RACING or TOURING CARBURETTER at WILL.

THE MOTOR CYCLE

1D

Largest Circulation. *Founded 1903.*

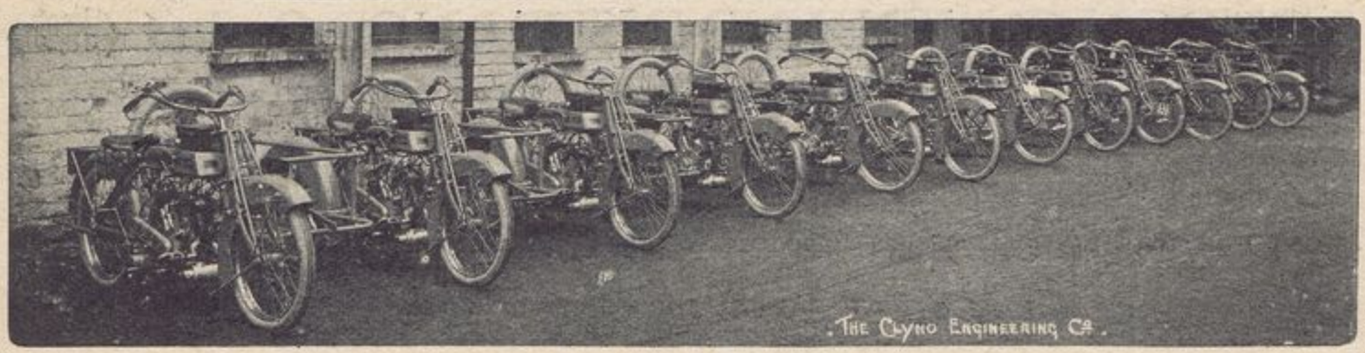
MOTOR BICYCLES – SIDECARS – CYCLE CARS

No. 554. Vol. 11. Thursday, November 6th, 1913. Price 1d.

Published Weekly.

CLYNO

THE Side Car Motor Cycle.



There, in that picture, is yet another proof of the world-wide acknowledgment of our claim—CLYNO, "THE SIDECAR MOTOR CYCLE."

It portrays a dozen Clynos with Commercial Chassis, and represents an order we have just executed for

CLYNO EXPRESS DELIVERY OUTFITS for the New Zealand Government.

These are our latest 1914 models, embodying all the distinctive Clyno features, and it is the same model, with passenger Sidecar, that we offer you.

THE Sidecar Motor Cycle—or as "Motor Cycling" called it—"THE LAST WORD IN SIDECAR CONSTRUCTION"—

Don't forget—That this has been the most successful Sidecar combination of the 1913 season—look at its records!—

That it is the passenger machine with detachable and interchangeable wheels and—that this feature enables you to replace any one of the wheels with the spare, which is carried on the Sidecar, in sixty seconds.

Let us send you fuller details and put your name on our mailing list for 1914 Catalogue, now in the Press.

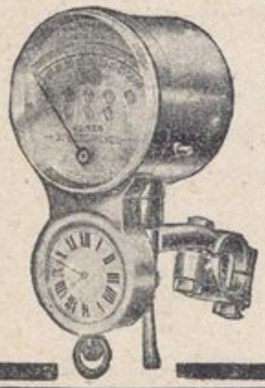
The Clyno Engineering Company, Pelham Street, Wolverhampton.

London—The Service Co., Ltd., 292, High Holborn, W.C.
London, S.W.—Wilton Cycle & Motor Co., 110 Wilton Road, Victoria.

The JONES SPEEDOMETER

ANOTHER GOLD MEDAL AWARDED, TURIN EXHIBITION.

A Speedometer that is not accurate is an abomination, it is more, it is dangerous. The opportunities of testing such instruments for accuracy are not usually available. Expert use of the stop watch and measured distances are not easily assured. Buy the instrument which above all others has demonstrated its qualities again and again.



THE "JONES" is a purely mechanical instrument constructed on a principle of unvarying natural law. Its accuracy of reading was the most important feature to decide the verdict of the R.A.C. Highest Award and Gold Medal in the only competitive official speed trials.

PRICES from 3 guineas.

MARKT & Co. (London), Ltd.,
98/100, Clerkenwell Road, E.C.

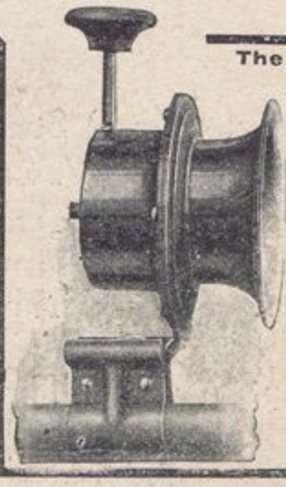
AN UNSOLICITED TESTIMONIAL.

"Jones" evidence outweighs that of four witnesses!"

No questioning of the "Jones" figures.

Mr. H. V. Prescott, of "Rosslands," Park Road, Timperley, Cheshire, writes—

"Perhaps the following will be of interest to you. I was summoned at Middlewich, Cheshire, for driving to the danger of the public on 3rd September. There were four witnesses against me. My only witness was the Jones Speed Indicator with maximum hand; but I won the case, its evidence being accepted. I reckon the Jones saved me £5."



The Long Horn or "Warning Tone"

PURELY MECHANICAL.

A UNIQUE ALARM.

No Batteries!
No Wires!!
No Bulbs!!!
No Trouble!!!!

PROMPT

Enjoying, as we do, a world-wide reputation for the promptitude with which we execute orders by post, it is additionally pleasing to receive expressions from our customers such as that we print below.

India, September 25th, 1913.
"This is in marked contrast to the delays I have experienced, when I ordered spare parts for my machine from the Manufacturers, and in future I propose to order spare parts from your firm."
M.G.V.C.

WE PRESENT THIS WEEK a selection of seasonable requirements in Accessories from our Catalogue. Full List sent on request.

SERVICE BELTING. Britain's Best. Always Grips. Never Slips.

The ideal belt for wet weather and sidecar work.

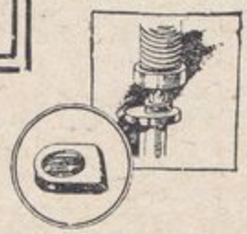
The strongest and most flexible belt made. No bell punch required; eyeleted throughout.

Prices with fastener.					
⅜	½	⅝	1	1½
1/9	2/-	2/3	2/6	2/9
—	—	—	3/3	3/6

Trade supplied.

A user writes:—Ealing, W., October 26th, 1913. "I cannot speak too highly of your service leather belt, especially for Sidecar work. In my opinion there is not a belt on the market to touch its wearing qualities." T.H.R.

Belticum will double your belt mileage. Stops slipping. Clean to handle. Carried like a plug. Have it in your toolbag. Per bar .. .. 6d.



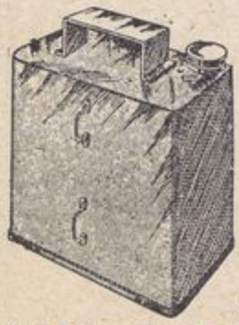
"Service" Belt Dressing. For Leather Belts, Clutches, etc. Specially recommended for Service Belts. Price (b)— 6d. tube. 1/- tin.

Sidecar Cleaning Brush Double Pattern. For cleaning wicker and cane bodies. Made of special quality hair. No. 8 Price, 2/3.

CLEANING BRUSHES.

Made to stand PETROL and can be used for any purposes for MOTOR Cleaning and for Whitening Tyres, &c. Will last longer than any ordinary Brush, as the hairs are looped over and wired round and soldered. No Cement is used, and it cannot fail to pieces. Price 1/-

With curved handle for reaching inaccessible parts of machine. No. 6a. 1/3



"Service" Spare Petrol Cans.

Fitted with lugs for strapping to carrier. A most useful accessory for long journeys. Made in three sizes.

	Size.	Capacity.	Price.
No. 1.	5½×5×3ins.	1 Quart	1/-
,, 2.	8½×6×3½ ,,	½ Gallon	1/3
,, 3.	8½×6½×6½ ,,	1 Gallon	2/-

Willbro Exhaust Extensions in stock.

Agents for Ford Valve Shields

"Service" Tappet Adjusters.

A new and very useful device which we have brought out for taking up the varying degrees of wear in the valve tappets Of fine hardened steel and can be instantly fitted over end of valve stem. Made in following thicknesses .048, .036, .028, .022.

No. 1. Price 3d. each or 9d. per set of 4.

The New "Service" Combined Valve Spring Lifter & Tyre Remover.

Removes with speed and ease. An indispensable tool. Price 2/6

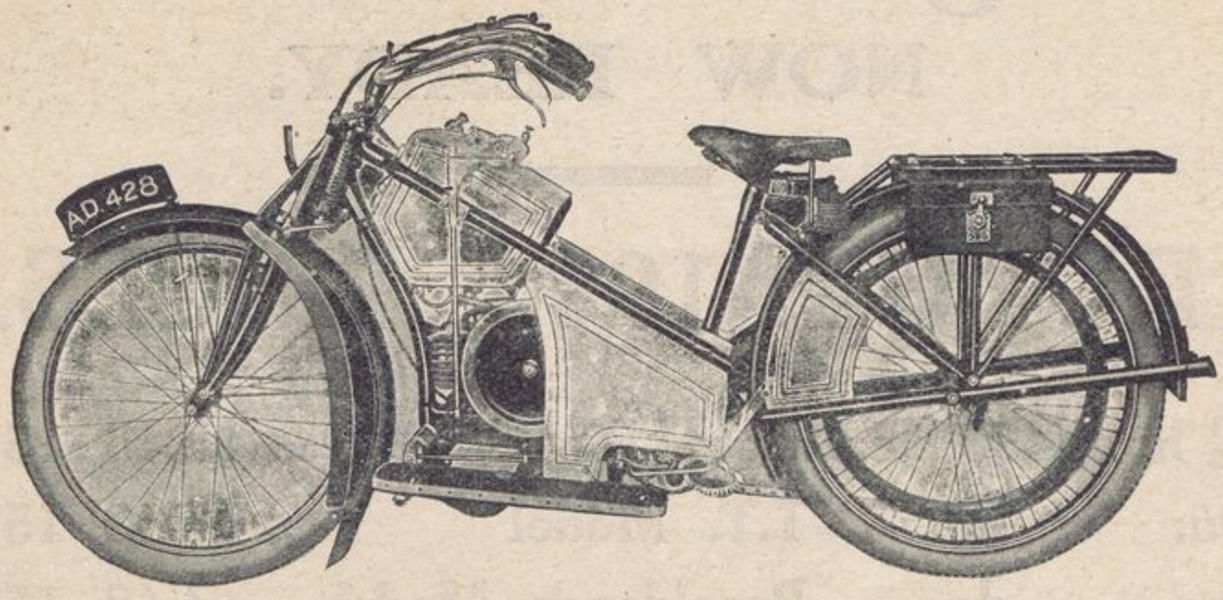
ANTARNISH.

"ANTARNISH" is simply applied with a soft brush, and when desired can be easily removed with methylated spirit No. 5, Price 9d. tin.

We also supply a Lacquer similar to above, but destined to produce a dull black finish similar to coslettised. No. 6. Price 9d. per tin.

THE SERVICE CO., LTD., 289-292-293, High Holborn, LONDON, W.C.

An Important Announcement to Readers of "The Motor Cycle."



THE FIRST PRIZE.

A unique Competition which will appeal to ladies, however remotely interested in motor-cycling, is being organised by the Proprietors of "THE LADIES' FIELD," and we shall be glad if readers of this journal will bring this announcement to the notice of their women-folk who, possibly, may not be readers of these columns.

Full particulars of the Competition will be published in the MOTOR NUMBER of "THE LADIES' FIELD," dated November 8th, one of the Prizes to be awarded being a Lady's 2¾ h.p. Twin-Douglas Model, as illustrated (which will be exhibited on the Douglas Stand at the Olympia Motor Cycle Show in November).

Another Prize will be an Auto-Wheel, which will also be on view at the Motor Cycle Show, in addition to which Seven Consolation Prizes will be awarded.

As an exceptionally heavy demand for this number is anticipated, by filling in the attached slip, or by ordering this issue from your newsagent, a copy will be reserved.

To THE LADIES' FIELD (Dept. M.), 8, Southampton St., Strand, London, W.C.

Please send me a copy of your issue dated November 8th, containing full particulars of MOTOR CYCLING COMPETITION, for which I enclose 6½d.

NAME .....

ADDRESS .....

.....

Rudge 1914 Models

NOW READY.

RUDGE 1914 PRICES.

3½ h.p. (499 c.c.) Motor Bicycle (Fixed-engine)	£48	15	0
Do. do. T.T. Model „	£48	15	0
Do. do. Brooklands Model „	£48	15	0
Do. do. with Free Engine	£53	0	0
Do. do. with Multi-speed Gear	£58	15	0
Do. do. „ „ T.T. Model	£58	15	0
Rudge Sidecar	£16	16	0

Extra for 750 c.c. engine on any model £5 0 0

„ „ Sturmey-Archer 3-speed gear on price of fixed engine model £10 0 0

OLYMPIA SHOW, STAND 49

Nov. 24-29th, 1913.

By Appointment Cycle Makers to H.M. KING GEORGE.

Write for Catalogue and "Rudge Wrinkles" post free from

Rudge-Whitworth, Ltd.

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NOVEMBER 6TH, 1913.

THE MOTOR CYCLE

ESTABLISHED IN 1903

AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

FIVE HUNDRED AND FIFTY-FOURTH CONSECUTIVE ISSUE.

Subscription Rates: Home, 6s. 6d.; Canada, 8s. 8d.; Foreign, 17s. 4d. per annum.

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Is the Supremacy of the 500 c.c. Engine Waning?

FOR the last few years no type of motor cycle engine has held such undisturbed sway among the mass of riders as the 500 c.c. single-cylinder. The sales of such a type of machine have probably been enormously in excess of all other types combined, and, despite the great improvements in twin-cylinder engines and the considerable popularity which such engines have lately enjoyed, there is really no serious diminution in the number of single-cylinder engines of 3½ h.p. met with on the roads. Even the tremendous and still growing popularity of the luxurious type sidecar has not shaken its position up to the present, and the successful application of the three-speed hub to motor cycles has probably vastly assisted it to retain its hold on the market, as it has been the means, at a comparatively slight extra cost, of enabling thousands of riders to fit passenger carrying attachments to motor cycles when otherwise they would have been almost forced to purchase a more powerful engine. There appear to be few limitations to the abilities of an efficient 3½ h.p. motor to haul a light sidecar and passenger, for the really remarkable displays put up by some of the best known long distance trials riders with such a type of machine show what can be done with careful handling, and even with ordinary intelligent driving a 3½ h.p. three-speed outfit can do yeoman service on average roads.

Why, then, readers may ask, should any interference with the design of this type of machine be meditated? As a matter of fact, excellent as are the results obtained, there are conditions such as heavy roads, head winds, or hilly country, that throw a great strain on so comparatively low-powered an outfit. And, further, an engine working at its limit for long periods is apt to fall off quickly in efficiency. Now, the difficulty manufacturers have to face is that it is desirable for them to market a machine that is a happy compromise between a sidecar and a solo mount, and 500 cubic centimetres capacity can be looked upon as thoroughly satisfactory for solo riding and, under fair conditions, for sidecar work; but what is wanted is something even more desirable—a machine that should be thoroughly satisfactory for both kinds of service without heed to weather or road conditions. Designers, therefore, have aimed at producing engines which, while not unwieldy or unduly heavy for solo work, are capable when required of hauling the extra load of a sidecar and passenger without the necessity for specially delicate handling, and to do this a good deal of quiet experiment has been going on by a number of manufacturers with single-cylinder engines exceeding 500 c.c., and we may look next year for a considerable number of such power plants in makers' lists.

The Desirability of a 600 c.c. Class.

THE interesting point now arises as to whether the 550 or 600 c.c. engine will eventually displace the present popular 500 c.c. motor, and if it does or even gains the preponderance in numbers on the road, what is going to become of the 500 c.c. class as regards competitions? The Tourist Trophy Races, A.C.U. trials, hill-climbs, and Brooklands all have established classes for engines of this size, and it may be an interesting problem for the authorities of the sport to decide in the near future as to whether a change may not soon have to be made in competition ratings. Already it is known that three or four firms will not standardise a 500 c.c. model next year, but instead offer a single of slightly greater capacity.

Special models would, therefore, have to be built for competition work, unless some change in the regulations for important competitions be made. From all we hear and know of the trend of single-cylinder design for the future, we believe that it will be imperative for the A.C.U. to institute an official 600 c.c. class in the more important competitions at an early date, and, on the whole, we should welcome such a change because we think that it is good for the industry and for the riding public that manufacturers should not get into grooves. The 500 c.c. engine has had a magnificent innings, and we do not suppose for one instant that its sphere of usefulness is over, but we do think that there is likely to be an enormous demand in the near future for engines up to 600 c.c., brought about chiefly by the wonderful increase in popularity of the sidecar, and we should like to see encouragement given to such a type of engine.

We have not dwelt upon the possibility of the twin-cylinder of 500 to 600 c.c. We are fully aware, however, that such engines are being rapidly improved, and may possibly in time even seriously threaten to capture the market, but we do not believe that the simple and highly efficient single-cylinder engine is finished with for a considerable time to come, and we are sure it will appeal to the vast majority of riders entirely on account of these two particular virtues.

The Depreciation of Cycle Cars.

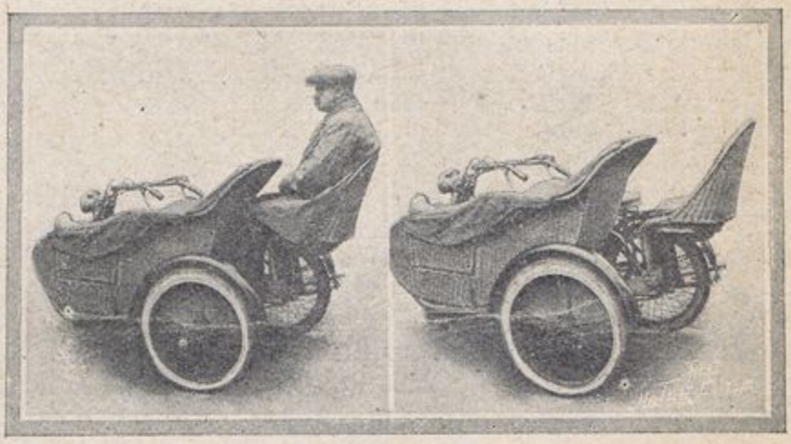
Lay journals may be pardoned for publishing statements to the effect that early model cycle cars can be run for a total outlay of three halfpence a mile, but any technical journal lending its authority to such gross under-estimates deserves no mercy. A study of the prices of second-hand motor vehicles shows that depreciation alone may form an item exceeding 1½d. a mile. For instance, £25 is a comparatively small amount to drop on the sale of the less successful types of 1913 cycle car, and it works out at 2d. a mile on a mileage of 3,000, or of 1d. a mile on a mileage of 6,000. When petrol, oil, tyres, taxes, garage, and licences are included, it is plain that the running expenses are considerably higher than some over-sanguine enthusiasts estimated twelve months ago.

Why Sell?

Owners of 1913 cycle cars who are thinking of selling should consider very carefully whether it may not be better worth their while to keep the vehicle and run it to destruction. Of course, if it be a "dud," the owner will probably decide to cut his loss and realise the best figure obtainable without delay. But if the machine has given good and faithful service, the owner should realise that his impending loss is very largely a matter of fashion. It is said that over 150 different makes of cycle cars were constructed during 1912-1913, and of these scarcely more than a dozen can survive in their original form. This wholesale changing of designs, patterns, and specifications puts last winter's cycle cars hopelessly out of fashion—they are *démodé*, so to speak, with a few regal exceptions, for just as diamonds are always in fashion, so a few makes of cycle cars I could name will undergo precious little change for next season. Consequently, Tom, Dick, and Harry will jump to the conclusion that nearly all the 1912-1913 cycle cars are worth but £70 or so apiece—just as their wives would refuse to pay a good price for one of last spring's hats. But many owners have 1912-1913 cycle cars in their stables which are as good as ever they were from a running point of view. I admit that these machines may be almost unsaleable by the end of next year; but if there is still three or four years' good running in them, they may be worth keeping. And here I have a special word of advice to offer. I have known many owners have great difficulty in selling motor cars, motor bicycles, and cycle cars even at a ridiculous price. But I never knew a motorist who kept his machine smart, clean, and in good tune ever have to go begging for a buyer. Only the other day I heard how one of the less meritorious cycle cars built last autumn realised £85 after it had done 15,000 miles in the hands of its first owner. He tuned it up, he kept it clean, everybody saw it daily doing hard work and doing it well; and when its owner's random fancy turned to something new, there were plenty of eager applicants ready to offer it a kind home at a decent price. *Verb. sap.*

A Sidecar Dickey.

I illustrate herewith a novel method of accommodating an extra passenger on a sidecar outfit produced by J. L. Butler, of 261, Kirkstall Road, Leeds. I cannot say I am particularly smitten with it personally, for I do not believe in overloading a machine, nor does its distribution of the weight appeal to me as ideal, but then I detest the popular pillion riding (by the way, I saw another couple come a fearful purler last week!), so I can quite believe that this sidecar dickey may become immensely popular.



A sidecar dickey made by J. L. Butler, of Leeds.

The Nailsworth Ladder.

I recently spent an instructive afternoon on the ill-famed Nailsworth ladder, which is alleged to possess much gradient worse than 1 in 3, and the sidecarist who endeavoured to ascend it with a three-speeded 6 h.p. sidecar outfit, geared 13½ to 1 on bottom, departed a sadder and a wiser man; indeed, he was the wee'est shade fortunate to depart at all in one piece, for the machine certainly got away with him when he was descending after conking out on the topmost bad knuckle, and only the easier stretch lower down enabled his cool head to make the brakes and compression on bottom gear once more operative. The afternoon provided an interesting commentary on the A.C.U.'s desire to see sidecars climb freak hills with the passenger "seated in a normal position," for his repeated failures were solely ascribable to lack of adhesion on the part of the driving tyre. The surface of the ladder is not loose; it varies from a kind

Occasional Comments.—

of hard, impromptu macadam to naked reefs of knobbly rock. He was using a non-skid Kempshall—to my mind quite one of the most adhesive tyres on the market; but when this tyre hit one of the reefs, it spun round ineffectually and the engine raced furiously; if the impetus jumped the tyre over the reef—sometimes it did, sometimes it didn't—the effect was similar to letting in the clutch with a bang, and the engine didn't like it a little bit, and either conked out incontinently, or slowed its "revs." down to such a point that failure on the next knuckle was assured. Success or failure was thus purely a matter of tyre adhesion. I am of opinion that the machine would have gone up well with a passenger on the carrier; but the frightful rocking of the outfit and the absence of any cushion deterred the hardiest spectator from offering to lend his weight.

Another Problem.

The driver of this Nailsworth sidecar outfit propounded another problem of diagnosis, which up-to-date has completely stumped the clever owner, and several quasi-experts. If he is rounding a corner on middle gear, well throttled down, and opens his throttle to tackle a succeeding gradient, the engine stops as if it had been shot. If he changes down on to bottom gear or up on to top gear, the engine leaps into full song again immediately. None of the control gear can possibly create a short circuit under these conditions, and though he cannot trace or remedy the trouble, he is convinced that the cause is connected with the carburetter. The engine will "rev" on middle gear on the straight flat quite as obediently as upon top or bottom. Will some expert oblige us with a solution?

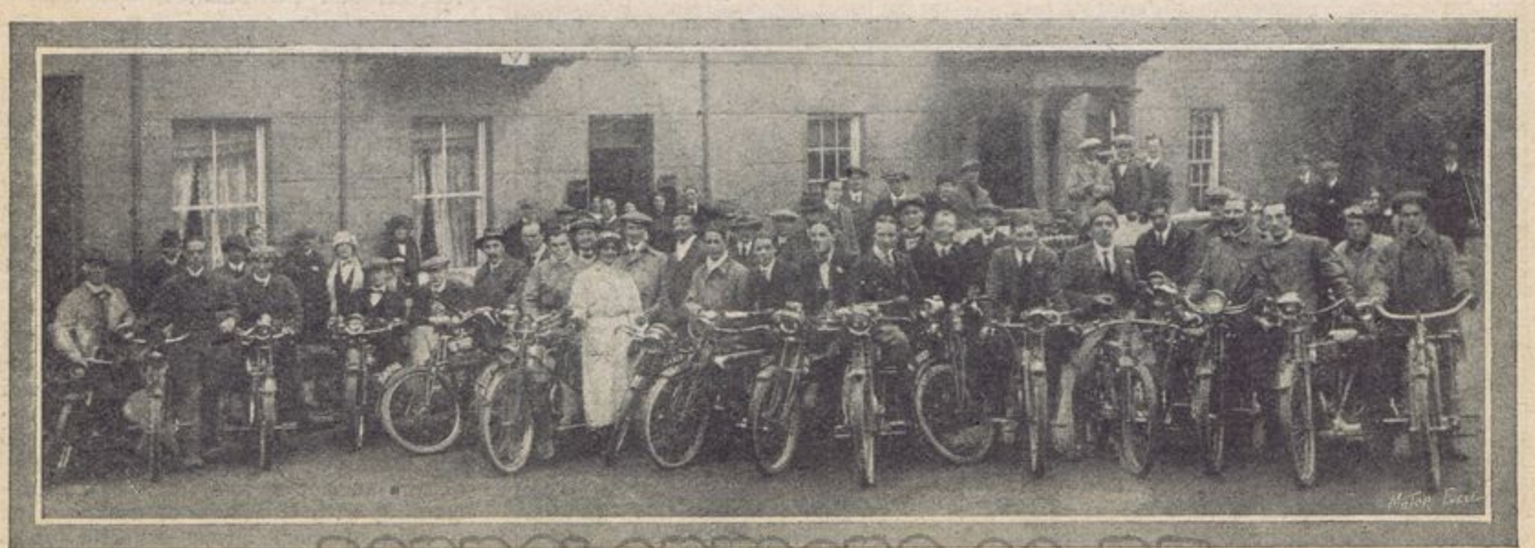
Chronic Conkitis.

Many letters which I receive are difficult to answer, but few more so than one from a reader who owns a machine of comparatively unknown make. It behaves tolerably well in respect of power and reliability, but its paces are disfigured by an inveterate habit of knocking, which is shared by all the other engines of the same make within his acquaintance. It knocks whenever it is asked to pick up after a slow, and the conking is especially pronounced on hills. He asks how to cure this unpleasant feature, and how to render his engine the equal of other 500 c.c. engines of greater renown and ability. As it happens, I have never sampled an engine by this particular maker, who turns out so few that I had almost forgotten such an engine existed, and his own suggestion is that a different valve timing might improve matters. One would be more inclined to suppose that he has had the misfortune to purchase an engine well below the average in efficiency, and that no alternative valve timing will improve matters. In any case, the expense of experimenting with a speculative series of specially made cams and pinions is too great to be justifiable.

Reducing Transmission Friction.

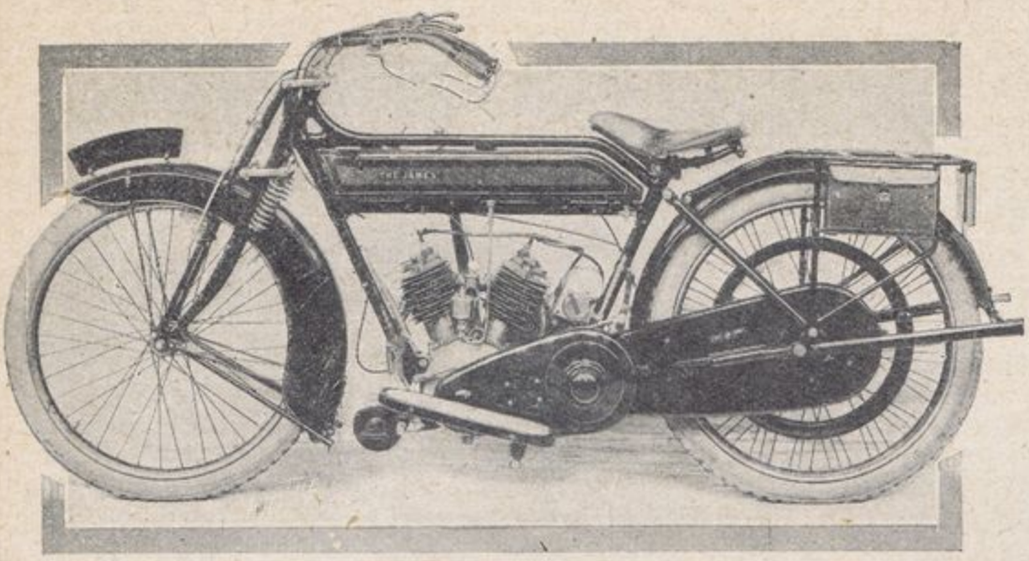
If, as alleged, all the engines of this make knock under no very extraordinary inducements, one of two things is certain; either the engine cannot develop sufficient power to propel a sidecar smoothly, or else its compression is too high. It is a cheap and easy matter for an amateur mechanic to lower the compression ratio; he should experiment with washers of different thicknesses between the cylinder and crank case, lengthening the valve tappets to suit, either by home-made tin caps, or by the Service adjusters. This is the most promising region for experiment. In addition, it would be well to make sure that there is no undue friction in the gear box and back wheel bearings, that the engine's moving parts are all nicely free, that the silencer is clean, that the ignition is not timed over fast, and that there are no air leaks between the carburetter and the inlet valve. It is further possible that the engine is over-geared; many 500 c.c. engines will never take a sidecar at all nicely on a higher gear than 5 or even 5½ to 1.

Finally, it is conceivable that the carburetter fails to supply a sufficient volume of adequately rich mixture at low speeds. In this case he should slip a lining tube in the funnel or choke round the jet; if this reduces the knock, it should be worth while trying a two-jet carburetter or a by-pass attachment. An engine that accelerates badly cannot suck enough gas from a simple carburetter at low speeds to enable it to get away; and such engines are improved by an auxiliary jet set within a choke tube of very narrow bore.



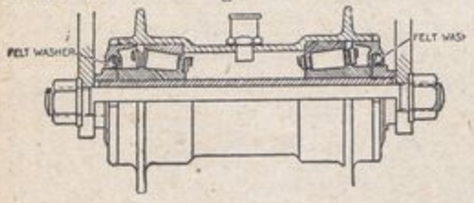
Group of Members of the Wrexham and District M.C. taken outside the Royal Hotel, Llangollen, where the president of the club, Mr. Noel Soames, entertained the members to luncheon on the occasion of this club's first run.

The 1914 James Models.



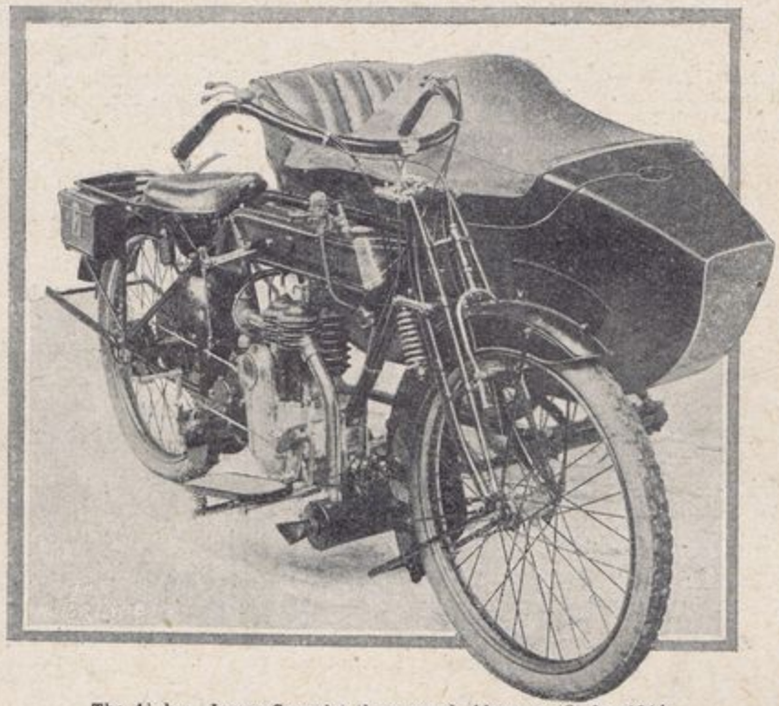
1914 model 3½ h.p. twin-cylinder three-speed chain-driven James.

FOR some time past the James Co. have been experimenting with a 3½ h.p. twin-cylinder model which has from time to time appeared in open competition. The fruits of these experiments are now ready for the market in the form of a very attractive machine, fitted with a three-speed bottom bracket gear and enclosed chain drive throughout.



Part section of the James front wheel hub, showing the Timken roller bearings which have been adopted to take side strain caused by the sidecar.

The engine is a 50° twin, having a bore of 64 mm. and a stroke of 77 mm. (496 c.c.), the cylinders being interchangeable and the radiating fins being staggered on the well-known James lines. Great care has been exercised in the design of the valve ports, and they are so arranged that air circulates freely round them. As regards the internal arrangements of the engine there are no great deviations from standard practice, but the steel flywheels are a fine piece of work. The magneto is chain driven, and lies high up behind the engine, where it is well out of the way of mud and wet.

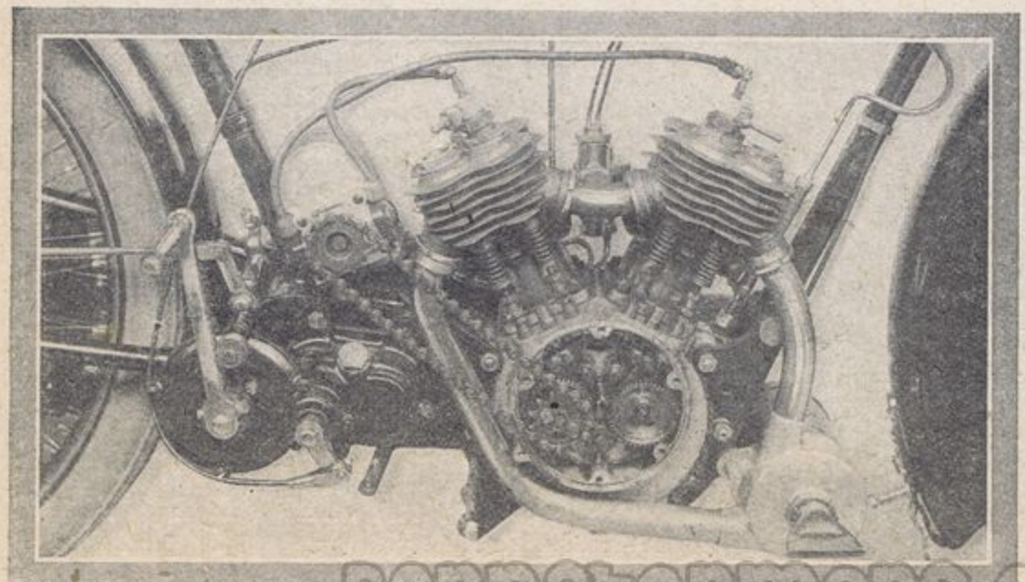


The 4¼ h.p. James-Canoelet three-speed sidecar outfit for 1914.

Details of the Transmission.

The three-speed gear is a redesign of the usual James box, but although the wearing surfaces remain the same, the actual gear box has been considerably reduced in size, and the standard ratios will be 4½ to 1, 7 to 1, and 11 to 1. An excellent feature is the enclosed kick starter. Both front and rear driving chains are carefully enclosed in stamped steel cases, which are split vertically and give easy access to the chains for adjustment or lubrication. To ease the shock of the drive a very neat spring cushion is enclosed in the rear sprocket, and consists of a series of compression and recoil springs interposed between the driving member and the hub. A multi-plate clutch is fitted on the main gearshaft and is controlled from the handlebar, though pedal control can be arranged if desired. The control of the gears is by a long flat striking lever working in a quadrant on the tank.

A strong frame supports the engine and carries a full complement of fittings, including sprung footboards and two stands. The toolkit is well stocked and the finish is excellent.



Timing gear cover of the 3½ h.p. James removed to show method of adjusting the magneto timing. Observe also neat fixing of gear box and kick-starter.

The Big Single Cylinder.

The big single-cylindered sidecar model has undergone no very great changes, though the engine has been increased in size to 86 × 103 mm. bore and stroke, giving a capacity of 599, and the air passages round the valve ports have been improved. A new piston is now used, having one ring at the top and one at the bottom end.

Hyatt roller bearings are now fitted to the front hubs to assist in taking the thrust on the front wheel when a sidecar is in use. This is a refinement which is well worthy of notice.

This single-cylinder is primarily a sidecar machine. While it is impossible to obtain such sweetness or refinement of running with this type of motor as with a twin of even larger capacity, it has the merits of simplicity, reliability, and great efficiency, qualities which will always weigh with a large number of buyers.

NEW MODEL

4 H.P.

(550 c.c.)

TRIUMPH

With numerous improvements for 1914.

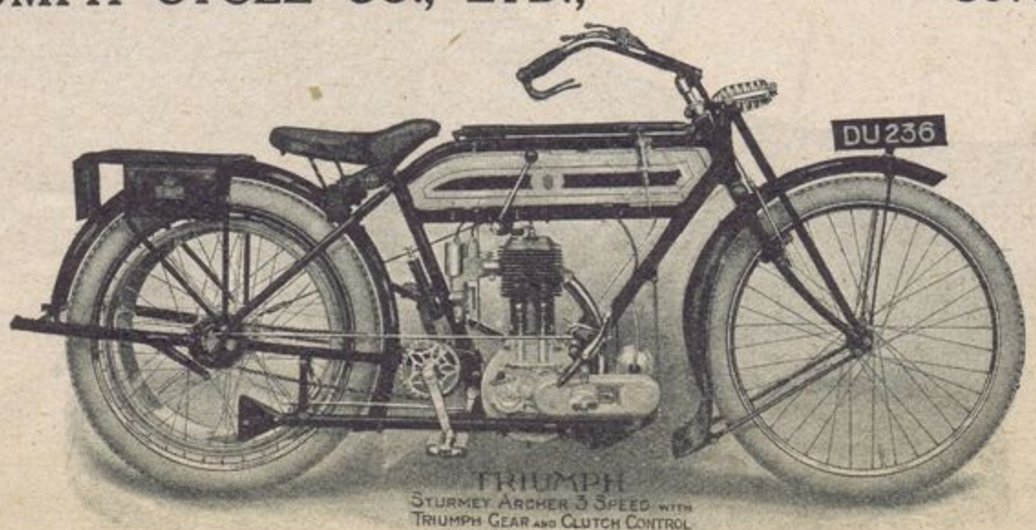
Engine :	85×97 mm. bore and stroke, 550 c.c. capacity, making it more powerful and suitable for sidecar work, at the same time retaining its delightful features as a solo mount.
Frame :	Curved top tube giving very low saddle position.
Lubrication :	Semi-automatic drip-feed.
Three-speed Gear :	Sturmey-Archer with Triumph improved gear and clutch control. The back wheel can be readily removed.
Handlebar :	New pattern, with double locking device, positively prevents it turning in steering stem.
Transmission :	Triumph 1 inch rubber belt.
Tank :	Fitted with petrol sump to drain tank to carburetter.
Cranks ;	Shorter and stronger.

Steering Head, Fork Crown, Axle, Carrier, Fork Ends—all made stronger.

Preliminary Catalogue will be published at Show time.

OLYMPIA, STAND 31.

TRIUMPH CYCLE CO., LTD., Coventry.



Strenuous Trial at the Cape Peninsula.

AT the break of dawn on Wiener's Day (October 6th, a local holiday), twenty-five motor cyclists assembled outside the City Hall, Cape Town, to compete in the 200 miles reliability trial for the Barling Cup, open to members of the Cape Peninsula M.C.C. A South African winter is notorious for heavy rains with flooded rivers and soaked roads, and under such conditions, for it had been raining for days, the men set off at intervals. The time allowances and distances between controls were :

	Miles.	Solo machines of 360 c.c. and under. Sidecar machines of 560 c.c. and under.	Other solo and sidecar machines
Cape Town to Wellington ...	45	140m.	130m.
Wellington to Worcester ...	36	160m.	140m.
Worcester to Villiersdorp ...	29	110m.	90m.
Villiersdorp to Sir Lowry Pass ...	50	210m.	180m.
Sir Lowry Pass to Cape Town ...	40	130m.	120m.

G. H. Jones (2½ F.N.) was the first to leave Cape Town, at 5.47 a.m., followed a few minutes later by F. J. Smuts on a 3½ P. and M., the last man leaving town being C. H. de Krielen, at 7.2 a.m., whose 7 Emblem, however, was the first to fall out through side-slipping on the treacherous surface of the muddy Paarl Road, thus causing his retirement.

After signing in at Wellington, the riders had to climb Bains Kloof, the first steep hill on the journey.

F. Barling (the donor of the cup) had to stop his 6 Enfield and sidecar; so also had V. Cardinal, who, riding the same make, came to a standstill near the top, forcing G. H. Jones, who was close behind him, to charge the bank and turn a complete somersault, dislocating the carburetter controls.

A USEFUL PASSENGER.
A competitor's sidecar being towed across one of the many streams.

Something like a Water Splash.

Coasting down from the top competitors were faced with the Breede River, which was flowing with considerable force across the main road

F. J. Smuts was the first man to arrive at the river's side, and unhesitatingly plunged into the roaring torrent, only the handle-bars of the machine projecting above the surface. He had very hard work to push the machine through, and magneto troubles naturally were legion. W. Herbert (6 Clyno sc.), after successfully having pushed through the current, worked with his passenger for fifteen minutes to get rid of the water which found its way into the carburetter, magneto, and cylinder. While righting matters they saw O. J. Prillevitz (6 Enfield sc.) descending and forthwith crossing the river. As the current pressed the outfit dangerously towards the big boulders they shouted to him to turn the wheel and head the current; he did so in the nick of time. His was a remarkable performance, as he got his machine to fire within half a minute, and consequently was the first man to enter the Worcester control.

At another splash an enterprising farmer offered to carry across on his waggon mounts and riders for a consideration of five shillings a time. Some of the coachbuilt sidecars acted as boats and floated, but many were upset.

On to Worcester, where a big crowd had gathered to see the "two hundred milers" pass through, and here an exciting incident befell Thornton, whose sidecar connections came adrift while going all out, the outfit capsizing and the occupants being thrown in the mud, resulting in black faces, but luckily no injury.

A Novel Exhaust Pipe.

Three drifts had to be crossed before reaching the Upington Bridge over the River Zonder End on the commencement of the home journey, and R. G. Woodville's four-cylinder F.N. fired immediately on reaching the other side, while Garlick's Enfield fired all the time during the wheeling through process, the exhaust being conducted through a 3ft. tube to above the saddle.

Then came a still more difficult task—coasting down from a tremendous height over a rough surface, with many cross-gulleys and numerous bends, towards "Boontjes kraal," a distance of about ten miles, where the main road from Caledon to Cape Town is joined.

The End of the Struggle.

After stopping at Hounhoek for the purpose of signing their names, the men, who, by the way, were far apart, steered their mounts over Sir Lowry Pass, through the control at the village, and *viâ* Somerset Strand, towards Cape Town.

A large crowd welcomed O. J. Prillevitz, who looked the fittest of all, at the City Hall, followed by F. Barling, with W. Herbert the next arrival.

One by one the competitors arrived, and it speaks volumes for the stamina of the riders and the reliability of the modern motor cycle that of the twenty-five entrants who started seventeen completed the course. Of these eight managed to come in before night fell, the last man signing in at 11.10 p.m.

The results are as follow :

1. O. J. Prillevitz (6 h.p. Enfield sc.)
2. W. Herbert (5-6 h.p. Clyno sc.)
3. W. H. Eastoe (7 h.p. Indian sc.)
4. F. Barling (6 h.p. Enfield sc.)
5. E. W. Watts (6 h.p. Enfield sc.)
6. G. H. Lunt (2¾ h.p. Douglas).
7. D. Garlick (6 h.p. Enfield sc.)
8. F. J. Smuts (3½ h.p. P. and M.)
9. R. C. Woodville (5-6 h.p. F.N.)

ARNOLD KEYZER.

QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly, and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Storing a Motor Cycle.

Q. Now that the winter months are fast approaching, I am anxious to store my machine for the winter. Will you please tell me the best way?—F.B.

The best plan is to jack up both wheels so that the tyres are not on the ground, store the machine in a dark but dry place, and smear all bright parts with vaseline.

Swaffham to Birmingham.

Q. Please let me know the shortest route from Swaffham (Norfolk) to Birmingham.—C.P.

Your best route would be as follows: Swaffham, Downham Market, Wisbech, Peterborough, Oundle, Market Harborough, Lutterworth, Coventry, Meriden, and Birmingham. The distance is approximately 128 miles.

Difficulty with piston Rings.

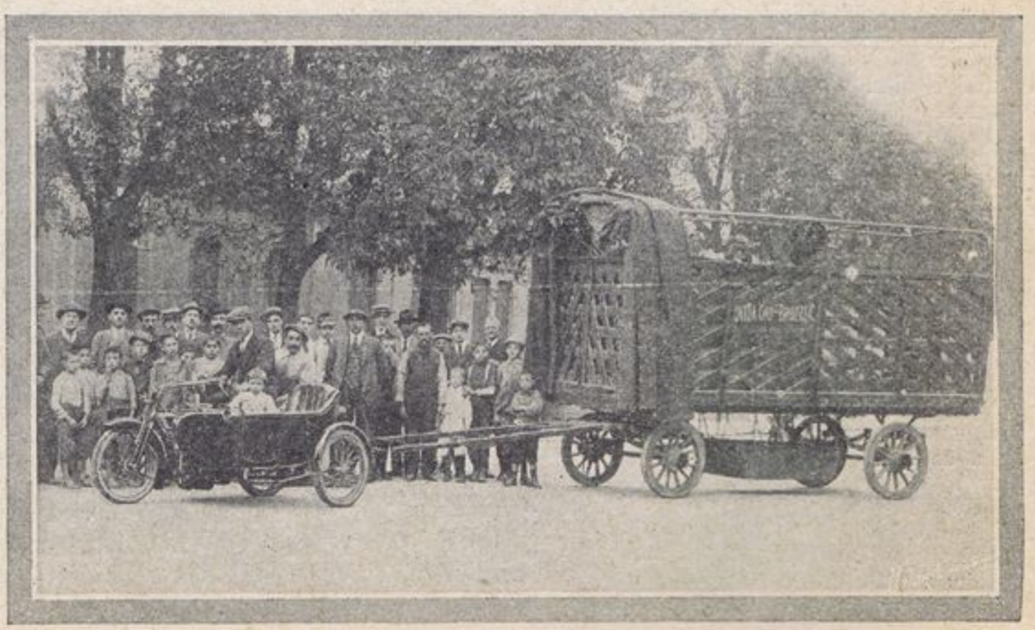
Q. I have a 1911 single-cylinder machine, and in January last when I was overhauling the machine, I was recommended by an engineer friend to fit wider rings to my piston. The grooves were widened on the lathe, and new rings fitted. Since then I have had five broken rings, on one occasion both rings snapping, and I am at present waiting for some new ones, as the trouble has occurred again. On every occasion except the last (when I had to leave the machine at a garage), I have fitted the new rings myself, and was very careful to see that they were not too tight. The engine is always well oiled. I should be much obliged if you would suggest a possible cause and remedy for this trouble, of which I am becoming rather tired.—L.H.

It is very difficult to give you an answer as to the cause of your piston ring trouble. The mere fact of having widened them should not necessarily make them liable to break, and we are rather inclined to think that the fit of these rings cannot be as good as you think, and should advise you to seek the advice of a competent engineer on the matter, as we gather from your remarks that you are not yourself an engineer. The rings, of course, should be an easy fit in their slots. Are you quite sure that you have not got carbon deposit in the slots behind the rings, as if there is much of this it is quite likely to force out the rings and lead to breakage? We advise you to look carefully to this point. If you are satisfied the rings fit properly and carbon is not present, and the trouble still continues, the only course is to fit a new piston. We do not think you were well advised to alter the original rings, as it is reasonable to presume the makers know what sizes are required.

The Question of Desaxe Cylinders.

Q. (1.) Can you please let me know what the bore and stroke should be for a side by side twin engine of approximately 4½ h.p.? (2.) What would be the approximate compression space above the top of the stroke? (3.) Is there any advantage in having the cylinders *désaxé?* If so, how much would be correct to give the best results from the vertical centre line? (4.) Would not compression be retained longer, and more even wear of cylinder walls be obtained, if one ring top and bottom were fitted instead of the usual method of all at the top?—C.A.H. (Baluchistan).

With regard to your first question, a 4½ h.p. twin-cylinder engine would be approximately 650 c.c. capacity, and this, of course, could be made up by various sizes of bore and stroke, but, taking 70 as a bore, you could get a combination of 70 × 78 up to about 75 × 75 to give you this power, though, as a matter of fact, the power of such an engine would be in all probability more than 4½. (2.) The compression space is roughly a quarter of the cubical contents, but this varies with the compression employed. (3.) The question of setting a cylinder *désaxé* is that the thrust of the piston on the walls is said by some designers to be slightly less than with the cylinder in a vertical centre line. The advantages or disadvantages, however, are more or less problematical, and we do not think there is very much in it either way. It is also claimed by some engineers that the thrust at the top of the piston when the explosion occurs takes place over a greater portion of the serviceable period of the stroke, on the same principle that if you mount a bicycle by the pedal you start with the pedal over dead centre. (4.) The number of the piston rings and the position in which they are placed depend on the design of the piston itself. Probably the best practice is three rings at the top.



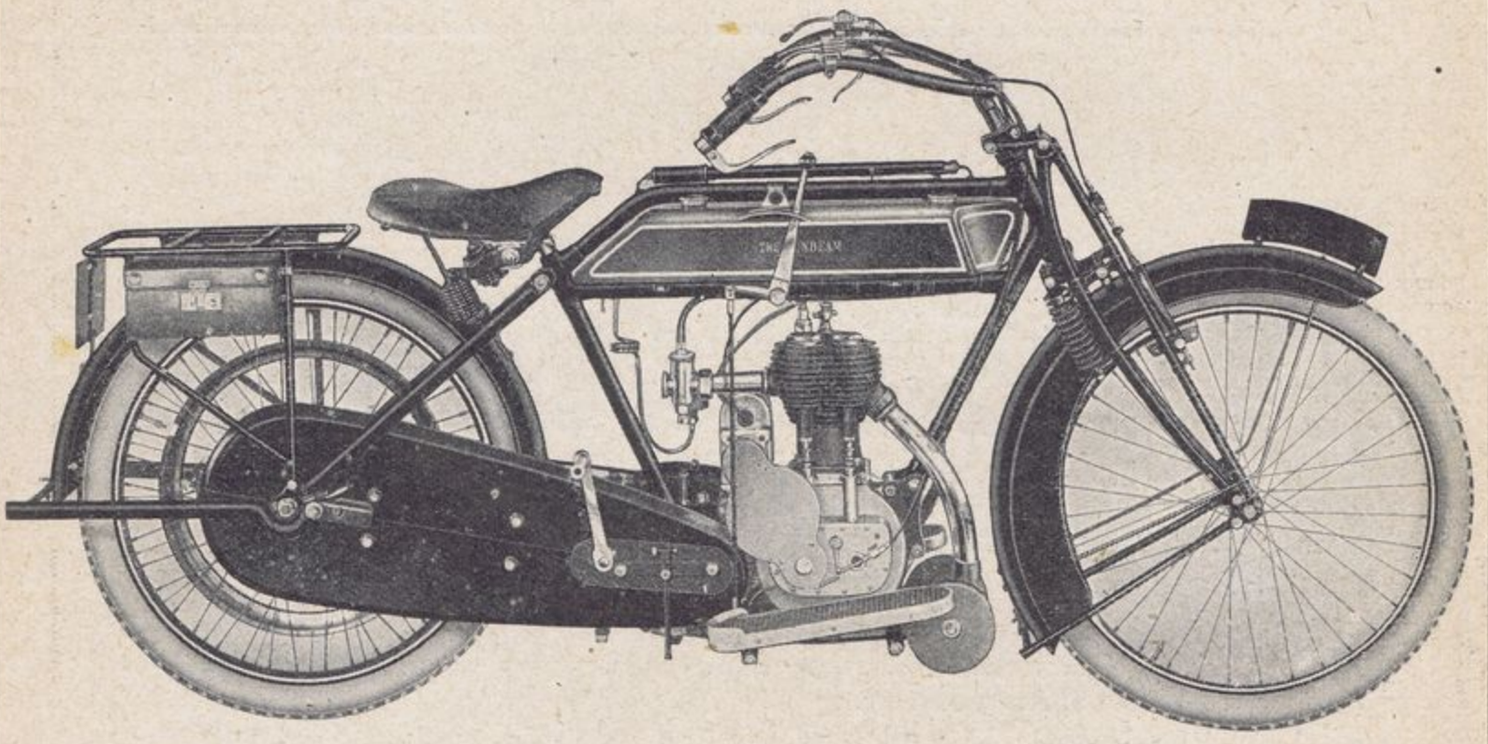
A HEAVY LOAD FOR A SIDECAR.

Great amazement was created in the streets of Milan the other day by the sight of an 8 h.p. Chater-Lea motor cycle, with sidecar attached, towing a removal van, which, incidentally, was full of furniture. We are told that the motor cycle towed the van a distance of over seven miles as shown, and that the crowds who saw this strange sight could not have paid more attention if their king had been passing through the streets.

WHY the New 3½ h.p. SUNBEAM

is

The Best Double Purpose (Solo or Sidecar) Cycle for 1914.



BECAUSE it has—

(1) A SUNBEAM Engine, the same workmanship and design as the 2¾ Sunbeam that carried all before it this year.

(2) An enclosed Countershaft Three-speed Gear.

(3) Enclosed Oil Bathed Chain Transmission.

(4) A Patent Spring Drive which makes very sweet running.

(5) A Patent Divided Axle for quick tyre repair.

(6) A Gate Change with positive stop for each gear.

(7) 2½ inch Heavy Tyres.

Write for 1914 Catalogue, now ready, to—

John Marston, Ltd., 11, Sunbeamland, Wolverhampton.

London Showrooms—57, Holborn Viaduct, E.C., and 157-158, Sloane Street (close to Sloane Square), S.W.

High Wycombe to Lincoln.

Kindly give me a route from High Wycombe to Lincoln, with distances.—E.T.L.

Your best route would be as follows: High Wycombe, Amersham, Chesham, Tring, Dunstable, Ampthill, Bedford, Eaton Socon, Buckden, Stilton, Peterborough, Market Deeping, Bourn, Falkingham, Sleaford, to Lincoln. Be careful of police traps in all the Huntingdonshire villages. Distance approximately 134 miles.

A Question of Balance and Cams.

I should be much obliged if you would inform me: (1.) If, when testing the balance of a single-cylinder motor, it is necessary to hang a weight equal to the whole of the reciprocating masses on the flywheel or only a weight equal to the half of them? I quite understand the means of doing it, but do not know which is the proper weight. (2.) Do you think it would improve a new motor cycle that seems to knock very easily on hills, and which has at present a very slow cam action to the valves, so to alter them that they opened quicker and consequently had a longer time wide open?—A.R.

In answer to the first question in your letter, it is necessary to hang a weight equal to half the whole of the reciprocating masses in order to test for balance. With regard to your second question, it is quite impossible to answer this without inspection of the machine. You do not even say what make of machine it is, but if of a standard make, in all probability the makers have settled the valve and cam action to their satisfaction, and it is highly probable that the best results have been arrived at, and without further particulars we should certainly hesitate to advise you to make any alterations but to look to other causes, verify the timing of the ignition, and set the spark to occur as the piston reaches the top of the stroke. Also see that your carburetter jet is quite free.

Questions from the East.

I shall be greatly obliged if you could tell me how to set my 1913 three-speed Rover motor cycle to racing pitch? Also, whether you advise one of the variable carburetters that are on the market, and what make will be most suitable? At present I have a B. and B. 1912 pattern. Shall I have to raise the compression ratio (at the time of tuning), and how much is necessary? Why I ask these questions is because I was in possession of a 1912 Rover single-speed which used to travel at 45 m.p.h. on the road, so I naturally would like this three-speed one to travel equally as fast, if not faster.—G.M. (Bombay).

In answer to your queries *re* tuning up your Rover you must not expect to get greater speed because you have got a change-speed gear fitted. As a matter of fact you are not likely to get such high speeds as regards maximum, but you will be able to keep up a much higher average than with a single gear. Tuning a machine up for a race does not mean structural alterations; it simply means seeing that every part is adjusted to the best possible position and in perfect working order. The carburetter you have fitted to your machine will give quite as good results as any other on the market, if it is properly tuned up. These are general rules: The compression must be perfect, valve springs of good strength, jet of larger size with air openings increased to suit, and an earlier magneto timing.

EXPERIENCE WANTED

"H.R." (Exeter).—Four-cylinder F.N. Reliability and economy.

"W.M." (Portsmouth).—Reliability of Paragon, or any other folding or collapsible sidecar.

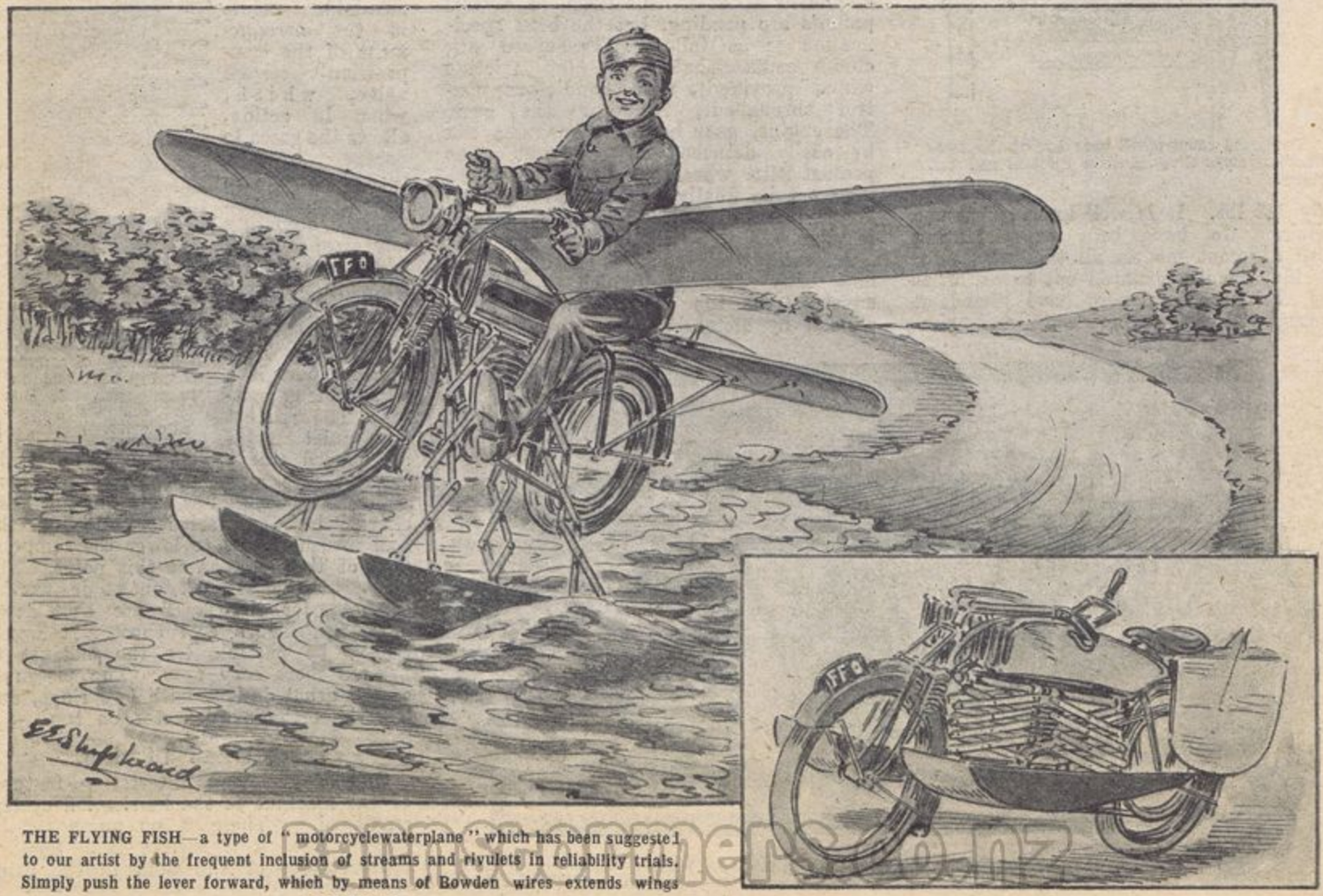
"R.A.D.H." (Stourbridge).—3 h.p. Enfield. Ease of starting, controllability, and efficiency of forced lubrication.

"A.C.H." (Burnham).—Benzole with 1912 2¾ h.p. Douglas, standard carburetter. Size of jet, and whether any alterations necessary to carburetter.

"W.M.J." (Coatbridge).—3½ h.p. twin Lea-Francis, solo and with sidecar. Consumption, reliability, durability, and hill-climbing. Also dynamo lighting set.

"F.C.M." (Edinburgh).—Morgan Runabout. Wear, reliability, hill-climbing, consumption, maximum speed, ease of cornering. General comparison with sidecar.

"C.J.H." (London).—8 h.p. Williamson, air and water cooled, solo and sidecar, lubrication, cooling of rear cylinder, flexibility and durability. Also durability of Lomax bands.

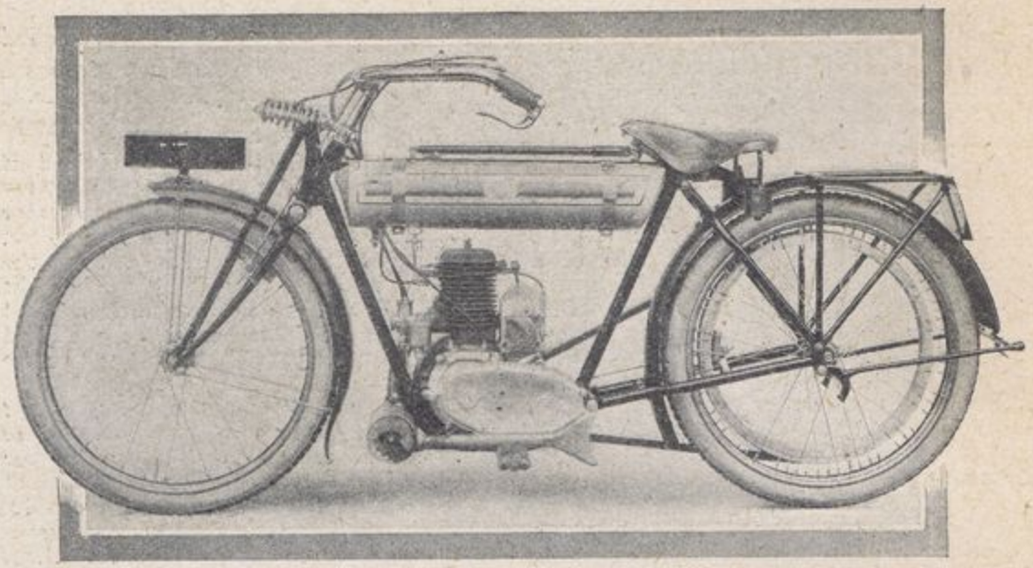


THE FLYING FISH—a type of "motorcyclewaterplane" which has been suggested to our artist by the frequent inclusion of streams and rivulets in reliability trials. Simply push the lever forward, which by means of Bowden wires extends wings and floats!

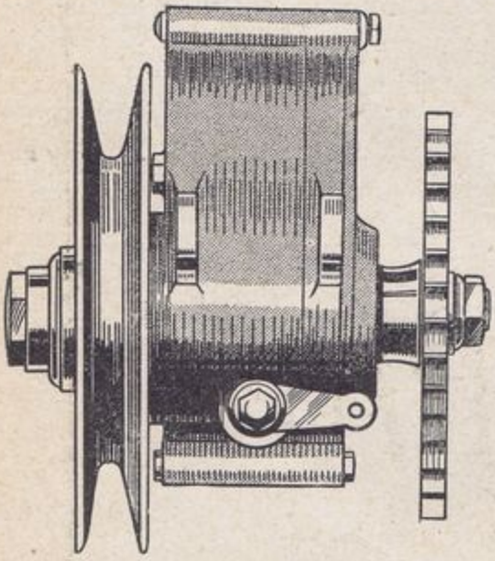
A Two-stroke Triumph.

Latest Addition to the Triumph 1914 Range. Companion to 4 h.p. Long-stroke Single-cylinder Mount.

LAST week, in dealing with the new 4 h.p. single-cylinder Triumph machines, we announced that the Triumph Co. would this week spring a surprise upon the motor cycling public, and that surprise is in the shape of a 2¼ h.p. two-stroke Triumph, which we now illustrate. This little machine is very attractive in appearance, and appears to be thoroughly workmanlike in its character. We tried it on the road, and, thanks to its two-speed counter-shaft gear, we found it possible to turn in an ordinary roadway, and start by sitting in the saddle and paddling along a yard or two. Nor is there any exertion in this mode of starting, seeing that the machine, fully equipped with petrol and oil, weighs only 125 lbs. It is well known that the Triumph Co. have been experimenting with different models all the year, and, as Mr. Schulte pointed out to us, what the Triumph designers have aimed at throughout their experiments was simplicity and reliability. They, too, desired to concentrate their attentions to one or two models at the most, as by so doing manufacturing costs were minimised.



The new 2¼ h.p. two-stroke two-speed Triumph.



Two-speed countershaft gear box of the two-stroke Triumph showing chain sprocket and belt pulley.

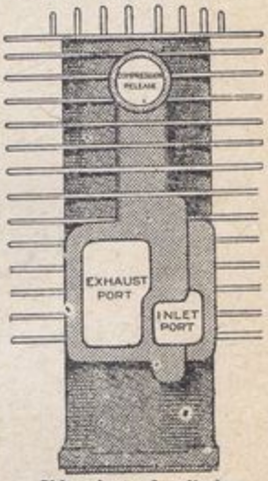
Some Mechanical Features.

The latest two-stroke Triumph has not been on the road long, and for that reason it is impossible to describe the engine in detail in this issue, as several patents are pending, but the brief specification is as follows: Two-speed dog clutch counter-shaft gear (no friction clutch provided), with handle-bar control throughout, including the gear. The engine, gear box, and magneto can be easily detached in one unit. At present 24in. wheels are fitted, but these may not be finally standardised. The height from saddle to the ground is 28½in.

A cylindrical tank is used on the new baby Triumph, which practically envelops the top tube, to which it is clipped by metal bands.

The transmission to the gear box is by enclosed chain; thereafter the drive is by belt on the right-hand side of the machine, the pulleys being of large size

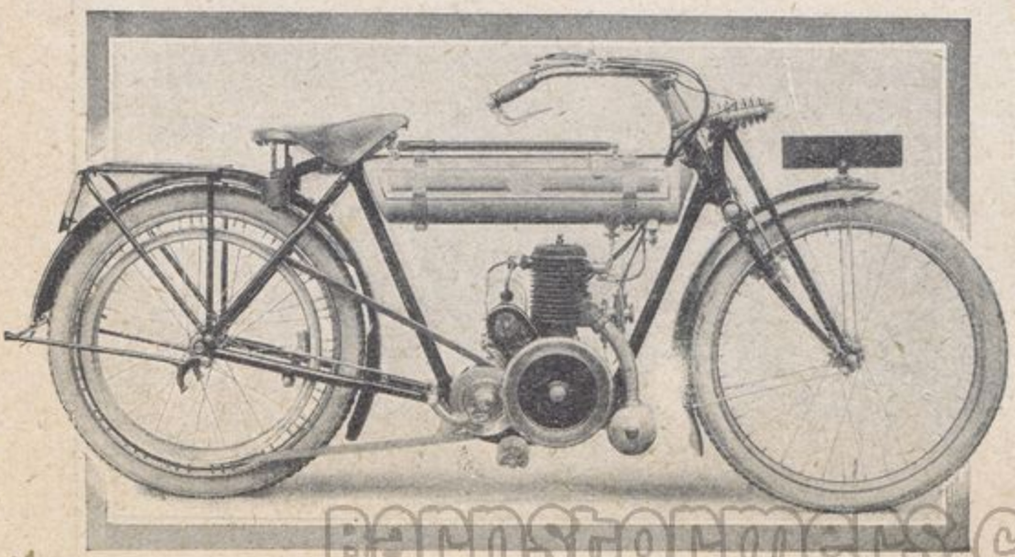
Naturally, one may expect novelty of design about any Triumph production, and these are most noticeable in the design of the engine. One of the most commendable points is the arrangement of the compression release valve, which, when in action, allows the gases to escape by a special passage to the exhaust port, thus obviating any escape of oil, which usually results in an oily cylinder, not to speak of sprayed overalls. The transfer port is a wide oblong passage. The exhaust and inlet ports are placed side by side in front of the engine; this arrangement not only enabling the burnt gases to warm the fresh charge, but, contrariwise, allowing the cool inrush of gas to lower the temperature of the cylinder at this point. The shape of the exhaust outlet is worthy of note, for the gases are shot down obliquely, like a coal shoot. It would hardly be possible for the exhaust to have a more easy flow. The piston is of the usual design, with two rings, and has the orthodox deflector on top.



Side view of cylinder showing inlet and exhaust ports, and hole for compression release valve.

The Lubrication System.

One of the most interesting features of the machine is the lubrication system employed. There is no pump to the engine, but oil is carried in a forward compartment of the tank in the usual



Flywheel and belt side of the two-stroke Triumph for 1914.

The 'Pharos' Headlight

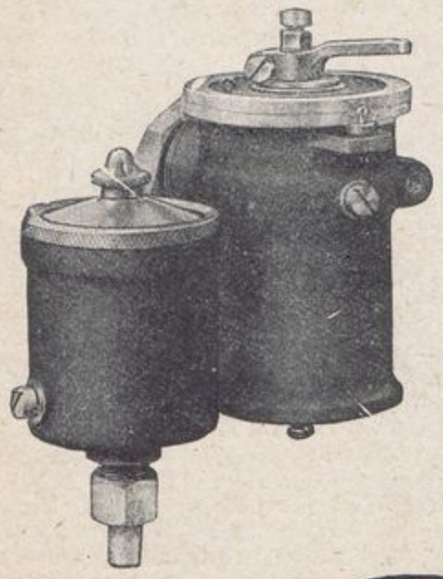
The 'Pharos' motor cycle headlight is a lamp of exceptional power, and its unique method of construction places it at once in the forefront of anything yet manufactured. The lamp is made of stout gauge metal, heavily nickel-plated. Every joint and attachment is strongly riveted. The reflector is of the lens type and is reinforced by a strong lens which takes the place of the front glass, thus giving a long and powerful beam. The DUNHILL adjustable bracket enables the lamp to be always regulated to the point of maximum advantage.

DUNHILL'S NEW M.C. OILSKINS

Undoubtedly the smartest and most serviceable oilskins on the market are the new Dunhill pattern here illustrated. These oilskins, which consist of a comfortable full jacket and trouser overalls with seat, are made in a new material of dark green colour, and are beautifully soft, flexible, and light in weight. Motor cyclists will find the new oilskins a valuable part of their equipment.

Price 33/6 complete

— Have you a copy of — THE MOTOR CYCLE LIST?



The 'Lukin' (Patent) Carburetter

(Dunhill's Sole Agents).

The 'LUKIN' has the throttle on the atmospheric side, and NOT on the engine side, thus ensuring a correct proportion of petrol and air before they are mixed. The vacuum in the mixing chamber increases as the throttle is closed, providing a medium for the instant volatilization of the petrol when it is most needed. The 'LUKIN' Carburetter has no tuned jets, but it is tuned for every speed by means of a shaped valve. There is but one moving part. Needles, dash pots, tuned springs, and other delicate mechanisms are entirely dispensed with. Suitable for every make of Motor Cycle. It is a petrol saver, of unique value, and will save its own price in a month.

Price of Carburetter - - - 55/-

Write for particulars.

Dunhill's

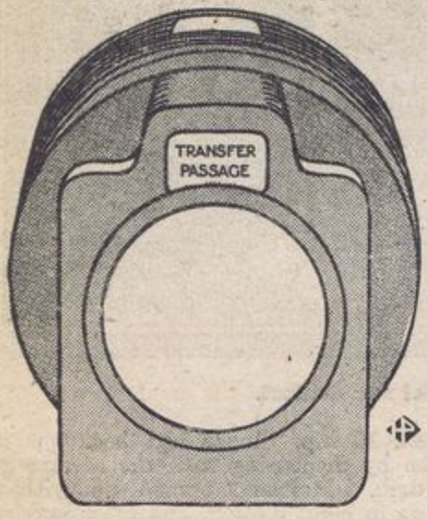
359-361, EUSTON ROAD, LONDON, N.W.

City Branch: 42-43, Lombard Street, E.C.

MANCHESTER: 88, Cross Street. GLASGOW: 72, St. Vincent Street.

The Two-stroke Triumph.—

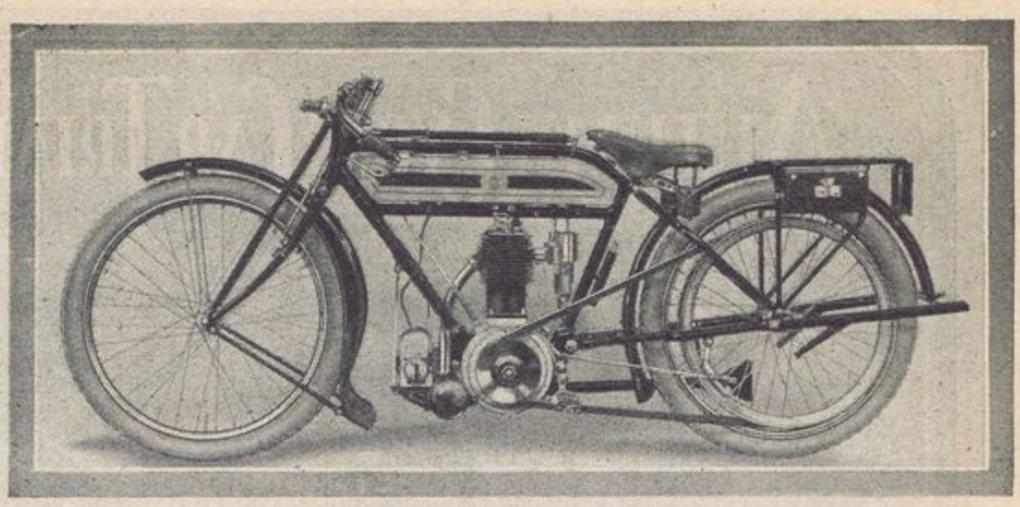
way. Embodied with the petrol filler cop is a small metal measure, which is used to draw off the oil from the front partition, and it is then mixed with the petrol to the extent of one-sixteenth of a gallon of oil to a gallon of petrol. The main advantage of this system is that the oil is drawn into the engine with the petrol, and therefore it is supplied in exact relation to the amount of petrol consumed, which is as it should be, for the wider the throttle is opened the more work the engine is doing; consequently the more oil it necessitates. The crank is thus revolving in an oil



Underside view of the cylinder of the 2¼ h.p. Triumph.

fog, and, contrary to what might be expected, during our trial of the machine we did not observe any suspicion of smoking, which may have been due to the large sized expansion chamber and the small flattened-end pipe which extends to a line with the gear box.

The magneto platform is cast in one with the crankcase, and the magneto can be slid bodily along slots provided to take up chair stretch.



A sporting mount—the 4 h.p. T.T. Triumph for 1914.

A point about the valveless Triumph is its ability to run at extremely slow speeds, and yet fire regularly every revolution. Many two stroke engines have a habit of four stroking immediately the speed is cut down, but the Triumph designers seem to have effectually overcome this trouble. Several carburetters have been tried, and the best results obtained from the Amac, which was fitted to the machine we rode.

An Absence of Vibration.

The Triumph is beautifully balanced, and the riding position with the footrests in the middle of the machine is a perfectly natural one. Vibration in the handlebar is almost entirely absent. Messrs. Hathaway and Hulbert described it as the most comfortable machine they had ridden. The spring forks, brake work, and such like details, are similar to the 4 h.p. model.

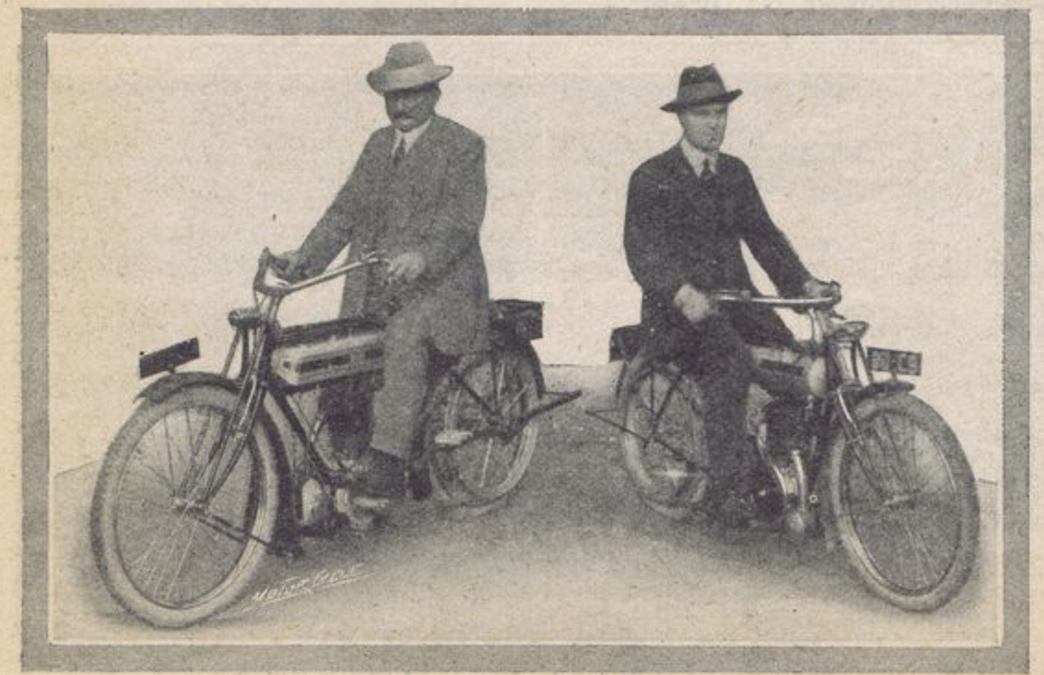
The valveless Triumph is not a potterers' mount, although it is bound to appeal to that very large section. It is even recommended for serious touring. Whilst inspecting the machine Mr. Schulte whispered to us that his 1914 mount was to be a 4 h.p. model. "I must go up hills fast" he added with feeling and a twinkle in his eye "and keep up with the rest of them."

The 4 h.p. Single Cylinder.

The Triumph standard models will in future be rated at 4 h.p., the stroke having been lengthened to 97 mm., the bore of 85 mm. remaining the same. The capacity is therefore 550 c.c. During the year single cylinders of 550 and 600 c.c. capacity have been exhaustively tested by the Triumph Co., and it was unanimously agreed that the 550 c.c. was the ideal double purpose mount, i.e., for solo or sidecar work.

We outlined most of the improvements in our last issue, the alterations apart from the longer stroke, being in detail only. Decompressors will be fitted to all engines in future, and other alterations include: new clutch control, giving freer engine, 19½in. belt drums, ⅜in. seat pillar bolts suitable for use with sidecars and new pattern handlebar. The price remains the same as in 1913.

As regards competitions, the Triumph Co., will refrain from competing except in more important events, unless of course the class definition is altered. For the Tourist Trophy Race they will build up several 499 c.c. engines



THE TWO TRIUMPHS FOR 1914.

Left, the 4 h.p. three-speeder. Right, the 2¼ h.p. two-speed two-stroke model. Both riders are of approximately the same height. Mr. Schulte, the managing director of the Triumph Co., is seated on the 4 h.p. model.

TYRE SIZES IN 1914.

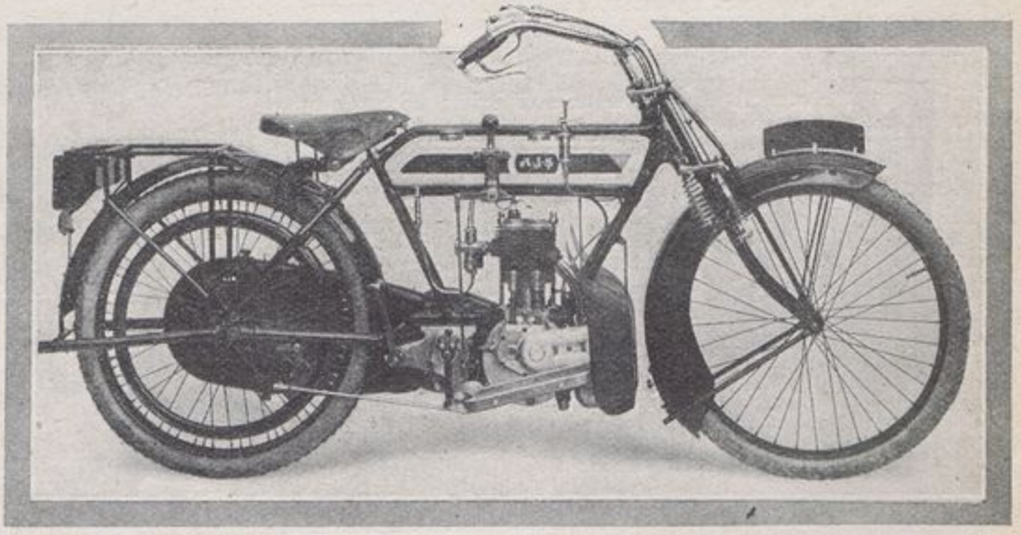
Next year will undoubtedly see an increase in tyre dimensions, particularly on standard makes of machines with engines of 500 c.c. and over. In this connection it is interesting to note that the Dunlop Rubber Co., Ltd., Aston Cross, Birmingham, are introducing, in addition to the new motor cycle tyre illustrated in last issue, a 3in. motor cycle tyre to fit two and a half inch motor cycle rims, an innovation which will be acceptable to sidecar owners. The motor cycle tyre department of the Dunlop Rubber Co. is engaged at the present time in revising its existing range of patterns and bringing them up to the present exacting conditions of motor cycle work which, with the always growing popularity of sidecaring, are becoming daily more strenuous to tyre life. For sidecar use with a powerful engine the 550 × 65 mm. Dunlop grooved small car tyre is being used with conspicuous success.

1914 MODELS.

ADVANCE DETAILS & ILLUSTRATIONS OF NEW DESIGNS.

A.J.S. Improvements: New Design Cylinder, more Efficient Lubrication System.

THE A.J.S. machines have been altered in a few details for 1914, but outwardly the design remains practically unchanged. On the 6 h.p. twin sidecar model, the detachable cylinder head has been done away with, but the swinging holding down bolts anchored to the crank case are retained. On the new cylinder casting the valve port and fins only hold the valve chamber to the cylinder, so that there is an air passage all round the valve chamber between the cylinder and the valves. The only reason for discarding the loose head is that inquisitive owners were always detaching it, whether it were required or not, with the result that when replacing it they seldom secured a compression-tight joint. Trials with the new cylinder have proved that it does not distort, and as it is more reliable from a perfect compression point of view the old style has been given up. The lubrication is by B. and L. spring fed drip from the oil tank, which is now in the centre of the petrol reservoir. The oil passes down a pipe which is branched as it approaches the crank case, and one lead goes to the near side pulley bearing, lubricating the crankshaft. For this purpose a groove is turned in the bush; the oil then passes along a hole in the crankshaft, and up another passage drilled in the web of the near side flywheel to the crank pin. After lubricating the crank pin the oil flows out of three oil ways drilled in the pin, which register with holes in the big end of the connecting rod, and so drops into the base. The other lead of the pipe goes direct to the crank case. Engine cradle plates are fitted at the rear of the crank case, as well as in front, thereby holding the engine more firmly in the frame.



Valve side of the 1914 pattern 2¾ h.p. A.J.S., showing kick-starter and change-speed gear lever.

The frame is strengthened by fitting a longer steering head, this being now eight inches long, fitted with larger ball races and lubricators to enable these bearings to be oiled—earlier models had no such provision. The down tube is 1⅜in. diameter, 10 gauge, and for eight inches below the socket lug a ⅜ vertical steel liner is fitted; the lug itself is carried lower and notched at the end to render this portion less subject to breakage from crystallisation. The chain stays are stronger than previously.

The tool case in rear of carrier is now superseded by two cases attached to the sides of the carrier and fitted in metal holders.

The rear mudguard is seven inches wide and the front guard is fitted with wide metal valances and a horizontal metal mud deflector.

The stop for the front brake on the front of the spring fork is lowered, so that this part will not foul a large lamp when it is carried low down on the steering stem. The guides for the front brake are now brazed to the fork tubes and a new front hub is fitted, this being both dust and mudproof.

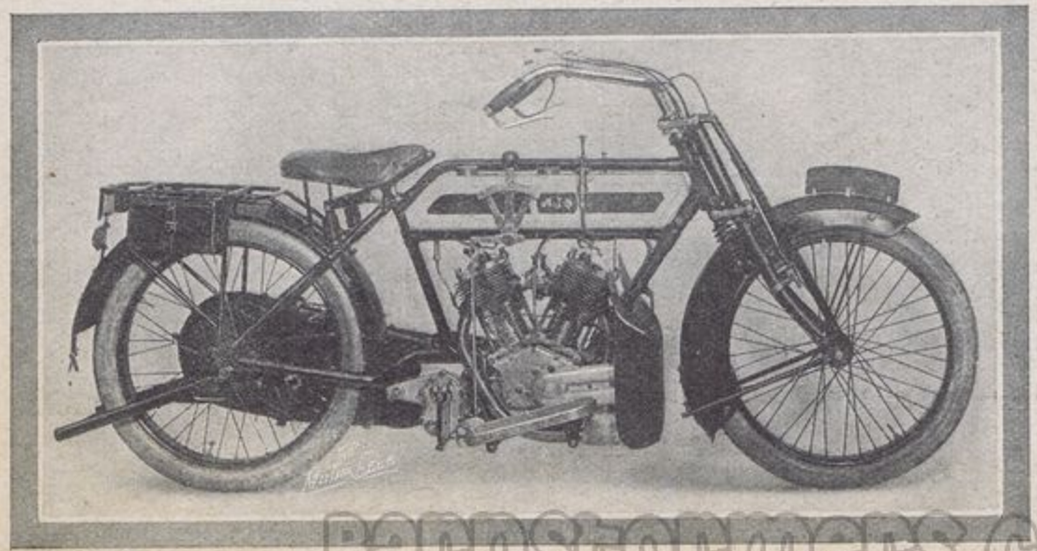
The Change-speed Gear.

In connection with the change-speed gear the following refinements are provided: the lever for changing gear is hinged on a bracket fastened to the bottom rail, the lever is of flat spring steel and works in a gate—it is sprung sideways to bring it out of the notches.

The kick-starter shaft is now carried in a bearing cast on an extension of the gear box, and sliding inspection windows are fitted to the chain cases for verifying chain adjustment. The footboard mats are much thicker, the mats being ⅜in. thick from the top of the pyramid pattern to the base, and the footboards are in a more comfortable position.

The sidecars will be exhibited in two models, both with the same chassis, which has an improved dropped frame, and is lighter than before. The bodies are boat shaped in wood and metal, and convenient cupboards are provided.

The improvements to the single-cylinder machine are that the one piece cylinder is fitted, the valves are enlarged to the size of those used on the twin, and the mudguarding is similar.



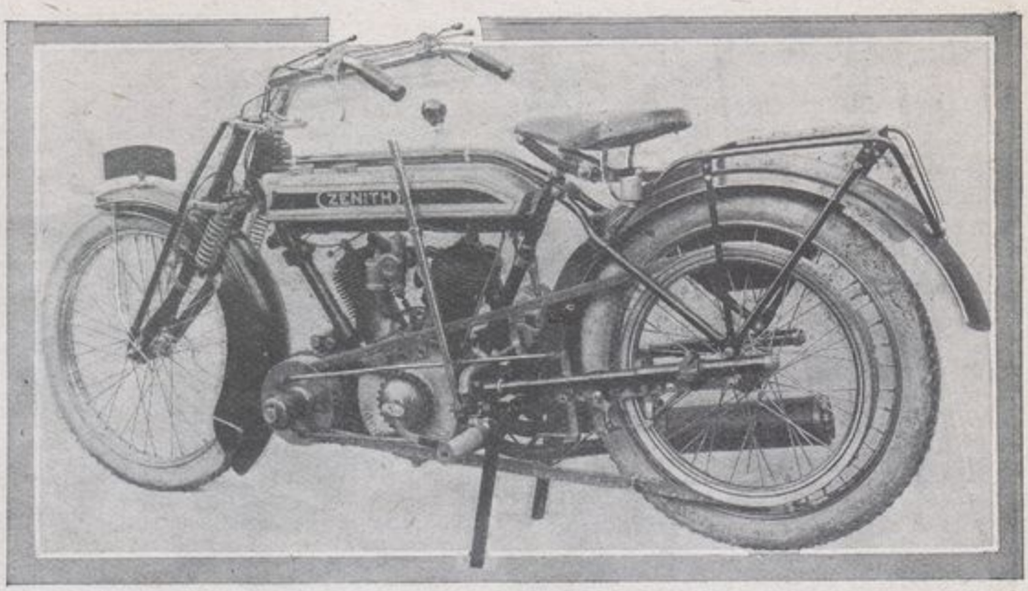
The latest model 6 h.p. three-speed A.J.S. sidecar machine.

The New 6 h.p. Zenith.

Counter-shaft Gear Providing Ratios between 4 and 11 to 1. A Long Belt Drive.

ON October 2nd we outlined the improvements to the new Zenith machines, and announced the policy of the firm for 1914. We are now able to reproduce illustrations of this popular motor cycle. The photograph of the complete machine gives an excellent idea of the general arrangement of the new counter-shaft drive and the length of belt employed, while the new and practical shape of the rear mudguard will also be observed. The latter was formerly of ample width, but it has now been improved by the addition of an extra wide lip designed to catch the mud thrown up by the belt rim. This lip extends almost from the end of the mudguard to the back stays, after which it is turned back, thus preventing wet from dripping on the belt. In the new models the rake of the front forks has been increased, while another improvement we may mention is a slight modification in the construction, the exact details of which we are not at liberty to mention, which permits the cylinders of the 8 h.p. model to be dismounted, while the rest of the engine remains *in situ*.

Zenith frames are built up with extraordinary care, and though we do not as a rule refer to factory details and tools, we cannot refrain from stating that Messrs. Zenith Motors, Ltd., possess a universally adjustable jig, used in the construction of frames, which is one of the most ingenious things we have ever seen.



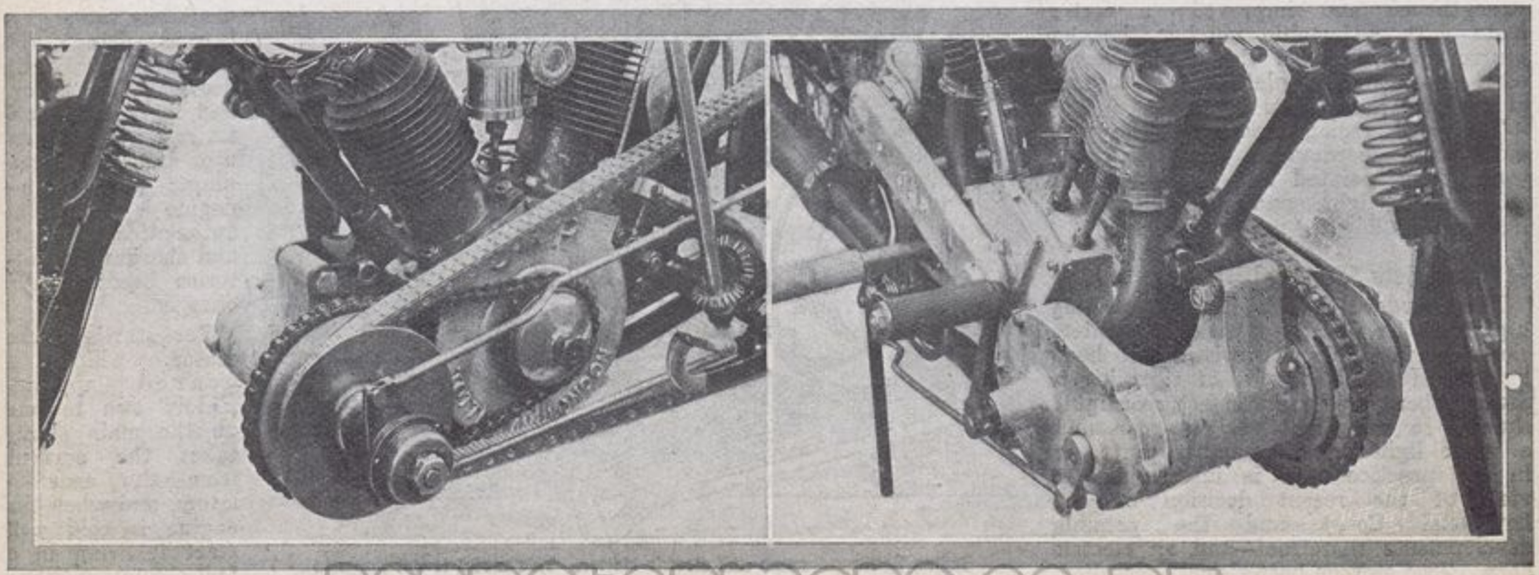
The latest model 3 h.p. Zenith, showing the improved rear mudguard and new system of transmission.

The Counter-shaft Gear.

The chief item of interest in the 1914 model is the new method of transmission by means of a chain to a counter-shaft placed forward of the crank case, and thence by belt to the rear wheel, which not only allows a larger belt pulley to be employed, but also affords a lengthy belt drive, both of which improvements place the belt under the best possible conditions. In the past Zenith machines have suffered for the want of a low ratio. Now, however, by the adoption of the counter-shaft drive ratios ranging from 4 to 1 to 11 to 1 may be obtained. It will be seen that with the exception of the chain the clutch and kick starter mechanism are entirely enclosed, but to protect the chain and belt still further an extra guard is being fitted.

Yet another excellent feature of the new system of transmission is that it may be fitted to both the 1912 and 1913 models. Inside the aluminium case is an outer shell running on ball bearings, to which the chain sprocket is attached. Inside it are two feathers which fit into grooves on a phosphor bronze piece, the inside of which is cone shaped, and forms the female portion of the clutch. The male cone, which is of steel, slides on a square shaft, at one end of which the belt pulley is fixed. The main clutch spring abuts against the thickest end of the steel cone, while against the thin end is a light spring pressing against a star piece, designed so that its arms drop into corresponding notches on a cap screwed on to and running solid with the outer shell, while behind it is a ball thrust. The object of this device is that on the slightest slip in the clutch being experienced the arms of the star piece drop into the notches, and both portions of the clutch are positively engaged. The clutch is put into action by means of a pedal just visible in the accompanying illustration behind the kick starter. The actual operation of declutching is brought into play by means of a quick pitch screw. The whole device reflects the greatest credit on the ingenuity of Mr. F W. Barnes, who has brought the Zenith to the high state of perfection it has now attained.

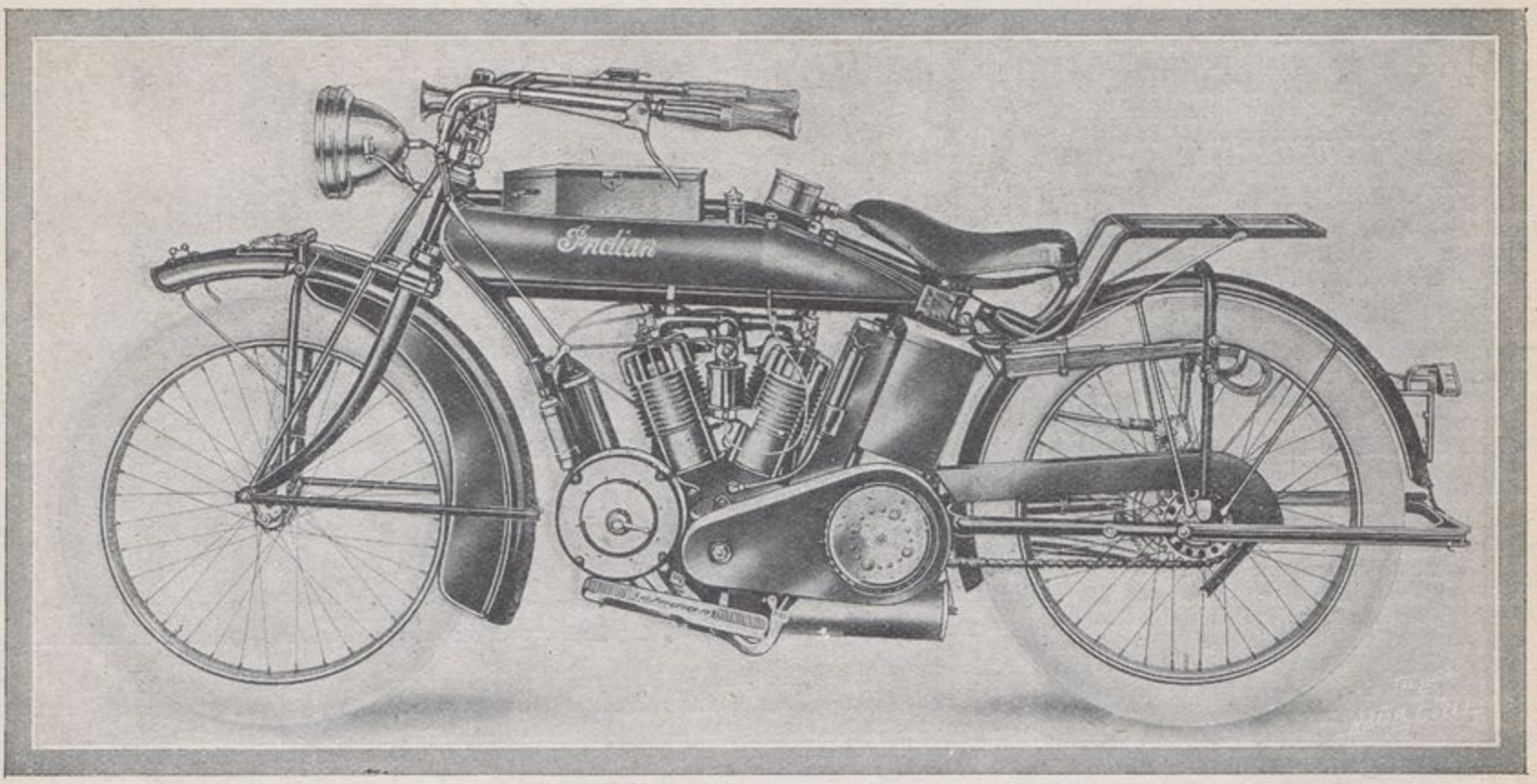
There will be three Zenith twins in 1914, the 3½, 6, and 8 h.p.



The 1914 model 6 h.p. Zenith has a counter-shaft Gradua gear in front of the engine. The drive from the engine is by chain and thence to the rear wheel by belt. The kick-starter is seen in the right hand illustration.

Indian Innovations for 1914.

Fully Equipped Machines; Electric Starting and Lighting Plant.



The 1914 model 7 h.p. Indian with electric self-starter and electric lighting outfit, including a rear lamp.

THE innovations introduced by the Hendee Co. for next year are, to say the least, startling in their novelty.

Four models will be produced, three of which—the Hendee Special, the twin standard model, and the road racing machine—will have the 7 h.p. engine; the other will be fitted with the 3½ single-cylinder power unit. Both these engines are already well known, so we can pass on at once to the 1914 improvements.

Every machine will be sent out fully equipped with everything that is necessary for the road; all will have Corbin-Brown rear-driven speedometers and two-speed gears. These gears have been strengthened and improved; a sector plate with adjustable notches, heavier control rods, and a declutching lever with a continuous plate to fit a foot of any size, have been adopted.

The road racing model will be provided with speedometer only, as speed work, it is pointed out, is carried on only in daylight, and consequently a lighting outfit will not be required.

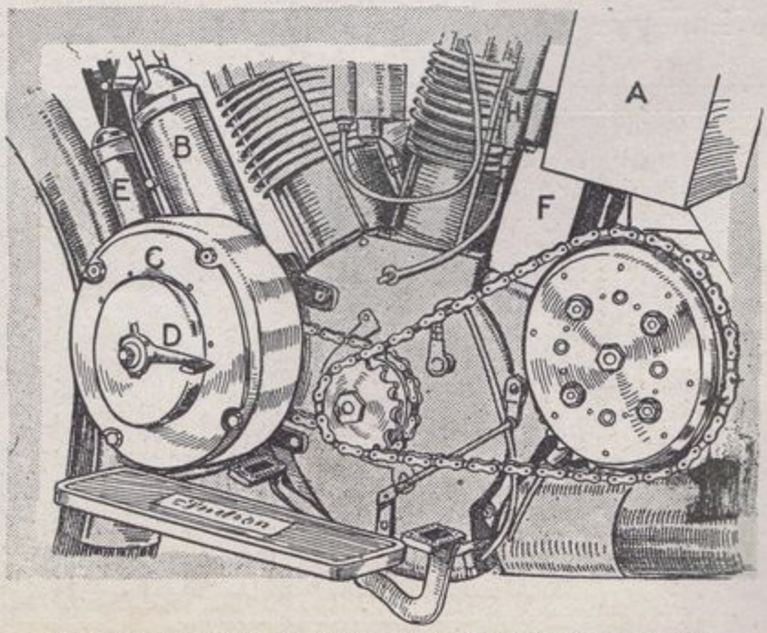
Complete Electrical Equipment.

The standard models, both 7 and 3½ h.p., will be fitted up with a complete electrical installation consisting of head light, said to be capable of throwing a powerful beam five hundred feet, rear light, showing a red light to the rear and a white light on the number plate, as in car practice—this is interesting, in view of the recent decision of the Divisional Court and the possible developments therefrom—and an electric horn. Two storage batteries are supplied, so that one may be charged while the other is in use. The carrier is now arranged to get the benefit of the rear springing; the kick-starter has been improved, and all models will carry front wheel stands. Indian machines are already noted for their silence and the ease with which they can be controlled—thanks, partly, to the pilot jet which is incorporated in the carburetter.

Electric Starting Device.

For the greatest novelty, however, we must turn to the Hendee Special, which is not only equipped with the lighting plant already described, but also boasts an electric starter, which works as follows:

The motor dynamo, of the multi-polar type, having four poles and four sets of brushes, is fitted in a weather-proof casting just in front of the engine—the place usually occupied by the magneto. As a motor it develops approximately 1½ h.p. As a generator it begins to charge the accumulators, which are fixed directly over the gear box, at 12 m.p.h. on high gear and 8 m.p.h. on low. The charging of the accumulators is regulated by a magnetic regulator attached to the dynamo. The entire system is fully protected by means of a magnetic cut-out.



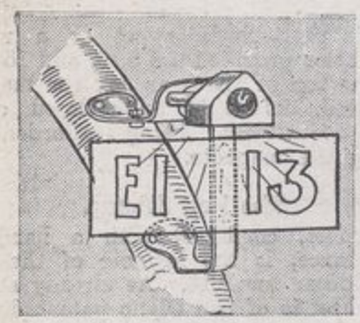
Indian lighting dynamo and electric starter. This model is not magneto ignited.

A. Battery case containing unspillable accumulators. B. Induction coil.
C. Electric starter. D. Dynamo starting pedal. E. Automatic cut-out switch or dynamo governor. F. Oil reservoir. H. Hand oil pump.

The starter has a high over-load capacity, and immediately the engine begins firing the starter automatically becomes a generator, and charges the batteries. The generator is always running while the engine is firing, but automatically cuts and charges the batteries become fully charged.

For starting, the motor, which is geared approximately two to one on the main shaft, takes the current from the accumulators, and when the engine is cold will start it firing in a few seconds. When the engine is warm it will commence firing almost the instant it

is started. Should the motor cycle be laid aside for a period, there will, it is said, always be enough current in the accumulators to furnish regular ignition, and the machine can be started by pushing off. As soon as the engine starts running the accumulators are quickly recharged by the dynamo. The whole system is exceedingly simple, and is one which has been used successfully on motor cars for some years past.



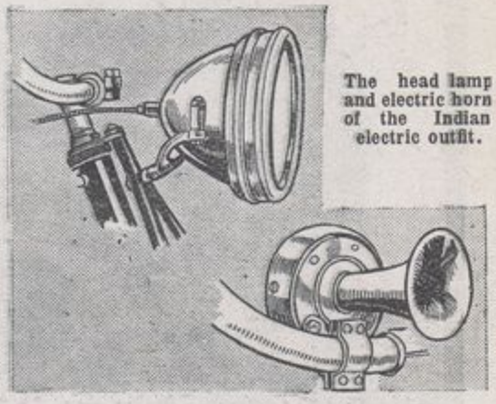
Rear light of the new Indian, which shows a red light rearwards and also illuminates the number-plate.

Minor Improvements and Prices.

We have been aware for some time, as our readers know, that electric lighting by means of a dynamo must come into use, and we congratulate the Hendee Co. on being the first to fit this desirable feature as standard, and also on going further and providing an electrical starter.

With reference to the frames, the fore and aft springing, by means of laminated leaf springs, has been retained, and for sidecar work a light reinforcement in the lower down tube has been added, which prevents the frame from twisting or being thrown out of alignment.

The prices are: Hendee Special £77, Standard 7 h.p. twin £70, Standard 3½ h.p. £60, in every case complete.



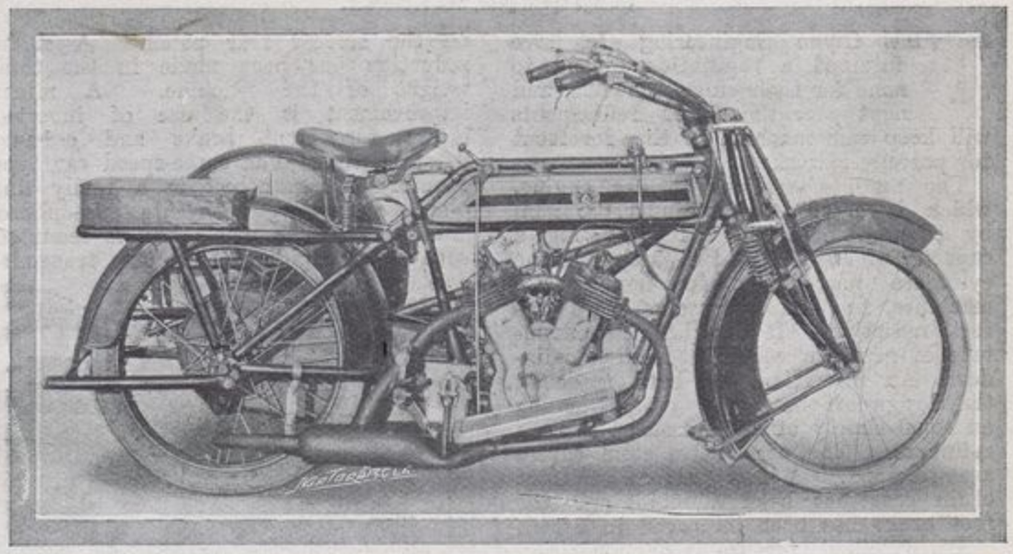
The head lamp and electric horn of the Indian electric outfit.

New Three-speed Twin-cylinder Rex.

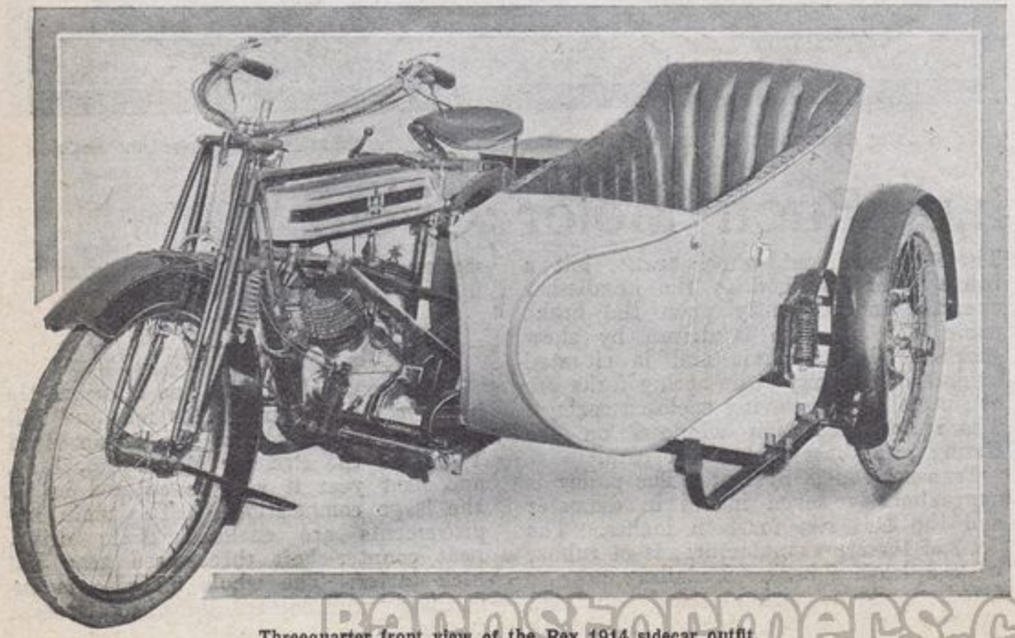
Chain or Belt Drive; A Larger Engine of Improved Design.

CONSIDERABLE alterations have taken place in the twin Rex engines for the 1914 season, and the new features are carried out on somewhat unusual lines. The cylinders project deeply into the base chamber and are surrounded by an oiltight pocket formed by the crank chamber casting. Oil is fed directly into this space and passes directly on to the pistons through ports in the cylinders; thus both front and rear cylinders are equally well lubricated. The dimensions of the engine are 80 × 95 mm., 952 c.c., and the cylinders are each held down by two long bolts to the head only. The crank case design is neat and clean. The timing case is circular and the tappet guides are mounted in flat cases, which have detachable extensions covering the valve gear. Roller bearings are fitted to the big ends, and the usual Rex eccentric rim flywheels are retained. The magneto has been placed between the front cylinder and the down tube and is chain-driven.

The drive is by chain to a three-speed sliding gear box carried in the counter-shaft through a cork insert clutch. The final drive is also by chain and the kick starter and transmission are totally enclosed.



Valve side of the 6 h.p. 1914 chain driven Rex showing valve-covers, new-change speed gear in the counter-shaft, tool box on the carrier, and large expansion chamber.



Threequarter front view of the Rex 1914 sidecar outfit.

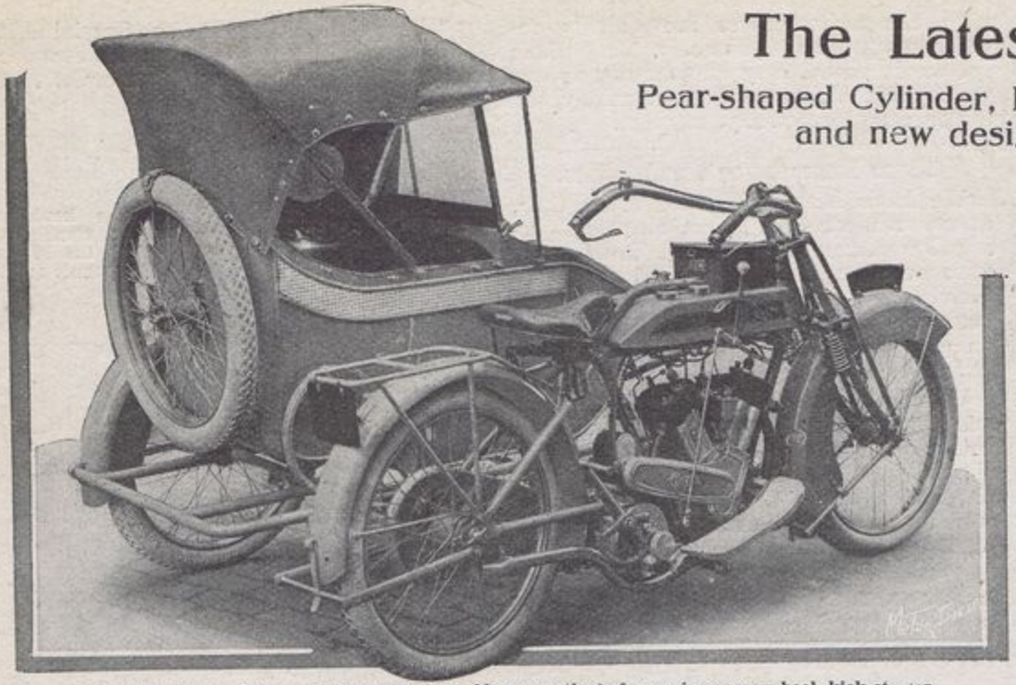
Transmission Details.

Neat rubber-covered footboards are fitted. The new silencer is of large dimensions and has a gradually tapering tail pipe extending to the rear spindle. The frame design remains practically unaltered except for the carrier, which is rather lower than usual and has fixed to it a large metal box lined with felt, which provides ample accommodation for tools and spares and has a specially strengthened lid to carry luggage or heavy weights. The front hubs are now fitted with larger bearings and waterproof washers. The tank retains the distinctive Rex features, and has hinged glass-topped filters and sight feed drip lubrication.

We also inspected a belt-driven model which, except for the transmission, is identical. The Rex-Roc gear is used, and it is fitted with a simple kick or hand starter, which works on the ratchet principle.

The Latest Clyno.

Pear-shaped Cylinder, Improved Lubrication, and new design Sidecar.



The 1914 5-6 h.p. Clyno. Observe new type sidecar, method of carrying spare wheel, kick-starter, change speed gear, and footboard.

THE Clyno Engineering Co. have obtained a reputation second to none for their sidecar models, and next year the added refinements will keep this machine in the forefront for passenger work.

The main alterations in the engine, which is a 50° twin-cylinder, 76 mm. by 82 mm. bore and stroke, giving a capacity of 744 c.c., is the casting of the cylinders pear-shaped for next year's machines, for the purpose of more perfect radiation. It also has the advantage of giving a very neat-looking cylinder. An alteration has been made in the design of the crank case, whereby an equal supply of oil is assured to both cylinders. The neat valve stem covers are retained. A new pattern of front chain case has been adopted, and the foot brake has been improved in detail.

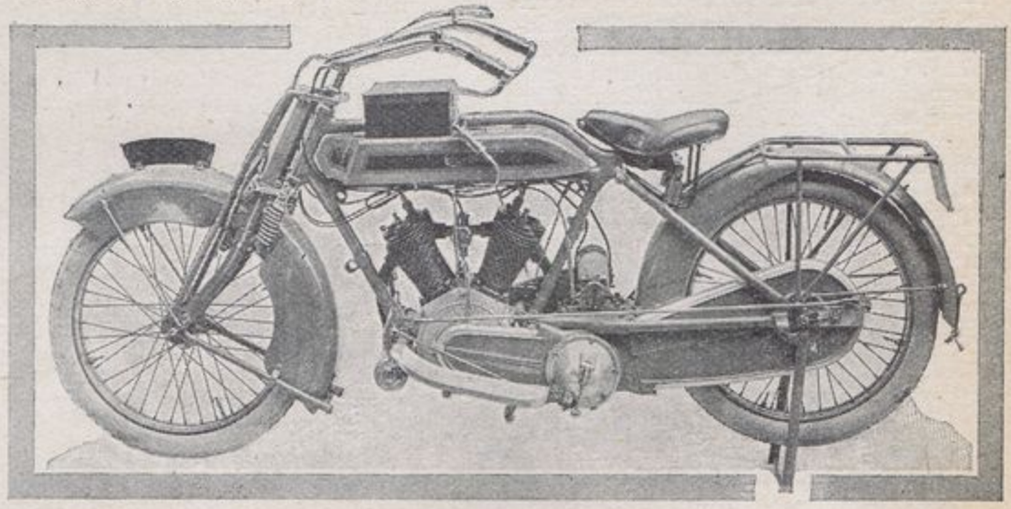
An excellent feature is the provision of large fuel tanks; two and a quarter gallons of petrol can now be carried.

The Detachable Wheel.

Of course, the detachable wheels to both machine and sidecar are retained, and probably no feature has gained such universal popularity among riders. It is literally but a moment's job to take out and replace any of the three wheels, the spare being carried on a dummy hub on the sidecar rear panel. A slight reduction has been made in the total weight of the machine. A minor improvement is the use of inverted levers for front brake and exhaust lifter control. The three-speed car type counter-shaft gear box is a really fine piece of work, with its six-splined mainshaft. The whole box is mounted with great rigidity, and the transmission is particularly sweet as a result. The ratios provided are 5, 9, and 15 to 1. On the top of the gear box the magneto is fitted, driven by an enclosed chain, easy adjustment being afforded by sliding the magneto.

The New Sidecar.

Comfort, combined with a handsome appearance, is the keynote of the very fine sidecar for 1914. As already stated, the wheel is of the Clyno patent detachable type, and the spare is neatly mounted on the rear panel on a dummy hub, and supported by a bracket. A complete measure of protection is provided for the passenger by a really well fitted hood with side curtains and an adjustable screen. When all is "storm rigged," the occupant is almost as well protected as if in a car. An attractive panel of canework runs along the sides of the coachwork. The design of the sidecar body is a new one for the Clyno firm, and is, we think, an improvement as regards appearance on the 1913 models. Altogether, these passenger outfits are among the finest to be met with on the road, and their wonderfully successful appearances in the big trials prove them to be as reliable as they are handsome.



Showing the clean lines of the 1914 Clyno. It will be noticed that the radiating fins extend the whole length of the cylinder.

The 2½ h.p. Puch Motor Cycle.

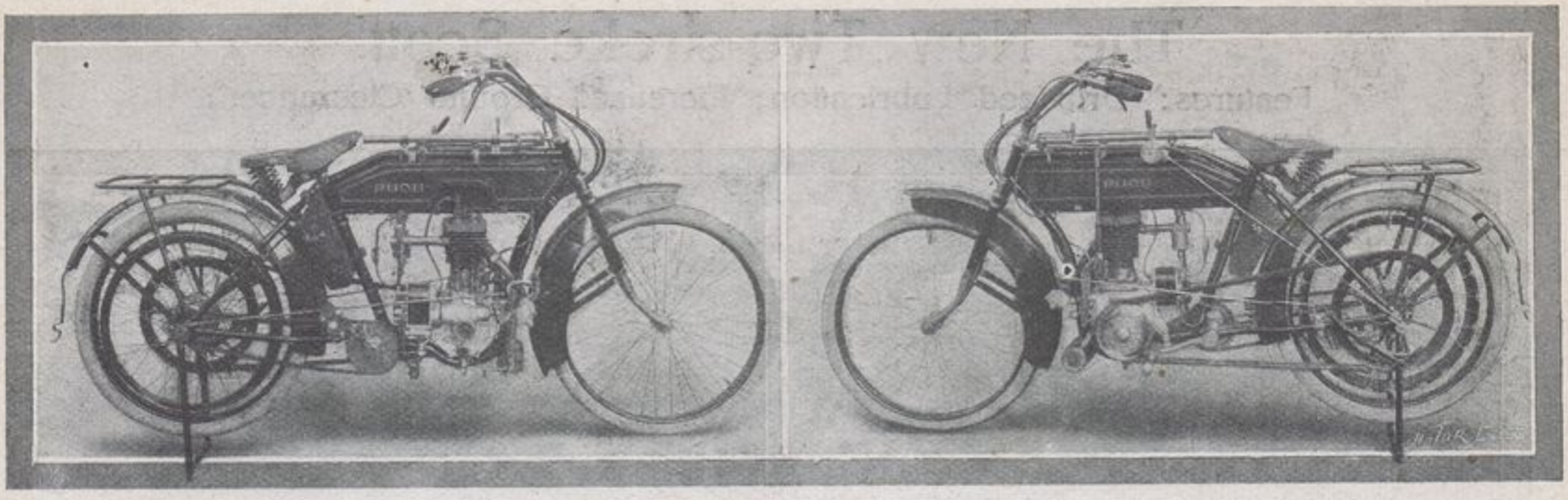
A 2½ h.p. single-cylinder model of this attractive little machine had just been uncrated when we examined it recently. The machine was finished in green.

It was fitted with an Armstrong three-speed hub, a Bosch magneto, and a B. and B. variable jet carburetter. The device by which the pulley is geared down is retained, also the belt tensioning device, which, on the model we examined, was operated by a handle attached to the top tube, similar to the N.S.U. two-speed gear. The petrol tank is fitted with a sump and filter. The toolbag is fitted under the saddle between the rear frame member and the back mudguard. There is no front wheel brake, but a brake lever attached to the handle-bar operates independently upon the brake rim. The magneto is driven by skew gear off the camshaft and is situated behind the engine. The spring forks are of simple design, having enclosed springs. There are inspection windows on the timing gear case and crank case.

Transmission is by belt. The pulley is approximately seven inches in diameter and the belt rim fourteen inches. The belt, of foreign manufacture, is of rubber with a leather back. Pedalling gear is fitted, and a spring stand operated by the heel of the rider. The back mudguard is hinged. Pirelli tyres are fitted.

REX-JAPS FOR 1914.

The Rex-Jap for 1914 has been greatly improved. In future this machine will be made throughout at the Aston Road Works of the Premier Motor Co., Ltd., and next year it will be entered in all the large competitions. The main improvements are enclosed chain drive, neat counter-shaft three-speed gear and kick-starter. The whole machine is exceedingly well finished and of most robust construction.



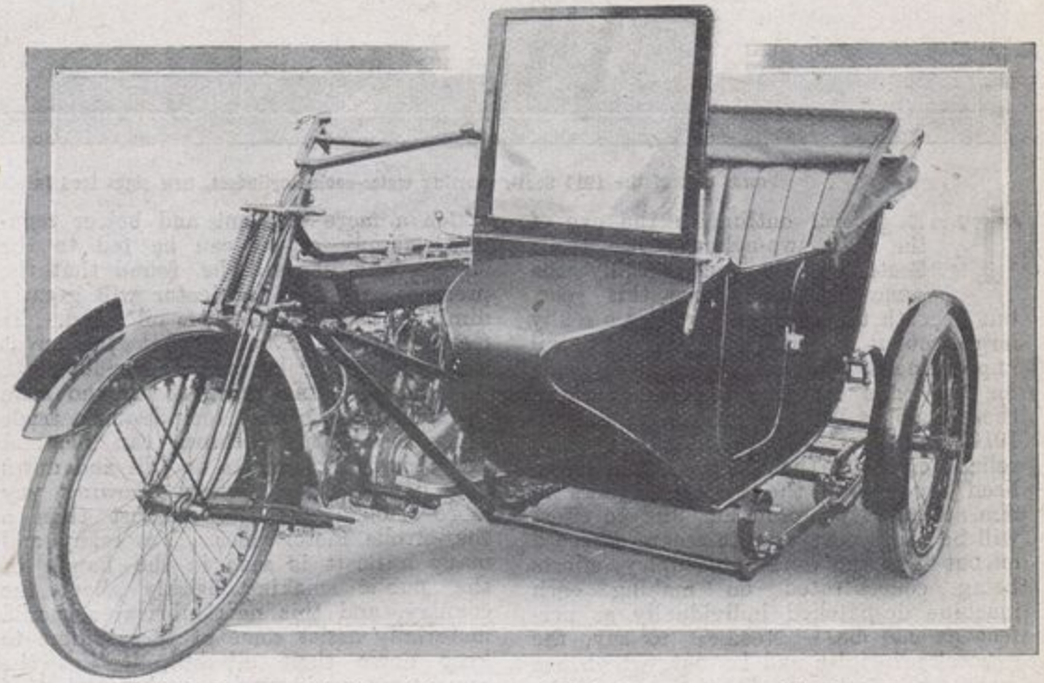
The latest model Puch single-cylinder mount, which is fitted with Armstrong three-speed gear, under-geared drive, and Bowden controls.

Enfield Improvements for 1914.

THE 6 h.p. sidecar model Enfield has been so successful, both in competition and in the hands of private owners during the past year, that the company have not considered it necessary to make any great changes.

The first point to attract attention is the substantial cast aluminium casing which now encloses the two engine chains and the selective clutch mechanism. The case is split horizontally and is rigidly attached to the frame so as to prevent rattles, and, at the same time, it leaves plenty of clearance inside so that the chains cannot hit. The handle starter chain passes through slots in a boss at the back of the case, and has been fitted with an improved starting clutch, while the handle itself, when out of action, is held in a neat spring clip in such a position as to be out of the way of the rider. The hand oil pump is fitted with a two-way tap, one lead being taken to the engine and the other to the gear, so that the latter may be lubricated from the saddle. Plating has been dispensed with wherever possible, and the all-black finish on the handle-bars and hubs looks smart and workmanlike.

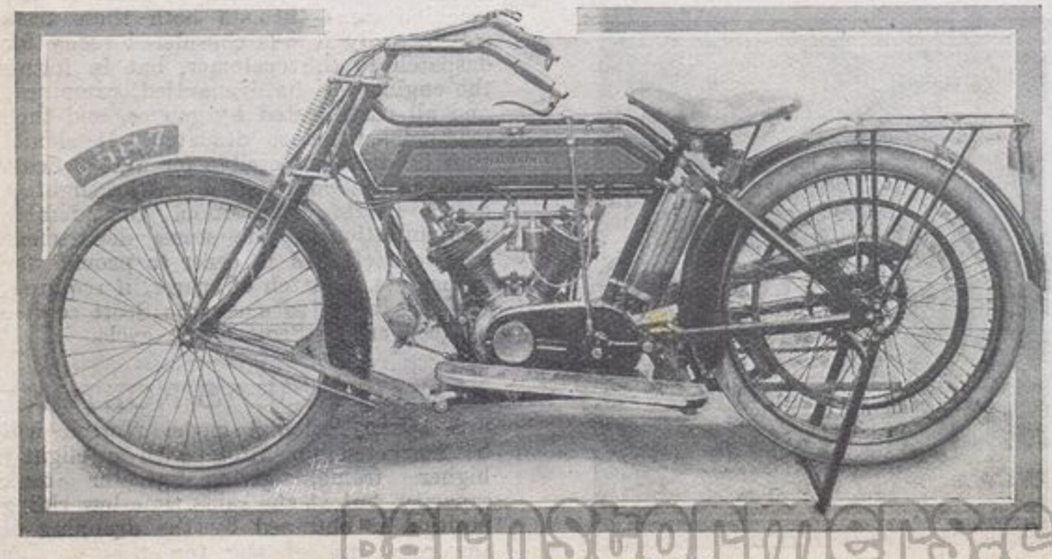
650×65 Palmer cord cycle car tyres are fitted all round, and these, with the two springs, which will be a feature of the new spring forks, give somewhat increased comfort, added to which a very neat spring handle-bar may be obtained as an extra. XL'All saddles and Amac carburetters are to be standardised on this model, and probably the footboards will be sprung at the front end.



Enfield sidecar combination, with smart coachbuilt sidecar equipped with windscreen.

Passengers are, of course, thoroughly well catered for in the large and comfortable sidecar fitted. Choice is made of either art cane sidecar body or coachbuilt body, and a special Colonial sidecar in art cane, giving exceptional clearance between the chassis and the ground, is a model which will doubtless appeal to overseas riders.

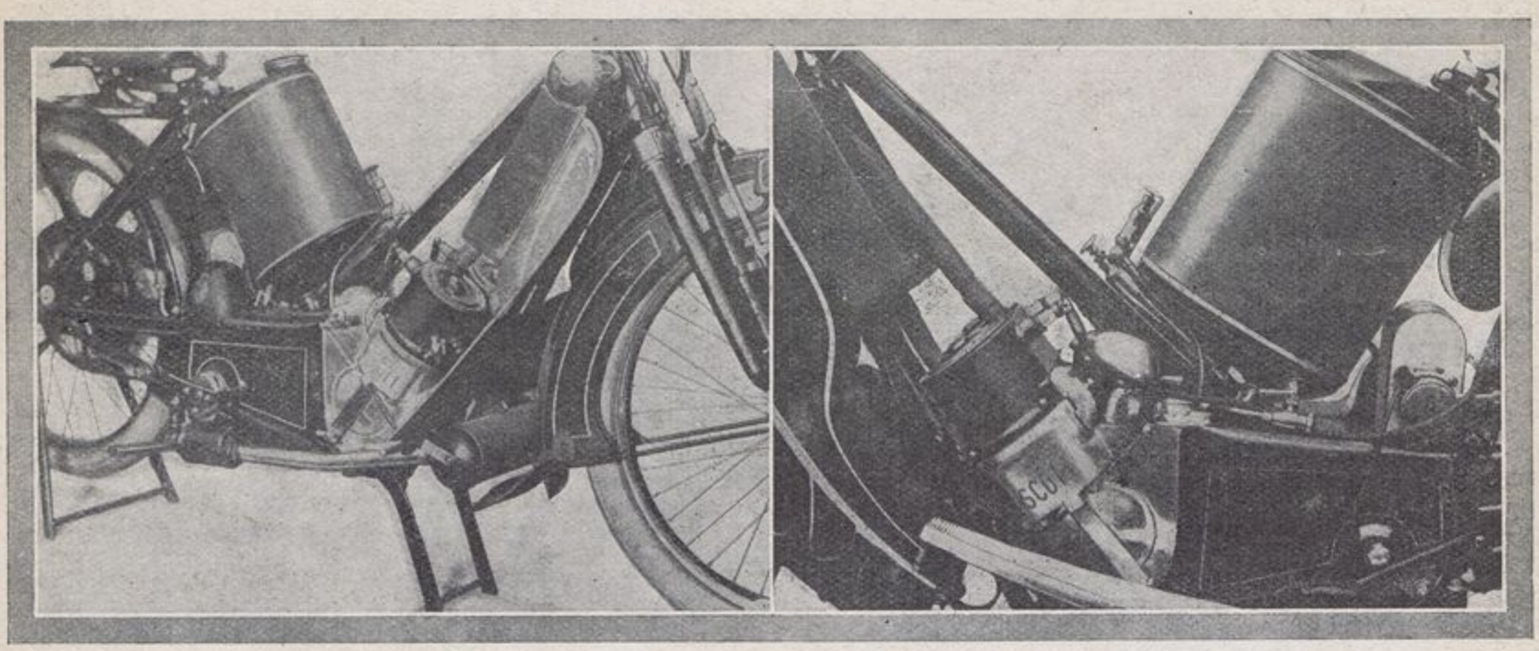
The little 3 h.p. model will, in future, have a chain-driven magneto placed in much the same position as before, and the kick starter has been changed over to the near side and now acts direct on the crankshaft. Other Enfield features remain the same. The usual smart green and black finish will remain the same, and the all-black finish will not be standard for the 3 h.p. model. It is not generally known that the Enfield Company have a private testing track, and it was interesting to watch two of the 6 h.p. models going through their paces, for, besides having a good turn of speed, they are capable of crawling round the track.



The latest design 3 h.p. two-speed Enfield.

The New Two-stroke Scott.

Features: Drip-feed Lubrication; Increased Ground Clearance.



Power unit of the 1914 Scott, showing water-cooled cylinders, new sight feed lubricator and general arrangements.

THE general outline to the eye of the 1914 two-cylinder two-stroke Scott will be substantially the same as it has been this year, but beneath the surface there lies a really large amount of original and sound detail improvement. Not merely changes made for the sake of changing, but because those changes will undoubtedly make the 1914 Scott an even sounder and more reliable a mount than ever. It has never been the aim of the Scott designers to aim at quantity production, and no effort will be made next year to secure a record output from the works at Shipley, efforts being concentrated on making each machine despatched individually as perfect as can be. Needless to say, the general principles and lay-out, which has made the Scott so distinctive, will be fully retained.

Some New Mechanical Details.

The chief alteration will be the use of a drip feed lubricator, by means of which a more constant and better regulated supply of oil can be fed to the engine, and it will be found that the presence of this lubricator will greatly diminish the quantity of oil used. It may safely be asserted that the great majority of Scott riders over-lubricate their motors, and those of us who have had much to do with long-distance trials know that these machines can be, and are, driven by experts up hill and down dale day by day without showing any more smoke from the exhaust than a four-stroke motor does. Yet many and many a Scott is seen in the hands of the public smoking briskly about the country, and this new lubricator should materially assist some of these riders to keep down their oil bill, and at the same time avoid undue carbonisation of their engines. The small silencer near the cylinder has been raised further from the ground, as it was found that occasionally the too dashing cornerist hit it against the earth.

The small driving sprocket has now been so fitted that it is absolutely impossible for it to work loose, without in any way rendering its removal difficult.

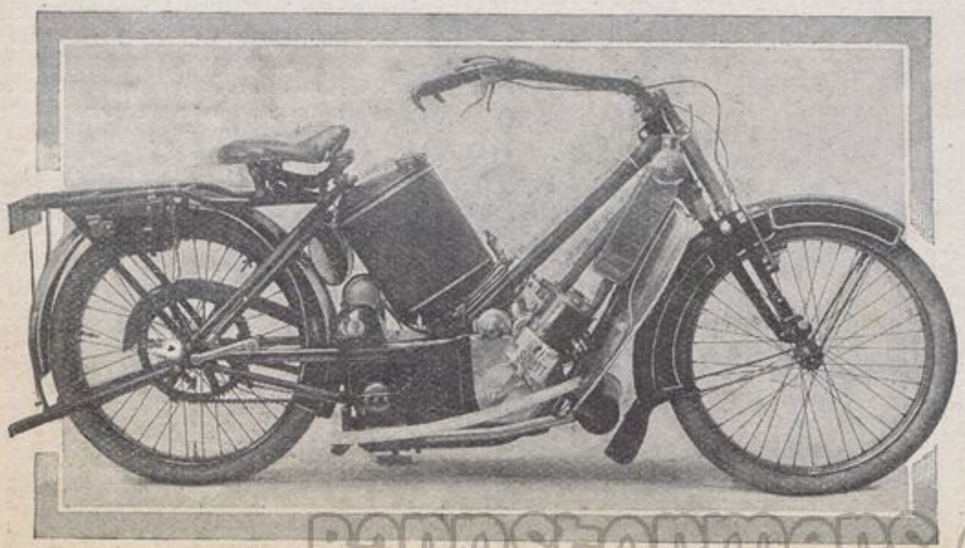
A large lubricator has been fitted to the gear box. In the former models removal of the gear shield was necessary to lubricate the gears, and many riders neglected to go to this trouble with sufficient frequency for the proper working of the change-speed mechanism. Now the laziest Scott rider can lubricate his gears as easily as he can oil his engine, even when a sidecar is attached.

The handle-bars are now covered by black celluloid: a move in the right direction towards an all-weather finish.

It is all these minor improvements that show the constant care exercised to keep the best class machines up-to-date.

Tests Before Delivery.

Every Scott engine is subjected to a bench test of 3½ hours' duration before it is sent out on the road in charge of a tester. Up to the present, if the machine came through both these tests satisfactorily it was considered ready for despatch to the customer, but in future the engine will be dismantled, examined, and all parts tested by gauges, and then reassembled before despatch. It should thus be quite impossible for a 1914 Scott to leave the work with even the slightest defect in its composition. Considerable reorganisation of the stores department has been effected in order to provide for immediate despatch of spares, if required, the idea being to make the Scott service as good as the Scott motor cycle.



Side view of the 3¼ h.p. 1914 model Scott.

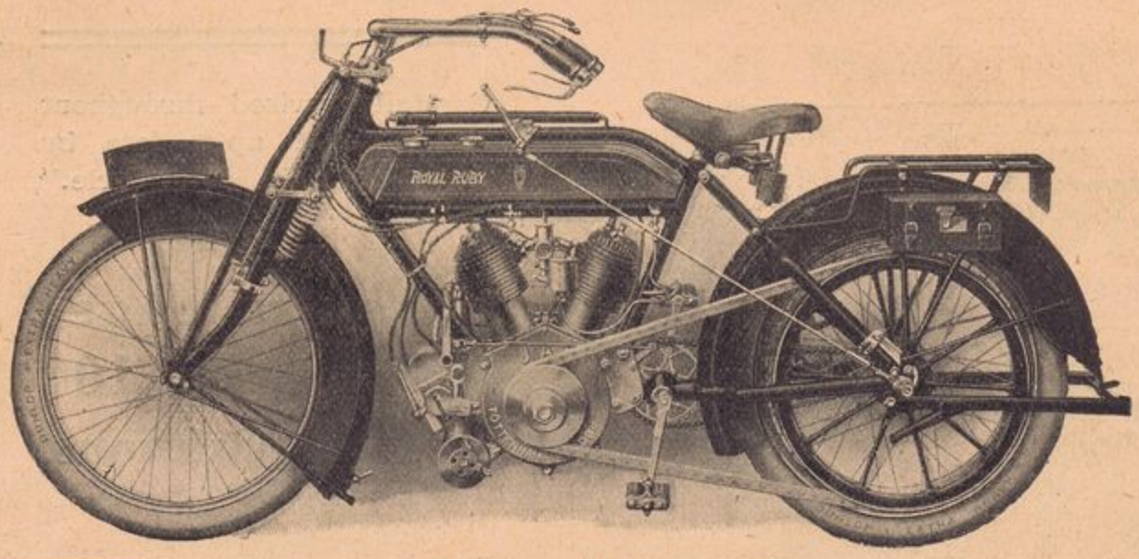
AN OVERSEAS NORTON.

A special colonial model Norton will be marketed for 1914, with a slightly higher frame, giving greater tank capacity, but at the same time low riding position is obtained by the dropping of the rear end of the top tube. The ground clearance will be 5in.

Yield to the "Royal Ruby" spirit

for instance—

Relax from the needless strain and worry connected with Motor Cycling on the ordinary Motor Cycle, by ridIng the "ROYAL RUBY" All Best Motor Mount, and you'll find—as thousands before you have found—that it is "honest right through." It is honestly RELIABLE, SPEEDY, COMFORTABLE & ECONOMICAL.



STAND No. 44 OLYMPIA SHOW NOV. 24th TO 29th.

MODEL "H."

Fitted with J.A.P. 6 h.p. Twin, latest pattern, with Decompressor, Sturmey-Archer 3-speed Gear and Free Engine Hub, Bosch Covered Magneto, and B. & B. Carburetter, Brooks Pan Seat Saddle, and 2 Brooks Best Quality Pannier Bags, etc., etc.

OTHER MODELS.

From 3½ h.p. Single-Cylinder to 8 h.p. Twin-Cylinder, all fitted with the celebrated J.A.P. Engines, and every well-known fitment.

Specialists in Motor Cycles for Export.

You cannot afford to settle about your new mount without first consulting the catalogue of the

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Meteor ..	27/- ..	10/-.
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1/6 and 3/- each. Largest and best assortment

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Complete with straps, 2/- each.

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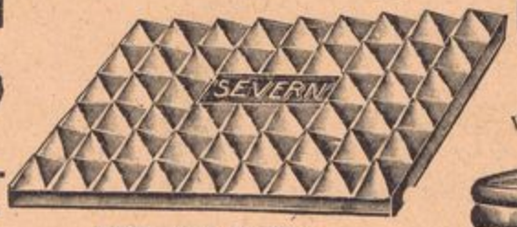
HORN BULBS.
With and without fittings. No. 8, 1/6 each

BELT RIM BLOCKS.
All patterns. 1/- each.

Footrest Rubbers.
1/- each.



FOOTBOARD MATTING.
2/- lb.—⅛in.=16oz. sq. ft.

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SEVERN BELT GRIP.—6d. each.

SEVERN SPECIAL SOLUTION.
In special screw cap tins. Cannot evaporate or leak. Non flam for export. 6d. each.

GAS BAGS.
Ensure steady light. 3in. 1/-, 4in. 1/6, 5in. 2/- each.

NEW LIST AND SPECIAL EXPORT TERMS with Samples Free per Return Mail through any Export Merchant or direct from Manufacturers.

SEVERN RUBBER CO., Ltd., MASCOT WORKS, NEWHALL STREET, **BIRMINGHAM, Eng.**

Cables: "Renown, Birmingham." A.B.C. 4th and 5th Edition.

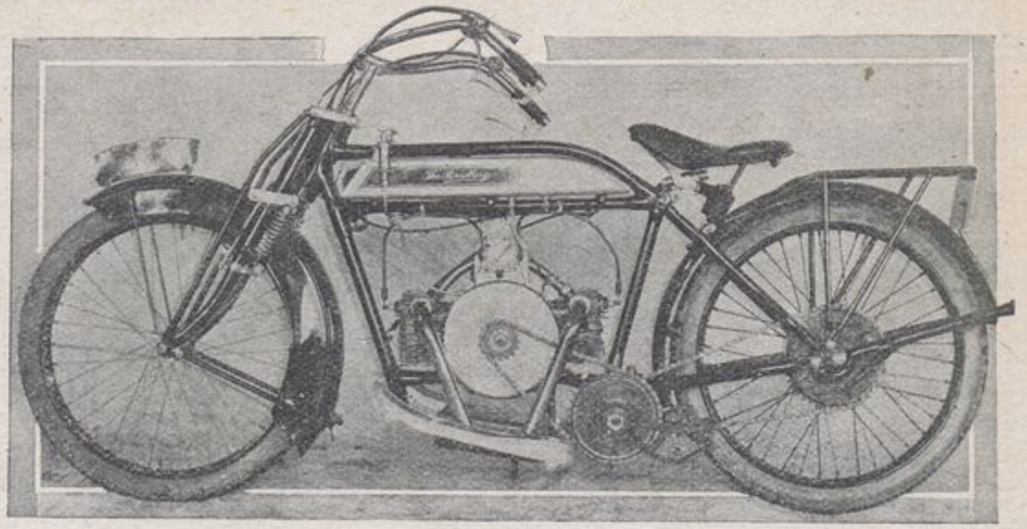
In answering this advertisement it is desirable to mention "The Motor Cycle."

A 499 c.c. Horizontal Bradbury Twin.

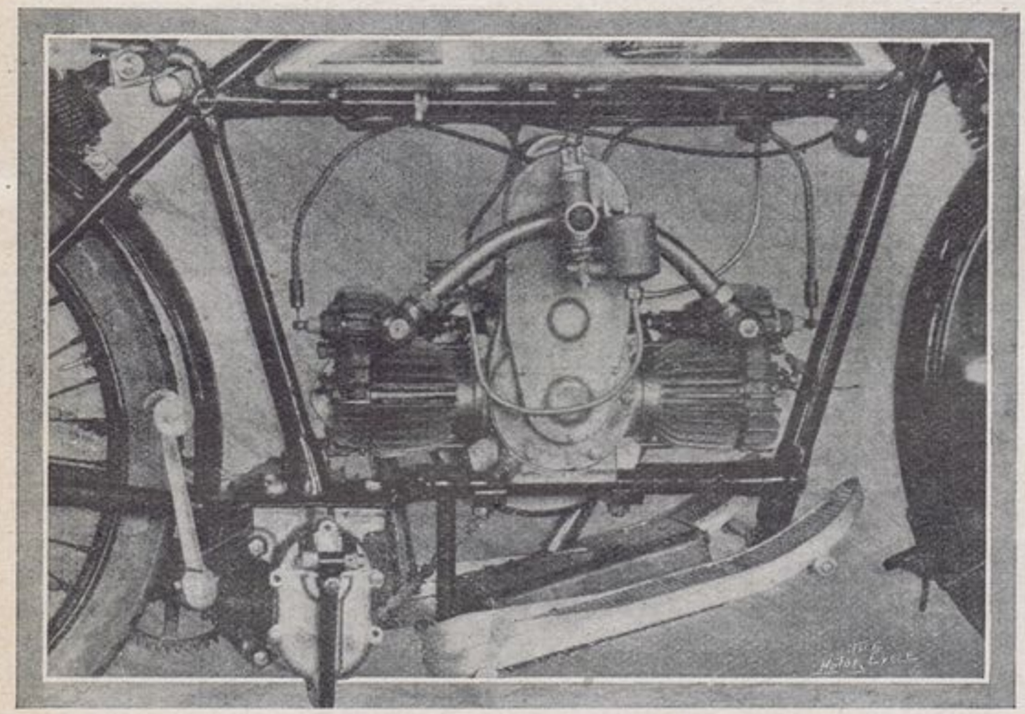
MESSRS. BRADBURY are introducing an entirely new model in the shape of a horizontally opposed twin, of which we are able to give a few particulars. The cylinders are fitted with detachable heads, which enable the cylindrical portion to be machined all over, thus ensuring an even distribution of metal, and the whole cylinder is plated to prevent rust. The crankshaft is made of high tensile steel, runs on ball bearings, and is of the three-throw type, which allows of excellent balance being obtained. The valves are side by side, and are operated by adjustable tappets. The transmission is by $\frac{5}{8}$in. × $\frac{1}{4}$in. chains, enclosed throughout.

The three-speed gear box is of the sliding dog type, provided with a kick starter and a large clutch with cork inserts, the latter being operated from the handle-bar. The gears are 4, 7, and 12 to 1 (solo), and 5, 8, and 14 to 1 for sidecar use.

The tank is capable of holding $1\frac{1}{4}$ gallons of petrol and three pints of oil. $2\frac{3}{8}$in. tyres are standard fittings; the rear brake is of the internal expanding type; wheelbase 54in.



The complete 3½ h.p. horizontal engined Bradbury from the flywheel side.



Timing gear side of the new Bradbury horizontal twin, bore and stroke 68 × 68·75 m.m.

F.R.S. REAR LAMP.

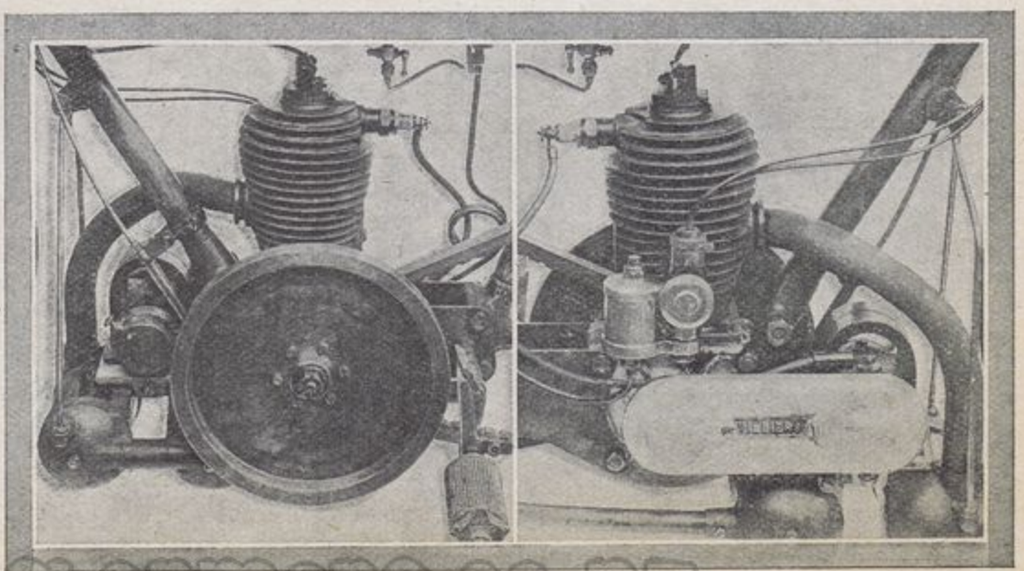
Another addition to the rear lamps is the F.R.S., a neatly made lamp in the form of half a cube, divided diagonally. It is designed to be fitted to the rear number plate, and to illuminate the number, as well as throw a red light rearwards. The electric bulb takes four volts and half an ampère.

The F.R.S. rear red light for fixing to the rear of a motor cycle. At the side will be seen a plain glass for throwing a white light on to the number plate.

A VILLIERS TWO-STROKE.

A New Departure for 1914.

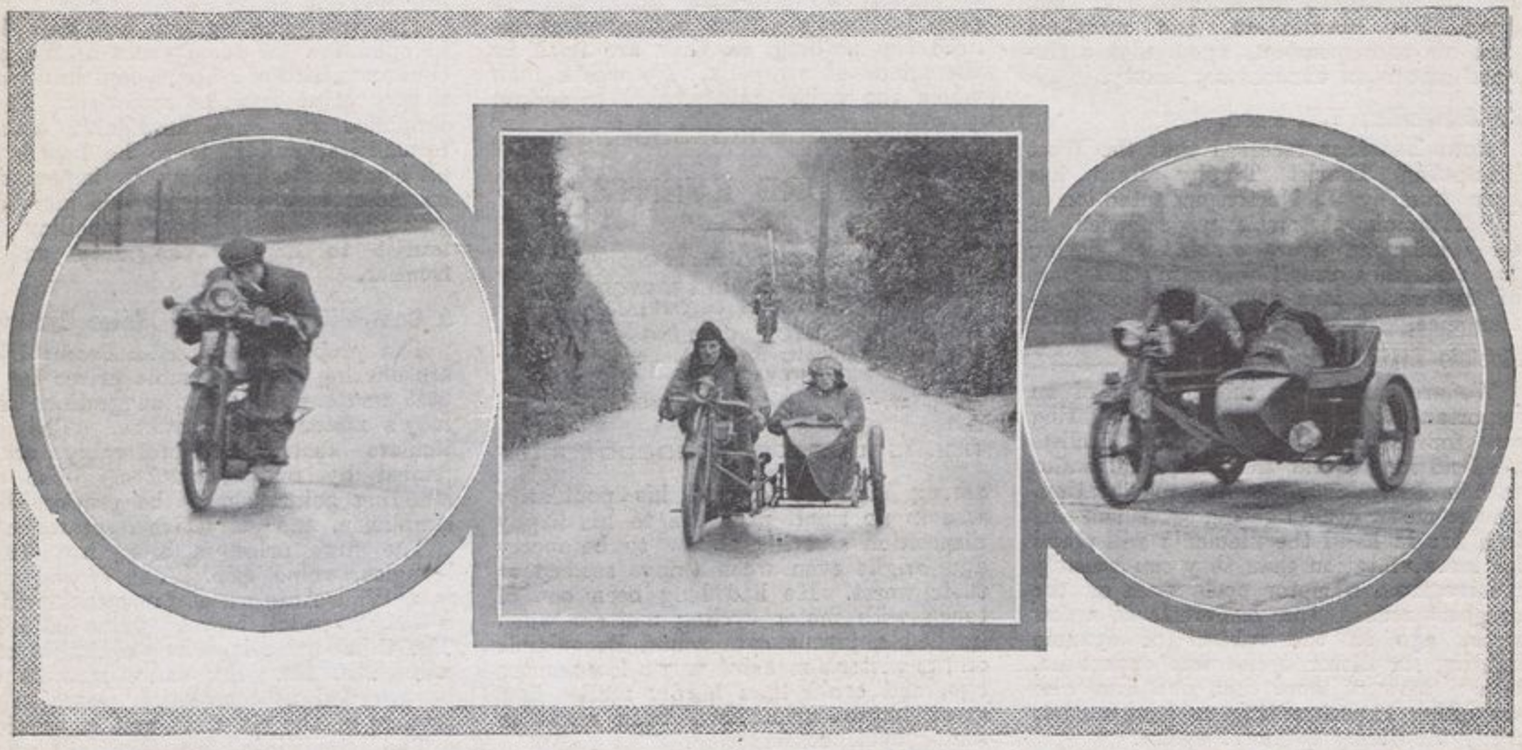
There have been many rumours current about a horizontal twin which was to emanate from the Villiers factory at Wolverhampton. This idea, however, has been given up, and a very neat little $2\frac{1}{2}$ h.p. single-cylinder two-stroke motor will be standardised in its place. The bore and stroke of the new engine are 70 mm., giving a capacity of 269 c.c. A roller bearing is fitted to the big end, and a large diameter outside flywheel employed. The primary compression is in the crank case, and the lubrication is centrifugal. When we saw the machine undergoing its road tests it was running particularly smoothly and silently, and it appears to produce plenty of power per size. Thanks to a large outside flywheel the engine is very flexible. It will, it is expected, appear at Olympia in a finished form.



Left and right side views of an entirely new model Villiers two-stroke engine.

Reliability, Acceleration, Speed, and Re-starting.

Ambitious Trial of the Streatham and District M.C.C.



(1) H. G. Dixon (3½ h.p. James) in the speed test on Brooklands. (2) A. M. C. Scott (Premier sidecar), followed by F. A. Applebee (Scott), on Tilberstowe Hill. (3) C. R. Collier (7 h.p. Matchless) starting for his flying lap on Brooklands.

A MOST interesting trial was held by the Streatham and District M.C.C. on Saturday last, and the results should prove instructive, as it comprised an acceleration test, a 100 miles reliability trial, a speed test on Brooklands, and a stopipng and re-starting test on a stiff gradient. A gold medal will be awarded to those who qualified in all four tests, a silver medal to those who qualified in three tests, and a bronze medal to those who only qualified in two tests. Out of an entry of eighty-six, only four failed to put in an appearance at Godstone, and just before 8 a.m. Godstone Green presented a busy spectacle, all the machines being ranged up in their allotted order along one side. Punctually as the clock struck the hour the first man was sent away on the acceleration test over a distance of fifty yards.

The Acceleration Test.

In each class the fastest average over this distance was taken as a standard, and only those who accomplished speeds within 5 m.p.h. of the standard were considered to have qualified. In practice this worked out well, and few failed to pass test except in Class III. (for solo machines between 350 c.c. and 500 c.c.), in which Crawley (3½ Triumph) set such a hot speed that eleven failed to get within the specified 5 m.p.h. margin.

Among the few who stopped their engines, Frank Smith had particularly hard luck, for his Grand Prix Clyno usually gets off the mark like a rocket. W. Cooper was allowed a re-start, as it was discovered that his petrol was turned off before he crossed the line. The following are the provisional results of the test :

Class I. (up to 300 c.c.)—Best performance, Colin Taylor (2½ Connaught). All qualified.

Class II. (from 300 to 350 c.c.)—Best performance, J. B. Sproston (2¾ Sunbeam). All qualified.

Class III. (from 350 to 500 c.c.)—Best performance, S. Crawley (3½ Triumph). The following failed : H. V. Colver (3 Enfield), L. A. Bollack (3½ Singer), J. H. Kerr (3½ N.S.U.), M. C. Breese (3½ B.S.A.), E. H. Littledale (3½ Ariel), Mrs. Hardee (3½ P. and M.), A. Roberts (3½ Blackburne), T. Pollock (3½ James), H. Collier (3½ Matchless), R. Croucher (3½ Kerry-Abingdon), and J. Gibson (3½ Triumph).

Class IV. (from 500 to 750 c.c.)—Best performance, R. G. J. Charlesworth (5 Zenith). All qualified.

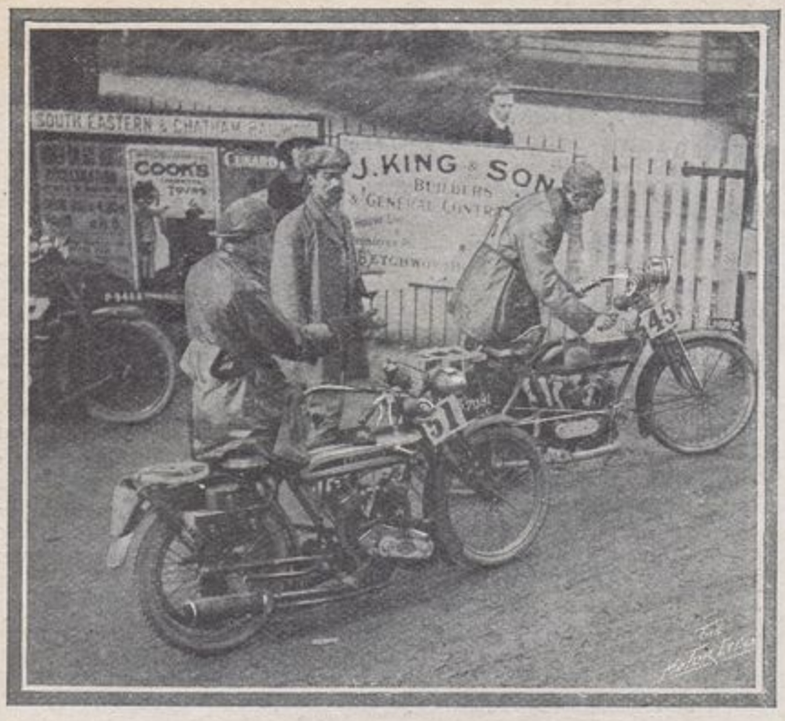
Class V. (from 750 to 1,000 c.c.)—Best performance, A. B. Wade (6 Zenith). Sydney George (7 Indian) and A. J. Luce (6 Zenith) failed.

Class VI. (machines and sc. up to 500 c.c.)—Best performance, F. J. Watson (3½ Ariel sc.) All qualified.

Class VII. (machines and sc. from 500 to 750 c.c.)—Best performance, E. B. Ware (5 Zenith sc.) George Wray (5-6 Clyno) failed.

Class VIII. (machines and sc. from 750 to 1,000 c.c.)—Best performance, E. L. Boutle (8 Chater-Lea sc.) A. C. Scott and T. S. Fordham (8 Premier sc.'s) failed.

George Wray (5-6 h.p. Clyno sidecar) ascending Chalk Pit Hill.



G. Price (3½ h.p. P.V.) and A. B. Wade (6 h.p. Zenith) waiting at the level crossing at the bottom of Pebble Hill.

CLASS IX. (four-wheeled cycle cars).—Best performance, L. Martin (10 Singer). All qualified.

CLASS X. (three-wheeled cycle cars).—Best performance, L. W. Spencer (8 Morgan). All qualified.

Tampering with the Arrows.

After the acceleration test, the first section of the non-stop reliability trial commenced, the route including such well-known hills as Chalk Pit, Polsteeple, Cudham, Brasted, thence *viâ* Oxted up Tilburstow Hill, through Nutfield, Betchworth, up Pebble Hill, Leatherhead, Cobham, to Brooklands. Considering the amount of rain that had fallen, Chalk Pit Hill was in wonderfully good condition, and caused but few failures. H. G. Bell (2½ F.N.) was stopped near the foot of the hill and came no further, and R. Abbott (3½ Bradbury) had trouble.

After Chalk Pit some of the arrows had been tampered with and quite a number lost their way. This was not the fault of the club officials, for the directions had been carried out very thoroughly, but some mischievous persons had removed some of the arrows and reversed others; in fact a pedestrian was seen walking about with one in his hand. Polsteeple Hill had a very slippery surface and caused more than one failure through rear wheel slip; also at this spot T. West (8 water-cooled Morgan), with Reg. Holloway as his passenger, broke a low gear driving chain. The surface of Cudham Hill was comparatively good, and consequently the hill presented little difficulty to the majority of riders. On Brasted Hill H. Collier had gear trouble. The surface was in fair order, and many three-speed machines sailed up on middle gear.

Slippery Surfaces and Steep Hills.

The country was beautiful in its autumn garb, but the fallen leaves and recent rains had made some of the narrow lanes so greasy that solo riders had to exercise the greatest caution over long stretches of road. At the top of Pebble Hill quite a little crowd of spectators had gathered to see the fun. We noticed a particularly fine ascent by T. C. de la Hay (6 Sunbeam sc.), and other good climbs by T. G. Meeten (3½ Rudge), J. B. Sproston (2¾ Sunbeam), A. C Scott (8 Premier sc.), and T. Silver (3½ Quadrant sc.), while A. G. Cocks, on the little Connaught, had to assist his machine slightly. On the way to Brooklands we overtook L. A. Bollack, who reported a stop for a broken belt, and shortly afterwards A. G. Cocks, who had shed the nut which holds on the driven sprocket; however, he managed to get another nut and continued again in great form. The non-stop section ended about half a mile from Brooklands, and competitors were sent on *viâ* the Byfleet Gate. On reaching the track a complete lap had to be made finishing in the straight and a minimum speed was set for each class.

Brooklands proved a surprise to many who were not previously acquainted with the track, and more than one rider found that his machine had a tendency to "dry up" in the neighbourhood of the aeroplane sheds. Three competitors had hard luck on the track, H. F. S. Morgan having carburetter trouble, E. B. Ware (5 Zenith sc.) shed a belt, and C. F. Halsall (10 Wilton cycle car) ran out of petrol. This was all the more disappointing in that all three machines are capable of high speeds and have previously shown up well on the track. A. B. Wade (6 Zenith) accomplished the fastest lap at 56.37 m.p.h., and Crawley's Triumph again proved its worth by lapping at 53.05. The following are the times of those who successfully attained their set speeds:

CLASS I.—Minimum set speed, 33 m.p.h.

R. O. Clark (2½ F.N.)	35.77	C. Taylor (2½ Connaught)	34.75

CLASS II.—Speed, 37 m.p.h.

J. Sproston (2¾ Sunbeam)	39.93	W. L. Barratt (2¾ Douglas)	42.94
J. S. Watson (2¾ Sunbeam)	40.77	C. Aslen (2¾ Grandex)	41.0
H. R. Davis (2¾ Diamond)	37.28	S. Tubb (2¾ Humber)	43.02
A. F. Selby (2¾ Sunbeam)	41.0		

CLASS III.—Speed, 42 m.p.h.

C. E. Noakes (3½ Sunbeam)	45.08	H. Willoughby (3½ Rudge)	50.75
T. G. Meeten (3½ Rudge)	48.48	H. G. Dixon (3½ James)	43.79
R. G. Mundy (3½ Triumph)	50.38	H. Collier (3½ Matchless)	42.85
L. A. Bollack (3½ Singer)	43.36	W. C. Drake (3½ P. and M.)	44.87
J. H Kerr (3½ N.S.U.)	44.03	A. V. Sumner (3½ Zenith)	50.23
F. Walters (3½ P. and M.)	43.21	R. Croucher (3½ Kerry-Abingdon)	46.81
M. C. Breese (3½ B.S.A.)	43.21	J. Gibson (3½ Triumph)	46.09
E. H. Littledale (3½ Ariel)	46.94	S. Crawley (3½ Triumph)	53.05
J. Oliphant (3½ Premier)	47.81		
A. Roberts (3½ Blackburne)	48.53		

CLASS IV.—Speed, 47 m.p.h.

G. Price (4 P.V.)	47.58	G. T. Gray (5-6 Rudge)	46.44
R. Charlesworth (5 Zenith)	50.96		

CLASS V.—Speed, 52 m.p.h.

B. A. Hill (7 Indian)	53.22	G. Griffith (8 Zenith)	55.03
A. Wade (6 Zenith)	56.37		

CLASS VI.—Speed, 32 m.p.h.

F. Edmond (3½ Humber sc.)	34.28	J. E. Greenwood (3½ Sunbeam sc.)	37.10
T. Silver (3½ Quadrant sc.)	37.82	F. J. Watson (3½ Ariel sc.)	37.89
K. Holden (3½ B.S.A. sc.)	40.77		

CLASS VII.—Speed, 37 m.p.h.

A. H. Wright (6 A.J.S. sc.)	37.95	T. Stevens (3½ James sc.)	38.67
G. Nott (5-6 Clyno)	37.78	F. Smith (5-6 Clyno sc.)	47.12
T. C. de la Haye (6 Sunbeam sc.)	41.00	Hugh Gibson (5-6 Bradbury sc.)	43.75
G. Wray (5-6 Clyno)	38.13	C. Freeman (5-6 Clyno sc.)	40.35

CLASS VIII.—Speed, 42 m.p.h.

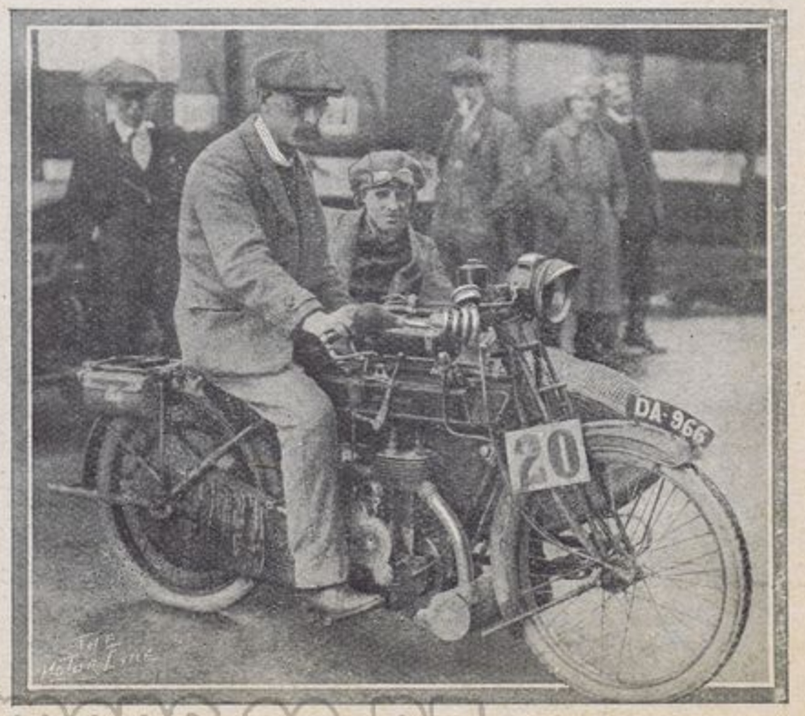
J. Woodhouse (7 Quadrant sc.)	43.87	C. Collier (7 Matchless sc.)	43.75
		E. Boutle (8 Chater-Lea sc.)	43.43

CLASS IX.—Speed, 40 m.p.h.

L. Martin (10 Singer c.c.)	52.66

CLASS X.—Speed, 42 m.p.h.

T. V. West (8 Morgan)	42.75	L. W. Spencer (8 Morgan)	42.94



J. E. Greenwood, the designer of the Sunbeam, on the 1914 model 3½ h.p. sidecar machine with which he competed in Saturday's trial.

Reliability, Acceleration, Speed, and Re-starting.—

It would appear at first sight that the speeds allotted to the various classes were not too high, but it must be remembered that the machines had gone through nearly seventy miles hard work, and were in full touring trim. J. Chater-Lea, V. Busby (3½ Quadrant), and F. J. Ellis (6 Matchless sc.) all suffered tyre trouble during the morning, and H. E. Chapman (5-6 Clyno) was reported to have been involved in an accident near Redhill.

Mechanical Details.

A look round the competing machines during the lunch interval proved interesting, for there were several 1914 models taking part in the trial. Both the 6 h.p. and 3½ h.p. Sunbeams are very workmanlike-looking machines. Colver's Enfield had a chain-driven magneto, a new oil pump, an experimental inlet pipe, and the kick starter on the left-hand side. Two 7 h.p. M.A.G. engines were competing, one in a Matchless and one in Charlesworth's Zenith; both ran very quietly and smoothly. The sidecar on J. Woodhouse's Quadrant was built on novel lines, and part of the top and side hinged back to allow the passenger to enter. Ray Abbott reported that he had run out of petrol, and ascribed his run of bad luck to the fact that he had shaved off his moustache. F. G. Edmond was out on the new water-cooled 3½ h.p. Humber, which was apparently running beautifully. The new twin Bradbury and the 1914 Diamond are both fresh arrivals to competition work.

The Afternoon's Run.

After leaving Brooklands on the second part of the reliability test, a route was taken to the Portsmouth Road, which was followed past the well-known Hut Hotel, then *viâ* Horsley and up Crockmouth Hill. This slope was so slight that no machine in good trim should worry about it, but the surface was distinctly dangerous, and it is difficult to see why it should have been included, unless as a means of reaching other tests. Dorking was the next objective, and thence a long pull led up to Coldharbour. Some fine roads were found on this section, but the surface again became greasy near Betchworth, and this state of affairs continued to Reigate.

The Re-starting Test.

On turning up Wray Lane a large placard announced that the non-stop section finished half a mile away, which considerably assisted speed-judging. Further up competitors were stopped and sent up singly for the re-starting test. This took place on a gradient of, we should judge, about 1 in 7, the surface, though fairly dry, being slippery on account of its chalky nature.

There was much rear wheel slipping, and it was curious to notice fallen leaves actually smouldering after machines had passed over them with buzzing back wheels. The following made particularly fine ascents: T. C. de la Hay (6 Sunbeam sc.), C. Duplock (6 A.J.S. sc.), H. R. Davis (2¾ Diamond), T. Stevens (3½ James sc.), F. J. Watson (3½ Ariel sc.), Frank Smith (5-6 Clyno sc.), A. Roberts (3½ Blackburne sc.), Hugh Gibson (5-6 Bradbury sc.), G. Price (4 P.V.), C. Freeman (5-6 Clyno sc.), Lionel Martin (10 Singer c.c.), C. R. Collier (7 Matchless sc.), H. G. Dixon (3½ James), W. C. Drake (3½ P. and M.), and J. G. Pauling (Swift c.c.) H. F. S. Morgan was troubled with rear wheel slip, but once he got a grip he went away at a great pace. Crawley caused a sensation by his wonderful recovery after a bad skid. W. Cooper (8 Humberette) got away well, but missed gear at the top of the hill. At the first attempt, Colin Taylor (2½ Connaught) had a wonderful skid, his machine describing a complete circle; he was, however, given a second chance and got away well. After the test competitors were sent straight back to Godstone and the finish. The organisation was excellent throughout, and in spite of the large amount of work necessary provisional results were obtainable soon after ten o'clock, and subject to confirmation by the committee and the correction of time errors, the awards will be as follow:

Gold Medal Winners.

E. L. Boutle (8 Chater-Lea sc.)	*G. Price (4 P.V.)
C. E. Noakes (3½ Sunbeam)	C. Freeman (5-6 Clyno sc.)
T. G. Meeten (3½ Rudge)	B. A. Hill (7 Indian)
J. B. Sproston (2¾ Sunbeam)	A. B. Wade (6 Zenith)
E. V. Walters (3½ P. and M.)	H. G. Dixon (3½ James)
J. Oliphant (3½ Premier)	*W. L. Barratt (2¾ Douglas)
T. Stevens (3½ James)	W. C. Drake (3½ P. and M.)
A. F. Selby (2¾ Sunbeam)	A. V. Sumner (3½ Zenith)
H. Gibson (5-6 Bradbury sc.)	*R. G. Charlesworth (5 Zenith)
H. B. Willoughby (3½ Rudge)	S. Crawley (3½ Triumph)

Silver Medal Winners

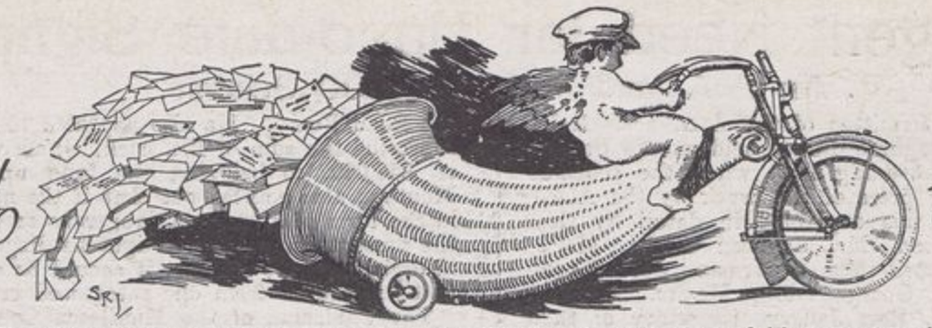
G. T. Gray (5 Rudge)	*H. R. Davis (2¾ Diamond)
A. H. Wright (5-6 A.J.S. sc.)	E. H. Littledale (3½ Ariel)
G. Nott (5-6 Clyno sc.)	C. Taylor (2½ Connaught)
T. C. de la Hay (6 Sunbeam)	F. J. Watson (3½ Ariel sc.)
R. O. Clark (2¼ F.N.)	F. Smith (5-6 Clyno sc.)
R. G. Mundy (3½ Triumph)	A. Roberts (3½ Blackburne)
J. Greenwood (3½ Sunbeam sc.)	C. F. Halsall (Wilton c.c.)
*J. S. Watson (2¾ Sunbeam)	R. G. Charlesworth (5 Zenith)
G. Wray (5-6 Clyno sc.)	S. Tubb (2¾ Humber)
K. Holden (3½ B.S.A. sc.)	R. Croucher (3½ Kerry-Abingdon)
M. C. Breese (3½ B.S.A.)	W. Cooper (Humberette c.c.)
C. Duplock (5-6 A.J.S. sc.)	

Bronze Medal Winners.

T. Silver (3½ Quadrant sc.)	Mrs. Hardee (3½ P. and M.)
L. A. Bollack (3½ Singer)	H. F. S. Morgan (8 Morgan c.c.)
T. Chater-Lea (8 Chater-Lea sc.)	T. Pollock (3½ James)
S. George (7 Indian)	J. Woodhouse (7 Quadrant sc.)
F. A. Applebee (3¾ Scott)	C. Aslen (2¾ Grandex)
F. J. Ellis (6 Matchless sc.)	F. G. Edmond (3½ Humber sc.)
R. Pearson (5-6 Clyno sc.)	J. G. Pauling (Swift c.c.)

*Doubtful.

Competitors in the Streatham and District M.C.C. Trial leaving Brooklands after the speed test for the return journey. In the foreground is E. L. Boutle (8 h.p. Chater-Lea sidecar.)



Letters to the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, E.C., and should be accompanied by the writer's full name and address.

A Novel Sidecar.

Sir,—With reference to Mr. Fletcher's letter on page 1418, I fail to find any similarity between the novel sidecar he described and those illustrated in Mr. Manning's list, so perhaps Mr. Fletcher will be good enough to disclose the identity of the manufacturer of his sidecar.

W. M. PANNETT.

Some Advantages of a Twin.

Sir,—Your correspondent "Twin Enthusiast" might lead some of your readers to believe that East Anglian roads were really awful. As a matter of fact they are not too bad, and have been considerably improved of late years, probably in readiness for military operations here if necessary.

Regarding his 3 h.p. twin climbing Maldon Hill on top. I believe the top gear of his machine is about 5 or 5½ to 1. Any decent 3½ single-cylinder should climb that hill geared 4¼ to 1, with a ten-stone passenger on the carrier. I have done so repeatedly myself. Personally a 7 h.p. twin appeals strongly to me, but I should think twice before again having a lightweight twin, for the humming of the engine makes me feel positively ill after a very little while.

EAST ANGLIAN RIDER.

Rear Lamps for Motor Cycles.

Sir,—We note in last week's issue of *The Motor Cycle* in your leading article under the heading "Must Motor Cycles Carry Rear Lights?" that you state "There is really no suitable lamp on the market at the present time." We are pleased to advise you that all 1914 Indian touring models will be equipped with an electric rear light, which not only shows a red light behind but illuminates the rear number plate.

In many countries outside of the United Kingdom rear lighting on motor cycles has been compulsory for some years past, and our company has for many years been in position to supply these.

We have never fitted them in this country before, for the very reason that they did not seem to be required, but now, in view of recent legal decisions in regard to rear lighting on motor cycles, we shall supply them as part of our standard equipment. Surely there is no reason why other motor cycle manufacturers cannot do the same.

HENDEE MANUFACTURING CO.

The Liverpool A.C.C. Trial.

Sir,—I notice on page 1420 of your last issue, a small paragraph "summary of correspondence" respecting the above Club's Trial. I appreciate your reason for not publishing the letters owing to same being signed with *nom des plumes*, but I venture to suggest that it would have been considerably fairer to Mr. Sproston, who won the cup, not to have published any remarks at all. It appears to me, and to others of my committee who have brought it before me, that this is an attempt of certain interested parties to damage the performance of Mr. Sproston. It is not sporting, and I suggest that Mr. Heaton, who is one of the best of sportsmen, would deprecate this action. The cup was offered *not* for the "best" performance, under which Mr. Heaton would have won it, but for any competitor to win the cup he had to win a gold medal. The performances for gold medal awards were arranged on a sort of handicap: solo riders over 2¾ h.p. had to climb every hill, solo riders 2¾ h.p. and under were allowed to fail on one hill, sidecar machines were not taken up one hill, and whilst the larger models had to climb the five still left in, the 3½ h.p. models only had to climb four. Knowing the hills as I do, this made a very reasonable and fair handicap, and without in any way disregarding Mr. Heaton's very excellent performance, Mr. Sproston was awarded the Reliance Cup by the judge, purely on the conditions attached to the Trial, Mr. Sproston's total error for the various checks being but three minutes, whereas Mr. Heaton, who was second, was nine minutes in error. This result, I may say, was worked out without consideration of secret checks.

S. W. PHILLPOTT,
Hon. Sec., Liverpool A.C.C.

How to Test Benzole.

Sir,—I do not wish to take up your space on a technical matter outside motor cycling, but I still think that Mr. Thomas is wrong in advising the novice to test without a condenser. As a works manager of a tar works where some fifty samples are tested each day, and having tested some thousands of samples myself, I may claim to know something of the matter. In tendering advice of a technical nature to the novice, the human element must be allowed for, and Mr. Thomas cannot blithely say that if his details are not followed to the letter then he washes his hands of it. The fact that works exist where benzole is tested by lads according to his method proves nothing at all, except that there are works where benzole is not tested according to the standard method.

With reference to the testing of sulphur, Mr. Thomas is undoubtedly correct. Probably the best method for the novice is the sulphuric acid test described by "Chemist." This, of course, is only a test, and not an estimation.

TECHNICAL CHEMIST.

LAST WEEK'S AUTUMN CYCLE CAR TRIAL.

On the left, R. G. Thomas (8 h.p. friction and belt-driven Pyramid) at the starting point. There were two machines of this make in the trial, and both made non-stop runs.

An Easily Removed Three-speed Hub.

Sir,—"Ixion" has expressed a desire to see a hub gear that can be removed easily.

I am running at present—and shall be pleased to show him—the following: 8 h.p. Matchless, Sturmey-Archer three-speed hub, and—dare I say it—the back wheel comes out after slackening two nuts (no need to run the nuts right off) and goes back again without any adjustment whatever.

The hub stands the big engine quite all right. After 15,000 miles (all sidecar work, and once towing another sidecar outfit ten miles) I have taken the clutch plates out to look at them. They are not scored at all, the simple explanation being that I have never neglected to lubricate them, and on the low gear the clutch is home in six yards.

For a long time I was a counter-shaft gear enthusiast, and I gave Mr. A. D. Powell, of Northampton, the order for the Sturmey-Archer on condition that he could fit it in such a way that the back wheel could be removed like my T.T. Triumph.

This he has done, and I congratulate him on doing a clever job, and the Sturmey-Archer firm on their gear.

WILLIAM LEES.

A Sidecar in Australia.

Sir,—Having been a constant reader of your valuable paper for the past two years I thought the enclosed photograph of myself and my Bradbury sidecar combination might be of interest to you.

Mine was the first sidecar in Moree, which is a town over four hundred miles from Sydney, and is in one of the finest grazing districts in New South Wales. There are a great many cars here, something like 250, but motor cycles are scarce, worse luck, as I was hoping to be able to form a club and have some good runs. The roads are good for about fifteen miles round the town, but after that there is no metal and it is all black soil plains, which are good in dry weather but absolutely impossible to ride over in the wet.

I have been riding the Bradbury for nearly two years and have never had the slightest trouble, which speaks volumes for the machine, as I was quite a novice when I got it and have ridden over some very bad country roads.

Every week I look forward to receiving my copy of *The Motor Cycle*, and have received some very good hints from it.

Moree, N.S.W., Australia. ERIC L. HUDSON.

E. T. Hudson on his 3½ h.p. Bradbury sidecar (See accompanying letter.

The Large Single Geared Twin.

Sir,—Now that single-geared machines are considered by some as antiquated, I want to put in a word for the single-geared big twin.

A 6 h.p. semi T.T. with an adjustable pulley weighs less than most two or three-speed 3½ h.p. machines, and can do all the work of the latter, and, withal, is a pleasure to drive.

With a minimum possible gear of 4½ to 1, I have yet to find a hill that I cannot climb, though the machine has, amongst others, Alms Hill and Porlock to its credit, the latter on a wet day.

With regard to economy, a large engine is so seldom "all out" that the bearings wear splendidly.

After two seasons' average hard use the bearings show hardly any play. I have used the same belt for more than twelve months, the original front tyre is still on the front wheel, and I am now using my third back tyre.

S. KING SMITH.

An Undesirable Practice.

Sir,—I should like to support BL 2318 in his remarks on carrier-riding. I have taken carrier-passengers several thousand miles altogether, and although I have suffered several accidents, in an approximately equal distance solo, I have never had a mishap when two-up. My experience is certainly not due to slow driving—I run a 6 h.p. twin and do not waste time—and I have had the usual amount of riding on skiddy roads, and through traffic, not to mention sudden tyre deflations at speed; but I can confidently say that given a plucky passenger, there is no more danger than in solo work. The only advantage of the sidecar as far as safety goes is in the elimination of the passenger factor, and with the girl of to-day, it is almost an unnecessary precaution.

The advantages of the practice are numerous: I can do 80 to the gallon with my passenger, and I have yet to have my first stop on a hill; so I, for one, should strongly object to carrier riding being suppressed by legislation.

C.H. 759.

Sir,—May I congratulate you on having the courage to tackle this very urgent question. I am very pleased to see "Ixion's" very appropriate remarks in your issue for October 23rd, and trust they will be taken to heart by those who indulge in this dangerous practice. Last Sunday I was on my way from Westerham to Burford Bridge and overtook two youths on a light weight twin (no, not a Douglas), and, having ample time, followed them for some miles to make observations. I noticed that the machine was obviously overloaded and extremely unsteady on the greasy patches met with. On quite slight rises pedalling was resorted to, and, in several cases, the passenger dismounted and ran. Approaching Redhill the road makes a winding descent into the town, and here the driver was able to touch about 30 m.p.h. On one of the sharp curves he was unable to keep to the left side of the road, and would have smashed into a large motor car had not the driver of it smartly pulled out of the way. They crossed the main London road at a good 25 m.p.h., and I only hope the policeman there will charge the driver with driving to the common danger. The machine was obviously out of control, due to the extra weight carried. Personally, I have had three narrow shaves on corners from fools riding in pairs on motor bicycles, and I promise that the next one who serves me this trick shall have a summons for driving to the common danger. I am inclined to think we should soon see the last of this idiotic practice if the above course were pursued. THE DREADNOUGHT

Sir,—As a motor cyclist who has carried passengers some 25,000 miles on a specially constructed seat on the carriers of my 1910 and 1911 F.E. Triumphs, I cannot allow the statements made in your issue of September 25th regarding the danger of this system of passenger carrying to pass unchallenged.

To commence with, I fear the writer of the article has had very little practical experience or he would not have suggested that it is necessary or advisable for the passenger to be in sympathy with the driver as regards steering; on

the contrary, it is essential for the passenger to sit and move naturally and to take no part whatsoever in balancing or steering the machine.

The strain on the machine generally is far less when carrying the passenger on the carrier than when pulling a sidecar, and there is far less risk of accident due to mechanical breakdown. Also there is less liability to collision in tight corners owing to the small space required, and little fear of overturning on sharp corners.

The carriers, wheels, frames, etc., of most 3½ h.p. and upwards machines are sufficiently strong with an ample margin of safety to carry a double load.

My experience is that with a passenger on the carrier the machine is as easily steered and is as steady, if not steadier, in traffic as when riding solo, provided always that the passenger takes no part in the balancing and steering of the machine.

Many motor cyclists, although they wish to take a passenger, cannot afford to purchase and run a suitable sidecar outfit, neither have they space for it in their homes and would have to go to the additional expense of storage. Further, a decent 3½ h.p. machine will take a passenger on the carrier as fast as or faster than the average 6 and 8 h.p sidecar outfits at something like half the running cost.

Whilst it must be admitted that great care should be exercised when travelling over wet roads, especially tram-rails, its many advantages as compared with a sidecar (of which method I have had some 10,000 miles experience) have been recognised, and this method is now being used by a large number of motor cyclists who, speaking generally, do not unnecessarily run the risk of smashing up their passengers, themselves, or their machines.

Accidents are liable to and do happen to all classes of vehicle, sometimes with the most careful and expert drivers in charge, but I think you will agree that each class of riding or driving has to be learned—solo riding is different from sidecaring, and carrier passenger carrying is also quite distinct, and no one should take a passenger on his carrier or by any other means until he has thoroughly mastered and is proficient in the method he intends to adopt. [How is he to become proficient?—ED.]

As regards the danger of burst tyres, I have had some ten to twelve bursts during the past few years, but in only one case did the machine fall, and that was through the tyre rolling off the rim and locking the wheel dead, fortunately unattended by any injury either to my passenger or myself. This trouble is now fast becoming minimised now that tyre manufacturers are producing suitable and special tyres for this class of work.

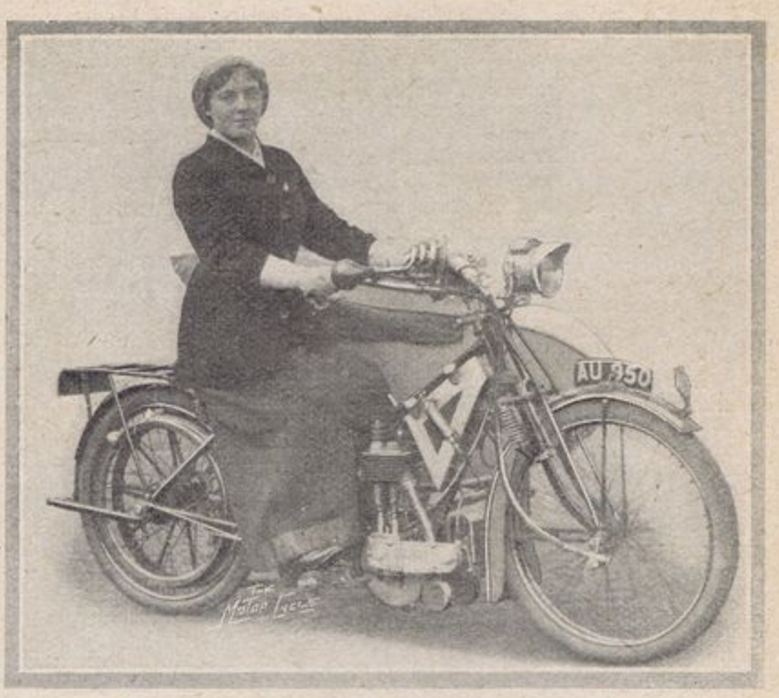
In conclusion, I may say that the narrowest escapes I have had have been under circumstances where had I been carrying my passenger in a sidecar instead of on my pillion seat bad smashes would have been unavoidable.

W. T. SAUNDERS

First ascent of East Lomond Hill. See accompanying letter from T. R. Inglis Melville

The Most Suitable Frame for Ladies

Sir,—I have read your article with reference to Miss Reid, and I am pleased to know of yet another lady rider who does not approve of the diamond frame for ladies.



Mrs. M. Wilson, who contributes the letter on this page.

With my open frame I can dress for any ordinary social function without any trouble. My machine is also a 3½ h.p. Brough, and I have done over 4,000 miles this summer with sidecar attached, and often a passenger over 13 stone.

(MRS.) MAUDE WILSON.

What it Costs to Run a Cycle Car

Sir,—I was much interested in your article on this subject, and herewith I hand you my experience of upkeep of Singer cycle car.

I have now run the car 6,114 miles. You will note that the item for repairs seems a heavy one, but I must explain that it includes £5 for a new engine fitted by the makers, as they had found their former engine to contain a radical fault. The fitting of the new engine has made the car much more efficient, and I have nothing but praise for it. Of the miles run 4,625 were done on petrol—157 gallons, which equals 29.45 miles per gallon, and 1,489 miles on Ford's benzole—32¼ gallons, equal to 46.20 m.p.g.

DETAILS OF EXPENSES.	s	d.		Per Mile. d.
Petrol and benzole	269	5	=	.528
Lubricating oil	21	2	=	.042
Repairs	239	1	=	.469
Insurance, licences, and registration	197	7	=	.389
Lighting	7	3	=	.013
Tyres and repairs	160	2	=	.315
Total cost	894	8	=	1.756

To the insurance and licences I have put down the amount accrued due to this date.

THOMAS WADSWORTH

On East Lomond Hill.

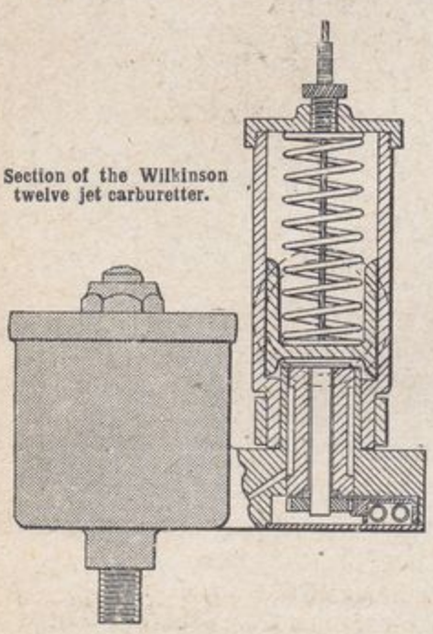
Sir,—I enclose a photograph of my 3½ Triumph, which successfully reached the summit of the East Lomond Hill, a few miles from here (Kingskettle, Fifeshire) on 14th ult. The hill is about 1,500 feet high, and the machine took a coach-built sidecar to within a few hundred yards of the summit, where it had to be detached owing to the presence of a high wall. The machine received no tuning whatever, and although I am over 13 stone, the engine did not overheat. This is the first time a motor cycle has been at the summit of the Lomond.

T. R. INGLIS MELVILLE.

A Racing or Touring Carburetter at Will.

Twelve Jets controllable from the Saddle.

ONE of the most desirable features of a motor bicycle is its ability to run slowly, and there is no question of doubt that five or six years ago the change-speed gear was hurried forward, as it was realised that with such a device a motor bicycle could be made to run at any speed and



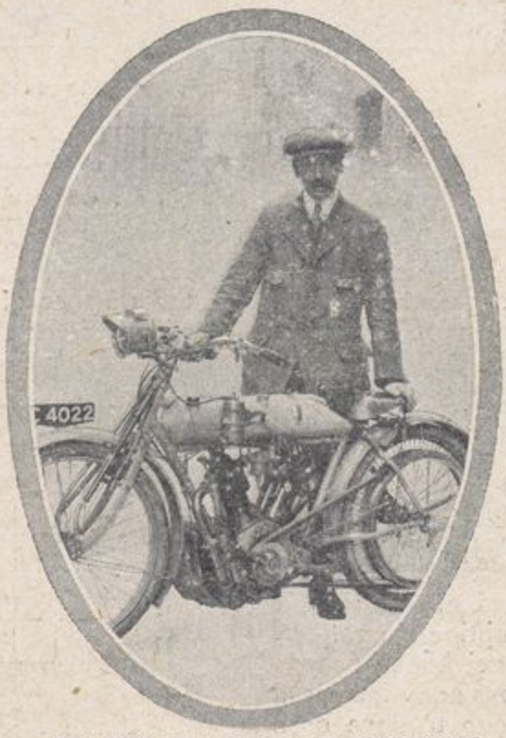
Section of the Wilkinson twelve jet carburetter.

would therefore appeal to the inactive. Of late years, however, great advancement has been made in the design of carburetters, until nowadays it is quite a usual sight to see a motor cyclist walking alongside a fixed geared machine with the engine firing regularly. But it is not every carburetter which renders this feat possible, and, further, it is only certain types of slow running engines that permit of such a performance.

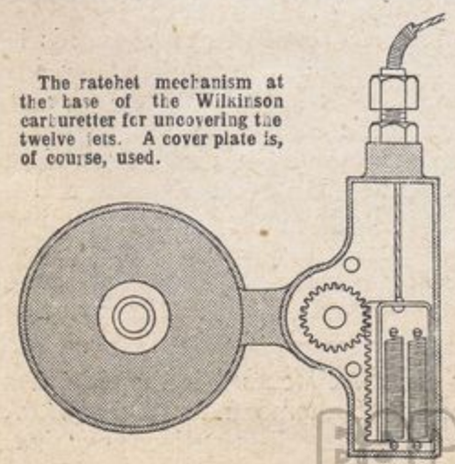
A Road Test.

Last week we had an interesting demonstration of a new carburetter (which we have already referred to and illustrated), viz., the Wilkinson twelve-jet. Mr. J. H. Wilkinson owns a T.T. Matchless-J.A.P. with overhead valves, and we think Mr. Prestwich himself will admit that of his splendid range of engines, the 5 h.p. T.T. model with overhead valves is one of the most difficult to control at slow speeds. Mr. Wilkinson rode his machine over from Doncaster to our offices, purposely to demonstrate its docility when fitted with one of his carburetters. We measured the gear used, and found it to be $3\frac{5}{8}$ to 1, yet the rider had no difficulty whatever in turning round in an ordinary roadway with the engine firing regularly. It was a most impressive sight to see him threading his way in and out of the traffic, and turning round as slowly as if he were mounted on a machine with a three-speed gear. We tried the machine ourselves, and found that even without practice we were able to equal Mr. Wilkinson's feat.

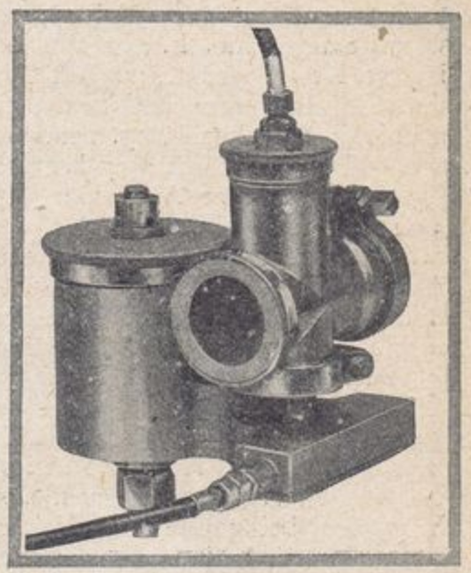
The most attractive point about the Wilkinson twelve-jet carburetter is the ability of the rider to vary the opening of the jets from the saddle. A flat valve covers the jets, and, by means of a Bowden wire, they may be covered and uncovered one by one. In other words, the driver has a carburetter completely controllable from the saddle, which may be immediately adjusted for slow running and low consumption, and at once made into a racing carburetter by opening up the jets. Thus the time taken to change jets in the ordinary way is done in a twinkling by a handle-bar lever with the Wilkinson instrument.



J. H. Wilkinson and the 5 h.p. single geared Matchless-Jap he used to demonstrate his twelve-jet carburetter.



The ratchet mechanism at the base of the Wilkinson carburetter for uncovering the twelve jets. A cover plate is, of course, used.



The complete Wilkinson carburetter in its latest form.

We have tested some carburetters which, although giving extremely slow running, are unable to pick up rapidly without choking the engine. Twice, after running some distance with the Wilkinson carburetter at a very slow speed, we opened up the jets, and the engine at once gathered way, and we were soon travelling at a speed in excess of the legal limit. A separate lever is provided as usual for the air, and the port is of large size, and admits sufficient air when all the jets are in action.

It will be understood that with a variable jet carburetter petrol can be economised, and, furthermore, the engine can be kept very cool by governing speed by the lever controlling the opening of the jets. A choked jet is a thing almost unknown, as, if any foreign matter finds its way to one of the jets, a further opening of the lever clears the obstruction. The behaviour of motor cycles fitted with this device in important trials will be watched with interest, especially as more and more attention is now being paid to flexibility tests.

The Wilkinson carburetter is being made by Messrs. Rotherham and Sons, of Coventry, and will be handled in London by Messrs. Brown Bros., Ltd.

HORSE POWER OF NEW VELOCE.

Since the description of the new 2 h.p., 2-stroke Veloce went to press last week, we received information from the makers, Veloce, Ltd., Fleet Street, Birmingham, that the brake horse power, developed at 2,800 revolution per minute is 3.6. They have therefore decided to call this engine a $2\frac{1}{4}$.

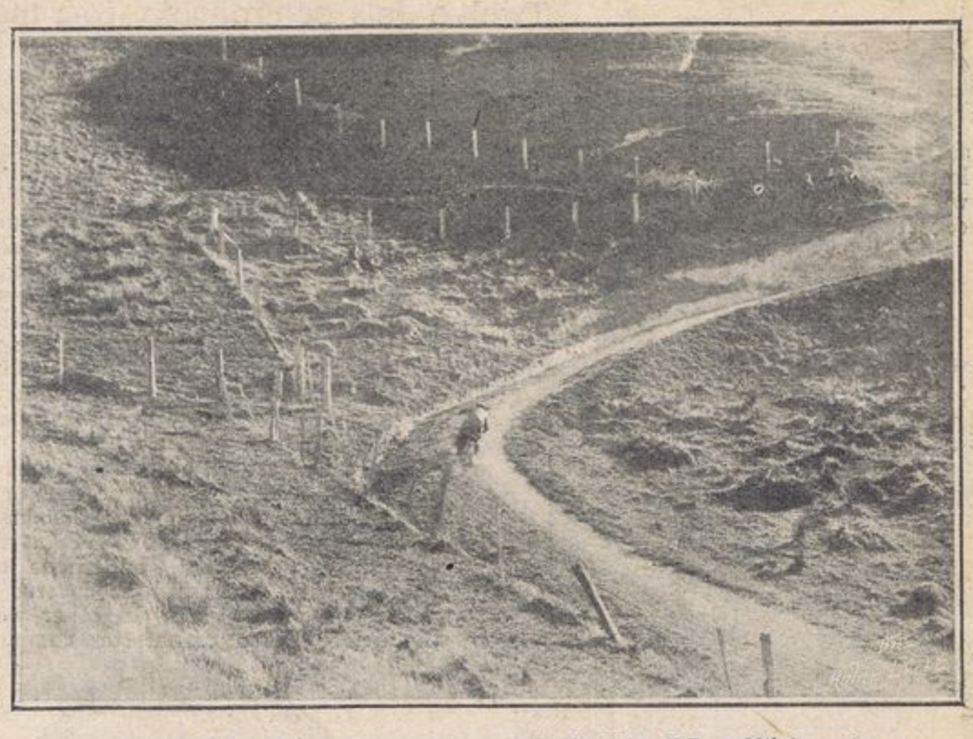
STEEL PISTONS AND RECORDS.

It is interesting to note that when Mr. H C Newman broke sidecar records at Brooklands on Oct. 20th he used "Simplex patent steel pistons, made by the Oxygen Welding Works, Ltd., New Summer Street, Birmingham, on his Ivy-Precision.

Hill-climbing and Racing in New Zealand.

MOTOR cycle events are exceedingly popular in New Zealand, and two successful competitions were held last month, one a race meeting at New Plymouth, when five and ten mile races were held, and the other a hill-climb at Lyall Bay, near Wellington. The racing was very keen, and in the five miles race Anderson (3½ h.p. Triumph) was first, after a Douglas rider had set the pace at the outset. Anderson was third in the ten miles, Boucher (3½ Rudge) scoring a fine win, with Coleman (2¾ Douglas) second.

Boucher is evidently one of the best riders in New Zealand, for he was in great form at the Lyall Bay hill-climb with his Rudge. He made fastest time of the day, and also received a special prize for being the rider whose two attempts varied the least in time, his variation being only one-fifth of a second. Other competitors rode Triumphs, Douglas, B.S.A., Indian, and Matchless machines.



J. Boucher (3½ h.p. Rudge), who won the hill-climb at Lyall Bay, N.Z., on 30th September.

PETROL COSTS.

HAVING regard to the steadily mounting price of petrol, the accompanying curves are intended to point out the effect in the aggregate of, and the importance of striving after, any small improvements which can possibly be made in the petrol consumption (m.p.g.) figures.

Fig. 1. In these curves a yearly mileage of 6,000 is assumed, and the total cost in petrol can be read off when the mileage per gallon, and the price per gallon, are known. Thus, taking petrol at 1s. 9d. and the consumption as being 100 m.p.g., then the season's petrol bill would be £5 5s. Supposing a wasteful engine, a heavy 8 h.p. machine, or a sidecar machine, in use, and petrol consumption 60 m.p.g., then expenditure would be in the neighbourhood of £9. As showing the result of the constantly increased price of petrol, take the price in 1910 to have been 1s. 1d. At 100 m.p.g. the season's petrol bill would have been £3 5s. as against present £5 5s.

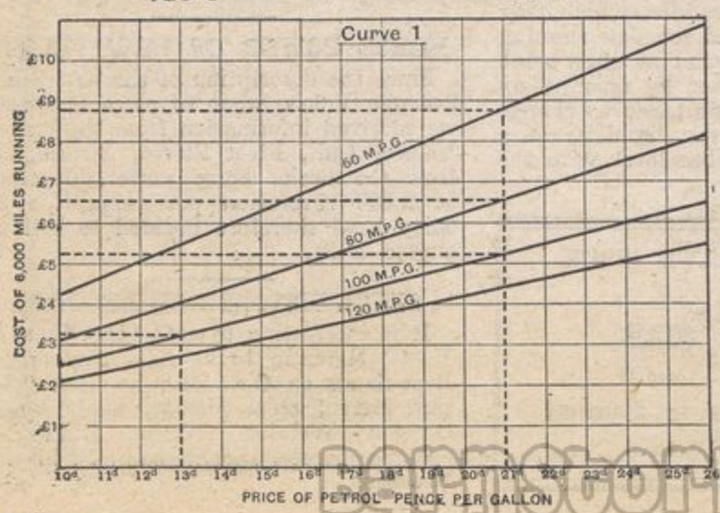
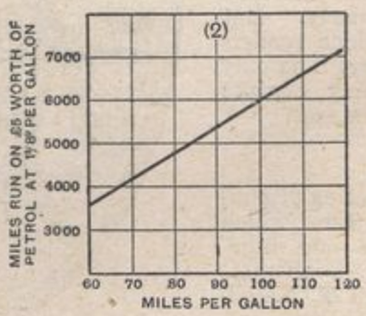


Fig. 2 shows in another manner the necessity of reducing running cost of petrol. The curve shows the number of miles running which can be obtained with varied consumptions (in m.p.g.) for the expenditure of £5 (petrol at 1s. 8d per gallon). The distance varies from 3,600 miles at 60 m.p.g. to 7,200 miles at 120 m.p.g. For every increase of 10 m.p.g. one stands to gain an additional 600 miles of running with the same expenditure (£5) on petrol.



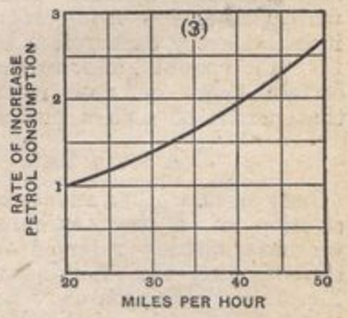


Fig. 3 shows the importance of moderate speeds in touring work, if m.p.g. figures are to be high. Taking a given level course, and considering a machine to traverse this course at different speeds ranging from twenty to fifty miles per hour with the same weight carried, and the engine working as nearly as possible at the same efficiency on each journey, then the curve would represent the ratios of the petrol consumptions at the different speeds, the consumption at 20 m.p.g. being taken as unity.

ELIGNUM.

"Lathe Work by some Amateurs" is the title of a book recently issued by Drummond Brothers, Ltd., Ryde's Hill, Guildford. It describes various machines made on a Drummond 3½in. centre lathe by amateurs.

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