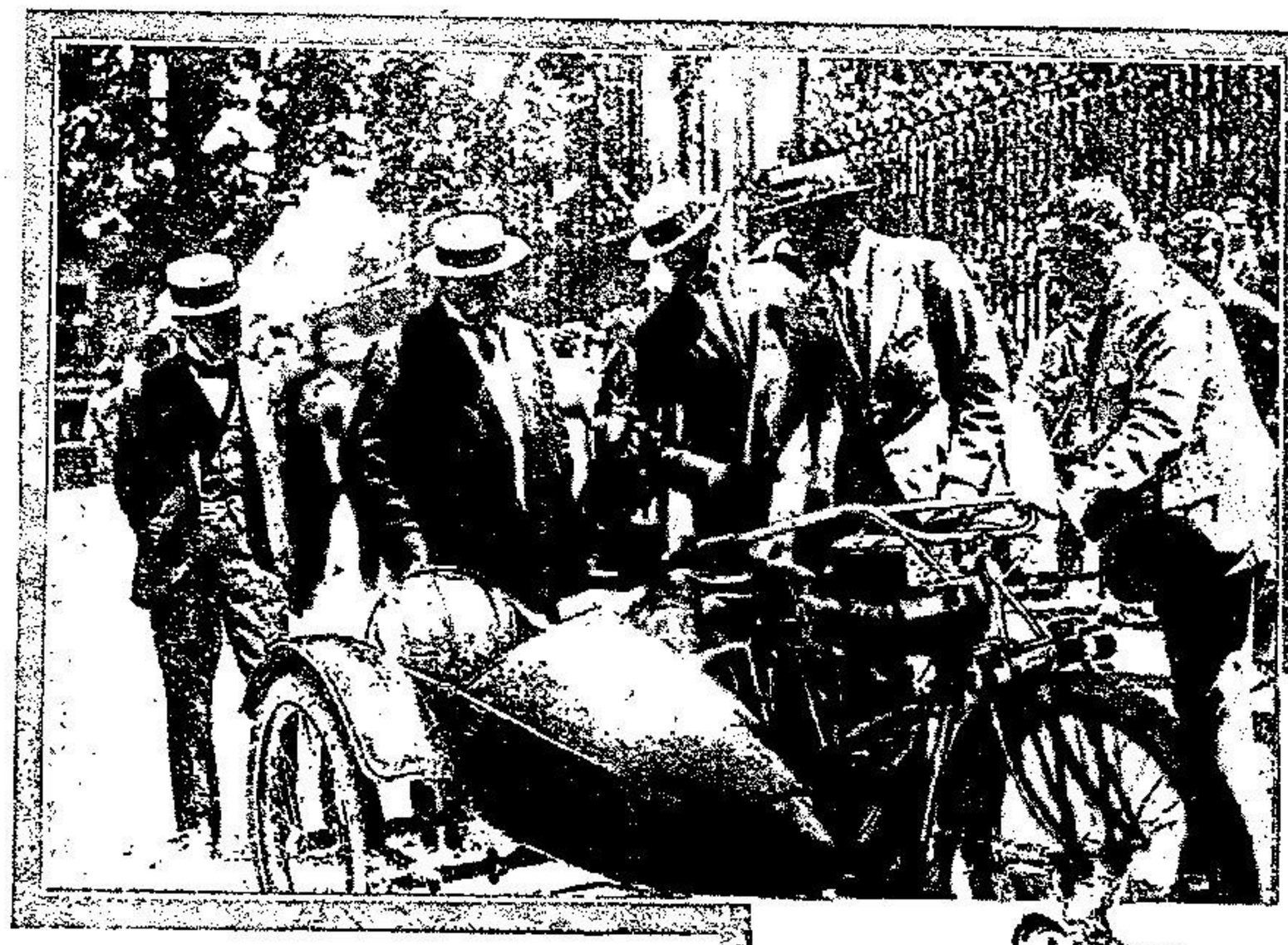
Salisbury Plain and its Surroundings.—

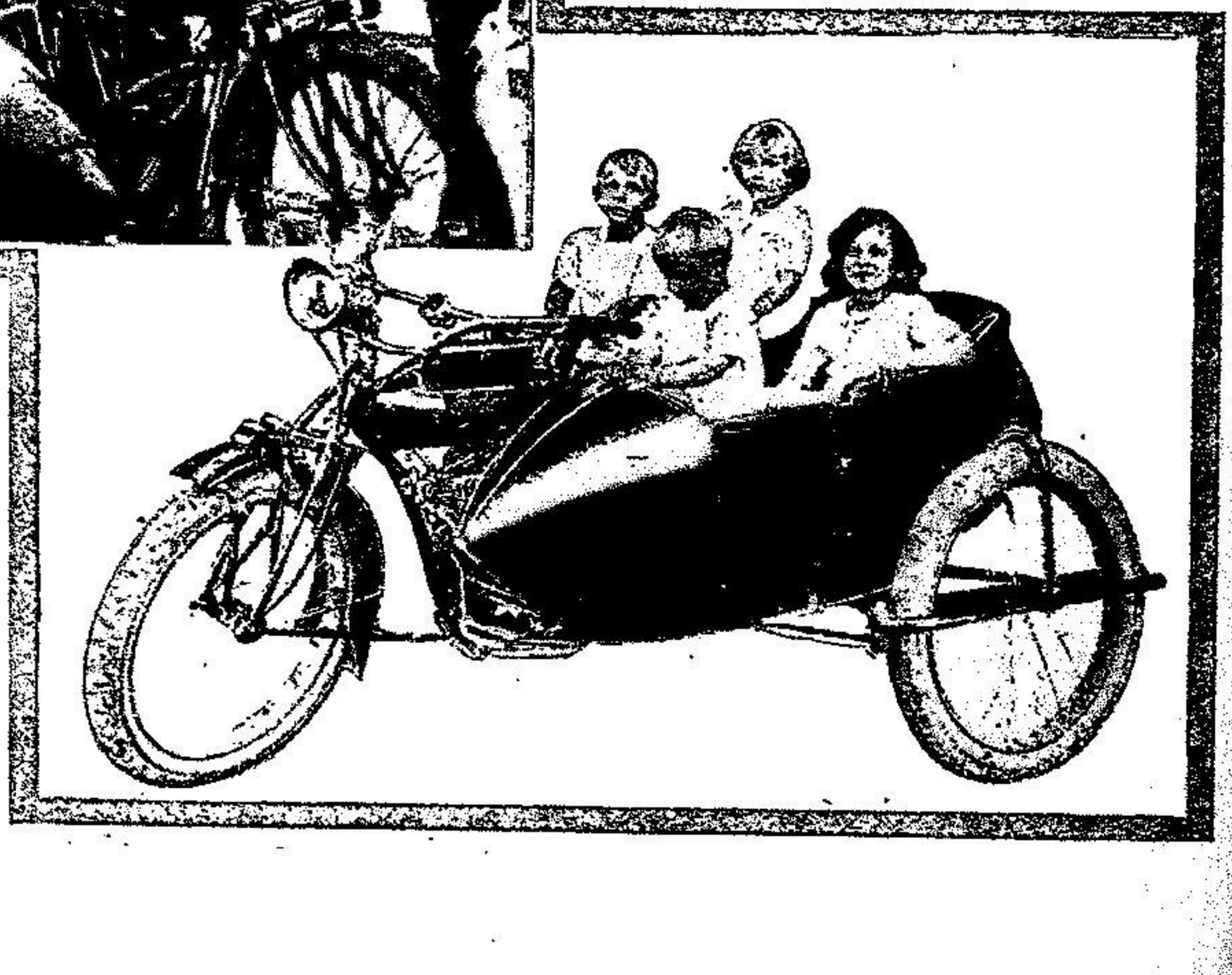
locked themselves into an upper room. In the meantime a large mastiff had bounded to the rescue, but paid the penalty of its temerity. The lioness left the horse, which had fought with great spirit, and pursued the dog, which it killed within forty yards. The keeper of the lioness now arrived, and at considerable risk drove it into an outhouse and there secured it. It had escaped from a caravan on its way to Salisbury Fair.

Continuing our road towards Everleigh, numerous tumuli or barrows and remains of early British camps and villages are noticed on the surrounding hills, and authorities state that no tract of country is richer in these early remains than that between Everleigh and Amesbury. In one tumuli recently opened near here were found the remains of a dog and that of its master, buried together with a circular wreath of horns of the red deer and five beautiful arrow heads cut out of flint. Thus we learn that the profession of the Briton here buried was that of a hunter from the mute inanimate memorials to prowess in the chase. We neared Upavon, the object of our ride, a snugly placed village of 500 inhabitants nestling at the foot of several hills. Here our thoughts, which had been carried back probably four thousand years, receive a rude awakening as we approach the Royal Flying Schools. About a mile of steady rising road from the village brings us to the aerodromes.

Here were ten aeroplanes all in flight at the same time. With a swing of the propeller to start the engine, the airman, with as much *sangfroid* as one would mount a bicycle, would seat himself, and after a short run be soaring skywards in a moment. Notices at the roadside warning pedestrians and others to "beware of aeroplanes" struck me as peculiar, but as I was still pondering, a huge battle-plane, which had been practising short runs on the grass, rose about six feet in order to avoid me on the road, passing within a foot or so of my head. The shock was so great that I nearly lost my equilibrium, which fact seemed to greatly amuse the airman, who returned and accompanied me along the road overhead for half a mile, whilst I involuntarily ducked to avoid the propeller which seemed to me to be in unpleasant proximity to my head. With a sudden lift my friend left me, and with spirals and bankings was soon a mile above me. The graceful evolutions of the machines were most interesting to watch, with the sun glinting on the white planes and polished aluminium bodies. Practice with machine guns, the gunner perched in a seemingly precarious position, was most thrilling to see.

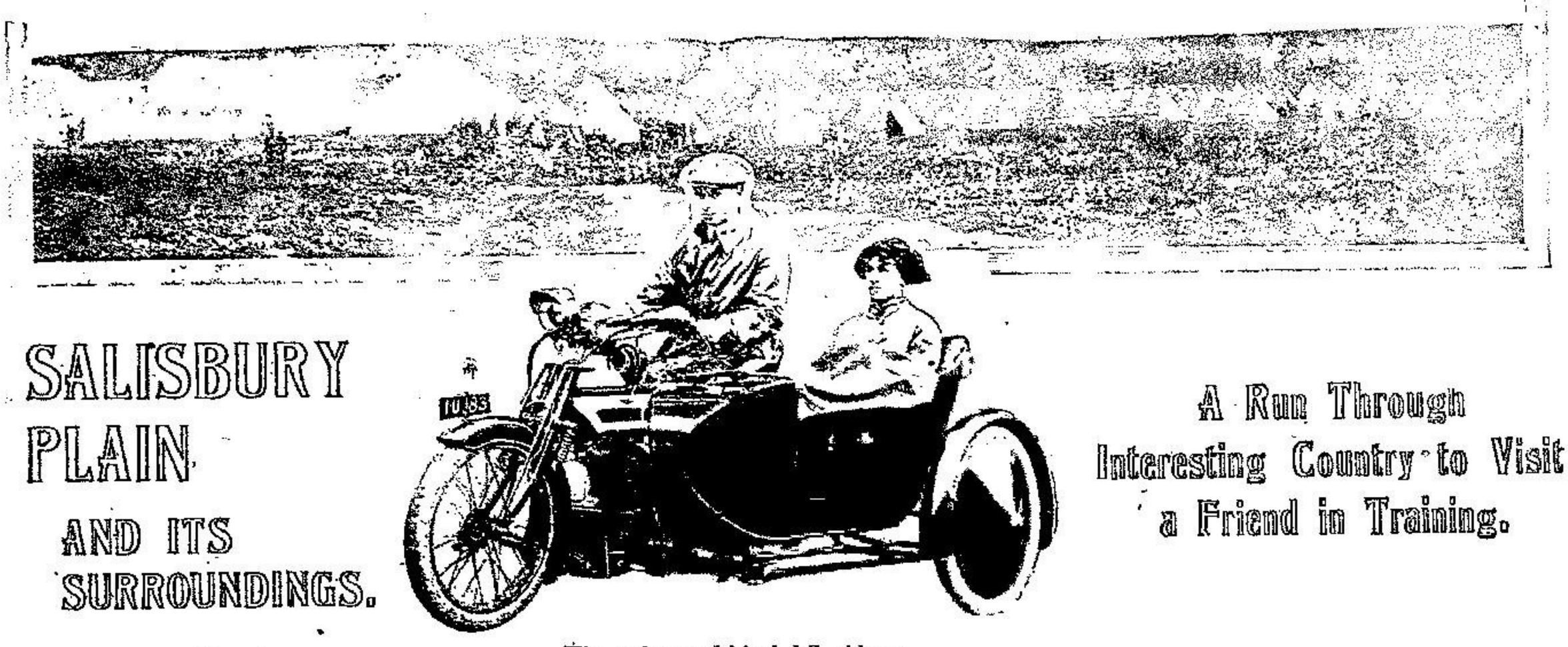
After a rest and a few calls to look up friends our ride was continued to the great military camps of Windmill Hill and Perham Downs, near Ludgershall. Matters of a personal nature now interested us, and at 6 p.m. the homeward run was commenced, which proved to be a non-stop run of two hours, thanks to the trusty A.J.S. sidecar, which, as usual, ran faultlessly and economically. I discovered I had only used about 1½ gallons of my monthly allowance during the 110 miles trip. The roads, too, were undoubtedly the best ridden on this season, having recently been entirely remade. "BONA SATIS."





THE KING OF SPAIN'S INTEREST IN MOTOR CYCLES.

We announced last week that King Alfonso had purchased an Indian sidecar for his children. The lower illustration shows them ready to start for a ride. In the upper picture His Majesty is seen inspecting another Indian, his interest in the sporting sidecar body being very apparent.



SALISBURY PLAIN AND ITS SURROUNDINGS.

A Run Through Interesting Country to Visit a Friend in Training.

The writer and his A.J.S. sidecar.

SALISBURY Plain being a great centre of military training and the temporary home of many thousands of men, visits to that neighbourhood have been of frequent occurrence by those having relatives stationed there. An impression of a recent trip may be of interest to some who have perhaps rather a remote idea of that vast tract of undulating chalk country which has been aptly likened to the surface of the ocean when heaving after a storm. There is a choice of routes from the West of England, the one most frequently used being through Bath to Melksham on the left bank of the Avon, with its mile long mail coach road from London forming the main street. Melksham is a clean and not over busy town, once a centre of the West of England cloth making industry, but now reviving on account of the extensive manufacture of motor and cycle tyres. Devizes, an ancient and well-known market town, is a few miles beyond, and is an outpost of the Plain. The main street of this place is wide and spacious, and ornamented by a cross erected by Lord Sidmouth in 1814 as a mark of esteem for the borough of which he had been Recorder for thirty years, and which he had represented at Westminster for six successive parliaments.

An Historic Inn.

It was at "The Bear" Hotel, Devizes, that the father of Sir Thomas Lawrence, the painter, was landlord, and here it was that the youthful artist at the age of seven first learned to draw likenesses and to repeat poetry for the entertainment of customers. A worthy and public-spirited host must Mr. Lawrence have been, for at his own expense in 1770 he set up tall poles every half mile along the road from Devizes to Salisbury. These have now given place to ordinary milestones, but the pioneer of civilisation should not be forgotten. Another interesting feature of Devizes and worthy of passing notice is the Kennet and Avon Canal, which, after taking eleven years to construct at enormous cost, is carried over the hill upon which the town is built in a series of twenty-nine locks. Of the remains of the castle behind the "Bear" not much is to be seen beyond a mound of a keep with surrounding ditch.

Running out of the town by way of the Brittox, a street so-called from the fact that once a Bretesque or wooden tower stood upon its drawbridge, the right hand road to Andover is taken, and Roundway Hill, which rises immediately from Devizes, is ascended. This hill, or "Runaway hill," so styled by the Royalists, was the scene of the Cromwellian Forces being put to flight in 1643. After the Battle of Lansdown, near Bath, the Royalists retreated to Devizes under Lord Wilmot, who with 1,500 horsemen engaged the Roundhead Army, capturing some 2,000 killed or prisoners. Beyond Roundway Hill, Salisbury Plain proper is entered, still a bleak expanse, although at the present day much has been reclaimed and fields of ripening corn gladden the eye, and clumps of trees are to be seen on almost every hill, planted chiefly as a shelter for game. The great bulk of the land is still occupied as sheep walks, and farm buildings are seldom out of sight. But the Plain still presents much the same aspect in the main as when "Thomas Ingoldsby" wrote:

"O Salisbury Plain is bleak and bare,
At least so I've heard many people declare,
For I fairly confess I never was there;
Not a shrub, nor a tree,
Nor a bush can we see:
No hedges, no ditches, no gates, no stiles,
Much less a house or a cottage for miles;
It's a very sad thing to be caught in the rain
When night's coming on upon Salisbury Plain."

A Lioness on Salisbury Plain.

There are, however, several comfortable inns on the Plain, the "Bustard," a good and well-kept house, and so-called from the fact that the Great Bustard was formerly common on the Wiltshire Downs, but is now never seen, the last pair of these rare and interesting birds being captured some sixty years ago. The "Pheasant Inn," which we pass further on, is another famous house of call. It was here that the jaded Londoners, Charles and Mary Lamb, often came for rest and quiet, and would walk twenty miles a day enjoying the "quiet delicious lazy holiday." One dark night in October, 1816, so the inn records inform us, a curious and unexpected incident occurred at the "Pheasant." The Exeter Mail, on its road to London, had just pulled up, when the off leader was seized by a lioness. Great was the uproar which immediately sounded over the solitary Plain. Two of the affrighted passengers rushed into the inn and

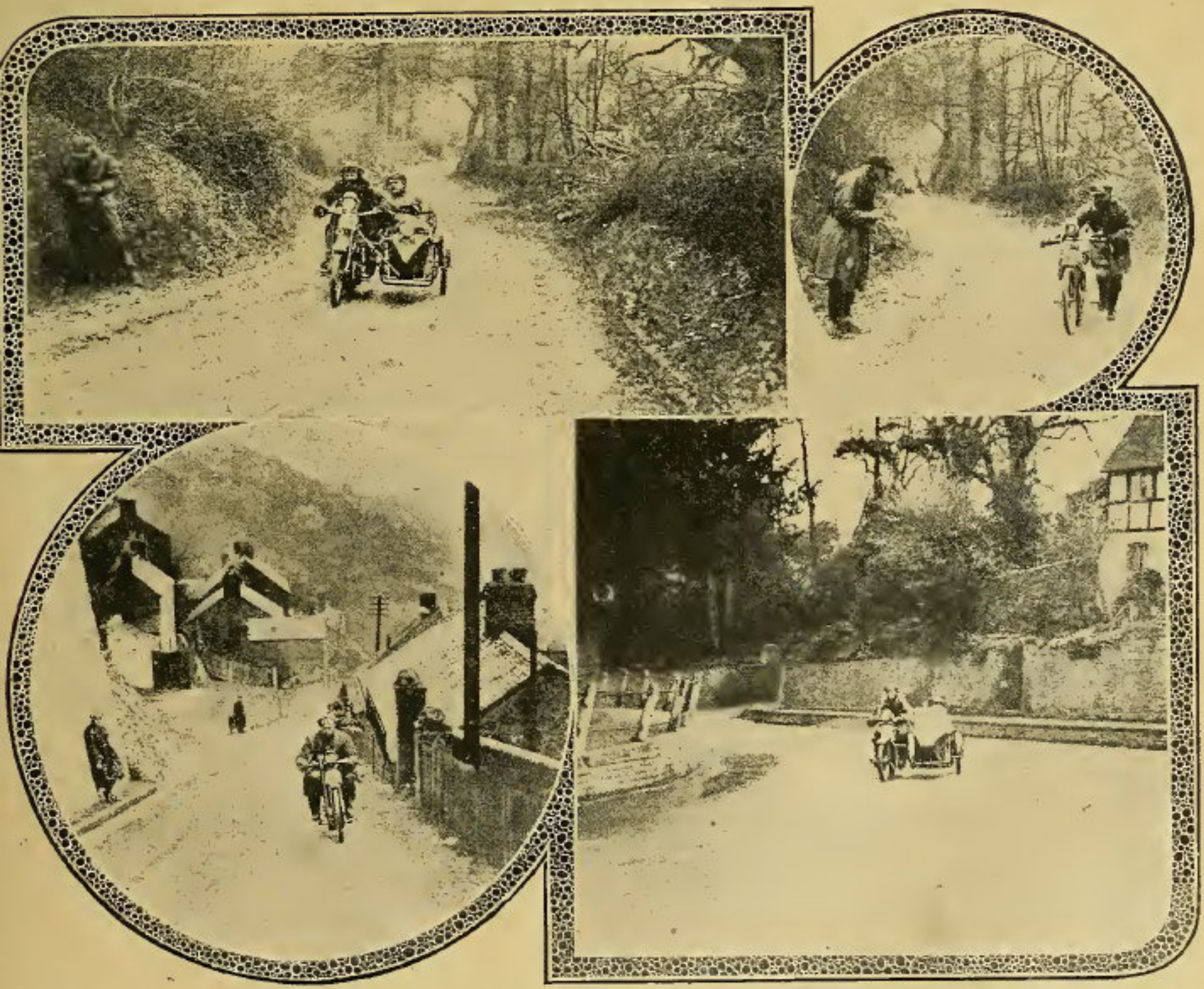
SCENES ON PORTWAY, WHERE THERE WERE SOME FAILURES OWING TO THE SLIPPERY SURFACE.

T. Stevens (4½ h.p. James sidecar) being passed by Pte. C. H. Poole (5 h.p. Indian).

C. Naylor (4 h.p. A.J.S. sidecar).

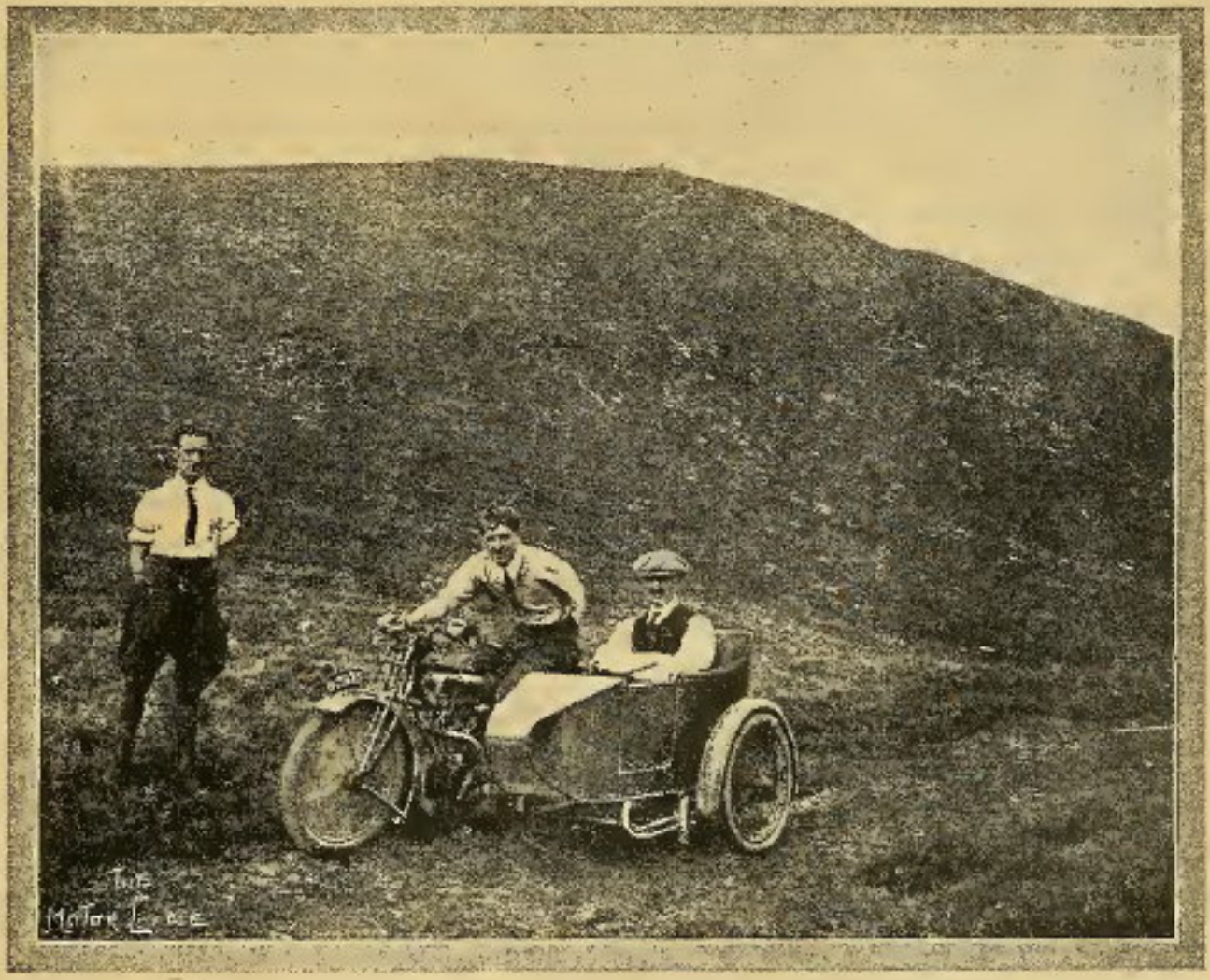
EASTER MONDAY'S RELAXATION FOR SERVICE MEN AND MUNITION WORKERS.

Scenes in the Birmingham M.C.C. Trial, reported in our last issue.

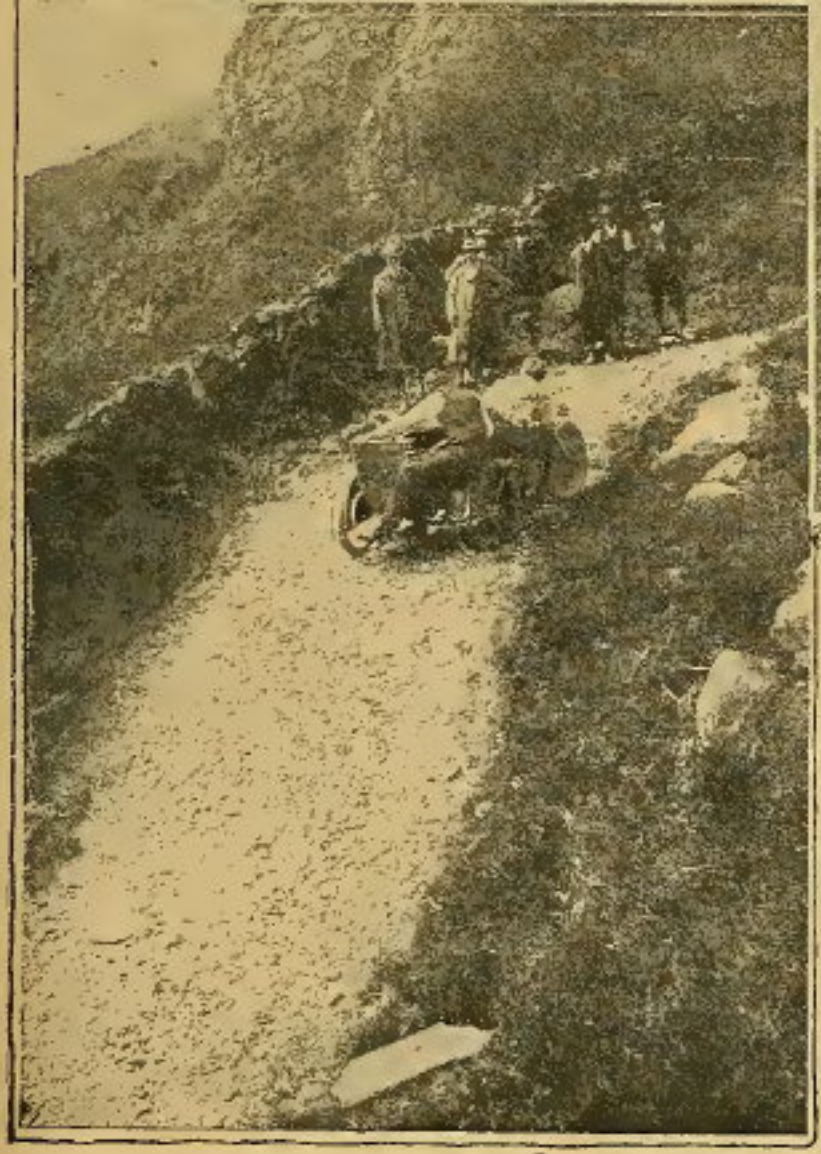


B. W. Harcourt (8 h.p. Rex-Jap sidecar) climbing Portway.
T. B. Haddock (2½ h.p. Diamond) among the chimney pots on the Old Wyche.

Manual exercise on Portway.
W. Heaton (4 h.p. A.J.S. sidecar) near Worcester.



The A.J.S. sidecar driven by Harry Whinnerah, a one-armed expert, at the top of Walna Scar, 2,100 feet above sea level. This is the highest point in Lakeland reached by a sidecar.



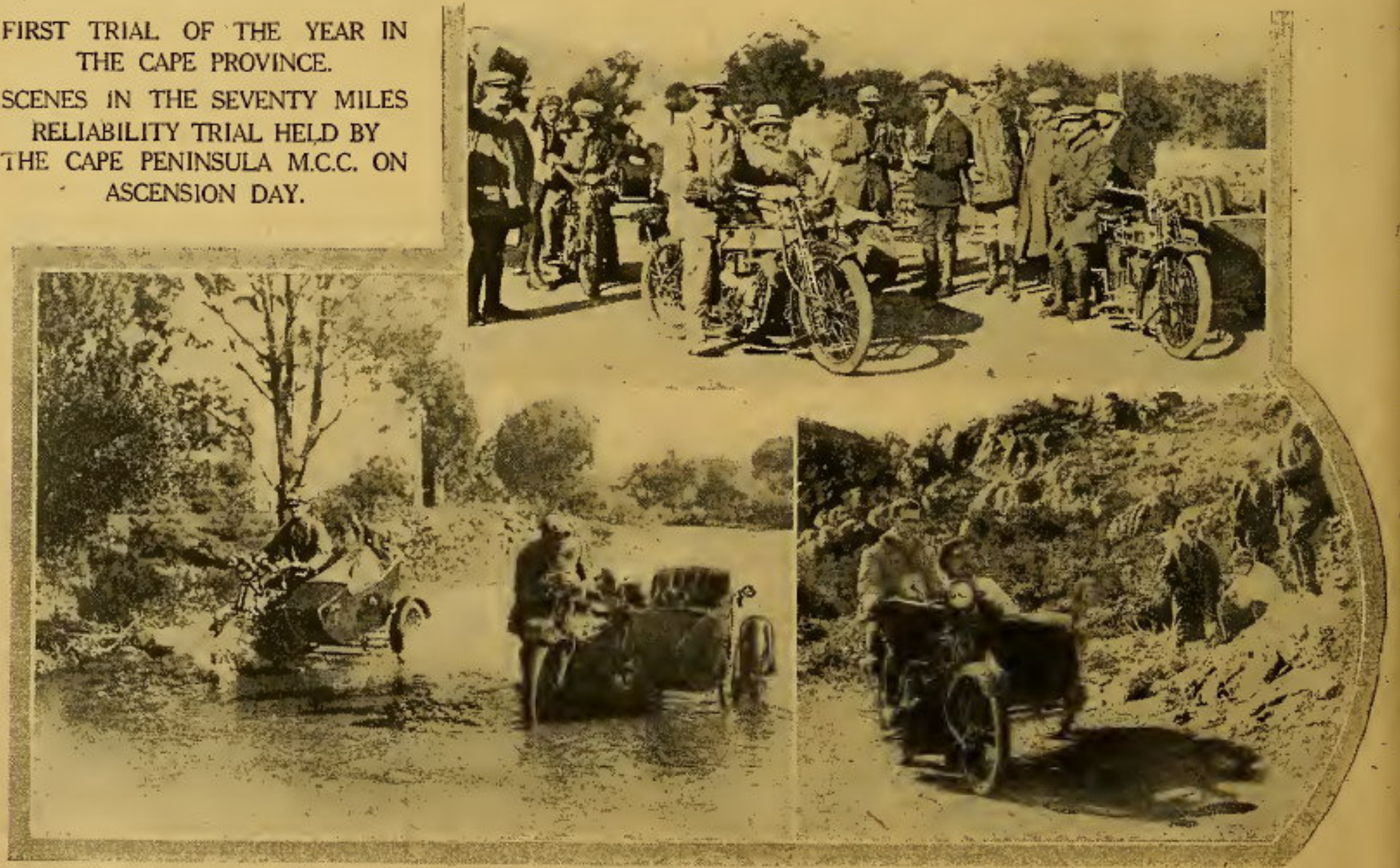
(Top) Climbing Walna Scar above Duddondale, a remarkable new hill first climbed by the munition workers. The road is grassy and steep, and ascends for two miles to over two thousand feet above the sea.

(Centre) A group of machines climbing the grassy road up Walna Scar.

(Left) The A.J.S. sidecar climbing the Rake on a gradient of 1 in 3.

FIRST TRIAL OF THE YEAR IN THE CAPE PROVINCE.

SCENES IN THE SEVENTY MILES RELIABILITY TRIAL HELD BY THE CAPE PENINSULA M.C.C. ON ASCENSION DAY.



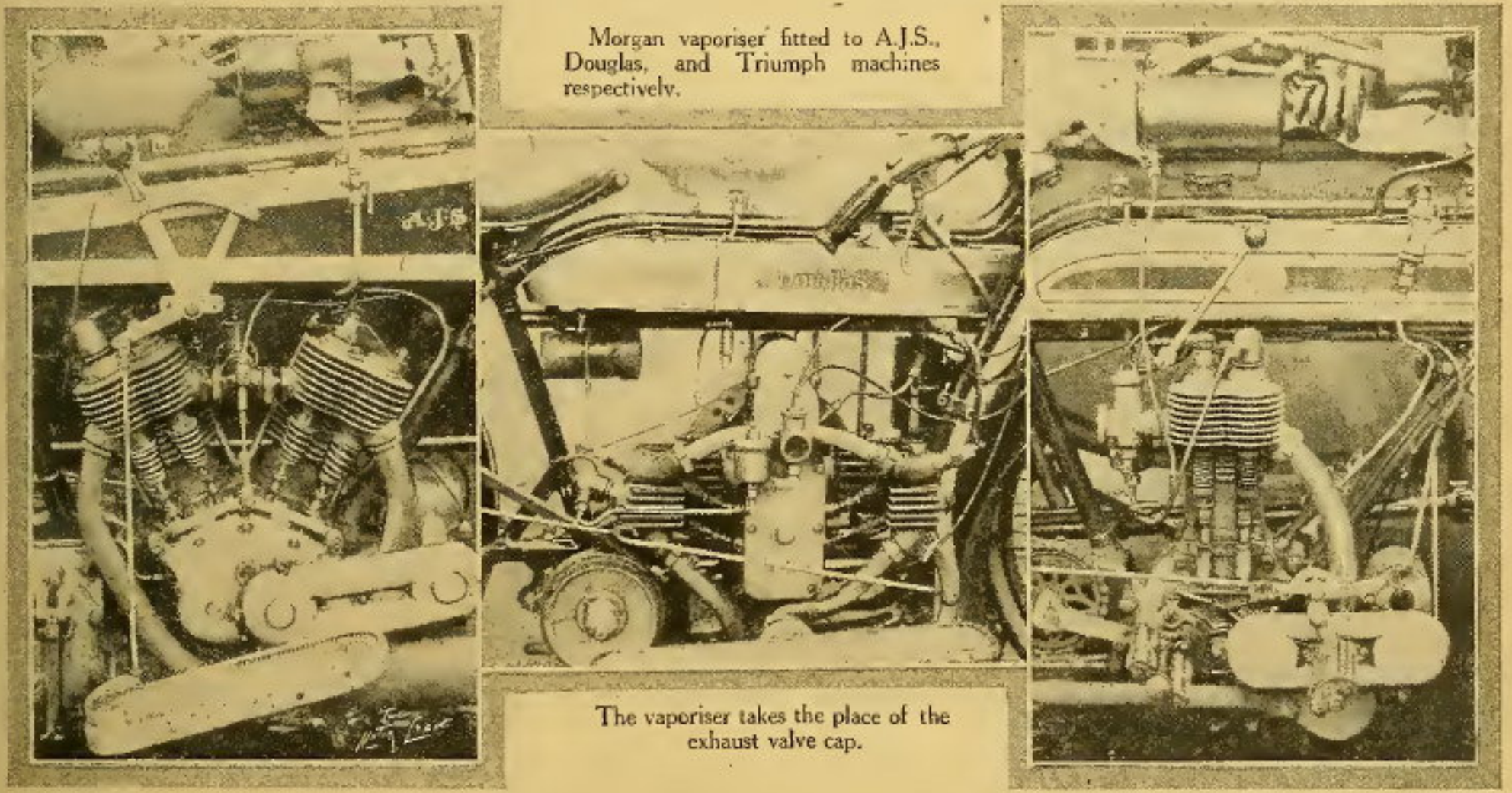
(Top) J. F. Smuts (3½ h.p. P. and M. sidecar) leaving the luncheon control. (Left) Different ways of tackling a drift. (Right) The winner, J. Roylowski (6 h.p. Enfield sidecar), passing the timekeeper at the summit of test hill. Second and third places were secured by W. McFarlane (6 h.p. A.J.S. sidecar) and G. W. Prillevitz (6 h.p. Enfield sidecar) respectively. McFarlane is shown pushing his machine through the water on the left.

SIDECARRING IN NEW SOUTH WALES.

Scott and A.J.S. outfits photographed on a piece of good road near Sydney. The Scott belongs to a soldier and the A.J.S. to Mr. Cunningham, of Petersham, Sydney. In sending us the photograph Mrs. Cunningham tells us that the A.J.S. has given great satisfaction, it being often used for lengthy tours, when it carries herself, husband, and two little children.

A Swansea vendor of *The Motor Cycle*, among other papers, and his 6 h.p. A.J.S. sidecarrier. Quite the most novel feature of this outfit, which belongs to Mr. Charles Evans, is the fine Dalmatian and his special platform. The advantages of sidecarriers for newspaper delivery are manifold.

French Army lorry driving instructors. In the background are two British productions—a Tilling-Stevens lorry and a Triumph motor cycle.

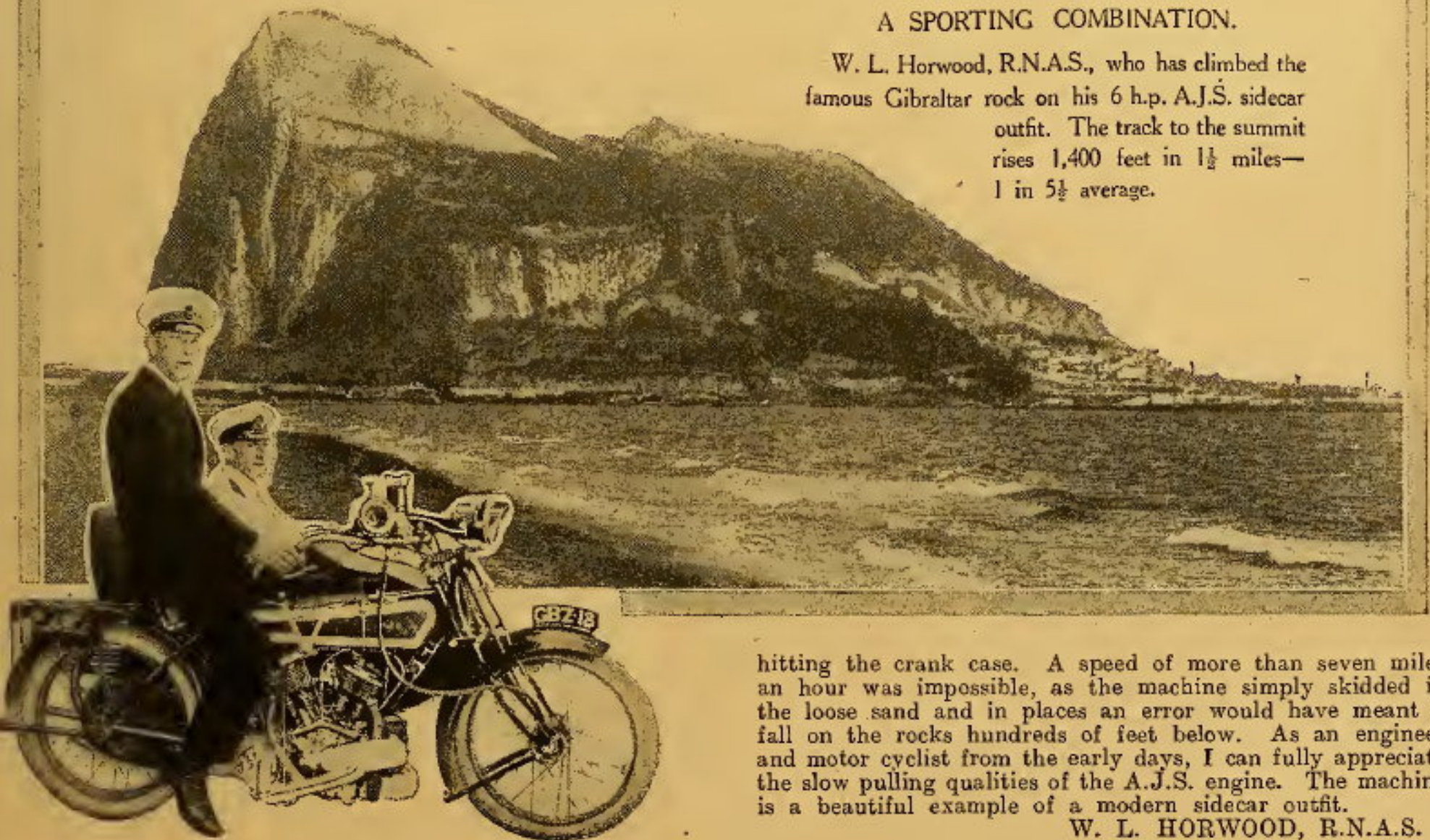


Morgan vaporiser fitted to A.J.S., Douglas, and Triumph machines respectivelv.

The vaporiser takes the place of the exhaust valve cap.

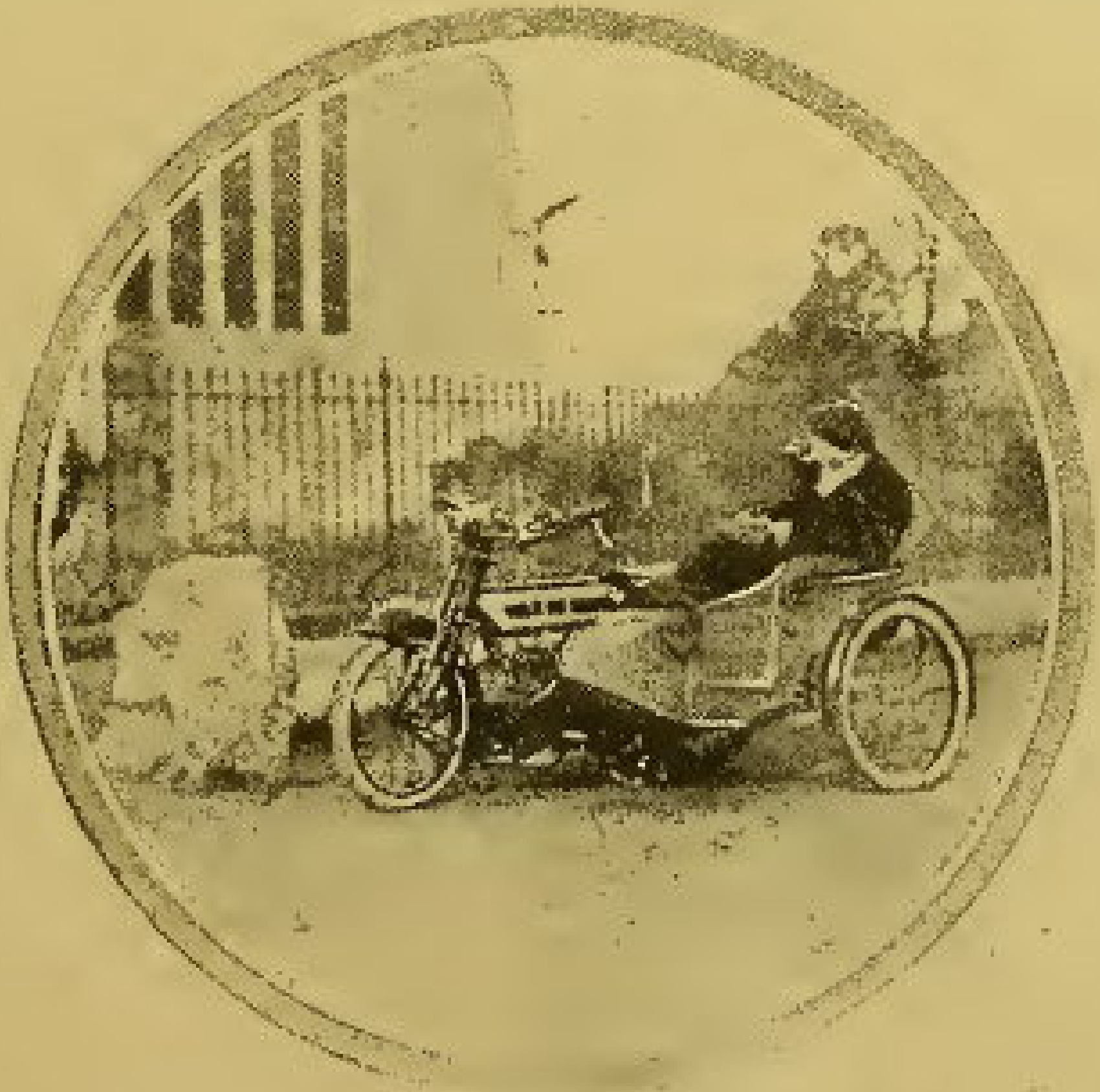
A SPORTING COMBINATION.

W. L. Horwood, R.N.A.S., who has climbed the famous Gibraltar rock on his 6 h.p. A.J.S. sidecar outfit. The track to the summit rises 1,400 feet in 1½ miles—1 in 5½ average.



hitting the crank case. A speed of more than seven miles an hour was impossible, as the machine simply skidded in the loose sand and in places an error would have meant a fall on the rocks hundreds of feet below. As an engineer and motor cyclist from the early days, I can fully appreciate the slow pulling qualities of the A.J.S. engine. The machine is a beautiful example of a modern sidecar outfit.

W. L. HORWOOD, R.N.A.S.



The A.J.S. sidecar by the old mounting stone outside Hemingborough Church.

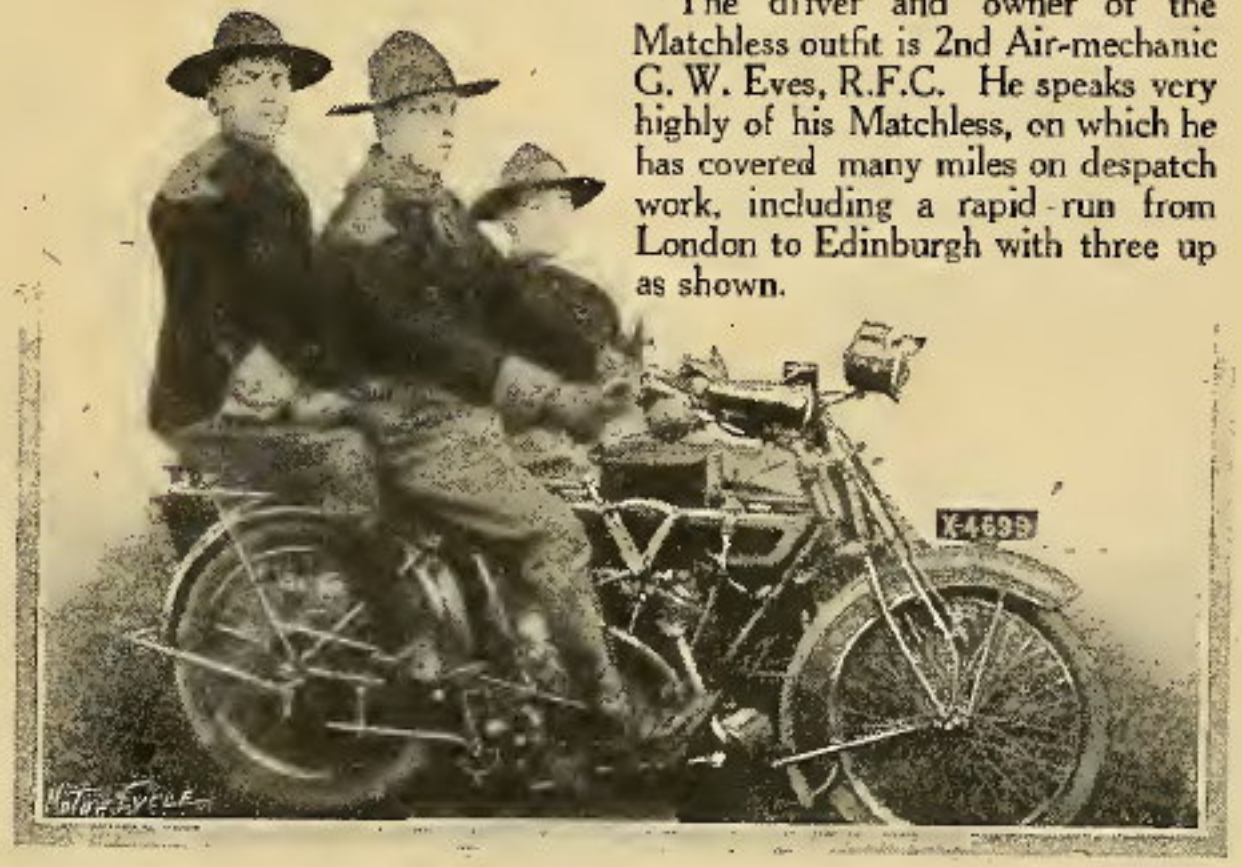
Lt. Frank May, R.N.A.S. (on the right in the upper picture), is still faithful to *The Motor Cycle* and the A.J.S. machines In the pre-war days he was a very keen amateur rider, his favourite mount being a $2\frac{3}{4}$ h.p. A.J.S. Apparently the latter has been replaced by a 4 h.p. twin of the same make.

MOTOR CYCLIST VOLUNTEERS AND THE WAR OFFICE.

Members of the National Motor Volunteers, London Section, with an A.J.S. sidecar and Zenith motor cycle respectively. The good work of the Volunteers is likely to lead to official recognition by the War Office in the near future.

We congratulate J. Chater Lea, jun., on his promotion to the rank of captain in the A.S.C. He has been doing excellent work in this corps in France since almost the very beginning of the war.

MEMBERS OF THE LEGION OF FRONTIERSMEN WHO ARE NOW IN THE ARMY.



The driver and owner of the Matchless outfit is 2nd Air-mechanic G. W. Eves, R.F.C. He speaks very highly of his Matchless, on which he has covered many miles on despatch work, including a rapid-run from London to Edinburgh with three up as shown.

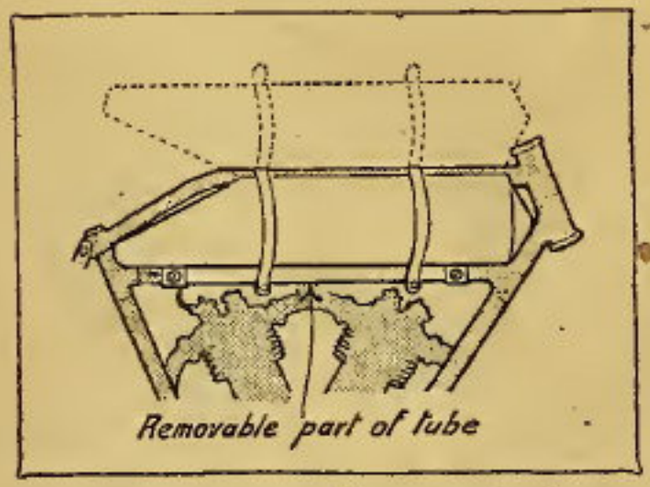
AN OLD FRIEND.

WELL-CONSIDERED MODERNISATION OF AN OLD MACHINE.

THERE must be many well-cared for and improved machines of moderate age about the country of which the six-year-old Matchless illustrated herewith is a particularly good example. The owner, Mr. J. H. Wilkinson, of Doncaster, has added many improvements to bring the machine up to date.

The engine is a 5 h.p. J.A.P. with overhead valves, the rockers of which are fitted with lubricators. These are found to be far more efficient than the plain oil holes which did duty previously. To allow of the easy removal of the cylinders the tube below the tank was cut near each end, and two half-tap joints made so that the tank can be swung to one side after the removal of the two bolts. The free engine wheel required no structural alterations, and Mr. Wilkinson himself made the brake and foot levers, which included a foot-operated exhaust lifter. A long exhaust pipe terminates in a car whistle operated by the right foot; this has proved very useful in traffic.

A SIX-YEAR-OLD MACHINE MODERNISED.
J. H. Wilkinson's single-geared 5 h.p. Matchless in its latest form.



Removable part of lower tank tube to facilitate cylinder removal on J.H.Wilkinson's Matchless.

The handle-bars were originally T.T. pattern; these have been bent up to a more comfortable angle, and long handle grips made of corrugated hose pipe fitted. The carburetter is, of course, the 12-jet Wilkinson which, the owner assures us, enables the machine to be run at any speed from six to sixty miles an hour. This has a hot air pipe not shown in the photograph fitted from the union of the front exhaust pipe, which has effected a considerable improvement, both in consumption and power, especially when running on a petrol-paraffin mixture.

The occupant of the saddle is in temporary charge of the machine.

Overseas Trade.—

if it increases it will virtually mean the extinction of our export business. As a case in point, at the present moment we have a consignment of motor cycles which has been awaiting acceptance by the rails for either Birkenhead or London Docks for the last month or more, and daily efforts to get these carried, by any one of three railway companies, for numerous vessels, the names of which have been duly passed to us by the shippers, have so far been without result! The docks are either 'entirely closed,' 'closed for all but war traffic,' or else 'No! The ss. —— is not on our list!' Meanwhile, the money is standing idle, the foreign or colonial agents in question are losing their orders, and our hold on our Overseas trade is slipping from our grasp. More often than not nowadays the rails state that they cannot carry for the vessel whose name the shippers have passed to us, and after a week of futile efforts, the name of a fresh vessel will be passed to us from the shippers, with the information that 'this vessel is now loading at the —— docks,' but fresh efforts on our part are, as likely as not, no more successful than before, and one can readily imagine the state of congestion which can rapidly arise in the packing department as export cases multiply for weeks through this trouble. We could, moreover, quote instances which go to prove our contention that the rails alone are often to blame in the matter."

Humphries and Dawes, Ltd., York Road, Hall Green, Birmingham.

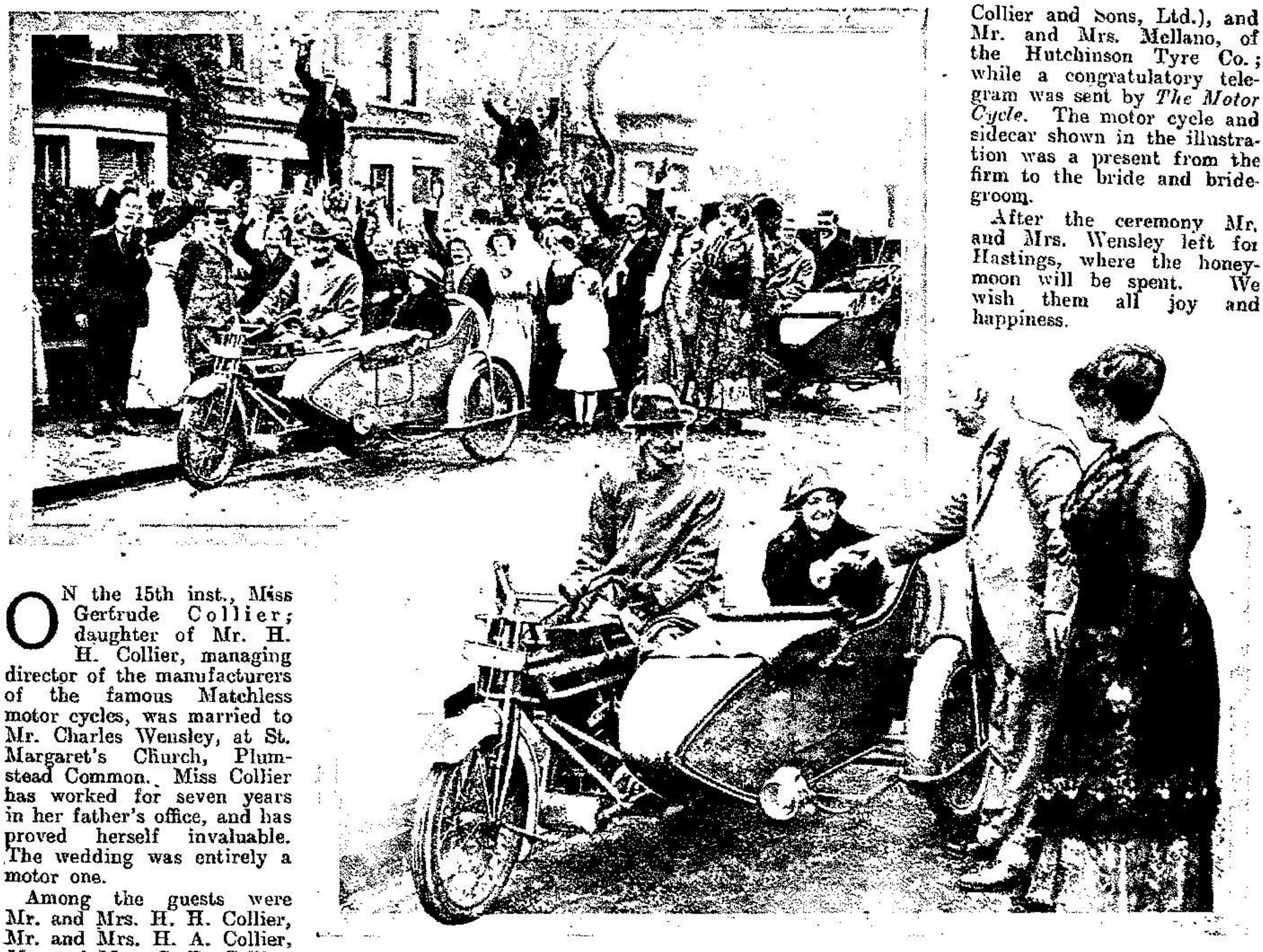
"It takes upwards of a month for the War Trade Dept. to say yea or nay to an application, and in one case for exportation to a neutral country they have just refused us a licence for some thirty odd machines, although why they should do this with our goods we do not know, since the British war authorities say they are not the slightest use to them for war service, and do not patronise us.

"We may say our Dutch agent has offered to keep records and numbers of machines as to where every single one is sold, and further we believe the Netherlands Overseas Trust extract from possible importers a deposit of some hundreds of guilders as a precautionary measure against any breach of faith."

A leading manufacturer who prefers to remain anonymous writes: "On March 14th we received an official order from the Netherlands Overseas Trust for a quantity of sidecars to go to our agent in Holland.

"We have the sidecars all ready to despatch, but are unable to obtain application forms for export licences from the War Office Board of Trade, their excuse being that they are entirely out of them, and do not know when they will have any more from the printers. This is certainly a nice state of affairs."

A MOTOR CYCLE WEDDING.



ON the 15th inst., Miss Gertrude Collier, daughter of Mr. H. H. Collier, managing director of the manufacturers of the famous Matchless motor cycles, was married to Mr. Charles Wensley, at St. Margaret's Church, Plumstead Common. Miss Collier has worked for seven years in her father's office, and has proved herself invaluable. The wedding was entirely a motor one.

Among the guests were Mr. and Mrs. H. H. Collier, Mr. and Mrs. H. A. Collier, Mr. and Mrs. C. R. Collier, Mr. and Mrs. A. Walker (representing Messrs. H. Collier and Sons, Ltd.), and Mr. and Mrs. Mellano, of the Hutchinson Tyre Co.; while a congratulatory telegram was sent by *The Motor Cycle*. The motor cycle and sidecar shown in the illustration was a present from the firm to the bride and bridegroom.

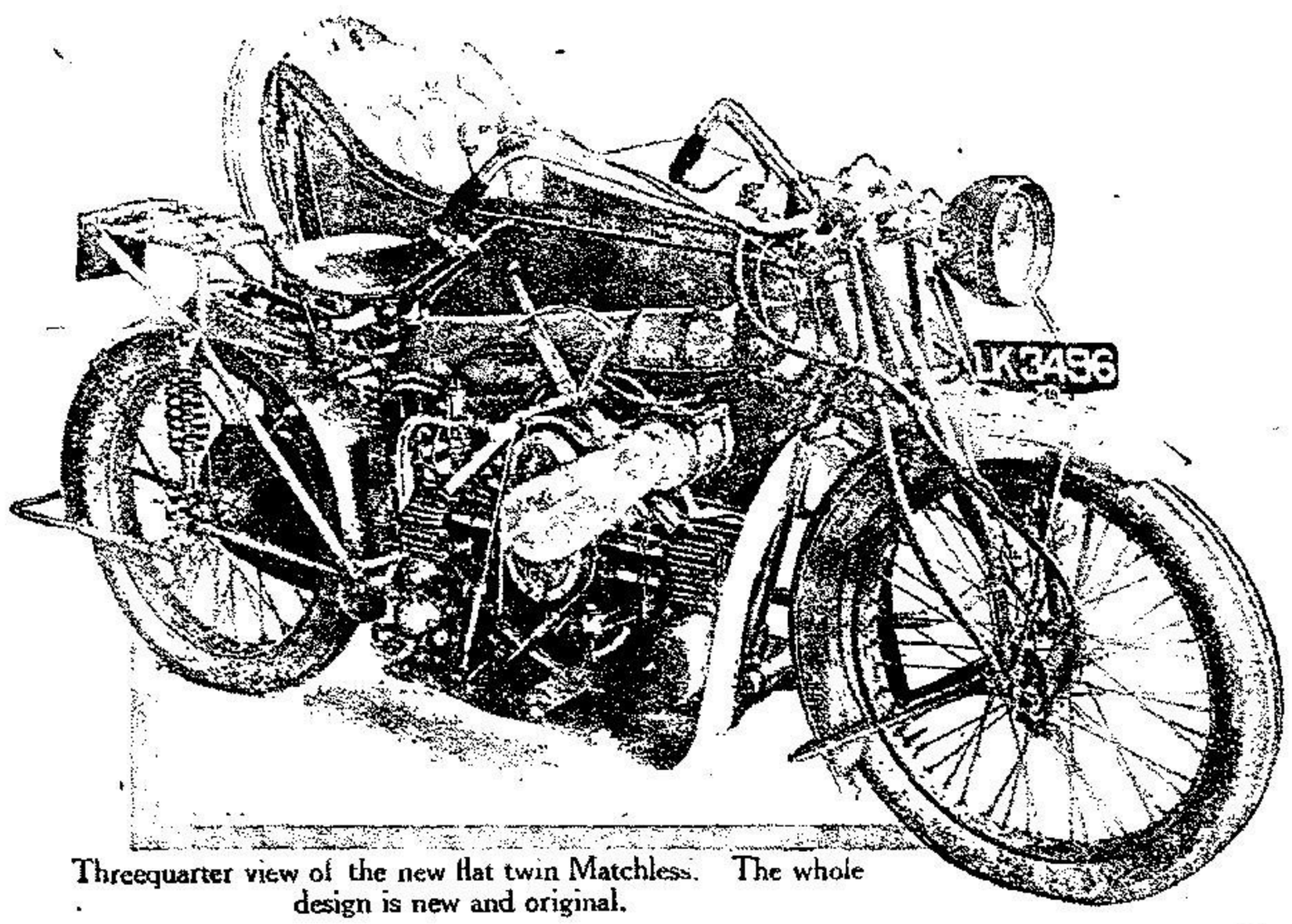
After the ceremony Mr. and Mrs. Wensley left for Hastings, where the honeymoon will be spent. We wish them all joy and happiness.

The motor cycle wedding of Mr. Charles Wensley and Miss Gertrude Collier. The start for the honeymoon on a Matchless sidecar outfit. Mr. H. H. Collier (inset) wishing the couple good fortune.

THE 5-6 h.p. FLAT TWIN MATCHLESS.

70 mm. × 95 mm., 732 c.c., Three Speeds, all wheels sprung.

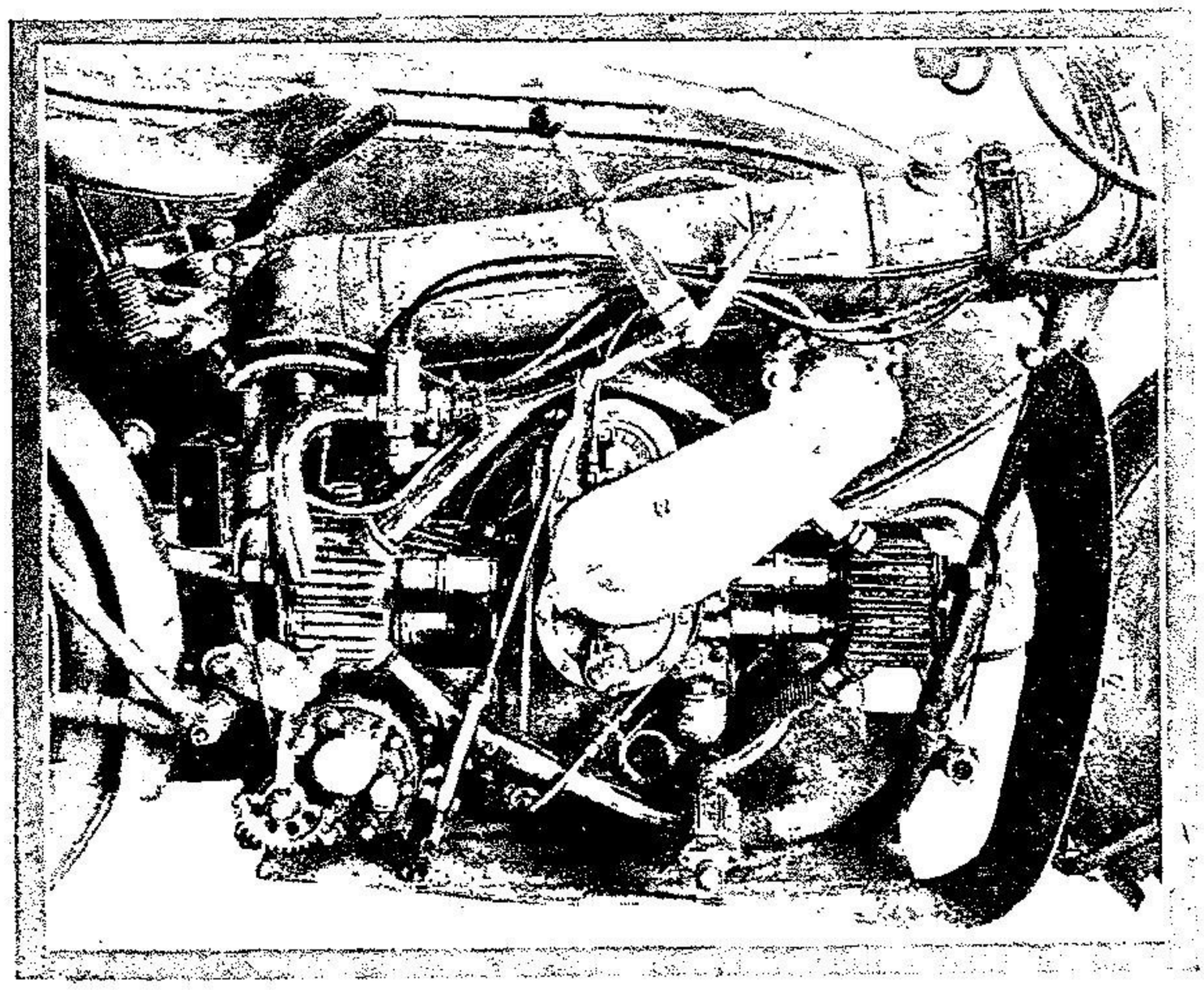
FEW members of the motor cycle business deserve greater success than H. Collier and Sons, Ltd. Since 1903 the two sons have devoted their lives to the movement, and, by engaging in many competitions and races, have sought to evolve the perfect motor cycle. Having known both Charlie and Harry Collier for the past thirteen years, we have watched the progress they have made in the design of their machine, and have always admired their devotion to their business, which was also their pleasure. In the early days they engaged almost entirely in speed work on the track, and it was while occupied in this that they obtained their wonderful practical knowledge of the motor cycle engine. This knowledge has stood them in good stead, and has been of undoubted value to them in designing their own engine. Although for many years they assembled their machines and bought their engines from outside firms, they were by no means ignorant of engine design, and considerably altered for the better many of the engines built up into their machines. Now, for the first time, they have designed their own motor, and a very successful production it is. Being absolutely up-to-date in their ideas, they have evolved a 5-6 h.p. flat twin embodying the very latest practice in motor cycle engine design. Furthermore, being cognisant of the magnificent future for British motor cycles in the Overseas Dominions, they have placed upon the market a well-tried and thoroughly efficient spring frame, while not only has the absence of vibration of the flat twin led them to adopt this form of engine, but also the fact that



Threequarter view of the new flat twin Matchless. The whole design is new and original.

the ground clearance is much greater than is possible in the case of the V type engine, the actual clearance being 5¼in. This is a point which will be much appreciated by Overseas customers.

The frame is a total departure from the firm's standard practice. In the first place, the tubular tank of steel, containing two gallons of petrol, forms the top member of the frame, and has a slight upward slope towards the head. The down tube forms a sort of loop, and acts as a support for the engine. The spring forks have been somewhat improved in design, the lower pair of links being now inside the main members of the forks, which are wide enough to allow the mudguard to form a perfect sweep from the front of the extension right down to the back.



Details of the power unit of the 5-6 h.p. flat twin Matchless.

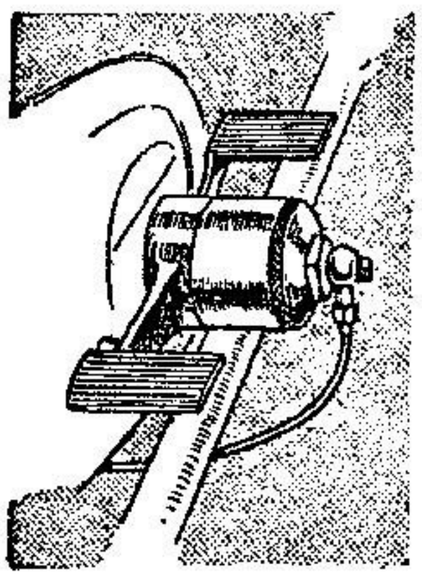
The system employed in the springing of the rear portion of the frame was clearly indicated in the issue of October 21st, 1915, page 401, and this has only undergone slight improvements in detail. The method adopted is to interpose coil springs between the movable rear forks and the rigid portion supporting the rear carrier. All moving parts, both on the front forks and the rear springing system, are provided with grease cups. These, however, will not be retained. Instead, a grease gun will be supplied, having a screw-on end, and on the dust caps taking the place of the grease cups, being removed, the nozzle of the grease gun may be screwed on to the hollow spindle, and the grease injected. This is much less trouble than the filling of numerous grease cups, one grease gun full being probably sufficient for all the points requiring attention.

The Power Unit.

The question of accessibility has been carefully studied in the design of the new Matchless engine arrangement, which is so carried out that the cylinders may be removed without taking the engine out of the frame. The radiating fins run longitudinally down the cylinders and taper towards their base. The cylinders are off-set to the amount of one inch. Both valves are horizontal and are arranged at the side in an accessible position, telescopic valve

The 5-6 h.p. Flat Twin Matchless.—

spring cams being employed which exclude all grit from the interior working parts of the valve system. Of the two portions of the valve spring cover the larger screws on to a ring surrounding the base of the tappet guide, and when it is found necessary to replace a valve it is unscrewed and slipped back, thus exposing the end of the valve stem and cotter. The valve gear is exceedingly simple and interesting, only three pinions being employed, while one set of cams actuates both inlet and exhaust valves.



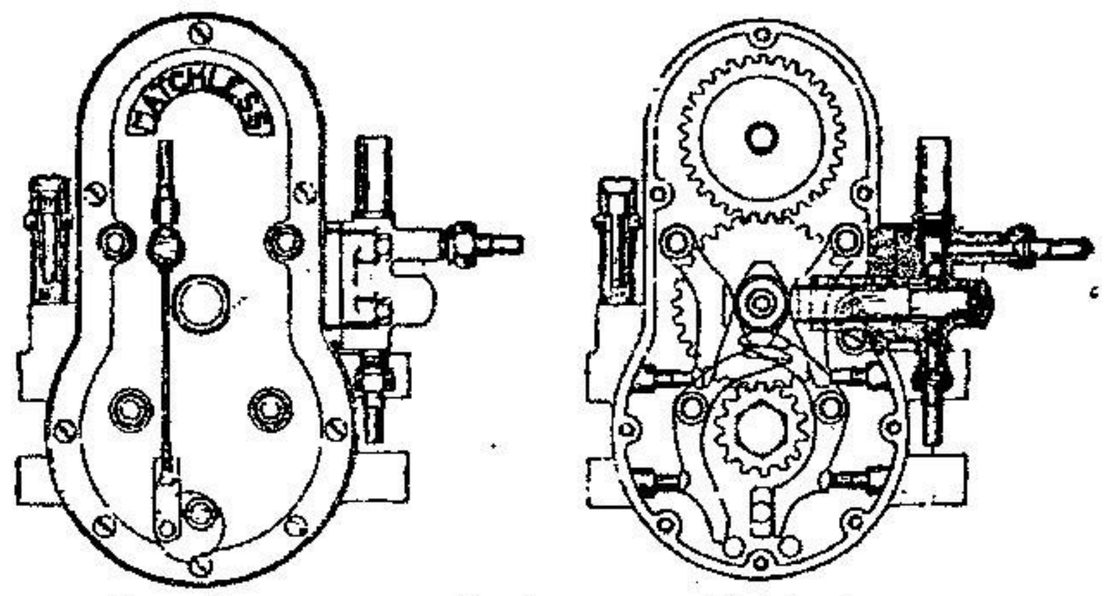
The rocking form of clutch pedal is retained. Note the oil lead for lubricating the clutch.

The Lubrication System.

A plunger pump actuated by one of the valve cams delivers the oil to two passages cast in the crank case, which lead direct to the main bearings; that is to say, the oil enters the bearings at both sides, the crankshaft is hollow and the lubricant is driven under pressure through it and exudes at the big end bearings, all excess returning to the sump. At the base of the sump whence the oil is delivered there is a large gauze which adequately filters it from all impurities. The system has been found to be most successful, and since the oil is delivered under pressure it is bound to reach those parts which need copious lubrication. A window has been let into the crank case just below the filling orifice which indicates the level of the oil in the sump.

Induction and Exhaust.

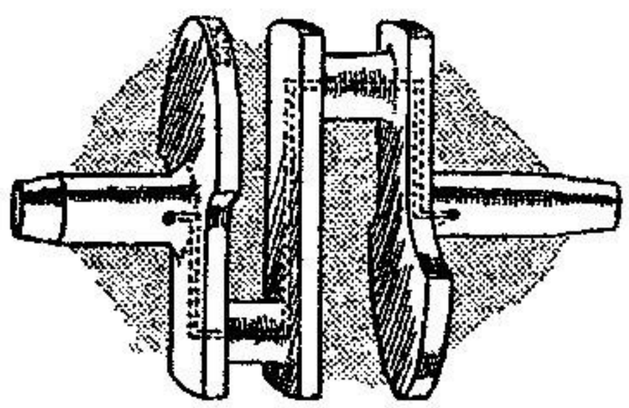
The arrangement of the carburetter is somewhat unconventional, the inlet pipe forming a complete bow, passing from one cylinder over the top of the timing gear case to the other, but near the top of the arc of the bow there is a branch pipe to which the Amac carburetter is attached. Long experience with motor cycle engines has made the brothers Collier realise the fact that it is always beneficial to take the air in warm if possible, no matter whether pure petrol or a petrol substitute be used; consequently a warm air pipe is fitted to the main air intake.



General arrangement of valve gear and lubricating pump.

The design of the exhaust pipes is also worthy of note, the pipe from the rear cylinder entering the bottom of the expansion chamber, while the exhaust gases from the front cylinder issue through a short pipe into the top of the expansion chamber, the final exit being through a long pipe on the near side of the machine.

At first the designers were troubled with a fault which is common to flat twins, namely, a "ring" in the flywheel, and this they have corrected in quite an ingenious manner by interposing between



The crankshaft, showing the manner in which the oil ways are drilled.

the periphery and the flywheel boss a disc of three-ply wood securely bolted up to the face of the flywheel, and this effectually deadens the noise.

Ignition.

The magneto fitted is the C.A.V., the advance spark lever being actually on the contact breaker and within easy reach of the driver. In actual practice it is found that the position of the spark lever requires practically no alteration. At the bottom of the timing case will be noticed the exhaust valve lifter, the crank for which consists of a small pin eccentrically mounted on a disc, which has a piece cut out of the lower portion, so that on the valve being dropped the indentation rests against one of the studs holding on the timing case cover. The exhaust lifter is of the double cam variety, the two cams actuating the exhaust rockers.

An interesting experiment is the fitting of aluminium alloy pistons, which so far have given every satisfaction.

Transmission.

In the new Matchless the circular type of gear box is retained, but owing to a slight modification of the design of the teeth, which enables the gear wheels to be made lighter, the new gear box is of rather smaller dimensions than previously. It is carried in two plates, extending from the crank case to the bottom bracket lug, and is held in position by two steel straps. To adjust the front chain the two nuts at the ends of these straps are loosened, and by applying a special spanner to two of the lower nuts in the gear box the whole may be rotated, thus enabling any slack to be taken up

It will be noticed that the Lucas dynamo is driven by a chain off the camshaft, and is carried in a bracket suspended from the tank, the chain being neatly enclosed in an aluminium case.

The clutch consists of two steel plates, hardened and ground, engaging with a central plate of cast iron forming part of the sprocket. An arrangement has been made so that, in the event of the machine being used as a solo mount, the clutch may be controlled by means of a Bowden wire from the handle-bar. The lubrication of the clutch is provided for by a branch pipe from the oiling system.

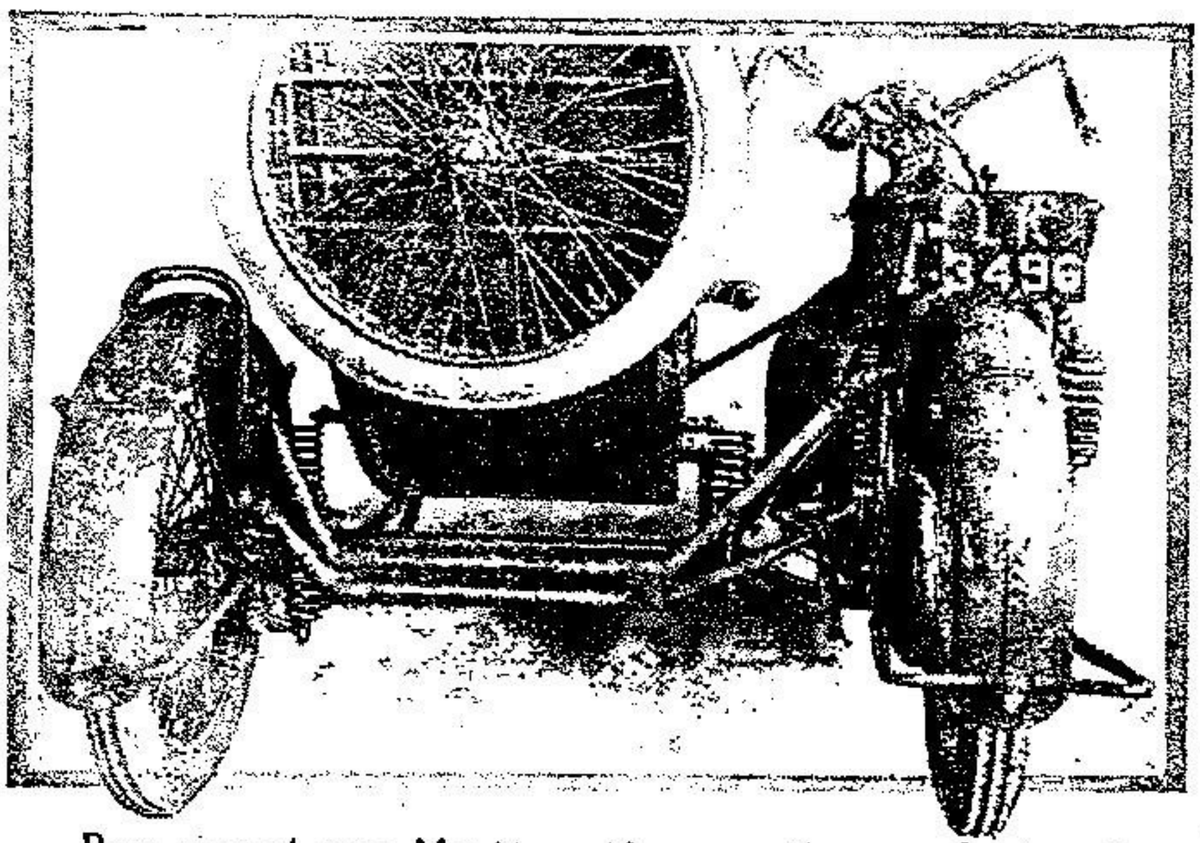
From engine to gear box the transmission is by silent chain, which is, of course, enclosed.

Considerable ingenuity has been displayed in arranging so that the rear chain cover is free to move with the lower and movable portion of the spring frame.

The mudguarding has been particularly well carried out, the guards being 5½in. in diameter, while an additional mudshield is fitted to the down tube, and is arranged so as not to impede the cooling. This is continued below the power unit, and acts as an efficient undershield.

The Sidecar.

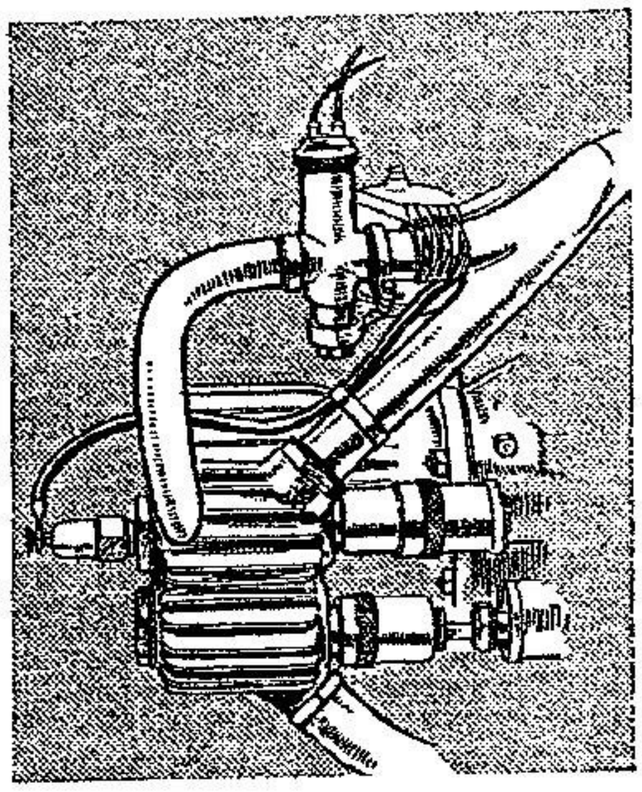
The same system of springing as is employed in the rear of the machine has been adapted to the sidecar, inasmuch as both the wheel and also the sidecar body are sprung on coil springs. The form of staying at the rear of the sidecar frame is interesting. This consists of double tubes attached to the uprights forming a portion of the motor bicycle frame. This arrangement enables both the sidecar wheel and the rear wheel of the motor bicycle to move more or less in unison, therefore the fault present in many combinations in which the sidecar wheel is sprung, namely, that of instability and



Rear view of new Matchless sidecar combination, showing the duplex tube joining the sidecar and motor cycle, and causing the two sprung wheels to work in harmony.

The 5-6 h.p. Flat Twin Matchless.—

a tendency to lean when turning corners to the left, is entirely absent. The sidecar wheel is also provided with a stand, similar in design to that employed in the front wheel. The sidecar is well sprung and luxuriously upholstered, while at the



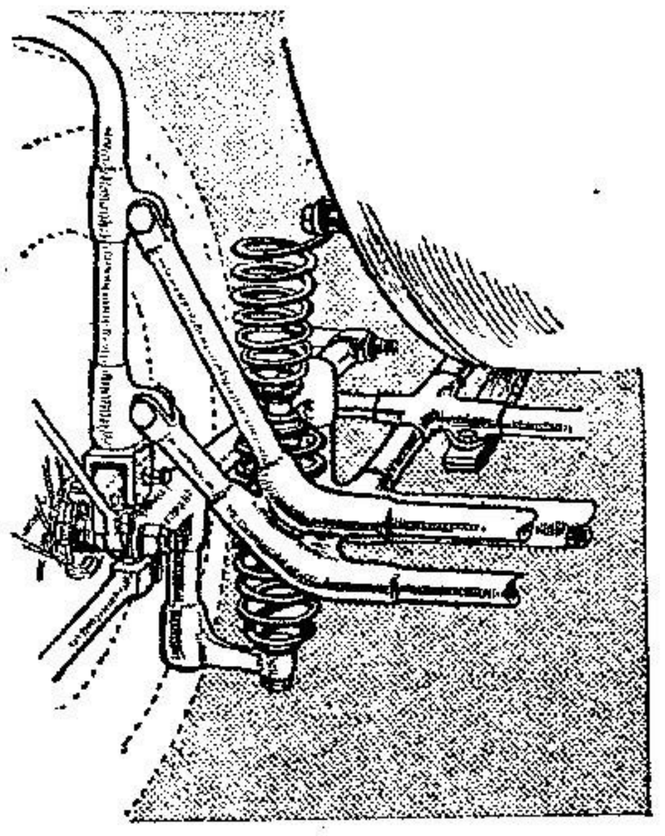
Method of fixing the carburetter and the valve spring covers.

back thereof is carried the spare wheel and also an efficient luggage carrier. It will be noticed that both the luggage platforms on the new Matchless are on sprung portions of the machine, which is distinctly an advantage.

The Machine on the Road.

We were next taken for a short run in the district round Woolwich, which is decidedly hilly. The first turning to the right past the works brought us on to quite an appreciable gradient, which the engine took comfortably on top speed, mounting up gradually until we reached Woolwich Common. We noticed that the sidecar was exceedingly well sprung, though Mr. Harry Collier assured us that he was not satisfied as to this point, affirming that the rider was more comfortable on the machine than in the sidecar. The roads were certainly rough in this locality, and personally we could find no fault whatsoever. The engine developed plenty of power, but seemed a trifle noisy—a fault which Mr. Collier readily acknowledged. Hitherto his efforts had been to obtain the maximum power for the engine, and he admitted that it required still further taming down both as regards the noise of the engine and of the exhaust, though with the latter little fault could be found.

On Woolwich Common we took control of the machine and drove for some considerable distance. Having driven a 1916 Matchless not long previously we soon became accustomed to the driving of the new mount. The engine possessed an ample degree of acceleration and was quite free from vibration, the clutch took up the load sweetly, and the gears went into engagement without a sound. The comfort of the spring frame was most noticeable on the rough road across the Common, which eventually brought us into Shooters Hill. A considerable amount of traffic was met, but the engine proved itself flexible, and we felt quite at home in negotiating it. On reaching Shooters Hill Road we found the surface distinctly good, though a little wavy in places, but the machine rode over the waves with an exhilarating and swinging motion which was delightfully comfortable. Having slowed up for the cross-roads at the foot of the hill we were practically brought to a complete standstill through a boy who saw fit to dismount from his bicycle and hold a conversation with a carter in the middle of the road. This necessitated a change down to second and reduced the speed of the machine to about four miles an hour. On opening the throttle it immediately picked up and the top was engaged, but not before we were well on to the gradient. However, the engine rapidly accelerated on top until just near the crest of the hill, passing over the summit still in top speed and with



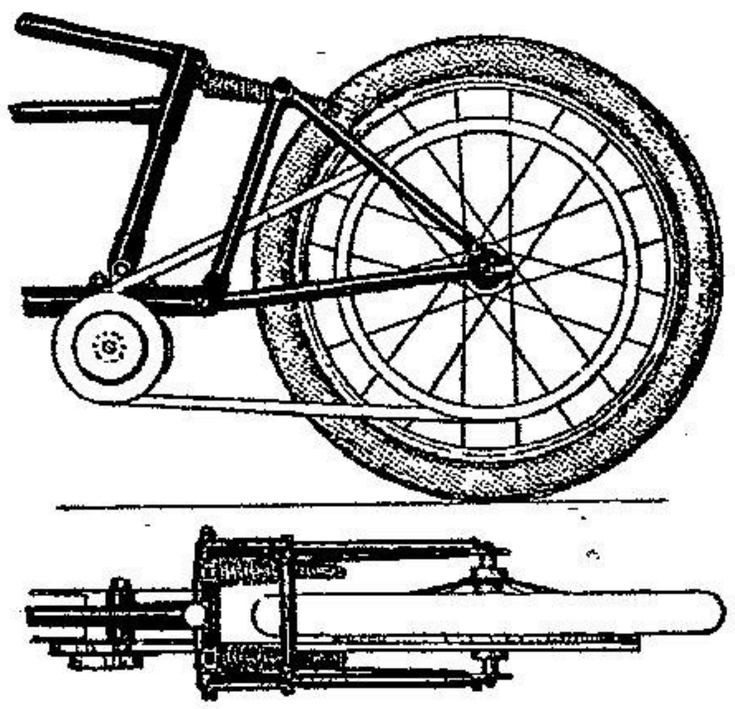
Details of the sidecar suspension, the sidecar wheel springing, and the duplex tubes forming the rear member of the frame.

the engine not labouring in the slightest degree. We noticed that considerable improvement has been made in the design of the handle-bars, these being much wider than on the previous model. Altogether, the run on the new Matchless was a delightful experience, and we greatly look forward to a closer acquaintance with this machine on the road at no very distant date.

It must be distinctly understood that Messrs. Collier and Sons are not in a position to deliver any machines. This is merely the prototype of their post-war model, which they hope to deliver to the public very shortly after the cessation of hostilities.

STILL MORE SPRING FRAMES.

STILL they come. *The Motor Cycle* campaign in favour of spring frames shows no sign of abatement at present. We dealt on November 2nd with the frame applied to the Allon two-stroke, and illustrate herewith another adaptation of the Alldays rear springing,

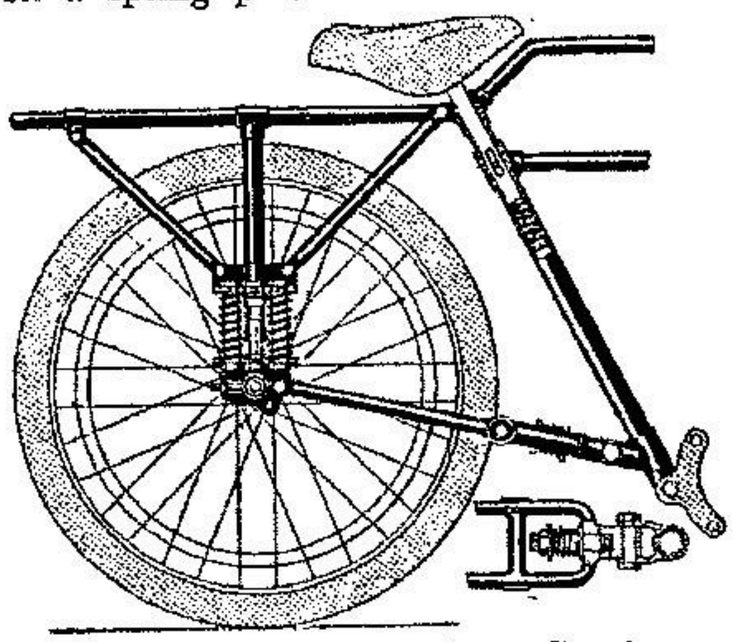


An adaptation of the Allon spring frame.

the difference being solely in the type of spring employed. In this instance, two springs of the coiled or helical type are used on either side, surrounding links on which the top of the rear frame is free to slide. Two springs take the weight of the machine and rider and two take the rebound.—Alldays and Onions and A. H. Johnson, No. 15,849, 1915.

Compound Rear Springing.

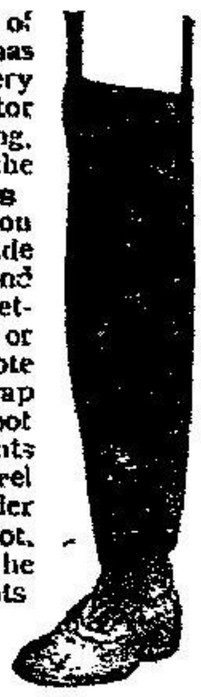
Another attempt at rear springing is the subject of a patent by T. Matthews, of Pengam, Monmouthshire (No. 10,712, 1916). This is designed to allow a backward as well as an upward movement of the rear wheel relatively to the frame. The rear stays are pivoted behind the bottom bracket, and also are capable of sliding backwards, this movement being controlled by a spring. It would be interesting to know what effect this movement would have on chain or belt or *vice versa*. The upper portion of the rear frame, made in one with the carrier, is hinged below the saddle, and carries at its lowest end two guide rods surrounded by springs. Between these is a vertical tube, which slides over another tube mounted on a plate attached to that part of the frame which carries the axle. The last mentioned tube has an oil-retaining gland at its base. Upon these tubes and guide rods the frame must rely for its support, for otherwise the rear portion is hinged only. The saddle is shown supported on a spring pillar.



A design giving movement in two directions.

CLOTHING.

THE "GROSE" MOTOR CYCLING
BOOT WADERS.



This style of protection has become very popular for motor cycling, fishing, and lately in the **trenches**. With these on you can wade across brooks and fords without getting the feet or legs wet. Note our special strap fixing at foot which prevents sagging at heel and holds wader tight on foot. Worn over the ordinary boots

Per pair **15/6**

With Leather Soles ... **22/6**
Hutchinson's make, with Leather Soles **25/-**

The "MOTO" SUIT.
Good quality fawn waterproof, double texture twill. All seams sewn, taped, and solutioned. High storm collar. Dust, wind, and rainproof. Ventilated under arms. Two side pockets. Full length leggings, well-shaped spat, and strap under instep.

The Suit **16/6**
Legg ogs only **5/6**
Jacket only..... **12/6**

The "BROOKLANDS" SUIT.
Similar to the "Moto" Suit, but superior quality.
The **Suit, 21/-**, with leggings.
The **Suit, 24/-**, with seatless trousers, giving waist protection.
Fawn Waterproof Leggiogs, **4/6** and **6/9**
Fawn Waterproof Seatless Trousers **10/-**

MOTOR CYCLING RACING CAPS.
Brown leather, with ear rolls **3/9**
Ditto, fleece lined **4/3**
Fawn waterproof **1/11**
Linked Leather Waist Belts **1/3**

BLACK "OILSKINS."
Jackets **7/6**
Leggings ..... **3/6** and **4/6**

BELTING.

Pedley	½"	¾"	1"	1"	1½"
per ft.	1/2	1/4	1/7	1/10	2/3
John Bull	½"	¾"	1"	1"	1½"
per foot	1/5	1/8	1/11	2/5	
Dunlop	½"	¾"	1"	1"	1½"
per foot	1/5	1/8	1/11	2/4	

Grose—*Rubber and Canvas.* Samples free.

	½"	¾"	1"	1"	1½"
per ft.	10d.	11d.	1/1½	1/4	1/8

John Bull and Pedley Belts in lengths about 4ft. less 40%. Use two fasteners.

SPARE PETROL TANKS.
Torpedo shape, to clip on top tube. Aluminium enamelled.
Quart size..... **5/6**
Half-gallon size..... **7/6**
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JACKS.
Special for cycle cars .. **3/6**

TANK CLIPS.
Complete with base-plate and bolts..... **3d.**

TYRES.

HUTCHINSON.

Clearance.	*2nd Choice.*	Usual Price.
BROOKLANDS.		
26×1¾	Non-skid 14/6	21/-
26×2¼	" 15/-	22/3
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T.T.		
24×2	Non-skid 19/-	26/-
26×2¼	" 20/-	29/-
26×2½	" 18/6	31/-
PASSENGER.		
26×2¼	Non-skid 24/6	36/-
26×2½	" 25/-	38/-
LIGHT CAR, 3 Rib.		
650×65	25/-	48/-

AVON, BATES, CLINCHER, DUNLOP, HUTCHINSON, KEMPSHALL, MICHELIN, PALMER, PEDLEY, R.O.M., JOHN BULL — TYRES IN STOCK. **Up to 20/- allowed for your old Covers.**

CONTINENTAL.
All guaranteed perfect and new tyres.

26×2¼	standard	14/6	22/6
26×3	standard	16/6	31/3
26×2¼	T.T. n.s.	18/6	26/10
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26×2	Non-skid	12/6	19/3
26×2¼	Combination Steel Stud & Rubber Bar	36/-	50/-
26×2½	ditto ...	35/-	54/6
659×65	ditto	34/6	54/6
26×2¼	Sidecar	10/6	15/-
650×65	Autobi	25/-	40/-

15% allowance off Continental covers for your old cover.

CLINCHER.

26×2	Junior, ribbed ..		10/-
26×2¼	" " ..		11/6
26×2	" studded .		11/6
26×2¼	" " .		13/6
650×65	Dreadnought .		29/-
700×80	" to fit 650×65 rims		**35/-**

DUNLOP, Etc.
Grose's remades— 26×2¼, 26×2½ .. **9/-**

INNER TUBES.
The **"Spur"** Red Rubber **(guaranteed for 12 months) Inner Tubes.**

26×2	plain	4/3	Butted 5/3
26×2¼	"	4/9	" 5/9
26×2½	"	6/3	" 6/3

Hutchinson 2-inch Inner Tubes

26×2	3/-
26×2¼	3/6
26×2½	3/9

TYRE SUNDRIES.

Clip-on Rubber and Canvas Gaiters	1/1
Clip-on Leather Gaiters .	1/4
One-minute Pattern Tyre Levers, set of three ..	6d.
3/- size Patchquick Outfits	2/6
1/- " " "	9d.
Security Bolts	5d.
Tyre Repair Clips for repairing broken heads, enough for two 6in. repairs	1/-

TOOLBAGS.
Best leather, lined Flaxite and armoured, size 7½×4×3½", fitted with lock, to fit on side of carrier **4/9**
Patchquick Leather Repair Outfit Case **1/4**

VALVES.
Inlet or Exhaust, to suit most engines ... **3/3**
Valve Tappet Adjusters, set of six ..... **4½d.**

SPRINGS.
Inlet and Exhaust ..... **3d.**

SILENCERS.
The Grose Silent Silencer **2/9**

EST. 1876.

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'Phones 7712 Central. 1297 North. 3684 City.

OLD JEWRY, CHEAPSIDE, LONDON, E.C.,
and at 255-257, Holloway Rd., London, N.
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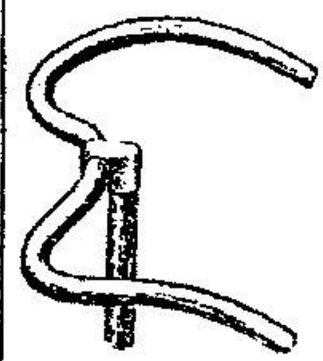
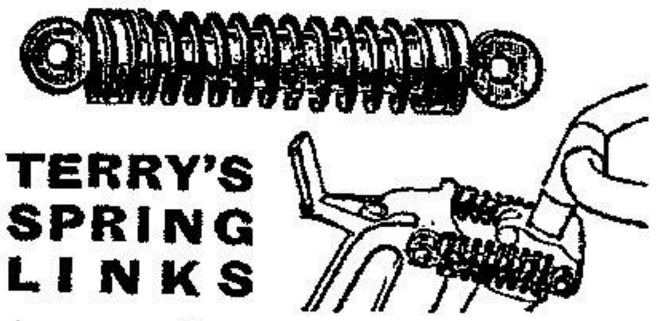


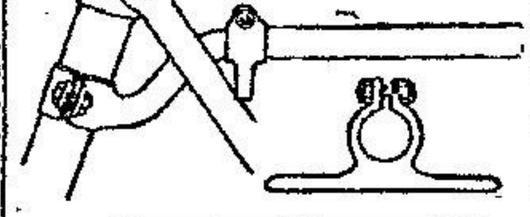
The **T.T. Douglas** pattern Handle-bars. Plated **6/6**
Other shapes in stock from **4/9**



TERRY'S SPRING LINKS

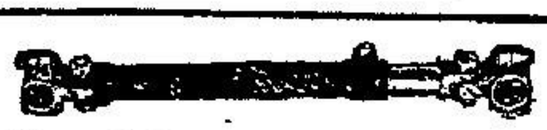
A marvellous auxiliary to fork springing. Can be fitted to all makes of the link pattern.

10/6 pair.



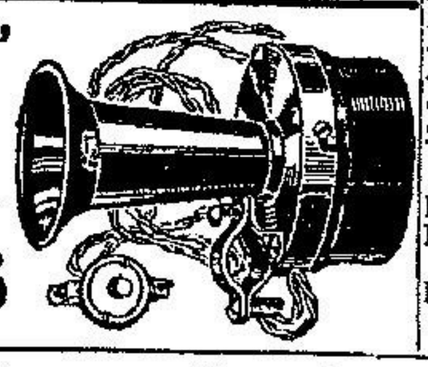
The 'Spur' Swan Neck
Seat Pins, **5/-** plated. Not plated, **4/-**
The lowest position obtainable.

THE 'COLLEGE' MUD SHIELDS.
Without pockets **10/6**
Apron to cover knees ..... **5/-** extra.
This is the best device on the market for dirty weather.



Auxiliary Sidecar Arm **5/11**

The 'GROSE' ELECTRIC HORN.
Complete with Cable and Switch **12/6**



GLOVES.

Cape leather, with loog gauntlet **3/9**
Cape leather, superior ... **4/3**
Cape leather, lined **4/9**
Black extra strong leather, with long gauntlet ... **4/9**
The **"TRANSPORT,"** as supplied to the Government, extra warm and strong. **5/6**
Try a pair. Cash returned if not satisfactory.

MIRRORS.
3", to fit on handle-bar **1/-**
4" " " **1/2**
5×4", brass, for cycle car **3/3**

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3½" wide, complete, pair **2/9**
Do. do. enamelled " **3/9**

SIDECAR MUDGUARDS.
3½", extra strong stays, enamelled..... **5/3**
Do., with side valance, **6/9**
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NUMBER-PLATES.
For front or back ..... **6d.**
Complete with clips.

BELT FASTENERS.
Detachable hook pattern **3d.**
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SPRINGS for SPRING FORKS
For Douglas, For Druid, Various **1/3**

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Red rubber ..... **-/8**
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Bosch **3/6**
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ENAMELS.
Robbialac, *black or colours* **1/6**
Petrol-proof ..... **10d.**
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SPEEDOMETERS.
Stewart's. Registers to 75 m. p. h., season's mileage to 10,000 m., and 100 m. set-back trip recorder **50/-**
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SPRING-FORK ATTACHMENTS.
For converting fixed to spring forks ....pair **14/-**

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Large size, very comfortable **6/9**
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Do., best **1/-**
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Do., superior .. **1/11** and **2/6**

CANVAS STRAPS.
Stronger than leather.

24 × ½in.	3d.
30 × ⅝in.	4d.
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BRAKES.
Belt rim, foot operated **6/9**
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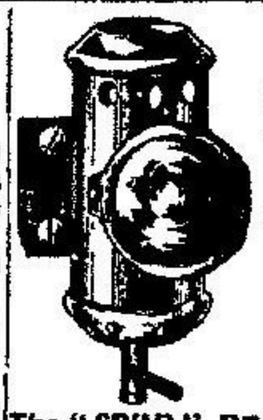
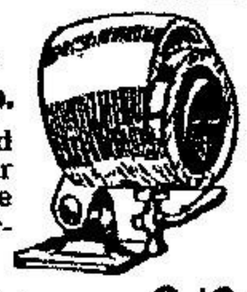
Brake Blocks, to suit all makes **1/-**



A rear lamp at a low price which fully complies with the law.
1/3
The "SPUR" REAR LAMP



The **"WINCO" Rear Lamp.**
Shows red light at rear and white on number-plate.
Solid Aluminium... **3/9**

LAMP SUNDRIES.
Brass Y Pieces ..... **4½d.**
Rubber Tubing, per yd. **6d.**
Surridge's Gas Bags and Tubes, 9" **11d.**, 12" **1/1**, 15" **1/4**
Bray's Roni Burners .. **7d.**
Bray's Special Rear Lamp Burners ..... **3d.**

LAMP GENERATORS.
Special for rear lamps .. **4/3**
Barnes, 8/6. Worth 12/6

ALUMINIUM MATTING.
9in. wide ..... per ft. **1/-**
12in. wide ..... " **1/2**

CONTACT FILES.
Knife pattern ..... **4d.**
Magneto knife file and gauge **1/-**

OILS.

Prices'	qts. 1/8	galls	5/-
Vacuum	" 1/8	"	5/-
Grose's	" 1/2		
B.S.A.	" 2/-	½ galls.	3/6
" c'shaft	" 1/8	"	2/8

GREASES.
Prices' Hub Lubricant ..... 1 lb. **9d.**
" Rangraphine 1 lb. **9d.**
Graphite Grease ... 1 lb. **9d.**

PISTON RINGS.
To suit most makes .. **1/3**

SIDECAR SUNDRIES.
Brass Turnstuds and Washers ..... each **3d.**
Body Plates and Bolts **3d.**
U Bolts..... **4d.**
Torpedo Mats **2/6**
Wind Screens **21/-** and **24/6**

SHACKLES.

2in. ..	1/-		
3in. ..	1/2	5in. ..	1/7
4in. ..	1/4	6in. ..	1/10

TRANSFER NUMBERS.
To transfer on, per doz. **9d.**

HORN BULBS.

Size	2	4	6	8	10
	6d.	8d.	10d.	1/1	1/5

CARBURETTER PARTS.
Jets for B. & B. ..... **8d.**
" Amac ..... **4d.**
" Senspray ..... **4d.**
Various parts in stock.

CARRIERS.
Tubular, very strong ... **3/9**
Do., with double support stays **5/6**

CARBIDE CARRIERS.
Leather, to hold ½ lb. tin of carbide and strap on cycle **1/4**
Do., in Flaxite..... **10d.**

RENOLDS CHAINS AND PARTS.
We have a fairly good stock. ⅝ × ½in. chains .. **3/-** per ft

To buy at these Prices, this Advert. must be mentioned. Terms: Cash with order only.
All prices are for goods now in stock, and subject to being unsold. Cash returned for any goods if not satisfied.
ON THESE PRICES CARRIAGE AND POSTAGE EXTRA. MOTOR CYCLE LIST POST FREE. 'PHONE, WRITE, OR CALL.

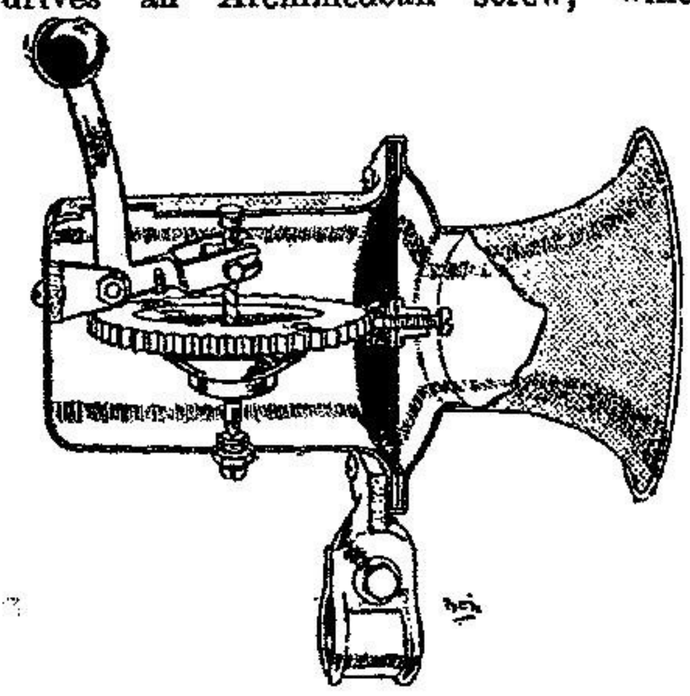
In answering this advertisement it is desirable to mention "The Motor Cycle."

MECHANICAL HORNS.

The divergency in the design of the growingly popular mechanical warning device is not generally appreciated. The drawings and descriptions accompanying will interest those who take a delight in knowing "how the wheels go round."

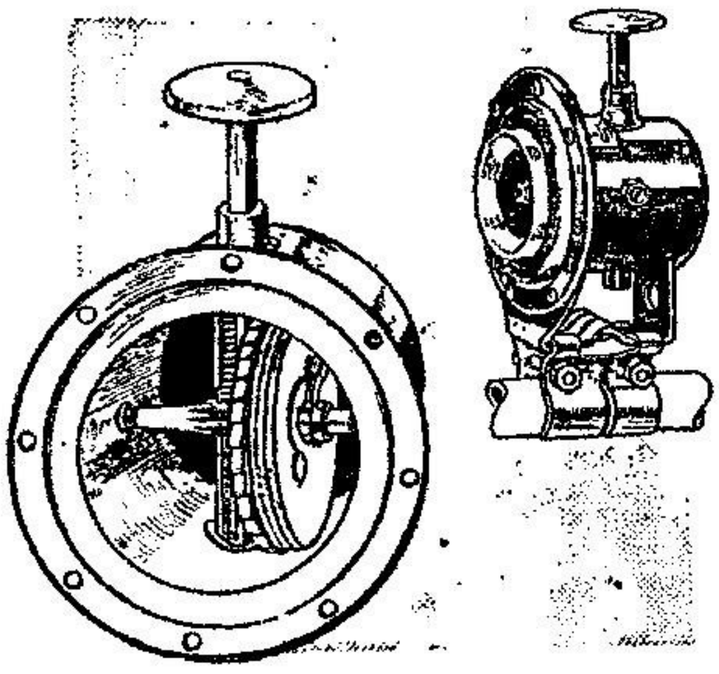
THE amount of ingenuity displayed by designers in producing a warning note by means of a mechanical horn is quite astounding. *The Motor Cycle* was the first journal to go to the trouble of taking each one of these horns to pieces and having the interior sketched for the benefit of the motor cyclist. The average motor cyclist is nothing if not practical, and he dearly likes to know how any piece of mechanism on his machine works. When the various designs are compared a very clear idea may be gathered of the different methods employed in producing the sound. In almost every case the sound is produced by causing the teeth of a cog wheel to rotate against an adjustable point in the centre of a diaphragm placed immediately behind the bell mouth of the horn, but variety is to be found in the different methods used to drive the actuating cog wheel.

Let us take, for instance, the SPARTON HORN. In this case the lever outside drives an Archimedean screw, which

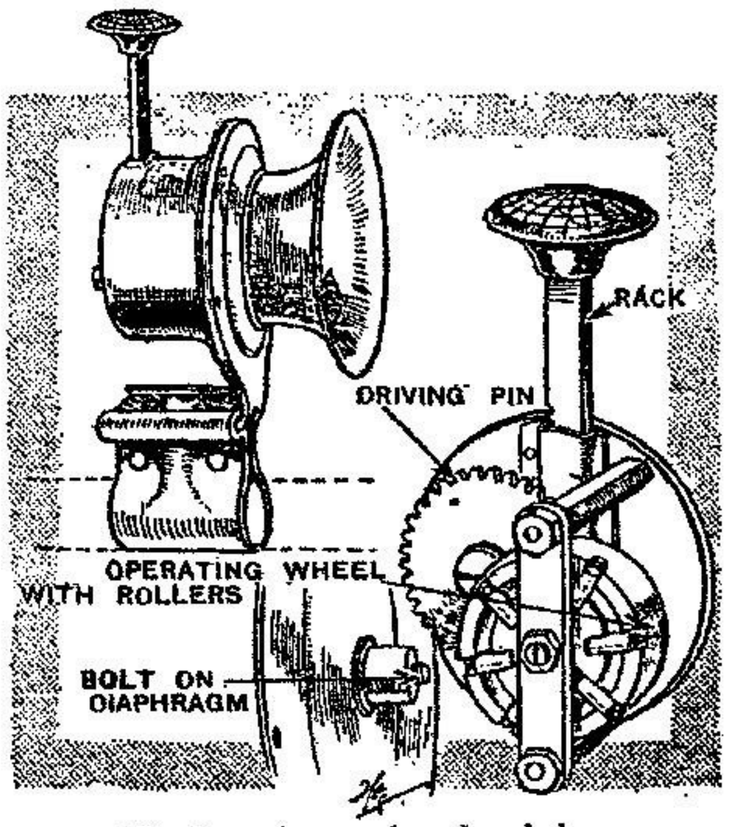


causes the cog wheel to revolve at a rapid rate. The mechanism of this horn is extremely simple. (Messrs. Brown Brothers, Ltd., 15, Newman Street, Oxford Street, W.)

THE GLORIAPHONE.—The mechanism of the Gloriaphone is easily followed. The lower part of the plunger rod is cut so as to form a ratchet, and works in a slide



in which there is a spring to return it to its original position after it has been depressed. This ratchet engages with threads cut on a spindle turning at right

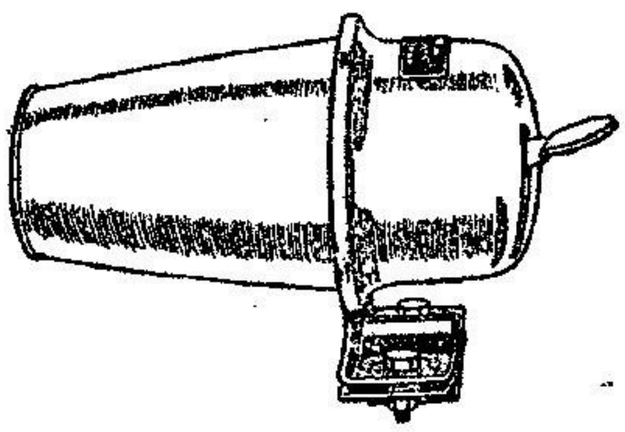


The Long horn referred to below.

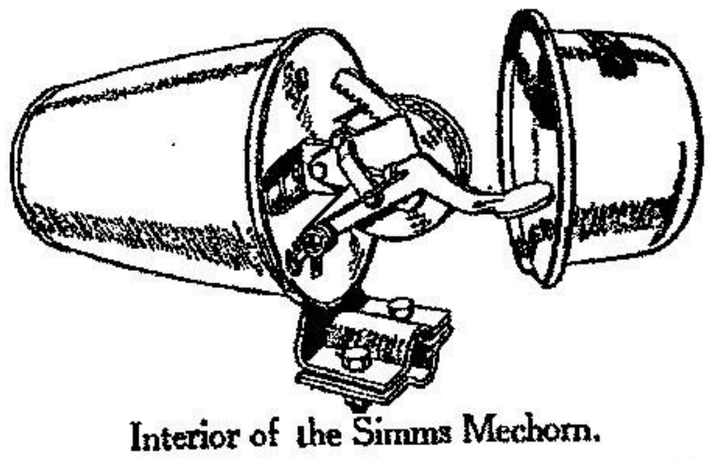
angles to it, on which there is loosely mounted on a ratchet a large tooth wheel which engages with the contact point on the diaphragm of the horn. The object of the ratchet, of course, is to allow the plunger to return to its original position after the horn has been operated. One of the peculiarities of the Gloriaphone is the absence of a bell mouth, yet despite this it makes plenty of noise. (Messrs. Etienne et Cie., 42, Gray's Inn Rd., W.C.)

We now come to the LONG HORN. This is actuated by means of a push-down lever, on the interior portion of which is a rack which drives a spur wheel attached to a larger wheel fitted with a ratchet. The noise is produced by means of a flywheel, on the face of which are regularly placed rollers which hit against the contact point situated in the centre of the diaphragm. This is quite a different principle from that employed in other horns. (Messrs. Markt and Co., Ltd., 98-100, Clerkenwell Road, E.C.)

The SIMMS MECHORN is of peculiar design, both internally and externally.

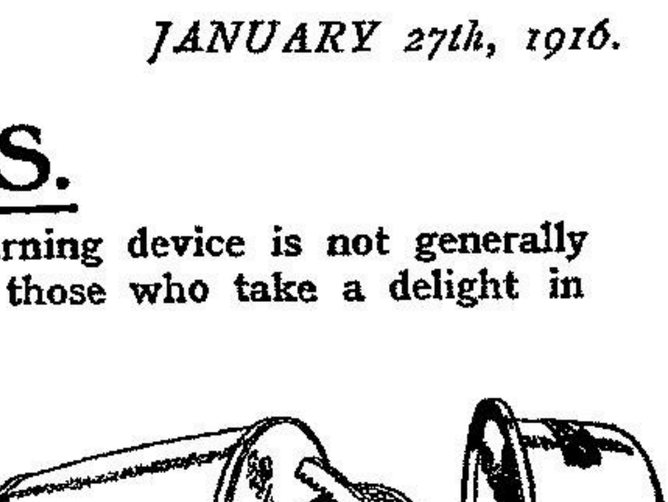


In this case there is a press-down lever on the outside to which is attached a rack which engages with a pinion on the cog wheel, which comes into contact with the diaphragm. (Messrs. Simms Motor Units, Ltd., 191, Wardour St., W.)

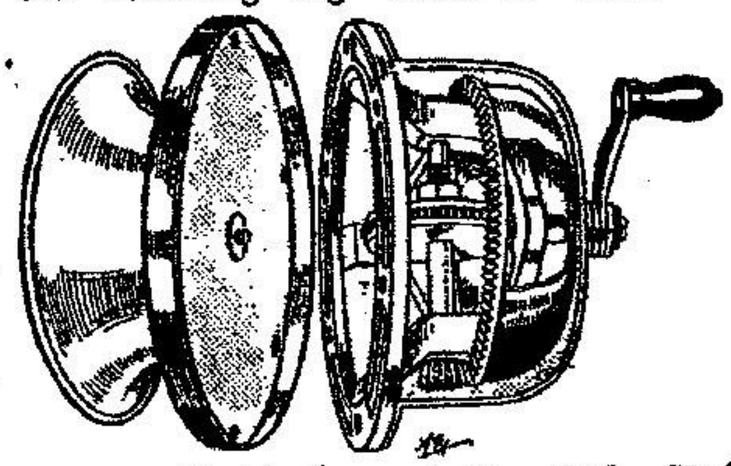


Interior of the Simms Mechorn.

TAYLOR'S MECHANICAL HORN.—In this the driving mechanism consists of a handle outside. Here, again, the interior mechanism is of simple design, a large

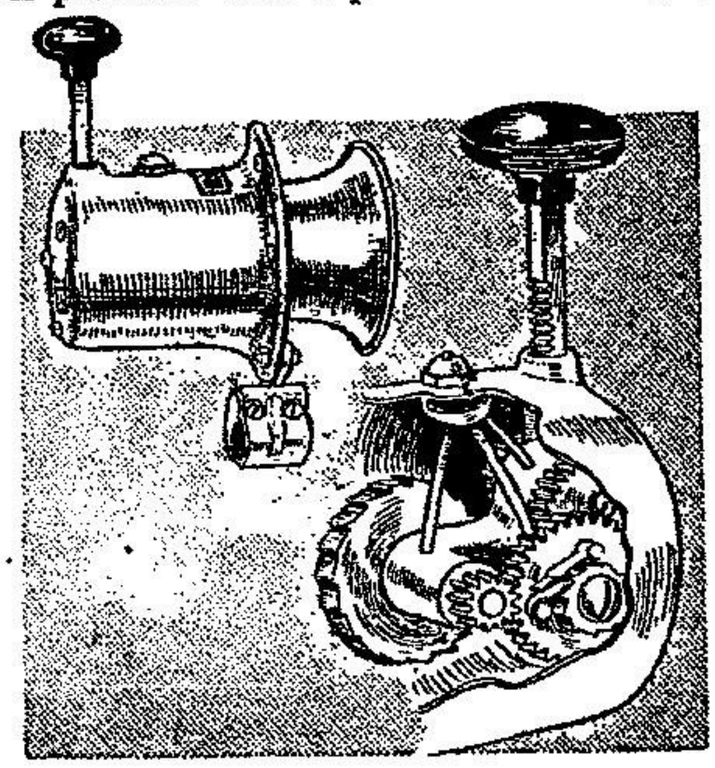


bevel coupled direct to the handle meshing with a small crown wheel, to which the actuating cog wheel is attached



(Messrs. H. Taylor and Co., Ltd., 21a, Store Street, W.C.)

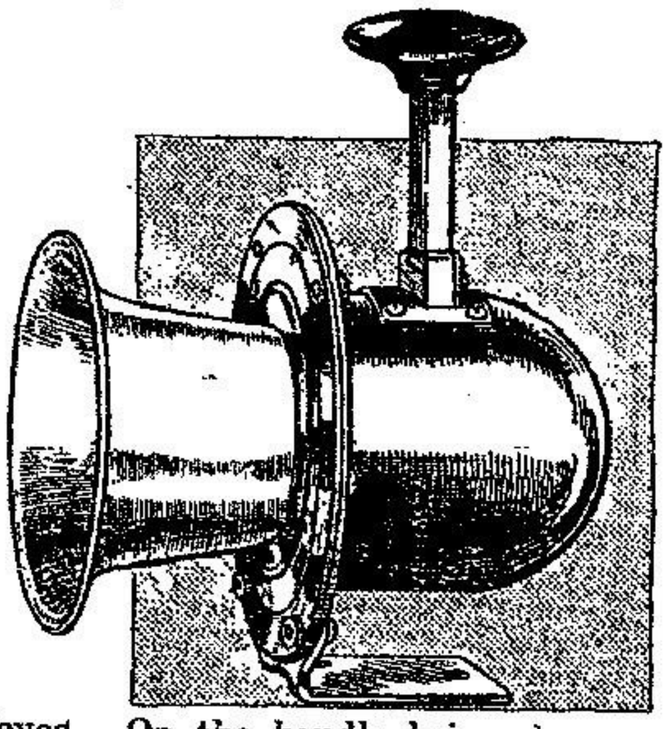
Next comes a pattern which is slightly more complicated. This is known as the HAND KLAXON. Like the Long Horn it is provided with a push-down handle, in



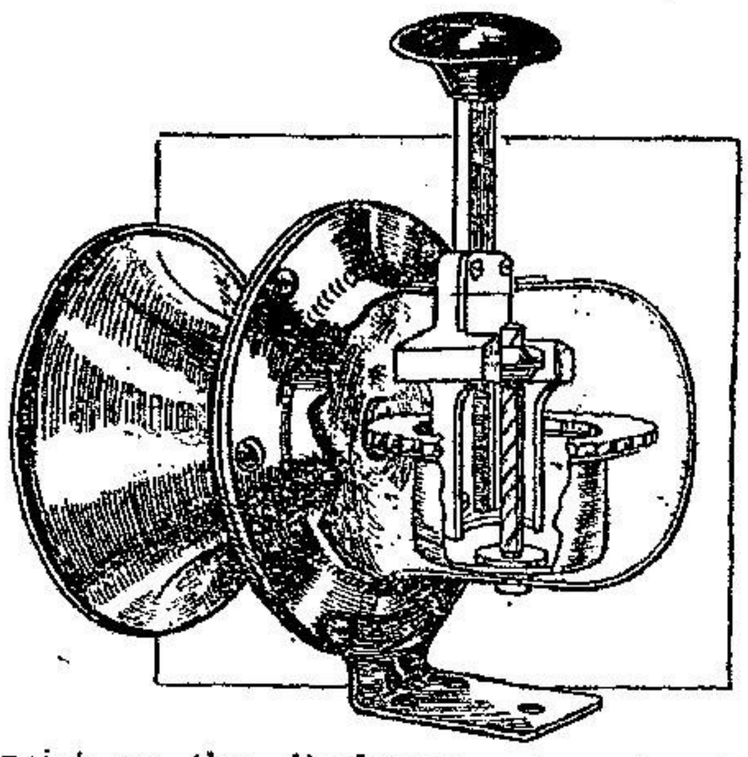
Mechanical Horns.—

the lower portion of which there is a rack which engages with a train of highly geared wheels, which cause the teeth of the sound cog wheel to hit against the contact point of the diaphragm. Both this and the Long Horn belong to the same type, as the rapid depression of the plunger causes the wheels to rotate for some little time, with the result that a prolonged note is produced in this manner. Yet another interesting feature is the lubrication system, as a squirt of oil given through the lubricator finds its way into a cup, whence it reaches, by means of pipes, the three principal bearings. (Messrs. The Klaxon Co., 1, King Street, St. James's, S.W.)

THE DUNHILL.—Curiously enough, the Dunhill mechanical horn works on very much the same principle as the Sparton, in which an Archimedean screw is em-



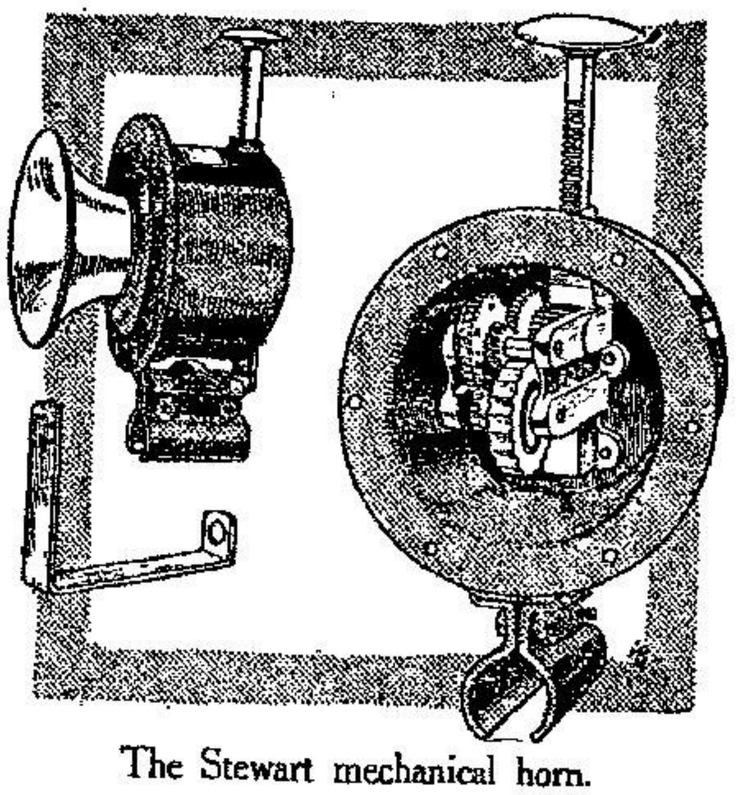
ployed. On the handle being depressed, a threaded arm passes down the Archimedean screw, causing the drum on which the teeth are cut to revolve rapidly, these in turn come in contact with a



point on the diaphragm. A spring is employed to return the handle to its original position after being depressed. (Messrs. Alfred Dunhill, Ltd., 359-361, Euston Road, N.W.)

The STEWART HORN is an excellent one of very much the same type as the Klaxon, and in this also a train of wheels is set in motion by pressing down a rack, while the sound is produced in very much the same manner as in the Klaxon. In all the horns under review the note can be to some extent varied by adjustment of the contact point on the centre of the diaphragm, and to facilitate this the manufacturers of the Stewart supply a special tool which greatly aids this operation. In the case of some horns the whole bell mouth portion has to be removed before adjustment can be effected. (Messrs. The Cooper Stewart Engineering Co., Ltd., 11, Broad Street, Bloomsbury, W.C.)

A study of these horns is by no means uninteresting. The leader, of course, was the electric Klaxon, which produces much the same effect by means of an electric motor. The original Klaxon, however, has been unrivalled as a road clearer, but such a system would be unwieldy on the average motor bicycle, consequently the mechanical horn has proved to be a very good substitute. No one can say that the noise it produces is calculated to promote good feeling between the motor cyclist and the pedestrian, though the latter may often be glad of its existence. He is a curious person, is the pedestrian. He hops out of the way and glares at you angrily after trying to throw himself under your front wheel, and yet, had it not been for the raucous note of the mechanical horn, he would probably have been rolled into the gutter. The note the mechanical horn produces is raucous and penetrating, and it owes its popularity solely to the fact that it can be heard a long way off, and above other street sounds in dense traffic. Many are now being used by both Navy and Army throughout the country, and their penetrating sounds may be heard calling road users to make way in "the King's name."



The Stewart mechanical horn.

Royal Engineers (Signal Section).

Central Office Announcement concerning Recruiting of Despatch Riders.

TO obviate the difficulties and unfairness which were inevitable under the old system of recruiting motor cyclists for the Royal Engineers, and in order to ensure that all qualified men should have a fair opportunity of enlisting in the Motor Cyclist Section R.E. throughout the United Kingdom, instructions have been issued by the newly constituted Central Offices, of which the following is an extract:

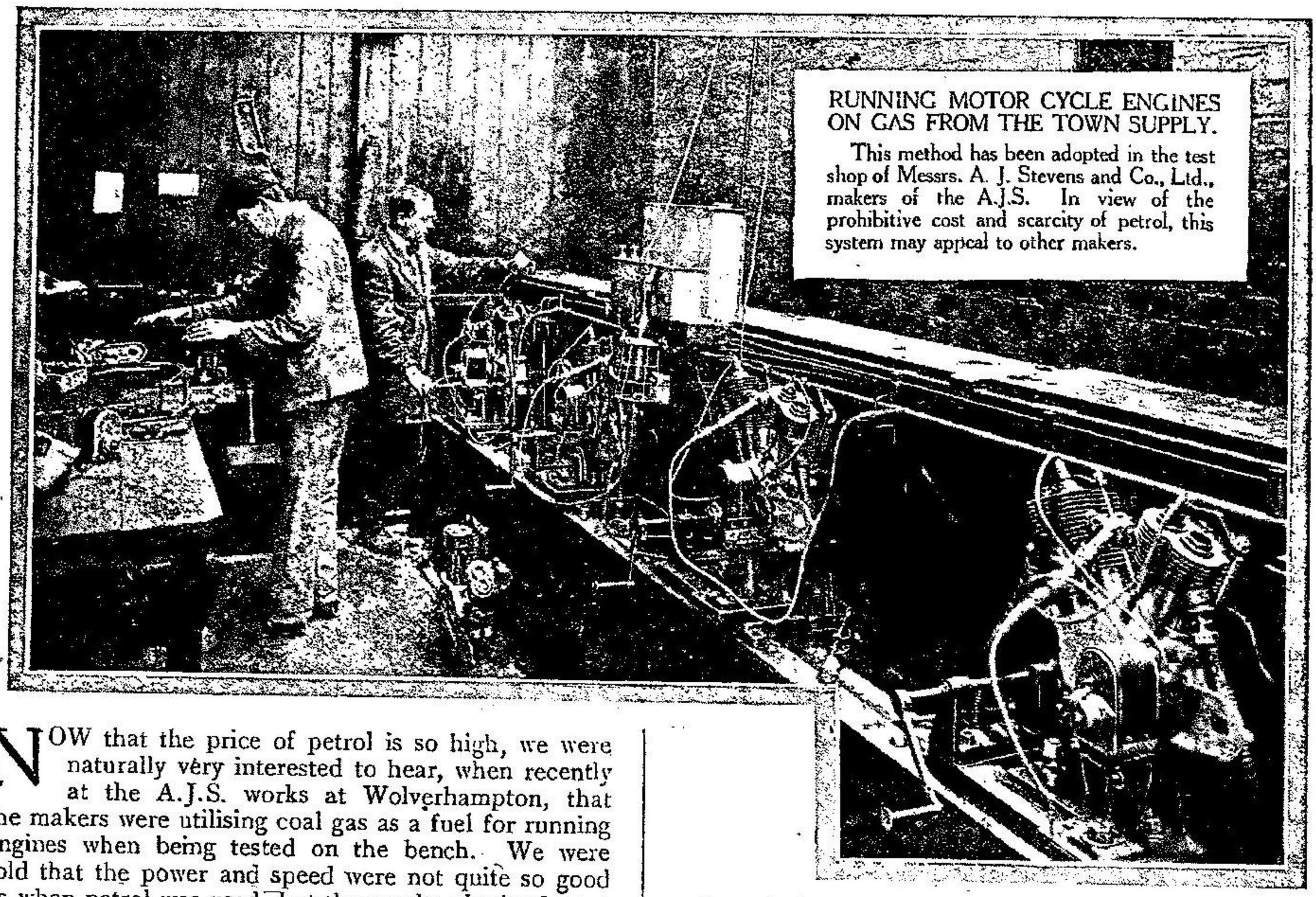
"Every man examined and found to be qualified for registration on a waiting list should be attested and passed into the Reserve (Group System). Such men should be supplied by the secretary of the local Motor Cyclist Reserve Committee with a certificate stating that they have been approved as suitable candidates for the Motor Cyclist Section R.E., which certificate should be handed to the Recruiting Officer by the candidate at the time of attestation. The Central Office must be informed of the number of the group in which each man on a waiting list has been attested, and in allotting vacancies will include as far as possible all men of those groups then under notice of joining. If any man receives a notice to join under the Group System before being called up by the Central Office, the M.C.R. Committee secretary should immediately advise the Central Office, and endeavours will then be made to enlist him forthwith in the Motor Cyclists' Section R.E. If for any reason this is impossible, the Central Office will communicate with the secretary of the local M.C.R. Committee, requesting them that the latter should apply to the R.O. to have the man relegated to a later group. The Central Office should be informed of the result of such application. Further, to assist the Central Office in allotting vacancies, candidates should be classified as regards *(a)* experience, *(b)* education, *(c)* physique. Instructions as to how to carry out this classification have been issued, and candidates of the three highest classes will be called up in preference to those of inferior classes, but only subject to the rule as regards taking men of early groups having been complied with.

Belt transmission for twins.

Artificers.

"About one in ten recruits should be qualified to serve as artificers. Such men should have at least two years' experience in the motor cycle trade, and should be capable of undertaking turning, brazing, and fitting operations."

PETROL ECONOMY.



RUNNING MOTOR CYCLE ENGINES ON GAS FROM THE TOWN SUPPLY.

This method has been adopted in the test shop of Messrs. A. J. Stevens and Co., Ltd., makers of the A.J.S. In view of the prohibitive cost and scarcity of petrol, this system may appeal to other makers.

NOW that the price of petrol is so high, we were naturally very interested to hear, when recently at the A.J.S. works at Wolverhampton, that the makers were utilising coal gas as a fuel for running engines when being tested on the bench. We were told that the power and speed were not quite so good as when petrol was used, but the results obtained were quite satisfactory, as the comparative results were much the same, while the saving of trouble and mess was quite considerable.

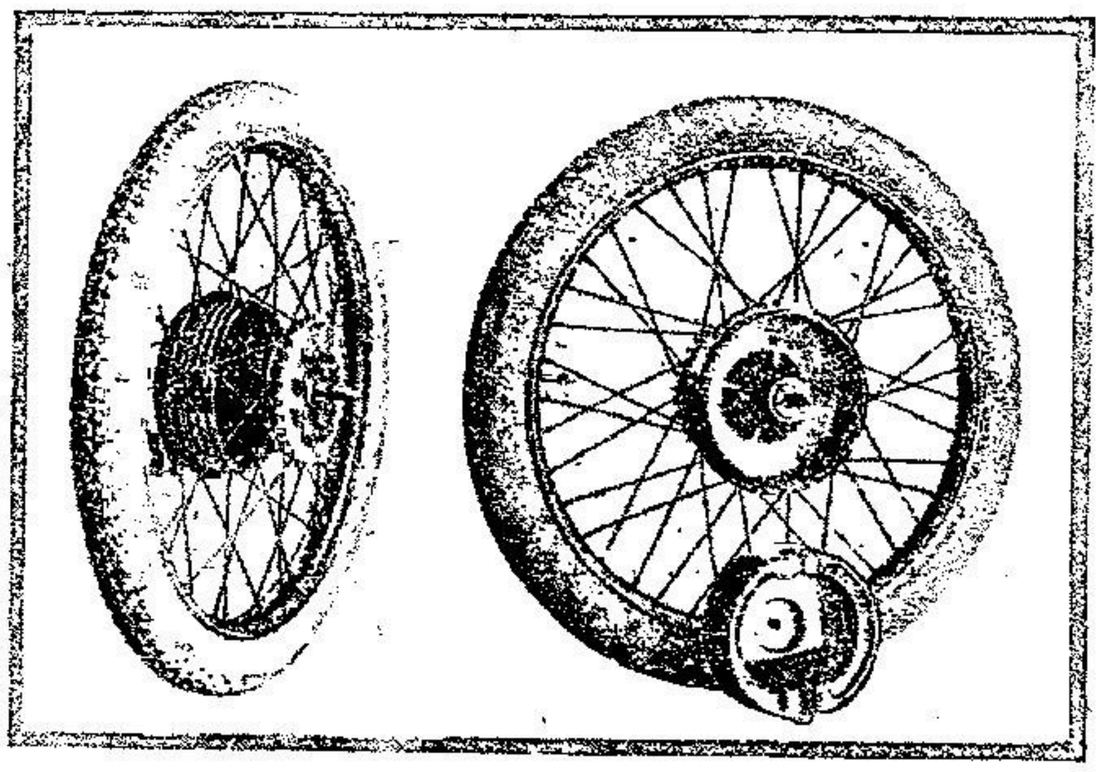
The method of supplying the gas is simple in the extreme. A large main gas supply pipe runs along the back of the test bench, and small branch pipes are taken off and lead direct to the engines. At the induction pipe entrance a bunsen burner attachment is fitted up, so that the quality of the mixture can be adjusted when necessary, while the speed may be varied by turning on or off the gas supply.

At first the gas was introduced directly into the ordinary carburetter. This worked quite satisfactorily but was not quite so convenient as the present arrangement. The engines show no signs of overheating, and start quite satisfactorily on the gas. We saw two engines running in this manner, one a 2¾ h.p. single, the other a 4 h.p. twin, and both appeared to run with perfect regularity.

AN A.B.C. IMPROVEMENT.

FEW firms are more up-to-date or progressive than A.B.C. Motors, Ltd. They have succeeded in producing one of the most ingenious and original, and at the same time practical, machines at present on the market, and only an excess of Government work prevents their supplying these to the public.

The latest development is the introduction of a new type of hub which contains two internal expanding brakes working independently, one of which is actuated from the handle-bar and the other by the pedal. The brake drum forms part of the hub, and thus the tendency to unscrew that arises with screwed-in brake drums is avoided. The brakes are made of a cast aluminium alloy, lined with Raybestos and provided with hardened steel plates where the cams make contact. It will be noticed that the brake drum is ribbed so as to assist cooling. Another point of interest in connection with this hub is that two separate and distinct transmission shock absorbers are fitted.

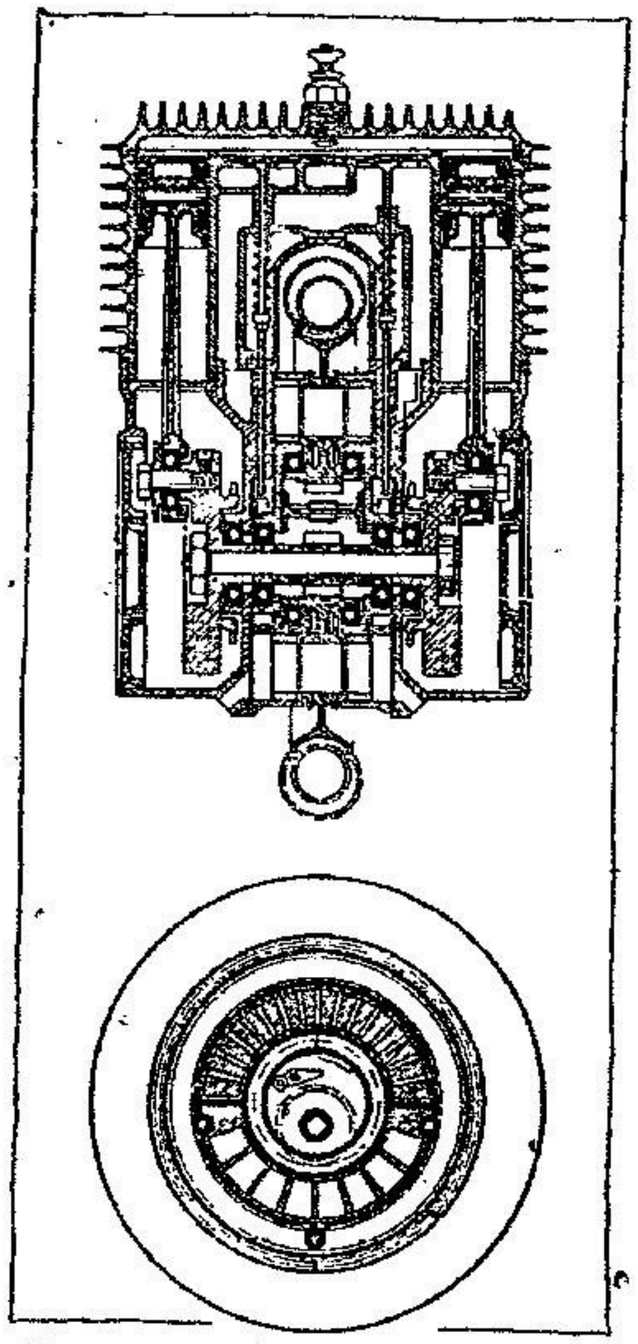


A.B.C. brake drum. The left view shows drum and sprocket in position, while that on the right shows the drums detached and the manner of their working side by side.

A MOTOR SKICYCLE.

A Natural Development of the Child's "Scooter."

THE child's skicycle or scooter has long ceased to be a novelty, and has taken its place among the child's regular playthings, but any attempt to propel the toy by motor power takes it ont of the reach of the average junior, and we are afraid that this invention will not obtain the popularity its forerunner had.

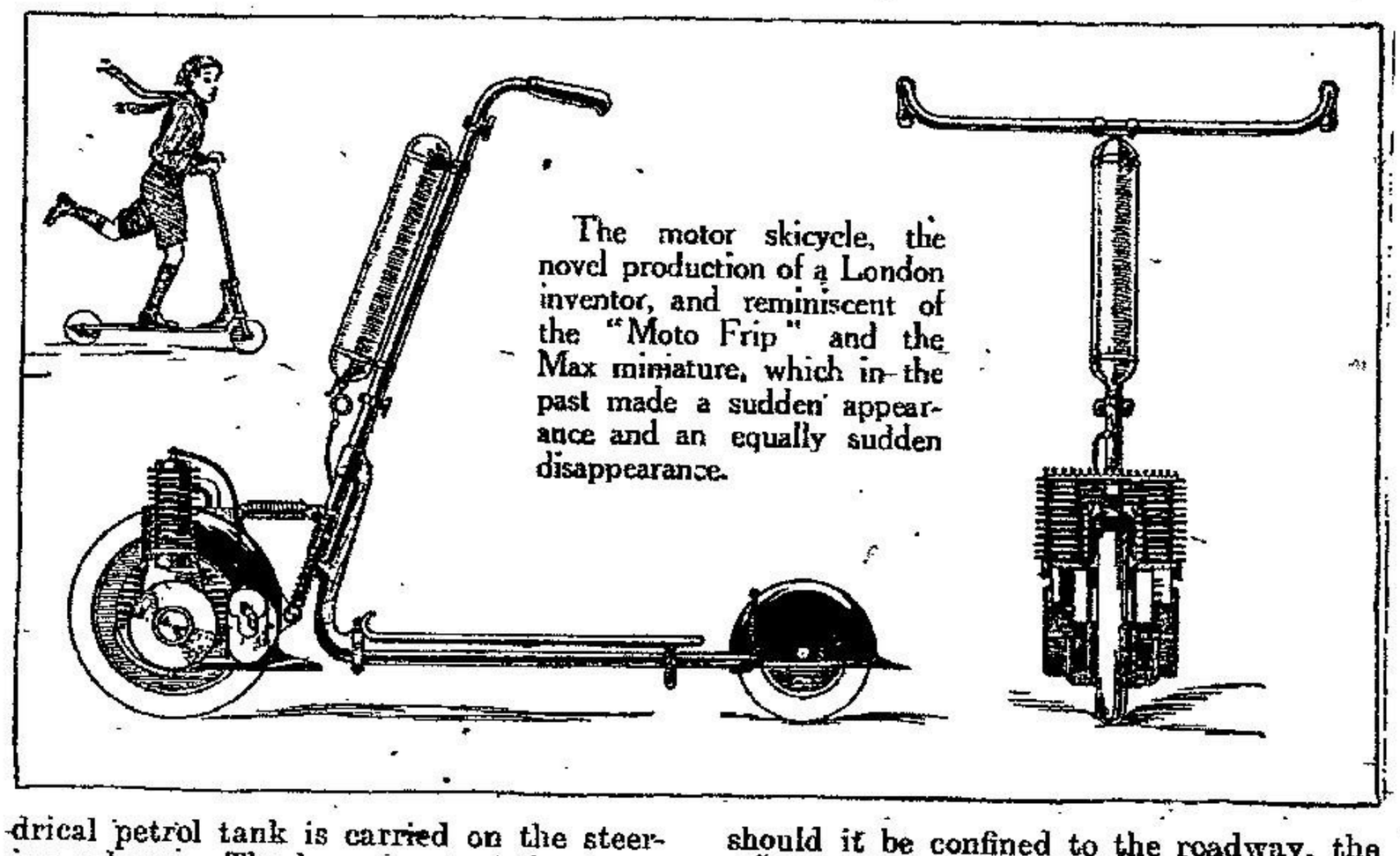


Cross section of the twin-cylinder engine and wheel, and also section through the wheel showing the turbine-like flanges through which the exhaust gases pass

Mr. Joseph Maina, of Brixton, London, is responsible for this novelty under patent No. 7,056, 1915.

He has incorporated the power unit, consisting of a twin four-stroke engine, *en bloc* with the front wheel. The two cylinders are placed vertically on either side of the wheel, and drive by a reducing gear on to the axle. Simultaneous firing by one plug in a combined compression space tends to simplicity. We presume the magneto is geared off the axle, but ignition, carburation, and lubrication details are not clear in the patent drawings.

The principal departure from the ordinary is the endeavour to utilise the exhaust to give extra power. The escaping gases are directed through vanes in the centre of the front wheel after the manner of a turbine, the intention being to add impetus to the already driven wheel, but we believe this idea has been experimented with before, and has proved to be a fallacy. The frame is similar to the usual skicycle, with refinements in the springing arrangements. A cylindrical petrol tank is carried on the steering column. The lower part of the frame is to be made to fold over alongside of the front wheel for easy storage.



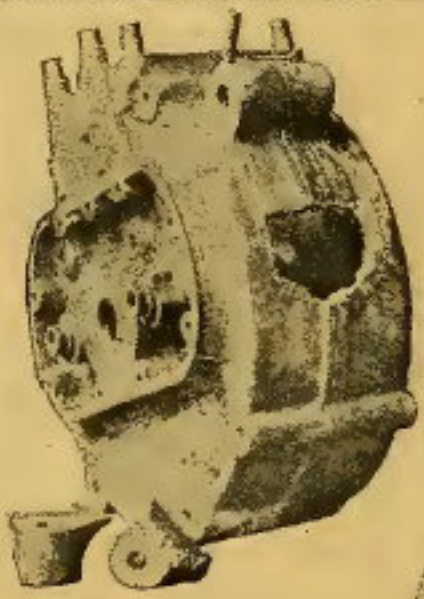
The motor skicycle, the novel production of a London inventor, and reminiscent of the "Moto Frip" and the Max miniature, which in the past made a sudden appearance and an equally sudden disappearance.

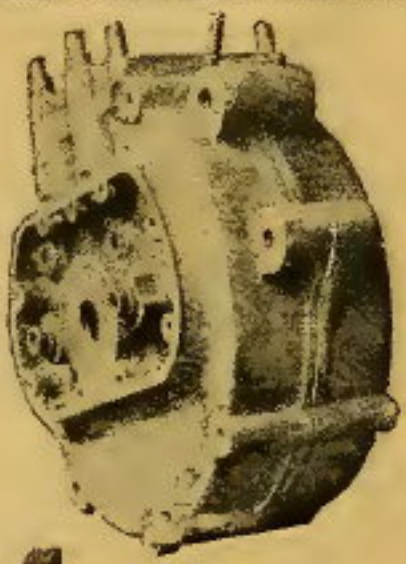
Generally, the machine may be said to be efficiently designed, with the exception of the use of the exhaust to aid propulsion, but we are very dubious of it coming into public use.

It would be unreasonable, and even dangerous, to allow a juvenile free use of such a machine on the pavements, and, should it be confined to the roadway, the child runs a grave risk of being killed by other faster vehicles. No idea is given in the patent specification of the approximate size of the machine or the h.p., and even if constructed large enough for an adult it cannot be ridden in a standing position with any degree of comfort; but it is a distinct novelty, and any further developments on these or similar lines will be awaited with interest.

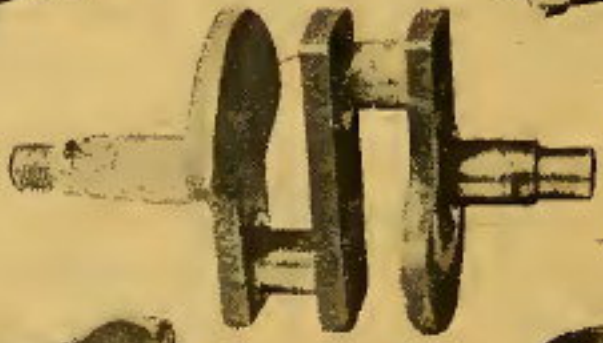
WOUNDED SOLDIERS' SIDECAR RUN IN THE NORTH MIDLANDS.

A party of soldiers from the Hooton Hall hospital were taken for a run to Worksop and the Dukeries, the picture showing the start. The organiser was Dr Pycroft, and many local sidecarists assisted in making the outing a success.

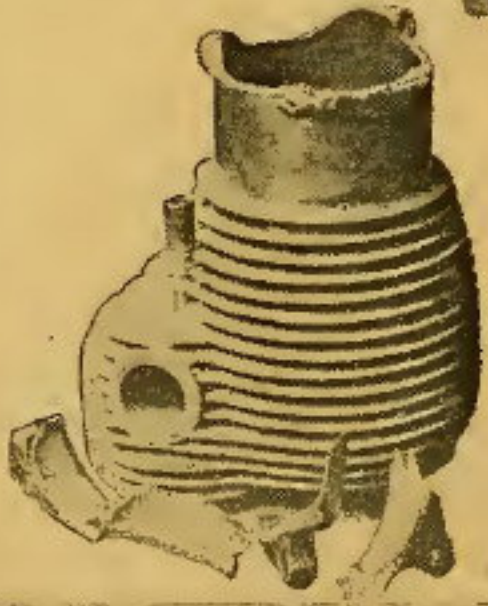


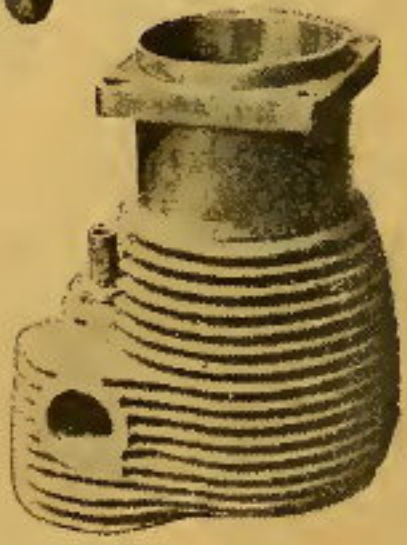


A crank case minus a lug, and the repair on the right.



A damaged keyway, which can be made like new by the oxy-acetylene process.





SOME TYPICAL BARIMAR REPAIRS BY THE OXY-ACETYLENE WELDING PROCESS.

The lower views show that even the base of a broken cylinder can be rebuilt.