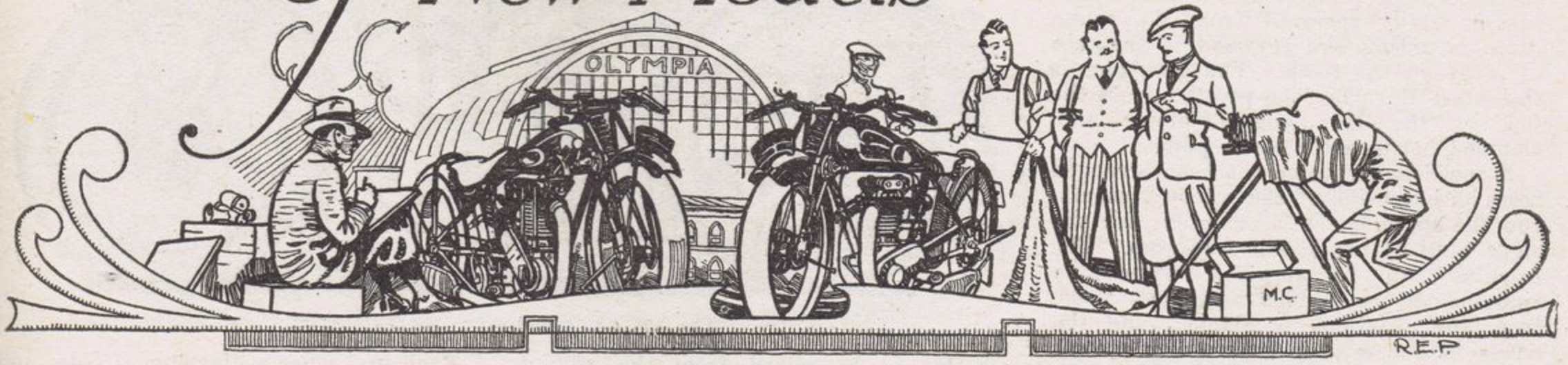
Advance Details of New Models



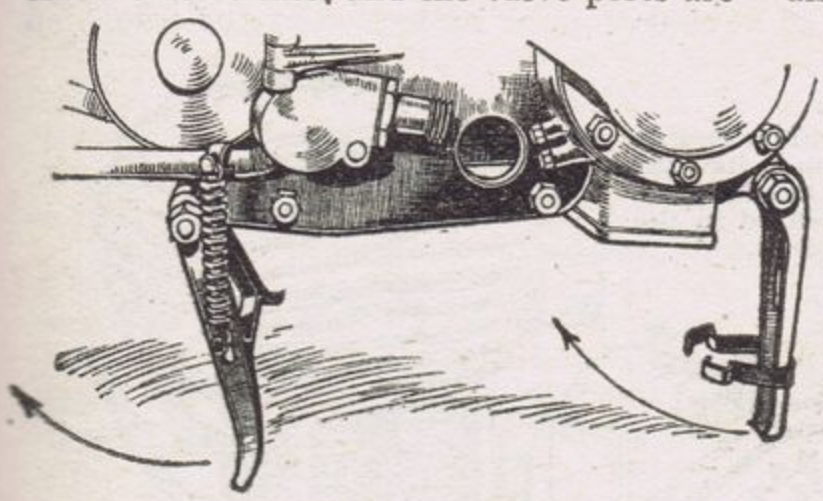
New 250 c.c. Ariels described in Detail: A Big Brood of Rex-Acme Models: Highly Attractive Baker Lightweights: Smarter Zeniths: Chater-Lea Modifications.

TWO "GENERATIONS" OF ARIELS.

250 c.c. Models with Sump Oiling and Overhead or Side-by-side Valves: Big Singles to the Same Pattern.

THE two new 250 c.c. Ariels for 1929 show a considerable advance in several points on modern motor cycle practice. The only outstanding difference in the two models lies in the engine units, one of which has a two-port overhead-valve cylinder, and the other a side-valve arrangement.

Bore and stroke measurements of 65 mm. × 75 mm. give a cubic capacity of 248 c.c. The side-valve cylinder is cast with a turbulence-promoting head, and an extension of the casting encloses the valve and tappet gear, a simple aluminium plate forming an oil- and dust-proof cover. The chamber thus formed is cooled and lubricated by vapour from the crank case release, and the valve ports are



Arrangement of the spring-up rear stand and the "prop" for the front wheel.

clear of the cylinder head, with an additional space between the ports and the valve spring chest.

No gudgeon pin fixing is provided in the die-cast aluminium piston, but the gudgeon pin is secured to the connecting rod by a pinch bolt. In the big end are two rows of roller bearings with a direct oil feed to a point between the two rows. Ball bearings support the driving side of the main shaft, and a plain bearing is fitted on the timing side.

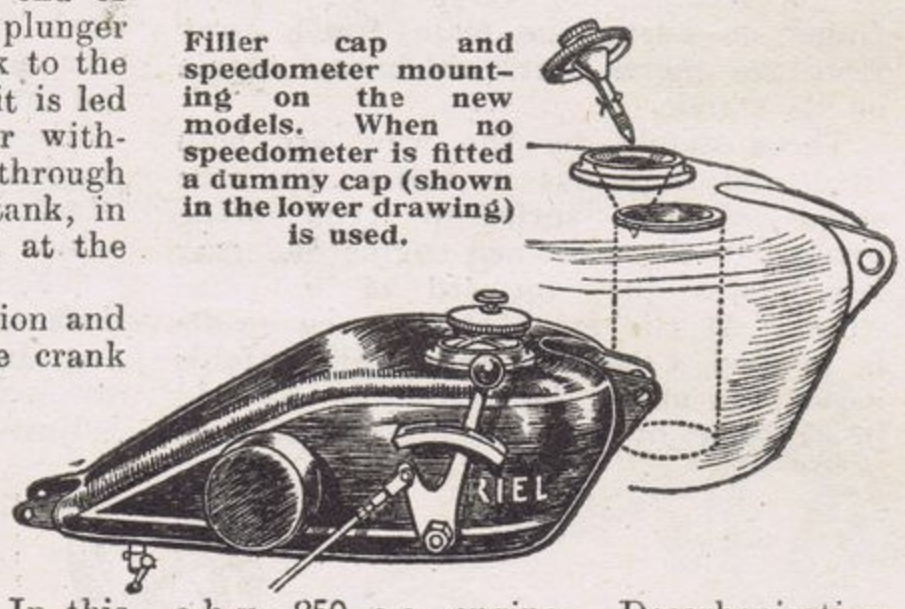
Two separate cam wheels are used, the cams operating direct on flat-base tappets. The whole of the timing chamber is covered by an oil-tight casting which also forms the back of the magneto chain case; the front of the case is extended to form a cover plate for the double oil pump.

This pump is of the plunger type and is driven by an eccentric on the end of the exhaust camshaft. A $\frac{3}{16}$in. plunger supplies oil from the separate tank to the centre of the crankshaft, whence it is led to the big end. A $\frac{3}{8}$in. plunger withdraws oil from the engine sump through a filter and returns it to the oil tank, in which a second filter is provided at the suction pipe.

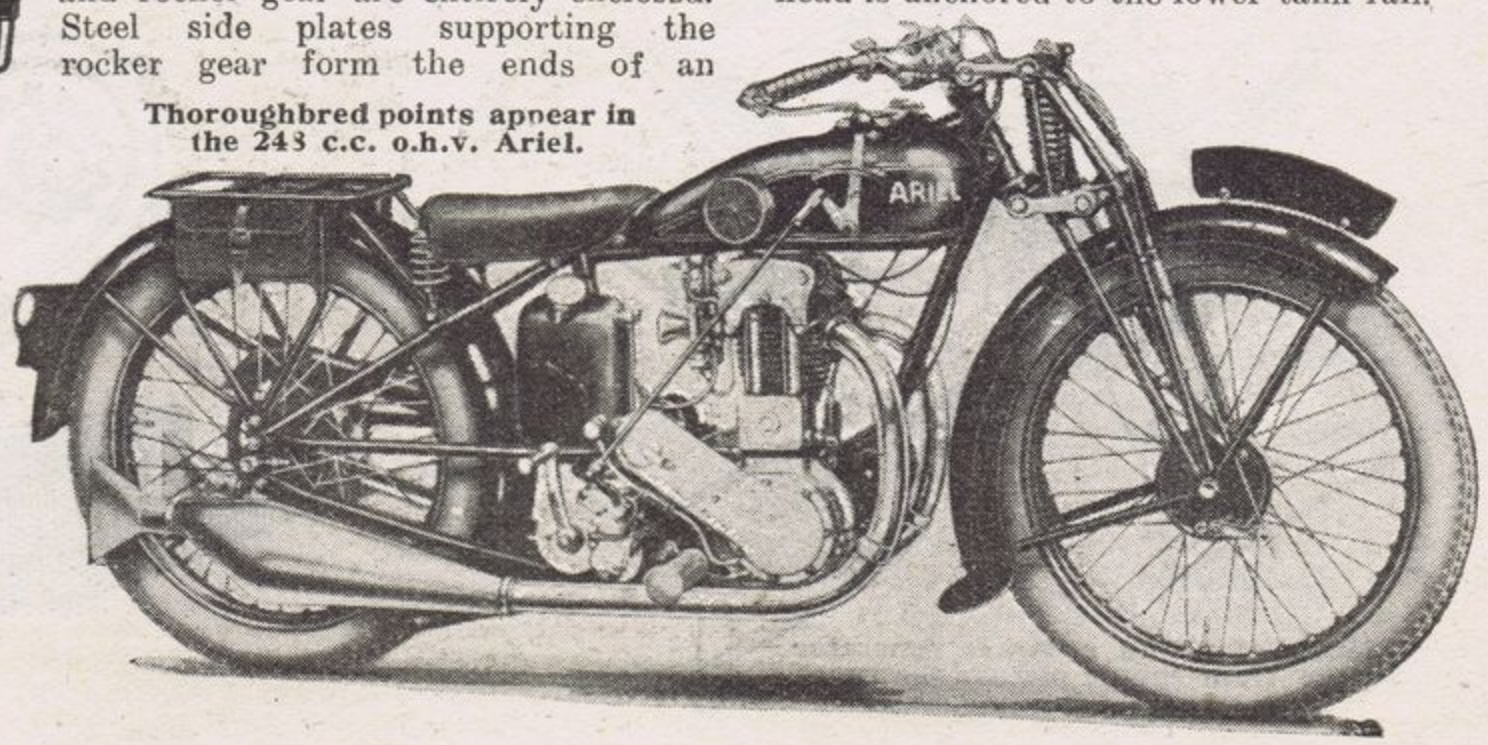
Oil is cooled during its circulation and also by deep cooling ribs on the crank case itself. Seven b.h.p. is claimed for every side-valve 250 c.c. engine.

Except for the cylinder and valve gear, the overhead-valve model is identical with the side-valve unit. In this case, however, the separate head has twin exhaust ports; the push rods and rocker gear are entirely enclosed. Steel side plates supporting the rocker gear form the ends of an aluminium chamber, through which only the rocker ends project, fabric joints being employed to prevent leakage. Both push rods are enclosed in tubes, and the return springs are housed in a box cast integrally with the cylinder.

An output of 10 h.p. is claimed for the o.h.v. 250 c.c. engine. Decarbonisation should be particularly simple, as the head is easily removable. In each engine the head is anchored to the lower tank rail.



Filler cap and speedometer mounting on the new models. When no speedometer is fitted a dummy cap (shown in the lower drawing) is used.



Thoroughbred points appear in the 243 c.c. o.h.v. Ariel.

Advance Details of New Models.—

Apart from the engine differences, the two new Ariels are identical. Transmission is by ½in. × 205in. chains, which are automatically lubricated from the engine release. The rear wheel sprocket can be easily removed from the brake drum mounting and reversed in the case of wear on the teeth. The gear box is the latest Burman type pivoted from the top of the rear engine plates and clamped between the lower plates.

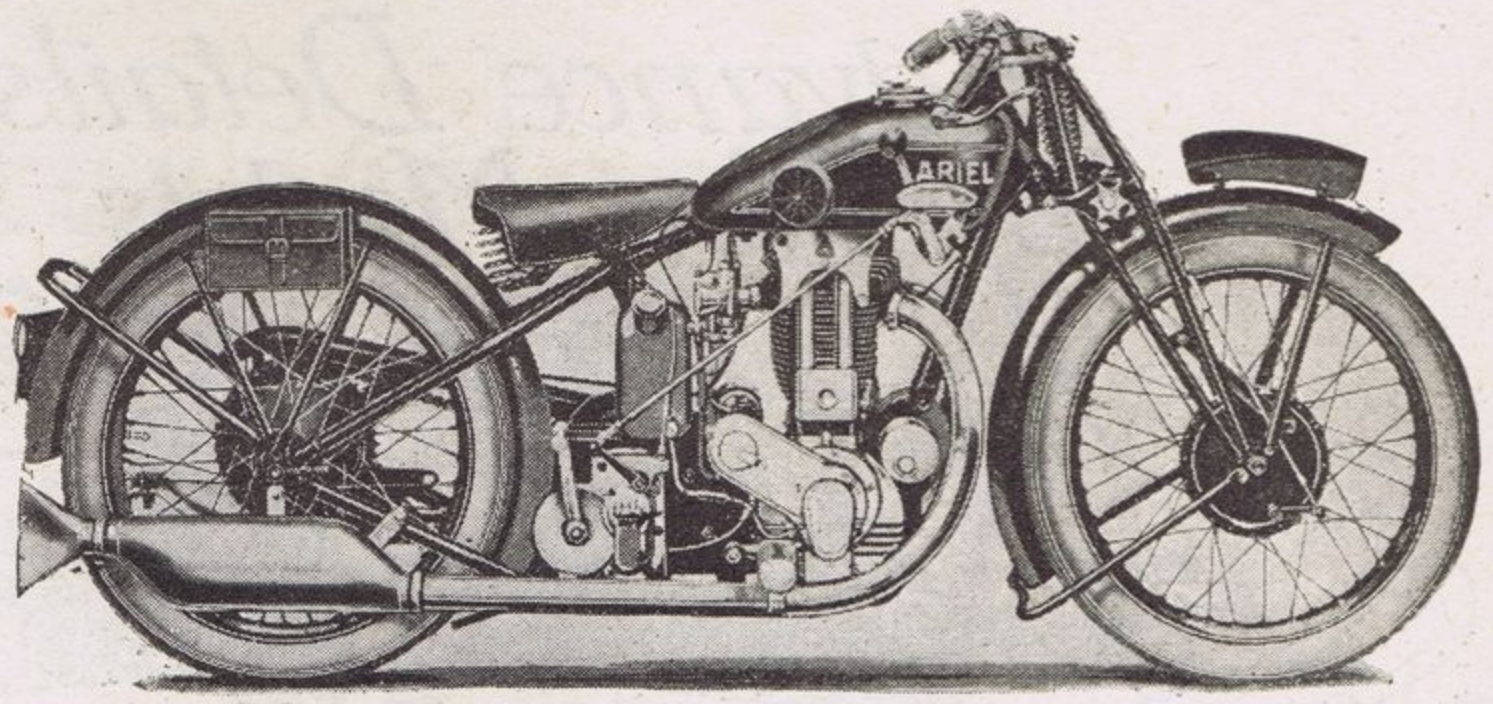
A speedometer drive has been arranged from an extension of the rotary layshaft, and the speedometer is mounted near the right side of the saddle tank top. The machine can be supplied without a speedometer, in which case the drive from the gear box is blanked and the recess in the tank is covered by a neat spring-clipped plate. In order to "balance" the speedometer, a very large petrol filler cap is placed on the opposite side of the tank top.

An Up-to-date Frame.

The eye of the gear box striking lever is in line with the gear box pivot, so that adjustment of the chain does not affect the control rod. Two tank tubes, both straight, comprise the upper part of the main frame, while chain stays and torque tubes run to the rear axle above and below the gear box, thus forming a most satisfactory compression strut for the final drive.

The normal back stays and saddle pillar have bolted fixings, and it is possible, after detaching the three-point saddle fixings and three bolts in the frame, to swing the main frame away from the engine unit, which can remain on its stands.

These stands, by the way, are both light and ingenious in action, the rear stand of the spring-up type being pivoted to the combined engine and gear box plates just forward of the rear wheel. At the front end of the cradle is pivoted a steel pressing which folds backwards under the engine, and is held in position by spring clips; thus both wheels can be raised from the ground without interference with the quick detachability of either.



The 497 c.c. two-port "Sports" Ariel.

At their foremost points, the engine cradle plates are extended to form circular supports for a four-volt Lucas dynamo, the space between the plates being protected by a sheet metal cover. When no dynamo is fitted, sheet metal caps cover the holes, and it is a simple matter for the veriest novice to add a dynamo lighting set to his machine.

The metal caps are removed and the dynamo inserted. A plate bolted to the front of the primary chain case is removed, and inside there is revealed a special sprocket for the dynamo chain. The chain is then covered by an auxiliary chain case which takes the place of the inspection cover. A platform is provided beside the saddle tube for mounting the accumulator, with the oil tank on the other side.

Head and tail lamps can be added, the former being supported on triangular steel wire brackets, for the fixing of which provision is made on the forks.

There is no metallic contact between the fork links and the fork blades or head lug, fabric packing strips being inserted at each joint, and a simple method of adjustment being provided.

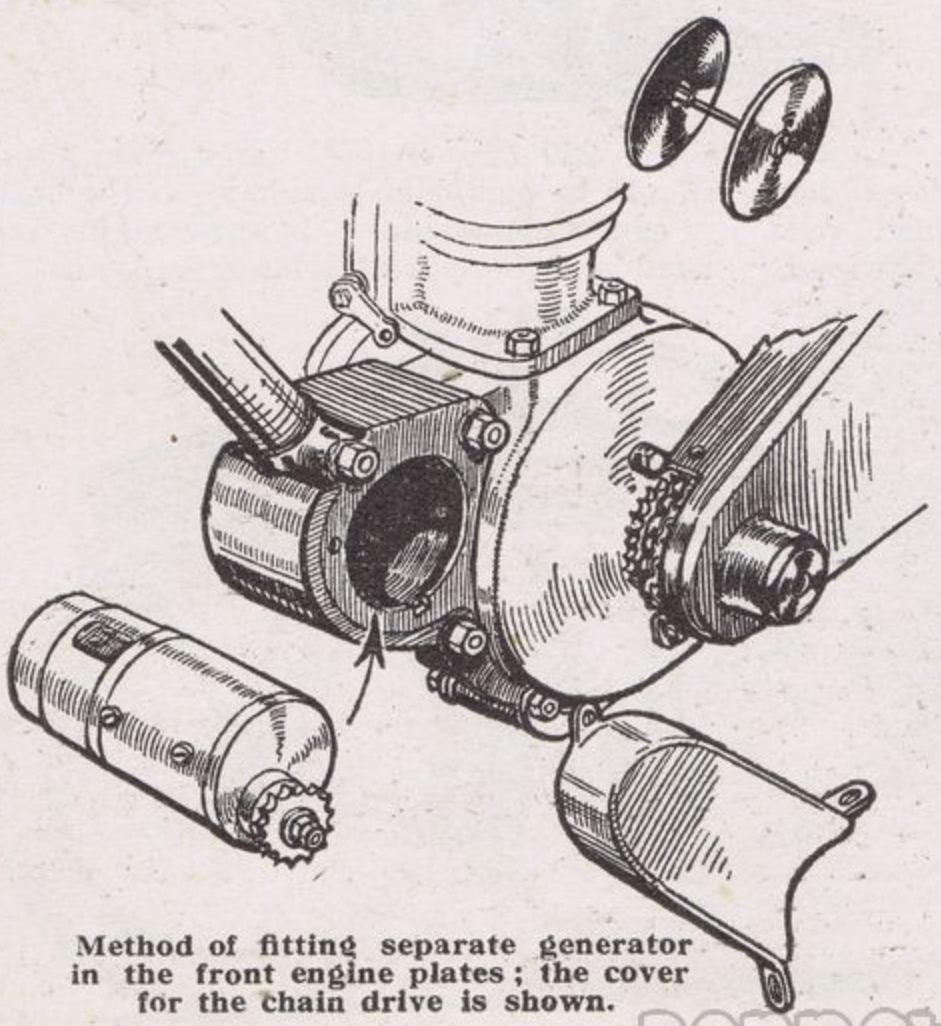
Each brake has a diameter of 5½in. and is protected from the weather by an overlapping back plate. Tyres of 25in. × 3in. are fitted to the wheels, which have taper roller bearings to the hubs.

Formed of a single steel pressing, the carrier is placed well forward, and is quite strong enough to support a pillion passenger; there are pannier toolbags at each side and a hand grip to assist in the operation of the stand.

The 200 lb. Taxation Limit.

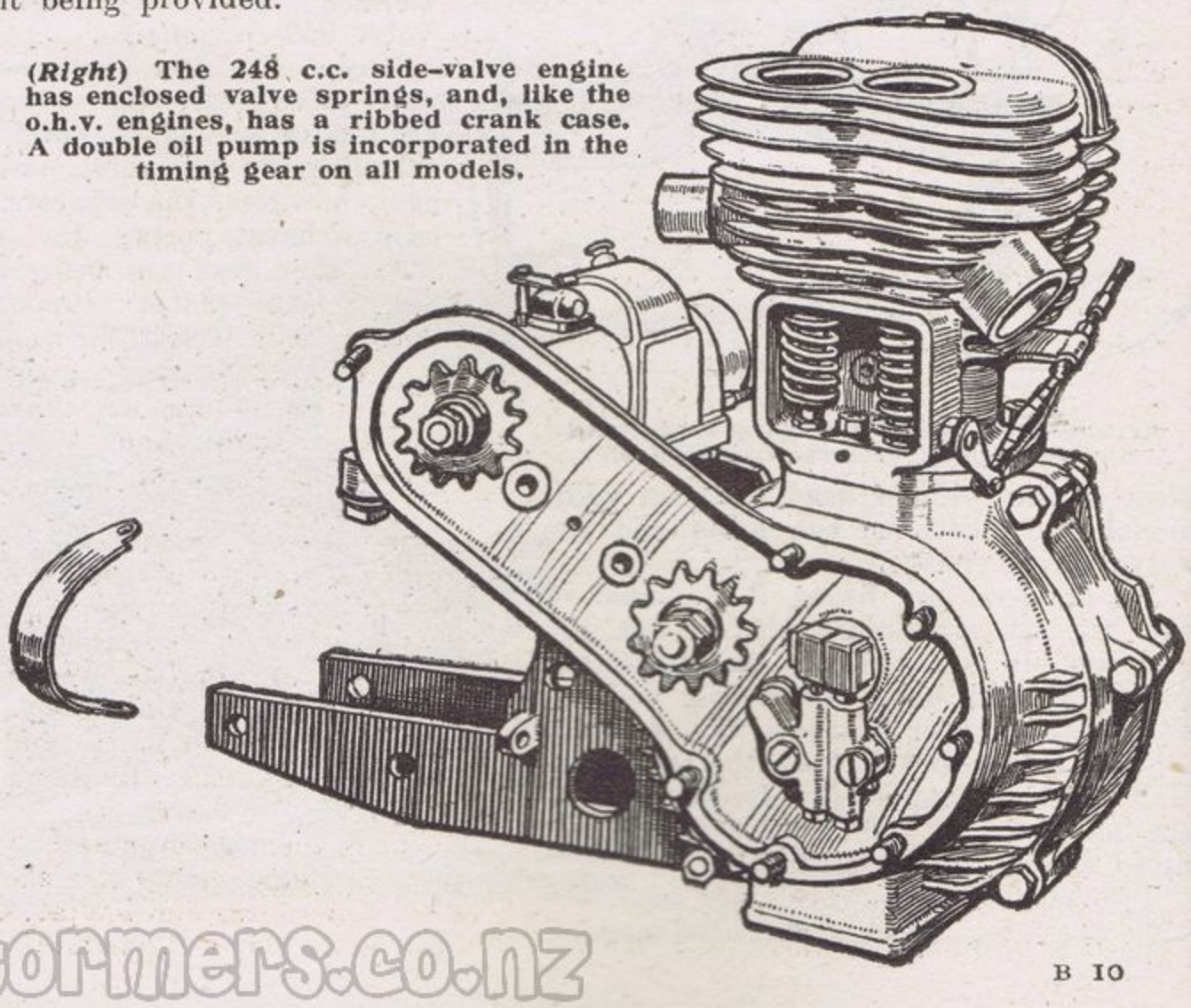
The specification includes adjustable footrests and handle-bars, pneumatic knee grips, Lycett flexible top saddle, Lucas magneto and a single-lever Amal carburetter having a neat trigger adjustment for the air slide to facilitate starting, or to provide an alternative position for exceptional weather conditions.

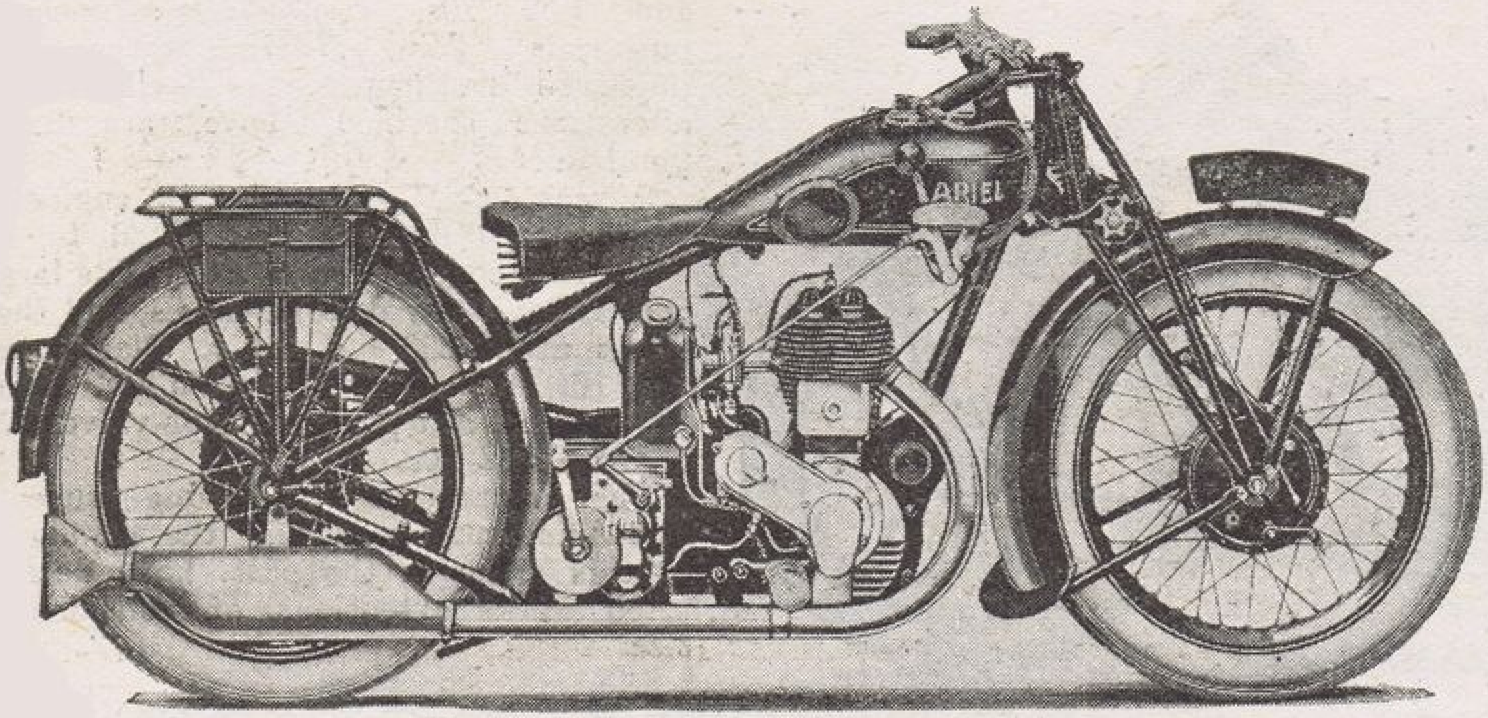
It is claimed that either machine can be brought within the 200lb. taxation limit with the dynamo system *in situ*, but without the speedometer. Both machines have been under road test for some time past, and it is claimed that the side-valve model is capable of from 50 to 55 m.p.h. and the o.h.v. model from 60 to 65 m.p.h. Though no special arrangements have been made for the protection of the rider, 5in.



Method of fitting separate generator in the front engine plates; the cover for the chain drive is shown.

(Right) **The 248 c.c. side-valve engine has enclosed valve springs, and, like the o.h.v. engines, has a ribbed crank case. A double oil pump is incorporated in the timing gear on all models.**





The 557 c.c. de luxe side–valve Ariel.

D-section mudguards, the front valanced and having a mud flap, will provide at least as good protection as do many high-priced motor cycles.

Like father, like son. Though the new 250 c.c. Ariel "Colts" are as up to date as any motor cycles, they are not more so than the parents from which they have sprung. So alike are the two "generations" in essential features that one description would almost do for both.

Almost, but not quite, for the larger models still retain distinctive features, and have many additional advantages for the coming year. There is a reduction of types for next year; the 557 c.c. engine is still made with side-by-side valves, but the 497 c.c. engine is available in the two-port overhead-valve form only; both engines now have the valve gear enclosed as far as is reasonably possible.

In the case of the side-valve engine the enclosure is complete, a chamber formed by extensions of the cylinder walls being closed by a detachable aluminium plate and lubricated by crank case vapour. A similar arrangement protects the tappet heads and return springs in the overhead models, the push rods being encased in steel extension tubes, while the rocker gear is protected by an aluminium case pinched between the steel rocker supporting plates and rendered oil-tight by fabric end pads.

Not only are the overhead rocker bearings lubricated by grease gun, but a hole is drilled through the arm communicating with the upper ball head, so that this vital point receives lubricant.

In the crank case there have been considerable modifications; the structure has been stiffened up, and is now provided with cooling ribs on both sides. Another important improvement takes the form of dry sump lubrication, as incorporated in the new 250 c.c. models.

The speedometer drive and tank fittings and the arrangements for a separate Lucas dynamo are similar to the 250 c.c. layout; either the speedometer or dynamo can be fitted up in a very short space of time.

Other mechanical improvements include a short induction pipe with flange joint, which is devised to give easier starting; on the side-valve model the plug is placed midway between the valves and the centre of the cylinder head.

Substantially the frame is unchanged, except for the dynamo housing and lugs for a centrally disposed spring-up stand. The forks have been modified, and the spring now acts in tension instead of in compression. In addition to this, the front brake anchorage takes the form of a tension link which relieves the forks of twisting strains. Footrests on all models are now adjustable.

Alternative Big Single Types.

Each of the larger models is supplied in two forms, sports and de luxe, the main difference being in the matter of tyre sizes, mudguarding, etc. The prices and main particulars are as follows:—

557 c.c. side-valve sports, 26in.×3in. tyres, Sturmey-Archer gear box; £44.

557 c.c. de luxe, 26in.×3.25in. tyres, valanced front guard, steering damper, Burman gear box; £46 10s

497 c.c. o.h.v. 2-port sports, 26in.×3in. tyres (no carrier); £47 10s.

497 c.c. de luxe, 26in.×3.25in. tyres, valanced front guard, carrier, and twist grip controls; £50.

In each case an extra charge of £5 5s. is made for lighting equipment, and £2 for speedometer and drive. In the case of the 557 c.c. sports model, speedometer drive from the gear box must be specified with the order, if required.

The prices of the 248 c.c. lightweights are: side-valve model, £36; overhead-valve model, £38 10s. Extra charges are: lighting, £4 10s.; speedometer, £2.