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# CYCLING and Mopeds

October 29, 1958

Every Wednesday 6D


## RALEIGH MOPED NUMBER

Full story and test report on moped introduction of world's largest cycle manufacturers.

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R.T.T.C. championship story and pictures.

### For Young Cyclists

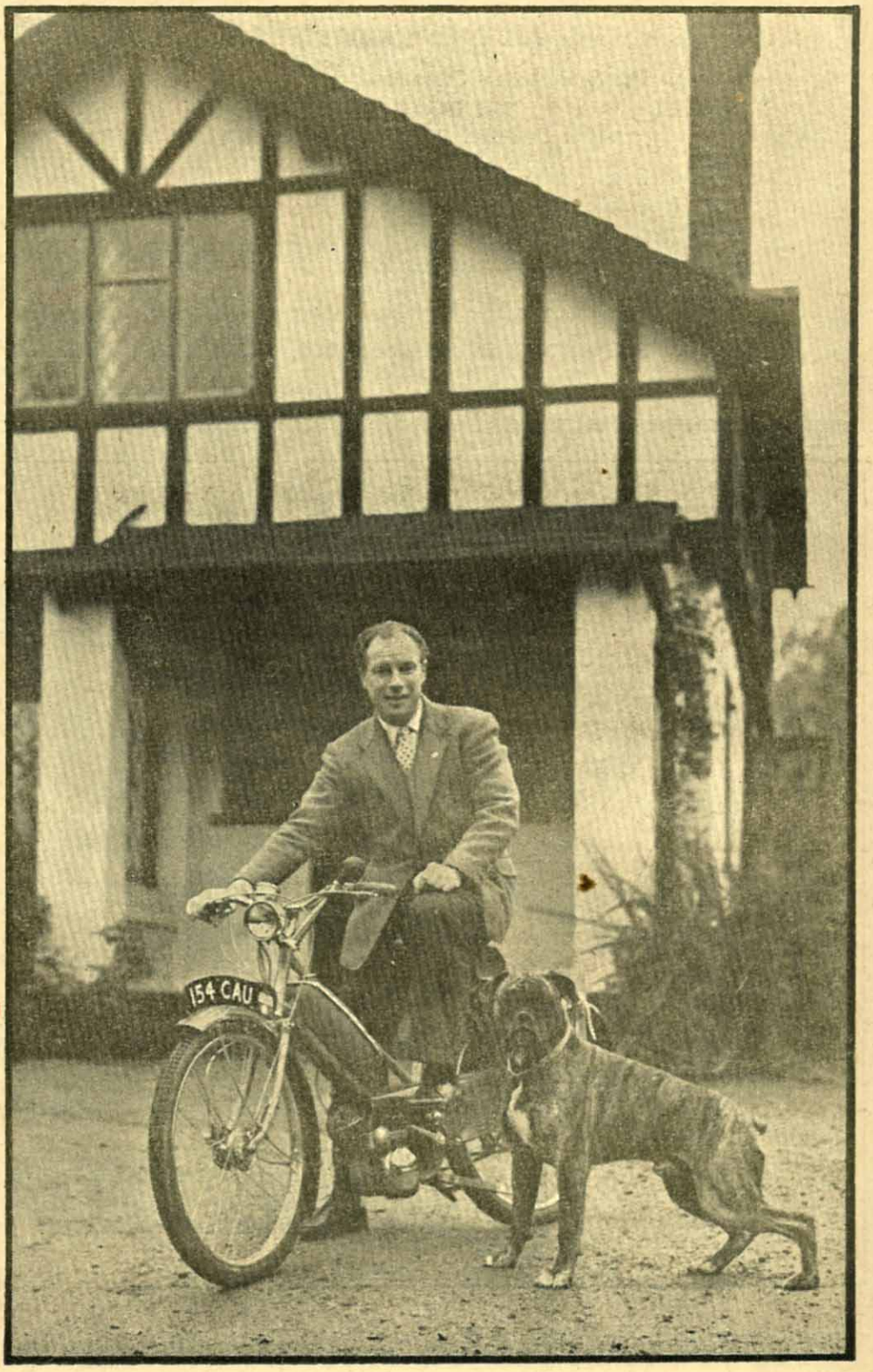
Introduction to the tubular, fast and light, tyre.

### Welsh Champions' Night

Full story of presentations to 1958 winners.

### Ordeal By Water

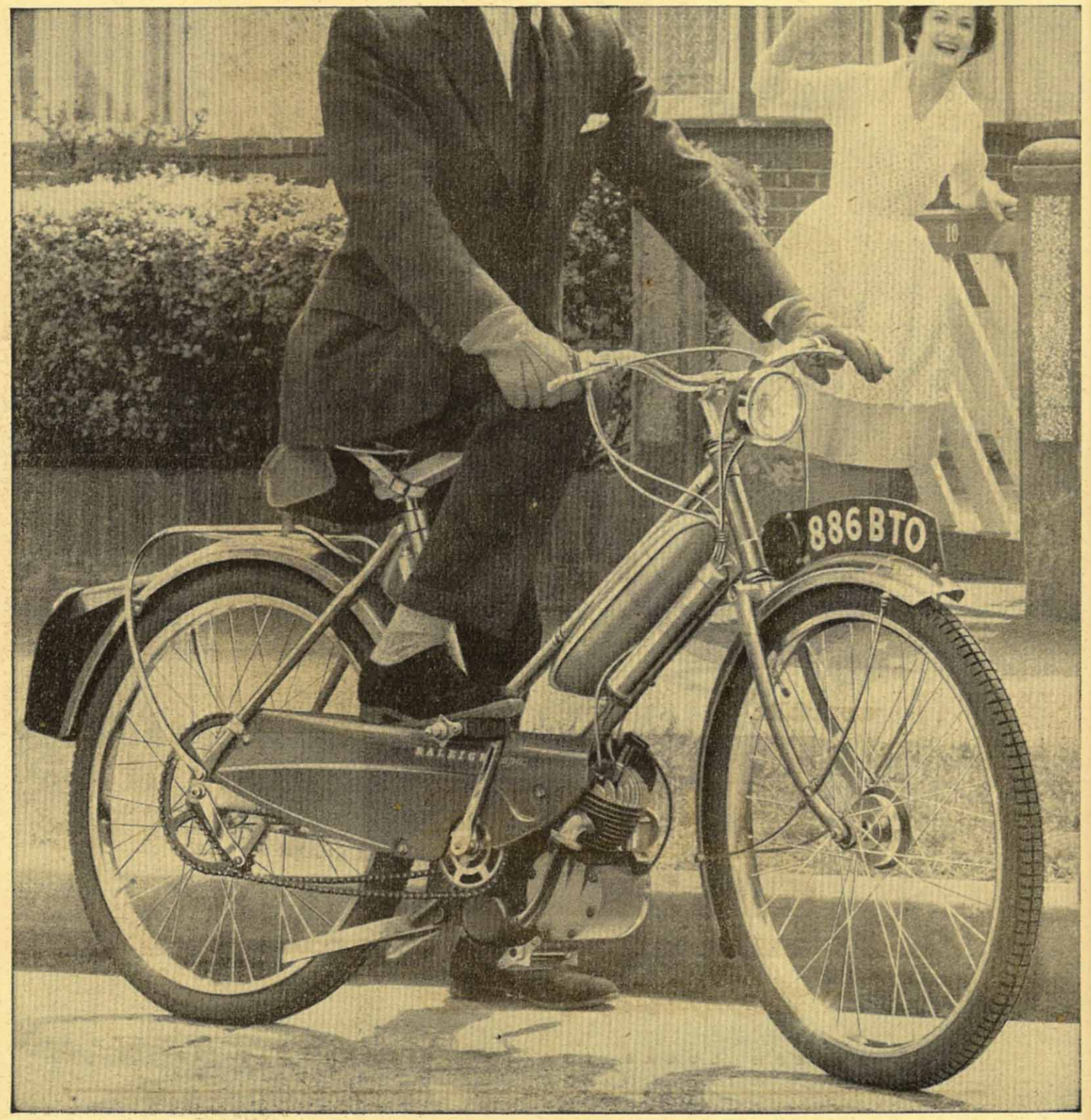
Dramatic story by girl cyclist Louise Sutherland.




Young, lively, sleekly-built, powerful and packed with energy and fun — that is Raleigh, one of Reg Harris's two boxer dogs. It is also Raleigh, the new moped, for some months in constant use by the world star as a runabout at his Cheshire home, and fully described inside.


CYCLING and Mopeds

# Raleigh burst into




A4



# the moped market!

What this country wants is an all-British Moped with a famous, respected name behind it. And here it is—the new Raleigh Moped—priced at only 46½ gns. It has been designed as a real work-horse—simple in layout, as easy to ride as a bicycle and at least as safe. It has been engineered to go slogging on mile after mile, month after month, with the minimum of attention. It has all the performance you need—cruising at 25 m.p.h., and doing a good 200 miles to the gallon. And it is backed up by a really thorough, really well-trained service and spares organisation.

**BRIEF SPECIFICATION**

*49 c.c. 2-stroke engine. Single-speed V-belt and chain transmission, with engine disconnecting pin. Single twist-grip control for throttle and engine decompressor. Heavy gauge strengthened brazed steel frame. Lucas ignition and lighting equipment. Dunlop wheels and tyres. Spring-type stand. Optional extra equipment includes windshield, leg-shields, pannier bags, speedometer.*

## The New RALEIGH moped

**ONLY 46½ GNS or £5 DOWN and 78 weekly payments of 12/11**

Go and have a look at this new Raleigh Moped today. You can see it wherever you see this sign.

RALEIGH MOPED SALES AND SERVICE

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RM.6
A5

# Raleigh recommend

# BP-ZOOM

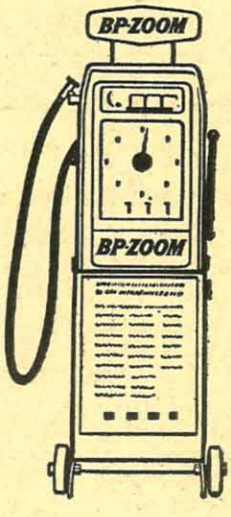
## Containing BP ENERGOL TWO STROKE OIL for the new

## RALEIGH *moped*


*This is it! The new Raleigh Moped. BP-ZOOM is the* mixture *recommended for this fine machine.*

**BP-ZOOM** is the first-ever branded and scientifically balanced petrol/oil *mixture* for two-stroke engines. It contains amazing new BP Energol Two Stroke Oil – specially made to cut down spark plug troubles and deposits and to protect your engine against wear and corrosion.

**SWITCH TO BP-ZOOM TODAY** – everyone's doing it. Call in at your BP Garage. Stop at the dispenser and ask *now* for BP-ZOOM – the first ever branded and scientifically balanced petrol-oil mixture containing NEW BP ENERGOL TWO STROKE OIL.




BP

**STOP AT THE *BP-ZOOM* DISPENSER FOR**
*THE BALANCED PETROL/OIL MIXTURE*
*THAT CONTAINS BP ENERGOL TWO STROKE OIL*

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# CYCLING and Mopeds

*Founded 1891*

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# WELCOME THE RALEIGH

TODAY is a red-letter day for all who wish the British cycle industry well, for it marks the entry into the motorized cycle field of the largest cycle factory in the world, and the entry is made not with a machine of Continental origin, but with a moped conceived, designed, and built in its entirety in this country. Thus, in the most impressive way, the claims of the moped are fully recognized by the Industry, and Raleigh's far-reaching production plans of 1,000 machines each week is eloquent testimony to the faith which they have in this new, but already well-tried, product.

Doubters would do well to consider the logic of the argument put forward in favour of the moped by its latest sponsor. Months of careful market investigation preceded the decision to manufacture the machine. This convinced the Raleigh boardroom that there exists a potential market, in this country alone, of 6½ million—fully half the number of people who at present are known to possess pedal cycles.

Since many of the present army of utility cyclists are below the age of 16, it may be deduced from the Raleigh investigation that a majority of cycling adults must now be considered more as potential moped riders than as cyclists by choice. Nor is this inherently a bad thing; experience has shown time and again that the utility cyclist is not a keen cyclist, but that when a man buys a moped he immediately begins to take more interest in his machine, both technically and as a means of pleasure. His apathy, perforce, becomes something akin to enthusiasm — an enthusiasm for cycling, albeit a new sort of cycling.

In the meantime, we can hail Raleigh's new venture, and wish it well. If it meets with the success it deserves, British annual moped sales may easily top the 100,000-mark, for the first time, by the end of 1959 or 1960.

## NEW TIME TRIALS ROUTE?

THE classic 100 miles course for R.R.A. record breakers is from Stirling Corner on the Barnet Bypass to near Norwich. Riders have to negotiate the Whittlesford level crossing which is closed to road traffic 13 times every hour for 10 of the 24 hours!

It is good news for this quite fast, prevailing wind route that the Minister of Transport has made a substantial grant towards the building of a bridge so that A505 at this point will cross both the railway and the River Carn. The new road and its bridge will have a 33ft. carriageway and will extend for 1½ miles. It should be ready within the year.

No doubt because of this level crossing, the Icknield Way, along the line of which the record route travels, has not been used for time trials. With this bridge available to avoid level crossing stops, the road to Newmarket might offer new speed possibilities.

# The Editor's News Review

### Pedalled Flight

THE idea of pedalled flight is still progressing even in this jet age. Man-powered flight is the aim of the Royal Aeronautical Society which has formed a group to investigate the problem still further. An experimental machine with a 60ft. wing span would cost between £1,000 and £2,000 and an appeal for funds is being launched.

T. R. F. Nonweiler, formerly senior lecturer in aerodynamics at the College of Aeronautics, Cranfield, Bedfordshire, and now of Queen's University, Belfast, believes that a tandem pair could take a plane up 25 feet. One of the cyclists would pilot the plane and pedal and the other would use a hand crank as well as pedals.

To get longer and higher flights a rubber storage unit is visualized. The rubber would be stretched round a drum by pedalling before take-off. This should store about three minutes of flight power.

### Museum On Your Shelf

ONE of the finest collections of old and historic cycles is in the Science Museum at South Kensington. It is the place in which to browse whether your interest is in cycles, engineering, or the social life of the nation which grew out of the personal transport developments of the past century.

C. F. Caunter, the curator of the cycling section of the museum, is a keen student of cycling and his knowledge and enthusiasm were evidenced when he wrote his historical survey of the Museum's cycles which was published in 1955 (4s.). Now you can transfer the full descriptions of all the cycle exhibits of South Kensington to your own home, for Mr. Caunter has produced part two of his notable work: "A Handbook of the Collection" or a "Descriptive Catalogue of the cycling museum." It costs six shillings from H.M. Stationery Office.

The new catalogue is well illustrated and shows amongst other items the Dunlop pneumatic tyre of 1892; lamps of the candle, oil and acetylene periods, and early cyclometers.

If you are a keen student of cycling history this latest book must be on your reference shelf.

### Vehicles And Roads

FROM "Basic Road Statistics" published recently by the British Road Federation: "The total number of motor vehicles

*(Continued overleaf)*


Buckshee Wheelers 13th Re-union. On the Top Table: (l. to r.) "Bing" Wilson, Vic Ginger, "Paddy" Roebuck (co-founder and retiring Pasha), Reg. Randall (End-to-End Record holder and current Pasha), Johnny Walker (co-founder).

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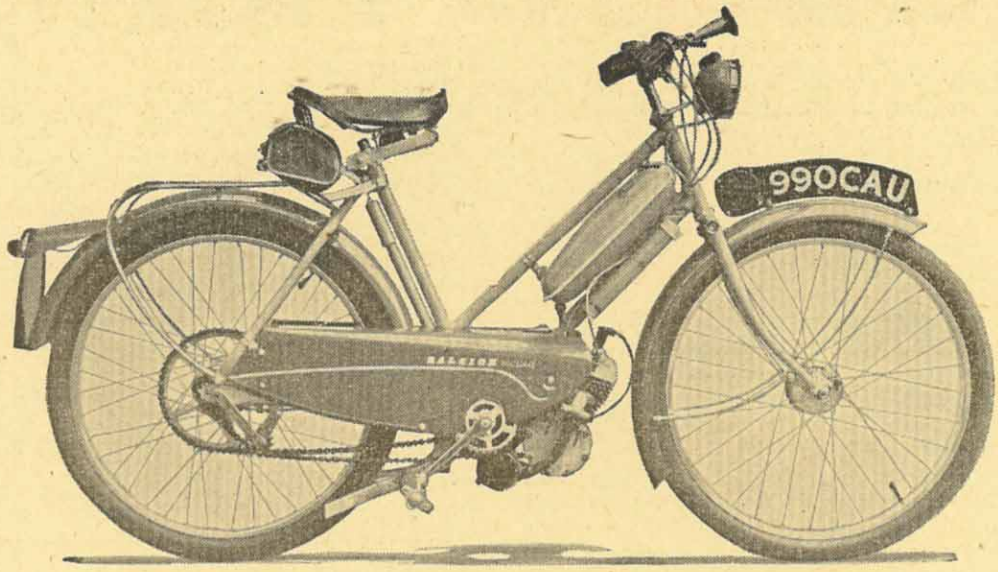
# MEET THE




A MOPED for the masses—every scrap of it conceived, designed and built in Britain—is the news this morning. The machine is the 46½-guinea Raleigh, and it is the result of patient testing and re-testing by its famous sponsors, Raleigh Industries Ltd., Nottingham.

Power for the machine, which is of the "motorized cycle" type, is provided by a Sturmey-Archer two-stroke engine of 49.9 c.c., which drives the rear wheel by way of a two-stage reduction. The first is by means of a vee-belt to a countershaft mounted in the bottom bracket, the second by chain. There is separate pedalling gear, and a simple push-pull device on the countershaft enables the Raleigh to be pedalled as an ordinary bicycle. Both front and rear ends are rigid; shapely and adequate shielding is employed; and—an excellent feature—there is a dual lighting set.

Sturdy and simple in conception, the Raleigh has undergone some of the most exhaustive testing ever employed for a machine of this nature. Test models have each clocked more than 30,000 miles. One of them covered 4,500 miles over dirt roads in East Africa, with no trouble, and at an average of 176 miles to each gallon of fuel, running 214.7 miles daily!

In addition, the whole design philosophy has been to achieve reliability and ease of servicing.

## HERE'S A WINNER!

### The Raleigh Moped's road behaviour is assessed by CYCLING'S tester

HERE'S a winner! There is no doubt at all in my mind about that. After using a brand-new Raleigh Moped as my personal runabout for several weeks I can confidently predict success for this sleek but simple all-British machine, which has so many qualities, and so few vices.

There is about the Raleigh something which, inherently, looks right. It is functional, but well styled, and when you climb aboard and pedal off to start the engine you are struck by the fact that it *feels* right, too.

No moped of my acquaintance is more comfortable than the Raleigh. Its designers have achieved just the right balance between saddle position and height, the bottom bracket, and the handlebars—the sort of balance which enables a man to ride for hours at a stretch and still feel fresh and uncramped at the end of the journey. With that admirable, soft-top Lycett saddle to give a "float-on-air" ride, the Raleigh sets a new standard for single-speeder comfort.

Once I had finished mooning over my cossetted ride, I was able to note point after point which proves that the months of careful test and re-test which preceded the launching of this machine were well employed. The steering, for example, is first-rate—light and positive, trustworthy right through the speed range. Road-holding is good, and the lack of suspension barely noticable, even on un-made surfaces. Though the brakes are not outstandingly powerful, they provided a good average pull-up, and could be applied heavily without any tendency to lock the wheels, and thereby provoke a skid.

### Smooth Power

Of the engine, it is difficult to speak too highly. Its power is delivered with a quite remarkable smoothness, and the unit is perfectly quiet mechanically, as well as being agreeably silent on the exhaust and intake sides. When cruising at 25 m.p.h.—the speed at which the machine seemed at its very happiest—one could sense the engine at work, rather than hear or feel it. Only when the speed dropped below 10 m.p.h, could vibration be detected. Then, transmission snatch became very obvious, and it was necessary to use the pedals to help the unit along.

This tendency for the unit to demand early pedal assistance was also noted on hills, where the power would fall off noticably once the machine slowed to the critical 10 m.p.h. Thus on gradients steep enough to slow the Raleigh, early assistance was needed if the unit was not to refuse the obstacle altogether; by and large, its performance under such conditions was below average. On the other hand, its abilities on gentler gradients were very creditable indeed, and on inclines where assistance was not required it was as fast as the average two-speeder. Overgearing seems to be the cause; a gear of 15 to 1 is used . . . a ratio as high as the top gear on a two-speeder. Lowering it to around the 17 to 1 mark would improve the all-round abilities of the machine.

### Pedal Boosted

Acceleration was very creditable. Using the pedals to boost the take-off, I found that the Raleigh could actually out-accelerate my wife's two-speeder below 20 m.p.h., and a snappy response to the throttle was evident right through the scale. Starting was easy, though I for one would prefer a cable-operated handlebar control for the rich-mixture device on the Amal carburetter, to enable it to be used throughout the starting-up period, instead of being primed before pedalling off. One could also start up by pedalling gently with the moped safe on its handy Shuresta light alloy stand.

Thanks to the internal layout of the porting, the Sturmey-Archer engine is claimed to be completely free from seizure, and though the unit I was using was brand new I was able to use full throttle with impunity. The motor showed no signs of tightening up. However, that it *was* tight was clear from the fuel consumption, which was heavy at first, improving noticeably later on. With engines made to fine limits, such as these are, it is inevitable that in the opening miles of their roadfaring life the friction inseparable from the bedding-down process must produce results which are not typical of the performance of which the properly run-in unit will be capable once the initial 500 miles or so have been covered, but it should be stressed that over 1,000 miles are necessary before the engine has really settled down.

### Practical Bicycle

So far, we have thought of the Raleigh only as a power-driven machine, but it is a very real part of its charm that it can also be made into a highly practical roadster bicycle . . . one which can *really* be pedalled . . . just by disengaging a catch on the countershaft.

Several times during the test, this catch disengaged itself, indicating the need to check that it is fully home before starting off. That apart, I had only one spot of bother—an involuntary stop through dirt blocking the float chamber inlet. More effective filters are needed.

Both as a moped and as a bicycle the Raleigh is perfectly clean in use. The engine and countershaft are well shielded, and so is the final transmission, with its twin Perry chains—one for engine power, the other—with jockey-sprocket adjustment—for the pedalling gear. The mudguarding is generous, and very efficient; I covered some miles on wet roads wearing only a top-coat over my office-going clothes, and received nothing worse than a mildly-spattered toe-cap on one shoe! And the provision of a saddle bag means that the large rear carrier can be used to carry extra riding kit if you wish, without sacrificing parcel space.

Smart, sturdy, reliable and comfortable, the Raleigh Moped is a machine to delight the heart of the enthusiast, and to offer to the workaday rider all those virtues which he is seeking in a utility machine. It is an exemplary piece of applied design, and is only at the beginning of its development life. Here is Britain's challenger for the markets of the world. It is a most worthy standard-bearer.

CENTAUR

# NEW RALEIGH MOPED

Weak points have been ruthlessly sought out and rectified, with the result that the new Raleigh can be justly claimed as one of the toughest machines of its class ever to be built.

An illustration of this can be seen from the generous bearing sizes of the Sturmey-Archer engine. The overhung big end, for example, is of 1⅜-in. diameter, while the plain small end —usually the weakest point in a moped unit— is of fully ¾-in. diameter.

## High Performance

With bore and stroke measurements of, respectively, 38 and 44 mm., the Sturmey unit develops 1.3 b.h.p. at 4,300 r.p.m., running on a compression ratio of 6 to 1. Great care has been taken with the port designs, the transfers being placed on the fore and aft faces of the bore, and the exhaust port and inlet port at the sides. This, Raleighs claim, reduces bore wear by ensuring that the more heavily loaded thrust face receives better-than-average lubrication.

A special Amal carburetter is employed, a feature of which is the mounting of the main jet on the side of the instrument, where it can easily be detached. Ignition and lighting current is supplied by a new Lucas generator.

As with the engine, so with the countershaft : bearing areas are more than generous. The hollow countershaft carries a pulley at one end and the final drive sprocket, located by a large "flat," at the other. This shaft runs on large-diameter caged needle-roller bearings, and caged needle rollers are also employed for the crank spindle, which runs through the shaft.

Raleigh is the first manufacturer of standing to appreciate the need for a dual lighting system on a moped. On the majority of machines, engine failure at night leaves the rider without any form of illumination. On the Raleigh, the problem is solved by adding, as standard equipment, an auxiliary dry-battery system, with the three single-cell batteries neatly located in an external casing.

The frame is brazed-up from steel tubes, and is of conventional "open" design, while the front forks are of familiar Raleigh pattern. Cyclists will recognize the brakes, too—the well-proved Sturmey-Archer BFC and BR hub units being employed, spoked into 2.00-in. x 26-in. Dunlop Endrick rims.

Production of the new machine has been proceeding for some weeks at a special factory in Nottingham, and it is anticipated that within the first year 50,000 Raleigh mopeds will have been built. This smart duo-tone grey machine, selling at a competitive price of under £50, is the most impressive evidence yet that Britain is *really* in the moped business to stay !

### The RALEIGH at a Glance

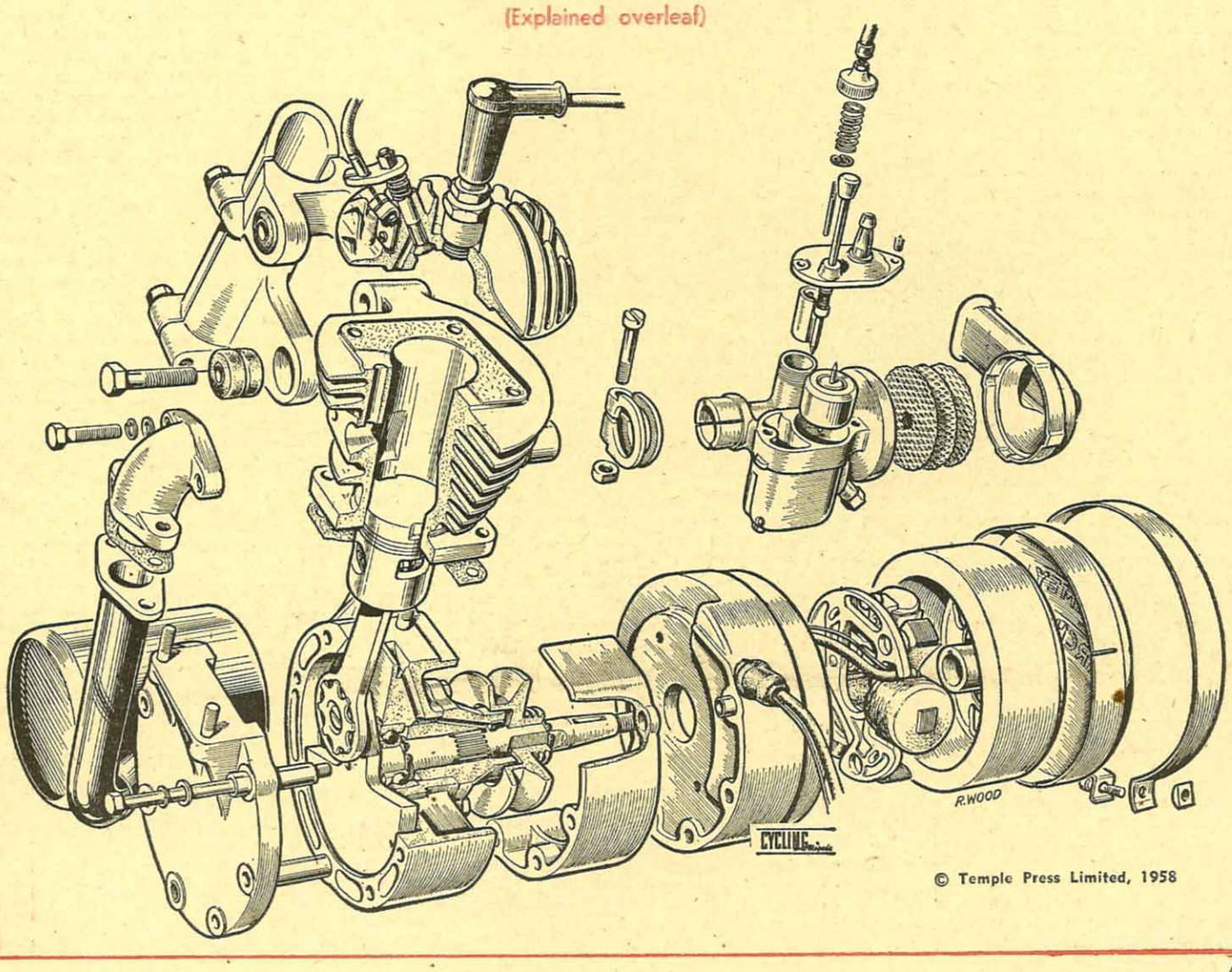
**Maximum Speed :** 28 m.p.h. in 25 sec. from rest.
**Economy :** 170 m.p.g. at 20 m.p.h.

| **Braking :** | **From 20 m.p.h.** | **From 30 m.p.h.** |
|---|---|---|
| Both brakes | 15 feet | Not applicable |
| Front only | 26 feet | Not applicable |
| Rear only | 28 feet | Not applicable |

**Load carried during test :** 200lb.
**Engine:** Sturmey-Archer two-stroke ; 38 mm. bore x 44 mm. stroke = 49.9 c.c. ; c.r. 6.2 to 1 ; 1.3 b.h.p. at 4,300 r.p.m.
**Transmission :** Countershaft, carried on large-diameter needle-roller bearings in bottom bracket ; single speed ; belt primary and chain final drives ; separate pedalling gear ; pedal starting ; push-pull catch to engage engine.
**Frame :** Brazed and bolted tubular frame, open pattern ; Raleigh front forks ; rigid rear end.
**Tank :** 6½-pints capacity.
**Lights :** Front and rear lamps fed direct from Lucas flywheel magneto-generator ; standby lighting provided by three single-cell batteries in tubular casing, externally-mounted.
**Wheels and Brakes :** Both brakes 3½-in. internal-expanding ; chromium-plated rims and rust-proof spokes ; 2.00-in. x 26-in. Dunlop tyres at front and rear.
**Equipment :** Bulb horn ; saddle bag ; Shuresta centre stand ; luggage carrier ; number plates; in-built licence holder ; tyre pump.
**Finish :** Duo-tone grey enamel, with chromium-plated details.
**Weight :** 87lb.
**Makers :** Raleigh Industries Ltd., Lenton Boulevard, Nottingham.
**Price :** £48 16s. 6d. inc. P.T.

## THE STURMEY-ARCHER POWER UNIT

(Explained overleaf)



The Raleigh Moped (continued)

# LET'S LOOK AT THE ENGINE

## Innermost details of the Sturmey-Archer Engine fitted to the new moped

A GRAPHIC illustration of the accessibility of the Sturmey-Archer engine, and of the degree of standardization achieved in bolt sizes, is provided by CYCLING'S exploded drawing of Britain's brand-new moped engine, for—with the exception of removing the flywheel section of the magneto—the unit can be stripped to the stage illustrated by using just one box spanner and a screwdriver! This feature, alone, is sufficient to make the Sturmey-Archer unit technically interesting, but in addition it has other unusual features.

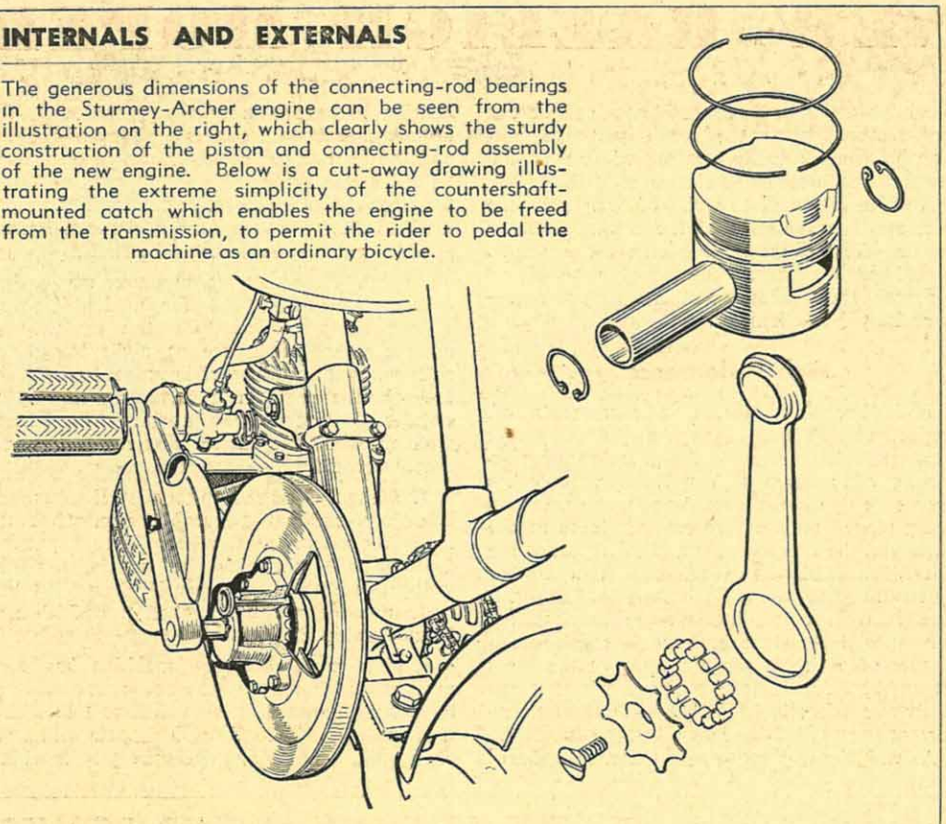
One of these concerns the lubrication of the outer main bearing. This is achieved by casting into the crankcase a small port connecting with the bearing housing. As the piston descends, a small amount of petrol/oil mixture is forced through the port into the housing, and the bearing is thus kept perfectly lubricated.

Bore lubrication has also been the subject of careful thought, and Raleigh's solution of the problem has already been mentioned. An ancillary advantage of the Sturmey-Archer port disposition is that the side position of the exhaust pipe also permits a very compact outlet system to be used, with advantages in mounting the unit.

Specially built for use with this unit are the new Lucas 7F1 flywheel magneto-generator—the first of its type ever produced by this eminent British electrical concern—and the Amal 385/1 carburetter, with its usual, rearward-facing, angled induction filter-cum-silencer.

### INTERNALS AND EXTERNALS

The generous dimensions of the connecting-rod bearings in the Sturmey-Archer engine can be seen from the illustration on the right, which clearly shows the sturdy construction of the piston and connecting-rod assembly of the new engine. Below is a cut-away drawing illustrating the extreme simplicity of the countershaft-mounted catch which enables the engine to be freed from the transmission, to permit the rider to pedal the machine as an ordinary bicycle.



Getting to know the Raleigh. "Centaur," of CYCLING, is pictured aboard the new machine in the grounds of the Raleigh factory in Nottingham. His conclusion? It's a winner!

## Training Behind Moped

ONE of the first "outside" men to ride the new Raleigh moped was our Ken Bowden. The opportunity came while he was on a visit to Reg Harris at the world champion's Cheshire home. A prototype of the moped had recently been delivered for Harris to try out, but on this particular morning he was feeling energetic. The moped would have its trial—but with Bowden aboard and Harris tucked in behind on his road bicycle for some strenuous motor-paced training!

Strenuous it proved to be, too. The pair completed one of Harris's tougher training circuits, some 45 miles of undulating Cheshire byroads, at around 28 m.p.h.—enough to sweat 2lb. off the already "racing weight" Harris, and to give our man a very good impression of the moped's qualities. One of the most notable of these: the machine, despite only being single-geared, is lively enough a hill-climber to make even a world champion grit his teeth!

### Handlebar Hint

SOME mopeds are equipped with handlebars fixed by an expander bolt in the stem, as on a pedal cycle. Owing to the moped's greater weight, one cannot adopt the time-honoured procedure of holding the front wheel between one's legs when adjusting the alignment of the bars. However, it is not necessary to do so. Instead, simply allow the forks to swing round on to full lock, when the bars can be turned one way or the other against the resistance of the frame stop.

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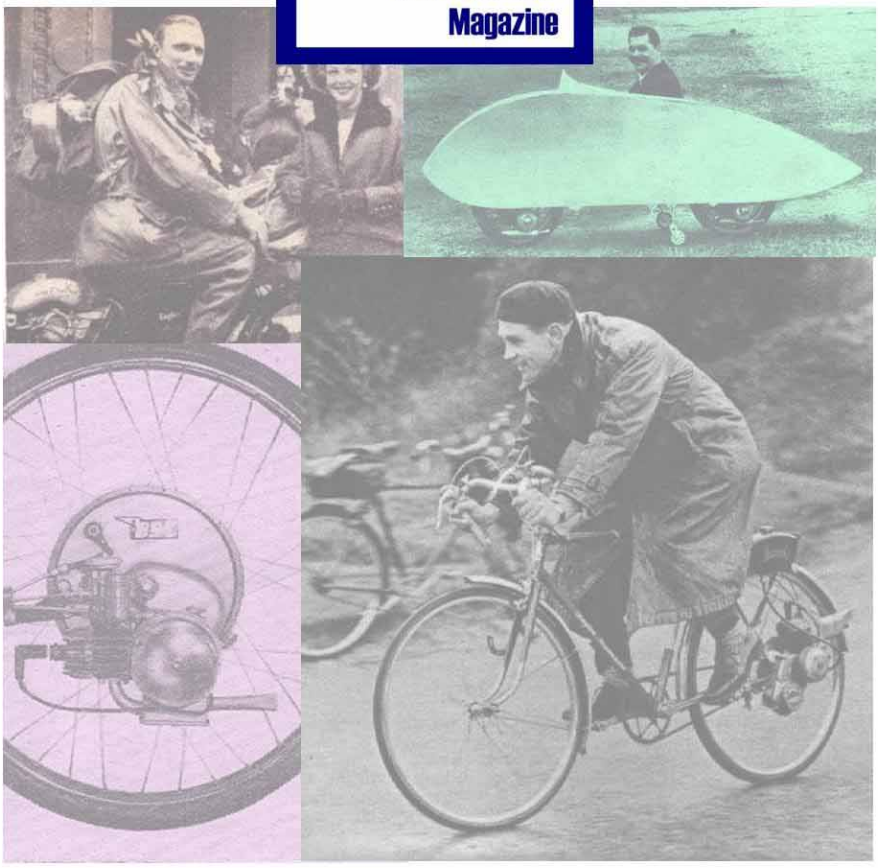

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