

Maintaining Your Moped

No. 10

**THE CYCLEMATE ENGINE****Routine Work on the Smallest British Power Unit**

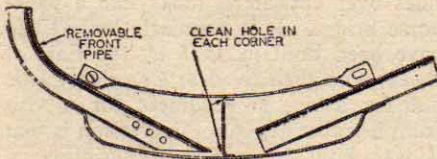
**T**HANKS to its cyclemotor origin, the 32-c.c. Cyclemate two-stroke is of simple conception and construction and, being of sturdy breed and build, calls for little work on the part of the owner to keep it in good trim. Periodic decarbonizing is, however, of great importance.

Before embarking on this, it is always a wise course to inspect the exhaust system and make sure that it is not choked. If engine power is low, carbon either in the engine or in the exhaust system is the likeliest answer, and it is much easier to examine the exhaust first, rather than wait until you've ripped the entire unit apart!

**Silencer First**

Loosen the front clip on the expansion chamber, once you have removed the exhaust and silencing unit from the machine, and draw out the front pipe. Examine it carefully for any signs of choking. If needs be, it can be cleaned out with a stiff wire brush, paying special attention to the perforations in the end of the pipe.

Now put it on one side and turn your attention to the silencer. Peeking through the hole in which the pipe fitted, you will be able to see a central, transverse baffle plate. At each corner there should be a hole. If choking is evident, carbon can be cleared away by judicious prodding with stiff wire or a knitting needle, the loose fouling subsequently being shaken out. When reassembling the silencer to the engine, make sure that the rear reinforcing clip is correctly in position around the mounting lug before you fit the attachment nut. The manufacturers recommend that a new tab washer



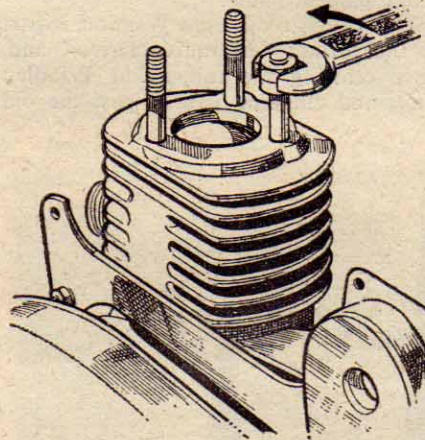
A section through the Cyclemate exhaust system, showing clearly the baffle-plate holes which must be kept clear of carbon if the unit is to produce its best power.

should always be used, and that the gasket which fits between the front flange of the pipe and the cylinder should be replaced if it shows any signs of deterioration or burning. The flange screws should always be retightened with the engine hot, especially when a new gasket has been fitted.

If engine power is still below normal, the exhaust system having been cleared, it points to the need for a thorough "de-coke."

Remove the exhaust system and inspect the cylinder port. This is a well-defined rectangle roughly  $\frac{1}{2}$ -in. wide and 5-16-in. deep. If there is any substantial difference between that and what you see, decarbonizing is required.

To proceed, loosen the three cylinder head retaining nuts and remove the head. There is no gasket. Bring the piston to top dead centre and scrape away all carbon on the crown, as well as inside the barrel above the limit of piston travel. Do not, of course, use sharp tools for this job. Fragments of



If the barrel needs to be removed, the studs must be withdrawn by the use of two nuts locked together, as indicated in this illustration.

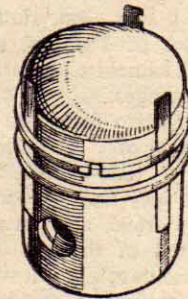
carbon can be blown away with a tyre pump. Be careful that none enters the transfer ports. If you keep the piston at T.D.C. until you have completed work on the top end there'll be no danger of that happening. On the other hand, it is easy enough to overlook the possibility, and to turn the engine over with odd bits of carbon still loose on the piston. No substitute, here, for a good memory!

**Barrel Removal**

With the piston clear, bring it to bottom dead centre and examine the remaining ports. If the transfers are clean, all that need be done is carefully to scrape clear the exhaust port (watch that carbon, though!) and then to refix the cylinder head and exhaust system, once the head has been cleaned. If, on the other hand, the transfer ports, too, show signs of carbon deposit it will be necessary to remove the cylinder barrel. To do so, screw on two of the head nuts to each stud in turn, lock them together by turning them in opposite directions with spanners until their faces "bite" against each other, and

then turn them anti-clockwise to draw the cylinder stud out. Repeat for each stud, then lift the cylinder straight up and off, without twisting it. Before doing this, ensure that you have a new paper gasket for the cylinder base. It will be needed.

You are now free to decarbonize the transfer ports. This done, remove the piston by carefully easing out the circlips which locate the gudgeon pin, and then ease the rings out of their grooves. Shims—that is, strips of very thin metal—equally spaced



Removal of the Cyclemate piston rings can be eased if strips of shim metal are inserted beneath them at various points around the circumference of the piston.

around the rings will considerably help to make this job less tricky than it would otherwise be.

**Last Stages**

Clean any carbon from the ring grooves, and also from the sides and backs of the rings themselves. Leave the working surfaces of the rings alone, however. Refit them, and reassemble the engine, but do not refit the exhaust system until the cylinder head is in place, with its nuts tightened down. Run the unit until it is hot, and then make a check on the tightness of all nuts and bolts which have been disturbed.

If, after this work, the lost power has not been regained the fault may lie in the timing. This, together with work on the carburettor and frame parts of the machine, we will consider in the next article in this series, in CYCLING's September 12 issue.

Before going on to this, however, it may be as well to consider, very briefly, other routine work which needs to be done to keep the unit in good shape. The manufacturers recommend that, every week, the engine mounting nuts and bolts should be checked for tightness, and that once every three months the oil level in the clutch chamber should be verified. To do this, remove the engine cover, and at the bottom rear corner of the housing you will see a slotted metal plug. Wipe the plug and the surrounding area clean with a petrol-soaked rag, and unscrew it. Oil will be visible inside, if the level is correct, when the front wheel is lifted one foot off the ground. Top-up, if necessary, with a good gear oil. Shell Spirax C, Castrol D, Mobilube C, Energol 140 or Esso Gear Oil 140 are the recommended lubricants for this purpose.

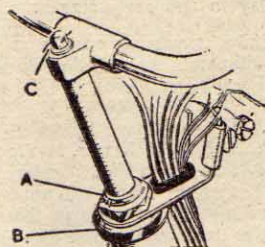
## MORE CYCLEMATE WORK

### Care of the Electrics, the Carburetter, and the Cycle Components of an All-British Moped

**L**AST week, in the article on the 32 c.c. Cyclemate engine, the method of decarbonizing was set out. In closing, we indicated that if lost power is not regained after a thorough internal cleaning of the unit, the likelihood is that the fault is in the ignition timing.

To check this, first remove the pressed-steel cover on the left side of the engine unit. It is retained by a single screw. Now detach the sparking plug and rotate the flywheel until the piston reaches top dead centre. Make a mark on the flywheel periphery and a corresponding mark on the crankcase—a soft lead pencil will do the trick, unless you prefer to scribe on a permanent indication of T.D.C. position—and then rotate the flywheel anti-clockwise for almost one complete turn. When the mark which you have made on the flywheel is about  $\frac{1}{8}$  in. to the right of the mark made on the crankcase the contact-breaker points should just be starting to open. If not, your timing is incorrect, and the cause of your lost power has been traced.

But what are you to do about it? If you rotate the flywheel slowly, while looking through the holes, you will see that the fixed plate carrying the coils is screwed to the crankcase, and that the screws pass through elongated slots, one at the top and one at the bottom of the stator plate. Loosen both of these sufficiently to enable the stator to move and then, with your

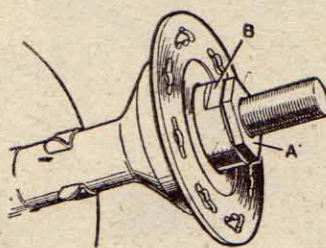


Steering head adjustment is controlled by the locknut (A) and the knurled ring (B). Bolt (C) controls the expander plug which locks the handlebar assembly.

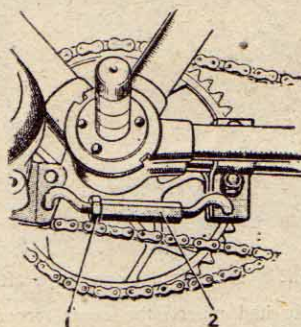
fingers, twist it in whichever direction is needed to correct the timing. If, when you have made your check, the points are still closed when they should have been opening it means that the spark must be advanced, so turn the stator clockwise. On the other hand, if they are gaping open, it proves that they have separated too soon. To avoid this, turn the plate anti-clockwise. Tighten the screws and recheck the timing; then readjust if necessary. Once you are satisfied, lock up the screws.

From time to time, you should check and clean the contact-breaker points. This is

quite a simple job. Turn the flywheel until the points are fully open (when they will be right in the middle of the lower inspection slot in the flywheel). In this position, it should be possible for a .015-in. feeler gauge to pass between them, but only just.



Lock-nut (A) must be loosened before the cone (B) can be screwed in to take up play in the wheel bearing (above). Below is seen the adjuster for the driving chain.



If adjustment is necessary, slacken off by a quarter-turn of the large-headed screw which locks the fixed contact to the stator plate, and then rotate the smaller adjuster screw (mounted at the top end of the contact plate) until the gap is correct. Retighten the locking screw, and then insert the feelers again to ensure that the gap remained unaltered as you locked up. The maximum permissible gap here is .018 in.

Though the B.E.C. carburetter is pre-set at the factory to give the best combination of performance and economy, provision is made for adjustment if evidence of too rich or too lean a mixture is found. Unlike needle-jet carburetters, however, all variation has to be carried out by means of the air bleed screw, on top of the instrument on the side remote from the fuel line. To weaken the mixture, the screw should be turned anti-clockwise; to enrich it, clockwise.

Should the mixture prove over-rich, and unresponsive to the air bleed, there are four courses of action. The air filter should be cleaned, the element being freed from the filter by springing out the circlip which holds

the front of the filter in place. Swill it out in petrol, and run on a little thin oil before replacing it.

If that fails, remove the screws which hold down the float chamber cover, and check that the paper gasket between the chamber and the cover is not choking the airways. If the gasket is suspect, enlarge the holes, but do it carefully. As a precaution, blow through the airways drilled in the carburetter body—the instrument can easily be detached by slackening the clamp screw—and finally ensure that the main jet is properly seated. The jet, which is the big brass screw in the bottom of the instrument, can easily be detached. Be careful not to lose the little fibre washer as you take it out. Examine the jet carefully. Blow through the hole, and look at the conical faces of the jet. If these are damaged, fit a new component, for they are so shaped to provide a petrol-proof seal, and any leakage occurring here is equivalent to the fitting of a larger jet! If damage is found, take a look at the seating in the carburetter body. Trouble there too means that the instrument should go back to the factory.

A weak mixture which fails to respond to the air-bleed means that the petrol pipe should be checked for possible blockage, and the two carburetter filters cleaned. One is within the banjo union atop the float chamber, and can be reached by removing the banjo bolt and lifting off the union. Take care, when replacing it, to follow the proper sequence. Hold the bolt inverted, and fit over it one fibre washer; then the union, with its recess nearer the head of the bolt, then the other washer. The filter, of course, will have been fitted inside the bolt first. Keeping everything in place with a finger, screw the assembly back, ensuring that the banjo arm is over the letters "KS" in the word "Bucks" on the carburetter.

The other filter is incorporated in the fuel tap. If your tests show a blockage, and the carburetter and fuel pipe are exonerated, it is here that you must look. Siphon off your fuel first, though. Then unscrew the tap, and clean the filter.

On the cycle side there is little more to do than is normally required with a pedal cycle. An eye must be kept on the clutch adjustment, and any undue play taken up on the adjuster mounted on the crankcase. Extra adjustment is provided within the timing cover. This is used when no further adjustment is left on the cable. Upon removal of the cover, you will see that the cable leads to an arm. On its spindle is a nut. Loosen this, and with a screwdriver turn the slotted spindle to the left if you wish to increase the play; to the right if you wish to decrease it. Lock the nut, and replace the cover.

Keep an eye on the clamp bolts on the engine mounting, and on the adjustment of the driving chain. The pedalling chain is tensioned in the normal way—by moving the wheel. The drive chain is adjusted by means of the long screwed sleeve beneath the bottom bracket. Loosen the lock-nut on this assembly, and rotate the sleeve as required to give a chain movement of about  $\frac{1}{8}$  in. on the lower run, finally locking up and rechecking afterwards.

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