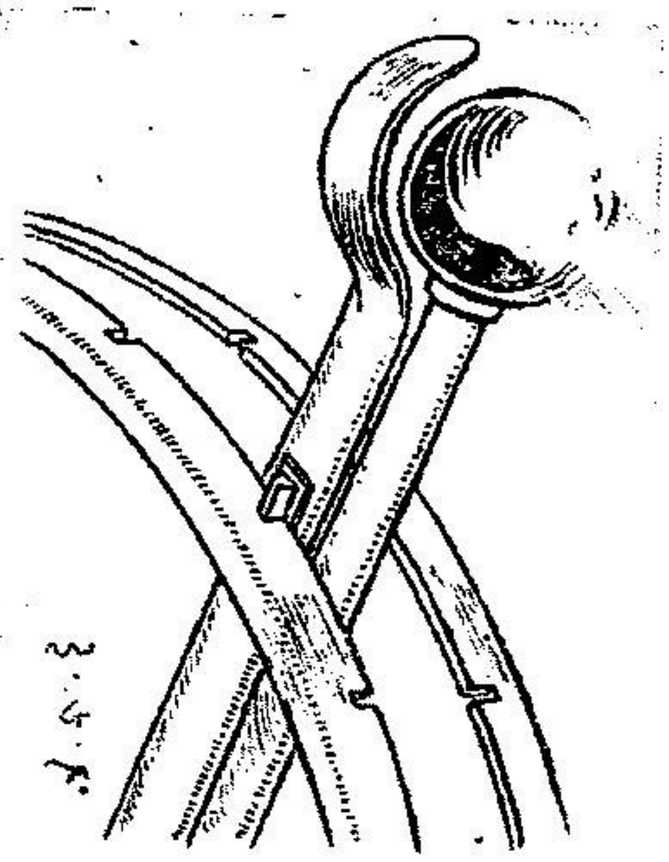
THE MATCHLESS T.T. MACHINE.

A Variable Gear adopted, giving ratios from 3 to 5 to 1.

TRUE to their reputation of being early birds—the numerous worms they have caught is a strong proof of the value of such a practice—Messrs. Collier and Sons have already got their T.T. machines, or at any rate one of them, on the road, and we have had an opportunity of inspecting them. As will be seen from the photographs, there is nothing *outré* about them, and in general appearance they are almost exactly similar to the machines which were so victorious in last year's race.

They differ from the latter in two notable particulars, namely, the dimensions of the engine and the provision of an ingenious variable gear. With regard to the engine, this is a J.A.P. 76 mm. bore and 88 mm. stroke, and has overhead valves, all of which are mechanically operated, a noticeable feature being the enormous strength of the valve springs. The motor is rated at 4 h.p., which seems a somewhat conservative figure, if a speed of sixty-eight miles an hour, which C. R. Collier's machine has done on the road, can be taken as a criterion.



Arrangement of the two levers of the variable gear.

A New Departure.

The variable pulley gear is quite a new departure, and has a number of most individual points. The back wheel is working in forks, which are supported from the main chain stays by means of links, and is capable of being moved backwards and forwards through the agency of a double-throw crank pivoted in the bracket which would otherwise be used for the pedalling gear.

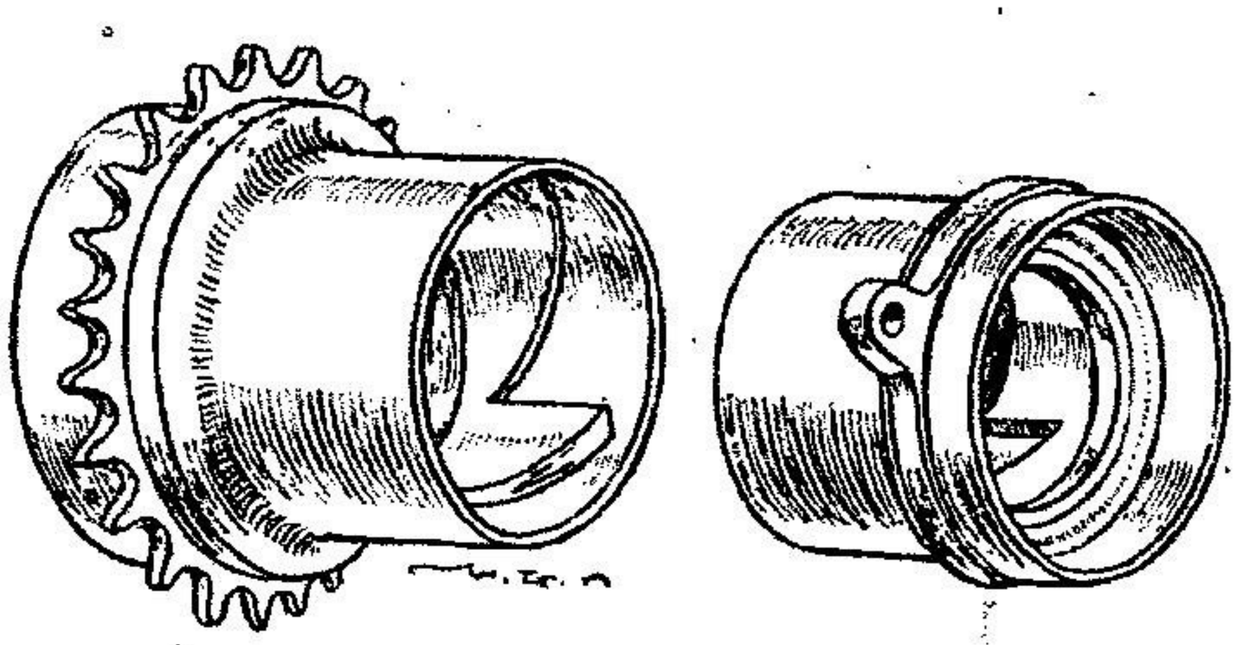
These cranks are connected to a long knob-ended lever which works in a notched quadrant on the right-hand side of the tank that stretches almost down to the steering head. Inside the aforementioned double-throw crank is an internal shaft, which is connected to a second lever working by the side of the first in the other half of the same quadrant. The other end of the internal shaft, by means of a short length of cycle chain, operates the expanding pulley on the engine-shaft. The levers are so arranged that they can be both operated together.

While one has a knob the other has a curved handle, which fits over the knob of the first, so that when firmly clasped and brought together the pawls of both levers are withdrawn from the notches on the quadrant, the "spring" in the levers being for this purpose made exactly equal. The quadrant has six notches, and the range of gears varies from 3 to 1 to 5 to 1.

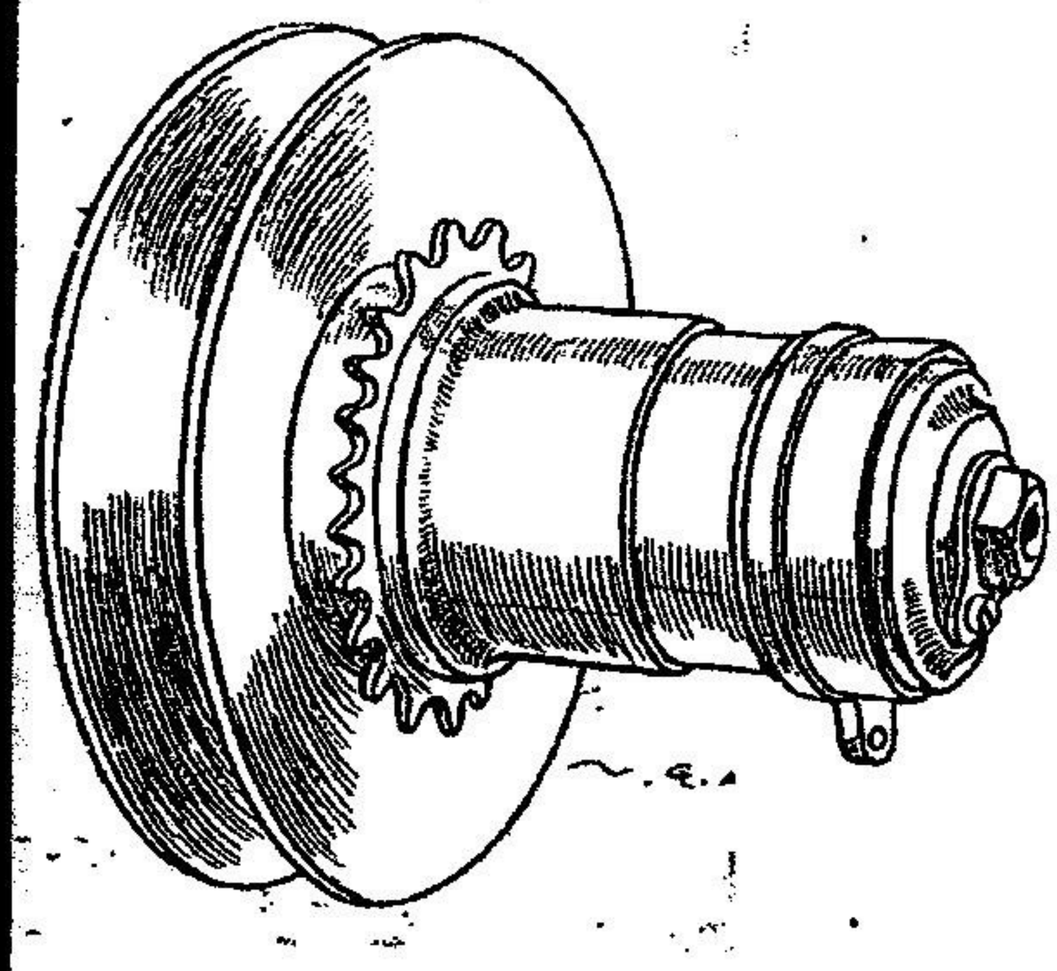
Detailed Description of Expanding Pulley.

The expanding pulley is worked by the second lever, and the outer pulley flange is carried by three keyways sliding over three keys attached to the arbor of the inner flange, the two being forced apart or drawn together by a quick thread drum, the moving piece of which is formed with a chain sprocket wheel, and operated in the manner already described. The dead end of the quick thread motion is anchored to the frame by means of a link and ball bearings. Ball-bearing thrust blocks are used to take up the strain when the outer flange of the pulley is being operated.

It should be noted that on account of using a chain to transmit the angular motion of the lever, movement of the back wheel is exactly and always proportional to the expansion of the pulley, which would, of course, not be the case if a directly connected crank motion were exercised. Thus the belt is kept accurately at the same tension whatever the gear ratio employed.



The two parts of the quick-thread drum on the engine pulley.



The Matchless expanding and contracting engine pulley.

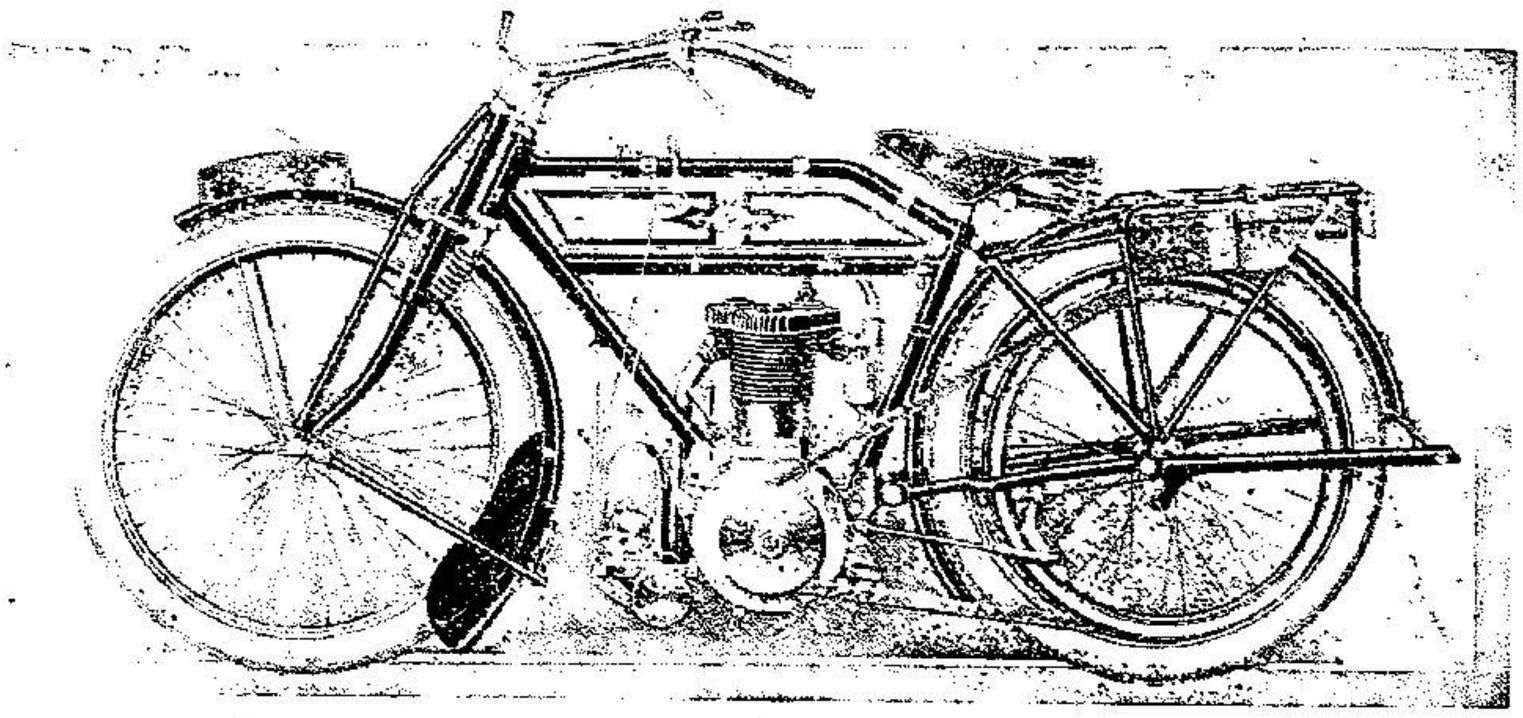
A good point about the use of two levers for the operation of the gear is that by the use of one of them the belt can be tightened or slackened independently of the alteration of the gear ratio, and this is likely to prove valuable in taking corners, as it entirely avoids any "conking" of the engine when it is called upon to pick up after the corner has been negotiated. We understand that Messrs. Collier are not making this gear for any machines except those of the T.T. type. This, at any rate, is their present intention. The arrangement of the quick thread drum is particularly neat, and should stand any amount of hard work without showing signs of wear. In the illustration the right hand piece slides inside the rotatable left hand piece.

Other Points of Interest.

Other features of the machine are a very well designed guard or under-shield which entirely prevents mud being thrown on to the belt, and should also do much to keep the engine perfectly clean. Contrary to last year, this year's T.T. Matchless machines have a square section tank, which holds two gallons of petrol and a large supply of oil, which is fed to the engine by a J.A.P. lubricator.

The magneto is well protected by a large aluminium shield, which, while absolutely preventing dirt or wet getting to the terminals, nevertheless affords very easy accessibility to the contact breaker. The machine complete ready for the road weighs about 200 lbs. (See pages 562 and 582.)

1912 Models.—



The 1912 T.T. model Ariel, which now has a dropped frame.

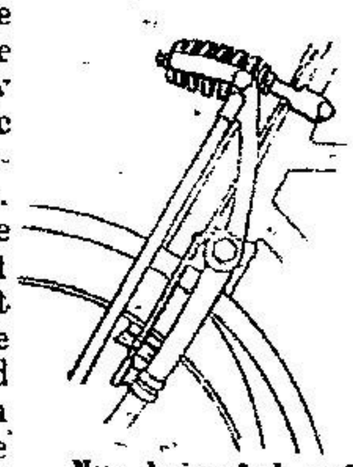
Matchless.

Messrs. Collier and Sons will exhibit ten Matchless motor bicycles and two sidecars, also C. R. Collier's famous red 7 h.p. racer, on which he has made world's records for the kilometre, mile, and five miles. The lady's 2½ h.p. m.o.i.v. is fitted with a three-speed gear, and the engine is vertically placed in a new open frame. The following men's machines will be on view: A 3 h.p. twin, m.o.i.v., 60 × 76 mm. engine; a 3½ h.p. single-cylinder, 85½ × 85 mm., m.o.i.v., free engine clutch; a similar machine with three-speed gear; a 5 h.p. twin, 85 × 65 mm., overhead valves, fitted with the Matchless six-speed gear, as used in the T.T. races; a 6 h.p. twin, 76 × 85 mm., m.o.i.v., with free engine clutch hub, and special touring equipment. In addition to the above there will be six standard models fitted with the latest ball bearing Bosch magnetos, spring front forks, adjustable pulleys, stands to both wheels, number plates, bags, and tools.

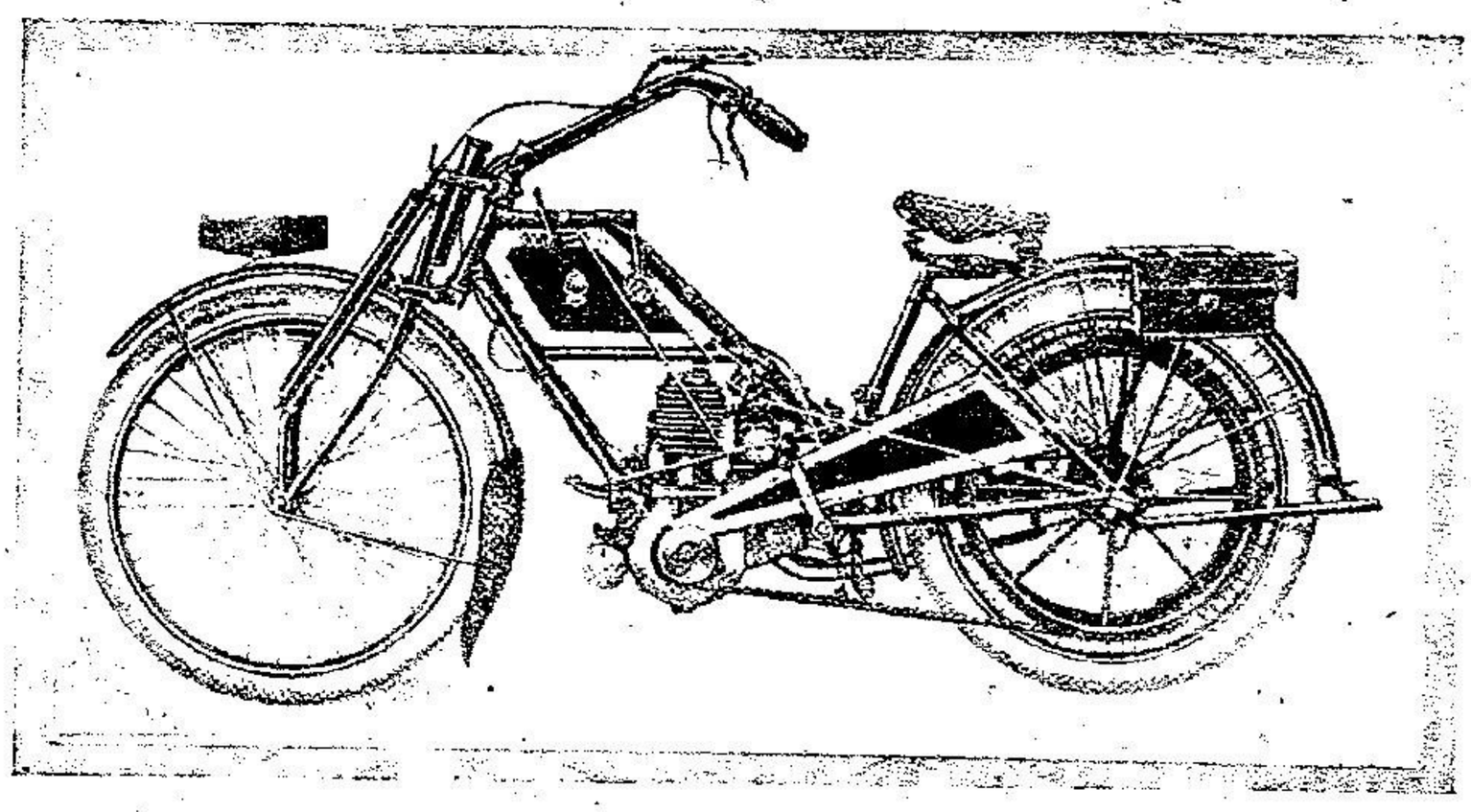
The principal improvements introduced by Messrs. Collier are the six-speed gear already referred to, stronger mudguards with metal side shields to front wheel, and back mudguard fixed without stays.

The Matchless engine will make its first appearance. Several notable improvements will be noticed in this engine especially the timing gear, valve lifting mechanism, and compression taps, whilst all running parts will be absolutely interchangeable with the J.A.P. engines, which Messrs. Collier have previously used so successfully. The adjustable pulley has a positive locking arrangement.

twin 76 × 85 mm., an 8 h.p. twin 85 × 85 mm., and a 4 h.p. single-cylinder 85 × 85 mm. The back wheels of the sidecar machines are fitted with 650 × 65 mm. voiturette tyres, and the front wheels with extra heavy 26 × 2½in. non-skids. Lubrication in the case of all these machines is by J.A.P. automatic lubricator and auxiliary hand pump. Mud shields are fitted over the belt rim, and the front wheel can be quickly detached by means of a hollow spindle. The two-speed gear and clutch is in the back hub and operated by two pedals which prevent any possible mistake being made in changing gear. A racing model will also be on view fitted with an 8 h.p. twin-



New design fork and front brake stirrup on the 1912 Triumph.



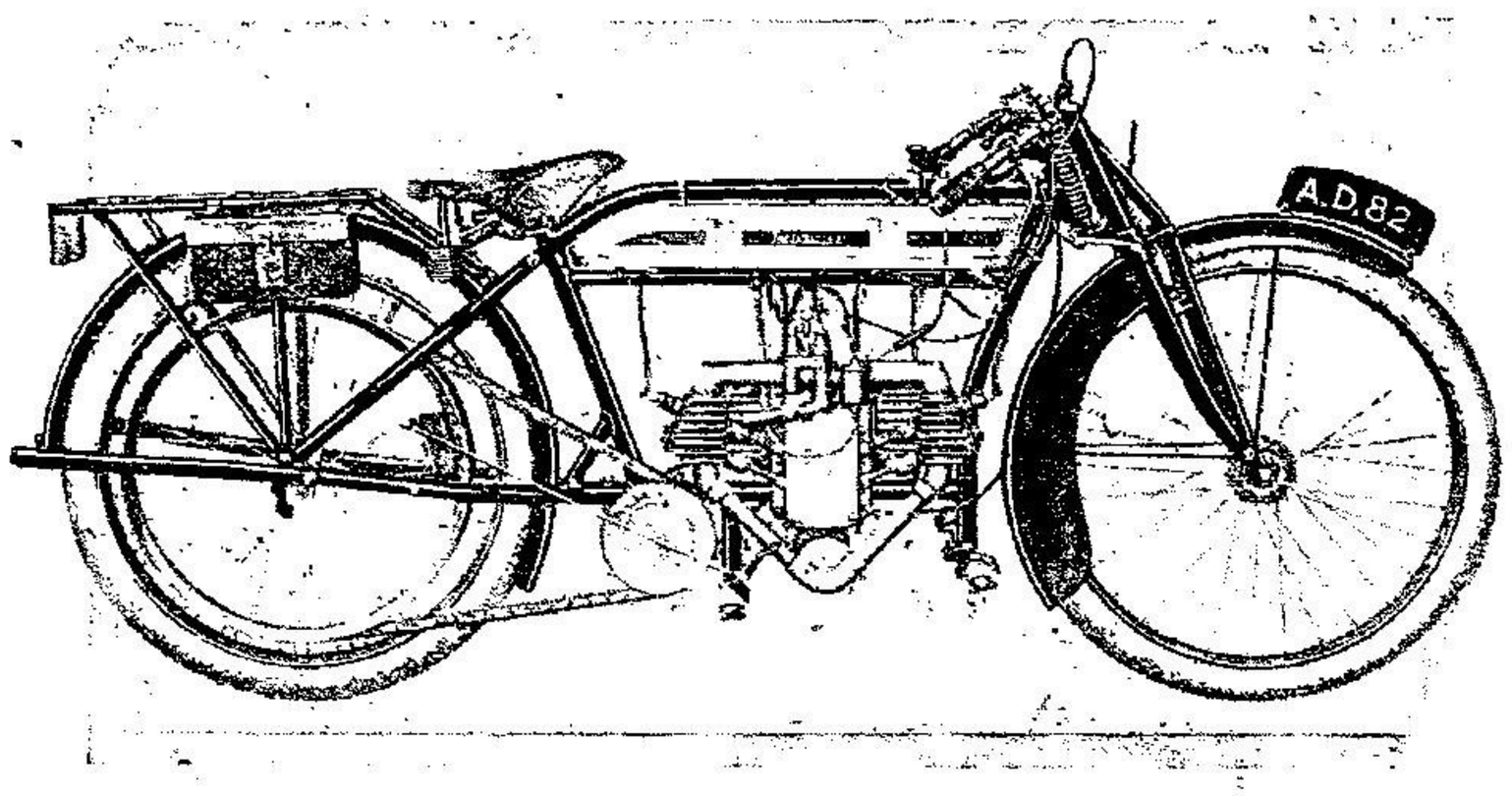
New model ladies' Matchless-Jap, with three-speed gear.

P.M.C.

The Premier Motor Co., Ltd., Birmingham, will exhibit, in addition to the Rex-Jap, illustrated last week, several De Luxe models specially designed for sidecar work. Among them are a 6 h.p. cylinder J.A.P. engine. The P.M.C. Motorette will, of course, be staged.

A.C. Sociables.

For next year two types of the A.C. sociables will be manufactured—the Standard and the De Luxe. An improved form of two-speed gear has been introduced, the design of which is exceedingly neat, even the brakes with which the changes are effected being enclosed. The new gear control is by two pedals, that on the right when pressed down engages the low gear, and when up allows the high speed to come into engagement. The left-hand pedal controls a ratchet brake, and when pressed down releases the clutch before applying the brake. The steering tiller is now hinged direct to the steering column, which turns on ball bearings, and all steering connections are of the ball and socket type. The stub axle pivots are provided with a ball thrust beneath, and an oilproof and wetproof central pivot steering is provided, which includes front wheel brakes of the external type, the wearing parts of which are interchangeable with the gear brakes. Sankey detachable steel artillery wheels will be fitted both to the front and rear.



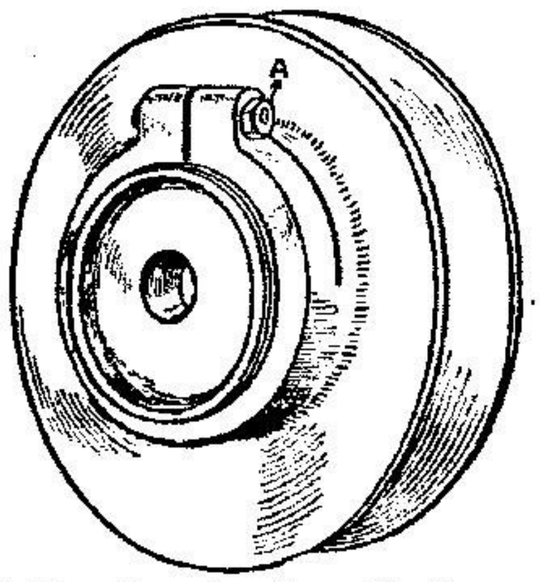
New model 2¾ h.p. T.T. m.o.i.v. Douglas with two-speed gear.

The Olympia Show.—

MATCHLESS, No. 35.

3½ h.p. MODEL: 85½ × 85 mm.; side by side; Amac carburetter; belt; three-speed gear.

H. COLLIER AND SONS, LTD., Plumstead, S.W.—Messrs. Collier and Sons are exhibiting a very complete range of



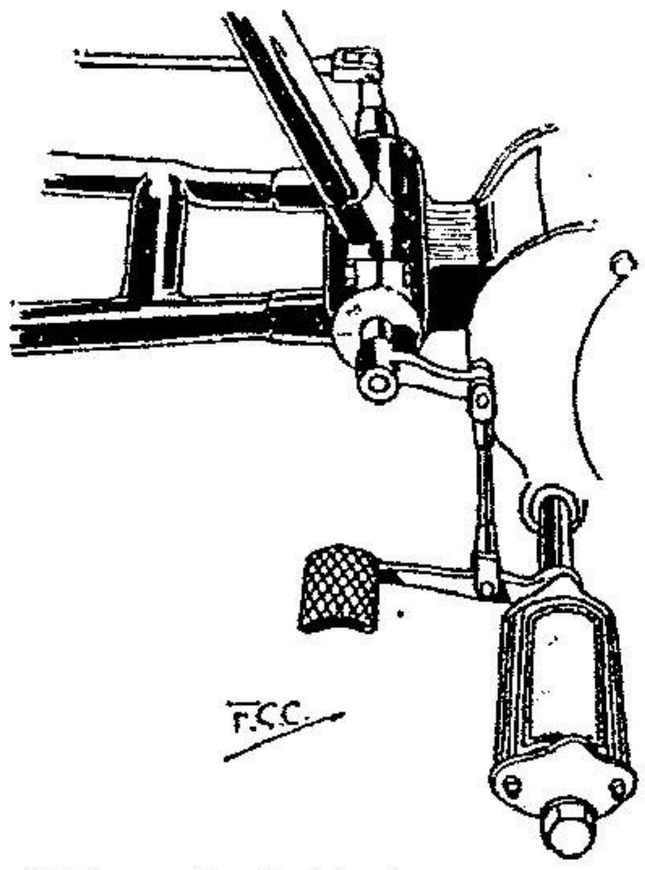
The Matchless adjustable pulley. It will be seen that the movable flange is screwed on to the fixed flange casting, and being split crosswise is locked by the nut and bolt A.

models. Two of the 3½ h.p. single-cylinder machines are shown with the new Matchless engine, one with a free engine clutch, and a similar machine with a three-speed gear. Their machines are on standard lines throughout, having a low saddle position and a very complete equipment of tools. All fittings, such as stand and carrier, are neatly fixed and carried out in a workmanlike manner. A feature which is bound to attract attention on this stand is C. R. Collier's 7 h.p. racer on which he has attained such marvellous speeds at Brooklands, incidentally capturing two world's records. This machine is the fastest motor bicycle in the world. A neat open-frame model is also shown with a 2½ h.p. engine placed vertically in the frame. This model is supplied with three-speed gear as a standard.

5 h.p. MODEL: 85 × 65 mm.; overhead; Amac; belt; six-speed gear.

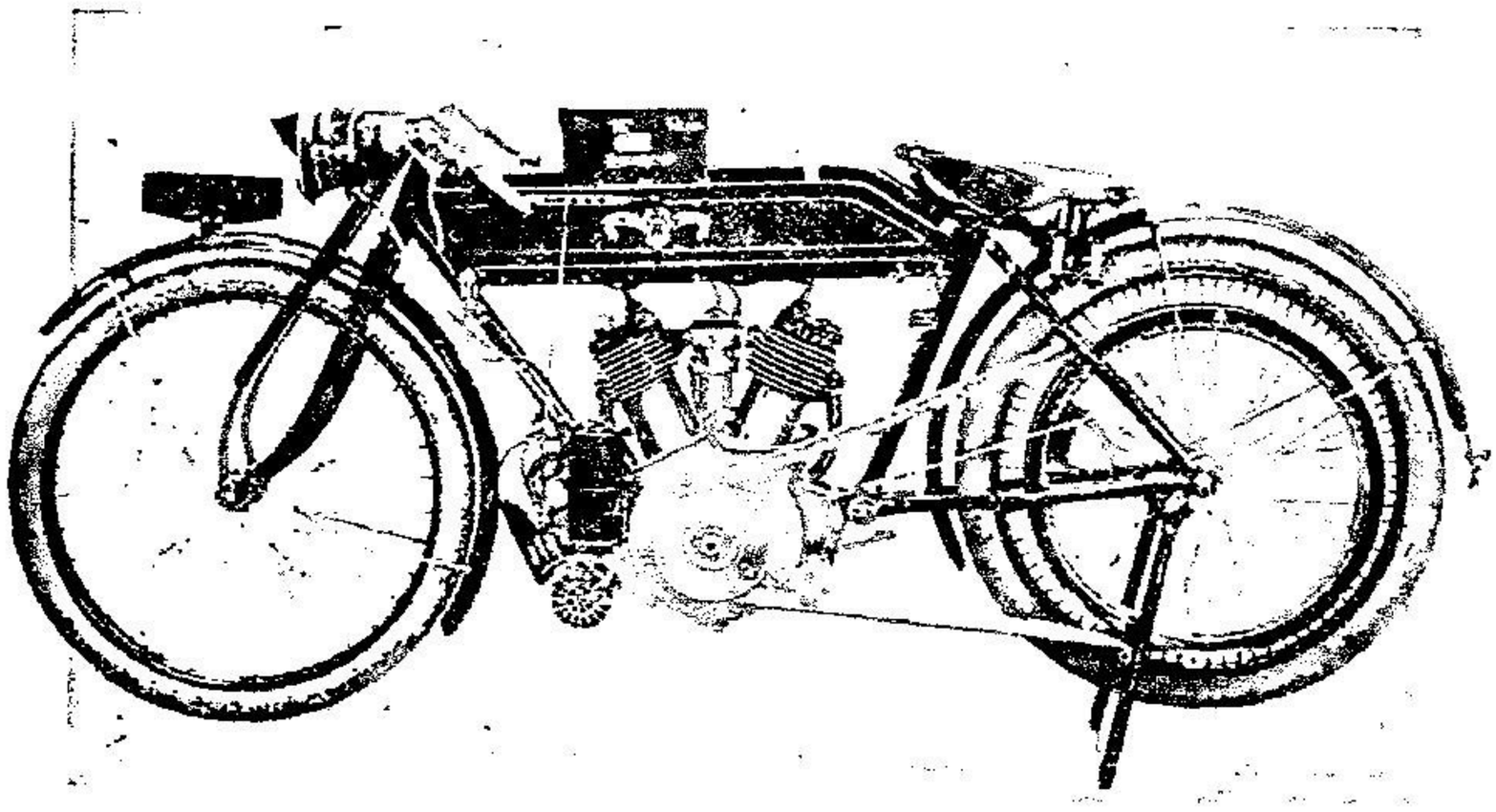
This model is similar to that used by the Collier brothers in the Tourist Trophy Race. The six-speed gear is well worth close inspection, and was described in our Tourist Trophy issues. It is sufficient, therefore, to say here that it consists of an expanding engine pulley, the belt slack being taken up by a simple movement of the back wheel. This movement is very substantially carried out, ensuring rigidity for the back wheel.

Another new model has a 3 h.p. J.A.P. twin-cylinder engine, 60 × 76 mm., with the valves disposed at the side. This is an extremely neat power unit, and should have a great future for those who require an efficient medium-weight twin. On all these models it should be noticed how carefully the mudguarding has been carried out, which is, of course, a very important feature from the rider's point of view. This is the first time the Matchless engine has been exhibited, and it is noticeable that the valve-lifting mechanism and timing gear are particularly neatly constructed. All except the 2½ h.p. ladies' model, illustrated last week, have toolbags on the top tube. Features common to all models are inverted handle-bar levers, a large magneto shield, carrier and stand acting as stays for the



Pedal operating the belt rim brake on the T.T. Matchless.

mudguard, screw-down filler caps of large size, adjustable drip-feed lubricator, and petrol gauge projecting from side of tank. A generator bracket is formed on the left hand fork link.

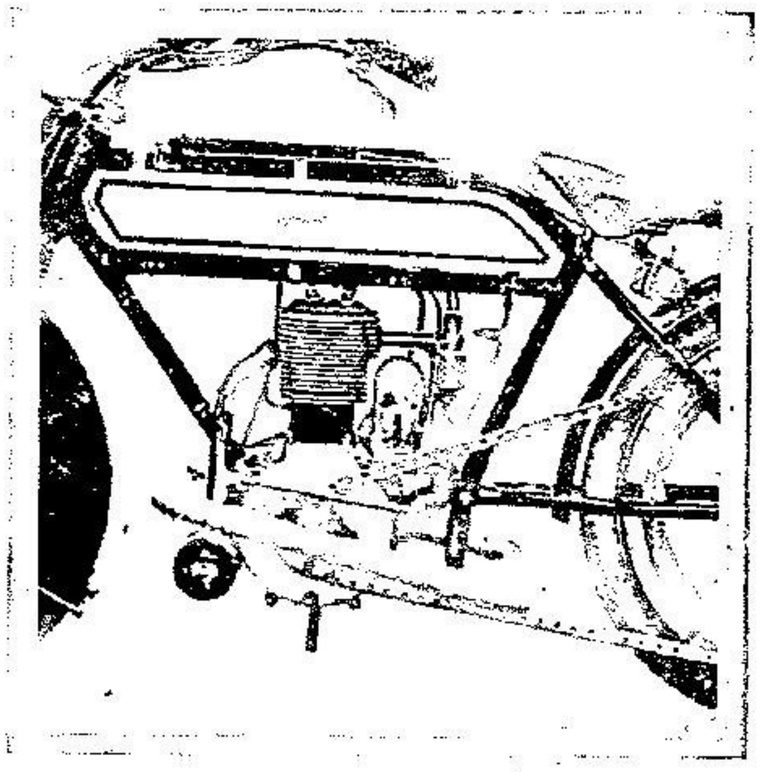


A neat looking 8 h.p. twin-cylinder Matchless-Jap racer.

EXCELSIOR, No. 71a.

3½ h.p. MODEL: 85 × 88 mm.; side by side m.o.i.v.; B. and B. carburetter; belt; multi-disc clutch in hub to order.

BAYLISS, THOMAS AND CO., Excelsior Works, Coventry.—Quite an interesting point about this machine is the lubrication system. A Best and Lloyd drip



Excelsior power unit, showing long footboards.

feed lubricator is supplied which allows the oil to enter a hole in the cylinder which registers with the hollow gudgeon pin at the bottom of the stroke, while a further lead conducts the oil to the crank case, whence it passes through a channel into a cup in the flywheel, which allows the oil to reach the crank pin and out again through two holes. The same lead also lubricates the main bearing on this side. The pulley side bearing is lubricated by splash, but the oil runs down to the bearing through a special lead from the cylinder. The general appearance of the machine is distinctly pleasing, and it is pleasant to note that this firm has so carefully studied the lubrication question. Reverting to the engine, it is worthy of note that the valve tappets are slightly off-set as regards the cams, with the result that side thrust is minimised to a great extent. The valve stems have a simple adjustment.

4½ h.p. MODEL: 86 × 112 mm.; side by side m.o.i.v; B. and B. carburetter; belt.

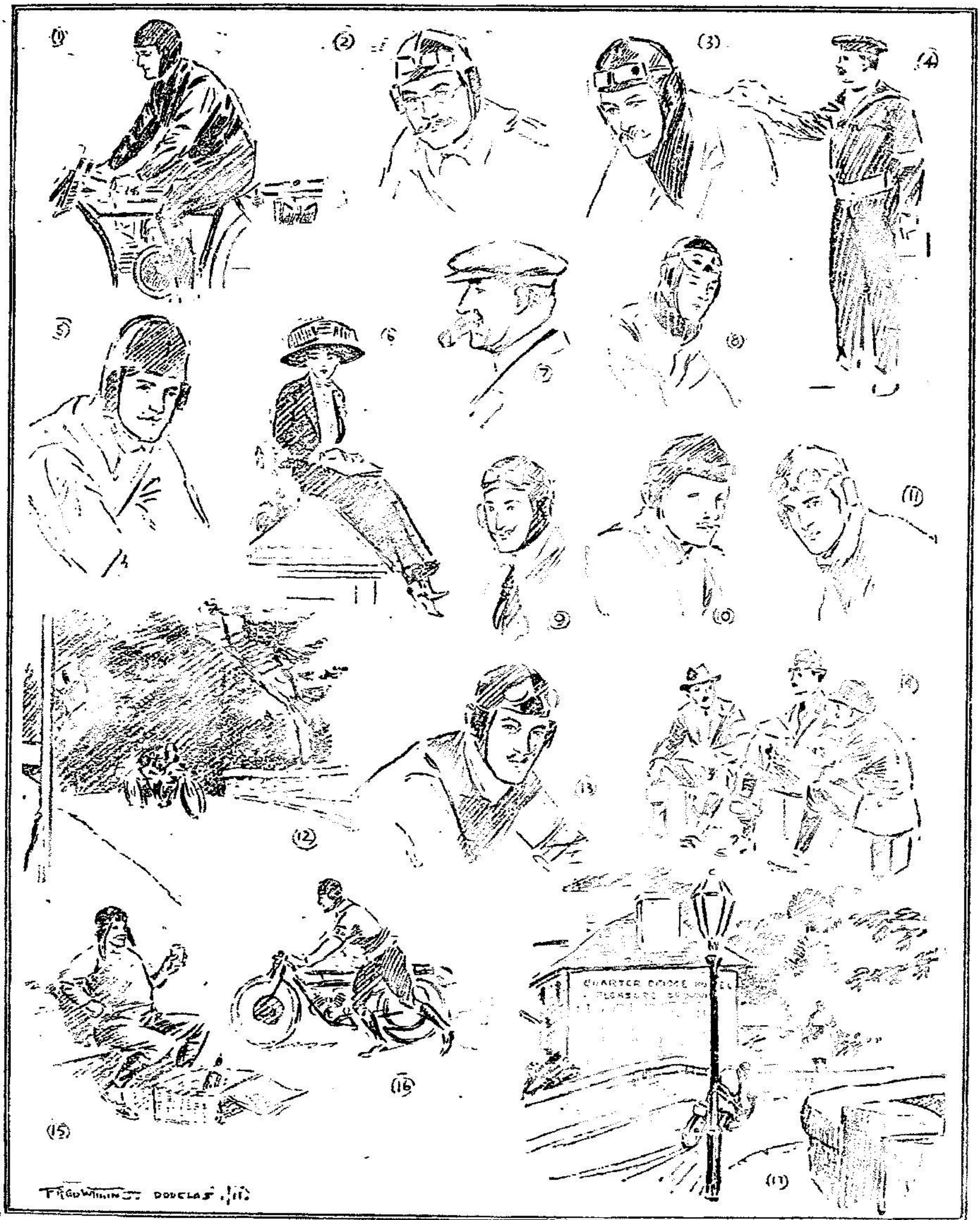
This machine is one of the largest single-cylinder machines shown, and has a cubic capacity of 650 cubic centimetres. In all other respects it resembles the model we have just described, except that 2½in. tyres are fitted and an extra heavy Druid fork. In the case of both models a separate belt rim is carried for the foot brake. The presence of these belt rims accounts for the fact that the rear mudguard is of ample dimensions.

CHARLES EDMUND, No. 100.

3½ h.p. MODEL: 85½ × 85 mm.; side by side m.o.i.v.; B. and B.; belt.

CHARLES EDMUND AND CO., Chester.—The chief feature about this machine is the spring frame. This consists of a separate top tube hinged at its forward end, while at its after end there is a shackle to which a tube is fixed running through the saddle tube, and at the lower

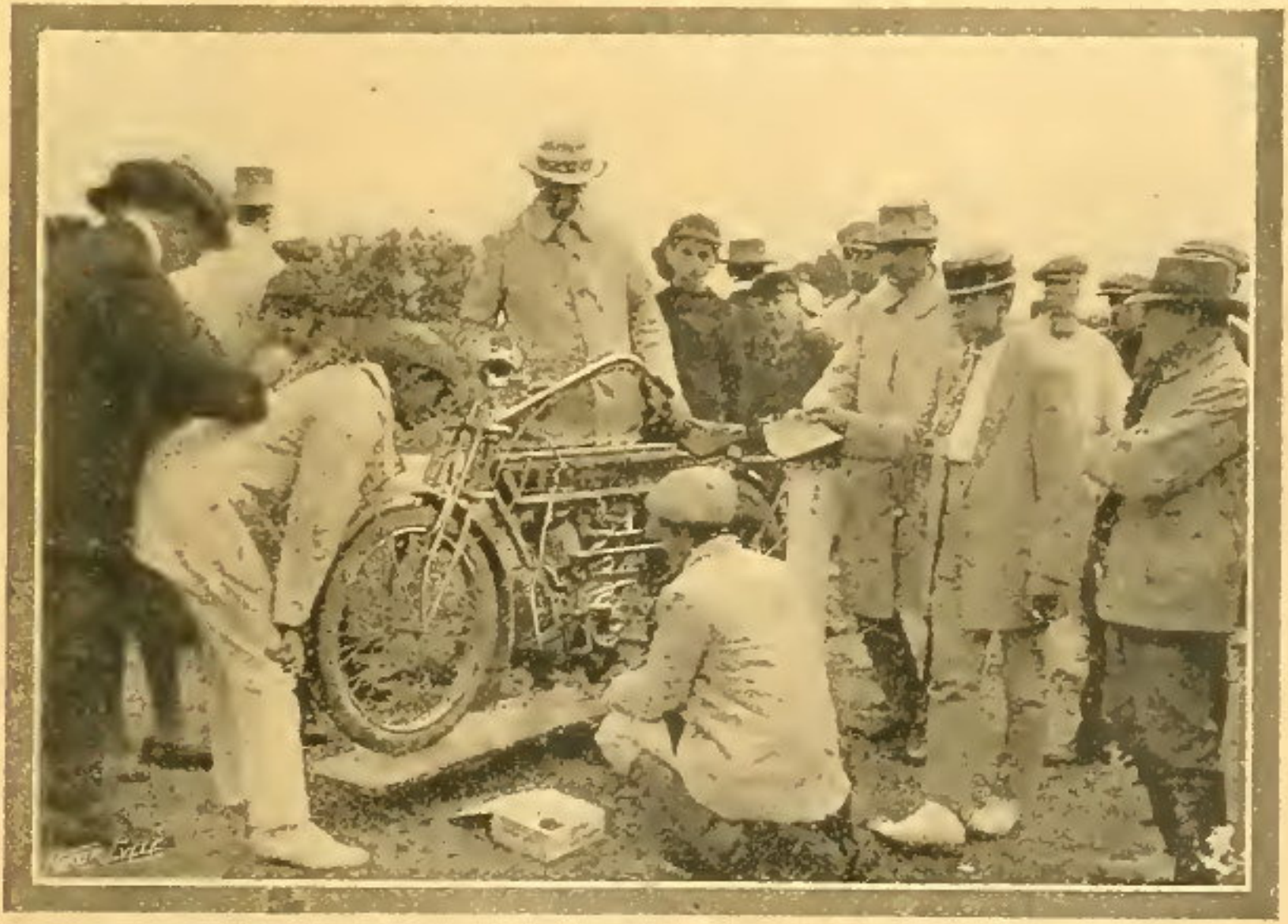
COMPETITORS IN THE TOURIST TROPHY RACES, AND INCIDENTS CONNECTED THEREWITH.



(1) W. W. Douglas. (2) H. A. Collier. (3) Hugh Gibson. (4) A signaller. (5) Francois Saio. (6) A pretty gate ornament. (7) Lord Raglan. (8) V. Wilberforce. (9) The winner of the Junior race. (10) R. Drechsler. (11) D. Bolton. (12) O. C. Godfrey, winner of the Senior race, crossing Quarter Bridge. (13) C. R. Collier. (14) Petrol tanks make good seats. (15) A German rider refreshing himself. (16) D. Brown pushing his machine past the post. (17) A Senior T.T. competitor grazing the footpath at Quarter Bridge.

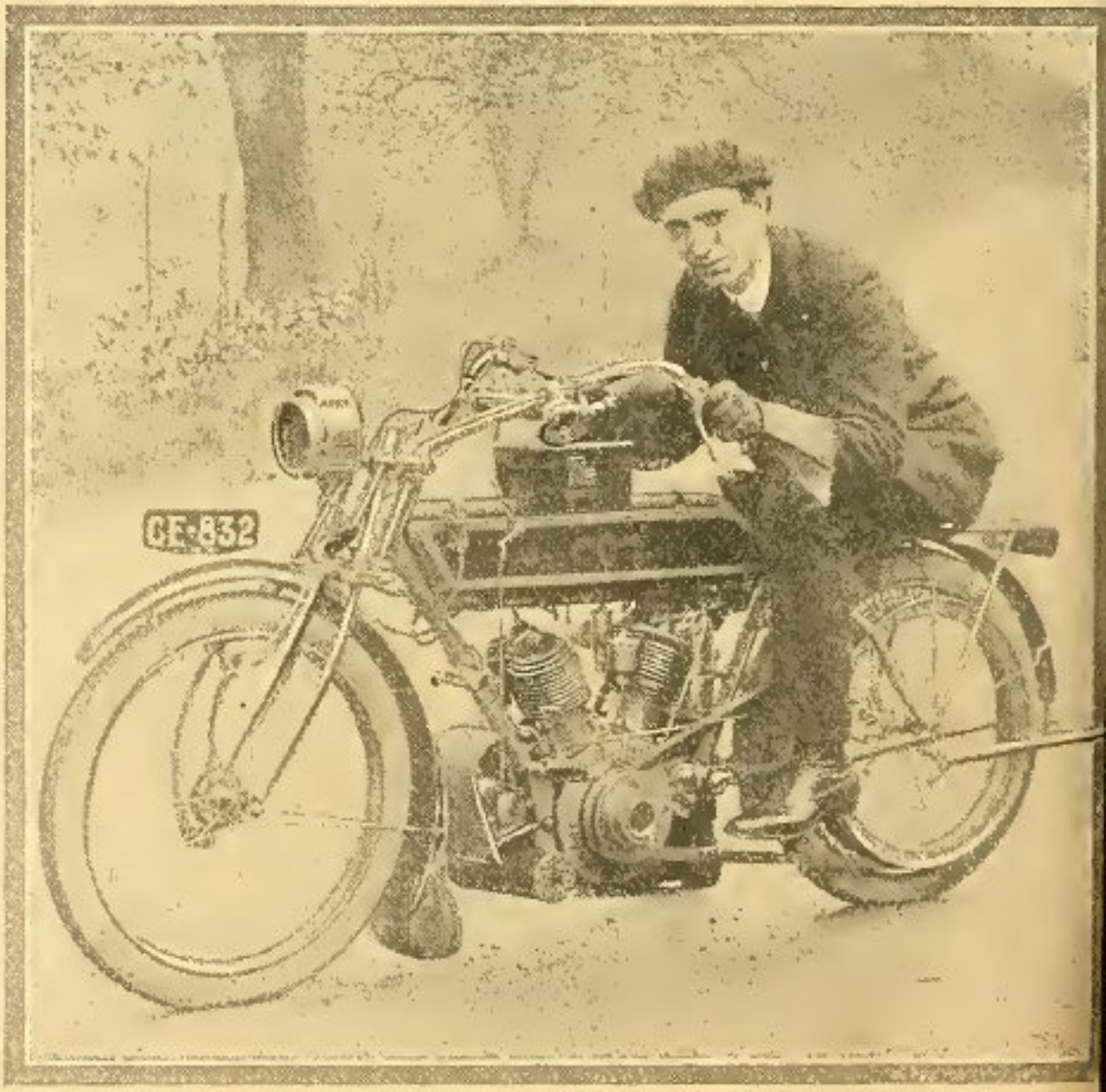
H. V. Colver (290 c.c. Matchless-Jap), winner of the first Junior One Hour T.T. Race.

T.T. NOTES.



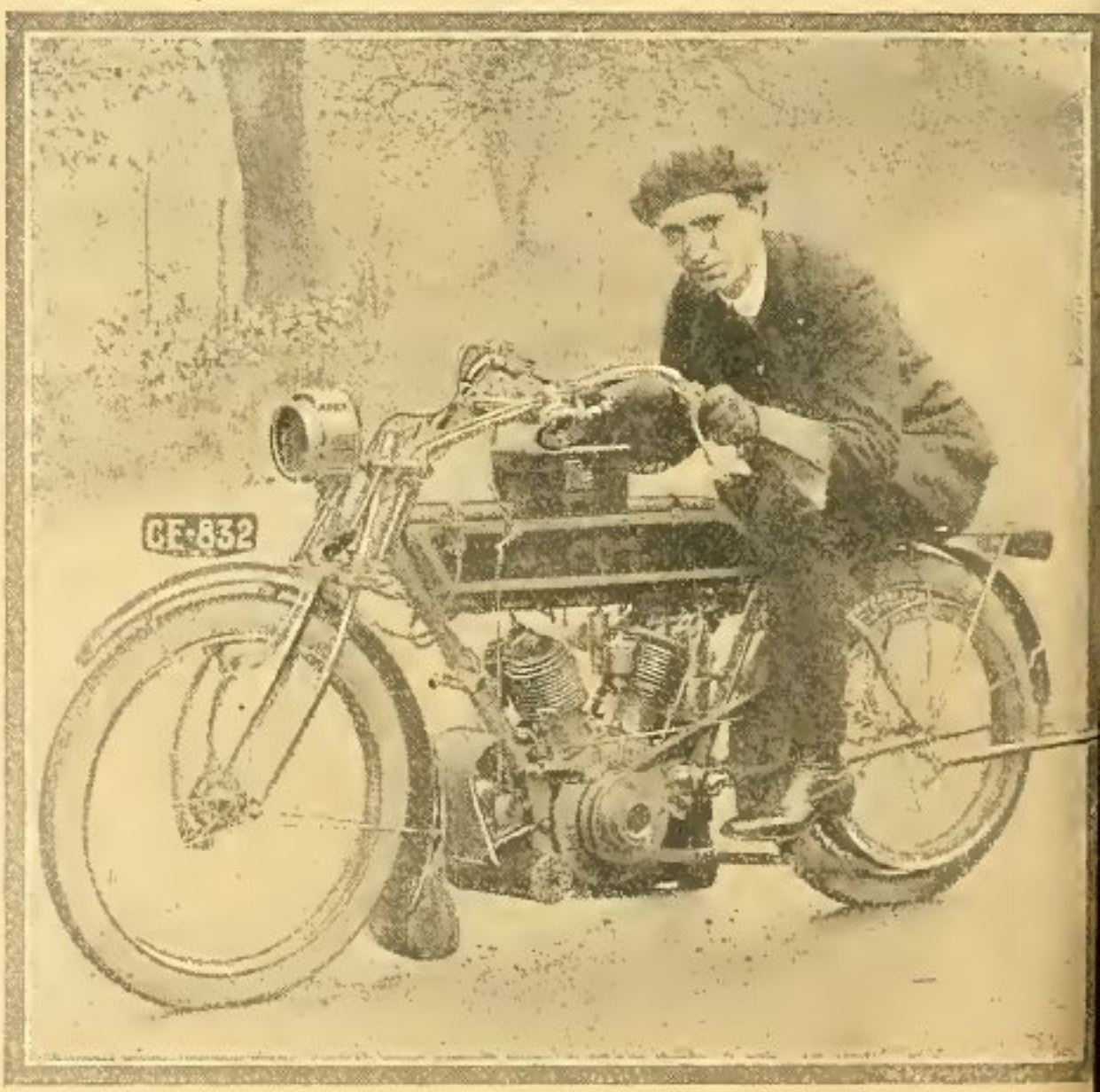
MOTOR CYCLE CLUB OF SOUTH AUSTRALIA HILL-CLIMBING CONTEST.

C. A. Hepworth, a sixteen stone rider of a 6 h.p. Matchless-Jap, on the scales.



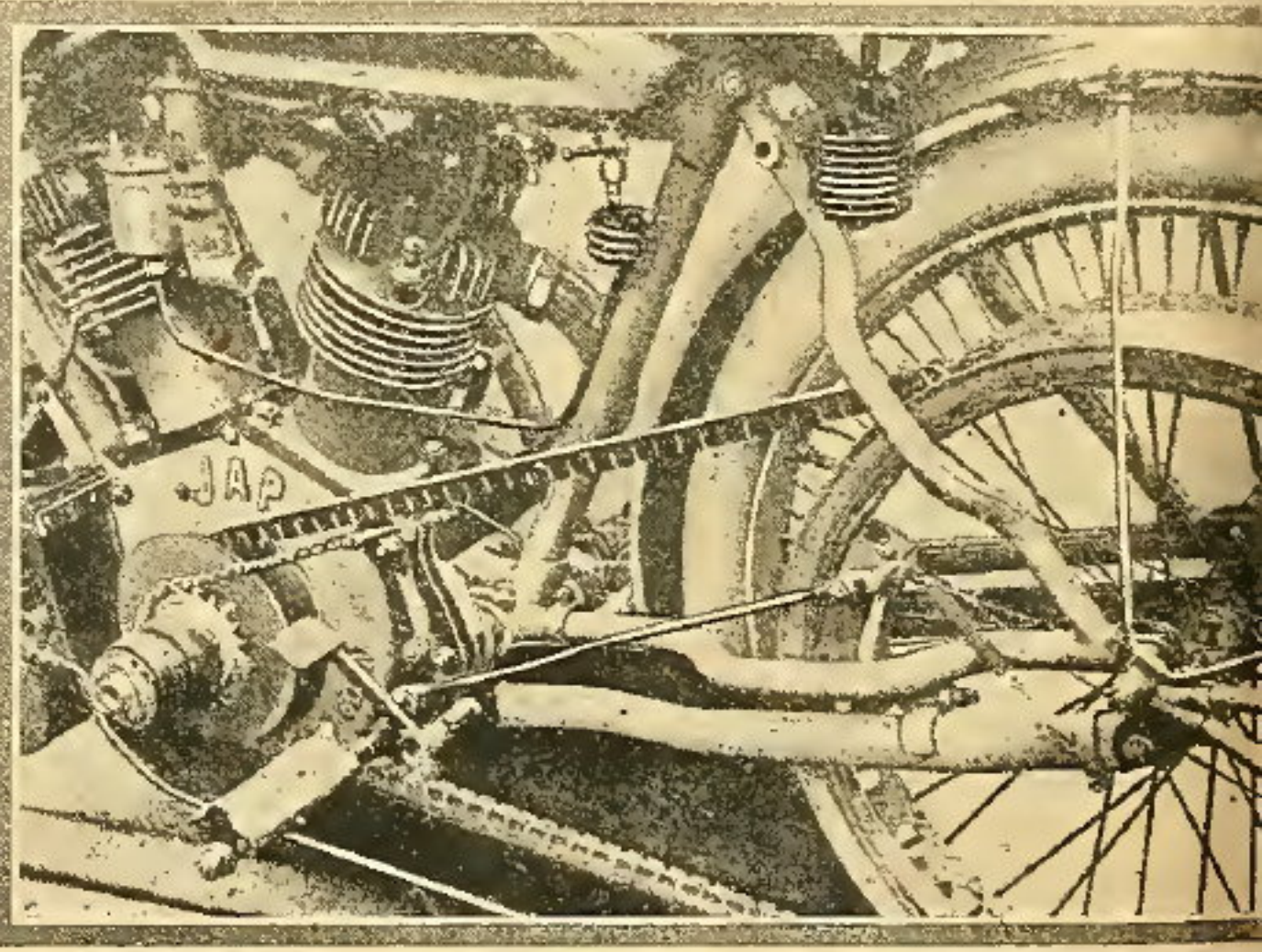
EDINBURGH AND DISTRICT M.C.C. OPEN HILL-CLIMB AT MANOR HILL, PEEBLES.

A. J. C. Lindsay, of Peebles (5-6 h.p. Matchless-Jap), winner of the multi-cylinder handicap, multi-cylinder scratch, and novices' handicap, and who also tied with an 8 h.p. machine for the fastest time of the day.



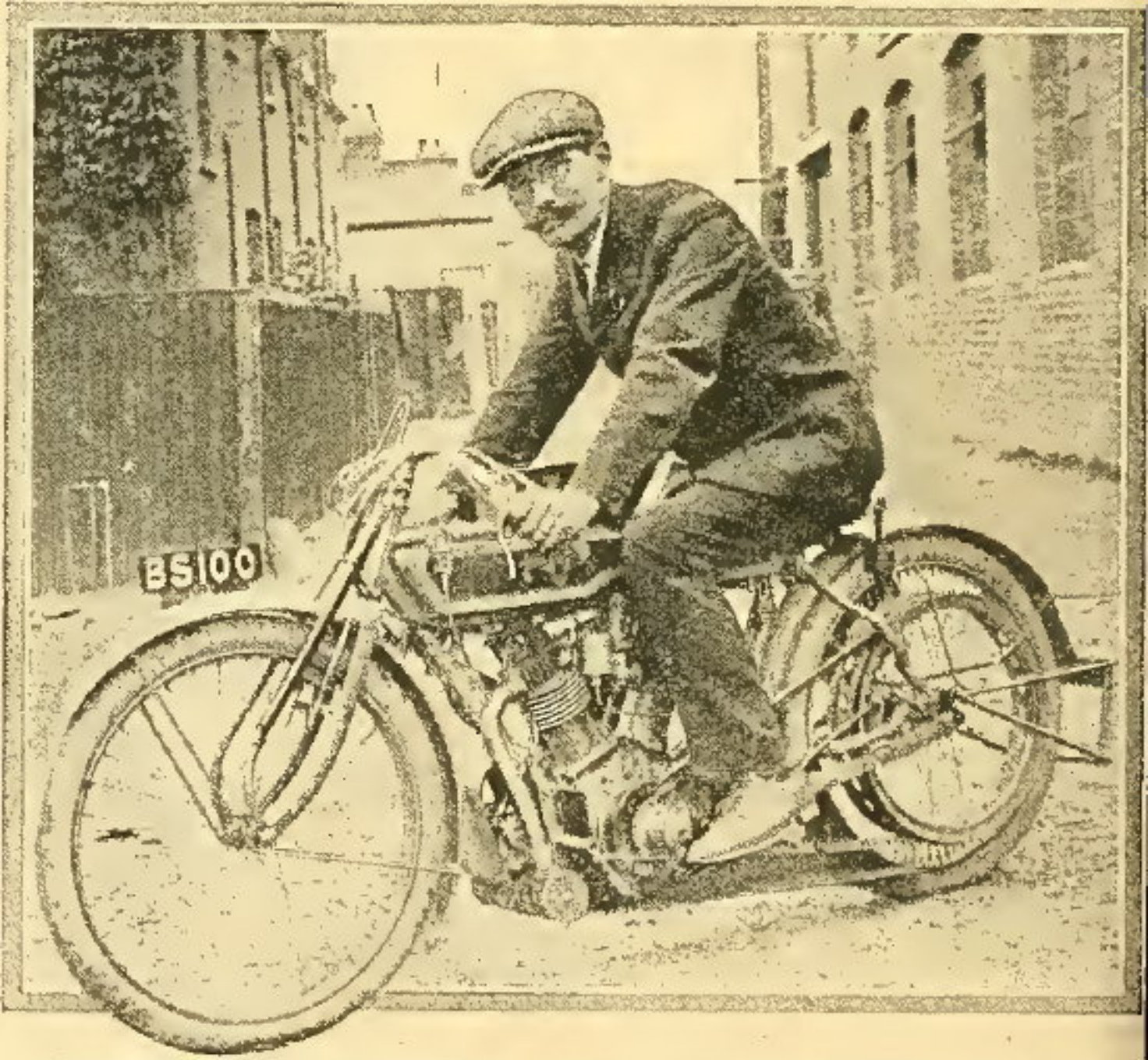
EDINBURGH AND DISTRICT M.C.C. OPEN HILL-CLIMB AT MANOR HILL, PEEBLES.

A. J. C. Lindsay, of Peebles (5-6 h.p. Matchless-Jap), winner of the multi-cylinder handicap, multi-cylinder scratch, and novices' handicap, and who also tied with an 8 h.p. machine for the fastest time of the day.



Showing the new Matchless variable gear and double horizontal rear stays. Observe the large metal guard. (See previous page).

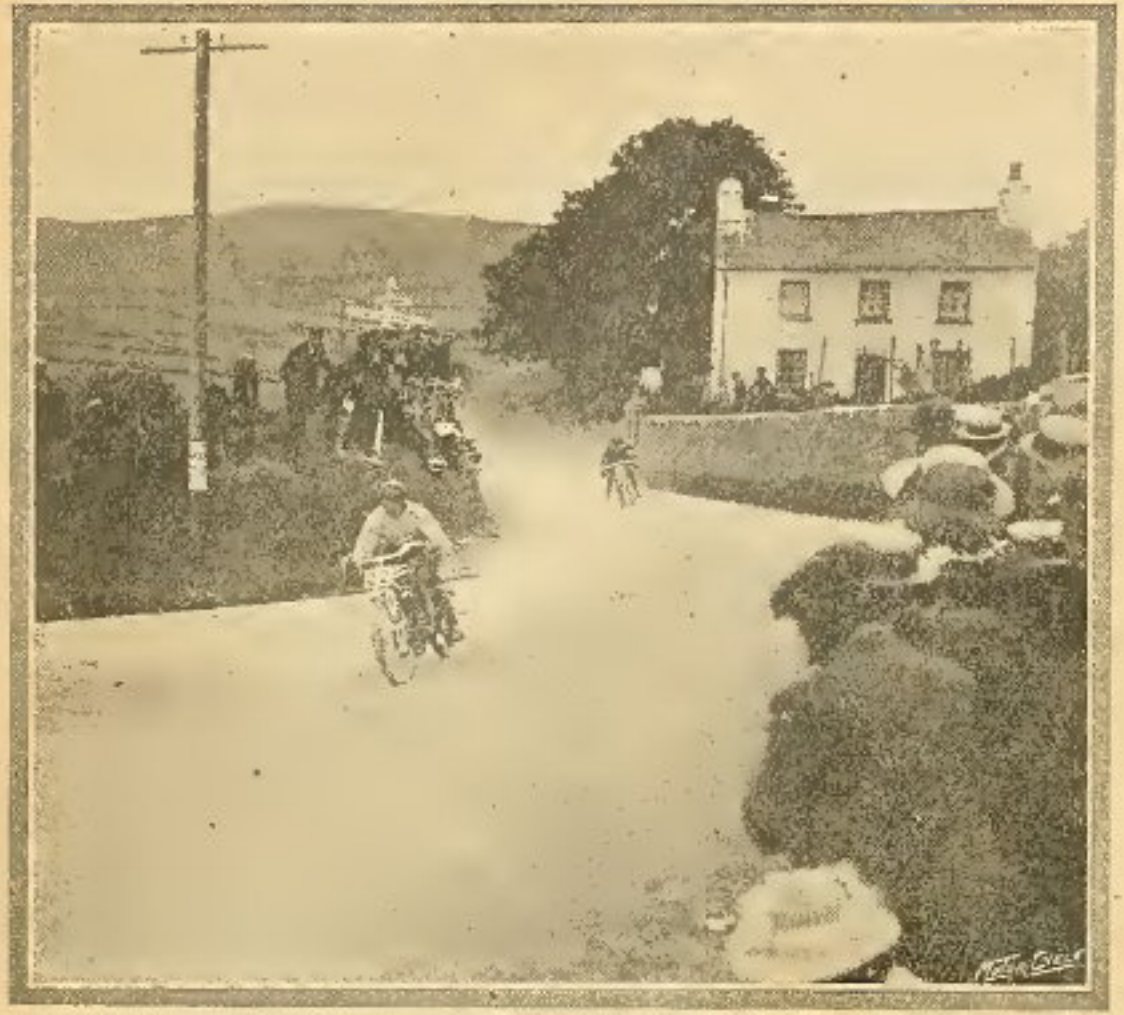
A curious photograph of C. R. Collier (Matchless) and F. A. McNab (Tr
in the hour race. Collier lapped McNab and covered 64 miles 430
60 minutes, beating his own record.



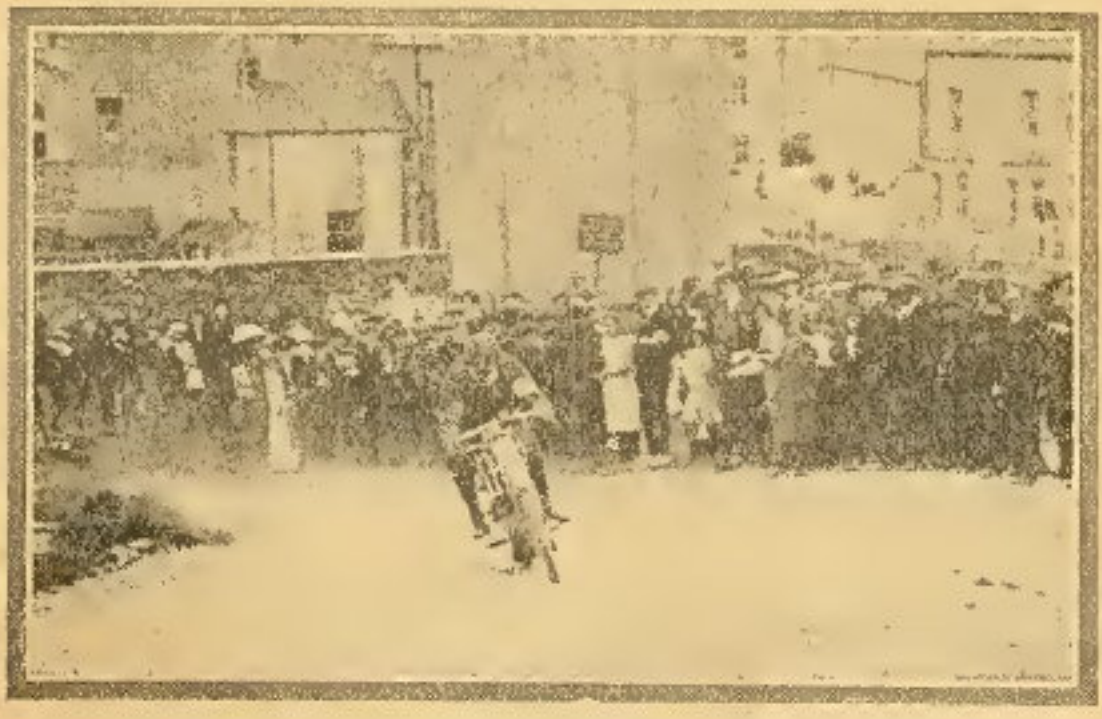
H. A. Collier, second in 1910 and first in 1909, mounted on his 1911 4 h.p. T.T. Matchless-Jap with variable pulley gear. It was described in detail in our issue of June 8th.

B. V. Jones (on his 3½ h.p. Premier) starting from Woodlands, followed by S. C. Perryman (3½ h.p. Ariel) and H. A. Collier (4 h.p. Matchless).

The International Motor Cycle Tourist Trophy Races.—



A. Boldt (N.S.U.) and C. R. Collier (Matchless) at Cronk-ny-Mona.



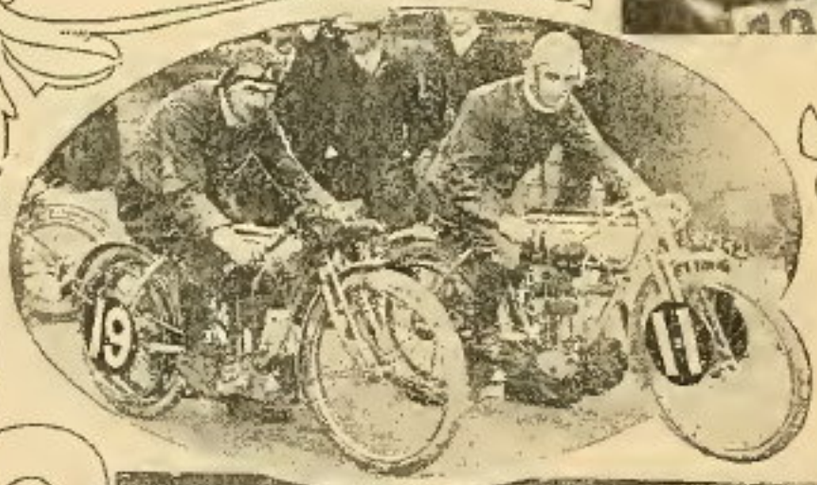
C. R. Collier (on his 4 h.p. Matchless) rounding the corner in Ramsey.

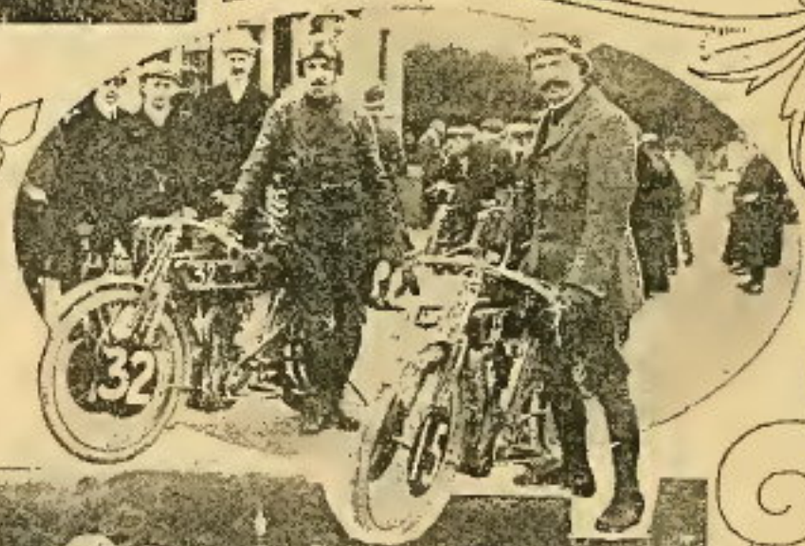
The International Motor Cycle Tourist Trophy Races.—

C. R. Collier (Matchless)—who finished second but was disqualified—travelling down Bray Hill at 70 m.p.h. A large crowd congregated at this point.

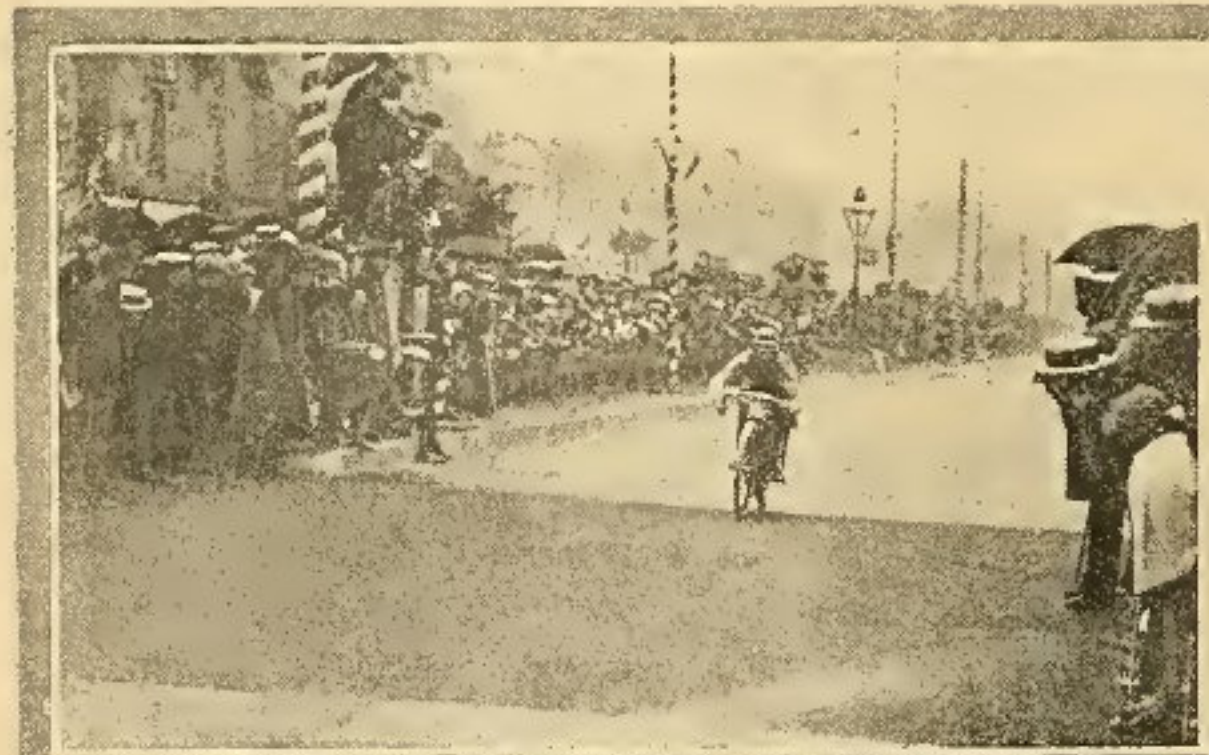
stroke, we are forced to the conclusion that there is little or nothing in it. I have heard Mr. S. F. Edge say that he considered speed was governed solely by cylinder capacity, and he thought little or nothing was to be gained in this connection by adopting a long or short stroke. And his remarks are absolutely confirmed

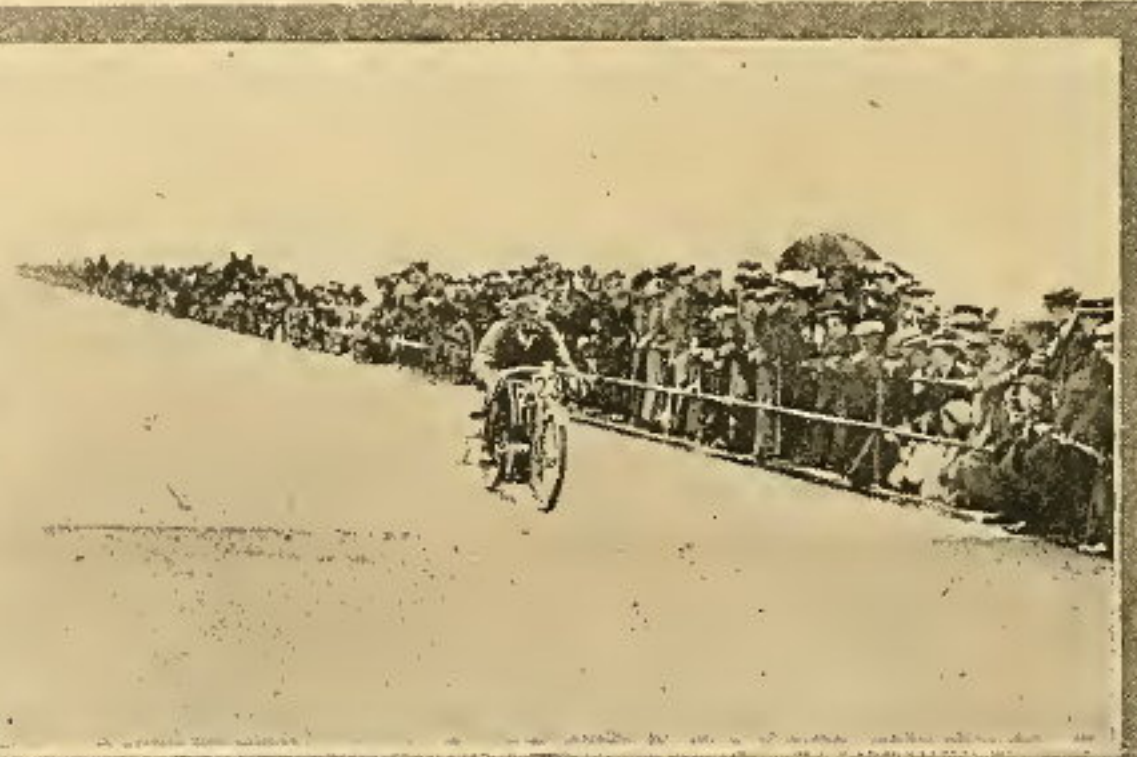
to finish a variable engine pulley (as opposed to the *adjustable* engine pulley), the third and fourth counter-shaft two-speed gears, fifth and sixth variable engine pulleys. Finally, the go-anywhere mediumweight is among us, and threatens to become a rival to the 3½ h.p. s.c. single-geared mount. G.S.





(1) The victorious Humber riders—S. Wright, D. Brown, P. J. Evans (winner), F. P. Johnson, and A. G. Fenn. (2) H. Martin and D. C. Bolton (three-speed Martin-Jap riders). Bolton won his class in the kilometre speed trials. (3) H. A. and C. R. Collier with their Junior T.T. Matchless-Jap machines. (4) The Douglas team: G. L. Fletcher, W. W. Douglas, V. Wilberforce, and E. Kickham. (5) The N.S.U. riders—K. Gassert, W. Heaton, A. Boldt, R. Drechsler, and J. F. Sirett.



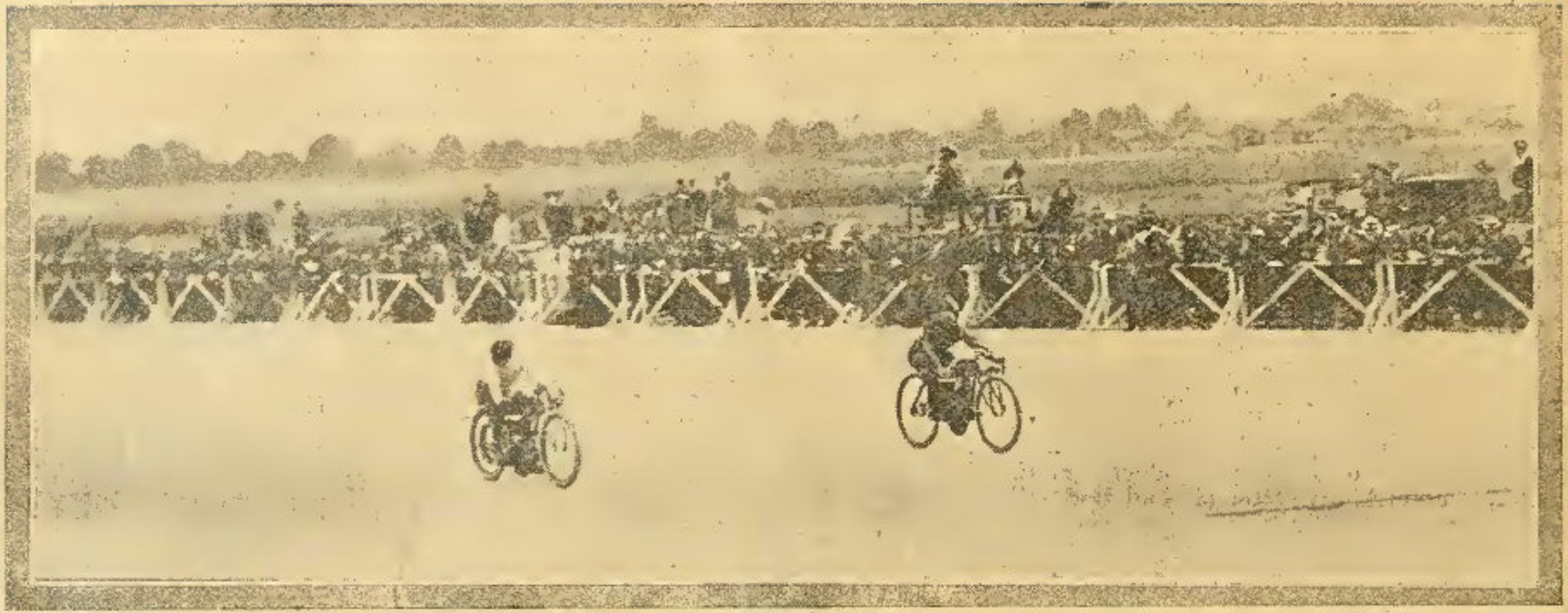


THE KILOMETRE SPEED TRIALS ON THE DOUGLAS PROMENADE.

(1) Jake de Rosier, who accomplished the best speed—75.57 m.p.h.—in the kilometre race on the Douglas promenade, riding his famous 7 h.p. Indian brought specially from the States. (2) H. A. Collier (Matchless-Jap) crossing the finishing line.

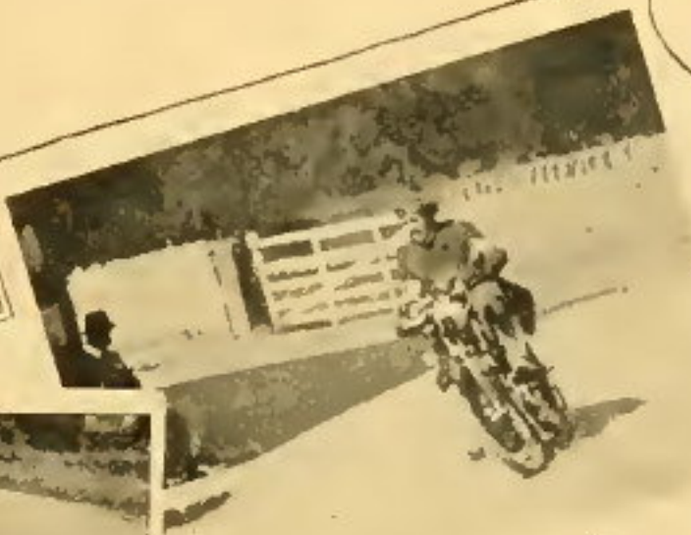
Specification : J.A.P. twin engine, overhead valves, 90 mm. × 77.5 mm. = 985 c.c. capacity. Tyres : Extra heavy 26 × 2¼in. Hutchinson.

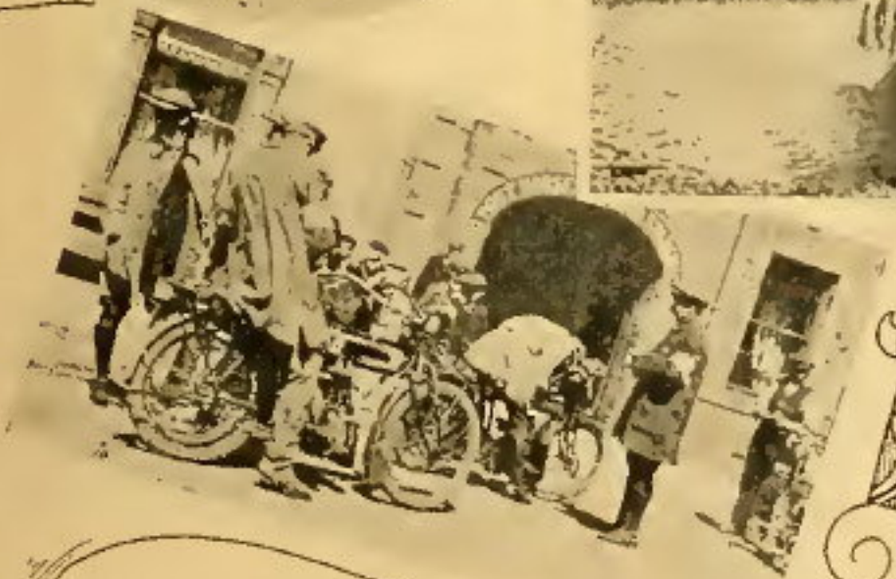
CHARLES R. COLLIER, the British Champion, mounted on the Matchless-Jap on which he contested a series of three races against the American Champion.



C. R. Collier (England) and Jake de Rosier (America) starting in the second International race.

*Private owners.





THE A.C.U. SUMMER QUARTERLY TRIAL IN PICTURES.

Waiting for the signal to start. H. Mason (4 h.p. Matchless), E. W. Merrall (3½ h.p. P. & M.), and G. Bell (3½ h.p. New Hudson).

Checking the competitors at the Queen's Hotel, Rothbury, where lunch was provided.

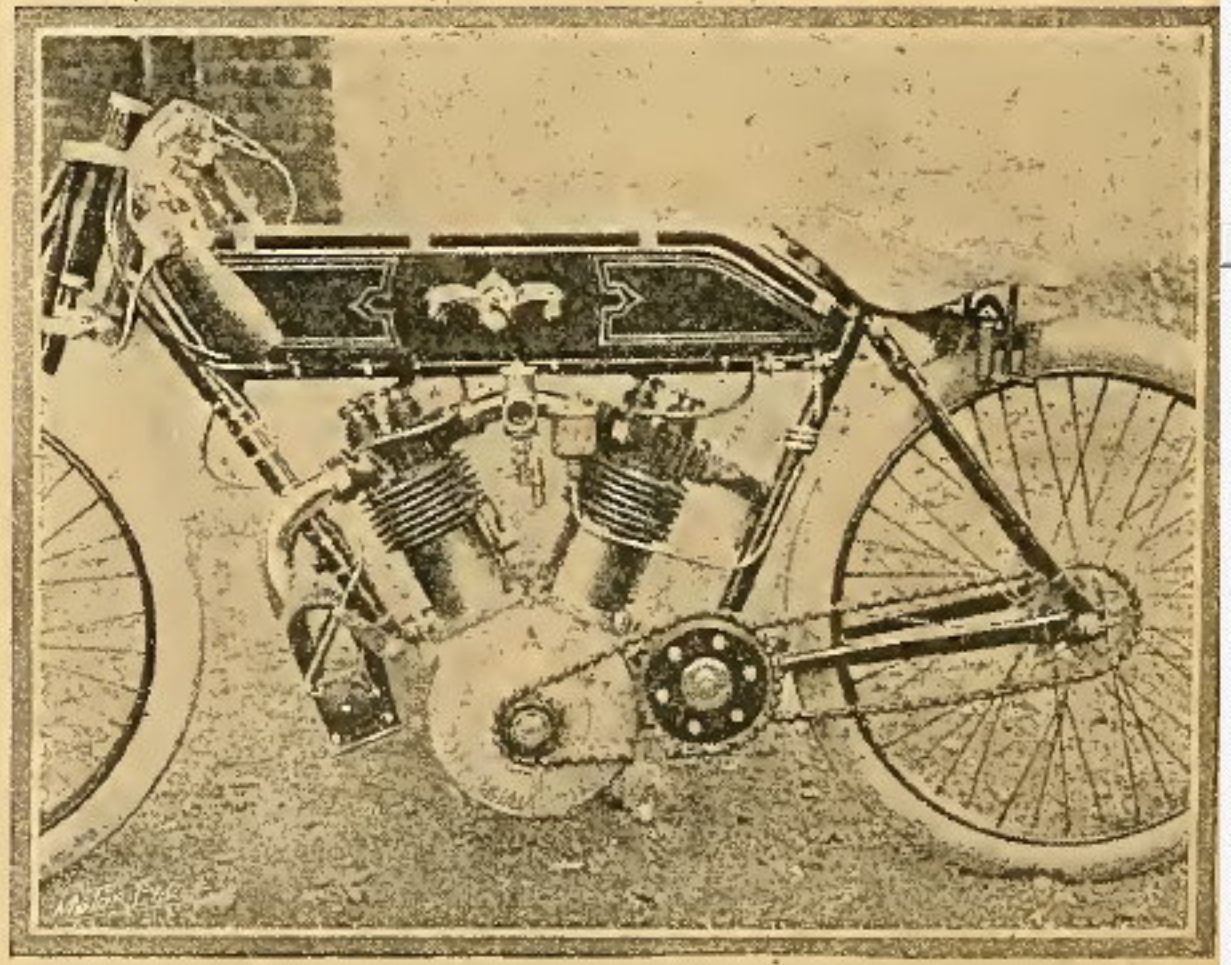
Frank Smith (5-6 Clyno and s.c.) negotiating the water-splash near Ilderton.

T. W. Hall (3½ h.p. Bradbury) rounding the right-angle bend of the ascent of Brunton Bank. Mr. F. Straight is timekeeping at the corner.

E. L. Bates (3½ h.p. Scott), hon. sec. of the Newc..stle Club, climbing the second test hill—Corby Bank. A magnificent panoramic view was obtainable from this point.

THE CHAIN-DRIVEN MATCHLESS.

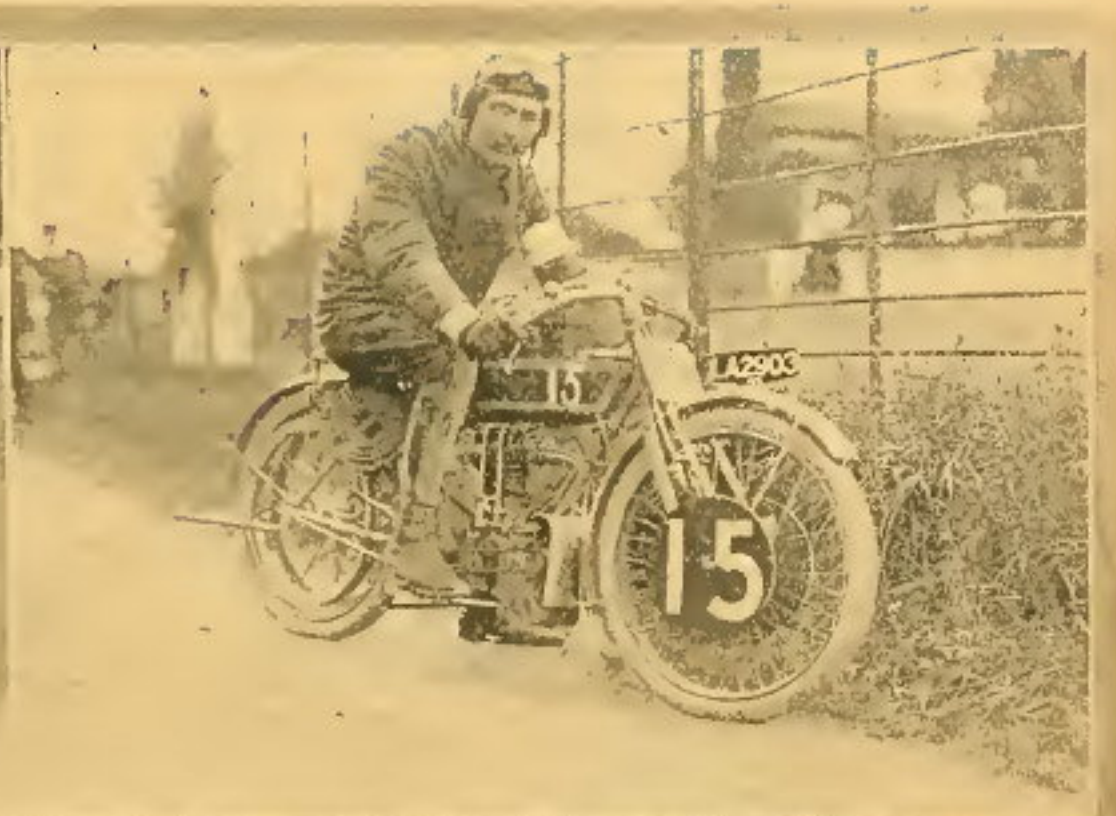
COLLIER & SONS, LTD., the makers of the Matchless motor bicycle, have introduced a new model which is chain driven instead of belt driven. The machine, which we have photographed, is the identical one used by C. R. Collier in the matches with Jake de Rosier, and on which he made his recent record rides of 90 miles an hour and over when belt driven.



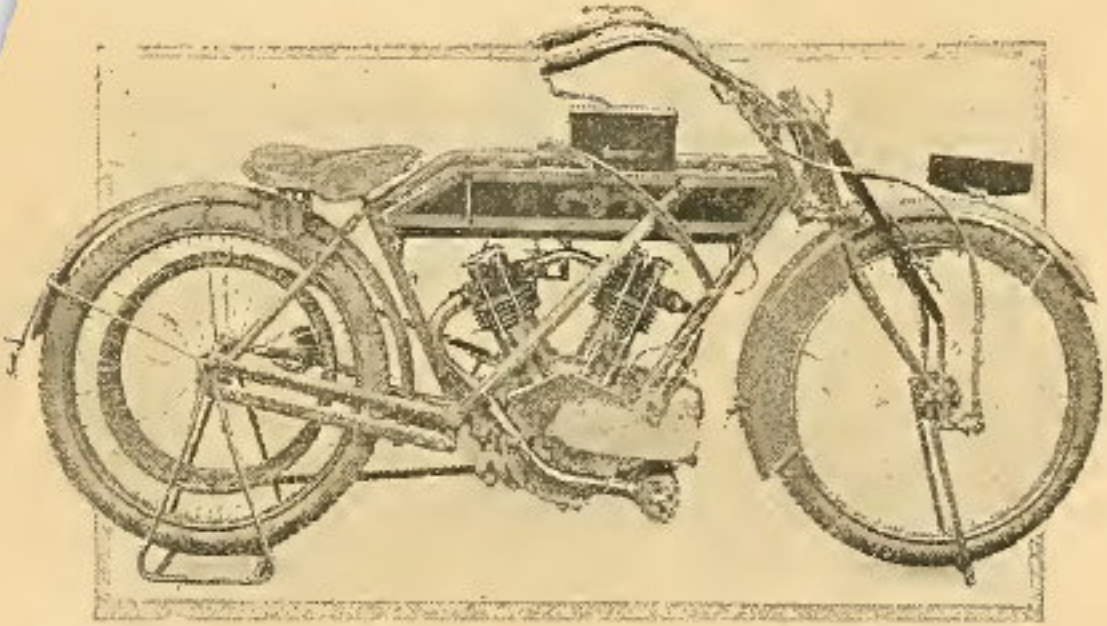
The engine is a J.A.P., 90 mm. bore by 78.2 mm. stroke, Amac carburetter, Bosch magneto, handle-bar control. The chain drive is through the counter-shaft by means of two chains, the ratio from engine sprocket to counter-shaft being 2 to 1, and from counter-shaft to road wheel 20 to 26 teeth, giving a final-gear ratio of $2\frac{3}{5}$ to 1. The counter-shaft is mounted on an eccentric strap, which allows the chains to be adjusted, and runs in two Hoffmann ball bearings. A frictional form of slipping clutch is fitted on the counter-shaft to soften the transmission of the chains, which would be otherwise too harsh. The machine is fitted with Hutchinson 26 by $2\frac{1}{4}$ in. tyres and enamelled red and gold lined.

The International Motor Cycle Tourist Trophy Races.—

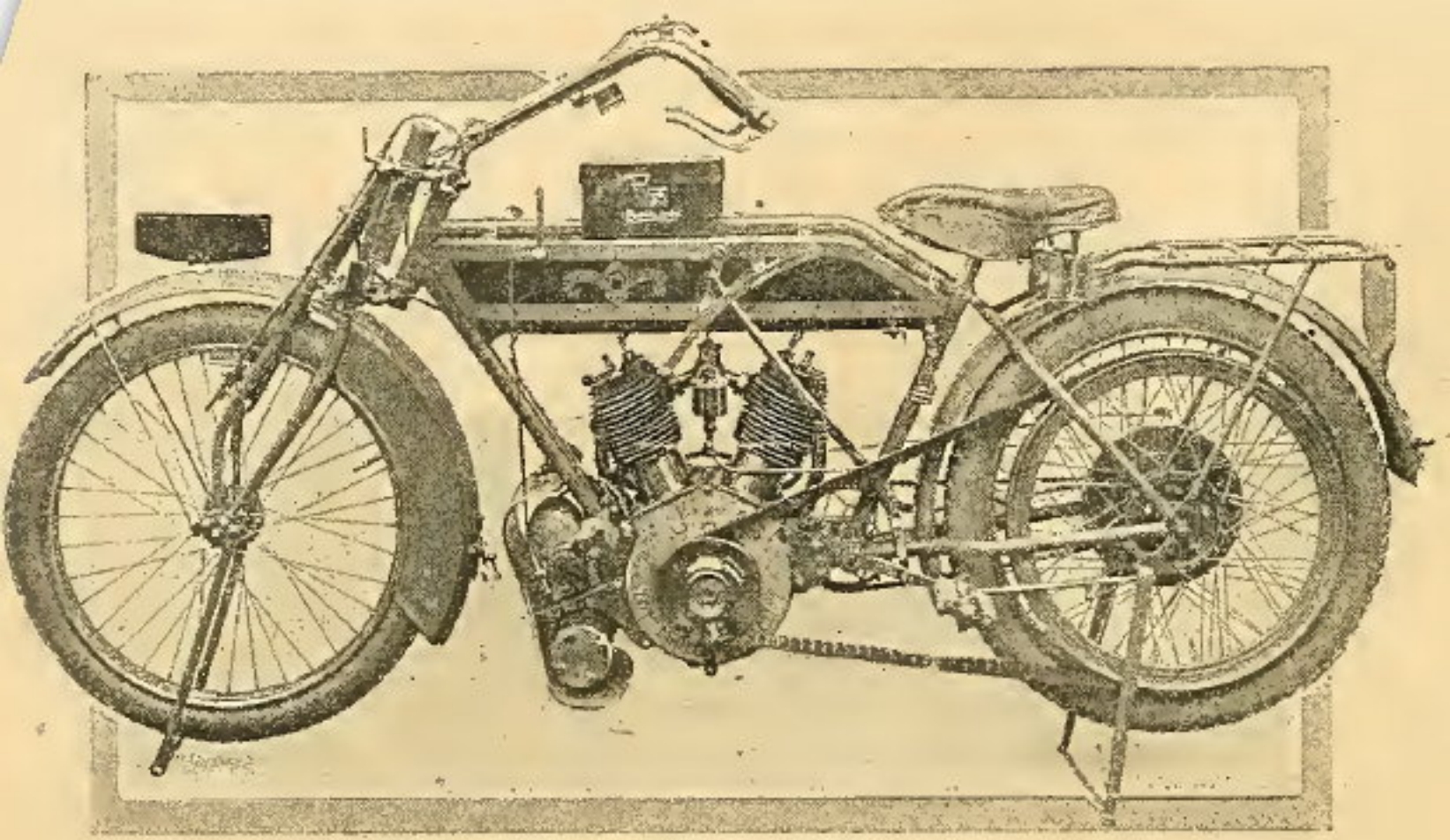
The winner, P. J. Evans, with his 2¾ h.p. Humber fitted with Armstrong Triplex gear.



The first single cylinder and second to finish, H. A. Collier (2 h.p. Matchless-Jap), who also used an Armstrong gear.



The new twin-cylinder six-speed Matchless, with overhead valve J.A.P. engine.



5-6 h.p. Matchless two-speed T.T. roadster.

"THE HONOURS OF THE DAY TO THE ENGLISH."

—L'Auto.

Open International Hill Climb, La Course de Côte de Gometz-le-Châtel, France, December 17th.

MATCHLESS

MADE FASTEST TIME OF THE DAY.

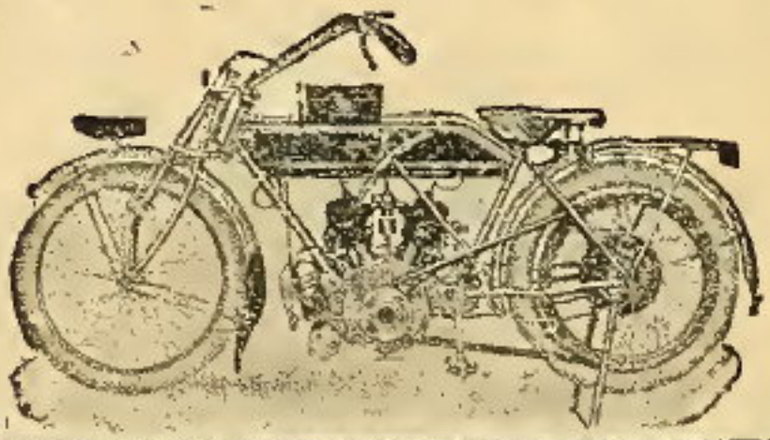
Unlimited Class, H. Bashall—**FIRST.**
Amateur Class, H. Bashall—**SECOND.**

"AUX ANGLAIS LES HONNEURS DE LA JOURNÉE."

—L'Auto.

Catalogue Free from

H. COLLIER & SONS, LTD.,

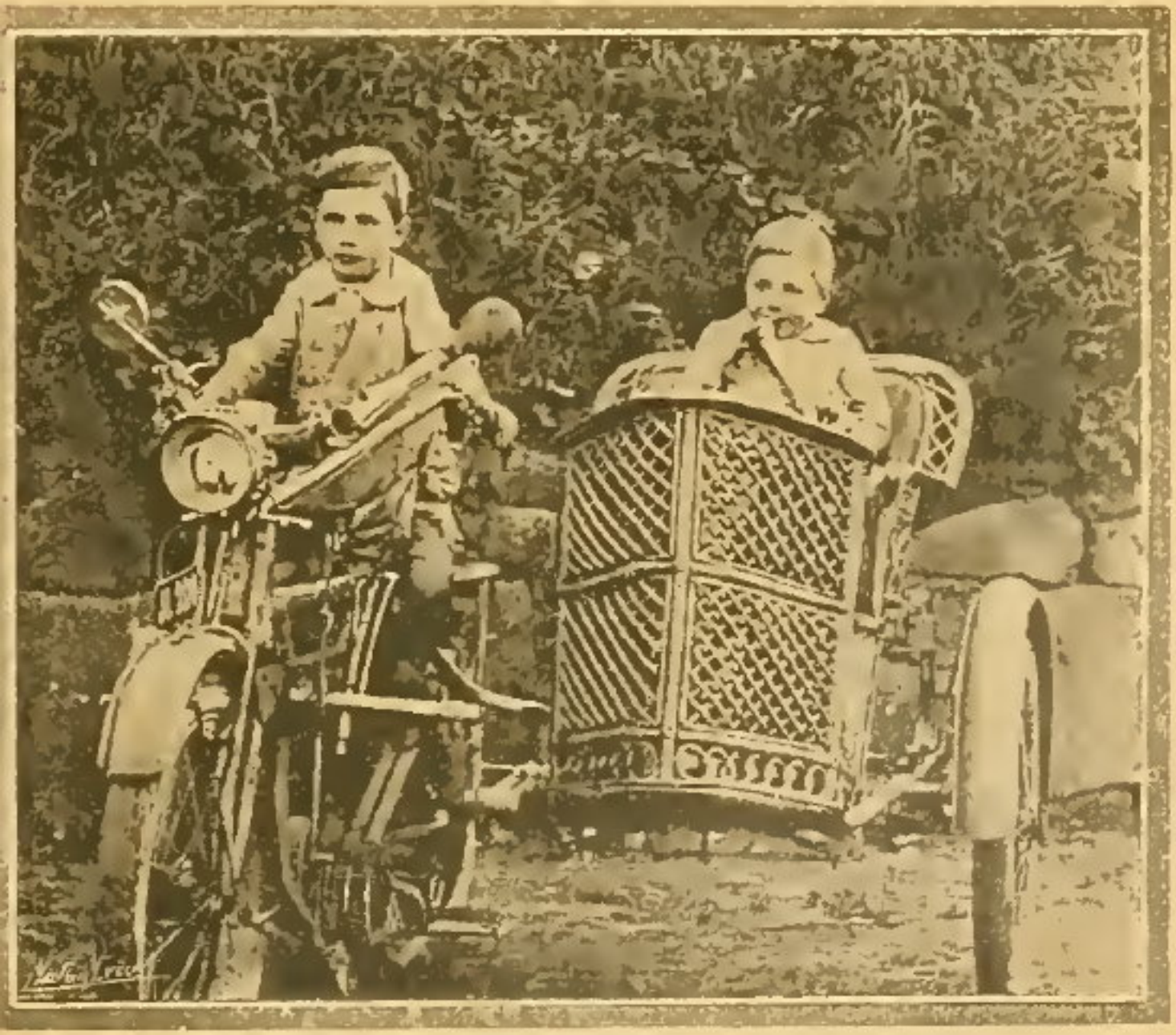


Matchless Motor Works,
PLUMSTEAD, S.E.

LEADING SPORTSMEN.

Jack Sharp, the noted cricketer and International footballer, accompanied by J. T. Tyldesley, on his 8 h.p. Matchless-Jap sidecar combination. Mr. Sharp occasionally uses his motor cycle and sidecar to fulfil his cricket engagements during the summer.

W. H. Bashall at full speed on an 8 h.p. chain-driven Matchless just after passing the bend. As will be seen, a number of spectators assembled at this point to witness the corner work.



JUVENILE ENTHUSIASM FOR THE MOTOR CYCLE.

Master Eric and Master Billy, sons of Dr. F. C. Wright, of Moy, Co. Tyrone, who are quite enthusiastic over their father's 8 h.p. Matchless-Jap and Montgomery sidecar, on which they have done some extensive touring.

(1) J. Tassell with his 7 h.p. Matchless sidecar.

(2) O. C. Godfrey (7 h.p. Indian sidecar).

MATCHLESS MOTOR CYCLES

for S. Africa.

IMPORTANT TO S. AFRICAN CUSTOMERS.

Don't waste time on enquiries, which are referred back to me as the makers' recognised S. African Agent.

Home Price Lists on application.

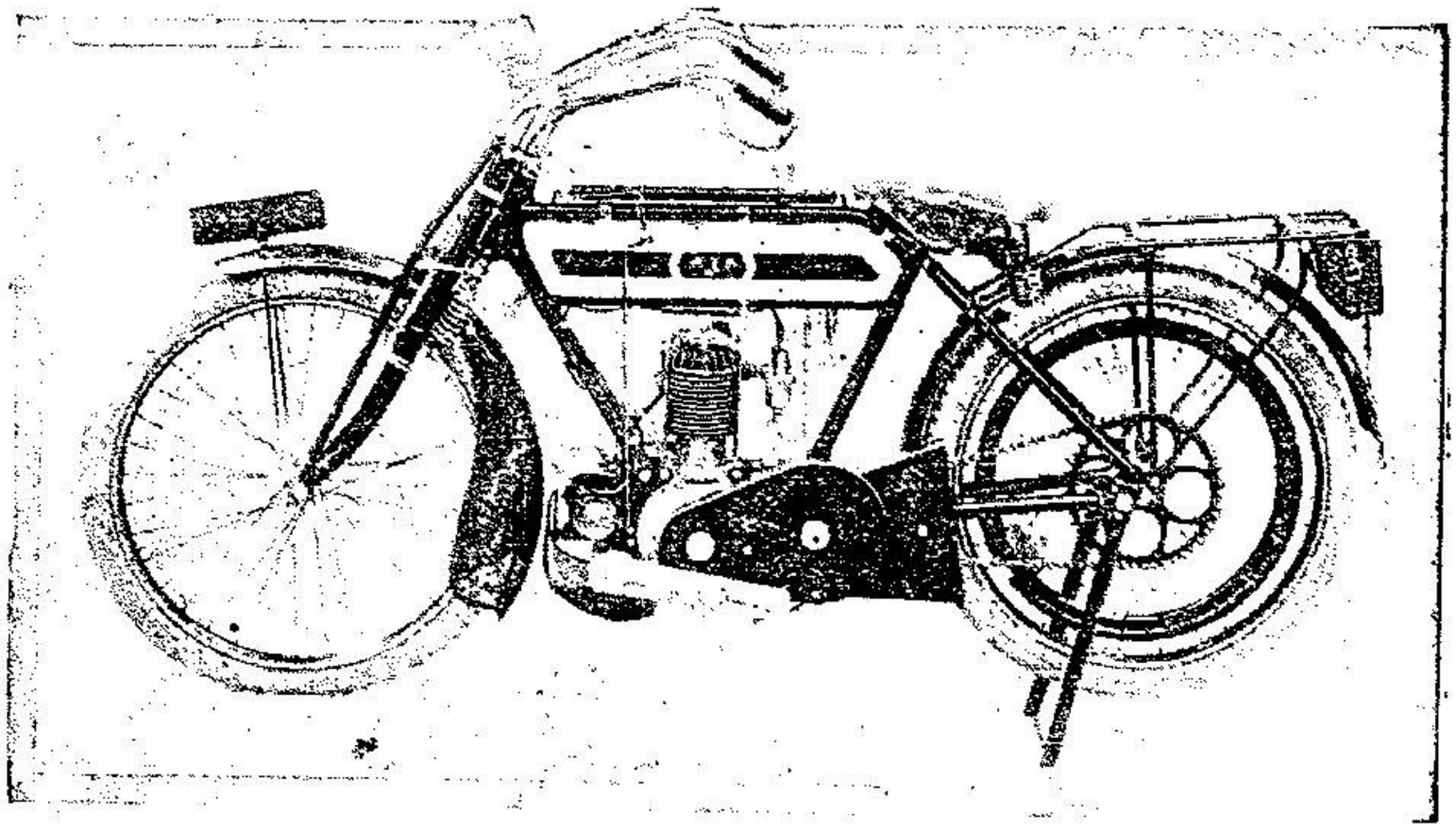
Orders executed direct.

Discount to the trade; local Agents in S. Africa appointed where not represented.

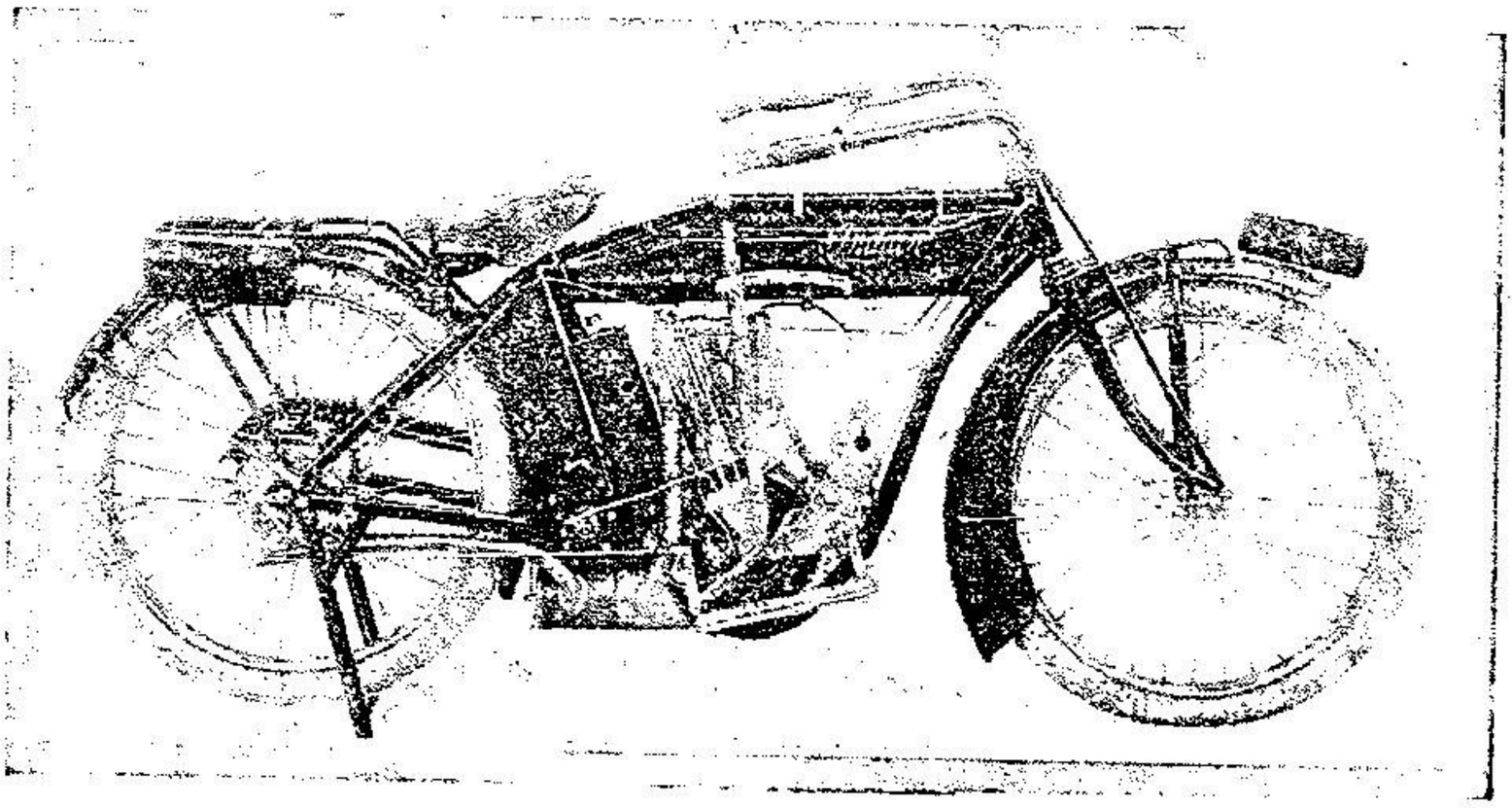
UNION MOTOR WORKS & GARAGE,
56-62, Skinner Street, J. Van Zwieten,
Pretoria, S.A.

S.A. Agent for H. Collier & Sons, Ltd.

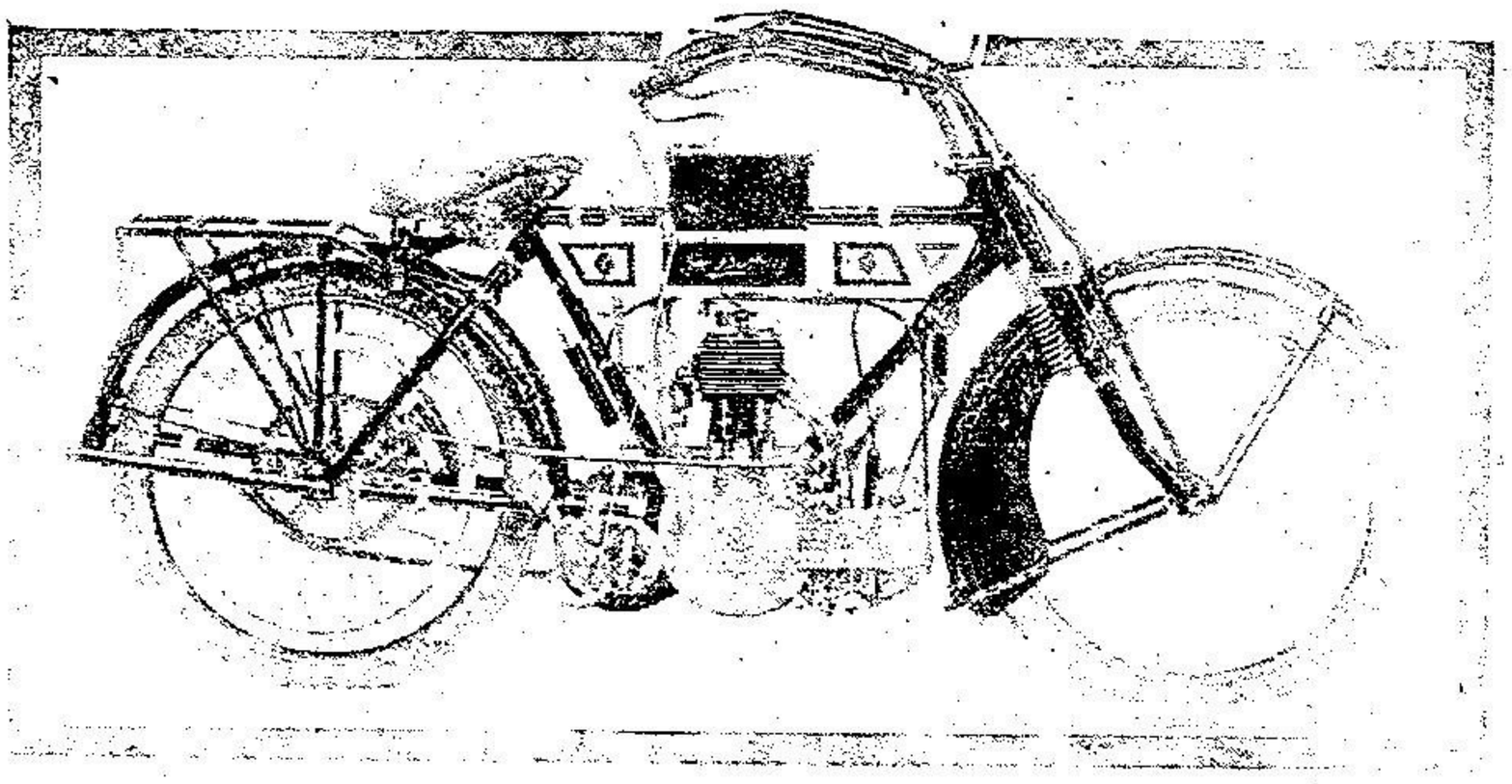
Single-cylinders, Chain-drive, Counter-shaft Gears.



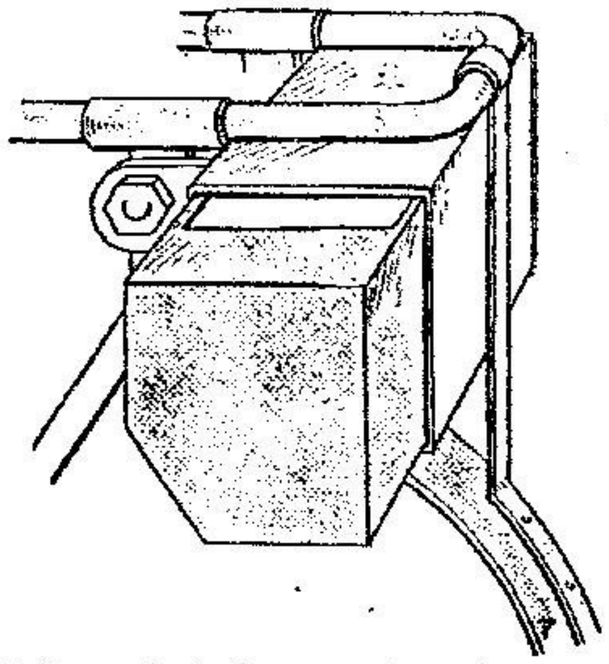
2¼ h.p. A.J.S. chain-driven two-speeder



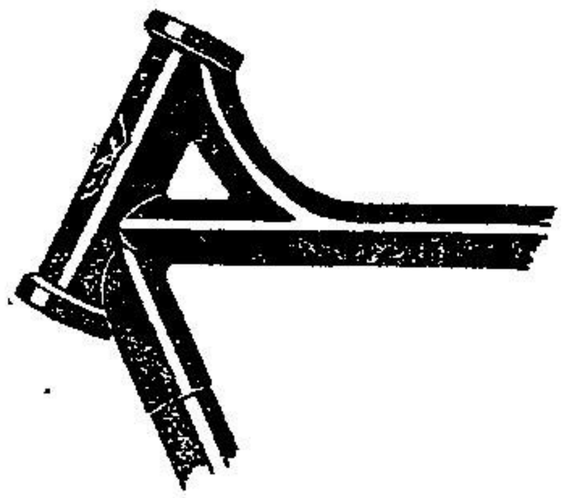
3½ h.p. two-speed single-cylinder Indian.



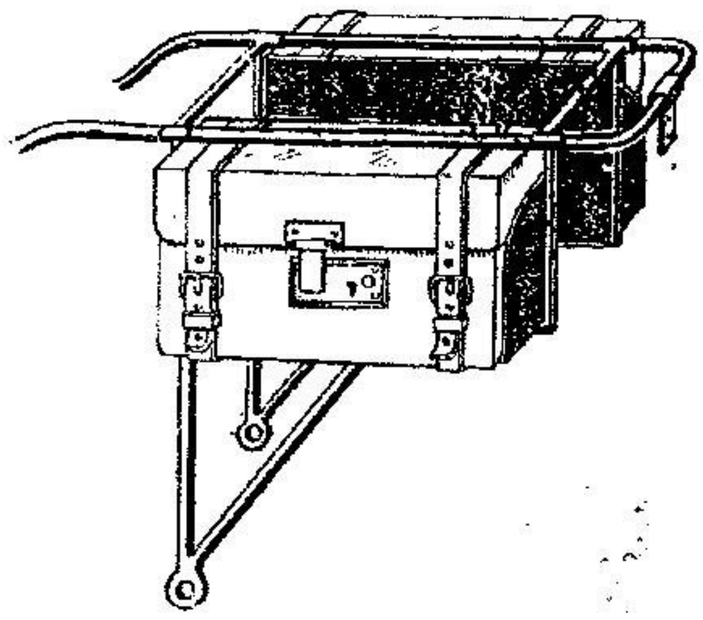
The new 3½ h.p. Bradbury, with chain drive and counter-shaft two-speed gear.



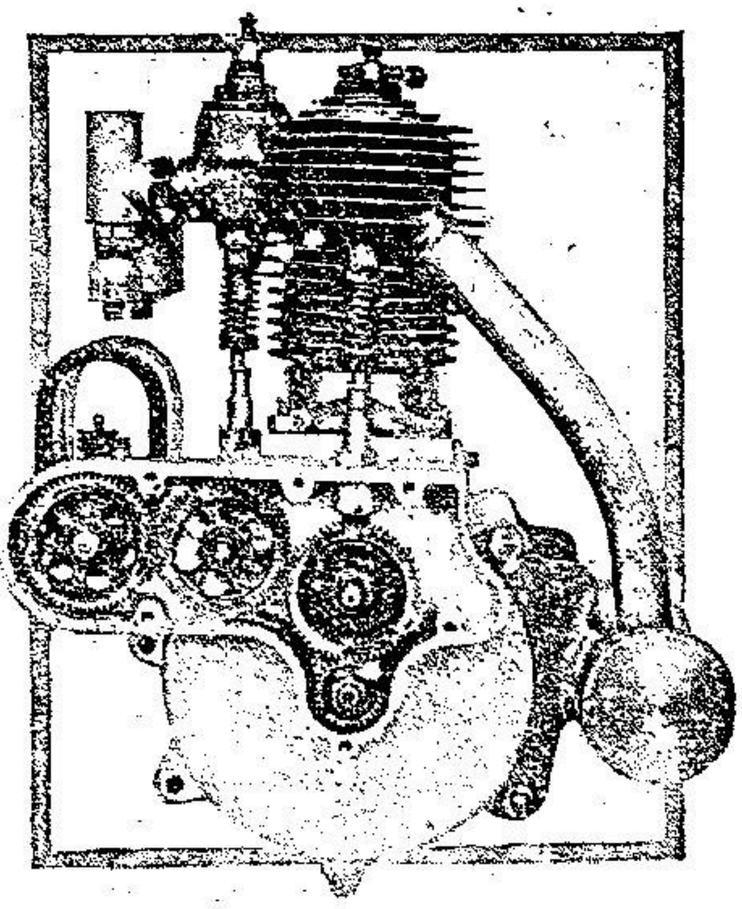
Steel cased toolbox, number plate, and mudguard stay on the new A.J.S.



Design of Douglas steering head.

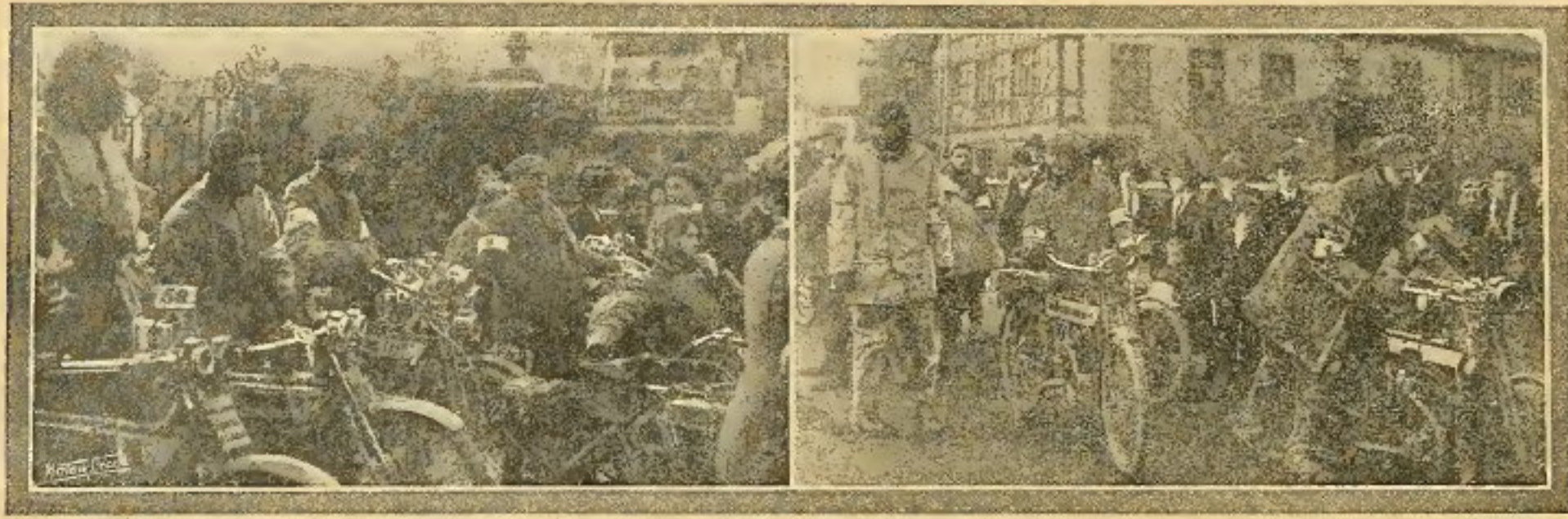


B.S.A. metal supports for pannier bags.



3½ h.p. Quadrant engine showing timing gear and magneto drive.

The brothers Stevens, riding 2½ h.p. A.J.S. machines, braving the water near Ilderton. They ran most consistently.

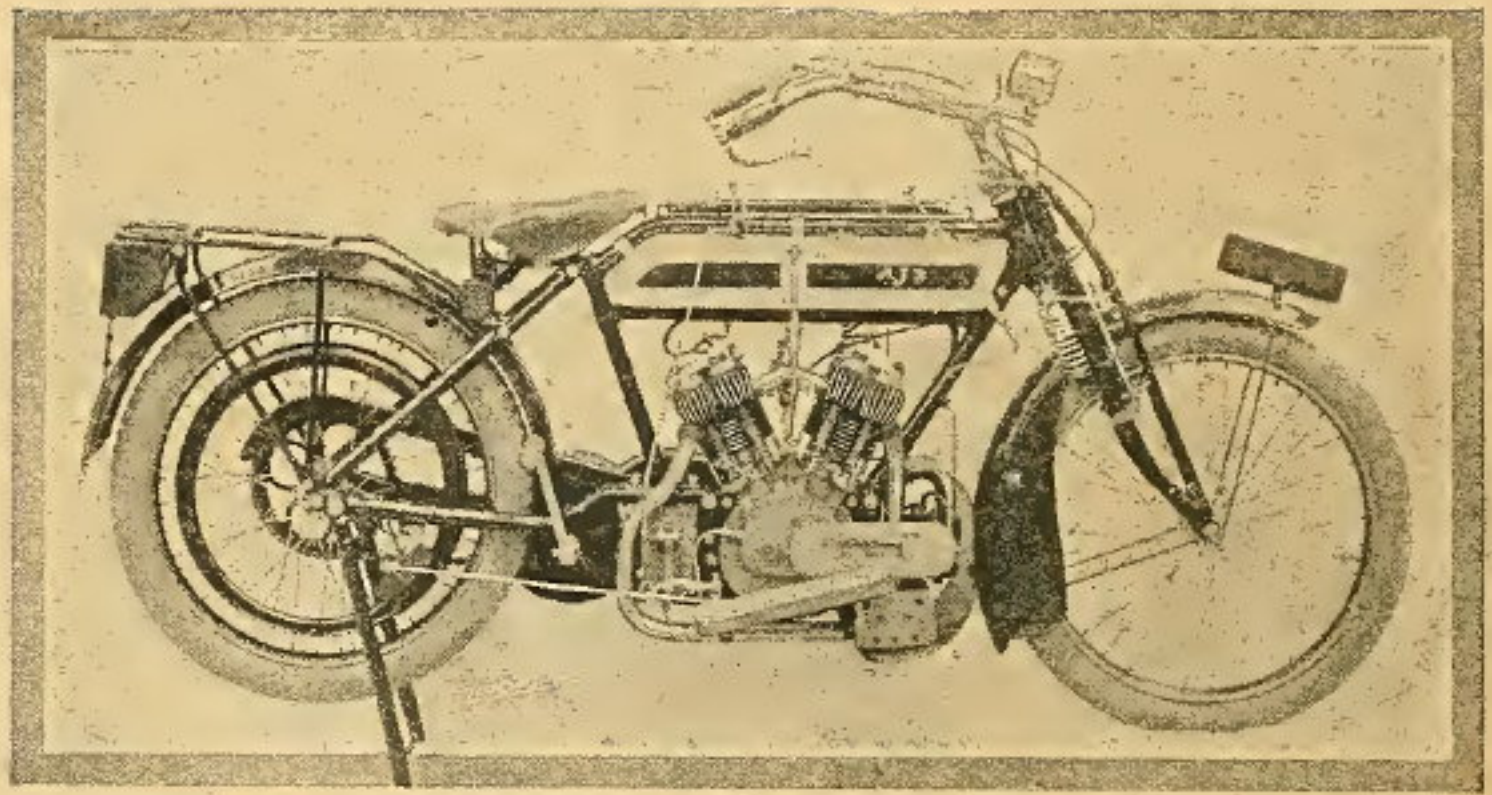


M.C.C. WINTER RUN. PREPARING TO LEAVE SALISBURY.

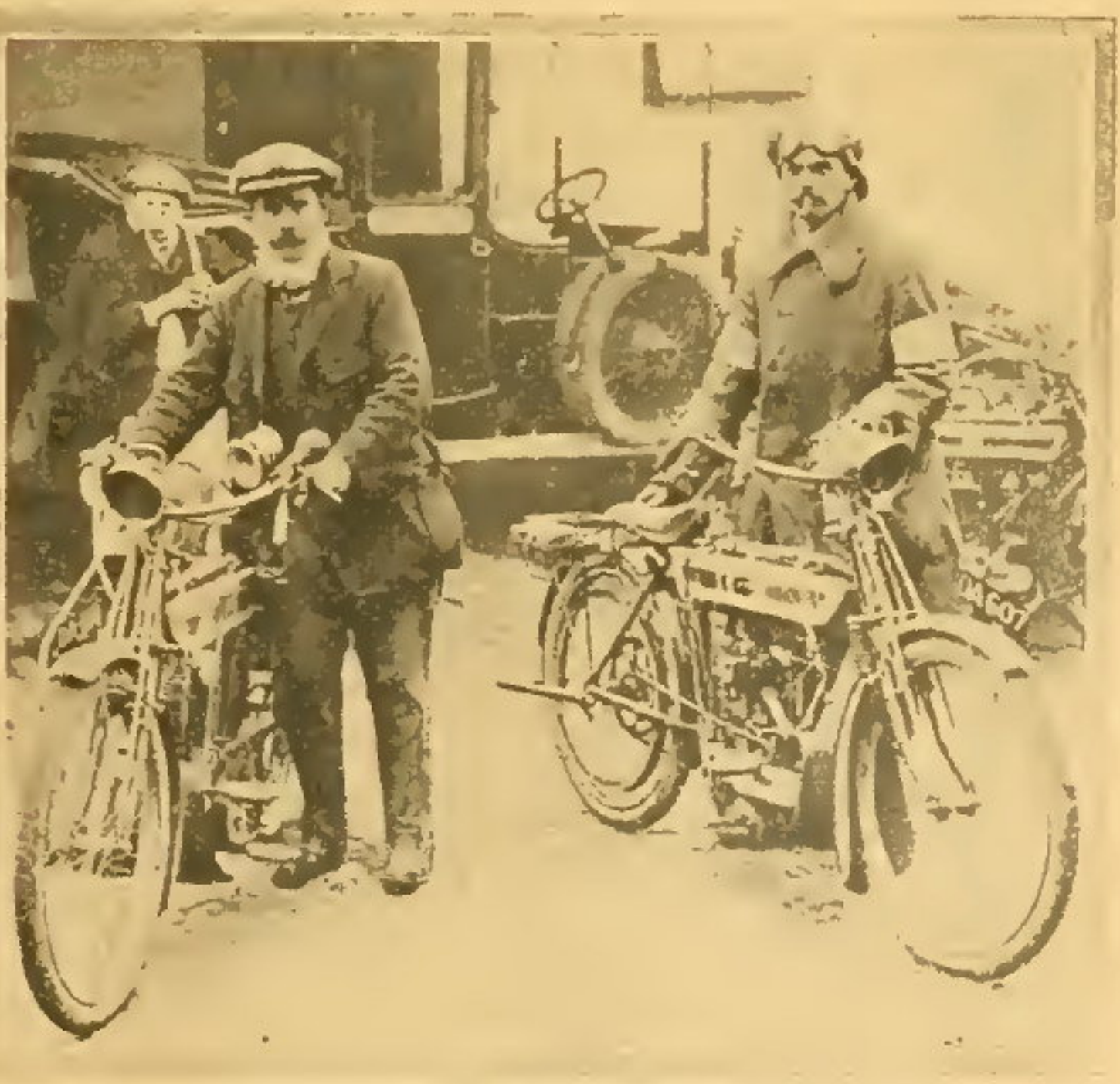
The two ladies in the competition may be seen in this illustration. On the left F. A. McNab and A. L. Ommaney (Trump-Japs).

H. R. Purchase (2½ h.p. A.J.S.) and A.C. Robbins (3½ h.p. Humber and sidecar) restarting on the last stage of the run.

H. & J. Stevens on 2¼ h.p. two-speed A.J.S. lightweights being overtaken by Percy Butler on a 7 h.p. two-speed Indian during the ascent of Lythe Bank. The two aforementioned lightweight riders gained first-class certificates.

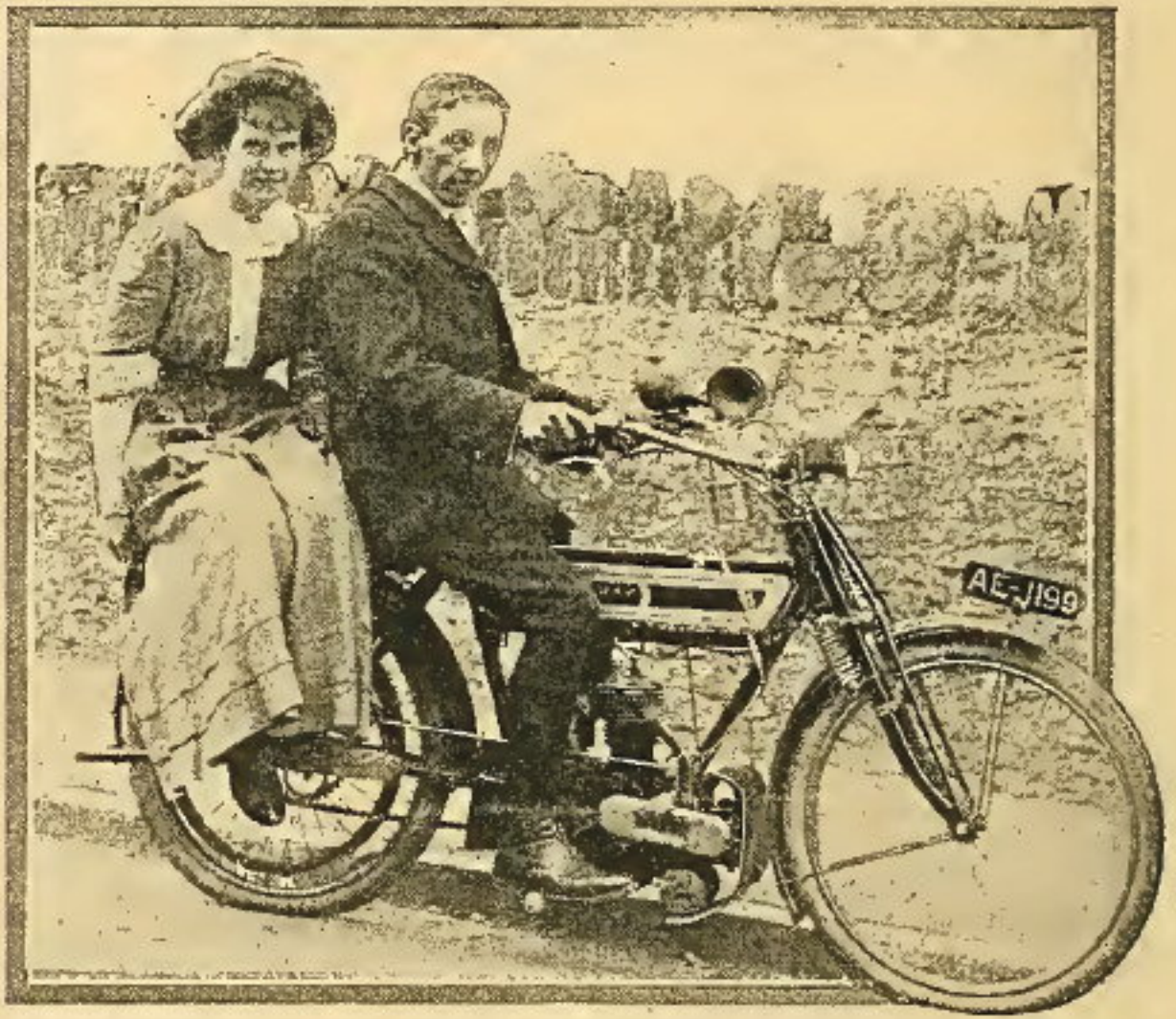


The new A.J.S. twin-cylinder two-speeder, with foot starter.



NON-STOPS ON FOUR SUCCESSIVE OCCASIONS.

J. and A. J. Stevens, who have made non-stop runs in each of the four Quarterly Trials of 1911, riding 2½ h.p. 2-speed chain driven A.J.S. machines.

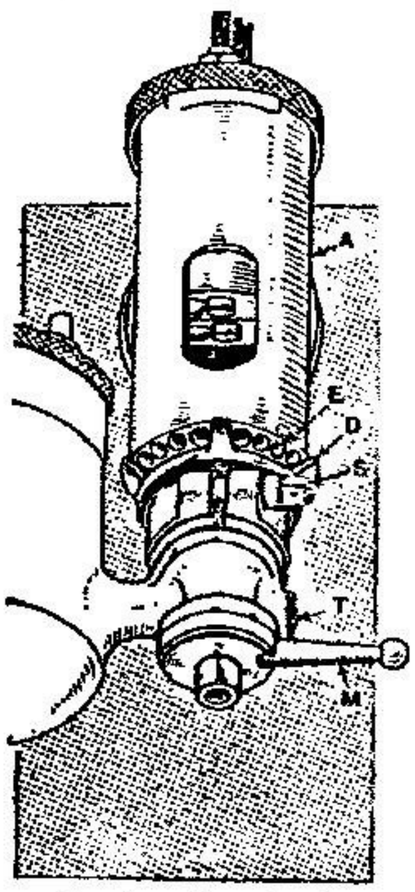


Basil Adams, the writer of letter No. 5980., and his 2½ h.p. A.J.S. with pillion seat.

NEW CARBURETTERS: The 1912 B. & B. The Pugh—a new design.

BY the courtesy of Messrs. Brown and Barlow, who have just moved into new works at Witton, Birmingham, we were recently favoured with an inspection of the 1912 B. and B. carburetters.

For next year there will be three patterns—the standard lightweight, the standard heavyweight, and the racing model. The specification of the universal types is exactly similar, the difference being one of size and weight. The new carburetter is of the adjustable jet and adjustable main air type, and the variation in the supply of petrol and air is obtained in the following manner. In the base of the throttle chamber is placed a plug H, which terminates at its upper end in an eccentric mushroom head. This head moves eccentrically over two holes K (one only shown) in the jet tube J, thereby gradually closing and opening the holes, the size of the jet thereby varying from zero to .036, the combined area of the two holes being equal to a jet opening of .051. It will be seen that it is possible to obtain a big variation in the petrol supply, .051 being a very much bigger jet than is usually employed, even for hill-climbing purposes, on a standard 500 c.c. engine. The lever M for controlling the variable jet is keyed on to the eccentric plug by means of keyways and keys cut on the plug and the boss of the lever. Finally the lever is secured to the eccentric plug by a nut and spring washer P, so that by tightening up the nut more or less the correct frictional contact is obtained.

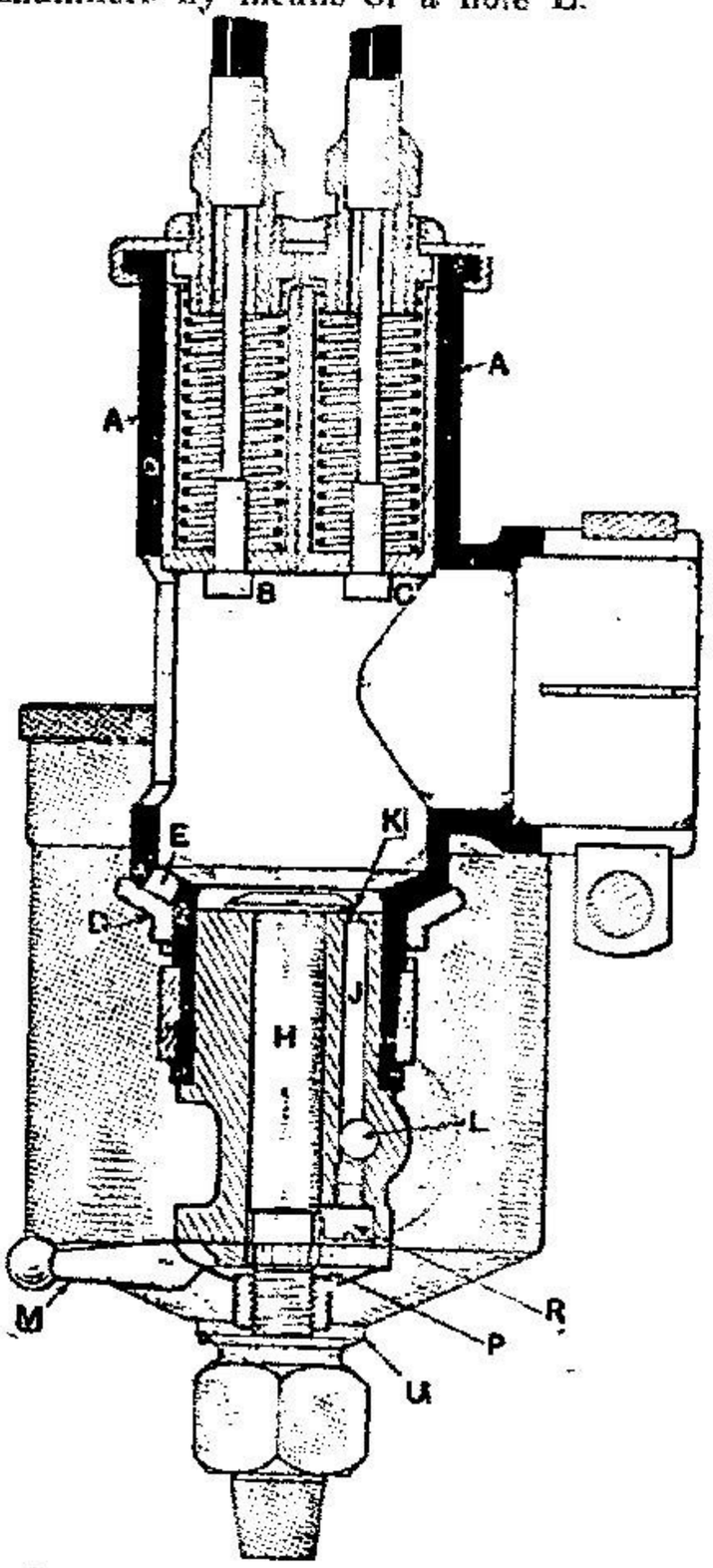


Showing the air inlets. The row of eight holes E admit the main air supply, and by turning the slide D the number open may be reduced to two.

Adjustable Main Air.

The adjustable main air holes E are formed in the base of the throttle chamber, and are closed and opened by a rotatable slide D, which allows the number of holes to be varied from 1 to 8. Supposing that the owner of one of these carburetters wishes to compete in a petrol consumption trial, he would close, say, five or six of the holes in question, turn the lever controlling the variable jet to zero, and gradually open it until the engine was just turning over. So adjusted, the petrol consumption would be very small, but naturally there would be very little power. On the contrary, if he wished to compete in a hill-climbing competition, the air passages would be left fully open and the jet lever placed in the maximum position. With this adjustment the mixture might be too rich, in which case the jet lever would be gradually closed until the correct explosive charge was obtained

The careful rider asks: How can the jet be removed? Examination of the illustration will show that this is an easy matter. The screw R at the base of the jet tube is taken out, and the jet holes can then be readily cleansed. If necessary, the whole of the float chamber, platform, etc., can be bodily removed by undoing the band clip S, disconnecting the petrol pipe. Provision is made for cleaning the passage from float to mixing chambers by means of a hole L.



Sectional view of jet chamber of the 1912 pattern B. and B. carburetter, which has an adjustable jet controlled by the lever M.

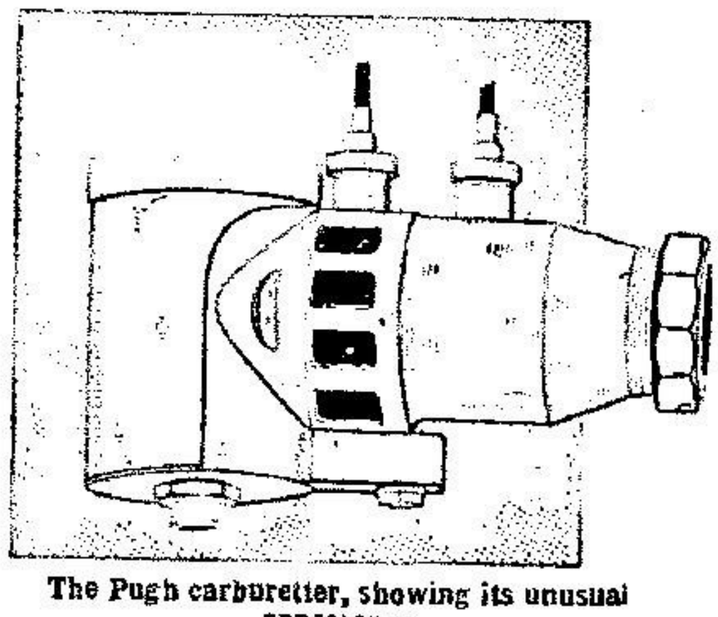
Among the detail improvements to B. and B. carburetters for 1912 may be mentioned: Slides machined from solid brass bars, keyways cut at the sides of the slides coinciding with pegs in the body of the carburetter; the slides rise and fall truly, and the slides cannot be wrongly assembled, as if a rider attempts to insert the slides wrongly the pegs will not allow them to descend to their correct positions until the keyways are opposite their respective pegs. The same binding screw with a square head is used for attaching the carburetter to the induction pipe, clipping the handle-bar control levers to the bar, and connecting the float chamber to the mixing chamber.

A small pocket spanner is provided which fits the square heads, so that the whole carburetter can be taken apart without the use of any other tool.

The only alteration to the float chamber consists of brazing on the threaded portion U, instead of attaching it by means of a screw and locknut.

Pugh Carburetter.

The special features of the Pugh carburetter (patented) is the duplex spraying jet, which is formed by fitting the nozzle proper into an air cone. This air cone has none of the attributes of a choke tube, but partakes of the nature of an injector, and its action is such that not only can the petrol be raised from practically any level in the jet—experiments having proved it to be possible to spray petrol perfectly with the level five inches and more below the top of the nozzle—but also that the petrol is perfectly atomised, and it emerges from the nozzle in the form of a mist or fog instead of in liquid form. All the air passes through the back of the carburetter, and, passing across the petrol mist created by the sprayer, is



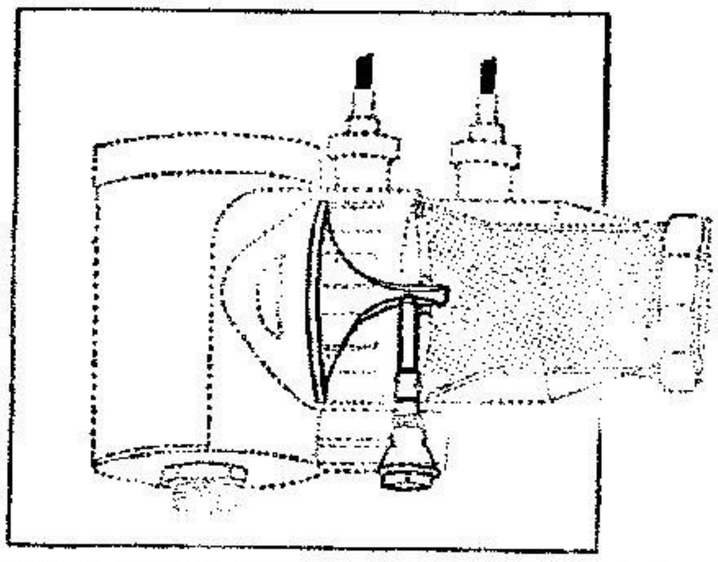
The Pugh carburetter, showing its unusual appearance.

formed into a perfect mixture at all speeds, and the charge enters the engine in the form of gas, *i.e.*, carburetted air.

Owing to the injector action of the duplex sprayer, the question of petrol level becomes absolutely of no account, and the level is set so low in the Pugh carburetter that flooding and consequent waste is impossible.

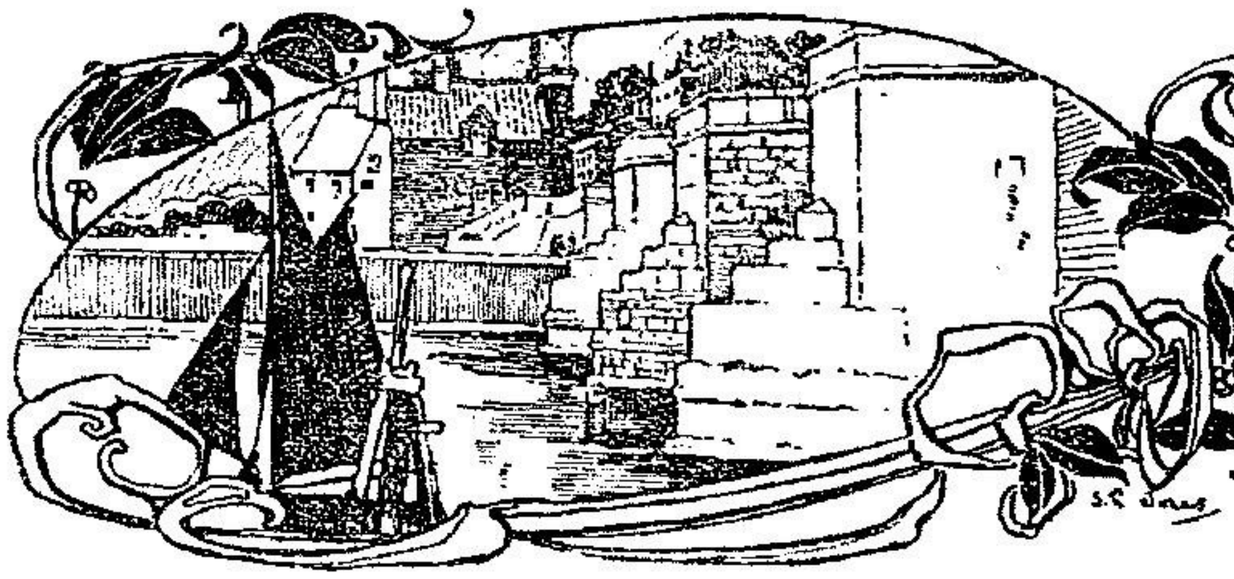
The Pugh carburetter is fitted with an air control lever, which must be opened only about one-quarter of its range of traverse when starting, but immediately after starting the air valve should be opened to its maximum and left there, all the driving being done on the throttle. It is in practice very rarely necessary to close the air lever.

The rack and pinion handle-bar control is worth mentioning, and the small spring clip on the needle valve (patented). Also



View of interior showing the novel method of atomising the petrol by means of an air cone.

the system of adjusting the Bowden cables, and the fact that the cables may be detached from the carburetter without unscrewing any small nuts or screws, or unhooking or unsoldering nipples.



Freight Charges and Duties on Motor Cycles Shipped Abroad.

IN our issue of February 19th, 1908, we published some particulars relating to the cost of shipment of motor cycles from England to colonial and foreign ports. This information was greatly appreciated by our readers—so much so, indeed, that when we decided to bring out the present special Overseas issue we resolved to publish not only the revised rates and duties for the places previously dealt with, but to give them for practically every country in the world where motor cycles are likely to be sent. We very frequently receive enquiries from our readers for information of this kind, and the accompanying table of rates, etc., should therefore prove useful to many who may contemplate sending or taking machines abroad. The date of the issue containing this table should be noted, and the paper kept handy for reference purposes.

Messrs. Davies, Turner, and Co., Ltd., the old-established foreign carriers and underwriters, of 52, Lime Street, London, E.C., supplied us with the particulars which we published on February 19th, 1908, and the same firm has been good enough to furnish us with the very valuable information which we publish this week. Readers should note that on the receipt of exact measurements and weight, Messrs. Davies, Turner, and Co., Ltd., can generally quote more advantageous terms than those given in the table. They will also supply, on application, details of the instances where the consulage charges are extra (these items are marked by an asterisk in our table), and also particulars of the cases where second-hand motor cycles can be sent duty free. We might point out that the prices given are for one machine, as, of course, it is unusual and generally inadvisable for more than one motor cycle to be packed in a single crate. Therefore, to arrive at the cost of freight, duty, etc., on more than one machine, it will, in practically every instance, be only necessary to multiply the price given, by the number of machines to be sent to the same place.

The prices given are for carting, packing, and shipping a motor cycle, when the bulk of the case does not exceed 25 cubic feet and the total weight 3 cwts. The rates are those at present in force, but it should be noted that they are liable to alteration, without notice, at any time.

Name of Country to which the Rates and Duties apply.	Cost of Cartage in London within 4 mls. of the Bank, packing in Cases, Dock Dues, Shipping and Freight per Motor Cycle.	These Duties are compiled from Official Sources, but without Responsibility. % = per centum *ad valorem*.
	£ s. d.	
ANTIGUA		
St. John's	2 15 6	13½ %
ARGENTINE REPUBLIC		
Buenos Ayres	3 2 0	£5 8s. each motor cycle*
AUSTRIA-HUNGARY		
Trieste	2 6 0	£2 10s. each motor cycle
AUSTRALIA		
Adelaide	2 12 0	British manufacture, 25 % Foreign manufacture, 30 %
Brisbane	2 12 0	
Fremantle	2 15 6	
Hobart (Tasmania)	2 15 6	
Launceston (Tasmania)	2 15 6	
Melbourne	2 12 0	
Sydney	2 12 0	
BAHAMAS ISLANDS		
Nassau	2 17 9	5/- each motor cycle
BARBADOES		
Bridgetown	2 5 3	10 %
BELGIUM		
Antwerp	1 11 0	12 %
Brussels	1 13 3	
Ostend	1 10 3	
BERMUDA	2 17 9	5/- each motor cycle
BRAZIL		
Bahia	3 17 6	25 %, or £3 15s. each motor cycle
Rio de Janeiro	3 10 6	
Santos	3 8 9	

Name of Country to which the Rates and Duties apply.	Cost of Cartage in London within 4 mls. of the Bank, packing in Cases, Dock Dues, Shipping and Freight per Motor Cycle.	These Duties are compiled from Official Sources, but without Responsibility. % = per centum *ad valorem*
	£ s. d.	
BULGARIA		
Sofia	3 12 3	£3 1s. per cwt.
CANADA		
Halifax, N.S.	2 5 6	30 %, but if imported from the United Kingdom accompanied by a preferential certificate that the cycles are of British manufacture 20 %
Montreal	2 5 6	
Quebec	2 5 6	
St. John's, N.B.	2 5 6	
Vancouver, B.C.	2 14 9	
Victoria, B.C.	2 14 9	
CEYLON		
Colombo	2 5 3	5½ %
CHINA		
Hong-Kong	2 17 3	Free
Shanghai	3 0 6	5 %
CYPRUS		
Larnaca	2 9 0	10 %
DENMARK		
Copenhagen	1 19 0	£1 13s. 10½d. per cwt.
DOMINICA		
Roseau	2 15 6	12½ %
EGYPT		
Alexandria	2 1 9	8 %
FIJI		
Suva	3 6 3	12½ %
FINLAND		
Helsingfors	2 2 0	£1 4s. each motor cycle
Hango	2 2 0	

Freight Charges and Duties on Motor Cycles Shipped Abroad.

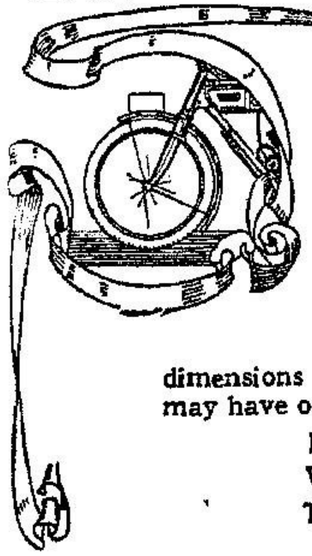
Name of Country to which the Rates and Duties apply.	Cost of Cartage in London within 4 mls. of the Bank, packing in Cases, Dock Dues, Shipping and Freight per Motor Cycle. £ s. d.	These Duties are compiled from Official Sources, but without Responsibility. % = per centum *ad valorem*.
FRANCE		
Bordeaux	1 19 6	£4 9s. 5d. per cwt.
Boulogne	1 11 9	
Marseilles	1 18 3	
Paris	1 10 9	
GERMANY		Weighing each 50 kilos. (about 1 cwt.) or less, £2 9s. 11d. per cwt.; over 50 kilos. (about 1 cwt.) and up to 100 kilos. (about 2 cwts.), £1 17s. 6d. per cwt.; over 100 kilos. (about 2 cwts.) and up to 250 kilos. (about 5 cwts.), £1 15s. per cwt.
Bremen	1 17 0	
Hamburg	1 13 3	
GREECE		
Piræus	1 18 3	10%
GOLD COAST		
Accra	3 8 0	Free
Cape Coast	3 8 0	
GRENADA	2 14 3	10%
GUATEMALA		
San Jose	4 6 6	*
GUIANA (British)		
Demerara	2 8 6	12½% plus 5% on the amount of duty leviable
HAWAII	3 2 6	45%
HAYTI	4 0 3	8/4 each motor cycle*
HOLLAND		
Amsterdam	1 12 0	5%
Rotterdam	1 9 6	
HONDURAS (British)		
Belize	2 19 3	12½%
INDIA		
Bombay	2 1 9	5%
Calcutta	2 1 9	
Karachi	2 1 9	
Madras	2 1 9	
ITALY		
Genoa	1 18 3	£3 1s. each motor cycle
Leghorn	1 18 3	
Naples	1 18 3	
JAPAN		
Kobe	2 19 0	10%
Yokohama	2 19 0	
JAMAICA		
Kingston	2 5 3	16⅔%
LIBERIA		
Monrovia	3 8 0	12½%
MONTSERRAT		
Plymouth	2 16 9	13⅓%
MEXICO		
Vera Cruz	1 18 3	£5 14s. 1d. per cwt.
MONACO		
Monte Carlo	2 11 6	£1 0s. 5d. per cwt.
MOROCCO		
Tangiers	2 0 3	12½%
MAURITIUS	2 7 3	12%
NEWFOUNDLAND		
St. John's	2 5 6	40%
NEW ZEALAND		
Auckland	2 12 0	30%, but if of British manufacture accompanied by preferential certificate 20%
Dunedin	2 13 9	
Lyttleton	2 13 9	
Wellington	2 12 0	

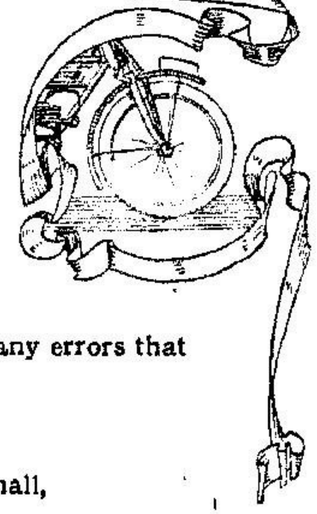
Name of Country to which the Rates and Duties apply.	Cost of Cartage in London within 4 mls. of the Bank, packing in Cases, Dock Dues, Shipping and Freight per Motor Cycle. £ s. d.	These Duties are compiled from Official Sources, but without Responsibility. % = per centum *ad valorem*.
NIGERIA		
Lagos	3 4 9	Free
NICARAGUA		
Corinto	4 6 6	If declared on invoice and b/l as "automovil" 7½d. per kilo, if declared as "bicicleta" 1/10½ per kilo.*
NORWAY		
Christiania	1 19 0	£1 13s. 4d. each motor cycle
PERU		
Callao	3 9 3	3/- per kilo.
PORTUGAL		
Lisbon	1 18 3	£11 5s. each motor cycle*
ROUMANIA		
Bucharest	3 16 9	Under 100 kilos. (or about 2 cwts.), £1 16s. 7d. per cwt.; between 250 kilos. (about 5 cwts.) and 100 kilos. (about 2 cwts.), £1 10s. 6d. per cwt.
RUSSIA		
St. Petersburg	1 18 0	With 2 wheels, £2 2s. 3d. each With 3 wheels, £7 7s. 9d. each With 4 wheels £14 15s. 7d. ,,
NEVIS		
Charlestown	4 16 9	11%
SAINT LUCIA	2 15 6	15%
SAINT VINCENT	2 15 6	10%
SERVIA		
Belgrade	3 3 3	12%
SIAM		
Bangkok	2 17 3	3%
SIERRA LEONE	3 4 9	10%
SPAIN		
Barcelona	2 1 9	£6 2s. per cwt.*
Bilbao	1 18 3	
Gyjon	2 1 9	
Santander	1 18 3	
SOUTH AFRICA (British)		
Capetown	2 13 9	15%, but if accompanied by certificate that the cycles are of British manufacture 12%
Delagoa	3 0 6	
Durban (Natal)	2 19 0	
East London	2 18 3	
Port Elizabeth	2 13 9	
STRAITS SETTLEM'TS		
Penang	2 13 9	Free
Singapore	2 13 9	
SWEDEN		
Stockholm	1 19 0	15%
Gothenburg	1 19 0	
SWITZERLAND		
Basle	1 16 0	£1 4s. 5d. per cwt.
TRINIDAD		
Port of Spain	2 5 3	£2 10s. each motor cycle
TOBAGO	2 14 0	£2 10s. each motor cycle
TURKEY		
Constantinople	1 15 3	11%
U.S.A.		
Boston	2 5 6	45%*
New York	2 5 6	
Philadelphia	2 5 6	
VIRGIN ISLANDS (Dan.)		
St. Thomas	2 18 9	10%

* Consulage charges extra.

To find cubic measurement of a motor cycle when packed in a case, measure its greatest height, breadth, and length, add six inches to height and two inches to breadth and length for packing, and cubic contents = height × breadth × length.

THE MOTOR CYCLE BUYERS' GUIDE OF 1912 MODELS





COMPLETE SPECIFICATIONS of all MOTOR CYCLES on the BRITISH MARKET.

This Guide appears at a most opportune time, when actual and prospective motor cyclists are considering the question of a new mount and what make they shall order at the Olympia Show, which opens on Monday next. Armed with a copy of this issue a reader may consider at his leisure the specifications of the numerous machines he has in view, and again at Olympia be in possession of full details which would occasion much questioning of busy stand attendants. A straight edge or rule laid across the page renders the line much more easy to follow. Owing to the fact that one or two new models were not completed at the time this issue went to press, occasional omissions in dimensions and other particulars will be found. Whilst every effort has been made to avoid inaccuracies we cannot be held responsible for any errors that may have occurred. To save space the following abbreviations have been used:

INLET VALVES.—A. = Automatic. M. = Mechanical. S.S. = Valves Side by Side.
VARIABLE GEARS.—C. = Counter-shaft. E. = Engine-shaft. H. = Hub. V.P. = Variable Pulley. F.E. = Free Engine.
TYRES.—A. = Avon. C. = Clincher. Con. = Continental. D. = Dunlop. G. = Goodrich. H. = Hutchinson. K. = Kempshall, L. = Liberty. M. = Michelin. Mid. = Midland. Mo. = Moseley. P. = Palmer. P.C. = Palmer Cord.

SINGLE-CYLINDER BICYCLES.

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
A.J.S.	2½ A.J.S.	315	70 × 82	M., S.S.	Amac	A.J.S., C.	Chain	5⅝ & 11 to 1	30″	6″	2¼″ H.	Rigid	51″	140	No	£46 4
A.J.S.	2½ A.J.S.	315	70 × 82	M., S.S.	Amac	—	Belt	5¼ to 1	30″	6″	2¼″ H.	Rigid	51″	130	Yes	£38 17
Alcyon	¾ Alcyon	—	—	M., S.S.	Claudel-Hobson	Clutch	Chain	to order	27″	5″	2″ H.	Rigid	48″	75	Yes	–
Alcyon	2 Alcyon	247	62 × 82	M., S.S.	Claudel-Hobson	V.P.	Belt	to order	27″	5″	2″ H.	Rigid	48″	90	Yes	£39 0
Allday	3½ Allday	499	85 × 88	M., S.S.	B. & B. or Amac	Roc, H.	Belt 1″	4½ & 9 to 1	29½″	4½″	2¼″ D. or C.	Rigid	50″	180	No	-
Anglian	2¾ De Dion	327	74 × 76	A.	De Dion	Anglian, H.	—	to order	29″	5″	2¼″ P.C.	Rigid	55½″	160	No	£45 0
Anglian	2¾ De Dion	327	74 × 76	A.	B. & B.	—	Belt ⅞″	to order	29″	5″	2¼″ P.C.	Rigid	55½″	146	No	£37 10
Ariel T.T.	2½ Ariel	292	71 × 75	M., S.S.	B. & B.	—	Belt ¾″	6 to 1	31″	5¾″	2″ L.	Rigid	49″	120	Yes	*£38 0
Ariel	3½ Ariel	482	85 × 85	M., S.S.	B. & B.	Ariel, E.	Belt ⅞″	4 & 5½ to 1	32″	5″	2½″ L.	Rigid	51″	180	No	†£50 0
Ariel T.T.	3½ Ariel	482	85 × 85	M., S.S.	B. & B.	—	Belt ⅞″	4 & 5½ to 1	30″	4″	2¼″ L.	Rigid	49″	160	No	£46 10
Arno	3½ Arno	499	84 × 89	M., S.S.	B. & B.	—	Belt ⅞″	—	27″	4½″	2½″ C. or H.	Rigid	50″	186	Yes	£45 0
A.S.L.	3½ Precisn or Jap	499	85 × 88	M., S.S.	Amac	—	Belt ⅞″	4½ to 1	27″	6″	2½″ M.	Spring	49″	180	No	£52 10
A.S.L.	3½ Precisn or Jap	488	85½ × 85	M., S.S.	Amac	—	Belt ⅞″	4½ to 1	27″	6″	2½″ M.	Spring	49″	180	No	£52 10
Bat	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	P. & M.	C. & B.	5 & 7½ to 1	32″	5½″	2¼″ D.	Spring	51″	210	No	£61 2
Bat	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	Belt	5 to 1	32″	5½″	2¼″ D.	Spring	51″	190	No	£48 10
Bat T.T.	3½ J.A.P.	493	90 × 77½	M., S.S.	B. & B.	—	Belt	to order	28″	3½″	2¼″ D.	Rigid	50″	155	No	£50 0
Bradbury	3½ Bradbury	554	89 × 89	M., S.S.	B. & B.	—	Belt	4 to 1	29″	5½″	2¼″ D.	Rigid	52″	185	Yes	£48 0
Bradbury	3½ Bradbury	554	89 × 89	M., S.S.	B. & B.	H., F.E.	Belt	4 to 1	29″	5½″	2¼″ D.	Rigid	52″	195	Yes	£54 10
Bradbury	3½ Bradbury	554	89 × 89	M., S.S.	B. & B.	2-speed, C.	Chain	5 & 9 to 1	29″	5½″	2¼″ D.	Rigid	52″	210	No	£58 0
Brough	2½ Brough	396	77 × 85	M., S.S.	B. & B.	—	Belt ⅞″	Variable	30″	4½″	2″ Con.	Rigid	59″	100	Yes	£38 0
Brough	2½ Brough	396	77 × 85	M., S.S.	B. & B.	Brough, E.	Belt ⅞″	Variable	30″	4½″	2″ Con.	Rigid	59″	110	Yes	£45 0
Brough	3½ Brough	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞″	Variable	30″	4½″	2¼″ Con.	Rigid	59½″	160	No	£45 0
Brough	3½ Brough	499	85 × 88	M., S.S.	B. & B.	Brough, E.	Belt ⅞″	Variable	30″	4½″	2¼″ Con.	Rigid	59½″	170	Yes	£50 0
Brown	2½ Precision	292	70 × 76	M., S.S.	B. & B.	—	Belt	6 to 1	30″	5¾″	2″ D.	Rigid	49¾″	96	Yes	£36 0
Brown	3½ Brown	499	86 × 86	M., S.S.	B. & B.	—	Belt	to order	31½″	5″	2¼″ C.	Rigid	51¾″	165	Yes	£48 0

* With free engine, £4 extra. † With adjustable pulley, £5 less; or hub two-speed gear, £5 extra.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
Brown	3½ Brown	499	86 × 86	M., S.S.	B. & B.	Bowden, C.	Belt	to order	31½"	5"	2¼" C.	Rigid	51¾"	172	No	£58 0
Brown T.T.	3½ Brown	499	86 × 86	M., S.S.	B. & B.	—	Belt	to order	29"	5"	2¼" D.	Rigid	50"	160	No	£48 0
B.S.A.	3½ B.S.A.	499	85 × 88	M., S.S.	B. & B.	B.S.A., H.	Belt	Variable	28"	4"	2¼" D.	Rigid	52¼"	195	Yes	£60 0
B.S.A.	3½ B.S.A.	499	85 × 88	M., S.S.	B. & B.	—	Belt	Variable	28"	4"	2¼" D.	Rigid	52¼"	185	Yes	£50 0
B.S.A. Colonial	3½ B.S.A.	499	85 × 88	M., S.S.	B. & B.	Colonial, F.E.	Belt	Variable	28"	4"	2¼" D.	Rigid	52¼"	188	Yes	Special
B.S.A. T.T.	3½ B.S.A.	499	85 × 88	M., S.S.	B. & B.	T.T.	Belt	3½ & 5½ to 1	28"	—	2" D.	—	49"	175	No	£48 10
Buck	4 Buck	604	90 × 95	M., S.S.	B. & B.	Roe, H.	Belt	4½ & 9 to 1	29"	5"	2¼" Con.	Rigid	52"	185	—	£50 0
Buck	4 Buck	604	90 × 95	M., S.S.	B. & B.	—	Belt	Variable	29"	5"	2¼" Con.	Rigid	52"	180	Option	£47 10
Calcott	2¼ Calcott	237	63 × 76	M., S.S.	B. & B.	—	Belt	6½ to 1	33"	8"	1¾" D.	Rigid	48½"	100	Yes	£33 12
Calthorpe	2¾ Calthorpe	292	70 × 76	M.	—	—	Belt ¾"	to order	32"	7"	2" M.	Rigid	52"	110	Option	*£35 10
Calthorpe	3½ Calthorpe	499	85 × 88	M.	B. & B.	—	Belt ⅞"	4½ to 1	31"	5"	2¼" M.	Rigid	52"	156	Yes	†£44 0
Calthorpe T.T.	3½ Calthorpe	499	85 × 88	M.	B. & B.	—	Belt ⅞"	3½ to 1	31"	4½"	2¼" M.	Rigid	48"	130	No	£44 0
Calthorpe	4¾ Calthorpe	611	90 × 96	M.	B. & B.	Calthorpe, C.	B. & C.	4½ & 8 to 1	31"	4½"	2¼" M.	Rigid	52"	180	No	£57 10
Campion	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	Belt	4½ to 1	32"	5"	2¼" D.	Rigid	52"	160	Yes	‡£43 0
Centaur	2	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝"	6 to 1	32"	6½"	1¾" D.	Rigid	50½"	100	Yes	£37 0
Centaur	2	198	60 × 70	M., S.S.	B. & B.	Armstrong, H.	Belt ⅝"	4 to 8 to 1	32"	6½"	2" D.	Rigid	50½"	105	Yes	£47 10
Centaur	2	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝"	6 to 1	30"	6½"	2" D.	Open	50½"	105	Yes	§£42 0
Centaur	3½	499	84 × 90	M., S.S.	B. & B.	—	Belt ⅞"	4 to 1	28"	4"	2¼" D.	Rigid	53½"	180	Yes	£47 10
Corah T.T.	3½ J.A.P.	488	85½ × 85	M., S.S.	Binks	2-speed, H.	Belt ⅞"	4 & 6 to 1	28"	4"	2¼" D.	Rigid	53½"	210	No	£52 10
Corah	3½ J.A.P.	488	85½ × 85	M., S.S.	Binks	—	Belt ⅞"	Adjustable	28"	4"	2¼" Corah	Rigid	50"	180	No	a£47 0
Corah	4 Corah	535	88 × 88	Valveless	Binks	Clutch	Belt ⅞"	Adjustable	30"	5"	2¼" Corah	Rigid	52"	190	Yes	‖£53 0
Corah	4¼ J.A.P.	592	90 × 93	M., S.S.	Binks	Corah	Worm	4½ & 8½ to 1	28"	4½"	2¼" Corah	Rigid	56"	190	No	£55 0
Dene	2¼ Precision	292	70 × 76	M., S.S.	B. & B.	Bowden, C.	Chain	4½ & 8½ to 1	30"	5"	2¼" Corah	Rigid	52"	190	No	£56 0
Dene	3½ Precision	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt ⅞"	to order	29½"	6"	2¼"	Rigid	50"	160	No	£46 0
Dene	3½ Precision	499	85 × 88	M., S.S.	—	—	Belt 1"	to order	30½"	5½"	2¼"	Rigid	51½"	175	No	£46 0
Dene	4¼ Precision	597	89 × 95	M., S.S.	B. & B.	Armstrong, H.	Belt 1"	to order	30½"	5½"	2¼"	Rigid	—	190	No	£56 0
Dene	4¼ Precision	597	89 × 95	M., S.S.	B. & B.	—	Belt 1"	to order	30½"	4¾"	2¼" & 2¼"	Rigid	53"	200	No	£52 0
Edmund, Chas.	3½ J.A.P.	488	85½ × 85	M., S.S.	—	Armstrong, H.	Belt 1"	to order	30½"	4¾"	2½" & 2¼"	Rigid	53"	215	No	£62 0
E.L.I.	2¾ Precision	292	70 × 76	M., S.S.	B. & B.	—	Belt	to order	—	—	2¼"	Spring	—	—	No	—
E.L.I.	3¾ Precision	499	85 × 88	M., S.S.	B. & B.	—	Belt	—	29"	4½"	2" D.		51"	—	Yes	¶£38 0
E.L.I.	4¾ Precision	597	89 × 96	M., S.S.	B. & B.	—	Belt	—	29"	4½"	2¼" D.		51"	—	Yes	£42 10
Elswick	2¼ Elswick	292	70 × 76	M., S.S.	B. & B.	Bowden, C.	C. & B.	—	29"	4½"	2¼" D.		51"	—	No	£51 10
Elswick	2¾ Elswick	292	70 × 76	M., S.S.	B. & B.	Adj. pulley.	Belt ¾"	5 & 6¼ to 1	30"	5¼"	2" D.	Rigid	50"	100	Yes	£40 0
Elswick	3¾ Elswick	499	85 × 88	M., S.S.	B. & B.	Elswick, F.E.	Belt ¾"	5½ to 1	30"	5¼"	2" D.	Rigid	50"	106	Yes	£47 0
Elswick	3¾ Elswick	499	85 × 88	M., S.S.	B. & B.	Adj. pulley.	Belt ⅞"	4¼ & 5½ to 1	31"	6"	2¼" D.	Rigid	54"	150	Yes	£48 0
Enfield	2¼ Enfield	241	64 × 75	M., S.S.	Amac	Elswick, H.	Belt ⅞"	4½ & 7 to 1	31"	6"	2¼" D.	Rigid	54"	158	Yes	£55 0
Excelsior	3½ Excelsior	499	85 × 88	M., S.S.	B. & B.	Enfield, C.	Chain	6½ & 9 to 1	30"	6"	2" D.	Open	53"	130	No	£52 10
Excelsior	4½ Excelsior	650	86 × 112	M., S.S.	B. & B.	Adj. pulley.	Belt	3½ & 5½ to 1	30"	5"	2¼" P.C.	Rigid	54"	—	No	b£47 15
F.N.	2¼ F.N.	249	65 × 75	M., S.S.	F.N.	Adj. pulley.	Belt	3½ & 5½ to 1	30"	5"	650×65 mm.	Rigid	54"	—	No	b£55 3
Gamage	3½ W. & P.	482	85 × 85	M., S.S.	B. & B.	2-speed, C.	Bevel	6 & 10 to 1	30"	7"	2" b., 1¾" f.	Rigid	50"	140	Yes	c£47 5
Grandex	2¼ Precision	292	70 × 76	M., S.S.	B. & B.	—	Belt	Adjustable	—	—	2¼" D.	Rigid	—	—	Yes	£45 0
Grandex	2¾ Precision	292	70 × 76	M., S.S.	B. & B.	N.S.U., E.	Belt ¾"	to order	27"	—	2" P.	Rigid	—	110	Yes	£40 19
Grandex	2¾ Precision	292	70 × 76	M., S.S.	B. & B.	—	Belt ¾"	to order	27"	—	2" P.	Rigid	—	100	Yes	£34 1
Grandex	3¾ Precision	499	85 × 88	M., S.S.	Amac	Armstrong, H.	Belt ⅞"	to order	27"	—	2" H.	Rigid	—	120	Yes	£47 3
Grandex	4¾ Precision	597	89 × 96	M., S.S.	B. & B.	Albion, H.	Belt ⅞"	to order	27"	—	2¼" P.	Rigid	—	168	—	£51
						F.E., H.	Belt 1"	to order	28"	—	2¾" P.	Rigid	—	190	—	£52 10

* Free engine hub, £4 10s. extra. † Free engine hub, £5 extra. ‡ Roe hub and no pedals, £5 extra; Precision and Peugeot engines same price. § Armstrong hub, £10 10s. extra. ¶ Bowden two-speed C., £5 10s. extra. ‖ Albion hub, two-speed, £2 extra. a With J.A.P. racing engine, £2 extra. b Free engine, £4 15s. extra, including pedals. c As a tricycle, £10 10s. extra.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheel-Base.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
Handy Hobart..	2½ Hobart	202	70 × 76	M., S.S.	B. & B.	—	Belt ¾"	5 to 7½ to 1	30"	5¾"	— H.	Rigid	52"	118	Yes	—
Handy Hobart..	2½ Hobart	300	70 × 78	M., S.S.	B. & B.	Armstrong, H.	Belt ¾"	—	30"	6"	— H.	Open	52"	130	Yes	—
Handy Hobart..	3½ Hobart	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞"	4½ to 7 to 1	29½"	6"	— H.	Rigid	54"	170	Yes	—
Hazel	2½ J.A.P.*	292	70 × 76	—	Amac or B. & B.	N.S.U.	Belt ¾"	5½ to 1	29"	6½"	2" H.	Either	43"	110	Yes	£36 15
Hazel	3½ J.A.P.*	488	85½ × 85	M., S.S.	Amac or B. & B.	N.S.U.	Belt ⅞"	4½ to 1	29"	5½"	2¼"	Either	44"	145	Option	£46 4
Hazel	3½ J.A.P.*	499	85 × 88	M., S.S.	Amac or B. & B.	N.S.U.	Belt ⅞"	4½ to 1	29"	5½"	2¼"	Either	44"	145	Option	£46 4
Hazelwood	2¾ J.A.P.	292	70 × 76	M., S.S.	B. & B.	Armstrong, H.	Belt ¾"	5, 7, 10 to 1	27"	6"	2" D.	Rigid	53½"	135	Yes	£49 7
Humber	2 Humber	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝"	6 to 1	32"	6½"	1¾" D.	Rigid	50½"	100	Yes	£37 0
Humber	2 Humber	198	60 × 70	M., S.S.	B. & B.	Armstrong, H.	Belt ⅝"	4 to 8 to 1	32"	6½"	2" D.	Rigid	50½"	105	Yes	£47 10
Humber	2 Humber	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝"	6 to 1	30"	6½"	2" D.	Open	50½"	105	Yes	†£40 0
Humber	3½ Humber	499	84 × 90	M., S.S.	B. & B.	—	Belt ⅞"	4 to 1	28"	4"	2¼" D.	Rigid	53¼"	180	Yes	£47 10
Humber	3½ Humber	499	84 × 90	M., S.S.	B. & B.	Humber, H. ..	Belt ⅞"	4 & 6 to 1	28"	4"	2¼" D.	Rigid	53¼"	210	No	£52 10
Indian	3½ Indian	497	82½ × 93	M., O.	Indian	F.E.	Chain	4.4 to 1....	30"	6"	2½"	Rigid	53"	—	No	£55 0
Indian	3½ Indian	497	82½ × 93	M., O.	Indian	Indian, C.	Chain	4.4 & 7 to 1	30"	6"	2½"	Rigid	55"	—	No	£63 0
Ivy-Precision ..	2½ Precision ...	292	70 × 76	M., S.S.	B. & B.	—	Belt ⅞"	to order ..	29"	6"	2" D.	Rigid	51"	120	Yes	£35 0
Ivy-Precision ..	3½ Precision ...	499	85 × 88	M., S.S.	Amac	—	Belt ⅞"	to order ..	31"	6"	2¼" D.	Rigid	53"	168	Yes	‡£42 0
Ivy-Precision ..	4½ Precision ...	597	89 × 96	M., S.S.	B. & B.	—	Belt 1"	to order ..	31"	6"	2½" P.	Rigid	53"	178	Option	£46 10
Ixion	3½ Precision ...	499	85 × 88	M., S.S.	Amac	—	Belt ⅞"	4½ to 1	29½"	4½"	2¼"	Rigid	52"	156	Yes	£42 0
Ixion T.T.	3½ J.A.P.	488	85½ × 85	M., S.S.	Amac	—	Belt ⅞"	4 to 1	29"	4"	2¼"	Rigid	50"	150	No	£46 0
Ixion	4½ Precision ...	597	89 × 96	M., S.S.	Amac	Bowden, C. ...	C. & B.	4¾ & 7¾ to 1	30"	3½"	2½"	Rigid	54"	—	No	£56 0
James	3½ James	557	86 × 96	M., S.S.	B. & B. or Amac	—	Belt ..	4¾ to 1	26"	4⅜"	2¼" D.	Rigid	53"	190	Option	£48 15
James	3½ James	557	86 × 96	M., S.S.	B. & B.	F.E., H.	Belt ..	4¾ to 1	26"	4⅜"	2¼" D.	Rigid	53"	200	Yes	£55 0
James	3½ James	557	86 × 96	M., S.S.	B. & B.	Armstrong, H.	Belt ..	4½ to 9 to 1	26"	4⅜"	2¼" D.	Rigid	50"	220	No	£58 0
James	3½ James	557	86 × 96	M., S.S.	B. & B.	James, C.	Chain	4½ & 8½ to 1	26"	4⅜"	2¼" D.	Rigid	53"	220	No	£58 0
Kerry-Abingdon	3½ Abingdon ...	499	85 × 88	M., S.S.	B. & B.	Adj. P.	Belt ..	4 to 1	29 or 27"	8"	2½" Kerry	Rigid	52"	180	Yes	£47 10
Kerry-Abingdon	3½ Abingdon ...	499	85 × 88	M., S.S.	B. & B.	F.E., H.	Belt ..	4 to 1	29"	8"	2½" Kerry	Rigid	52"	188	Yes	£53 11
Kerry-Abingdon	3½ Abingdon ...	—	—	—	—	2-speed, H. ...	B. & C.	4¼ & 7¾ to 1	29 or 27"	8"	2½" Kerry	Rigid	52"	194	No	£56 14
Kynoch	2½	292	70 × 76	M., S.S.	B. & B.	—	Belt ..	5 to 1	29"	—	2" D. or P.	Rigid	—	—	—	‖£35 0
Kynoch	3½	499	85 × 88	M., S.S.	B. & B.	—	Belt ..	4½ to 1	29"	—	2¼" D. or P.	Rigid	—	—	Yes	£45 0
Kynoch	3½	499	85 × 88	M., S.S.	B. & B.	B.S.A., H., F.E.	Belt ..	4½ & 8½ to 1	29"	—	2¼" D. or P.	Rigid	—	—	Yes	£55 0
Levis	2¼ Levis, 2-str.	211	62 × 70	None	Amac	—	Belt ⅜"	6 to 1	28½"	5¼"	2" H.	Spring	46"	85	No	£33 12
Levis	2¼ Levis, 2-str.	211	62 × 70	None	Amac	F.E., H.	—	6¼ to 1	29½"	4"	2" H.	Spring	57"	110	No	£44 2
Levis	2½ Levis, 2-str.	269	70 × 70	None	Amac	—	Belt ⅜"	6 to 1	30½"	5"	2" H.	Spring	50½"	90	No	§£35 14
L.M.C.	3½ L.M.C.	499	85 × 88	M., S.S.	B. & B. or Amac	Auto-varia. E.	Belt ⅞"	4 to 5½ to 1	29"	4"	2¼"	Rigid	51½"	175	Yes	£51 0
L.M.C.	3½ L.M.C.	499	85 × 88	M., S.S.	B. & B. or Amac	L.M.C., Roe H.	Belt ⅞"	4¼ & 7½ to 1	29"	4"	2¼"	Rigid	51½"	195	No	£60 0
L.M.C. T.T.	3½ L.M.C.	499	85 × 88	M., S.S.	B. & B. or Amac	—	Belt ⅞"	4 to 1	29"	4"	2¼"	Rigid	51½"	145	No	£50 0
L.M.C.	4 L.M.C.	572	89 × 92	M., S.S.	B. & B. or Amac	L.M.C., Roe H.	Belt 1"	4½ & 7½ to 1	29"	4"	2½"	Rigid	51½"	220	No	£65 0
Martin Racer ..	2¾ J.A.P.	345	85 × 60	O., M.	Amac	—	Belt ⅞"	3½ to 1	29"	3"	2" Con. ..	Spring	48"	120	No	£45 0
Martin	3½ J.A.P.	482	85 × 85	M., S.S.	Amac	—	Belt ⅞"	4⅓ to 1	31"	4"	2¼" Con. ..	Spring	52"	140	No	£47 10
Martin T.T.	3½ J.A.P.	482	85 × 60	O., M.	Amac	—	Belt ⅞"	3¾ to 1	30"	3½"	2¼" Con. ..	Druid	52"	130	No	£49 10
Matchless	2½ J.A.P.	292	70 × 76	M., S.S.	—	3-speed	—	—	—	—	—	Open	—	—	—	£53 11
Matchless	3½ J.A.P.	488	85½ × 85	M., S.S.	—	—	—	—	—	—	—	—	—	—	—	£48 6
Matchless	3½ J.A.P.	488	85½ × 85	M., S.S.	—	Matchless	—	—	—	—	—	—	—	—	—	£60 18
Midget Bicar ...	3½ Precision ...	499	85 × 88	M., S.S.	Amae	V.P., E.	Belt ..	5 to 1	30"	5"	2¼"	Rigid	50–52"	140	No	—
Midget Bicar ...	3½ Precision ...	499	85 × 88	M., S.S.	Amae	V.P., E.	Belt ..	3½ to 7 to 1	30"	5"	2¼"	Open	52"	156	No	—
Midget Bicar ...	4½ Precision ...	597	89 × 96	M., S.S.	Amae	V.P., E.	Belt ..	3½ to 7 to 1	30"	5"	2¼"	Rigid	54"	156	No	—

*Also fitted with Precision engines. † Armstrong hub, £10 10s. extra. ‡ Albion two-speed and free engine hub extra.; T.T. model, 2in. shorter.
‖ B.S.A. two-speed or Armstrong three-speed extra. § With pedals, £1 1s. extra, 5 lbs. more.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
M.M.	4½ M.M.	534	82½ × 101½	O.	Schebler	M.M., F.E.	Belt 1"	4 to 1	32"	5"	2½" D.	Rigid	54"	160	Option	£44 2
Motosacoche	2⅓ Motosacoche	290	64 × 90	M., S.S.	Dufaux	Motosacoche E.	Belt ..	5 & 9 to 1	31"	10"	1¾" A	Rigid	48"	105	Option	—
Motosacoche	2 Motosacoche	212	62 × 70	A.	Dufaux	—	Belt ..	6½ to 1	29"	3½"	1¾" Con.	Open	50"	95	Yes	—
New Comet	2½ Precision	292	70 × 76	M., S.S.	to order	to order	Belt ..	6½ to 1	30"	4½ or 6"	to order	Rigid	51"	120	Yes	£40 0
New Comet	3¾ Precision	499	85 × 88	M., S.S.	to order	to order	Belt ..	4 to 1	30"	4½"	to order	Rigid	53"	175	Yes	£45 0
New Comet T.T.	3⅜ Precision	499	85 × 88	M., S.S.	to order	—	Belt ..	3½ to 1	29"	3½"	2¼" wired	Rigid	53"	160	No	£47 5
New Comet	4¼ Precision	597	89 × 96	M., S.S.	to order	to order	Belt ..	4 to 1	30"	4 or 5"	to order	Rigid	55"	195	Yes	£50 0
New Hudson	2¾ J.A.P.	292	70 × 76	M., S.S.	B. & B.	Armstrong, H.	Belt ⅜"	5, 7, 10 to 1	29"	6"	2" D.	Rigid	53"	135	Yes	£49 7
New Hudson	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	Armstrong, H.	Belt ½"	3½, 5, 7 to 1	29"	4½"	2¼" D.	Rigid	53"	185	Yes	£59 17
New Hudson	3½ New Hudson	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt 1"	3½, 5, 7 to 1	29"	5"	2¼" D.	Rigid	53"	190	Yes	£50 17
New Imperial	2¾ New Imperial	292	70 × 76	M., S.S.	B. & B.	3-speed, H.	Belt ⅜"	4½ to 1	33"	6½"	2"	Spring	53"	—	Yes	—
New Imperial	3½ New Imperial	499	85 × 88	M., S.S.	B. & B.	F.E., H.	Belt ½"	5 to 1	33"	4½"	2¼"	Spring	59"	—	Yes	£55 0
New Imperial	4¼ New Imperial	611	90 × 96	M., S.S.	B. & B.	2-speed, H.	Belt 1"	4½ to 1	35"	4"	2¼" D.	Spring	59"	—	No	£61 10
N.L.G.	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	Belt 1"	3½ & 5 to 1	28"	4"	2¼"	Rigid	52"	160	Option	£45 0
N.L.G.	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	P. & M., C.	Chain	4½ & 9 to 1	28"	4"	2¼"	Rigid	54"	175	No	£55 10
N.L.G.	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	3-speed, H.	Belt 1"	Variable	28"	4"	2¼"	Rigid	52"	172	Yes	£55 10
Norton	3½ Norton	490	79 × 100	M., S.S.	B. & B.	Nortoroe, H.	Belt ..	—	29"	3½"	2¼"	Rigid	54"	194	No	£60 12
Norton	3½ Norton	496	82 × 94	M., S.S.	B. & B.	—	Belt ..	Adjustable	29"	4½"	2¼"	Rigid	54"	184	No	*£48 0
Norton	3½ Norton	496	82 × 94	M., S.S.	B. & B.	F.E.	Belt ..	Adjustable	29"	4½"	2¼"	Rigid	54"	196	Yes	£55 0
Norton	4½ Norton	636	82 × 120	M., S.S.	B. & B.	Nortoroe, H.	Belt ..	—	29"	3½"	2¼" C.	Rigid	54"	196	No	£60 12
Norton	4½ Norton	636	82 × 120	M., S.S.	B. & B.	—	Belt ..	Adjustable	29"	3½"	2¼" C.	Rigid	54"	186	No	*£51 0
N.S.U.	2 N.S.U.	267	66 × 78	M., O.	N.S.U.	—	Belt ..	6 to 1	32"	8"	2" Con.	Spring	50"	125	Yes	†£38 0
N.S.U.	3½ N.S.U.	499	85 × 88	M., O.	N.S.U.	—	Belt ..	4½ to 1	31"	6"	2¼"	Spring	54"	160	Yes	†£47 0
N.Y.E.	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	Albion, H.	Belt ⅞"	4 & 8 to 1	28"	5"	2¼" M.	Rigid	51"	200	Yes	£55 13
O.K.	2½ Precision	292	70 × 76	M., S.S.	Amac	—	Belt ⅞"	5 to 1	31"	8"	2" H.	Rigid	52"	105	Option	£34 13
O.K.	3⅜ Precision	499	85 × 88	M., S.S.	Amac	Albion, H.	Belt ⅞"	Adjustable	32"	5⅜"	2¼"	Rigid	54"	180	Option	£51 9
O.K.	4¼ Precision	597	89 × 96	M., S.S.	Amac	Armstrong, H.	Belt ⅞"	Adjustable	32"	5⅜"	2¼"	Rigid	54"	212	Option	£54 12
Osmond	3½ Precision	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞"	4¼ to 1	26"	4⅜"	2¼" D.	Rigid	53"	180	Yes	£48 0
Osmond	3½ Precision	499	85 × 88	M., S.S.	B. & B.	Vilbers, H.	Belt ⅞"	4¼ to 1	26"	4⅜"	2¼" D.	Rigid	53"	190	Yes	£54 0
P. & M.	2¼ P. & M.	260	66 × 76	A.	P. & M.	P. & M., C.	Chains	5 & 9 to 1	28"	10"	2" K.	Rigid	50"	125	No	£50 0
P. & M.	3⅜ P. & M.	465	82 × 88	M., S.S.	P. & M.	P. & M., C.	Chains	4½ & 7⅜ to 1	28"	9"	2¼" K.	Rigid	54"	190	No	£60 0
P. & M. Colonial	3⅜ P. & M.	465	82 × 88	M., S.S.	P. & M.	P. & M., C.	Chains	5 & 9 to 1	28"	9"	2¼" K.	Rigid	54"	190	No	£65 0
Pierce	5 Pierce	591	89 × 95	M., S.S.	Breeze	Clutch	Belt F.	4⅝ to 1	32"	—	2½" G.	Rigid	54"	180	Yes	£50 0
Pilot	2¾ J.A.P.	292	70 × 76	M., S.S.	B. & B.	—	Belt ..	Adjustable	27"	5"	2" H.	Rigid	—	—	Yes	£32 0
Pilot	3½ Precision	499	85 × 88	M., S.S.	Amac	—	Belt 1"	Adjustable	27"	4"	2¼" H.	Rigid	—	—	Yes	£36 0
Pilot	4¼ Precision	597	89 × 96	M., S.S.	B. & B.	—	Belt 1"	Adjustable	27"	4	2¼" H.	Rigid	—	—	Yes	£41 10
Portland	3½ Pougeot	472	80 × 94	M., S.S.	B. & B.	—	Belt 1"	4 to 1	27"	3½"	2¼" H.	Rigid	48"	176	Yes	£39 18
Portland	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	—	4 to 1	27"	3½"	2¼" H.	Rigid	48"	177	Yes	‡£42 8
Premier	2¼ Premier	246	66 × 79	M., S.S.	B. & B.	—	Belt ⅜"	5, 7, 10 to 1	30	5"	2¼" D.	Rigid	47½"	96	Yes	£36 0
Premier	2¼ Premier	246	66 × 79	M., S.S.	B. & B.	—	Belt ½"	5, 7, 10 to 1	30"	5"	2¼" D.	Rigid	47½"	106	Yes	£43 7
Premier	2¼ Premier	246	66 × 79	M., S.S.	B. & B.	Armstrong, H.	Belt ⅝"	Adjustable	30"	6½"	1¾" D.	Rigid	47½"	120	Yes	£46 10
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞"	Adjustable	30"	6"	2¼" D.	Rigid	50"	180	Yes	£47 10
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	Clutch	—	Adjustable	30"	6"	2¼" D.	Rigid	50	190	Yes	£54 17
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	Millennium, H.	—	Adjustable	30"	6"	2¼" D.	Rigid	50"	212	Yes	£58 0
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	—	Adjustable	30"	6"	2¼" D.	Rigid	50"	196	Yes	£58 0
Premier Racer	3½ Premier	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞"	Adjustable	30"	4½"	2¼" D.	Rigid	49"	160	No	£47 10
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt ⅜"	5, 7, 10 to 1	30"	5"	2¼" D.	Open	53"	200	Yes	—
Puch	2 Puch	254	68 × 70	M., S.S.	B. & B.	—	Belt ..	5 to 1	31"	7"	2" Peters	Spring	52"	112	Yes	£42 0
Puch	2 Puch	254	68 × 70	A.	B. & B.	—	Belt ..	5 to 1	31"	7"	1¾" Peters	Spring	52"	90	Yes	£31 10

* Pedalling gear, 35/- extra. † N.S.U. two-speed gear, £5 15s. extra. ‡ Roc hub, £10 10s. extra.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
Puch	3½ Puch	454	76 × 100	M., S.S.	B. & B.	—	Belt	5 to 1	29″	7″	2¼″	Spring	53¾″	140	Yes	£46 4
Puch	3½ Puch	454	76 × 100	M., S.S.	B. & B.	2-speed, C.	Chain	5 to 1	29″	7″	2¼″	Spring	53¾″	140	Yes	£52 10
P.V.	2½ J.A.P.	292	70 × 76	M., S.S.	B. & B.	—	Belt ⅞″	5 to 1	30″	6″	2¼″ D.	Spring	55″	128	No	£47 0
P.V.	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	2-speed, C.	Belt ¾″	4½ to 1	30″	5″	2¼″ D.	Spring	55″	140	No	£52 0
Quadrant	2 Quadrant	292	70 × 76	M., S.S.	B. & B.	Quadrant, H.	Belt ¾″	Variable	28½″	4″	—	Rigid	—	110	Yes	£47 10
Quadrant	3½ Quadrant	499	85 × 88	M., S.S.	B. & B.	Quadrant, H.	Belt ¾″	Variable	28½″	4″	—	Rigid	—	160	Yes	£56 0
Quadrant T.T.	3½ Quadrant	492	85 × 88	M., S.S.	—	—	Belt ¾″	3½ to 1	28½″	4″	—	Rigid	—	130	No	£48 10
Quadrant	4 Quadrant	523	87 × 88	M., S.S.	B. & B.	Quadrant, H.	Belt	4½ & 7½ to 1	28½″	4″	—	Rigid	—	165	Yes	£56 0
Rex	3½ Rex	448	77½ × 95	M.; S.S.	B. & B.	—	Belt	—	33″	4″	2¼″ Con.	Rigid	—	—	No	*£44 0
Rex	4 Rex	532	84½ × 95	M., S.S.	B. & B.	—	Belt	—	33″	4″	2¼″ Con.	Rigid	—	—	—	*£46 0
Rex	4 Rex water-c.	532	84½ × 95	M., S.S.	B. & B.	—	Belt	—	33″	4″	2¼″ Con.	Rigid	—	—	—	*£50 0
Rex-Jap	2½ J.A.P.	292	70 × 76	M., S.S.	B. & B.	—	Belt ⅞″	Adjustable	31″	4″	2¼″	Spring	48″	—	No	£44 2
Rex-Jap	4 J.A.P.	488	85½ × 85	M., S.S.	B. & B.	Rex, H.	Belt ⅞″	Adjustable	32″	4″	2¼″	Spring	50″	225	No	£63 0
Rover	3½ Rover	499	85 × 88	M., S.S.	B. & B.	Clutch, H.	Belt ⅞″	Adjustable	32″	4″	2¼″ D.	Rigid	52″	186	Yes	£55 5
Rover	3½ Rover	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt ⅞″	Adjustable	32″	4″	2¼″ D.	Rigid	52″	192	Yes	£59 10
Rover	3½ Rover	499	85 × 88	M., S.S.	B. & B.	—	Belt ⅞″	Adjustable	32″	4″	2¼″ D.	Rigid	52″	180	Yes	£49 0
Rudge	3½ Rudge	499	85 × 88	O., M.	R.-W.	—	Belt ⅞″	3½ to 6½ to 1	30″	4¾″	2¼″	Rigid	54″	180	Yes	£48 15
Rudge	3½ Rudge	499	85 × 88	O., M.	R.-W.	Clutch, E.	Belt ⅞″	4½ to 6½ to 1	30″	4¾″	2¼″	Rigid	54″	184	Yes	£55 0
Rudge	3½ Rudge	499	85 × 88	O., M.	R.-W.	Rudge, E. & H.	Belt ⅞″	3¾ to 7 to 1	30″	4¾″	2¼″	Rigid	54″	200	Yes	£60 0
Samson	3½ Precision	499	85 × 88	M., S.S.	B. & B.	Albion, H.	Belt	4½ & 8 to 1	31″	4″	2¼″ C.	Rigid	52″	220	No	£55 0
S.I.A.M.T.	2¾ S.I.A.M.T.	261	68 × 72	M., O.	S.I.A.M.T.	—	Belt	to order	31½″	9″	2″ M.	Rigid	46″	85	Yes	£36 15
Singer	2½ Singer	299	69 × 80	M., S.S.	B. & B.	Singer, C.	Belt	7½ & 10½ to 1	31″	5½″	2″ D.	Rigid	54″	175	Yes	£48 15
Singer	2¾ Singer	299	69 × 80	M., S.S.	B. & B.	—	Belt	5 to 7½ to 1	31″	5½″	2″ D.	Rigid	54″	135	Yes	£39 0
Singer	3½ Singer	499	85 × 88	M., S.S.	B. & B.	F.E.	Belt	4 to 6½ to 1	31½″	3½″	2¼″	Rigid	56″	188	Yes	£55 0
Singer	3½ Singer	499	85 × 88	M., S.S.	B. & B.	—	Belt	4 to 6½ to 1	31½″	3½″	2¼″	Rigid	56″	180½	Yes	£48 15
Singer	4 Singer	535	88 × 88	M., S.S.	B. & B.	Singer, C.	C. or B.	5½ & 7⅞ to 1	31½″	3½″	2¼″	Rigid	56″	215	Yes	£65 0
Steelhouse	3¾ Precision	499	85 × 88	M., S.S.	B. & B.	Brampton	Belt	to order	31″	5¼″	2¼″	Rigid	—	144	Option	£42 0
Stuart	2½ Stuart, 2-str.	301	71 × 75½	None	Amac	to order	Belt ⅞″	4 & 6½ to 1	29″	5″	2″ D.	Rigid	54″	145	Yes	£37 10
Swan	3½ J.A.P.	488	85½ × 85	M., S.S.	J.A.P.	Swan, C.	Chain	4½ & 7½ to 1	30″	5″	2½″ K.	Spring	57″	160	No	£55 0
Swift	3½	482	85 × 85	—	B. & B.	F.E., E.	Belt ⅞″	Variable	—	—	2¼″ L.	Rigid	—	—	Yes	£52 10
Torpedo	2½ Torpedo	292	70 × 76	M., S.S.	B. & B.	F.E., E.	Belt ¾″	5¾ to 1	30″	5¼″	2″ D.	Rigid	50″	106	Yes	£43 0
Torpedo	2½ Torpedo	292	70 × 76	M., S.S.	B. & B.	—	Belt ¾″	6 to 1	30″	5¼″	2″ D.	Rigid	50″	106	Yes	£37 0
Torpedo	3½ Torpedo	499	86 × 86	M., S.S.	B. & B.	—	Belt ⅞″	4½ & 6 to 1	31″	6″	2¼″ D.	Rigid	54″	150	Yes	£46 0
Torpedo	3½ Torpedo	499	86 × 86	M., S.S.	B. & B.	Torpedo, H.	Belt ⅞″	4½ & 6 to 1	31″	6″	2¼″ D.	Rigid	54″	158	Yes	£53 0
Triumph	3½ Triumph	499	85 × 88	M., S.S.	Triumph	Clutch, H.	Belt ¾″	4¼ to 6¼ to 1	31″	4″	2¼″ C.	Rigid	54″	180	Yes	£55 0
Triumph	3½ Triumph	499	85 × 88	M., S.S.	Triumph	—	Belt ¾″	4¼ to 6¼ to 1	—	—	—	—	—	170	Yes	£48 0
Triumph T.T.	3½ Triumph	499	85 × 88	M., S.S.	Triumph	—	Belt ¾″	3¼ to 5 to 1	31″	4″	2¼″ D.	Rigid	52″	160	No	£50 0
Trump	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	C.	C. & B.	to order	29″	4″	2¼″ D.	Rigid	—	190	No	—
Trump	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	Belt	4½ to 1	29″	4″	2¼″ D.	Rigid	—	170	No	£48 6
Trump T.T.	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	—	Belt	4 to 1	29″	4″	2¼″ D.	Rigid	—	160	No	£48 6
Victoria	2½ Precision	292	70 × 76	M., S.S.	B. & B.	—	Belt	to order	—	—	2″ D.	Rigid	—	—	Yes	—
Victoria	3½ Precision	499	85 × 88	M., S.S.	B. & B.	—	Belt	to order	34″	6″	2¼″ D.	Rigid	52½″	—	Yes	£42 0
V.M.C.	2½ V.M.C.	276	68 × 76	M., O.	B. & B.	2-sp. in crank c.	Belt ¾″	5 & 8½ to 1	30″	4½″	2¼″	Rigid	55″	146	No	£50 0
V.M.C.	3½ V.M.C.	499	85 × 88	M., S.S.	B. & B.	—	Belt ¾″	4¼ to 1	30″	4½″	2¼″	Rigid	53″	180	No	£45 0

* Modèle de Luxe with two-speed hub, £10 extra. † Free engine £6 extra.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight Unladen. lbs.	Pedalling Gear.	Price.
Win-Precision ..	3½ Precision ...	499	85 × 88	M., S.S.	B. & B.	Villiers, H. ...	Belt 7/8"	4¼ & 6½ to 1	27¾"	5½"	2½" D.	Rigid	52"	160	Option	£45 10
Wulfruna	1½ Stevens	208	63 × 66	M., S.S.	Amac	—	Belt ..	—	28"	7"	2"	Rigid	49"	98	Yes	£33 12
Wulfruna	2¾ Stevens	322	76 × 82	M., S.S.	B. & B.	—	Belt ..	4 to 6½ to 1	28½"	6½"	2"	Rigid	51"	125	Yes	£37 16
Wulfruna	3½ Stevens	499	85 × 88	M., S.S.	Amac	—	Belt ..	4 to 6½ to 1	28½"	5½"	2¼"	Rigid	54"	160	Yes	£47 5
Zenith	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	Gradua, E. ...	Belt ..	Variable ..	27¼"	4½"	2¼" H.	Rigid	52"	180	No	£55 13

MULTI-CYLINDER BICYCLES.

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
A.J.S	5 A.J.S. 50° ..	630	70 × 82	M., S.S.	Amac	A.J.S., C.	Chains	4½ & 9 to 1	30"	5½"	2½" H.	Rigid	54"	185	No	£63 0
Alcyon	2 Alcyon	252	47 × 72	M.	Claudel-Hobson	H.	Chains	to order ..	27"	5"	2" H.	Rigid	50"	105	Yes	—
A.S.L.	5 Fafnir	614	70 × 80	M., S.S.	Amac	—	Belt 1"	4 to 1	27"	6"	2½" Mo. ..	Spring	49"	190	No	£60 0
Bat T.T.	5 J.A.P.	738	85 × 65	M., O.	B. & B.	—	Belt ..	to order ..	28"	3½"	—	Rigid	57"	175	No	£62 0
Bat	5-6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	—	Belt ..	4 to 1	32"	4½"	2½" D.	Spring	55"	205	No	£58 0
Bat	5-6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	Bat., C.	Chain	4 & 7 to 1	32"	4½"	2½" D.	Spring	55"	225	No	£70 12
Bat	7-8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	—	Belt ..	3½ to 1	32"	4½"	2½" D.	Spring	55"	205	No	£60 0
Bat	7-8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	Bat., C.	Chain	4 & 7 to 1	32"	4½"	2½" D.	Spring	55"	225	No	£72 12
Bat T.T.	8 J.A.P.	986	90 × 77½	M., O.	B. & B.	—	Belt ..	to order ..	28	3½"	2½" D.	Rigid	57"	185	No	£65 0
Brough	6 Brough 50° ..	792	77 × 85	M., S.S.	B. & B.	Brough, C.	Chain	4½ & 9 to 1	30"	4½"	2½" Con. ..	Rigid	62"	200	No	£65 0
Brough	6 Brough 50° ..	792	77 × 85	M., S.S.	B. & B.	—	Belt ..	Variable ..	29"	4½"	2¼" Con. ..	Rigid	56"	162	No	£55 0
Buck	6-7 Buck 40° ..	904	80 × 90	O.	B. & B.	—	Belt ..	Adjustable	26"	5"	2¼" Con. ..	Rigid	48"	150	Yes	£50 0
Buck	6-7 Buck 40° ..	904	80 × 90	O.	B. & B.	Roe, C.	Belt ..	4 & 8 to 1	26"	5"	2¼" Con. ..	Rigid	48"	160	No	£55 0
Campion	6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	Roe, H.	Belt ..	Variable ..	32"	4½"	2½" D.	Rigid	54"	185	No	£62 10
Campion	8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	Roe, H.	Belt ..	Variable ..	32"	4½"	2½" D.	Rigid	54"	190	No	£62 10
Centaur	2¾ — V 45° ...	340	60 × 60	M., S.S.	B. & B.	—	Belt 7/8"	5 to 1	28"	5½"	2"	Rigid	51½"	145	Option	£42 0
Centaur	2¾ — V 45° ...	340	60 × 60	M., S.S.	B. & B.	Armstrong, H.	Belt 7/8"	5, 7, 10 to 1	28"	5½"	2"	Rigid	51½"	150	Option	£52 10
Chater-Lea	8 Chater-Lea .	964	85 × 85	M., S.S.	Amac	C.	Chain	Variable ..	32"	4½"	65 mm.....	Rigid	61"	280	No	£78 15
Clyno	5-6 Clyno 55° ..	643	76 × 82	M., S.S.	Amac	Clyno, C.	Chain	4½ & 8½ to 1	30"	4½"	2½" P.C. ..	Rigid	60"	220	No	£68 5
Douglas	2¾ Douglas 180°	340	60 × 60	M., S.S.	Douglas	Douglas, C. ...	C. & B.	5½ & 8½ to 1	29"	9"	2" Avon	Rigid	52"	120	No	£47 0
Douglas	2¾ Douglas 180°	340	60 × 60	M., S.S.	Douglas	—	Belt ..	to order ..	29"	9"	2" Avon	Rigid	52"	120	Yes	£41 0
Enfield	2¾ Enfield 60° ..	343	54 × 75	M., S.S.	Amac	Enfield, C. ...	Chains	5¾ & 7¾ to 1	30"	6"	2" & 2¼" D.	Rigid	53"	140	No	£52 10
F.N. 4-cylinder	5-6 F.N.	494	52½ × 57	O.	F.N.	—	Bevel	6 to 1	32"	10"	2½"	Rigid	55"	200	Yes	£52 10
F.N. 4-cylinder	5-6 F.N.	494	52½ × 57	O.	F.N.	Clutch, C.	Bevel	6 to 1	32"	10"	2½"	Rigid	55"	200	Yes	£58 0
Forward	2¾ Forward	344	56 × 70	M., S.S.	Amac	—	Belt ..	Adjustable	30"	—	2" Mid. ..	Rigid	52"	112	Yes	*£39 18
Forward	2¾ Forward	344	56 × 70	M., S.S.	Amac	—	Belt ..	Adjustable	30"	—	—	Open	52"	112	Yes	£44 2
Hobart	4 Hobart	552	68 × 76	M., S.S.	B. & B.	Millennium, H.	Belt 7/8"	—	29½"	6"	2¼" H.	Rigid	55"	180	Yes	—
Humber	2¾ Humber 45°	340	60 × 60	M., S.S.	B. & B.	—	Belt 7/8"	5 to 1	28"	6½"	2"	Rigid	51½"	145	Option	£42 0
Humber	2¾ Humber 45°	340	60 × 60	M., S.S.	B. & B.	Armstrong, H.	Belt 7/8"	Variable ..	28"	6½"	2"	Rigid	51½"	150	Option	£52 10
Indian	7 Indian	994	82½ × 93	M., O.	Indian	F.E.	Chain	4 to 1	30"	6"	2½"	Rigid	53"	—	No	£67 0
Indian	7 Indian	994	82½ × 93	M., O.	Indian	Indian, C.	Chain	4 & 6.4 to 1	30"	6"	2½"	Rigid	55"	—	No	£75 0

* Armstrong three-speed hub, £10 10s. extra.

SINGLE-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight Unladen. lbs.	Pedalling Gear.	Price.
Win-Precision ..	3½ Precision ...	499	85 × 88	M., S.S.	B. & B.	Villiers, H. ...	Belt ⅞"	4½ & 6½ to 1	27¾"	5¼"	2¼" D.	Rigid	52"	160	Option	£45 10
Wulfruna	1¾ Stevens	208	63 × 66	M., S.S.	Amac	—	Belt ..	—	28"	7"	2"	Rigid	49"	98	Yes	£33 12
Wulfruna	2¾ Stevens	322	76 × 82	M., S.S.	B. & B.	—	Belt ..	4 to 6½ to 1	28½"	6½"	2"	Rigid	51"	125	Yes	£37 16
Wulfruna	3½ Stevens	499	85 × 88	M., S.S.	Amac	—	Belt ..	4 to 6½ to 1	28½"	5½"	2¼"	Rigid	54"	160	Yes	£47 5
Zenith	3½ J.A.P.	488	85½ × 85	M., S.S.	B. & B.	Gradua, E. ...	Belt ..	Variable ..	27¼"	4½"	2¼" H.	Rigid	52"	180	No	£55 13

MULTI-CYLINDER BICYCLES.

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
A.J.S	5 A.J.S. 50° ..	630	70 × 82	M., S.S.	Amac	A.J.S., C.	Chains	4½ & 9 to 1	30"	5½"	2¼" H.	Rigid	54"	185	No	£63 0
Alcyon	2 Alcyon	252	47 × 72	M.	Claudel-Hobson	H.	Chains	to order ..	27"	5"	2" H.	Rigid	50"	105	Yes	—
A.S.L.	5 Fafnir	614	70 × 80	M., S.S.	Amac	—	Belt 1"	4 to 1	27"	6"	2½" Mo. ..	Spring	49"	190	No	£60 0
Bat T.T.	5 J.A.P.	738	85 × 65	M., O.	B. & B.	—	Belt ..	to order ..	28"	3½"	—	Rigid	57"	175	No	£62 0
Bat	5-6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	—	Belt ..	4 to 1	32"	4½"	2½" D.	Spring	55"	205	No	£58 0
Bat	5-6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	Bat., C.	Chain	4 & 7 to 1	32"	4½"	2½" D.	Spring	55"	225	No	£70 12
Bat	7-8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	—	Belt ..	3½ to 1	32"	4½"	2½" D.	Spring	55"	205	No	£60 0
Bat	7-8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	Bat., C.	Chain	4 & 7 to 1	32"	4½"	2½" D.	Spring	55"	225	No	£72 12
Bat T.T.	8 J.A.P.	986	90 × 77½	M., O.	B. & B.	—	Belt ..	to order ..	28"	3½"	2½" D.	Rigid	57"	185	No	£65 0
Brough	6 Brough 50° ..	792	77 × 85	M., S.S.	B. & B.	Brough, C. ...	Chain	4½ & 9 to 1	30"	4½"	2½" Con. ..	Rigid	62"	200	No	£65 0
Brough	6 Brough 50° ..	792	77 × 85	M., S.S.	B. & B.	—	Belt ..	Variable ..	29"	4½"	2¼" Con. ..	Rigid	56"	162	No	£55 0
Buck	6-7 Buck 40° ..	904	80 × 90	O.	B. & B.	—	Belt ..	Adjustable	26"	5"	2¼" Con. ..	Rigid	48"	150	Yes	£50 0
Buck	6-7 Buck 40° ..	904	80 × 90	O.	B. & B.	Roe, C.	Belt ..	4 & 8 to 1	26"	5"	2¼" Con. ..	Rigid	48"	160	No	£55 0
Campion	6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	Roe, H.	Belt ..	Variable ..	32"	4½"	2½" D.	Rigid	54"	185	No	£62 10
Campion	8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	Roe, H.	Belt ..	Variable ..	32"	4½"	2½" D.	Rigid	54"	190	No	£62 10
Centaur	2¾ — V 45° ...	340	60 × 60	M., S.S.	B. & B.	—	Belt ⅞"	5 to 1	28"	5½"	2"	Rigid	51½"	145	Option	£42 0
Centaur	2¾ — V 45° ...	340	60 × 60	M., S.S.	B. & B.	Armstrong, H.	Belt ⅞"	5, 7, 10 to 1	28"	5½"	2"	Rigid	51½"	150	Option	£52 10
Chater-Lea	8 Chater-Lea .	964	85 × 85	M., S.S.	Amac	C.	Chain	Variable ..	32"	4½"	65 mm.....	Rigid	61"	280	No	£78 15
Clyno	5-6 Clyno 55° ..	643	76 × 82	M., S.S.	Amac	Clyno, C.	Chain	4½ & 8½ to 1	30"	4½"	2½" P.C. ..	Rigid	60"	220	No	£68 5
Douglas	2¾ Douglas 180°	340	60 × 60	M., S.S.	Douglas	Douglas, C. ...	C. & B.	5½ & 8½ to 1	29"	9"	2" Avon	Rigid	52"	120	No	£47 0
Douglas	2¾ Douglas 180°	240	60 × 60	M., S.S.	Douglas	—	Belt ..	to order ..	29"	9"	2" Avon	Rigid	52"	120	Yes	£41 0
Enfield	2¾ Enfield 60° ..	343	54 × 75	M., S.S.	Amac	Enfield, C. ...	Chains	5¾ & 7¾ to 1	30"	6"	2" & 2¼" D.	Rigid	53"	140	No	£52 10
F.N. 4-cylinder	5-6 F.N.	494	52½ × 57	O.	F.N.	—	Bevel	6 to 1	32"	10"	2½"	Rigid	55"	200	Yes	£52 10
F.N. 4-cylinder	5-6 F.N.	494	52½ × 57	O.	F.N.	Clutch, C.	Bevel	6 to 1	32"	10"	2½"	Rigid	55"	200	Yes	£58 0
Forward	2¾ Forward	344	56 × 70	M., S.S.	Amac	—	Belt ..	Adjustable	30"	—	2" Mid. ..	Rigid	52"	112	Yes	*£39 18
Forward	2¾ Forward	344	56 × 70	M., S.S.	Amac	—	Belt ..	Adjustable	30"	—	—	Open	52"	112	Yes	£44 2
Hobart	4 Hobart	552	68 × 76	M., S.S.	B. & B.	Millennium, H.	Belt ⅞"	—	29½"	6"	2¼" H.	Rigid	55"	180	Yes	—
Humber	2¾ Humber 45°	340	60 × 60	M., S.S.	B. & B.	—	Belt ⅞"	5 to 1	28"	6½"	2"	Rigid	51½"	145	Option	£42 0
Humber	2¾ Humber 45°	340	60 × 60	M., S.S.	B. & B.	Armstrong, H.	Belt ⅞"	Variable ..	28"	6½"	2"	Rigid	51½"	150	Option	£52 10
Indian	7 Indian	994	82½ × 93	M., O.	Indian	F.E.	Chain	4 to 1	30"	6"	2¼"	Rigid	53"	—	No	£67 0
Indian	7 Indian	994	82½ × 93	M., O.	Indian	Indian, C.	Chain	4 & 6.4 to 1	30"	6"	2½"	Rigid	55"	—	No	£75 0

* Armstrong three-speed hub, £10 10s. extra.

MULTI-CYLINDER BICYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
Kerry-Abingdon	5-6 Abingdon50°	670	67 × 95	M., S.S.	B. & B.	—	Belt 1"	Adjustable	27"	8"	2½" K.	Rigid	50"	—	No	£59 10
Martin Racer ..	3½ J.A.P.	498	76 × 55	O., M.	Amac	—	Belt ⅞"	3¼ to 1	29"	3"	2½"	—	53"	150	Yes	£58 10
Matchless	3 J.A.P.	430	60 × 76	M., S.S.	—	—	—	—	—	—	—	Rigid	—	—	—	£52 10
Matchless T.T...	5 J.A.P.	738	85 × 65	M., O.	—	Matchless	—	—	—	—	—	Rigid	—	—	—	£69 6
Matchless	6 J.A.P.	770	76 × 85	M., S.S.	—	—	—	—	—	—	—	Rigid	—	—	—	£56 14
Matchless	8 J.A.P.	964	85 × 85	M., S.S.	—	V.S., H.	Belt D.	—	—	—	—	Rigid	—	—	—	£73 10
M.M.	7-9 M.M.	999	82½ × 93½	O.	Schebler	F.E.. or 2-sp. H	Belt 1"	3½ to 1	31"	5"	2½"	Rigid	56"	175	Option	£57 5
New Comet	6 Precision ...	750	75 × 85	M., S.S.	to order	to order	Belt ..	3½ to 1	30"	4"	to order ..	Rigid	55"	225	to ord.	£55 0
N.L.G.	6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	—	Belt 1"	Adjustable	28"	4"	2½"	Rigid	54"	180	No	£57 15
N.L.G.	6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	3-speed, H. ...	Belt 1"	Adjustable	28"	4"	2½"	Rigid	54"	190	Yes	£68 5
N.S.U.	3 N.S.U.	396	58 × 75	M., O.	N.S.U.	—	Belt ..	5 to 1	32"	6"	2"	Spring	54"	140	Yes	*£45 0
N.S.U.	6 N.S.U.	796	75 × 90	M., O.	N.S.U.	—	Belt ..	4 to 1	31"	5"	2½"	Spring	54"	200	Yes	£56 0
Pierce 4-cylinder	6-7 Pierce	688	62 × 57	M.	Breeze	2-speed, C. ...	Bevel	4⅛ & 7⅛ to 1	32"	—	2½" G. ..	Rigid	60"	190	Yes	£80 0
Pilot	8 J.A.P.	964	85 × 85	M., S.S.	Amac	—	Belt 1"	Adjustable	27"	4"	2½" H.	Rigid	—	—	Yes	£48 0
Premier	3¾ Premier	548	66 × 80	M., O.	B. & B.	—	Belt ⅞"	Adjustable	31"	4½"	2¼" D.	Rigid	53"	186	No	£52 10
Premier	3¾ Premier	548	66 × 80	M., O.	B. & B.	Clutch, H.	Belt ⅞"	Adjustable	31"	4½"	2¼" D.	Rigid	53"	196	Yes	£59 17
Premier	3¾ Premier	548	66 × 80	M., O.	B. & B.	Armstrong, H.	Belt ⅞"	5, 7, 10 to 1	31"	4½"	2¼" D.	Rigid	53"	202	Yes	†£63 0
Puch	6-7 Puch	904	80 × 90	A.	B. & B.	2-speed, F.E...	Chain	Variable ..	33"	7"	80 mm.....	Spring	59¾"	270	Yes	£78 15
Puch	6-7 Puch	904	80 × 90	A.	B. & B.	—	Belt ..	5 to 1	33"	7"	80 mm.....	Spring	59¾"	200	Yes	£54 12
P.V.	3½ J.A.P. 50° ..	430	60 × 76	M., S.S.	B. & B.	N.S.U. to order	Belt ⅞"	4½ to 1	30"	5"	2¼" D.	Spring	55"	135	No	£55 0
P.V.	5 J.A.P. 50° ..	584	70 × 76	M., S.S.	B. & B.	N.S.U. to order	Belt 1"	4½ to 1	30"	5"	2¼" D.	Spring	55"	140	No	£58 0
P.V.	6 J.A.P. 50° ..	770	76 × 85	M., S.S.	B. & B.	N.S.U. to order	Belt 1"	4½ to 1	30"	4"	2¼" D.	Spring	55"	160	No	£62 0
P.V.	8 J.A.P. 50° ..	964	85 × 85	M., S.S.	B. & B.	N.S.U. to order	Belt 1"	4½ to 1	30"	4"	2¼" D.	Spring	55"	170	No	£65 0
Rex	6 Rex	896	77½ × 95	M., S.S.	B. & B.	—	—	—	—	—	—	Rigid	52"	—	No	‡£50 0
Rex-Jap	3 J.A.P. 50° ..	430	60 × 76	M., S.S.	B. & B.	Armstrong, H.	Belt 1"	Adjustable	31"	4"	2¼" D.	Spring	48"	—	No	£58 16
Rex-Jap	6 J.A.P. 50° ..	774	76 × 85	M., S.S.	B. & B.	Rex, H.	Belt 1¼"	Adjustable	32"	4"	65 mm. D.	Spring	50"	245	No	§£71. 8
Rex-Jap	8 J.A.P. 50° ..	964	85 × 85	M., S.S.	B. & B.	Rex, H.	Belt 1¼"	Adjustable	—	4"	65 mm. D.	Spring	50"	261	No	£73 10
Scott	3¾ Scott 2 str.	535	73 × 63½	None ..	Scott	Scott, C.	Chain	4 to 7½ to 1	28½"	6"	2½"	Open, R	54½"	180	No	—
Wulfruna	4 Moto-Rêve ..	498	63 × 80	M., O.	Special	to order	C. or B.	—	28½"	6½"	2¼"	Open, R	54"	—	Yes	—
Zenith	6 J.A.P.	770	76 × 85	M., S.S.	B. & B.	Gradua. E. ...	Belt ..	Variable ..	27½"	4½"	2¼" H.	Rigid	52"	195	No	£70 13

* N.S.U. two-speed E., £5 15s. extra; heavy pattern, £7 15s. † Millennium hub, same price. ‡ Two-speed hub, £10 extra. § £10 10s. to £15 15s. less without variable gears.

PASSENGER MOTOR CYCLES.

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
A.C. Sociable ...	5-6 A.C., ...	649	90 × 102	M.	A.C.	—	Chain	4½ & 10 to 1	—	7"	65 mm.....	Spring	66"	504	No	—
B. & A. Runabo't	6 Buck	904	80 × 90	O.	B. & B.	Epicyclic	Bevel	4 & 7½ to 1	—	12"	65 mm.....	Spring	87"	350	No	£110 0
B. & A. Runabo't	9 Buck	1208	90 × 95	M., S.S.	B. & B.	Epicyclic	Bevel	4 & 7½ to 1	—	12"	65 mm.....	Spring	87"	400	No	£135 0
Brough Sociable	8 Brough	964	85 × 85	M., S.S.	B. & B.	2-speed, C. ...	Chains	—	—	—	65 mm.....	Spring	—	—	No	£95 0
C.M.C. Carette..	7 Crouch.....	744	76 × 82	M.O.	Amac	Crouch, sliding	Chain	5, 8, 14 to 1	—	7"	65 mm.....	Spring	84"	616	No	£99 15
Enfield Sidecar	6 J.A.P.	770	76 × 85	M., S.S.	Amac	Enfield, C. ...	Chain	5 & 9 to 1	32"	4"	65 mm.....	Rigid	55½"	300	No	£80 17

PASSENGER MOTOR CYCLES (*Continued*).

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
James S.	3½ James	557	86 × 96	M., S.S.	B. & B.	James, C.	Chain	4½ & 8½ to 1	26″	—	2½″ D.	—	53″	290	No	£72 0
Morgan Runabt'	8 J.A.P.	964	85 × 85	M., S.S.	B. & B.	Morgan, C.	C. & G.	4 & 8 to 1	—	—	2½″ Con.	Spring	—	336	No	£89 5
Motorette	6-7 P.M.C.	723	95 × 102	M., S.S.	J.A.P.	P.M.C., H.	Chain	4½ & 13 to 1	—	7″	65 mm.	Spring	—	525	No	£105 0
New Hudson S.	3½ New Hudson	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt 1″	4½ to 9 to 1	29″	5″	2½″	Rigid	53″	280	Yes	£67 4
Roc Tricycle	5 Roc	—	—	M., S.S.	B. & B.	Roc, H.	Bevel	5½ & 10 to 1	—	5½″	2½″	—	75″	392	No	£105 0
Unecar	4½ Fafnir	452	80 × 90	M., O. 6	B. & B.	2-speed, C.	Belt 1″	6 & 9 to 1	—	—	2½″ M.	Spring	—	—	No	£57 0

LADIES' BICYCLES.

Name of Motor Bicycle.	H.P. and Name of Engine.	Cubic Capacity. c.c.	Bore and Stroke. mm.	Inlet Valves.	Name of Carburetter.	Change Speed Gear.	Transmission.	Standard Gear or Gears.	Saddle Height from Ground.	Crank Case Clearance.	Standard Size and Make of Tyres.	Standard Frame.	Length of Wheelbase.	Weight, Unladen. lbs.	Pedalling Gear.	Price.
Centaur	2	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝″	6 to 1	30″	6½″	2″	Open, R	50½″	105	Yes	*£42 0
Douglas	2¾ Douglas	340	60 × 60	M., S.S.	Douglas	Douglas, C.	C. & B.	5½ & 8½ to 1	28″	9	2″ Avon	Open, R	52″	130	No	£52 0
Enfield	2½ Enfield	241	64 × 75	M., S.S.	Amac	Enfield, C.	Chains	6½ & 9 to 1	30″	6″	2″ D.	Open, R	53″	130	No	£52 10
Forward	2¾ Forward	344	56 × 70	M., S.S.	Amac	—	Belt	Adjustable	30″	—	2″ Mid.	Open, R	52″	112	Yes	*£44 2
Hobart	2½ Hobart	300	70 × 78	M., S.S.	B. & B.	Armstrong, H.	Belt ¾″	Variable	30″	6″	H.	Open, R	52″	130	Yes	—
Humber	2 Humber	198	60 × 70	M., S.S.	B. & B.	—	Belt ⅝″	6 to 1	30″	6½″	2″	Open, R	50½″	105	Yes	*£40 0
Levis	2¼ Levis 2-stroke	211	62 × 70	None	Amac	F.E., H.	Belt ¾″	6¼ to 1	29½″	4″	2″ H.	Open, S	57″	110	No	£44 2
Midget Bicar	3½ Precision	499	85 × 88	M., S.S.	Amac	V.P., E.	Belt ¾″	3½ to 7 to 1	30″	5″	2¼	Open, R	52″	156	No	—
Motosacoche	2½ Motosacoche	290	64 × 90	M., S.S.	Dufaux	—	Belt	6½ to 1	31	10″	1¾″ Avon	Open, R	48″	100	Yes	—
Premier	3½ Premier	499	85 × 88	M., S.S.	B. & B.	Armstrong, H.	Belt ⅞″	5, 7, 10 to 1	30″	5″	2¼″ D.	Open	53″	200	Yes	—
Quadrant	2 Quadrant	292	70 × 76	M., S.S.	B. & B.	Quadrant, H.	Belt	5½ to 1	28½″	4″	—	Open, R	—	110	Yes	£47 10
Scott	3¾ Scott 2-stroke	535	73 × 63½	None	Scott	Scott, C.	Chain	4 & 7½ to 1	28″	6″	2½″	Open, R	54½″	180	No	—

* Armstrong three-speed hub, £10 10s. extra.

SIDECAR ATTACHMENTS ON THE BRITISH MARKET.

Name.	Details.	Price.
Canoelet	Coach-built, doors, adjustable seat	£12 12s.
Chater-Lea	Spring wheel	
Clyno	Special front suspension, coach built	£17.
Comfy	Three models (spring wheel, 44/- extra)	£6 6s. to £7 7s.
Coronet	Four models, wicker-cane, coach-built	£5 5s. to £7 12s. 6d.
Dunkley	Fifteen models, wicker-cane, coach-built	£5 to £15.
Farrar	Rigid wicker	£5 6s. to £7.
Gloria	Four models	£16 16s. to £21.
Grandex	Standard	£6 6s.
Griffin	Coach-built, wind screen, and hood	
Kerry	Three models, coach-built	£6 6s. to £10 10s.
Matchless	Two models, cane or coach-built	£14 14s. and £16 16s.
Millford	Rigid wicker, cane, or coach-built	£6 6s. to £14 5s.
Millford	Spring wheel, castor, or radial castor	£12 12s. to £17 17s.
Montgomery	Five models, rigid	£8 to £15.
Montgomery	Castor wheel	£12 10s.
P.M.C.	Spring wheel	£6 2s. 6d. to £7 12s. 6d.
Portland	Five models, wicker or cane	£5 5s. to £11 11s.
Rey	Rigid, wicker	£5.
Rossendale	Rigid, wicker	£4 10s. and £6 6s.
Turner	Low coach-built torpedo body	
Walbrook	Wicker or cane, torpedo body	

"READ and INWARDLY DIGEST."

1912 MODELS

awaiting your acceptance in MORECAMBE on CASH, EXCHANGE, or DEFERRED Terms:

SCOTT, 2-speed	Offers
P. & M.'s, 2-speed models	Offers
MORGAN RUNABOUTS	Offers
MATCHLESS, 8 h.p., 2-speed	List price
BAT-J.A.P., 8 h.p., 2-speed	List price
ZENITH, 6 h.p., 2-speed	£70 7
ZENITH, 3½ h.p., 2-speed	£55 13
BRADBURY, chain drive, 2-speed	£58 10
BRADBURY, belt drive, 2-speed	£55 0
BRADBURY, ordinary model	£48 10
BRADBURY, free engine model	£54 10
PREMIER, 3½ h.p., sidecar machine	List price
CLYNO, 5-6 h.p., 2-speed	£68 5
CLYNO, 4-speed	£73 6
HUMBER, 3½ h.p., 2-speed	£52 10
HUMBER Lightweight	£37 0
HUMBER Lightweight, 3-speed	£10 10s. extra
HUMBER Lightweight, T.T. model	£42 0
HUMBER Lightweight, Lady's model	£40 0
HOBART, Lady's model	List price
A.C. TRICARS	List price
HUMBER, 3½ h.p., pedal motor cycle	£47 10
HUMBER, 2 h.p., lightweight, single	£37 0
DOUGLAS, "G" model	£41 0
DOUGLAS, "H" model	£47 0
DOUGLAS, "J" model	£47 0
DOUGLAS, "K" model	£50 0
DOUGLAS "L" model, lady's	£52 0

NEW & SECOND-HAND MODELS.

SCOTT, 1911, brand new	£60 0
PHELON & MOORE, 1911, brand new	£60 0
ROYAL ENFIELD, chain drive, 1911, new	£40 0
REX DE LUXE, 5 h.p., as new, 1911 model	£50 0
PHELON & MOORE, 1910, extra good	£59 0
CRESCENT CAR, as new; cost £95	£80 0
MOTO-REVE, twin, new	£28 10
MOTO-REVE, single, as new	£22 0
J.A.P.-BAT, 4 h.p., 1911, as new	£35 0
INDIAN (green), 5-6 h.p., 1910	£35 0
N.S.U., 1910, 2-speed gear	£35 0
PHELON & MOORE, 1910, good order	£45 0
HUMBER, 2-speed gear, 1910, fine order	£38 0
MATCHLESS, 2-speed gear, 1911	£55 0
HUMBER (lightweight), 3-sp. gear, as new	£39 0
ROYAL ENFIELD, 1910, good order	£28 10
J.A.P.-CHATER-LEA, 10 h.p., recent	£36 0
REX, 1910 SPEED KING, as new	£39 0
ZENITH, 1909, 5-6 h.p.	£32 10
J.A.P.-CHATER-LEA, F.E., 8 h.p.	£36 0
BRADBURY, 1910, fine order	£36 0
BROWN, 3½ h.p., F.E.	£27 10
TRIUMPH, 1911, new	£48 15
J.A.P.-CHATER-LEA, 5-6 h.p.	£22 10
F.N. Two-speed Lightweight	£27 10
TRIUMPH, 1909	£32 10
BROWN, 5 h.p., twin	£35 0
INDIAN, Red, 1910	£40 0
INDIAN, Green, 1910	£37 0
TRIUMPH, 1911, F.E., new	£55 0
SINGER, 2 h.p.	£13 10
NORTON, 5 h.p., two-speed	£49 0
TRIUMPH, 1910	£35 0
MINERVA, 3½ h.p.	£17 10
MINERVA, 3½ h.p., two-speed	£35 0
GRITZNER, F.E.	£18 0
REX, 3½ h.p., good order	£25 0
REX, 3½ h.p., nice line	£27 10
SINGER, 1911, Lightweight	£30 0
HUMBER, two-speed, 1910	£38 10
REX DE LUXE, 5 h.p.	£39 0
ROYAL ENFIELD, 1910	£27 10
SINGER, 3½ h.p.	£19 10
N.S.U., 3½ h.p.	£18 0
QUADRANT, 4 h.p.	£18 0
CLYDE, 2½ h.p.	£13 10
F.N., 1½ h.p., good order	£13 10
QUADRANT, 3½ h.p.	£16 0
MOTO-REVE, twin, 1911	£30 0
N.S.U., 3 h.p.	£15 0
Lady's **SINGER,** 1911, as new	£29 10
MOTO-REVE, 1910	£22 10
HERALD, 4½ h.p. Stephen	£22 10
SIMMS, 1½ h.p.	£12 0
HUMBER, 3½ h.p., belt-driven	£18 0
MINERVA-J.A.P., F.E.	£25 0
BRADBURY, 3½ h.p., 1910	£36 0
MOTO-REVE, single-cylinder, 1910	£22 10
BRAITHWAITE, 3½ h.p., two-speed	£27 0
SCOTT, 1911, as new	£50 0
F.N. Four-cylinder, 4½ h.p.	£25 0
BRAITHWAITE, 4 h.p.	£17 0
REX SPEED KING, 5 h.p.	£40 0
REX, 3½ h.p., good puller	£20 0
DOUGLAS, 1911	£33 0

HEAPS MORE ON WEEKLY LIST.

ACCUMULATOR MODELS.

From £3 down and 5/- per week.

ARIEL, 3½ h.p., Michelin and Dunlop tyres	£11 0
F.N., 2½ h.p., good puller	£10 0
F.N., 1½ h.p., nice order	£10 0
REX, 3½ h.p., enamelled French grey	£12 0
HUMBER, 2½ h.p., useful mount	£9 0
HUMBER, 3½ h.p., decent machine	£12 0
HUMBER, 2½ h.p., ready for the road	£10 0
HUMBER, 3½ h.p., splendid condition	£17 0
FAFNIR, 3½ h.p., general condition good	£12 0

We have now arranged to have **weekly specification lists,** and shall be pleased to send you one. By the bye, have you got our Accessory List? If not, send at once. The library is full

ACCESSORIES.

ARTICLE.	Sale Price.
Long Handle-bars	4 7½
Triumph Pattern Ditto	4 11½
Separate Generator Lamps	11 11½
Special Bracket Ditto	19 11½
S.H. Leather Coats	12 11½
S.H. Leather Suits complete	15 11½
Waterproof Umbrella Coats	5 5½
Oilskin Breeches	2 7½
New Large Motor Cycle Saddles	7 11½
New Inner Tubes, all sizes	4 7½
New Cowey Speedometers	£3 15
New Jones Speedometers	£2 15
New Covers	from 11 11½ to 16 11½
New Pannier Bags	from 2 11½ to 5 11½
Swan-neck Seat-pillars	2 7½
Strong Black Enamelled Carriers	3 11½
E.I.C. Plugs, 3/8 size	- 11½
Parker's Self-contained Lamps	15 5½
Sidecar Aprons, wool lined	6 5½
Spec. Twist Horns	3 11½
Triumph Pattern Horns	4 5½
Tube and Belt Cases	5 5½
Rubber Belts, 7½ × 3in.	5 5½
1911 B. & B. Carburetters, H.B.C.	22 6
S.H. Trembler Coils	6 7½
S.H. Non-trembler Coils	6 5½
S.H. Nab Seat-pillars	6 11½
Garner Whistles	11 11½
Tan Gauntlet Gloves, lined	4 5½
Tan Gauntlet Gloves, unlined	4 11½
New Butted Tubes, all sizes	10 11½
Leather Gauntlet Gloves	2 10½
Mudguards, complete, 2in. and 2½in.	3 5½
H.B. Watch and Holder	3 10½
Special Ditto	4 7½
Waterproof Leggings	4 7½
Waterproof Leggings, with fringe	7 11½ to 9 11½
Waterproof Suits	11 11½
Dunlop Suits	27 6
Hellesen's Dry Cells	4 6 and 6 6
Triumph Compression Domes	1 11½
New Generators	3 10½ and 4 7½
S.H. Parker Generators	6 7½
S.H. P. & H. Generators	6 11½
S.H. Carburetters, H.B.C.	11 11½
Horn Grips	1 10½
Lamp-brackets, all patterns	1 10½
Morecambe Studded Covers	18 11½
Heavy Ditto	22 11½
Mabon Free Engine	£2 2
F.I.E.N. Magnetos	£3 4 11
New F.R.S. Generators	6 11½
Exhaust Cut-outs	2 10½
H.B. Mirrors	2 7½ and 4 5½
H.B. Watch Holders	- 9½ and 1 10½
Self-contained Lamps	12 11½
New Red Tubes, all sizes	8 5½
Leather and Steel-studded Bands	18 11½
Carbide Carriers	1 9
Rubber Goggles	1 3
Brass Exhaust Whistles	2 10½
Felt Grips	3 11½
2in. Dermatine Belting	per foot 1 9
2in. Lyso Belting	" 1 8
Bowden H.B.C.'s	8 5½
S.H. Unite Couplers	9 11½

ARTICLE.	Sale Price.
Tin Tube Cases	1 5½
New Front Brakes	5 11½
New Back Brakes	7 11½
S.H. B. & B. Carburetters, H.B.C.	15 11½
S.H. Amac Carburetters, H.B.C.	14 11½
S.H. Bowden Brakes	9 11½
New Kit Ariel Tools	11 11½
Oil-cans, new	- 5½
Petrol Funnels, new	- 7½
Special Belt Fasteners	- 5½
Vulcan Belt Fasteners	- 10½
Bradbury's Adjustable Pulleys	11 11½
Assorted Adjustable Pulleys	6 11½
S.H. Lucas and F.R.S. Lamps	from 19 11½
S.H. Brooks's Saddles	" 10 11½
S.H. Odd Saddles	" 6 11½
S.H. Electric Lamps	4 11½
S.H. Generators	1 11½
S.H. Self-contained Lamps	4 11½
S.H. Separate Generator Lamps	3 11½
S.H. Triumph Cylinders	25 11½
S.H. Triumph Pistons	8 11½
S.H. Odd Cylinders	from 19 11½
S.H. Odd Pistons	" 6 11½
S.H. Odd Parts of Engines	Cheap
S.H. Odd Bags	from 1 11½
S.H. Rubber Belts	from per foot - 9
Chemico Repair Outfits, 1/- sizes	- 8½
Dunlop Repair Outfits, 1/- size	1 1½
Patchquick Outfits, 3/- size	2 6
Matchless Spring Forks	12 11½
XL'All Spring Forks	12 11½
Bowden Light Brakes	4 11½
Veeder Cyclometers	10 11½
New Brooks's Padded Saddles	19 11½
S.H. Brooks's Pan Seat Saddles	19 11½
S.H. Ukanfes Stands, 26in. wheels	2 11½
Small Pannier Bags	2 11½
Extra Large Pannier Bags	4 11½
Bosch Plugs	3 6
Lodge Plugs	4 -
Lucas Rear Lights	1 11½
Three Strong Sales	each £3 19 11½
Two Smaller Ones	" £2 19 11½
Harrison's Back Rests	7 11½
S.H. Auto. Variable Pulleys	12 11½
S.H. Matchless Spring Forks	8 11½
Straight Silencers	2 11½
S.H. N.S.U. Fan	4 11½
S.H. Brown Free Engine	13 11½
S.H. Mabon Variable Pulley	£1 19 11½
S.H. Albion Four-speed	19 11½
S.H. Brooks's Large Carrier Bag	4 11½
S.H. N.S.U. Two-speed	£2 19 11½
S.H. Albion Free Engine	£1 19 11½
S.H. Bradbury Spring Forks	18 11½
S.H. Bradbury Spring Forks (1910)	24 11½
New XL'All Saddles	29 5½
New XL'All Pan Seat Saddles	48 11½
New F.R.S. Back Rests	25 11½
S.H. Douglas Footrests	4 11½
S.H. Footrests	4 11½
S.H. Pumps	1 3
S.H. Horns	1 11½
S.H. Butted Tubes	from 4 11½
S.H. Circular Tubes	" 3 11½
S.H. Carriers	" 1 11½
S.H. Rom Covers	" 24 11½
S.H. Kempshall Covers	" 35 11½
S.H. Covers, various	" 8 11½
S.H. Foot Pumps	3 11½
Defiance Watches	3 11½
S.H. Mudflaps	1 5½
S.H. Tank Control Carburetters	1 11½
Tap Tube Generator Brackets	- 10½
Odd Pulleys	from 4 11½
Bell Punches	- 10½
Large Car Coils	9 11½

LOTS OF OTHER BARGAINS.
Lists free.

TO THE TRADE.

WANTED.

1912 P. & M.'s at £60, SCOTT'S at £60, MORGAN RUNABOUTS at 5% off retail price, and TRIUMPHS at 6% off list. Cash waiting.

HITCHEN'S MOTOR EXCHANGE CO., LTD.,

—The Money-back Firm,—

MORECAMBE.

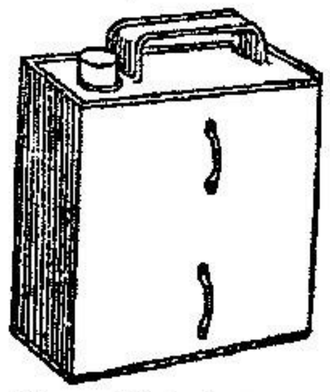
Telephone: 152. Telegrams: "Motor, Morecambe."

BROWN BROTHERS, Limited

The 'Duco' Combined Belt Punch and Cutter. Punches a hole and cuts the belt to the correct length in one operation. The cutting blade is detachable, so that it can easily be sharpened when necessary. Well made and finished in best style. One size only, suitable for ¾ or ⅞in. belt. Each 4/9.

Motor Cycle Splashers.

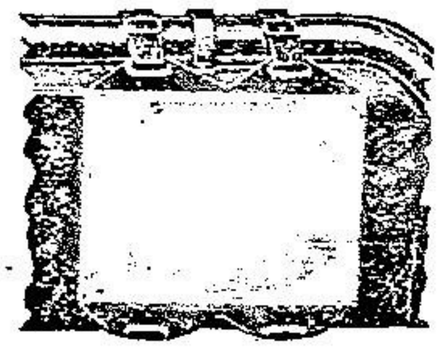
All leather. The strongest and most durable on the market. Fitted with spring steel strip, which always keeps it in shape. No. 11548c, size 15 x 12, each 3/9. Patent waterproof leather, supported with spring steel strips. 11548d each 2/6.



Spare Petrol Can.

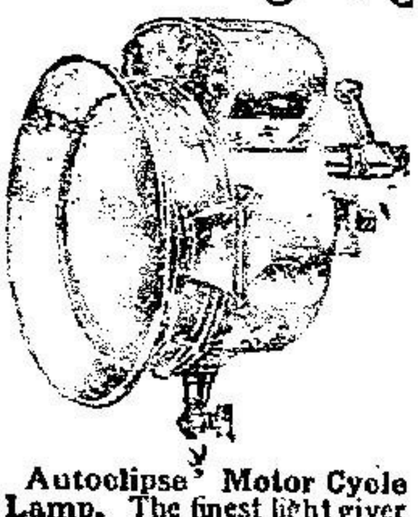
Neat and compact. Designed with metal loops for strapping to carrier. Enamelled green with brass stopper.

11617a, 1 gall. size, each 2/6.
11617b, ½ gall. size, each 2/-.

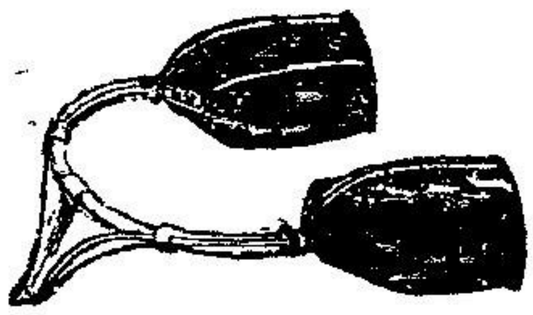


"A.K." Knee Grips for Motor cycles.

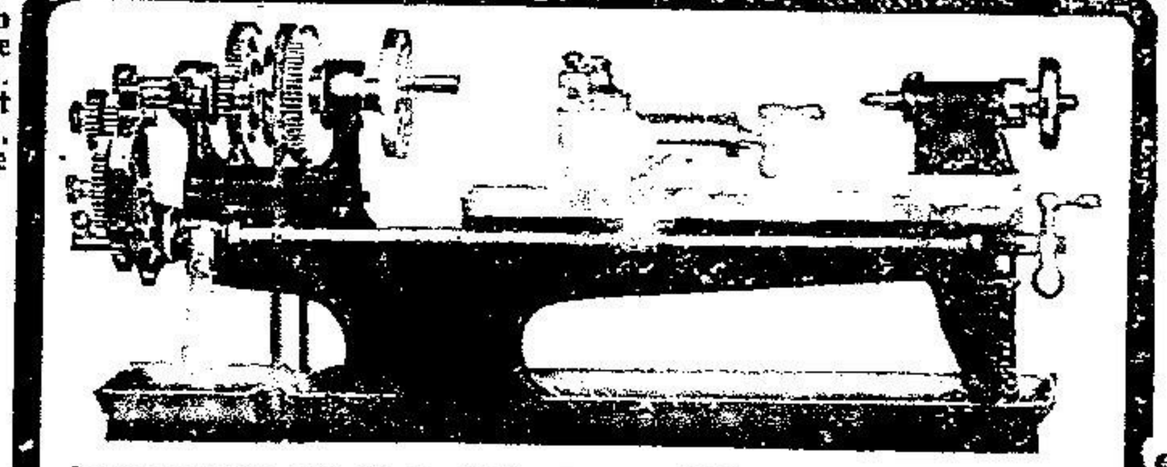
Give the rider a firm hold on the machine, thereby leaving the hands free to manipulate handle-bar levers. Per pair, 6/6.



Autoclipse' Motor Cycle Lamp. The finest light giver and best constructed lamp on the market. Write for new 'Autoclipse' folder, describing latest models.



"ROBI" SHIELDS.
Keep your hands warm and do not interfere with handle-bar controls. Mackintosh lined. Prices from 9/6.

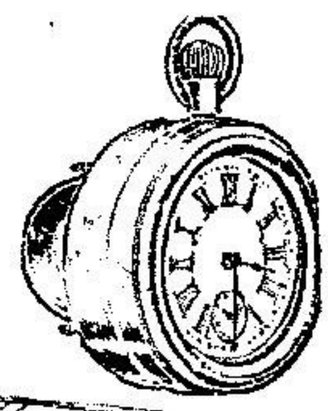


Improved English Made 3½ in. Centre, Sliding, Screwcutting, and Boring Lathe. The flywheel is balanced, and extra heavy; this, in conjunction with the large cone on the headstock, makes the lathe very powerful **Testing**—Every lathe tested to bear twice the strain that any use could put upon it. Full specification up request.

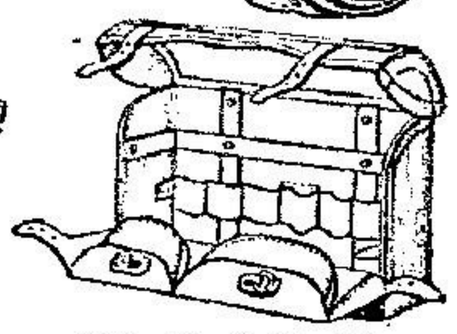
No. 7708h. Bench Lathe only .. .. £10 10 0.
No. 7708k, for Treadle or Power .. .. £13 10 0.

We invite applications for particulars of any kind of tools

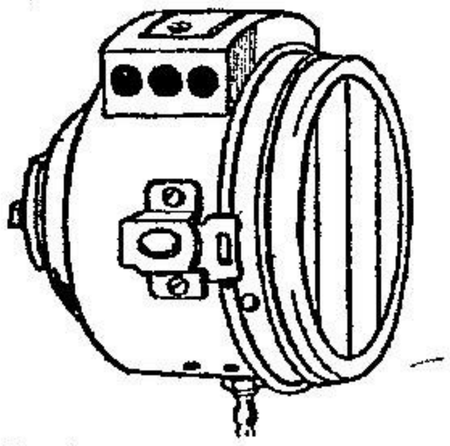
The "Challenge" Watch
For fixing on handlebar. Nickel-plated finish. Complete with handlebar attachment with secret fastening, each 5/9.



No. 10209s. 'King Dick' Belt Drill, each 1/6
No. 10209t. 'King Dick' Belt Punch each 1/6.



Motor Cycle Tool Bag.
No. 10145a. Metal frame, well made and strong. Size 9 x 3½ x 6 in. Each 6/- NOTE—Latest pattern has one large purse and no fall front.



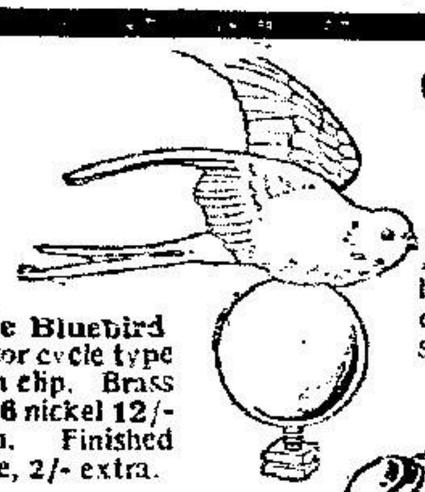
The 'Duco' Motor Cycle Lamp The body is made in one piece, and covered with a heavy coating of vitrified enamel. This highly glazed surface needs only an occasional wipe with a damp cloth. Fitted with mirror lens. No. 11116b. Enamelled black with nickel-plated mounts, 12/- each.

Lodge Motor Cycle Sparking Plug.

Gives the greatest satisfaction.

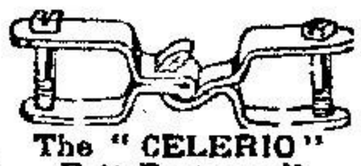
Price, 4/- each.

We can strongly recommend our "DUCO" Plugs. Particulars will be sent on request.

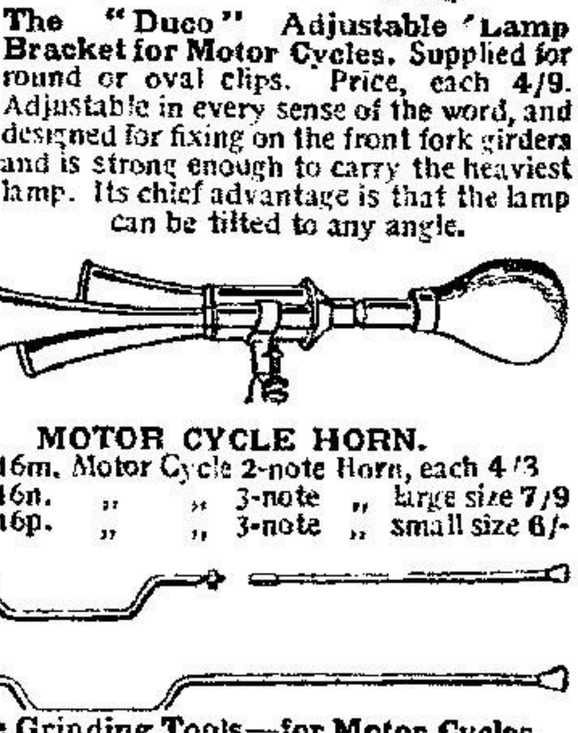


The Bluebird motor cycle type with clip. Brass **10/6** nickel 12/- each. Finished blue, 2/- extra.

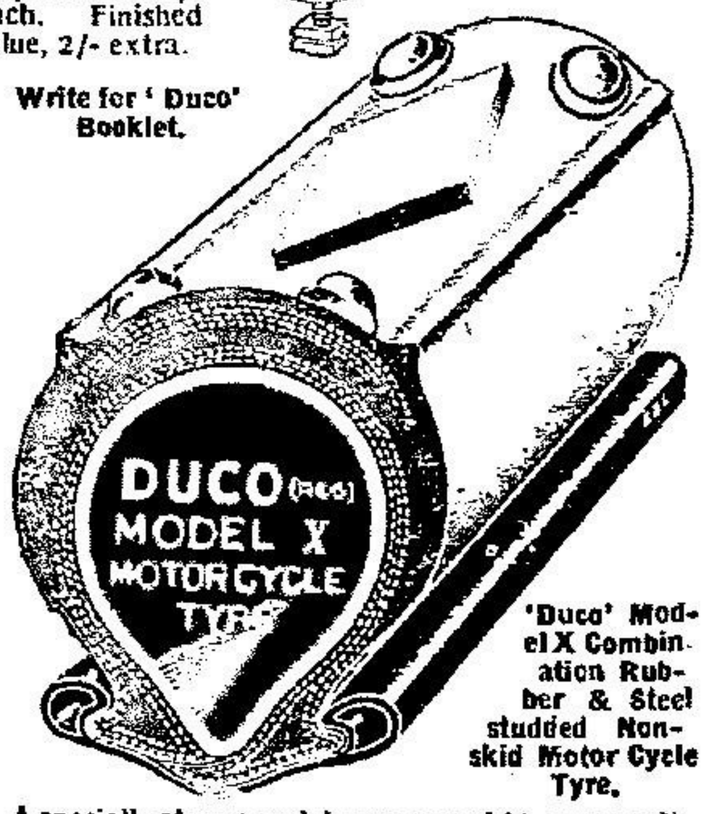
Write for 'Duco' Booklet.



The "CELERIO" Belt Fastener."
A thoroughly reliable belt hook which can be quickly detached, but will never slip apart at any speed, will fit ⅞ or 1 in. belts. Price 9d. each.



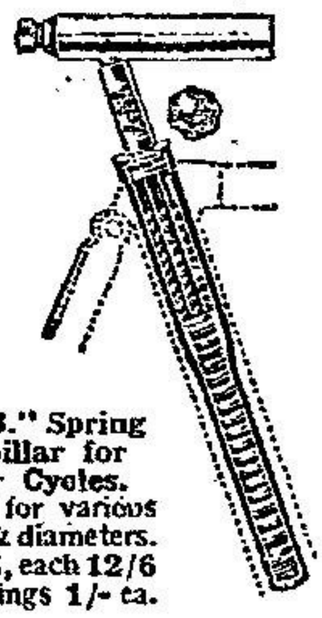
The "Duco" Adjustable 'Lamp Bracket for Motor Cycles. Supplied for round or oval clips. Price, each 4/9. Adjustable in every sense of the word, and designed for fixing on the front fork girders and is strong enough to carry the heaviest lamp. Its chief advantage is that the lamp can be tilted to any angle.



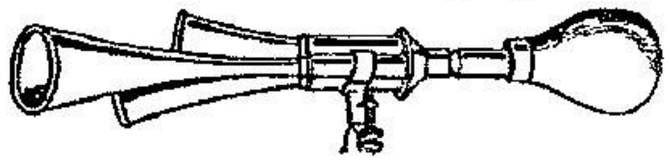
'Duco' Model X Combination Rubber & Steel studded Non-skid Motor Cycle Tyre.

A specially strong and heavy non-skid cover suitable for powerful machines, 26 x 2¼in., cover 50/-

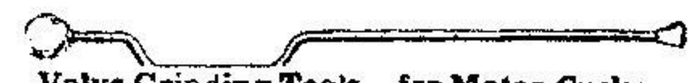
"FLASH," Antiseptic Hand Cleaner. 'Flash' cleans everything better and quicker than soap, it leaves the skin absolutely clean and free from injurious and unhealthy matter; never chafes or roughens; is thoroughly antiseptic beneficial to the skin, and may be used with hard, soft, hot, cold, or salt water.
6d. and 2/6 per tin



"N.A.B." Spring Seat-pillar for Motor Cycles.
Supplied for various weights & diameters.
No. 12125, each 12/6
Spare springs 1/- ea.



MOTOR CYCLE HORN.
No. 11016m. Motor Cycle 2-note Horn, each 4/3
No. 11016n. " " 3-note " large size 7/9
No. 11016p. " " 3-note " small size 6/-

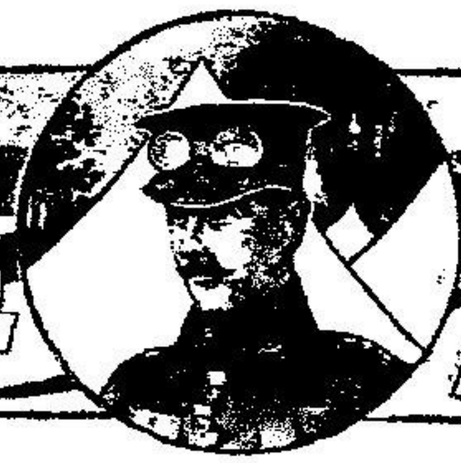


Valve Grinding Tools—for Motor Cycles.
Specially made with a view to overcoming the difficulty of reaching valves that need grinding.
No. 18722a, plain, 2/- each. No. 13722a, adjustable, 2/6 each.

London Manchester Paris

West End Showrooms: 15, Newman Street, Oxford Street, W. Wholesale: Great Eastern Street, E.C., and Deansgate, Manchester.

MILITARY MOTOR CYCLING NOTES



BY "CELERITER"

THOSE motor cyclists who attended the Army Manœuvres in years past as despatch carriers and generals' orderlies are beginning to wonder whether there will again this year be an opportunity of combining a delightful holiday together with military instruction during September. It will be remembered that in these pages an earnest appeal was made to all civilian motor cyclists to refrain from again offering their services to the military authorities until such time as the latter saw fit to provide a suitable organisation for creating a volunteer motor cycle corps. Already two committees have had this matter under consideration. The one appointed by the A.C.U. forwarded a report more than a year ago to the War Office, of which no notice has since been taken; whilst the other committee, appointed by the War Office, has done little.

A Deadlock.

The result has been a deadlock, and in the meanwhile it has been decided not to hold the Army Manœuvres in Cambridgeshire on account of the drought, and civilian motor cyclists will not be invited to take part in whatever manœuvres may be held. During the past year several motor cyclists have been added to the establishment of Royal Engineer units, and also many officers in the regular Army have taken up the motor cycle pastime. It is believed that the military authorities are fondly relying upon these two sources to supply them with such motor cyclists as they may require pending the formation of a volunteer motor cyclist corps. On paper this sounds a very feasible idea—in fact, just the sort of idea which would be likely to commend itself to the theorists of Whitehall—but in practice, as every practical motor cyclist will realise, especially if he has had much to do with motor cycle amateurs, the idea is absurd. To the theorist, a motor cyclist, no matter what the experience of the rider or the make of his machine, is a man-machine capable of averaging thirty miles an hour over any roads, under any weather conditions. We civilian motor cyclists are responsible for having inculcated that opinion into the minds of the General Staff. We have sent them our best riders mounted on their best machines, each one of whom was not only deadly keen to excel in the work he undertook, but each one of whom was extremely well equipped in the matter of experience, knowledge, and ingenuity to undertake the work that falls to a motor cyclist at army manœuvres.

The motor cyclists who have lately been incorporated in the Royal Engineers are doubtless good all-round mechanics, but so far as motor cycling is concerned they cannot be compared with the expert enthusiasts who have volunteered for this work in the past; whilst as regards the officers who, having become possessed of a motor cycle during the past twelve months, are now willing to come out and help the General Staff on manœuvres, there are few who would be likely to shine in a reliability test.

Despatch Carrying.

In despatch carrying for military purposes, you not only require the very best kind of man and the very best and most suitable kind of machine, but it is essential to have a man who has every reason to place implicit confidence in himself and in his machine.

The ordinary motor cyclist is usually content and more or less competent to tootle along the main roads at twenty miles an hour, stopping at a repair shop when adjustments are to be made or at the nearest hostelry when the weather becomes inclement or night supervenes. For this purpose, a lightweight machine in fair running order is all that is required, but that is not the sort of mount that is suitable for the orderly who has to "puff" for a general at army manœuvres. *Imprimis*, he has to carry all he wants for the duration of the manœuvres on his mount; he has to traverse roads which are not only blocked with troops, but which have been cut to pieces by the transit of army transport waggons and traction engines. More usually his journeys have to be accomplished at night, and it is seldom that he has an opportunity of getting on to a high road. What he requires is a high-powered two-speed mount with a free engine which is both fool-proof and weather-proof. If he is wise, he will carry all his spares with him, and he must know how to replace them himself, as repair shops are infrequent in the track of an army, and even when one is found it is liable to fall into the hands of the enemy. Personally—and I speak with considerable experience—I believe that the motor cyclist who goes through army manœuvres without a breakdown has qualified for a first place in the most stringent reliability test that man's ingenuity could contrive, and it is no aspersion on the motor cycling knowledge and capacity of the average R.E. or subaltern when I say that very few of them are fit to enter for such a test.

Will the Authorities take notice?

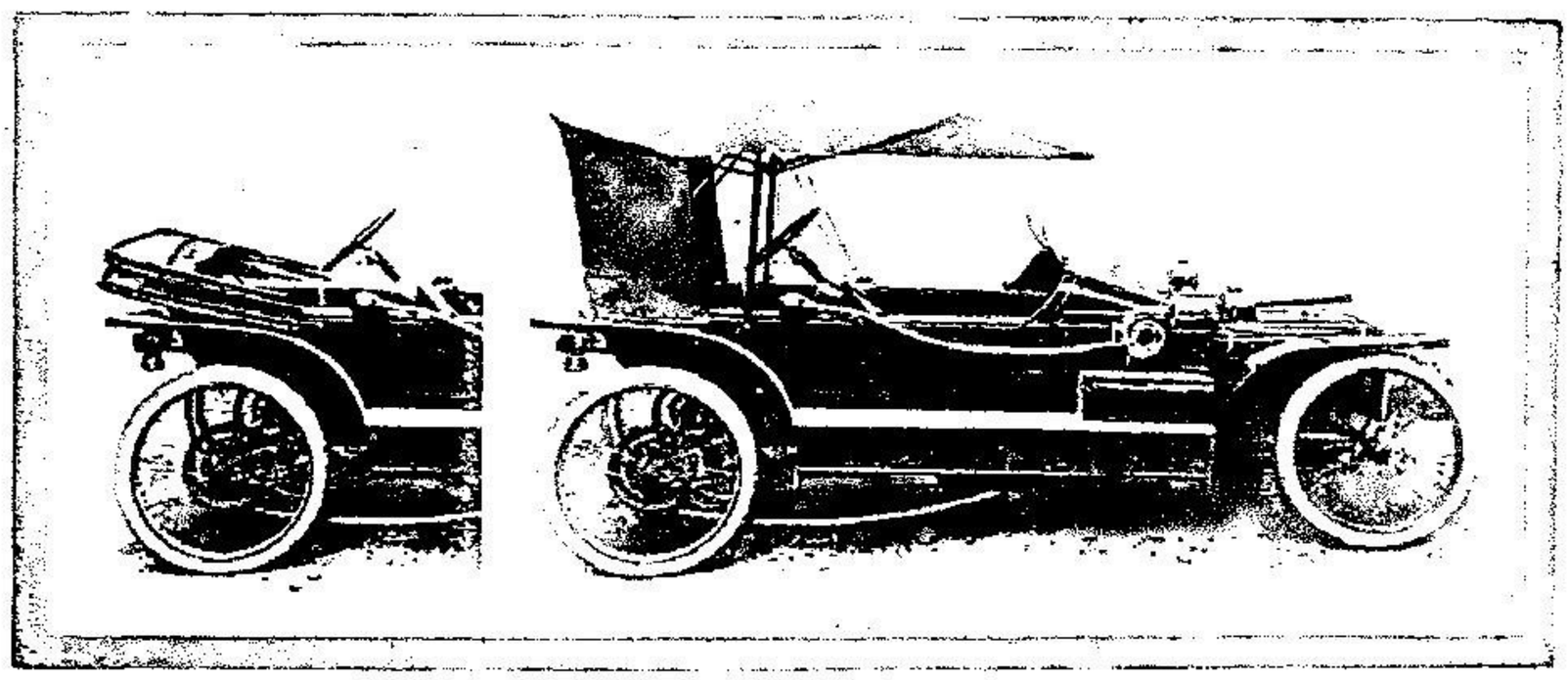
Let us hope that the authorities will realise these considerations as facts, and that during the winter they will in earnest take up the matter of forming a motor cycle corps of experts. Among the various suggestions already offered to the War Office in this connection the three following schemes appear to be the most practicable, and it is probable that at least one of them, if not all three, will be adopted.

(1.) One officer and seventeen motor cyclists added to the establishment of each of the thirteen authorised cyclist battalions.

(2.) Two officers and forty motor cyclists to be attached to the headquarters of each of the fourteen Territorial divisions.

(3.) Twenty groups of motor cyclists, each consisting of one officer and twenty men armed with Rexer automatic rifles (250 rounds a minute) for coast defence in case of war, and for staff duty on manœuvres.

In each instance it is suggested that the men should be attached for drill purposes to the Territorial unit nearest to their homes in order to enable them to learn the first rudiments of military knowledge.

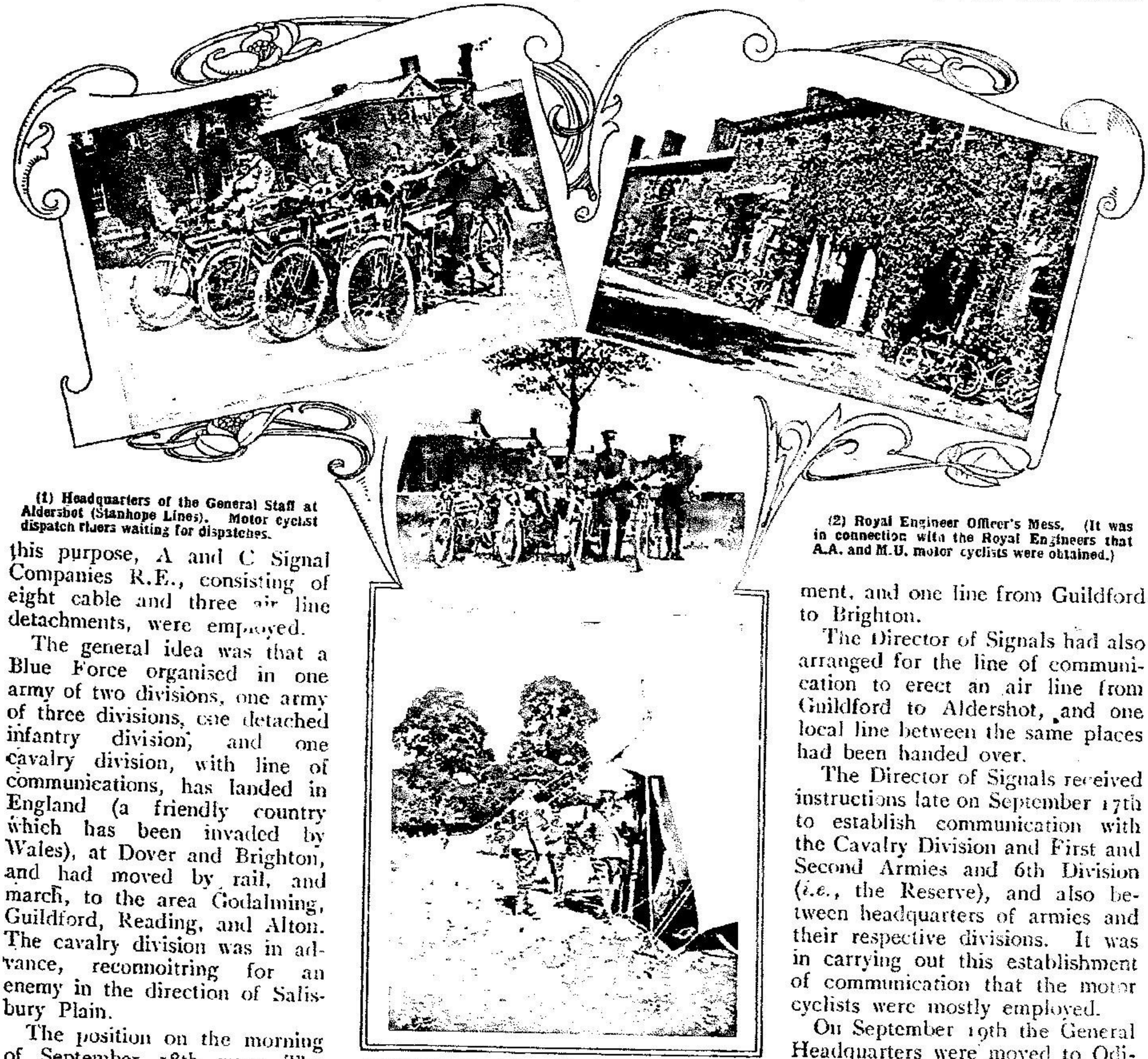


A CRESCENT RUNABOUT fitted with the Astill patent easily-folding hood. The maker of the machine demonstrated to us a few days ago the ease with which the hood may be opened and closed without leaving one's seat.

MORE MILITARY MOTOR CYCLING.

BY A RETIRED REGULAR OFFICER.

ON Sunday, September 17th, ten motor cyclists, enrolled through the Automobile Association and Motor Union, and about a dozen motor cyclists belonging to the Cambridge University O.T.C., were sent to Aldershot to assist the Royal Engineers in carrying out some experiments in connection with wireless telegraphy and air lines. For this purpose, A and C Signal Companies R.E., consisting of eight cable and three air line detachments, were employed.



(1) Headquarters of the General Staff at Aldershot (Stanhope Lines). Motor cyclist dispatch riders waiting for dispatches.

(2) Royal Engineer Officer's Mess. (It was in connection with the Royal Engineers that A.A. and M.U. motor cyclists were obtained.)

(3) Headquarters of General Staff at Aldershot, showing orderly tent in the rear.

(4) Headquarters moved to Odihan. The orderly tent with orderlies and despatch riders waiting outside.

The general idea was that a Blue Force organised in one army of two divisions, one army of three divisions, one detached infantry division, and one cavalry division, with line of communications, has landed in England (a friendly country which has been invaded by Wales), at Dover and Brighton, and had moved by rail, and march, to the area Godalming, Guildford, Reading, and Alton. The cavalry division was in advance, reconnoitring for an enemy in the direction of Salisbury Plain.

The position on the morning of September 18th was: The General Headquarters at Aldershot, the First Army Headquarters at Hartford Bridge Flats, 1st Division Headquarters at Eversley, 2nd Division Headquarters at Hartley Row, the Second Army Headquarters at Farnham, the 3rd Division Headquarters at Odiham, the 4th Division Headquarters at Alton, the 5th Division Headquarters at Farnham, and the 6th Division, comprising General Reserve, at Godalming, whilst the Cavalry Division Headquarters were at Netheravon. Altogether this was a fairly extensive area, and meant a good many miles for motor cyclists to cover in order to deliver their despatches.

The special idea was that the Director of Signals had arranged to take over two lines from Guildford, the advanced base, to Dover from the local Government, and one line from Guildford to Brighton.

The Director of Signals had also arranged for the line of communication to erect an air line from Guildford to Aldershot, and one local line between the same places had been handed over.

The Director of Signals received instructions late on September 17th to establish communication with the Cavalry Division and First and Second Armies and 6th Division (*i.e.*, the Reserve), and also between headquarters of armies and their respective divisions. It was in carrying out this establishment of communication that the motor cyclists were mostly employed.

On September 19th the General Headquarters were moved to Odiham, and on the 20th to near Basing House (Basingstoke).

The experiments carried out seem to have been entirely successful, and the weather, fortunately, was fine, although on the 19th and 20th some very sharp showers were experienced.

All the motor cyclists seem to have escaped any trouble, other than a puncture or two, with the exception of one man, who lost a spring in the

More Military Motor Cycling.—

contact-breaker of the magneto, and who had to travel from Basingstoke to London by train in order to replace it.

The Desiderata of Military Motor Cyclists.

The result of the experiment as regards motor cyclists is that it is found that there should be ten men to each signal company of the R.E.; *they should always be the same ten men*, so that they know their officers and their officers know them and their capabilities; they should, of course, be subject to military discipline as Territorials or some such arrangement, it not being at all necessary that they should be regular soldiers. Each man should also be thorough master of his machine, with a good all-round knowledge of other makes of motor cycle besides the particular make he rides. Each despatch should be taken by two men, in case one breaks down, owing to puncture or any other cause, so that, whereas ten men per company are sufficient, yet really twenty men are required if the arrangement of two men per despatch is to be carried out.

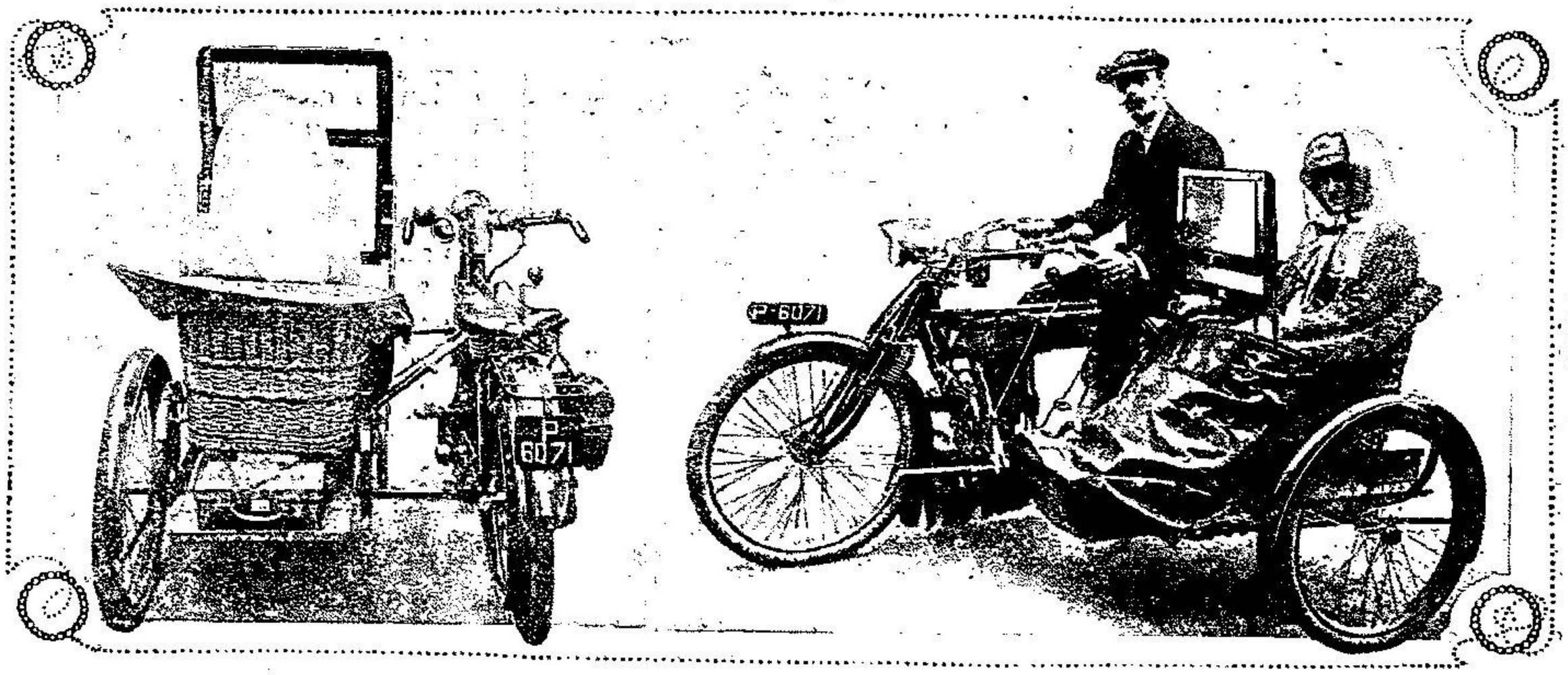
In addition to this, all motor despatch riders should be encouraged in map reading, map making, use of the compass both by day and by night, besides such things as signalling, a knowledge of the various bugle calls, etc., all of which would greatly tend to make the men useful generally. It is quite surprising how few there are amongst motor cyclists who really know how to "set a map."

A Serious Occupation.

The ideal military motor cyclist despatch rider is in reality far more than a mere messenger, as in actual warfare, when telegraph wires are cut, he would have to get a message through on his motor cycle, and on the prompt delivery of his despatch might depend the fate not only of the army, but of the country. This would require him to use all his knowledge, and keep all his wits about him, and his eyes open, and stopping for lunch, etc., whilst on the road with a message (as has happened on this and other occasions), would, of course, be out of the question; so that military motor cycling must be treated seriously by those who undertake it.

INTERESTING SIDECAR FITMENTS.

THE photographs reproduced depict Mr. and Mrs. Edward Cox, of Guildford, and their 3½ h.p. Zenith-Gradua and sidecar. Mr. Cox is the chairman of the Surrey Motor Cycle Club and a regular attendant at club runs and competitions. In a letter to us he mentions that he has had a very good season's running, his mileage including a 600 miles tour without any trouble. He draws special notice to the luggage carrier and spring shackles on the sidecar, which greatly add to the passenger's comfort. The dust screen at the rear of the chair, and also the sidecar wind screen will be observed. Another detail which might pass unnoticed is the strap from the tube under the tank to the sidecar stay. This is fitted as a precaution should the front fixing of sidecar to bicycle move. There have been serious accidents recently due to this fixing giving way, and that is why Mr. Cox considers this or some other precautionary fixing which might help in some way to minimise the risk advisable.



Mr. and Mrs. Edward Cox and their 3½ h.p. Zenith-Gradua and sidecar. Several interesting fitments will be observed on the sidecar attachment.

Earle L. Ovington, the American motor cyclist who came over to this country a year or two ago, is now an airman. Following England's lead, Postmaster-General Hitchcock, of U.S.A., has issued an order authorising Ovington to act as an air mail carrier, and further directing the postmaster at New York to despatch letters *viâ* the aeroplane route, the official number of which is to be "Route 607,001."

Ovington was recently appointed to carry the mails over a short route between Nassau and Brooklyn, and is now completing preparations to transport official mails from New York to Los Angeles.

EXTREMES MEET. No. 2.

We have received another photograph of an unique gathering. This time, as will be seen, there is an elephant, horse, car, motor cycle, horse and trap, and "push cart."

The Motor Cycle as a Scouting Mount.

[5755.]—I am sending you a photograph of myself on a 7 h.p. twin Indian.

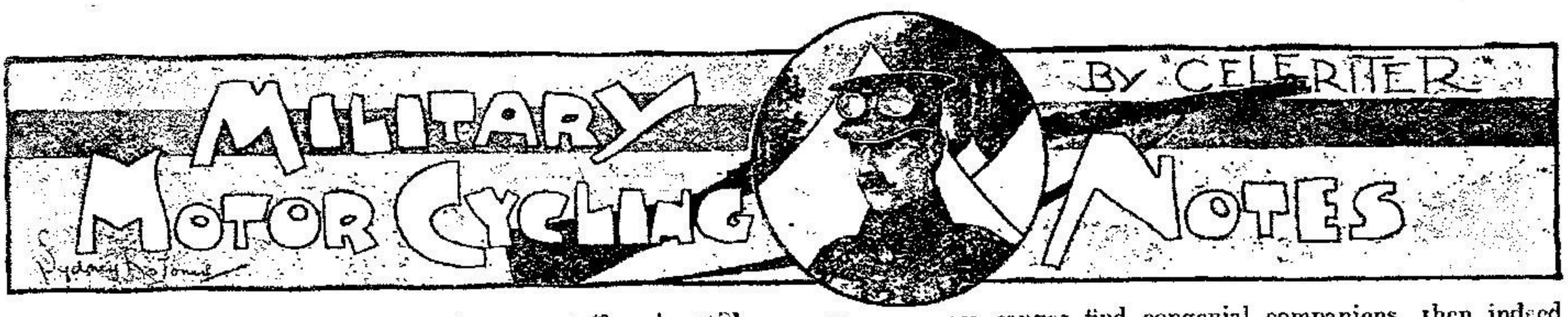
As a scouting mount this machine proved itself a great success at the recent Norfolk Yeomanry Camp at Wells. Its silent running amongst the horses, power to start up any hill, and great petrol capacity, to my mind make this machine an ideal mount for military work. I had most awful roads to traverse, very often on grass, but not once

Lc. Cpl. C. Bettinson. (See letter No. 5755.)

in sixteen days (working about six hours per day) had I occasion to open the toolbag.

I send you this, thinking it might be of interest to your readers. Lc. Cpl. C. BETTINSON, K.O.R.R.N.Y.

extreme meets 1



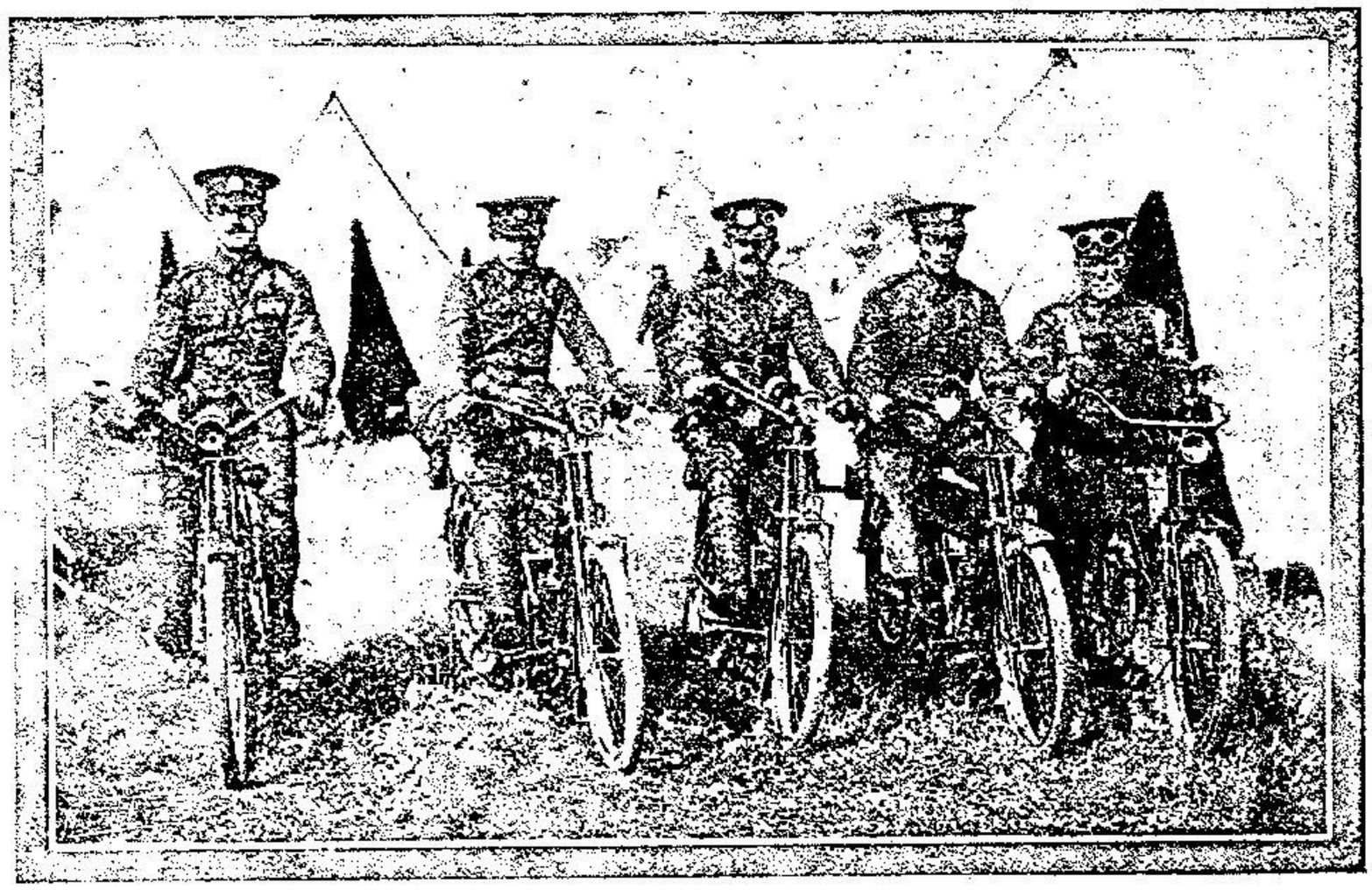
WHILST the Committee at the War Office is still muddling along working out the future of what Lord Haldane calls the "Technical Reserve," two definite decisions have been arrived at and regulations framed which will interest all motor cyclists and those in the trade who employ motor lorries.

Motor Cyclists in the Territorial Army.

It has now been decided that each cyclist battalion may enrol seventeen motor cyclists, and that these are to draw a special petrol allowance of six shillings and sixpence a day during annual training. At the first glance this allowance may seem inadequate to compensate the motor cyclists for the wear and tear to their machines and for the running expenses entailed, but, as a matter of fact, this is by no means the case, and the allowance must be looked upon as a very fair compromise.

The Work of Motor Cyclists.

It is not as if the motorist were expected to be always on the go during the fifteen days he is in camp, for this is far from being the case. Generally speaking, the utmost mileage any motorist will be called upon to accomplish on duty during that period will be about 500 miles, so that the allowance works out at about twopence halfpenny a mile at the minimum, and in addition to this he gets a pound a year for the maintenance of his cycle, as well as his pay during camp as a soldier. During annual training there are usually three or four days when the motorist plays a very prominent part as the "Mercury" who links up the scattered columns of cyclists with each other; during this manœuvre or inspection period he may be called upon at any time of the day or night to go anywhere, and to go at top speed, and the success of the work accomplished by the regiment is very largely dependent upon the excellence of its motor cyclists, their grit, their ability to read a map, and their determination to "get there" at all costs and at best speed. There is a pleasing novelty about this work, because the police do not interfere to restrict the speed; there are, in fact, many cases on record of messages coming through at the rate of fifty miles an hour, and that means going "all out" when one takes into consideration the negotiation of villages and corners, and the necessity of consulting the map from time to time.



Military motor cyclists of the 6th Batt. Norfolk Regiment (Cyclists) Territorials at the Camp Ground, Great Yarmouth. Standing; from left to right: Capt. E. Dewing, Sergt. Major C. H. Vincent, Pte. T. Pechey, Lance Corpl. Coils, Sergeant. Four of the machines are 2¾ h.p. Enfields, the other a Triumph. The former machines were presented to the Regiment by Mr. L. Ross, and all have done excellent work despatch carrying.

Taking it Easy.

At other times in camp the motor cyclists attached to cyclist battalions have a very easy time of it. They are excused from early morning parades, and, as often as not, they are told off under a senior motorist to go for a run round the country and learn the roads, whilst the rest of the battalion is indulging in musketry exercises or drills. For a man who owns a reliable cycle of 3½ h.p. or 5 h.p. the position is ideal, and I cannot conceive of a pleasanter way of spending a holiday. How many of us, when we take our annual holiday, find it hard to get congenial companions or to map out a pleasant tour that will accommodate itself to our pockets. Here we have all three problems solved for us: all our expenses are paid and a bit over, we are set definite tasks to accomplish awheel, and if amongst the other sixteen motorists we cannot find congenial companions, then indeed we must be hard to please.

The Conditions of Service.

We motor folk are an independent crew, and we have held aloof from Territorialism in the past because we imagined it meant a lot of silly drill, restrictions, regulations, and other vexatious items. I am not attempting to recruit my brothers of the wheel for the Territorial Army, let me hasten to say, but I am only giving a few plain facts for the guidance of those who feel that they might like to combine pleasure and patriotism. The motor recruit will have to put in forty hours' work during his first year of service—some twenty of these will be spent in learning the rudiments of drill just like any infantryman, but thereafter the remaining hours will be spent in the saddle or learning how to make maps, or attending other instructive lectures. In succeeding years only ten hours are required, and these will be spent almost entirely in week-end outings and such-like work. The motorist will have to attend annual camp for at least eight days, or furnish a sufficient excuse for exemption, otherwise he is liable to be proceeded against and fined anything up to forty shillings; but such extreme measures are only taken in cases of obvious shirking on the part of the man. In return, the motorist receives two sets of uniform and the various emoluments detailed above; he enlists for four years' service, but should his civil work call him abroad he can get a free discharge, and—this by the way—a useful introduction or two from his officers or comrades. In camp the motor cyclists usually hob-nob together and form a little clique of their own, for they like to confer with one another regarding the events of the day and to compare notes as to their various mounts.

Where to Enrol.

At the present moment there are eleven cyclist battalions in Great Britain, each consisting of 21 officers, 500 cyclists, and 17 motor cyclists, and in the course of the next year two additional battalions will be formed. The best procedure is to write a letter to the *Adjutant*, stating your address and asking for full particulars of local companies, for if you

Military Motor Cycling Notes.—

live some way from headquarters you will probably be attached to one of these. The age limits are seventeen and thirty-five, and the minimum height 5ft. 2in. The names of the existing battalions are:

Highland Cyclist Battalion; headquarters, Perth, N.B.
Lowland Cyclist Battalion; headquarters, Linlithgow, N.B.
Northern Cyclist Battalion; headquarters, Newcastle-on-Tyne and Durham.
Yorkshire Cyclist Battalion; headquarters, Park Street, Hull.
Norfolk Cyclist Battalion; headquarters, Norwich.
Suffolk Cyclist Battalion; headquarters, Saxmundham.
Essex Cyclist Battalion; headquarters, Brentwood.
London Cyclist Battalion; headquarters, Fulham House, Putney Bridge, S.W.
Kent Cyclist Battalion; headquarters, Tonbridge.
Devonshire Cyclist Battalion; headquarters, Exeter.
Welsh Cyclist Battalion; headquarters, Cardiff.

Each of these battalions recruits over a very wide area, and has local headquarters all over the country, so that, for instance, it is quite feasible for a cyclist living at Peterborough to join the Norfolks, or a Berkshire man to join the Londons.

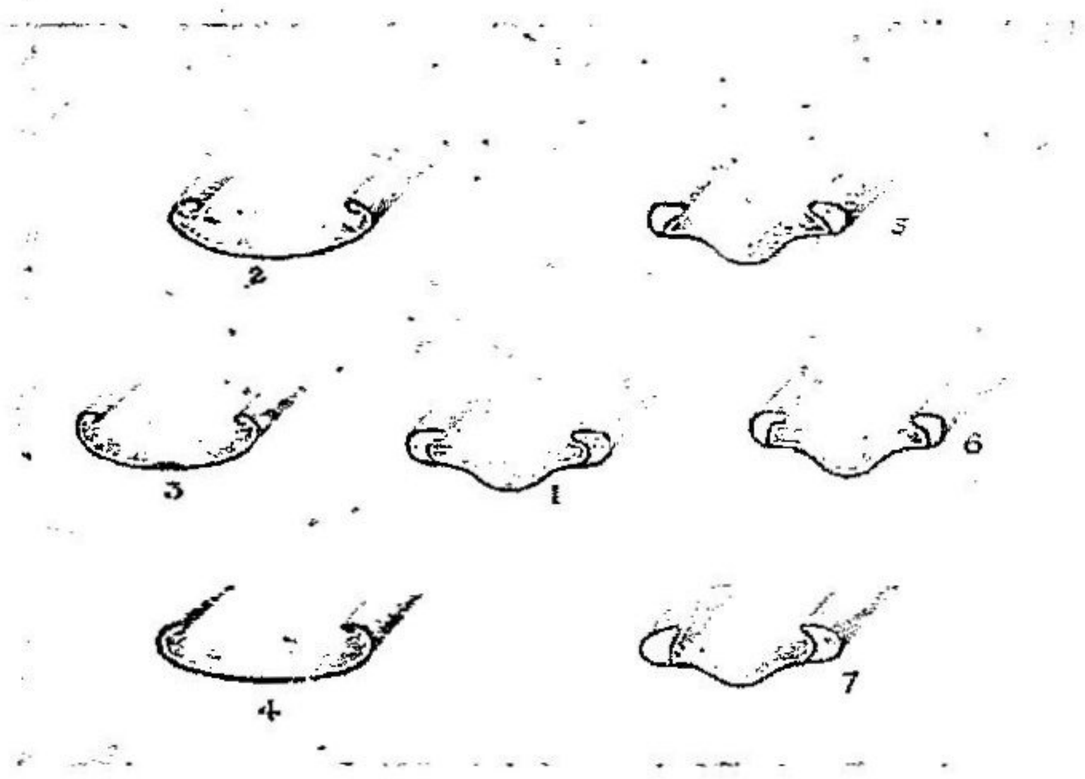
Just one final word. Those motor cyclists whose knowledge of Territorials is limited to other arms of the service would do well to find out a little about cyclist work before they dismiss all idea of joining from their minds. The cyclists are admittedly the pick of the Territorial Army—physically, mentally, and socially—and their work is of the most interesting description, and is devoid of routine and barrack-yard work.

Motor Lorries.

The other interesting pronouncement I referred to at the commencement of these notes is the one to the effect that the War Office is now prepared to subsidise motor lorries, provided that on mobilisation the lorries could be at once taken over by the military authorities at a valuation. Such lorries are classed in two categories—(a) the heavy 5 ton lorry, (b) the light 30 cwt. lorry—and the subsidy varies according to construction from £8 to £20 per annum. Firms engaged in the motor trade may well think it worth their while to register some of their motor vehicles with the military authorities, for if mobilisation ever comes upon this country there will be little enough doing in all trades, and least of all in the motor trade, and such vehicles could well be spared. In the meanwhile the annual subsidy will help to fatten the yearly earning power of the lorry very considerably.

The Importance of Suitable Tyre Rims.

THE Manufacturers' Union recently decided to adopt a standard size and shape of rim for motor cycles, the sections of which were illustrated in *The Motor Cycle* of August 3rd (page 804c). The makers' decision was arrived at after considerable discussion and arrangement between various machine and tyre manufacturers; and we understand that no member of the Union will in future send out a machine the wheels of which are built with other than the standard rim. Complaints are constantly reaching us that covers which are not by any means worn through at the tread have a habit of bursting at the beads, and as the Manufacturers' Union has decided to adopt a standard rim to enable the various makes of tyres to be interchangeable, it is opportune to point out the unsuitability of some rims which, owing to their shape, do not allow the bead of the cover to bed properly into the groove. At Olympia we had an interesting talk on this question with a representative of Messrs. W. and A. Bates, Ltd., St. Mary's Mills, Leicester, who showed us photographs of several sections of actual rims which were submitted to



Sections of various wheel rims submitted to tyre manufacturers.

them, and some of which are in general use, or, to be more correct, were in general use until the Manufacturers' Union came to the rescue and standardised one shape of rim. Messrs. Bates showed us that unsuitable rims cause friction between the beaded edge of the cover and the groove into which it is supposed to fit. Finally this produces a cut just above the bead, so that no matter how strongly the cover is made, if an unsuitable rim be employed bursting cannot be prevented. This cutting and bursting takes place long before the cover is worn out, and is, therefore, a danger to be guarded against. Cutting above the bead is one of the greatest troubles experienced by tyre manufacturers, and Messrs. Bates say that they are convinced that this is only due to unsuitable and improperly shaped rims.

Reference should now be made to the appended illustration of sections of the rims which it will be noted are numbered from 1 to 7. No. 1 is known as the standard rim, and the tyres of all manufacturers who are members of the Union will fit this rim without cutting. Nos. 2, 3, and 4 are practically the same shape at the base but with different grooves for the beads. Now it will be obvious to almost every reader that covers which fit the grooves on No. 2 rim cannot possibly be correct for Nos. 3 and 4. No. 5 has smaller grooves for the bead than the standard rim, and Nos. 6 and 7 show a variation in pattern in the grooves of the same rim. It is very clear that a cover fitted to either of these could not prove satisfactory in use. What we think should be done now would be for either the Manufacturers' Union or the tyre manufacturers who are members of the Union, and who are agreed to a standard rim, to send out on application a small metal template with which motor cyclists could test the rims of their machines which were built previous to the decision to standardise one rim. By this means those who prefer to scrap their old rims and buy new ones could have the wheels rebuilt and so ensure accuracy of fit when the new covers of the standard make were purchased. The cost of the templates would be infinitesimal, and tyre manufacturers who were ready to send these out would doubtless increase their business by proving that they were not only ready but anxious to fall in with the Union arrangements.

PREPARATIONS FOR THE M.C.C. EXETER RUN.

The Rudge Co. left no stone untnrned to enable clients of theirs who had entered for the above run to get through with a minimum of trouble and a maximum of light. For example, some of the machines were equipped with dissolved acetylene apparatus supplied by the Acetylene Illuminating Co., Ltd. The container for the compressed gas is about the size of an ordinary wine bottle, and consists of a small cylinder containing 5 cubic feet of acetylene and fitted with a valve to regulate the pressure. This was carried either on the top tube of the motor bicycle or in the sidecar chair. Other Rudge machines were provided with C.A.V. accumulator lighting sets, the batteries being specially made to fit in the sidecar between the back of the passengers' legs and the front of the seat. The electric lamps were special C.A.V.'s with metallic filament bulbs and lenses of the same size as those used for the small car lamps. Ordinary gas lamps with separate generators were carried as a stand-by by those Rudge riders who used electricity for illuminating purposes.

A New Method of Mending Punctures.

THE Parsons Rapid Repair Kit, sold by the Parsons Non-skid Co., 23, Store Street, Tottenham Court Road, London, W.C., although primarily intended for use with car tyres, is, nevertheless, equally applicable for the relief of smaller tube troubles, and as these are the greatest bugbear from which motor cyclists suffer—a greater bugbear even than they are to car drivers—the description of a new method of repairing punctures cannot fail to be of interest. The great point about the Parsons process, to my mind, is that there is no messy solution, and hence no waiting whatever. The repair made is in almost every respect as lasting a one as vulcanisation, and made, moreover, without the slightest risk of damage to a valuable tube. Unlike most solutioned patches, no amount of heat can ever loosen the Parsons patch, and this fact has caused me to give it my most unqualified blessings during the recent very hot weather. It is a great thing to be able to mend a puncture and be off again in five minutes with clean hands and the secure assurance that *that* repair at all events will give no further trouble.

The outfit consists of four tools, put up in a neat leather case. The first, which is shown in fig. 1, consists of a cutter.

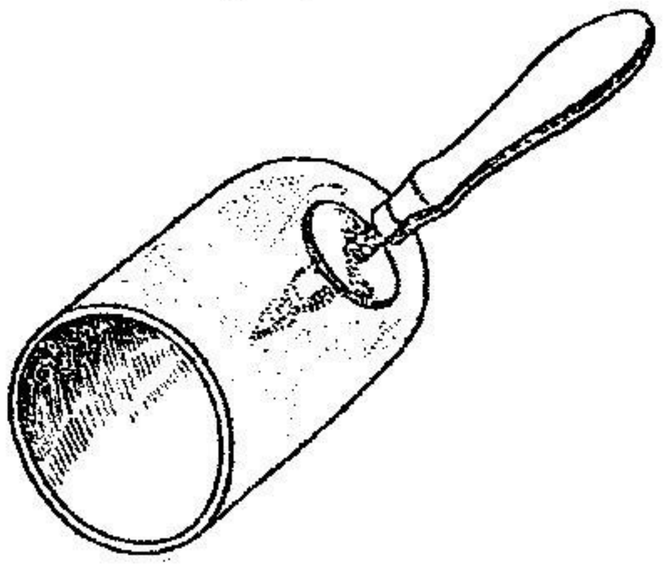


Fig. 1.—The Parsons cutter.

The puncture having been located, the point of this tool is thrust through the tube until the latter drops into the circular groove, as indicated in the dotted lines. The handle of the tool is held with one hand, whilst with the other the milled nut is screwed towards the spear point. This milled nut carries a tubular knife, which, with the aid of the square back edge of the spear point, cuts an absolutely clean, round hole, about $\frac{3}{16}$in. in diameter, in the tube. Thus the punctured part of the rubber is completely removed. The cutter having been removed—its operation having been the matter of a very few seconds—the tool shown in fig. 2 is introduced. This is a spreader, the jaws of which, when closed, are pushed into the hole made by the cutter, and are then forced apart by hand pressure. The function of this tool is to stretch what was first a round hole into a slit about $\frac{3}{4}$in. in length. Owing to the original hole being perfectly circular and with smooth edges, there is no risk whatever of the tube splitting, if it be made of good rubber. The next tool to come into use is the patch itself, which takes the form of a button, shown both in perspective and section in fig. 3. This stud is thrust through the spread hole, and, when in position, the spreading tool is withdrawn, this operation—like the cutting process—only taking a very few

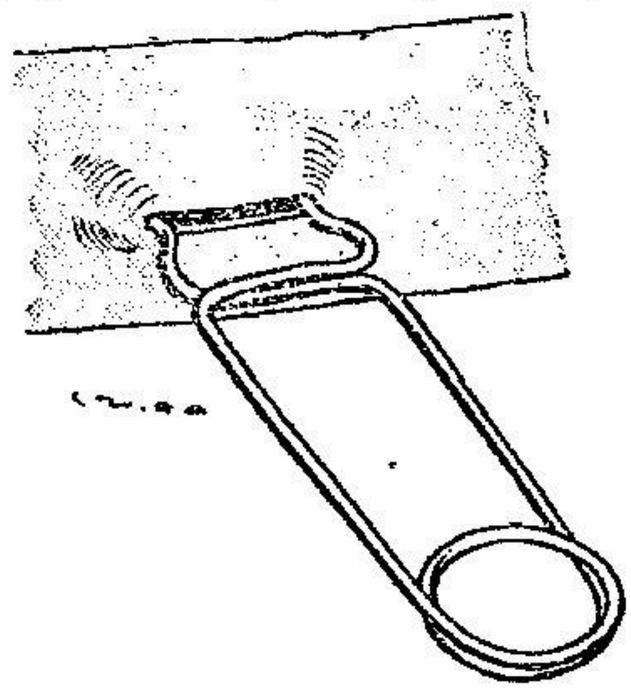


Fig. 2.—The spreader in action.

seconds to perform. The button itself consists of a spun brass skeleton, surrounded, as shown, by a thick coating of vulcanised rubber. It measures some $\frac{3}{4}$in. in diameter, and, before squashing, about $\frac{3}{32}$in. in thickness. It will be noticed from the section of the button that the top and bottom parts are furnished with corrugations which correspond with one another, and hence when the head and base of the button—which is really a form of rivet—are closed together under pressure, the joint between the button and the tube is a very intimate one. When it is squeezed up the central tubular column between the head and the base collapses, and spreads outwards, thus forcing the tube tighter and tighter into the corrugations of the button.

The tool with which the squashing of the rivet is accomplished consists of a pair of pliers with a parallel motion, as shown in fig. 4. The jaws are provided with hollowed-out discs, which exactly fit the ends of the button, and ensure its being crushed down evenly all round. The button being loosely inserted into the tube, it is twisted around once or twice to make certain that it has been inserted fairly and squarely, and the tube is then flattened and placed between the jaws of the pliers, care being taken that the base of the rivet, which is inside the tube, lies squarely—the opposite wall of the tube, of course, intervening—on its hollowed disc. The pliers are then grasped firmly

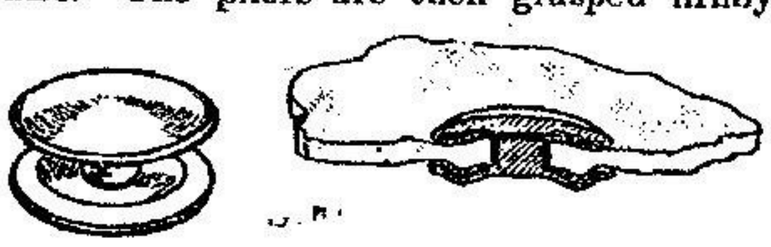


Fig. 3.—Sketch and section of button.

and squeezed until the rivet can be felt to collapse. No Herculean strength is required for this operation, a firm, slow pressure being all that is necessary. After this has been done, the tube is turned round, and the rivet again squeezed tightly, but from the opposite side. This second squeezing is done in order to ensure the heads being squeezed together uniformly. The cutting, the spreading, the inserting of the button, and the final squeezing of the same, complete the whole operation; and with a little practice it occupies from start to finish less than a minute. Once the button is squeezed up it is there for "keeps," although it can, as a matter of fact, be got off if required. The buttons, when securely squeezed home, do not permit a leakage. The only precaution which is necessary for keeping them in the best condition is to avoid severely stretching the tube in their immediate vicinity.

During the past three weeks I have had the pleasure—and, indeed, it is a pleasure—of mending something like a dozen punctures with the Parsons kit; and an old tube, in which five previously applied solutioned patches have been replaced with buttons, has stood up for close upon 1,000 miles, in spite of the heat occasioned by a steel-studded cover on a sidecar machine. I recently took the tube out, after more than 700 miles, and found it to be as airtight as if it were new; and, as far as I am able to see, there is not the slightest sign of the heads of the buttons having wrought any effect whatsoever on the fabric lining of the cover.

A few days ago I was able to give the new process of repair an extremely arduous test, in which my expectations were that

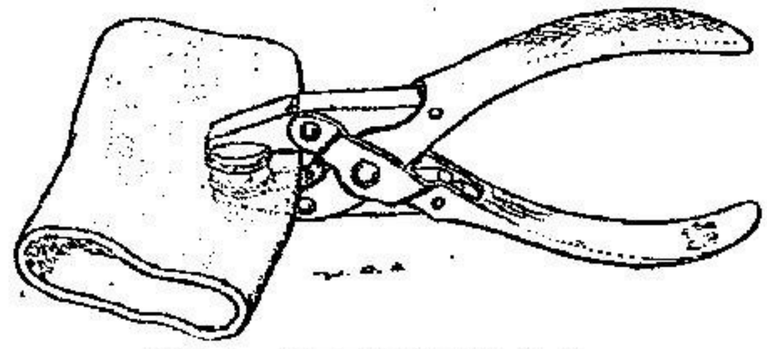


Fig. 4.—Compressing the button.

it could scarcely be hoped to succeed. A badly worn front cover allowed the tube to burst, the burst being a slit nearly half an inch in length. I well knew that in such circumstances the Parsons kit was scarcely intended to be applied, but I determined to see what it would do. Accordingly the cutting tool was used to make a single round hole in the middle of the split, and another one on each end, running into the middle one, of course, to prevent the split enlarging under the spreading tool. This meant that the head of the button only overlapped the hole by about $\frac{1}{8}$in. each side. It was accordingly inserted, squeezed up as tightly as possible, and the tube replaced and the cover strengthened by an unsolutioned plaster. Contrary to my expectations, the tube has held up perfectly for over four hundred miles, and I have no doubt it will continue to do so indefinitely. The complete repair occupied scarcely ten minutes between stopping and getting under way again, and it is this saving of time which makes the Parsons repair kit such a very valuable accessory.

The only difficulty that occurs to me would be the mending of a puncture that unfortunately happened to be close to a previously affixed button, for in this case the two buttons would overlap and it would be difficult, if not impossible, to fix the second one satisfactorily so as to make an airtight joint, and it would be needful to remove the button and cover both holes with a patch. W.G.A.