

DECEMBER 8, 1949.

MOTORCYCLING

6

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Editor :
GRAHAM WALKER

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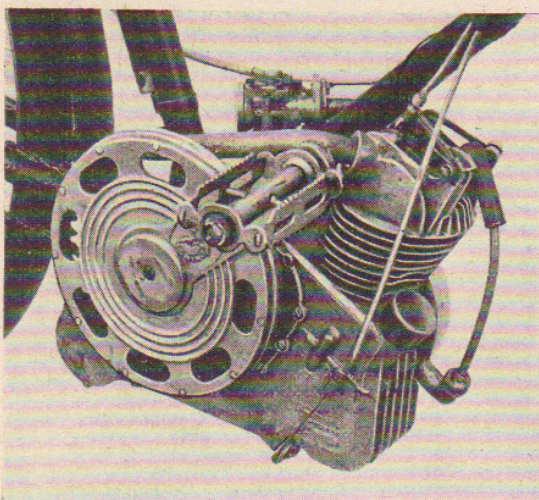
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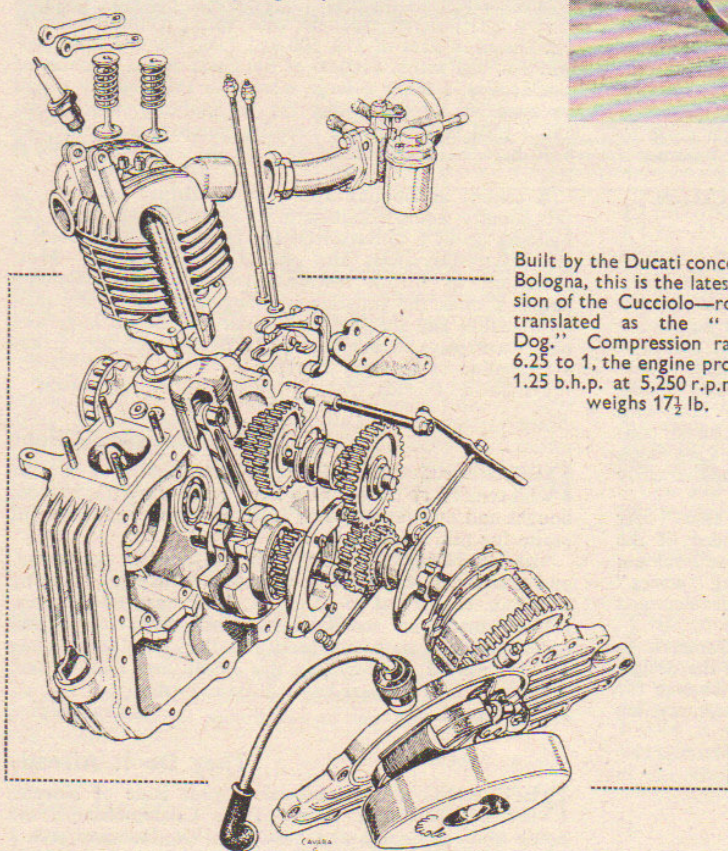
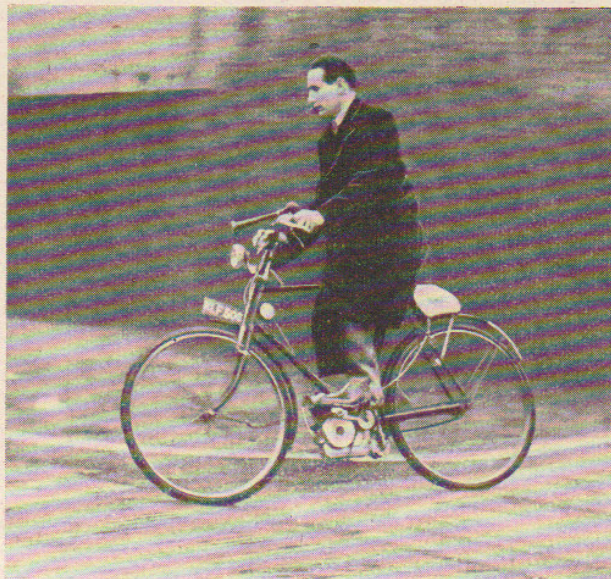
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The 48 c.c. unit which forms the subject of the accompanying description and test. In certain external details only does it differ from the current production model depicted below. The large drum contains an internal toothed ring operating the starting mechanism. (Right) A "Motor Cycling" man tries out the Cucciolo on a heavyweight cycle.

AN o.h.v. "AUXILIARY"

Impressions of the Italian Cucciolo 48 c.c. Four-stroke Unit with a Two-speed, Preselector Gearbox



Built by the Ducati concern, of Bologna, this is the latest version of the Cucciolo—roughly translated as the "Puppy Dog." Compression ratio is 6.25 to 1, the engine produces 1.25 b.h.p. at 5,250 r.p.m. and weighs 17½ lb.

OF the many "micro motor" attachments for cycles which are marketed on the Continent, few are more popular with discerning users than the Cucciolo, built by the Italian Ducati concern under licence from the Siata company. A little over two years ago a somewhat early edition of one of these units came into the possession of Col. R. E. Horn, of Sutton, Surrey. For some time it was unused, but it was subsequently fitted on

to a heavyweight pedal cycle, the work being carried out by Mr. N. Rickard, a Sutton enthusiast. Realizing that details of so unusual an attachment as this would be of interest to many, "Motor Cycling" contacted him, the result being that, recently, a staff man spent a fascinating morning riding the machine and examining the unconventional little engine unit.

Unconventional is the operative

term. It has become almost a matter of course that these small engines should be two-strokes. The Cucciolo, however, is a four-stroke of 48 c.c. capacity—and an o.h.v. job into the bargain. But even there it differs, for the valves are operated by pull-rods, actuated through "wishbone" levers bearing on a single cam, the camshaft serving also as the primary shaft of the gearbox. The whole upper half of the unit, including the cylinder head and barrel, is a one-piece light-alloy casting. A steel cylinder liner is shrunk in, and steel valve-seat inserts are fitted in a similar manner. Sharing the crankcase is a two-speed gear and clutch. All parts are splash-lubricated from the wet-sump oil reservoir, which forms the lower half of the crankcase. A single-lever, car-type carburettor is fitted, while ignition and lighting are dealt with by a flywheel generator.

Now, most manufacturers would have thought that, having incorporated all those features, they had done enough. But not so Ducati, for they have even fitted a preselector mechanism to the gears! The operation is simple. A cam carried on the left-hand pedalling crank bears on the gear-operating rod. When the pedal is moved to the first-gear position, this pivoted rod carries out the first stage of the selection which, however, is not complete until the rod has been given a sideways movement. This is accomplished by coupling to the gear rod an extension of the clutch arm. Thus, when the clutch is released, the gear selection is completed, and the drive is taken up in the normal way by re-engaging the clutch. The transmission to the rear wheel is by way of the normal cycle

chain, the gear being so arranged that, when the engine is in neutral, the cycle may be pedalled in the ordinary way.

A three-point fixing of the unit is adopted. Two large clamps, attached to the crankcase, hold the unit to the bottom bracket of the cycle, while a third clamp straddles the front down tube. Naturally, the special pedal-crank assemblies have to be substituted for the existing cycle types. A large internally toothed ring, forming part of the offside crank and, bearing on a roller wheel, forms the starting mechanism.

In Action

This beautiful little unit has been fitted to an ex-R.A.F. pedal cycle—a strong, sturdy machine which, by nature of its build, allows a good ground clearance to be attained. The engine nestles snugly below the bottom bracket and, with the petrol tank fitted neatly over the rear mudguard, just behind the seat-stays, there is nothing "bitty" in the appearance.

A short trial run left the "Motor Cycling" staff man with a high opinion of the capabilities and general running qualities of the Cucciolo. Although, at first, it was somewhat difficult to become accustomed to the operation of the gear, which is dependent upon the position of the pedal cranks, the knack was soon mastered. Then it was delightful to preselect the higher ratio and bring it into play at the requisite moment simply by operating the clutch. Similarly, neutral

could be selected, thus doing away with the old boggy of finding that elusive position at traffic lights.

The little o.h.v. engine chugged away merrily, although it had not then been possible to find the correct tappet adjustment and, consequently, the unit was not quite giving of its best. Nevertheless, a run on a level piece of road yielded an estimated 25-30 m.p.h. maximum, at which speed both the machine and the rider were quite happy. That is a point. With the low-set engine, chain drive and absence of "fuss," a machine so fitted handles very much like a miniature motorcycle. Despite the greasy condition of the roads when the test was undertaken, not the slightest trace of side-slip could be felt. Even when revving hard in bottom gear—which was fairly easy, as the unit seemed to have exceedingly wide ratios—and laying well over, there was no tendency for the rear wheel to depart from a straight path.

Noise was restricted to a subdued note from the exhaust—an efficient system utilizing a small expansion box set to the rear of the unit—and a certain amount of "chatter" from the rockers. This latter, however, may have been due to the incorrect tappet clearances. The action of the throttle caused some concern at first, until it was realized that the single lever controlled both the "gas" and the exhaust-valve lifter. The system adopted was a twin-cable control, closely resembling that in use on pedal cycles with derailleur gears, the throttle being operated by move-

ment to the rear, and the compression-release by pushing the lever to the front. It will be remembered that a similar system is employed on the G.Y.S. unit described in last week's issue.

Good Handling

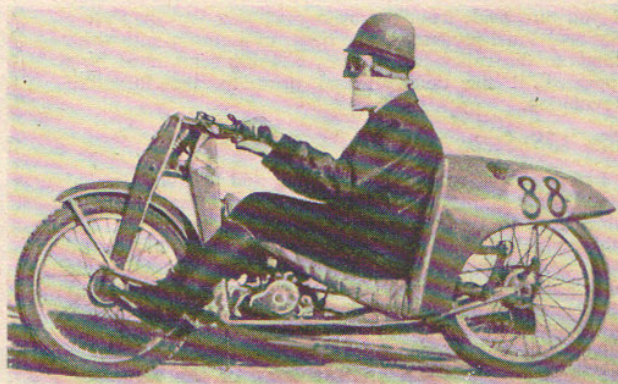
The steering was nearly perfect. In fact, the cycle with the engine attached probably steered better than it did without it, for the central weight seemed to anchor the bike to the ground, and from walking pace upwards it was possible to steer a hairline course. On later models, as depicted in the accompanying "exploded" drawing, reproduced by courtesy of our Italian contemporary "Motociclismo," various modifications have been carried out. For example, the cylinder head has been redesigned in order that a forward exit from the exhaust may be obtained and the crankcase is no longer split on, approximately, a horizontal plane. Considerable extra finning appears on the detachable side plate of the unit and the position of the oil filler has been lowered. In its "internals," however, the unit tested follows the details shown in the drawing, from which an excellent conception of the manner in which the Cucciolo engine works may be obtained.

Undoubtedly, a unit such as this is in the "luxury" class amongst its own kind, and were a similar type to be placed upon the British market it would be likely to make even wider the appeal of the "micromotor."

ANOTHER ITALIAN NOVELTY

The "Automoto Futuro"—which Provides a New "Low" in Riding Positions

Somewhat reminiscent of a remarkable "home-built" racer used many years ago on British short circuits, this is the Automoto Futuro, designed by Dr. Marzocchi.



ANOTHER Italian design, in a somewhat different field from that of the model described earlier in these pages, is the Automoto Futuro—a type on most unorthodox lines and patented by Doctor Marzocchi, which has, according to a statement by its sponsors, already had successes in racing form at Bologna and Mirandola.

The Automoto Futuro was shown at the Milan Fair of 1947, and has an engine which presents nothing new, as in the existing models normal commercial 98 c.c. and 125 c.c. two-stroke-units with foot-operated three-speed gearboxes have been mounted. The originality and revolutionary conception in design lie entirely in the frame with normal-sized wheels, and it was with a standard touring engine that

it is stated to have won its first race in August last, demonstrating its stability.

The radically novel construction can be seen from the photograph, and the machine is equipped with an automobile type seat instead of a saddle, situated at the approximate level of the wheel axles instead of being perched over the frame as with normal machines. This, apart from giving extra comfort, lowers the centre of gravity most substantially which, it is claimed, permits the machine to take curves at extremely high speed and at greatly reduced risk. Travel in this position certainly looks comfortable, and in addition there is an easily fitted hood on the non-racing model which affords the driver considerable protection.

The engine is mounted in a tubular frame. Parallel ruler-type front forks in pressed steel are used and the swinging arm back forks are equipped with shock absorbers. The petrol tank is housed in the "torpedo" tail over the rear wheel, serving also as a mudguard; a sprung leather cloth-covered seat, with back support, accommodates the rider, while all the controls are in the same positions as those of a normal model.

Readers with memories of the 'twenties will recall a very similar type of machine which featured at the Crystal Palace track and in other competitions during 1927—the 250 c.c. Villiers-engined "Gasolene Hare" ridden by J. W. Twitchett.