller.



**NEXT WEEK'S "EASIWAY TUNE-UP"  
THE B.S.A. "A" SERIES TWINS**