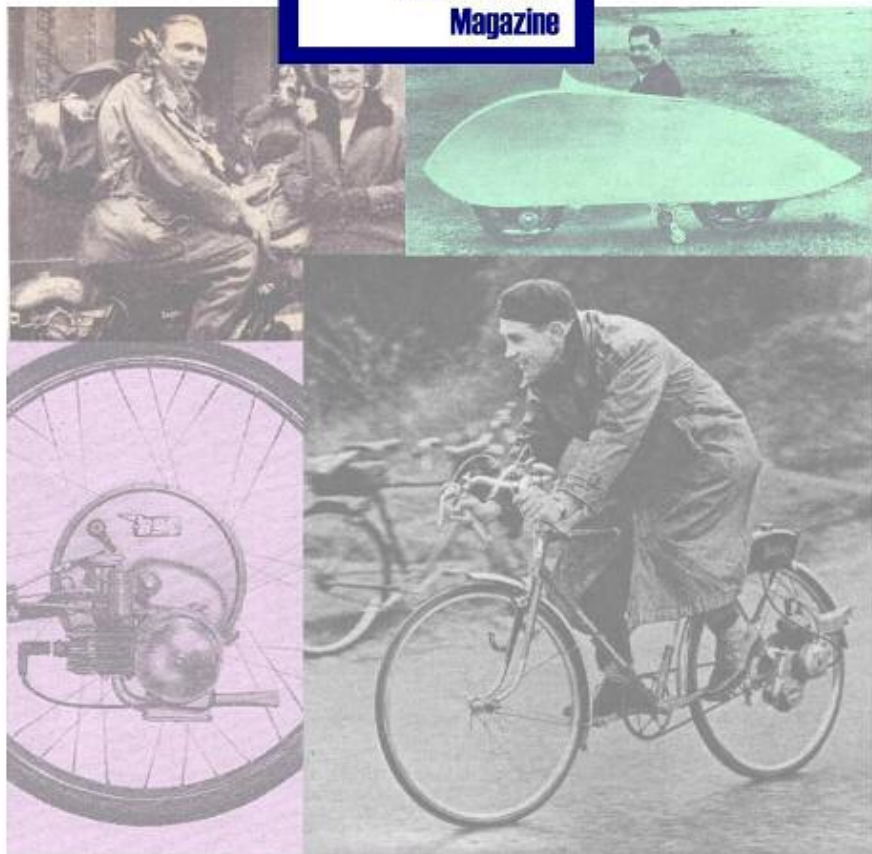


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The "Miniauto" Motor Bicycle

Winner of the Challenge Cup at the Exhibition of the Ipswich Society of Model and Experimental Engineers

by R. N. Ostler

HAVING dabbled in small internal combustion engines for some considerable time, it occurred to me that instead of watching the wheels go round and generally making myself a nuisance creating noises akin to V1's etc., why not make one to work for me, if only to help conserve the energy required by us poor cyclists.

The power/weight ratio of small internal combustion engines is generally reckoned to be very good, so I designed a simple two-stroke engine which I considered would be the smallest practical engine to propel the average person on a cycle on reasonably level roads at a speed above the average of its pedal-operated counterpart. The engine is a simple two-stroke about 25 c.c. with the conventional transfer ports, etc. The crankcase is cast aluminium and the cylinder, good grade cast-iron. No cores were used in the patterns, and castings were machined from solid. The crankshaft is built up, crank disc and crank-pin turned from solid and the centre bored a force fit for $\frac{1}{8}$ -in. diameter silver-steel shaft, which was pressed in and pegged.

Crankcase cover, connecting-rod and piston are of dural, the latter having three cast-iron rings fitted of the stepped pattern.

The connecting-rod has a phosphor bronze bush at crank-pin end, and the gudgeon-pin is $\frac{3}{16}$ -in. diameter silver-steel, bored through $\frac{3}{16}$ in. diameter for lightness.

The cylinder was bored and fins turned from the solid, ample size bosses being cast on to accommodate exhaust and inlet manifold and



transfer port. The latter was drilled up the boss from the base, then across into the cylinder, the outside holes afterwards being plugged up.

Cylinder cover was turned from dural and fins cut by hand, using two blades together in hacksaw frame to get the width of slot.

Engine crankshaft runs on three light type ball-races two in crankcase (with sealing bush between) and one in aluminium housing at end of crankshaft.

The drive to the tyre is by aluminium roller, turned slightly concave with diagonal saw-cuts round its periphery, and the ratio to a 26-in. cycle wheel is 10 to 1.

The whole engine unit is mounted across two soleplates of 14-gauge steel, which in turn are arranged to swivel on its anchorage at the back of cycle fork. The front fixing is by two telescopic spring forks attached to front wheel spindle.

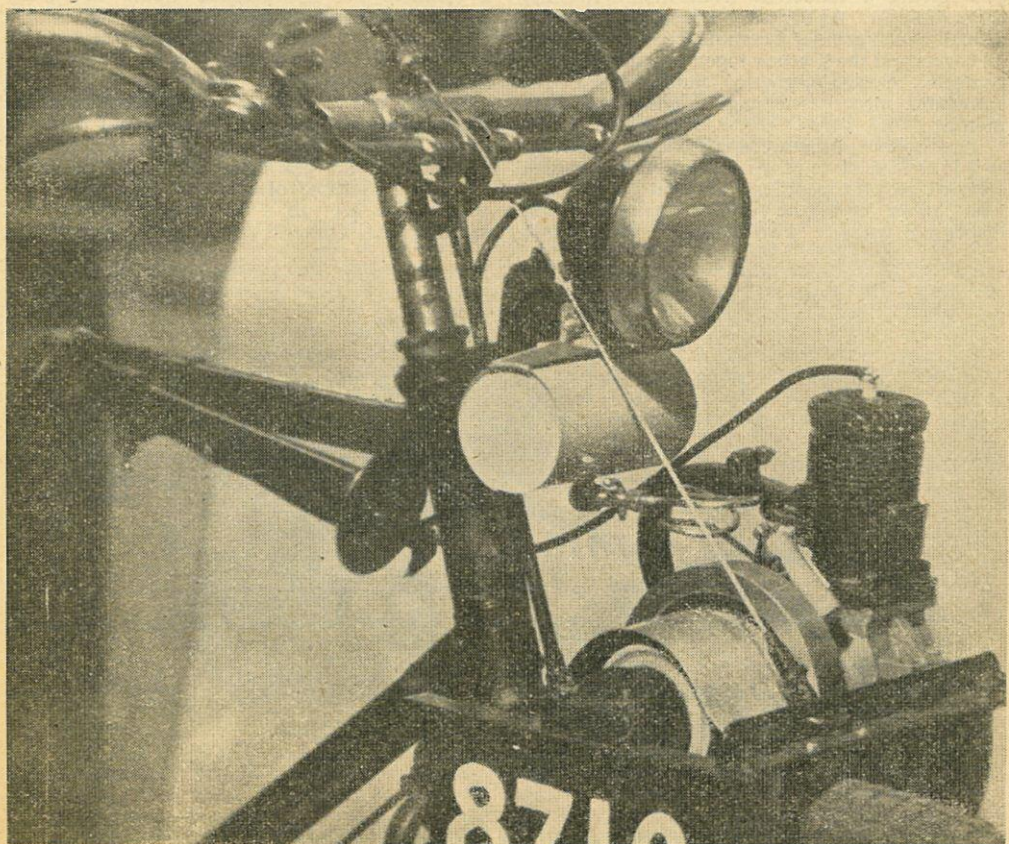
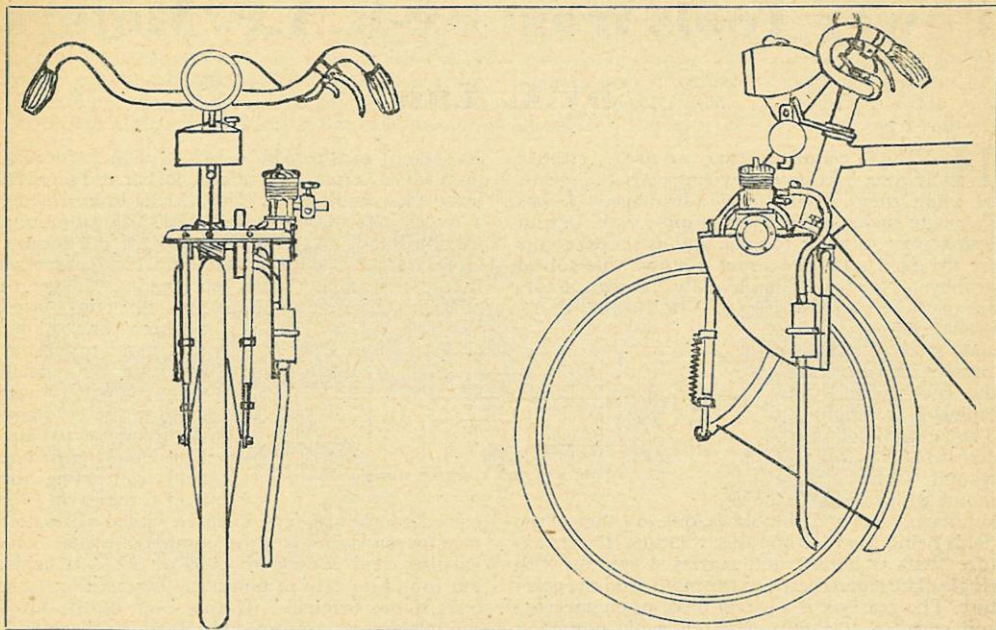
Free engine device is by Bowden cable anchored at handlebar adjusting bolt and attached to soleplate spacing angle.

The Bowden cable hand-lever on handlebar has a spring-catch to hold engine in free position if the rider wishes to cycle for a change.

Ignition is by coil and dry battery, both of which are carried in rear cycle bag. The original battery (6-volt Lanternlite) is still in use after 4½ months, which is due to shape of contact-breaker cam.

Sparking-plug is $\frac{3}{8}$ in. \times 24 t.p.i. of the Champion model aircraft engine type.

The performance of this little unit far exceeded
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The "Mini-auto" Motor Bicycle

(Continued from page 78)

my expectations, and although it has been in regular use for the past 7 months, it shows no visible signs of wear or distress in any part.

The carburettor is of float pattern with bottom feed and cork float with revolving throttle and adjustable jet needle. No adjustment is needed when set, and the engine will purr along at 20 m.p.h. and also at a walking pace, two-stroking all the time. Four-stroking can only be achieved by over-running the engine down a hill. Wear on

the tyre is negligible, and petrol consumption somewhere around 350 m.p.g.

The taxation class is the same as for auto-cycles or under 250 c.c., and what a nice little book of coupons you get!

I might mention that all machining was carried out on a home-made plain lathe, no screw cutting, no back gear, and only a bell chuck, but with heaps of enthusiasm and remarkable Heath Robinson rig-ups.

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