

THE 348 C.C. O.H. CAMSHAFT VELOCETTE.

ORIGINALITY does not necessarily imply freakishness in design, and the four-stroke Velocette, with its overhead camshaft and dry sump lubrication, cannot possibly be described as a freak. It is, in fact, a particularly fine example of the modern high efficiency 350 c.c. type.

Since the valve operation of the 348 c.c. model is its most outstanding feature, it may be as well to begin by giving impressions of this particular point gained on the road. During experience with the machine no sort of disadvantage due to the overhead camshaft could be discovered, but, on the other hand, the valve gear demonstrated its very definite advantages of neatness, quietness, total enclosure, and thorough lubrication; the light weight and small number of reciprocating parts should reduce the stresses both in valves and cam gear to a very considerable extent.

Systematic Lubrication.

It is true that a slight hum emanates from the bevel gear, but this is infinitely more pleasant than the chatter of push rods and tappets, while the fact that the camshaft casing is attached to the cylinder head obviates any trouble due to valve clearances increasing through cylinder expansion. The noise of the bevels is most noticeable at low revolutions, but becomes almost inaudible at touring speeds. Both upper and lower pairs of bevels are immersed in oil, the pressure being maintained by the delivery pump at a few pounds per square inch. A certain amount of lubricant is allowed to leak from the upper bevel box to the rocker shoes and bearings, any excess being drained back to the crank case and to the front chain.

It is just possible that the overhead camshaft makes de-carbonising a little more complicated than would be the case if push rods were used, but this point has been very carefully studied on the Velocette, and all parts are clearly marked, so that if the instructions supplied with the machine are followed, stripping and re-erecting the valve gear should present no difficulty. Valve springs can be changed without the operating gear having to be disturbed.

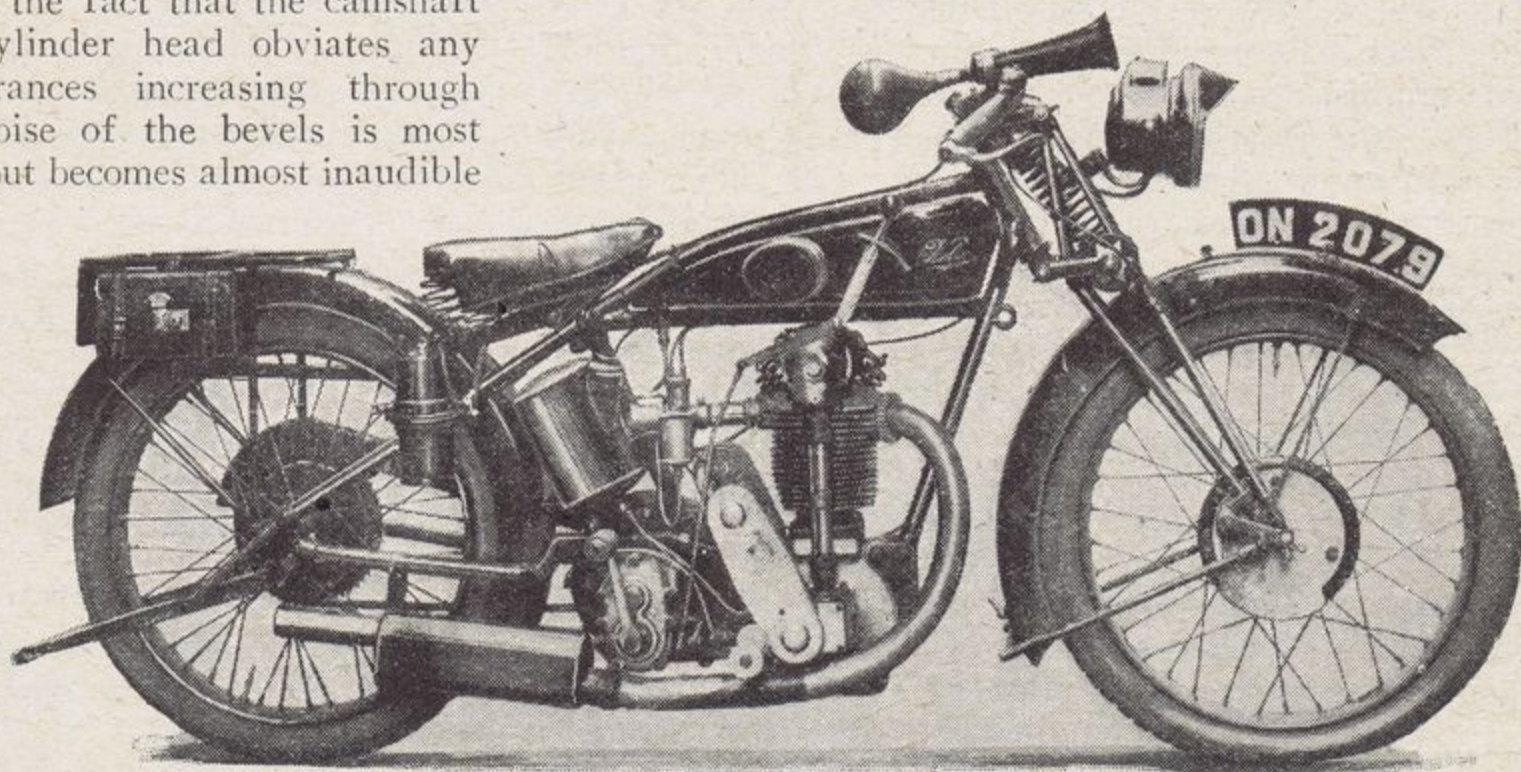
It is, of course, impossible to say that wear on rocker gear is reduced by camshaft operation without a full season's usage, but the theoretical advantages of the overhead camshaft engine in this respect are so clear that we may leave it at that. At any rate, experience proved

that the 348 c.c. Velocette has a charming engine—lively and powerful, and combining to a remarkable degree an ability to pull strongly at low speeds with a propensity for turning over smoothly at very high speeds.

The standard model, such as was supplied to *The Motor Cycle* for test purposes, can, on its compression ratio of $5\frac{1}{2}$ to 1, be driven quite comfortably on "straight" petrol. With this fuel it is rather sensitive, however, to spark control, but will not "pink" if properly driven. On the open road the machine must be handled with respect, for, though it is capable of speeds in the neighbourhood of 70 m.p.h., it is deceptively smooth and comfortable at high speeds, and it is not easy to realise how fast one is travelling.

High-speed Engine which "Pulls."

On the top gear ratio of 5.25 to 1, Frizz Hill, between Wellesbourne and Kineton (Warwickshire), can be taken fast, and Edge Hill itself can be climbed with comfort on the same gear without hurry on the corners. To anyone acquainted with Edge Hill, unusual pulling



Neatness is inseparable from an overhead camshaft engine, but the Velocette designers have carried the principle further to include the whole layout of the 348 c.c. model.

qualities for a small high-speed engine are indicated by this statement; after the first right-hand corner—which was taken at a modest touring speed—the hill steadily increases in gradient to its maximum of nearly 1 in 7. During the climb the engine showed no signs of labouring or knocking, but the ignition had to be retarded slightly.

Throughout the test the absence of piston slap was particularly noticeable, and, except for the slight hum at low speeds previously mentioned, the engine makes remarkably little mechanical noise. The exhaust, however, is rather too strident—quite a pleasant exhaust noise

SPECIFICATION.

ENGINE: 74 x 81 mm. (348 c.c.)

single cylinder, overhead camshaft.

GEAR BOX: Veloce; ratios 5.25, 7.5 and 13.3 to 1.

CARBURETTER: B. and B. two-lever with pilot.

FORKS: Webb single spring type

TRANSMISSION: Chains.

LUBRICATION: Dry sump; pressure feed to all engine parts.

BRAKES: Internal expanding front and rear.

TYRES: 650 x 65 mm.

WEIGHT: 220 lb.

WHEELBASE: 53 $\frac{3}{4}$ in.

SADDLE HEIGHT: 27 $\frac{1}{2}$ in. (with rider seated, 26 $\frac{1}{2}$ in.).

GROUND CLEARANCE: 4 in.

PRICE: £65.

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1926 Models on the Road.—

as such noises go, but rather excessive except at small throttle openings.

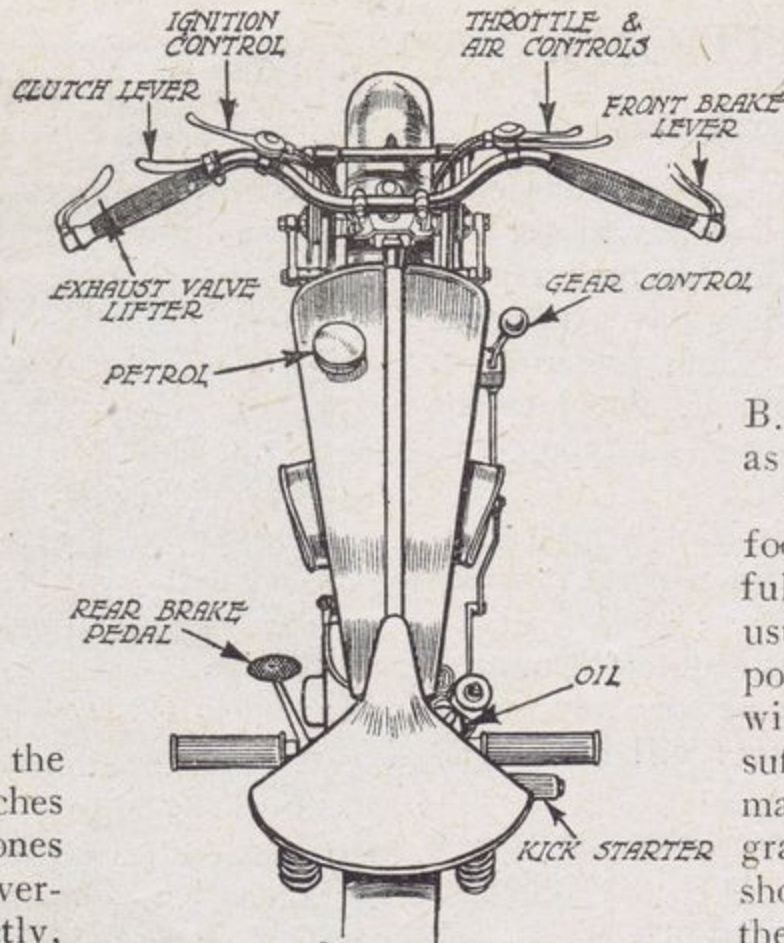
In the expansion chamber there is a baffle consisting of an extension tube over the main exhaust pipe; this is almost closed at one end, and drilled at the sides. It can, the makers say, be reversed in order to reduce noise, but efforts in this direction failed to produce what could fairly be termed a quiet exhaust.

To judge its behaviour on rough surfaces, the machine was ridden up a hill the condition of the surface of which, on the day of the test, was particularly villainous, patches of grease between large loose stones making wheel grip uncertain. Nevertheless, the Velocette behaved perfectly, and a correct feet-on-rests climb was accomplished at the first attempt. The stiff, deep mud on either side of Kenilworth Common water-splash occasioned some footing, but the splash was comparatively shallow, and, as the magneto is mounted well up behind the cylinder, no trouble was experienced.

Oiltightness of Engine Joints.

Cleanliness and freedom from oil leakage are strong points of the Velocette engine, and the same applies to the gear box. In spite of well-planned pressure lubrication, the only trace of leakage took the form of a slight smear on the camshaft case where the rocker ends emerge. The working of the lubrication system while the machine is in motion is not indicated, but, since there is nothing to go wrong with the simple type of double gear pump employed, a tell-tale would be superfluous. An immediate check is available, however, by removal of the screw cap of the oil tank; if the pump is working, oil from the return pump will be seen flowing into the filter just inside the tank.

A pressure regulating screw for the oil delivery is located just behind the magneto chain cover on the crank case, and to increase the oil pressure this screw



Plan of the control layout on the 348 c.c. Velocette.

needs to be turned right handed.

Handle-bars adjustable for angle and reach, a Lycett "Aero" saddle, an excellent riding position, convenient placing of the controls, a smooth clutch with light operation, and a gear lever well forward on the tank all contribute to make the Velocette a pleasure to ride. The B. and B. pilot jet instrument gives carburation as nearly perfect as could be desired.

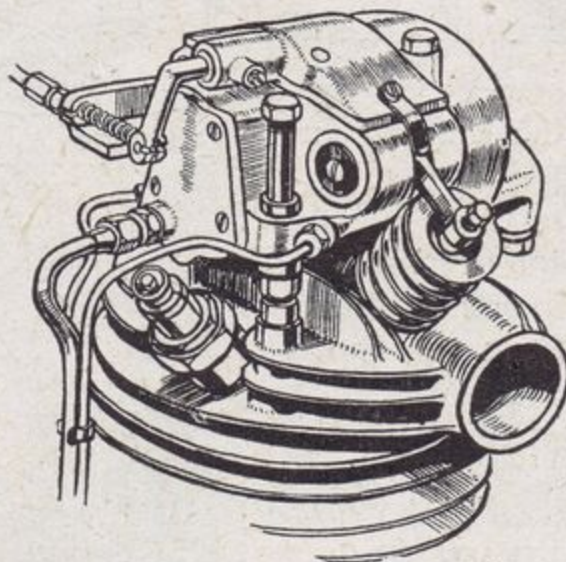
The footbrake, operated by the left foot, is smooth in action and very powerful, but the front brake, though unusually efficient, is inclined to be noisy; possibly this noise would have worn off with further use. The front brake is sufficiently powerful to bring the machine to a standstill on single-figure gradients; the aluminium deflector plate should prevent, to a considerable extent, the ingress of mud and water.

Contrary to previous Velocette practice, the frame of the overhead camshaft model is not of the loop type, but twin tubes from the head to the sturdy engine plates give a satisfactory feeling of rigidity, and the steering is delightful. The action of the Webb fork through a wide range of travel is very smooth, all chatter and dither being damped out by the shock absorbers.

Reasonable Fuel Consumption.

A spring-up stand has long been a feature of Velocette productions, and on this machine the stand legs are H-section steel forgings, which are said to be lighter and stronger than tubes.

A rough test showed that the petrol consumption was in the neighbourhood of 80 m.p.g.—quite a reasonable figure for a machine which was driven hard, often over rough surfaces. It is impossible to obtain the terrific acceleration which is available on the lower gear ratios without some extra expenditure of fuel, but the compromise in the case of the Velocette is admirable. It should seldom be necessary to employ the low gear of 13.3 to 1, and the 7.5 to 1 middle is just right for acceleration on normal roads, and permits high speeds to be maintained.



Camshaft casing and cylinder head of the Velocette four-stroke.