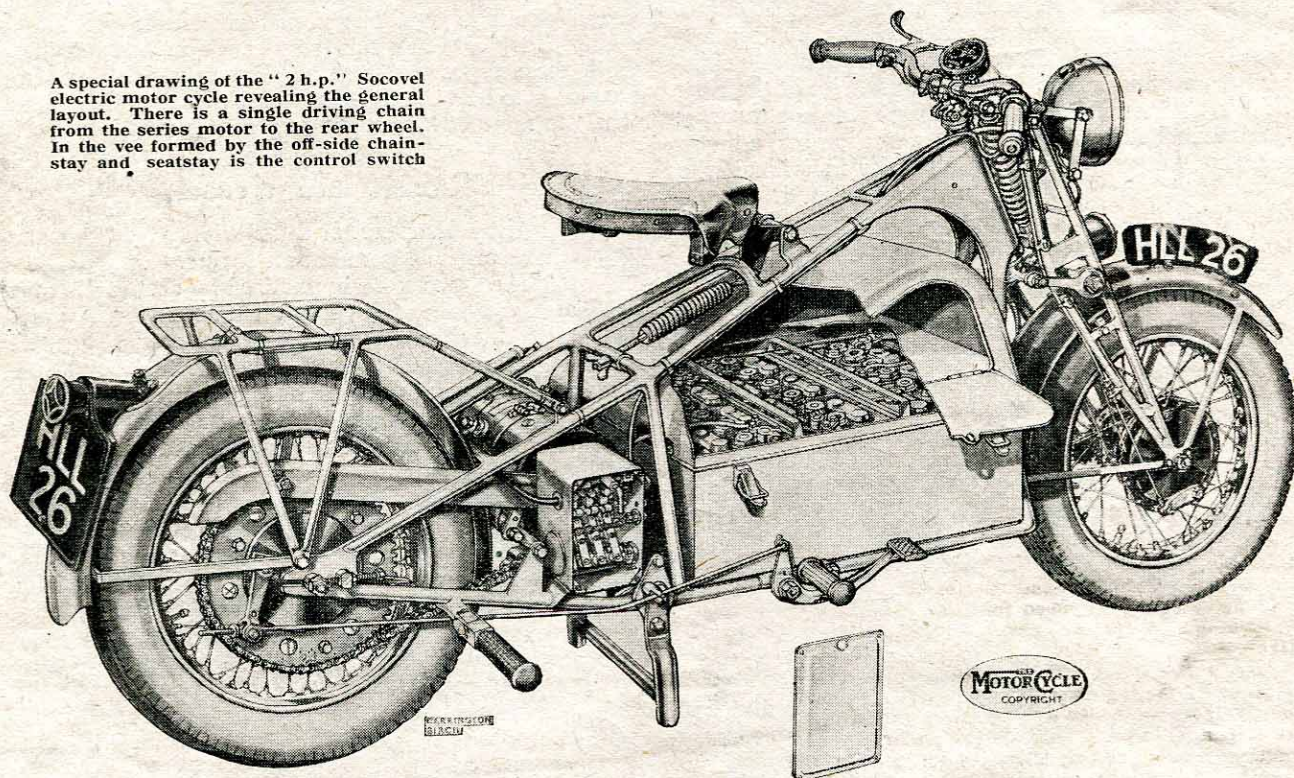


"The Motor Cycle" Introduces — AN ELECTRIC

A special drawing of the "2 h.p." Socovel electric motor cycle revealing the general layout. There is a single driving chain from the series motor to the rear wheel. In the vee formed by the off-side chainstay and seatstay is the control switch

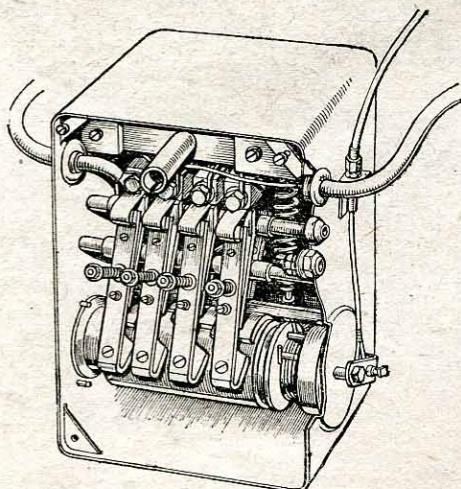


Production-model Belgian Machine Tried on the Road : Its Appeal and Its Limitations

HAS the electric motor cycle a future? What are its advantages and disadvantages? On the Continent the electric motor cycle has made considerable headway. Was that solely owing to lack of petrol during the war or has the machine

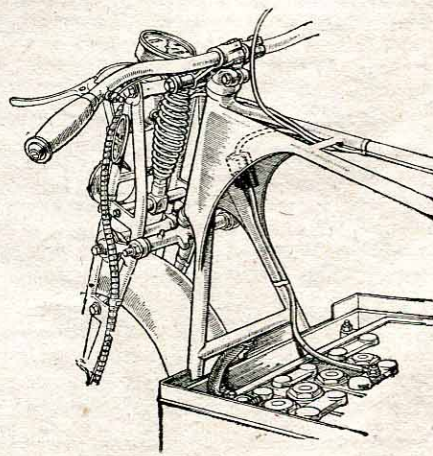
an appeal of its own? In Britain electric motor cycles have been made—not many, but a sufficient number to cause the Chancellor of the Exchequer to regularize the position over their taxation in the interim Budget last October, when it was

laid down that electric motor cycles should be taxed at 17s 6d a year, the same as autocycles and motor cycles up to 150 c.c. These machines, however, were nearly all of a home-made variety, with car batteries and car starter motors fitted in lightweight motor cycle or even bicycle frames. What of true production-model electric motor cycles?



(Left) Detail layout of the control switch. Operation of the drum carrying the contact strips is by twistgrip

(Right) How the steering head is built up by welding



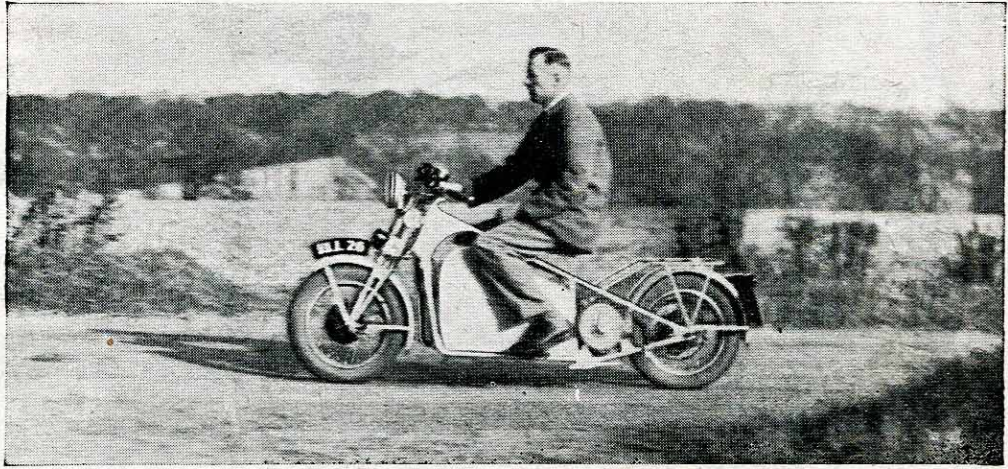
MOTOR CYCLE

A Belgian manufacturer, Socovel, has made over 1,000 electric motor cycles. *The Motor Cycle* decided to import one—to examine it, test it, use it and learn all it could about such a machine. Mr. Geoffrey Smith, Editorial Director of *The Motor Cycle* and its associated papers, had already seen the Socovel on the streets of Brussels—had done so in the course of an official mission to Germany and the (previously) occupied countries. He was so impressed by its silence, simplicity and convenience that he ordered a specimen for trial and examination by interested parties in the trade.

Last month the latest Socovel arrived. It is an interesting machine with appealing characteristics. In no way, however, is such a machine a rival to the motor cycle. Its speed and its range per charge are too limited. On the other hand, an electric motor cycle might attract many whose needs or desires are not met by motor cycles and autocycles. Doctors, priests and owners of large estates, for example, might well find the silent, ever-ready electric motor cycle of value, also the elderly for, say, shopping and short journeys into the country or for visiting friends. There are no gears, no clutch, no starting difficulties—merely a twist-grip on the right handlebar and the brakes. To start the machine the grip is turned and the machine gently and silently glides away, picking up speed in the manner of a trolley-bus. To stop the machine the grip is moved backwards, whereupon the machine free-wheels and is halted by applying the brakes. Could anything be more simple?

Construction of the Machine

The Socovel is a machine built on motor cycle lines, and usually has a pillion seat. No doubt the makers felt that with their wartime market, and the conditions under which they were labouring, such were the best—perhaps, the only—lines on which to work. In this country a firm that has also expended much thought on the subject, Small Electric Motors, has experimented with an electric light-weight. In the case of the Socovel, as the special drawings and the photographs reveal, there is a heavy type of duplex cradle frame of welded construction,



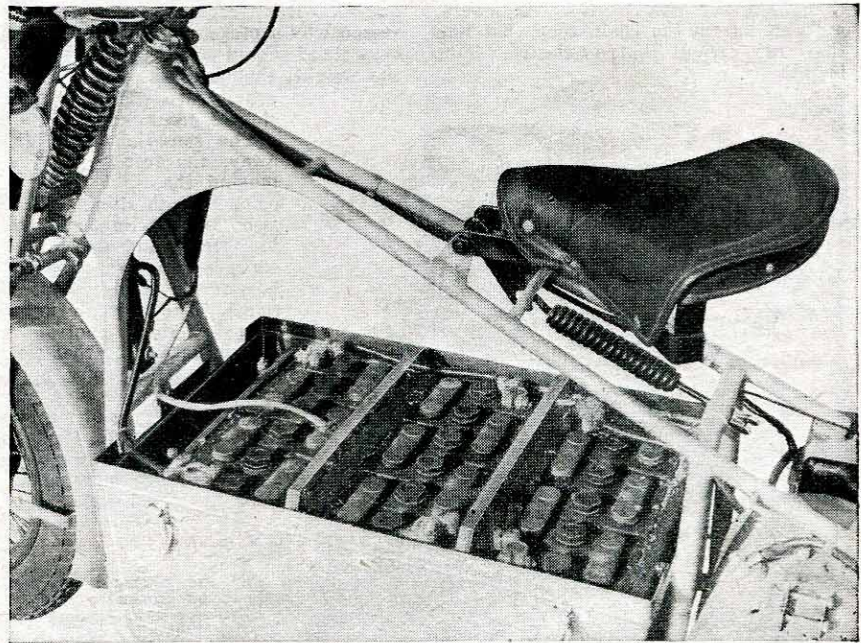
On the road with the Socovel. A picture taken during the course of the first duration tests

central-spring front forks and, generally, a heavyweight motor cycle specification that includes large-section tyres on small-diameter rims—3.25×14 Englebert tyres—a spring-top saddle with a single, adjustable tension spring as the suspension and a normal rear carrier of tubular construction.

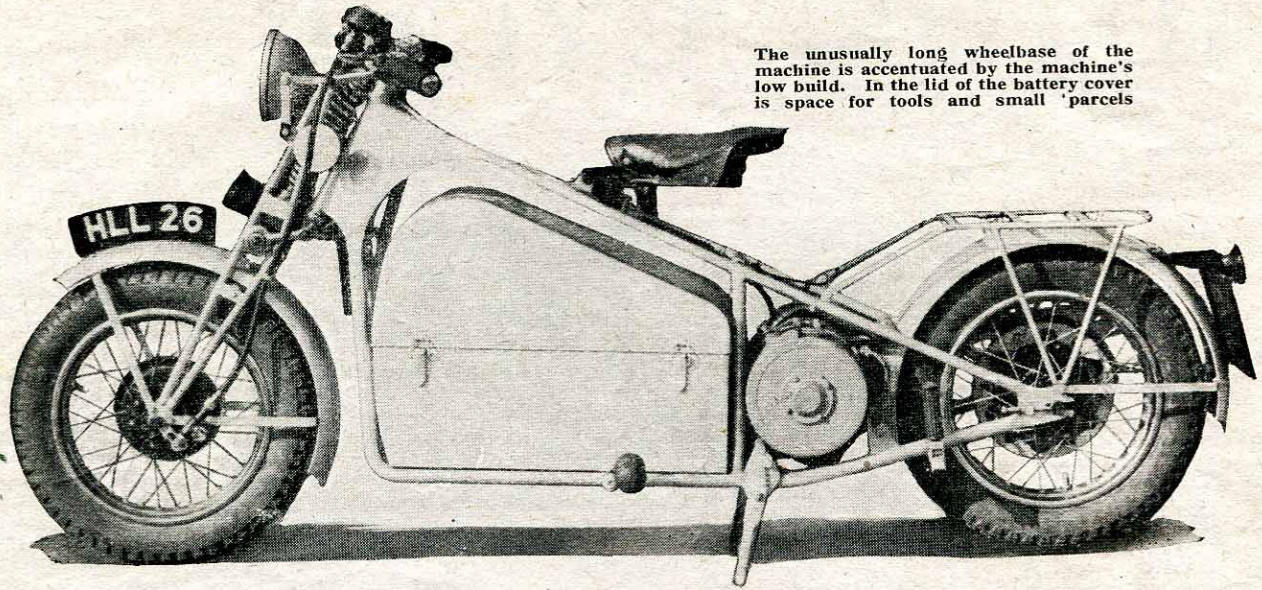
In the earlier models the electric motor was of 18 volts and rated at 1 h.p. With the very latest model which has been imported there is a 48-volt series motor rated at "2.6/1.2 h.p." This is

mounted between the rear mudguard and the twin seatstays, while the three 12-volt batteries—a total of 36 volts for the 48v motor—are carried in the neat pressed-steel box in the middle of the frame. The batteries are arranged crosswise and, with their low position in the frame, the machine affords a feeling of great stability. In the cover there is a locker for tools and small parcels.

On the off-side of the motor is the switch box. The switch is of very simple type. Movement of the twistgrip on the



Arrangement of the three 12-volt batteries. A 6v. tapping provides current for the lamps and horn. Note the adjustable saddle suspension



The unusually long wheelbase of the machine is accentuated by the machine's low build. In the lid of the battery cover is space for tools and small parcels

handlebar causes a cylinder which carries a series of four contact strips to move round. As the grip is twisted, first current passes to the motor via spiral resistances totalling 0.29 ohms. The machine gets under way. Move the grip a little farther and one of the resistances is cut out. There is now a resistance of 0.096 ohms. Finally, there is the position, the normal riding position, in which all resistance is cut out. In appearance, the resistances are akin to rather long valve springs.

From the motor to the rear wheel there is a single driving chain. The rear chainwheel has 63 teeth and the driving sprocket only 12 teeth, which no doubt is the reason why with this machine there is a "sizz" from the chain somewhat like that of various battery-electric light lorries.

The machine is longer than a normal motor cycle and unusually wide at the footrests. The wheelbase is approximately 60in, while the total width over the footrests is some 29in; the width of the battery box is 15in. The motor is of 8in diameter and approximately 10½in overall. A tapping off the front battery provides current for the 6v lighting and horn. The brakes are of 6in diameter.

As suggested, the machine is no light-weight—indeed, weight is one of its main disadvantages. The three 12v batteries total 201 lb and the machine, with batteries, 441 lb. With such a weight the central stand, which is not of a low-lift type, is very difficult to operate single-handed. However, there is, of course, no reason why a propstand and/or a rolling-type stand should not be fitted. Further, the weight, thanks to the low centre of gravity, in normal circumstances passes unnoticed.

The sensation of gliding away, the result merely of moving the right handlebar grip, is enthralling. There is no kick-starting, no clutch to operate and no gear to engage—not even a carburettor to flood or controls to set. The master switch is turned; then control is effected merely by that right grip and, if necessary, application of the brakes. In short, it is a type of machine anybody can ride straight-away; it is not merely as simple as, but more simple than, any pedal cycle.

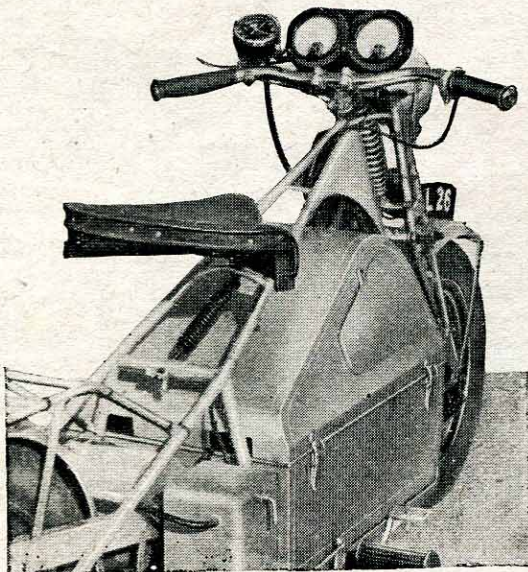
For the purposes of the tests an ammeter and a voltmeter were fitted on the handlebars

From a standstill the acceleration can be very gentle or rapid according to whether the twistgrip is moved slowly or quickly from the position of maximum resistance, between batteries and motor, to that of no resistance. Once in the latter position the rider leaves the grip static. He or she is in the cruising position, and the machine glides along at a speed which depends upon whether the road is level, downhill or uphill and upon the direction and strength of any wind. There is no acceleration as such; it is not a case of giving more throttle and the machine automatically travelling at a higher speed.

Almost Complete Silence

On roads that are approximately level the machine travels at anything from about 16 to 20 m.p.h. It does so with complete silence except for the noise from the chain drive. Automatically, those who see the machine stop and stare, and there are questions such as those from bystanders when the machine was undergoing its duration tests of "How much? How much?" or "Can one buy one?" To see the machine gliding along is most impressive. On the batteries fitted as standard—the three 12-volt "Tudor (Bruxelles)"—the total distance covered on a full charge was 27½ miles. This was on to-and-fro runs over a slightly undulating road on a rather windy day. The speed in one direction was approximately 20 m.p.h., with a current consumption of 24 amperes at a voltage under load of 35½. In the opposite direction the speed was around 16 m.p.h. and the consumption 33 amps.

At 21 miles the voltage had dropped to 34; at 22 miles to 33; and at 24 miles to 32. Then there was a rapid drop and, with it, of course, a sudden and big decrease in speed. At 27.4 miles the voltage was but 9 and the machine would barely crawl along. Leave the machine a short time and the batteries naturally pick up. After the machine had been



An Electric Motor Cycle—

standing about a quarter of an hour, following stopping at 27.5 miles, it covered a further half a mile. The speed of the machine at 28 miles was under 10 m.p.h. and the voltage approximately 14.

It is possible therefore to cover an additional distance by switching off for a short time, covering another half-mile or so, and repeating the procedure. Also, of course, a greater mileage will result if the machine is not ridden for over 27 miles non-stop, as was the case with the first duration test.

What is the cost of charging the batteries? A total of approximately five units is required—5d if the electricity supply is 1d a unit. Since there is no engine lubrication as in the case of an internal-combustion engine, it can be said that the cost from the power angle is equal to five miles for a penny; ten miles for a penny if the electricity supply is ½d a unit! For an autocycle, with its petrol and oil, the present-day figures are four miles (or a little more) per penny.

However, the fact that an autocycle can be nearly as cheap to run from the "fuel" angle, has a cruising speed of some 10 to 30 m.p.h. and possesses acceleration, are rather beside the point, for the electric motor cycle is not very likely to appeal to those attracted by autocycles or motor cycles. The probability is that a very different market would be opened up among those having frequent calls to make in a district. As a hack to the golf links it is excellent.

Desirable Mileage per Charge

In this country, and with the design of the Socovel, in which there is no inbuilt charging arrangement, it is not a question of the owner merely plugging in to the house circuit when the machine is left over-night. Normally, a rectifier will be called for and the cost of a suitable charger, at present prices, is in the region of £30. Traction batteries are usually guaranteed for two to three years, but with proper usage can be counted to last almost indefinitely.

Weight can no doubt be reduced, but is inevitably a problem with a battery-

electric motor cycle. Mileage per charge is a more material factor. A total distance of 50 miles would appear to be a minimum range to aim at. What of the cost of an electric motor cycle? Naturally, this depends upon many factors, but it is not impossible to visualise a machine which incorporated a means of battery charging, yet compared in price with lightweight motor cycles. A fact which may not be appreciated is that such a machine can have a very good performance on hills. The Socovel would restart with ease—would even spin its rear wheel if the twist grip was "opened" rapidly—on a hill with a gradient of 1 in 7.

A novelty the machine may be, but it was not merely with this in mind that *The Motor Cycle* bought and imported the Socovel electric motor cycle. The object was to learn something about a production model electric motor cycle that has sold in considerable numbers—to determine what progress has been made and to assess the possibilities of a two-wheeler that is different, a gentlemanly machine if ever there was one. Further tests will be made and our experiences recorded.

Castwell Park Programme

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Jackson (249 Budget);
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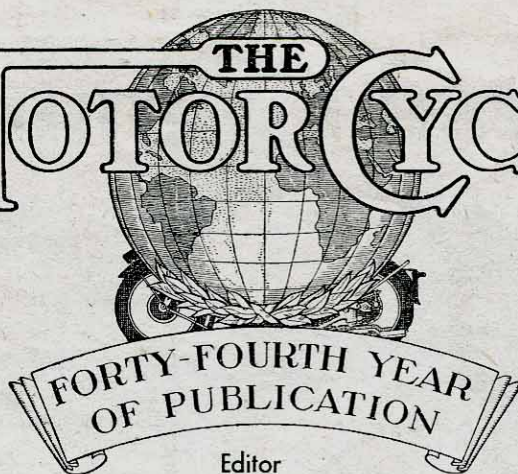
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EDITORIAL OPINION

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