January - June 1918

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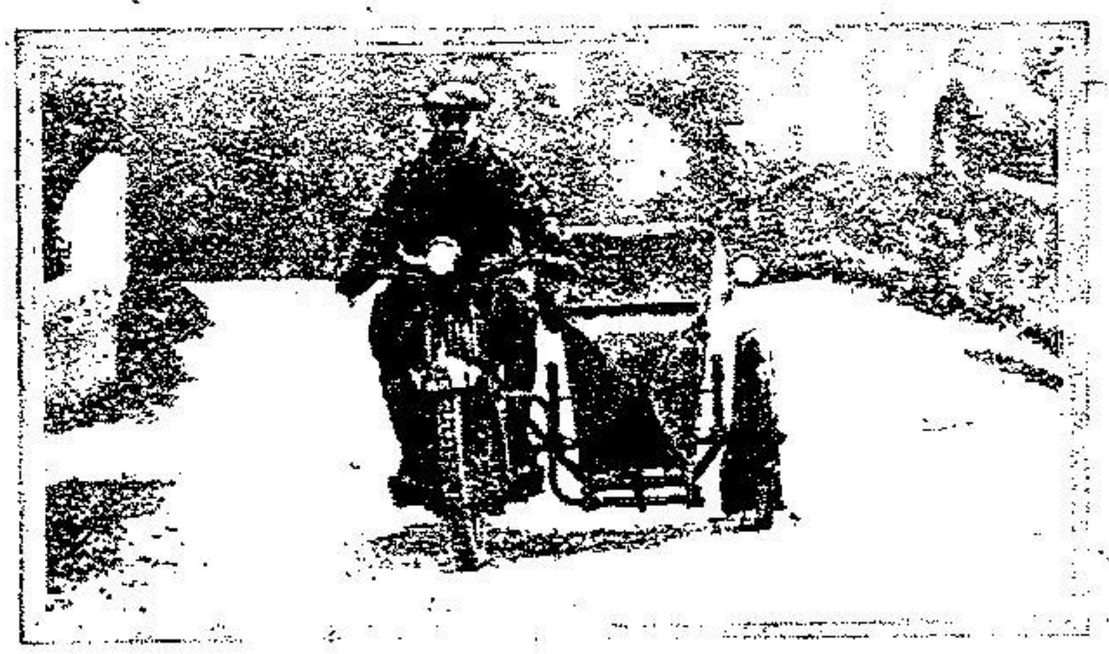
Iliffe & Sons Ltd., London and Coventry.

THE FIRST 1000 MILES on a MILITARY MODEL A.J.S.

Notes on the Running of a Popular Outfit.

EVERYONE knows that the A.J.S. is not a speed merchant's mount. With its sidecar attached, it is as fast as most riders require, pulls well on hills, is delightful to control, and requires no attention whatever. The aim of the makers has been to obtain absolute reliability, weatherproofness, and tractability—to produce a thoroughly serviceable mount which will meet with the thorough approval of riders of ordinary engineering ability. A noble attempt has been made at efficient mudguarding, and, except in the vilest of winter weather, one keeps spotless. When the roads are a-swill, however, nothing short of leg shield will keep one clean on any mount, and even with the A.J.S. sensible front wheel mudguard a certain amount of splash blows back on to the knees of the rider.

On first taking delivery of the new machine sundry carburetter adjustments, described later, were necessary ere it began to shed its lethargical attitude towards anything in the way of hard work. Then came a long run to the West of England and back, taken pretty well all out with a veritable rhinoceros and his luggage in the sidecar. This had the desired effect of freeing things up, and the engine began to take a new interest in life. Though its maximum is about 42 m.p.h. on the level, it will hold an average of 32 m.p.h. without great effort. In other words, and in common with one or two mounts of similar type, the A.J.S. is a slow machine on a short journey, but a fast machine on a long journey!



The military model A.J.S. on which the 1,000 miles test was accomplished.

"I have always regarded the A.J.S. as rather under-engined for a heavy sidecar mount, but what it lacks in actual c.c. it makes up in what one might term "general pluck." No matter how hard and difficult the going, it is ever ready to get off the mark on its top gear immediately the severity of the conditions relents in the least degree, and normally it possesses a surprising degree of ginger in tackling gradients. The only time at which one becomes conscious of the engine being slightly on the small side is when carrying an extra heavy passenger in the sidecar. Every pound over 10 stone begins to tell on the gradients, whereas with an engine on or about the 1,000 c.c. mark it makes no perceptible difference to the road speed whether the passenger be 10 stone or 14 stone.

A 30 jet is used in the Amac carburetter, which is tuned for high "revs" and sturdy pulling rather than economy and a slow tick over, yet with passenger the petrol consumption usually centres about 78 m.p.g.

It may be added that, immediately after the ride to the West of England, the cylinders and pistons were carefully gauged, and were found to have retained their rotundity, the back cylinder being perfect, while the front was so slightly out of truth as almost to defy observation.

As turned out by the makers, the carburetter is fitted with a neat aluminium hot air intake, drawing its supply through the front cylinder fins. This is doubtless a wise provision, especially as the machines were designed for use in Russia, but a hot air intake on an air-cooled engine inevitably detracts from the

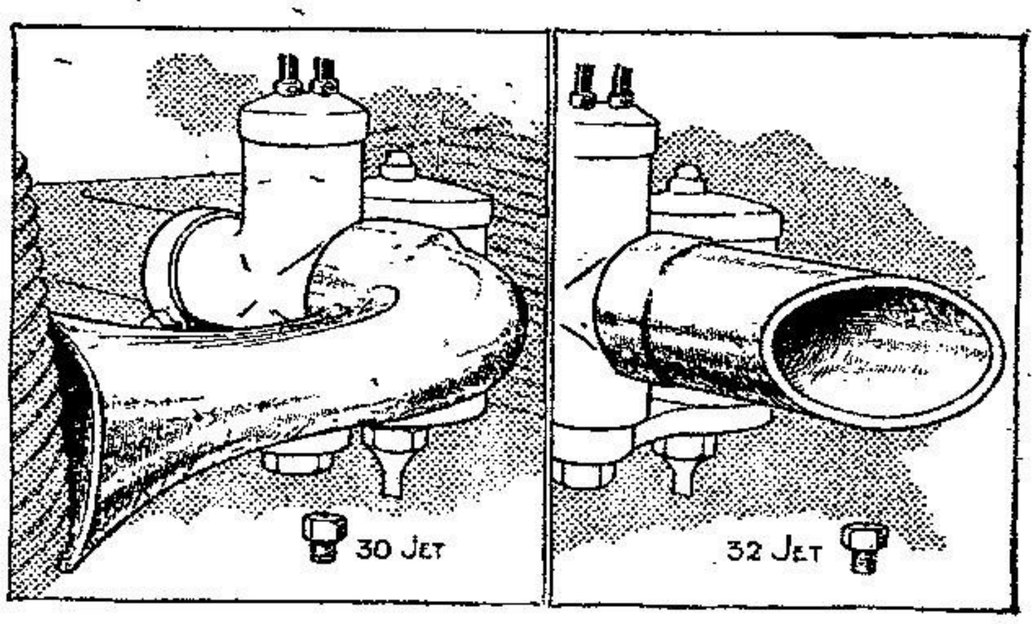
The First 1,000 Miles on a Military Model A.J.S.—

"revving" capabilities of the engine. This particular one was fitted internally with a double thickness of gauze, the disc being of rather narrow diameter, with the result that it simply did not admit sufficient air for high revs.—what little it did admit being expanded by the heat. The volumetric efficiency of the engine was thus knocked down, though by employing a small jet one could obtain marvellous petrol consumption and a beautifully slow tick over.

This, then, accounted for the sluggishness of the engine in delivery tune, and was possibly a state of affairs wisely arranged for the benefit of the hairy Cossack. I pulled out the gauze, and at once discovered that the engine would take no air at all. The next obvious thing to do was to fit a larger jet, and the thirty gave good results with the hot air intake fitted. When in a skittish mood I removed the hot air intake, fitted a rubber scoop to the main air supply, substituted a thirty-two jet for the thirty, and pulled out the two little extension pipes from the silencer. Result—colossal kick!

It may be added that in tuning a carburetter, petrol level must be considered in conjunction with the size of jet used.

The engine has proved conveniently indifferent as to the fuel it consumes. On No. 2 petrol it invariably starts second kick after flooding. On half substitute and half petrol it is necessary to flood twice and kick four times. On one occasion I was reduced to paraffin with the merest smell of petrol—and that on a frosty night. After flooding six times and kicking sixty-two times, I induced a wayside watchman to lend me some of his coffee to pour over the induction pipe, after which the first kick did it.



(Left) The A.J.S. hot air intake, which, used in conjunction with a thirty jet, gives ordinarily economical running. (Right) By fitting a rubber hose air scoop and using a larger jet more power and higher revs. are obtained.

A Mudguarding Indiscretion.

Though the chain cases permit a reasonable degree of accessibility, which is further added to by the system of interchangeable wheels, I cannot speak very highly of their weatherproofness. Recently, after a spell of abnormally muddy weather, the kick-starter threatened to strike work, so I removed the front cover to investigate. To my surprise both chains were dry of oil, while the front chain was literally wallowing in a stiff solution of mud and water—conditions infinitely worse than those to which a totally exposed chain is subjected. A considerable accumulation of stiff mud, through which the clutch sprocket had ploughed a groove, was removed from the inside of the cases, which were then washed out as well as possible, and a pound of stiff grease inserted.

This state of affairs was found to be mainly owing to an indiscretion in the design of the rear wheel mudguard—a point quite out of harmony with the general detail care and thoroughness exhibited in most minor points. The wide rear wheel mudguard overlaps the chain case, so that at the point at which they come in contact the torrent of mud from the inside of the guard naturally drains itself on the top of the case—and at its most vulnerable point—the thin slush percolating through the chinks and the joint through which the left chain stay emerges. The lip of the front chain case cover fits outside instead of inside, so that mud and water contrive to get through it, and at the top of the cover is a small recess in which quite a spacious puddle is free to collect, duly draining itself through the joint.

The more one has to do with chain cases the more convinced does one become that the only variety that warrants its existence is the cast aluminium type. However, by bending the guard so as to divert the stream of mud inside the case, the trouble referred to has practically been eliminated.

It is customary in these days to lubricate the chains by the overflow from the engine, but for some reason the A.J.S. people have eschewed this system. With a chain-cum-belt drive it certainly has its defects, but I see no objection to it when all enclosed chains are used, and the system tends to safety in the hands of the ordinarily forgetful rider. With the A.J.S. it seems to me the best plan is to cram handfuls of stiff grease through the observation holes at regular intervals, trusting that centrifugal force will keep the clutch plates fairly clear.

Features of the Military Model.

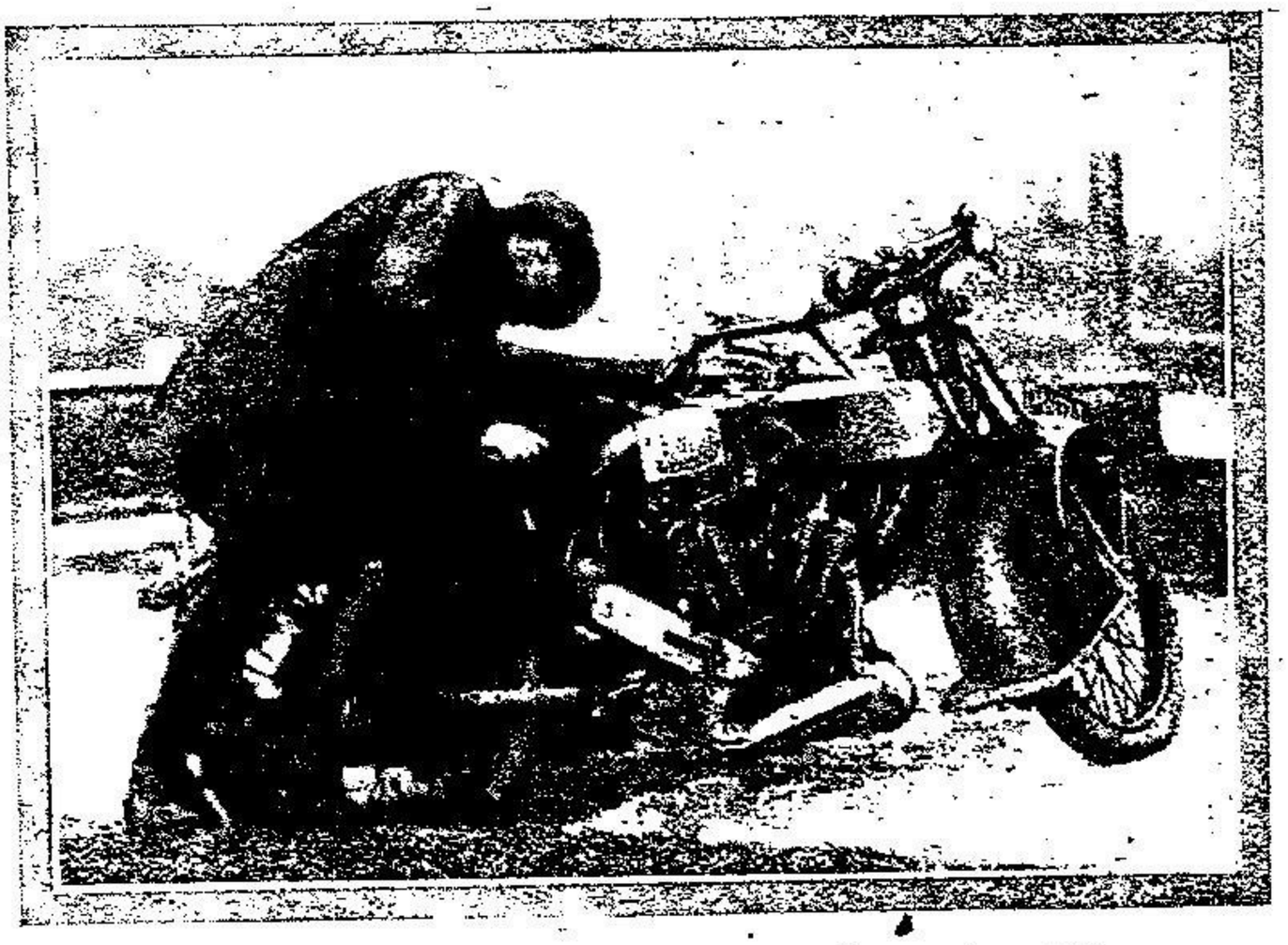
The mount is, of course, a Russian military model, having the increased ground clearance, 700 × 80 mm. tyres, and long magneto drive laid down by the Russian specialists. The last point is simply a polite way of asking for trouble in the direction of a slack magneto drive and worn bearings. The A.J.S. design was the result of a decade of experience, and one cannot help but feel that the authorities responsible for the change might have done well to consult the opinion of firms who knew their business before forcing them to undertake radical alterations in design. The increased ground clearance is a good point in this case, as it does not hinder the speedy removal of the cylinders, but, in company with the large, squashy tyres, it renders the machine rather an unpractical proposition for solo use. Coventry possesses a highly efficient brand of grease of its own, created by the incessant flow of traffic necessary for the distribution of thousands of copies of *The Motor Cycle* and its sister journals, and riding the A.J.S. solo over the tramlines proved an undertaking eminently suitable for contortionists and acrobats.

The large wheels and tyres are, however, a huge acquisition over present-day roads. One can ride fast over the potholes without experiencing the least discomfort, the spring forks functioning excellently, and with sidecar attached the propensity towards sideslip does not matter in the least. The rear brake of the A.J.S. is rightly famous.

The First 1,000 Miles on a Military Model A.J.S.—

The engine of the A.J.S. is remarkably silent, both as regards valve mechanism and exhaust. There is none of that deafening valve clatter at high speeds common with many twins, and when throttled down in traffic the engine runs like a Rolls-Royce. It is a highly desirable type of mount for every class of rider who delights in smooth running, reliability, and an absolute no-trouble mount. The clutch is one of the kindest I have handled. It is difficult, indeed, to obtain anything but a smooth engagement, and being adjacent to the rider's hand it can be utilised as a shock absorber at low speeds.

It will be recalled that the A.J.S. people abandoned the use of the engine-shaft friction shock absorber (fibre to metal) on account of the fact that they discovered its correct adjustment caused more trouble to "the average rider" than its existence warranted. This may have been a wise step, but at the same time there is no getting away from the fact that a friction shock absorber is highly desirable with a positive transmission, and though on wet roads its necessity is not felt, the drive is inevitably harsh without it on dry roads. The idea of using the clutch instead is perhaps simple, but it must be borne in mind that one generally forgets to use the clutch till the snatchiness of the drive warns one to do so, by which time the worst snatches have probably been delivered and the necessity of a shock absorber is diminishing. Moreover, it is not a difficult matter to arrive at a spring friction shock absorber which requires no adjustment whatever—is, in fact, unadjustable.



Adjusting the carburetter. The picture prompts the question which many sidecarists have put, "Why are parts which need adjusting placed on the inaccessible side of the machine?"

The Thomson-Bennett magneto is a fine instrument, which contributes largely to the characteristically easy start obtainable. The engine will start even when so stiff that one can hardly kick it over compression, and on coal gas can be throttled down to a scarcely audible tick.

The Mills-Fulford "Corvette" sidecar is comfortable and well sprung—an excellent piece of work which demands only a spring luggage grid. The windscreen first fitted got rather into the way of the wide semi-T.T. bars, so it was removed, whereupon we discovered that with the hood erected the passenger was much better sheltered without the screen than with it. In fact, it was a doubtful blessing at any time, the hood fully meeting requirements in wet weather, and it may be added that the sidecar rides much more comfortably with the hood erected than with it down—the hood steadying the rebound. This points to the desirability of yet another friction shock absorber.

A Ward and Goldstone accumulator lighting set was installed, but since this has already been fully described it may be passed by with the comment that it has proved entirely satisfactory, and gives sufficient light for war-time requirements. The Bonniksen speedometer is an excellent instrument of infallible accuracy. It registers the exact m.p.h., even when one is pushing the machine across the yard into the garage, while it is a huge advantage at high speeds to enjoy the facility of reading an absolutely stationary needle, which hits the mark and stays there for a few seconds, till its place is taken by its neighbour.

A Few Candid Criticisms.

It will be recalled that in the latest model A.J.S. a truly triangulate frame construction is employed, and this excellent feature necessitates the flat-topped tank with its cleanly exterior, there being no top bar under which dirt and oil can collect. Incidentally, no petrol gauge is necessary with this type of tank; when only half a gallon is left it gives off a faint base rumble, which I have mistaken for an aeroplane passing near, and as the supply sinks to a quarter-gallon the sound is reminiscent of a boy scouts' band in the far distance.

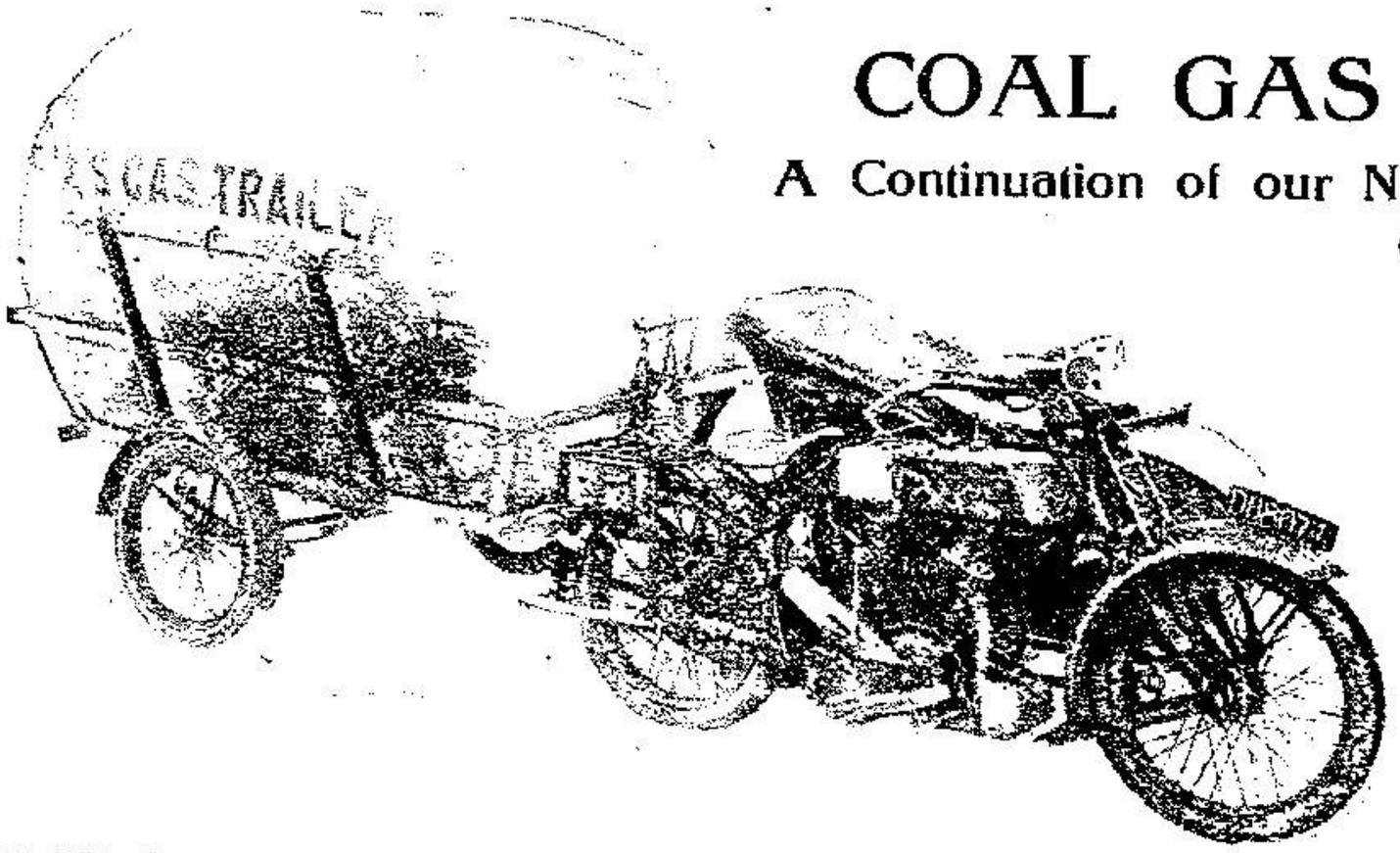
I have no intention, and there is certainly no need, to sing the praises of this world-renowned machine, so now for a few criticisms. The foot plates are a shade too far forward for long-distance riding, with the result that one acquires the habit of sitting with one's instep on the elevated heel, which is bad for the instep, and worse for the side of one's boot, which is constantly chafing against the jagged points of the clutch-operating mechanism. No doubt by curling one's foot in a special way one can avoid the mishap, just as, I have heard, one can drink paraffin without nausea by curling one's tongue in a special position, but—why drink paraffin?

War-time tank stoppers leak enough petrol to run an Auto-wheel, and, as for war-time toolbags——! But the A.J.S. is a thoroughly sound mechanical job, the workmanship and design being of the highest order, and obviously the result of long experience among practical riders and engineers—facts which are perhaps proved by the high second-hand value these machines maintain—a sure indication of the public attitude towards them.

CHINOOK.

COAL GAS IN PRACTICE.

A Continuation of our Notes based on the Daily Use of Coal Gas.



THE 6 h.p. A.J.S. motor cycle on which we are conducting our experiments with coal gas is badly in need of decarbonisation. With petrol as fuel a distinct "pink" is emitted with each opening of the throttle, and the condition of things is gradually becoming worse, but with coal gas, on the other hand, a decided improvement is noticeable, owing to the increased compression caused by the deposit. We have, accordingly, adopted a simple method of varying the compression to suit the fuel. For running on petrol a solid brass ring is placed under the exhaust valve caps, the ring being $\frac{1}{8}$in. deep, and machined to assure a gastight joint, so that by raising the cap the compression space above the piston of each cylinder is increased in area, thus eliminating the knock. Before switching over to coal gas the rings are removed, and the caps screwed down on their copper and asbestos washers in the ordinary way.

Incidentally these distance pieces are very useful to any rider, as by their use one is enabled to postpone the necessary evil of decarbonising, while they save the engine considerably when a sidecar is occasionally attached to a mount not intended for that purpose.

We should imagine a Scott two-stroke would yield excellent results with coal gas—provided the gauzes were kept perfectly clean so as not to interfere with the volumetric efficiency of the engine.

In muddy weather the gasbag becomes thickly plastered with mud on either side, a constant cascade being thrown by the cycle and sidecar wheels. This accumulation naturally causes excessive chafing of the canvas at the points where it touches the carrier frame, while the repeated saturations will not tend to improve the gas-retaining properties of the fabric. Similarly, the trailer wheel bearings are subjected to an incessant shower during wet weather, and very soon become full of water and grit unless repeatedly packed with grease. We have been compelled to fit both the machine and the trailer with wide mud interceptions, consisting of flaps of linoleum and American cloth, or the life of the gas container would have been a short if merry one. Though these fitments do not improve the appearance of things, one might as well go the whole hog when towing a gas trailer and drop all thoughts of appearance.

A Non-stop Run.

Recently an extended business trip enabled us to test the road capacity of the bag on a non-stop run. We left Coventry with the container fully inflated, and the first ten miles on a good open road with a strong cross wind was covered in twenty minutes, which may be taken as comparing very favourably with petrol. Also very little gas was used.

At this point, however, we were compelled to leave the main road and proceed by little-frequented byways, abnormally heavy with mud deposited by farmers' carts from the fields, and against a powerful wind. Our speed at once dropped down to an average of 20 m.p.h., which may be taken as 5 m.p.h. slower than would have resulted from petrol. Also our consumption went up enormously, and at the end of twenty-three miles it was necessary to recharge the container. This yields a result equivalent to 46 miles per gallon on petrol, while under similar conditions, with that fuel, we have never obtained less than 58 miles per gallon.

Though when running normally the engine does not overheat, its weary flogging becomes somewhat monotonous under continuously perverse conditions. If much gear changing is done the consumption goes up at an alarming rate, and it is found profitable to stick to top gear, for no amount of continued slogging causes the engine to "pink." It will climb almost anything on top gear at its own speed, while the rider can doze in the saddle, unharassed by the necessity for niceties of mixture or delicate fingering of the clutch.

A Starting Tip.

Discounting the equipment necessary for its use, coal gas as a petrol substitute is very much preferable to the paraffin makeshifts, as, given a correct mixture, no difficulty is obtained in starting, and no knocking or other disconcerting symptoms accompany its use. Pressure feed systems will need to be very delicately applied, however, for it is an easy matter when cranking round the engine to flood the cylinders with gas, in which case it is impossible to obtain a start till the engine has been turned over a few times with the exhaust valve lifted and the gas turned off, thus completely getting rid of the old charges. With the container fully inflated and feeding a supply under slight pressure, we have, on many occasions, experienced the utmost difficulty in starting.

GAS FOR MOTOR VEHICLES.

Use for Essential Purposes only.

THE Board of Trade announces that, with the concurrence of the Petroleum Executive, it has been decided that the use of gas for motor vehicles is to be brought under the same regulations and restrictions as the use of motor spirit. It is stated that the reasons for this step are the serious position resulting from the deficiency of tonnage and the probability that circumstances may arise at any time which will require the further reduction of the supplies of petrol available for civilian purposes, and the urgent necessity of reducing to the absolute minimum the expenditure of labour and materials for other than war purposes. Its object is to provide that, to the extent that gas may be available, it shall be used only for essential needs in substitution for petrol, with the object of reducing the consumption of the latter wherever practicable and of conserving stocks.

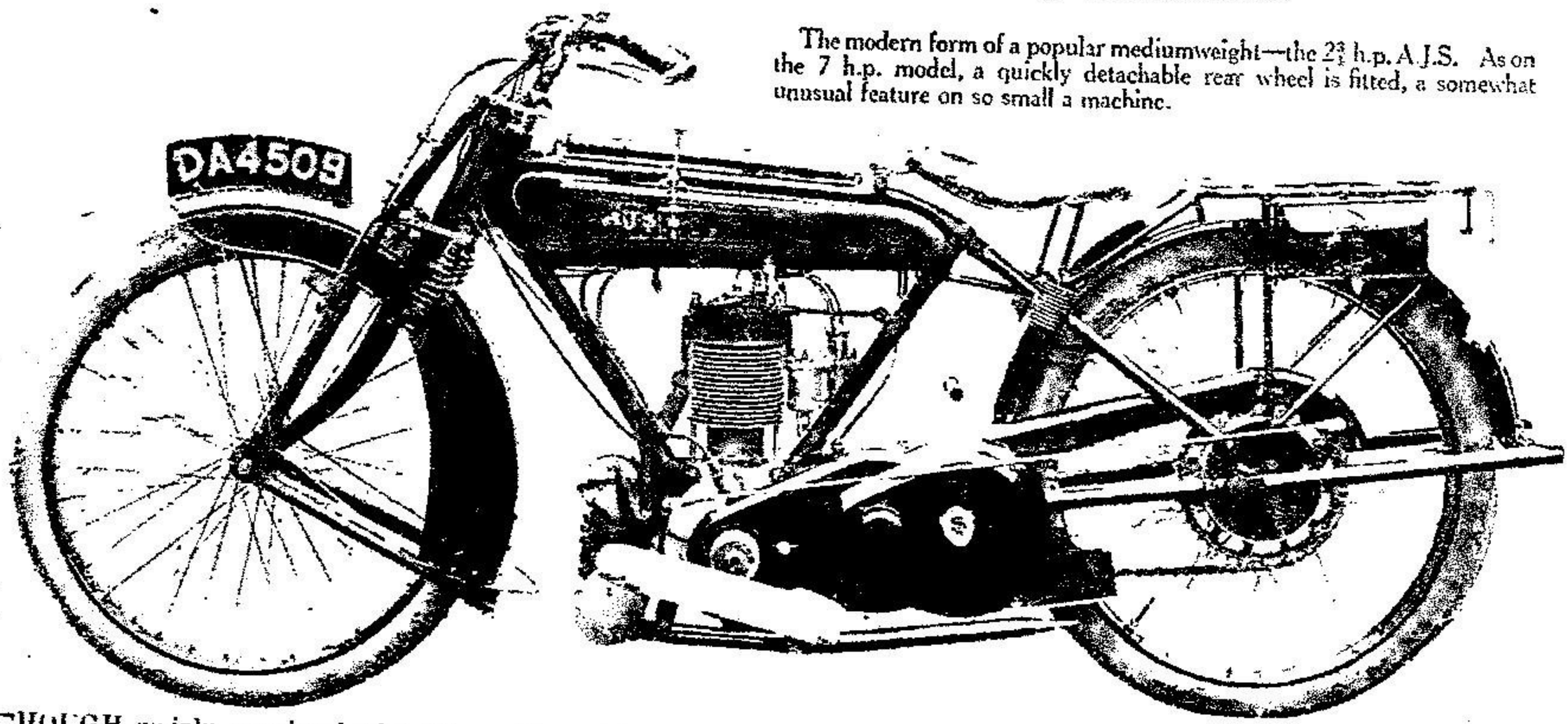
It is recognised that a certain number of vehicles have already been fitted for the use of gas, and, wherever possible, permits will be granted in these cases to enable such vehicles to be used for essential purposes, as indicated by the Motor Restriction Order. It is not intended to prohibit the use of gas for motor vehicles in so far as, subject to other considerations, it may be available, nor to license the quantity that may be purchased, but only to confine its use to the purposes stated. The best methods of the adaptation of gas for driving motor vehicles and questions relating to the safeguards against any danger attending its use are the subject of investigation by Mr. Walter Long's Committee on Gas Traction.

It is proposed to issue shortly a new Order consolidating and amending the present Motor Spirit Restriction Orders, and the regulation of gas will be dealt with in a new Order, also to be issued in due course.

A Medium-powered Three-speed Solo Mount.

The 2¾ h.p. A.J.S. Reintroduced with Many Refinements.

The modern form of a popular mediumweight—the 2¾ h.p. A.J.S. As on the 7 h.p. model, a quickly detachable rear wheel is fitted, a somewhat unusual feature on so small a machine.



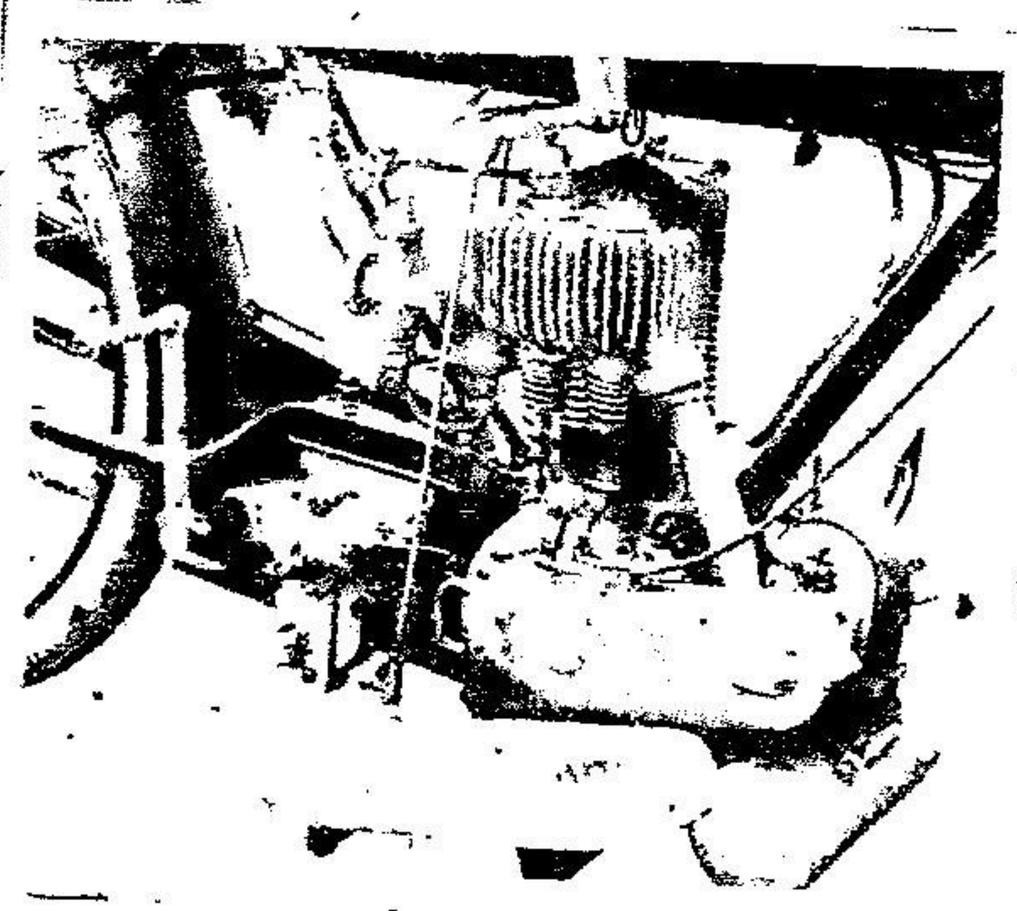
THOUGH mainly associated with sidecar machines, the magic letters A.J.S. have figured largely in all speed events since last spring. The overhead valve 2¾ h.p. type which won the 1920 Junior T.T. has earned a wonderful reputation for speed, and was the first motor cycle of under 350 c.c. to accomplish a speed of 80 m.p.h.

Many of our readers also will remember the highly successful pre-war 2¾ h.p. A.J.S., and it is this machine, incorporating all the refinements acquired by experience in other fields, which is now being introduced to the public.

Roller Bearings.

The engine, a single-cylinder of 74×81 (349 c.c.), is a typical A.J.S. production, and closely resembles half a 7 h.p. engine. A detachable head is, of course, retained, and the clamping bar is fixed to a "steady" bolted to the saddle tube. Roller bearings are used throughout the crankshaft; and the back of the magneto chain case is cast with the timing gear cover plate.

Chain drive is employed throughout, a three-speed gear box with dry plate clutch and powerful kick-starter being neatly housed in the bottom bracket. Incidentally, this gear box is provided with a screw adjustment for chain tension of sensible proportions. A simple coil spring shock absorber is fitted on the engine shaft.



The cylinder dimensions of the new A.J.S. lightweight engine are 74×81 mm. (349 c.c.). Note the "steady" to the cylinder head.

The frame is a neat and very steady piece of work, the top tube being slightly sloped and dropped at the rear end. Contrary to the practice employed on the 7 h.p. model, the tank is not of the saddle type. Druid forks and a saddle pivoted to the top tube and supported from the carrier are used. The finish is excellent.

Weather Protection.

Both front and rear mudguards are sensibly proportioned, and the former is widely splayed behind the forks so as to provide ample protection. The front chain is almost completely enclosed, and the rear chain is protected over the top run, while the lower run is shielded from any mud which might drop from the tyre.

Footboards covered with thick rubber pads and a silencer which is both large and efficient complete a very workmanlike specification, and we feel sure that the 2¾ h.p. A.J.S. in its latest form will fill the very large demand for a well-made "go anywhere" medium-powered machine.

A short run round convinced us that its capabilities do not fall short of its appearance, but we will defer further comment till we have thoroughly tried out the new model on the road.

ROAD CONDITIONS.

THE A.A. has issued a series of maps showing roads particularly to be avoided, and, in some cases, alternative routes. It is emphasised that these maps do not show every road in poor condition.

Under the classification of "Roads to be Avoided" are the following:

NORTH-WESTERN COUNTIES.—Kendal to Shap (first eight miles), Kendal to Kirkby Lonsdale,—Doncaster to Boroughbridge, Pocklington to Beverley, Doncaster to Barnsley.

NORTH-EASTERN COUNTIES.—Newcastle to Brampton, Newcastle to Otterburn.

MIDLAND COUNTIES.—Northwich to Holmes Chapel, Northwich to Warrington, Birmingham to Wolverhampton, Coventry to Nuneaton.

EASTERN COUNTIES.—Downham Market to Ely, Downham Market to King's Lynn, Norwich to Bungay.

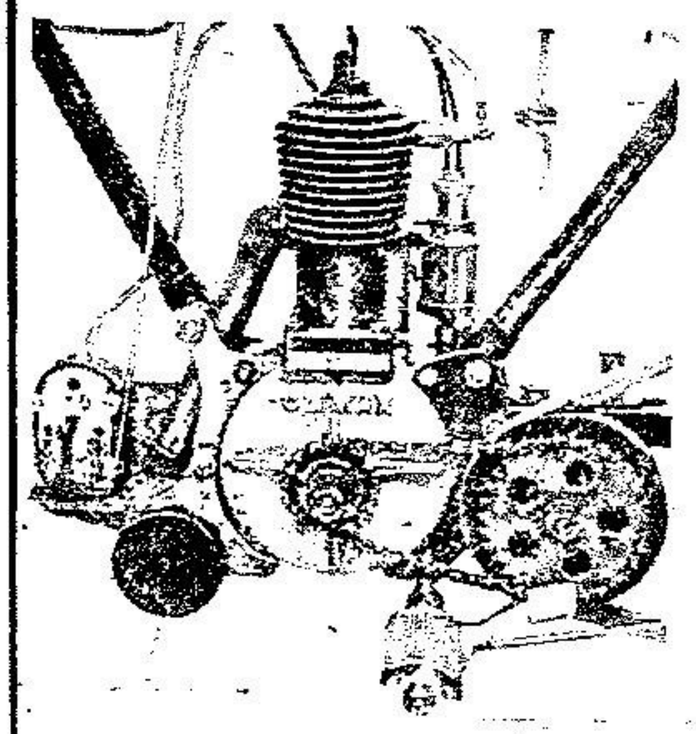
WESTERN COUNTIES.—Bath to Radstock, Bath to Chippenham (first six miles), Yeovil to Shaftesbury, Shaftesbury to Wilton, Barnstaple to Ilfracombe.

HOME COUNTIES.—Chelmsford to Burnham, Colchester to Mersea, Hastings to Eastbourne.

In Scotland, Argyllshire, Caithness and Sutherland possess a majority of bad roads; while around Stirling, also, practically every route is out of condition.

Motor Cycles for the T.T. Race.—
structions to abstain from heroics and o demonstrate rather that a standard model lightweight could survive the race t a creditable speed.

The Climax engine (70×76 mm. = 292 c.c.) s unique amonget marketed two-strokes in aving inside flywheels, and its staying ower was shown at Brooklands not long go in successful attempts on the long istance lightweight sidecar records.



2½ h.p. Climax two-stroke engine in the New Comet; it has a built-up crankshaft and inside flywheels.

New Comet T.T. machines are identical th the standard models sold to the blic; they have similar engines, frame d fittings, and as made they are appre-bly lighter than the minimum weight quired of machines entered in the T.T. ces, and may thus have to carry ballast less it is decided to use a three-speed ar. At the moment of writing, how-er, the standard two-speed box is on e machine.

EATURES OF THE A.J.S

ERHAPS one of the most fancied chances for the Junior event is the A.J.S. team. For the 1920 race firm had had but little time to get overhead valve engine in trim, but er a year's experience on road and ck, little weaknesses have been elimi-ed, and the machine has been martened up" considerably. H. R. ries' hour and two-hour records on

Deep radiating fins and machined cylinder ribs are outstanding features of the T.T. A.J.S.

Brooklands last week will also do much to make the A.J.S. a favourite.

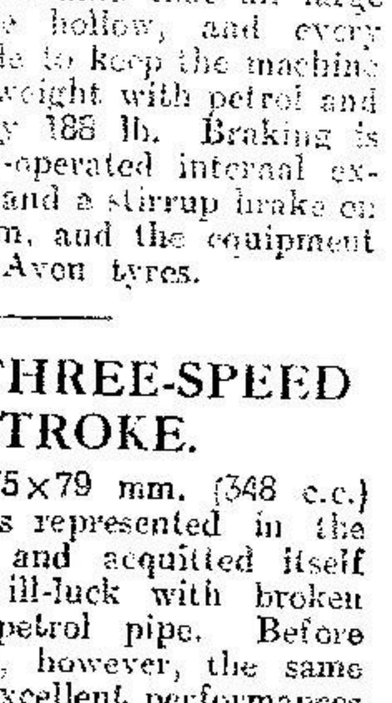
The overhead valve engine, having a bore and stroke of 74×81 mm. respectively, is retained for the forthcoming race, but has been modified in detail. A new cylinder head with improved cooling is fitted, the head being held down by a steel strap as before. Vertical ribs of considerable depth are used, and even the valve guides have ribs machined on them.

Quite an unusual amount of care has been expended on the manufacture of the cylinder, the fins of which are rough-turned and ground. Both cylinder and head are then copper-plated, and finally blacked. Four very narrow rings are fitted to the light steel piston, the piston itself being machined all over both inside and out. A very light hollow gudgeon pin serves to connect the piston to an extremely sturdy H section connecting rod.

Plain Bearings.

With the exception of the double row roller big end, plain bearings are employed throughout the engine, the crank axles and pin being attached to light steel flywheels, which have ample clearance in the crank case.

Lubrication is effected by a foot-operated pump, which delivers oil to the cylinder from a tank behind the saddle tube, the main tank being a container for fuel only, and an Amac carburetter fitted with a special extra air valve supplies the mixture.



A novel type of filler cap fitted to the A.J.S. mounts.

Transmission is by ½×¼in. chain throughout, the crank case release pipe serving to lubricate the primary chain. A standard clutch and three-speed gear box (but without kick-starter) supplies the necessary ratios, which are approximately 4⅞ to 1, 6 to 1, and 9½ to 1.

Fitted with Druid forks, the frame is very neat and light, and we are informed that the steering is as near perfection as possible. It is noticeable that all large diameter bolts are hollow, and every effort has been made to keep the machine light. The actual weight with petrol and oil amounts to only 188 lb. Braking is provided by a foot-operated internal expanding rear brake and a stirrup brake on the front wheel rim, and the equipment includes 26×2½in. Avon tyres.

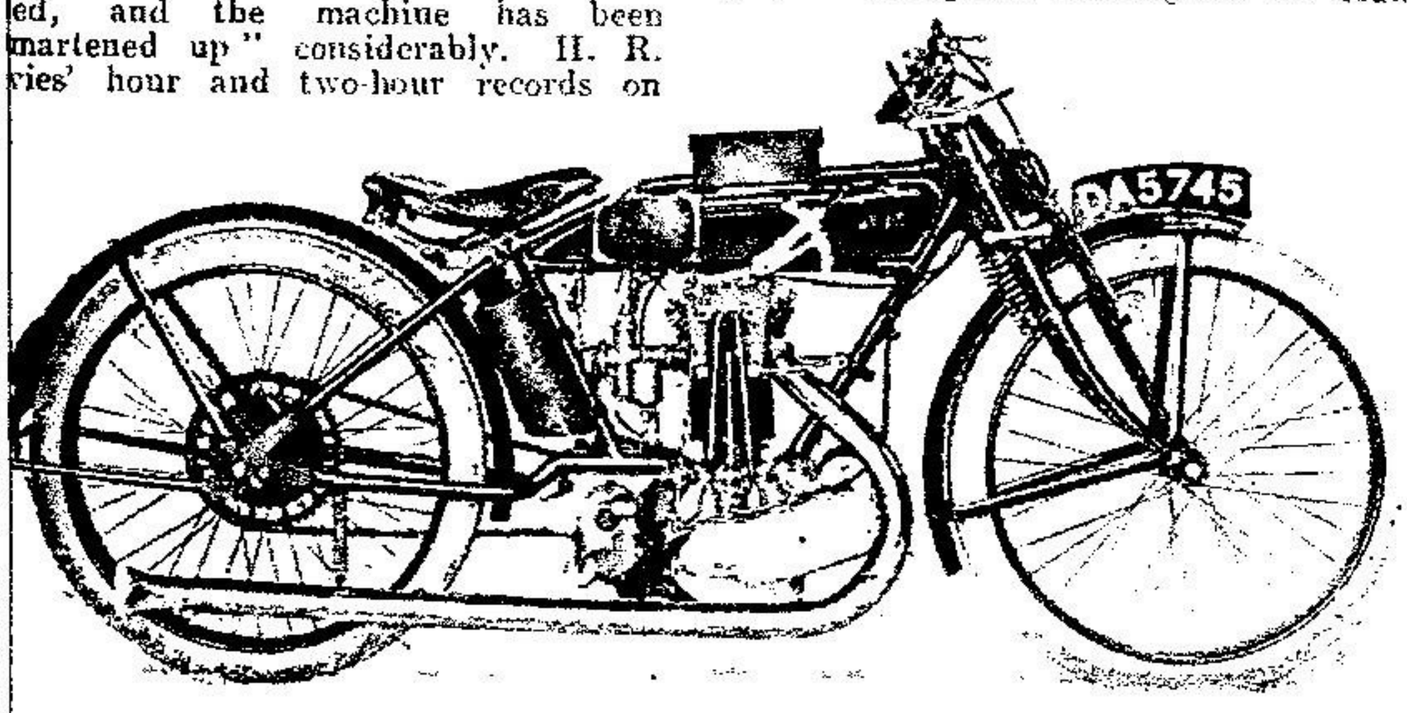
3 h.p. IVY THREE-SPEED TWO-STROKE.

LAST year the 75×79 mm. (348 c.c.) Ivy engine was represented in the Isle of Man, and acquitted itself creditably, despite ill-luck with broken tank fittings and petrol pipe. Before reaching the public, however, the same engine made some excellent performances on the Old Wyche road at Malvern, making twenty-five non-stop ascents of the famous 1 in 2.9 hill solo, and fifteen climbs with sidecar. We ourselves have subjected these engines to some gruelling tests, and have found them to stand up to indefinite hard driving. All this being so, it is not surprising that the seven machines prepared for this year's races are equipped with absolutely standard engines.

Handle-bar Operated Oil Pump.

The machines throughout are absolutely on standard lines, the tanks alone being slightly larger than those used ordinarily, and a handle-bar operation being adopted for the plunger of the Best and Lloyd drip-feed pump. Profiting by previous experience, special precautions have been made to secure the tank, which, in addition to the normal top rail clips, is steadied beneath by a flat strip of spring steel, enclosed in a leather sheath.

Chain transmission throughout is employed, and an Enfield shock absorber is used in the back hub. Special Sturmey-Archer three-speed boxes, with clutch, but less kick-starter, are fitted to all the machines except one. The exception is equipped with a new Moss three-speed gear box, made by the famous gear specialists, the Moss Gear Co., Ltd., of



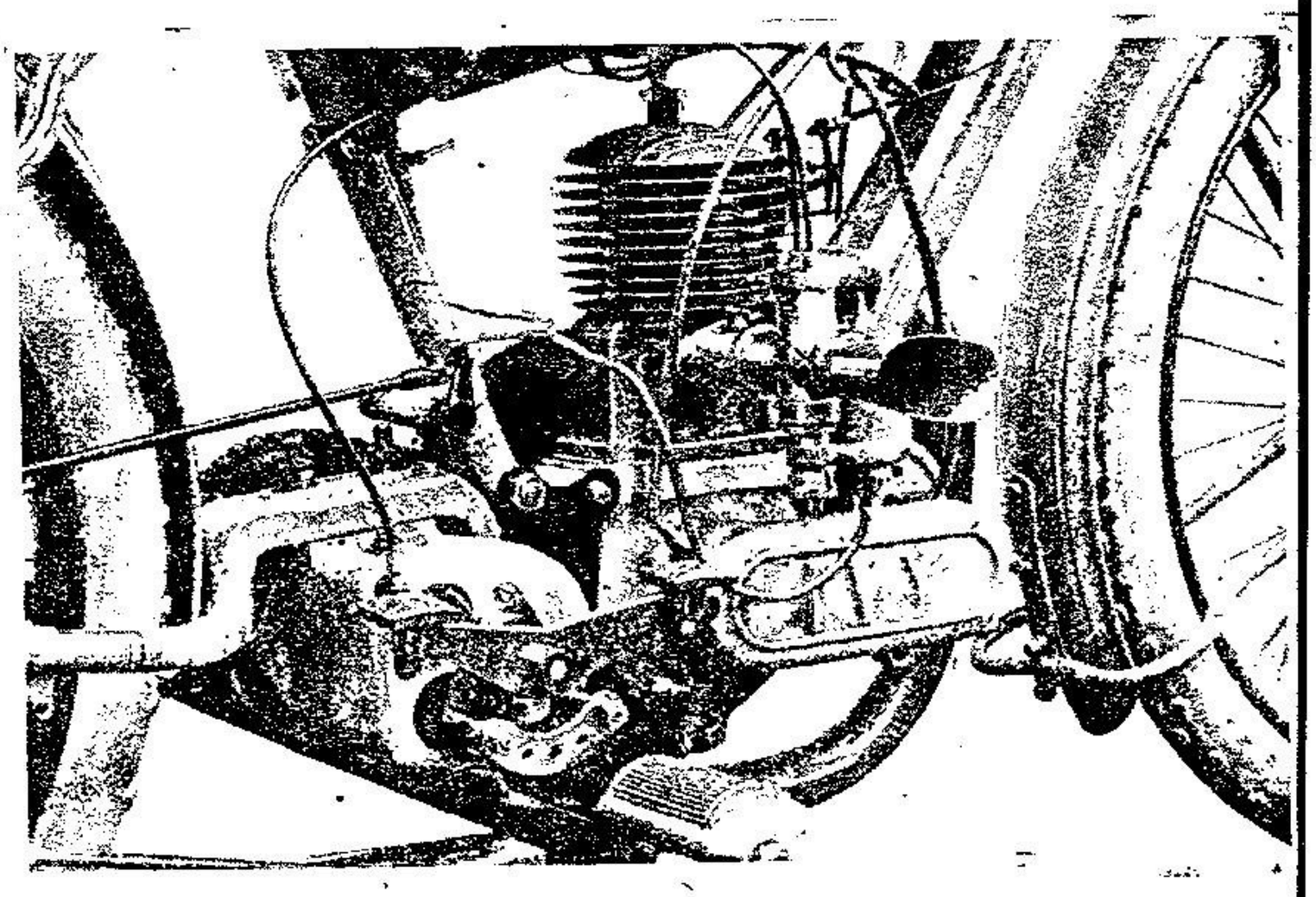
the 1921 T.T. A.J.S. has very pleasing lines. It is very similar to last year's model, but has been lightened and smartened up considerably.

Motor Cycles for the T.T. Race.—

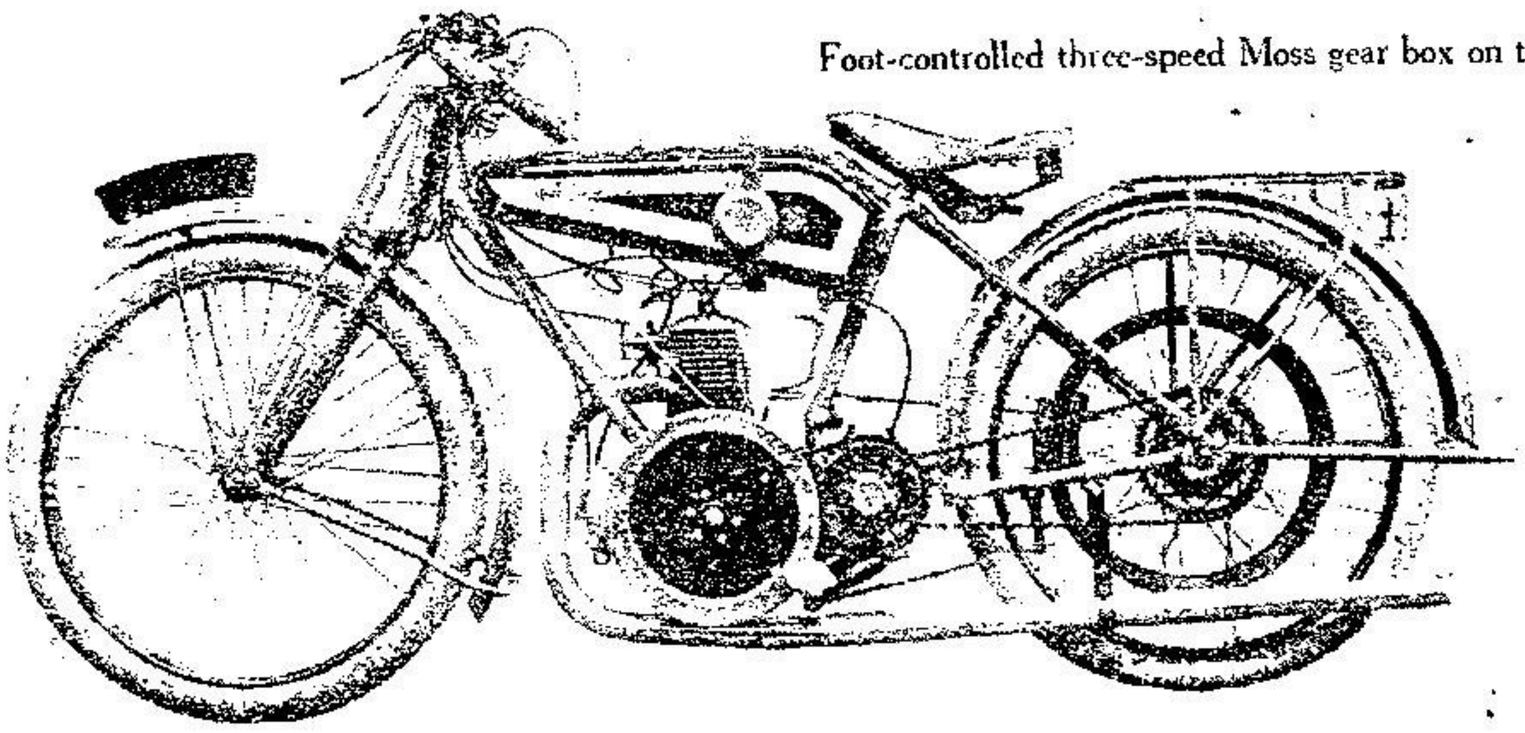
Birmingham. On this particular gear the operation is by rocking pedal, so that the rider does not need to remove his hands from the handle-bars under any circumstances. An alternative form of hand control may be fitted if desired, but for racing purposes the foot operation has undoubted advantages.

Two brakes are fitted on the Ivy machines, one operating on the inside and one on the outside of a dummy belt drum on the back wheel. Both brakes are worked by heel pedals fitted below, but clear of, the footrests. The gear ratios are at present 4, $5\frac{1}{4}$, and $6\frac{1}{2}$ to 1, with $26 \times 2\frac{3}{8}$in. tyres.

In the Island the Ivy stable will be in the charge of Howard C. Newman, so well known in pre-war speed events as "Ivy" Newman. His tuning abilities which gave him prominence then will be devoted to all the Ivy machines, which may be expected to make a consistent performance. A noteworthy feature of these machines is that nothing has been scamped; they are fitted with front stands and carriers, and the finish is excellent.



Foot-controlled three-speed Moss gear box on the 3 h.p. Ivy which will be ridden by N. Norris.



3 h.p. Ivy machine, with chain drive and three-speed gear, for the Junior T.T. The engine will pull a 4 to 1 top gear.

NEW T.T. LIGHTWEIGHT BREAKS RECORDS.

Success of the 350 c.c. o.h.v. A.J.S.

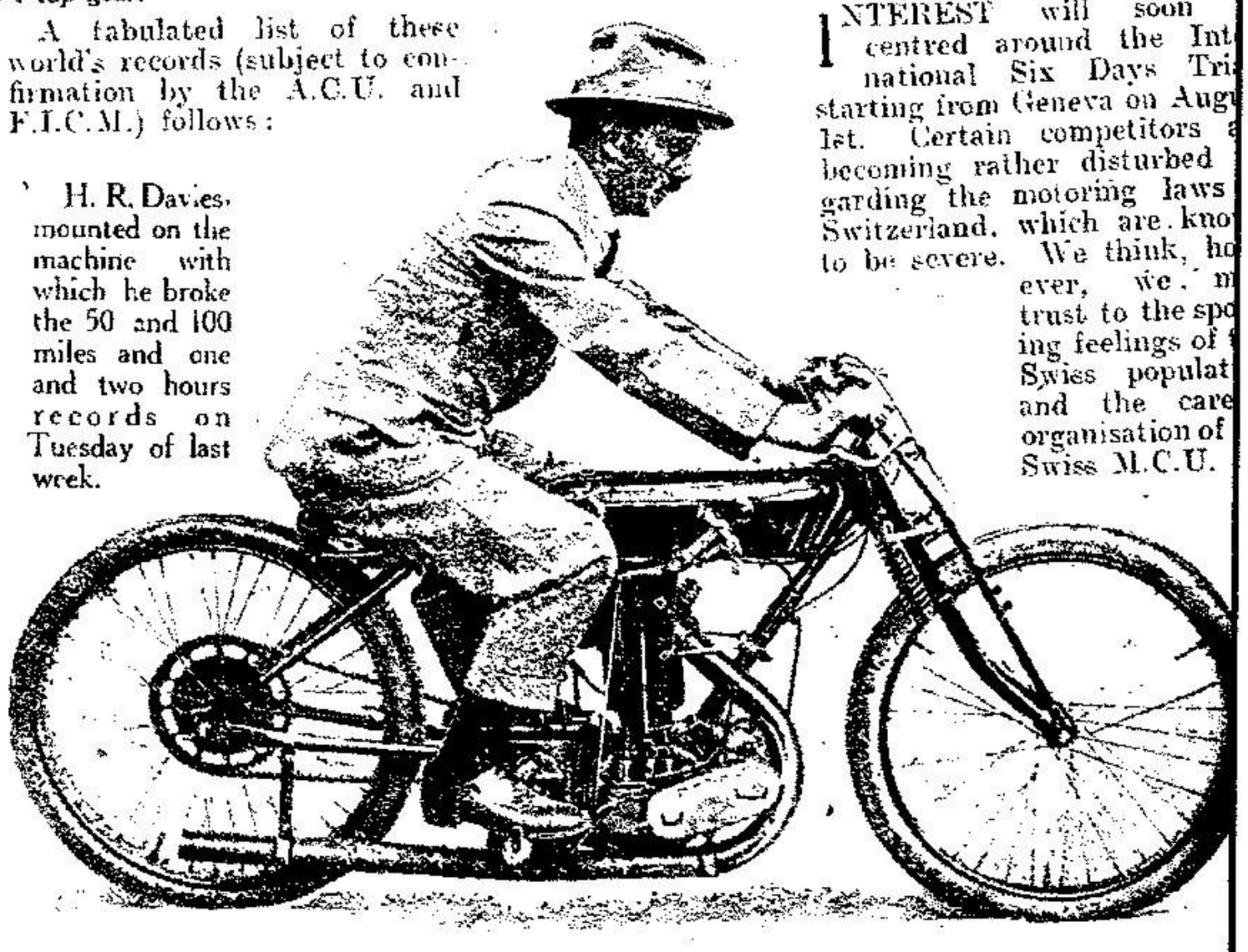
AT Brooklands on Tuesday, the 24th ult., H. R. Davies, on a $2\frac{3}{4}$ h.p. T.T. A.J.S. (very similar to the machines described elsewhere in this issue), successfully raised the hour record in the 350 c.c. class to 66 miles 162 yards. This record has been held since November, 1920, by Tudor Thomson, who covered 63 miles 696 yards on a $2\frac{3}{4}$ h.p. Douglas.

The A.J.S. was also successful in lowering the class times over the fifty and hundred miles distances and in beating the two-hour record, averaging a 3-4 m.p.h. greater speed than the previous bests.

G. E. Stanley ($2\frac{3}{4}$ Singer) has held the fifty miles record, and Hugh Mason ($2\frac{3}{4}$ N.U.T.-Jap) the hundred miles and two-hour records, both since July, 1913.

Added merit attaches to Davies's performances on account of the fact that his ride was made with a dented (steel) piston, caused by a valve breakage the day before.

A tabulated list of these world's records (subject to confirmation by the A.C.U. and F.I.C.M.) follows:



H. R. Davies, mounted on the machine with which he broke the 50 and 100 miles and one and two hours records on Tuesday of last week.

Records set up by H. R. Davies on 2¾ h.p. A.J.S. at Brooklands on May 24th.

CLASS B (350 c.c.).

One Hundred Miles.—Time, 1h. 32m. 45.6s. =64.68 m.p.h. (104.09 km.p.h.).

Fifty Miles.—Time, 45m. 6.8s.; average speed, 66.49 m.p.h. (107.02 km.p.h.).

Two Hours.—Distance covered, 130 miles 1,054 yards: average speed, 65.5 m.p.h. (105.08 km.p.h.).

One Hour.—Distance covered, 66 miles 162 yards; average speed, 66.1 m.p.h. (106.36 km.p.h.).

THE INTERNATIONAL SIX DAYS TRIAL.

INTEREST will soon be centred around the International Six Days Trial starting from Geneva on August 1st. Certain competitors are becoming rather disturbed regarding the motoring laws in Switzerland, which are known to be severe. We think, however, we may trust to the sporting feelings of the Swiss populace and the care and organisation of the Swiss M.C.U.

THE SOCIABLE SIDECAR.

A Simple Solution of the Problem of Weatherproofing the Driver.

PROBABLY the sidecar owed its conception to the desire for sociability more than to any question of mechanics. Theoretically, the trailer is more mechanically sound than the most up-to-date sidecar, but if to-day we widened the track of a trailer and proved its stability and its mechanical principles superior to the popular sidecar, it would fail to appeal, because of that lack of sociability which condemned the tandem cycle car.

With many sidecars it is quite possible for the driver to converse with his passenger with a certain degree of comfort, but in the majority, owing to the different levels of the seat and saddle and their relative positions, conversation is almost impossible.

There is no doubt that the sidecar combination was the most popular vehicle on the road before the war, and there is every reason to believe that this popularity will increase when normal conditions return. The sidecar owed its popularity to its comparatively low cost, and the possibilities it offered as a companionable machine for two.

That it failed to fulfil every requirement of its users is manifested in the fact that many efforts have been made to give the driver the same protection from the elements as is enjoyed by the passenger. The cycle car, in fact, owed its conception only to this fault of the conventional sidecar combination. If the sidecar were perfect there would be little room for the cycle car.

Concurrent with the advent of the cycle car, another type of hybrid came into existence, *i.e.*, the double-seated sidecar with steering mechanism arranged so that one of the passengers could control the machine. Several such attachments as these have appeared on the market, the best known of which was the U and I, which could be adapted to any existing machine without undue trouble.

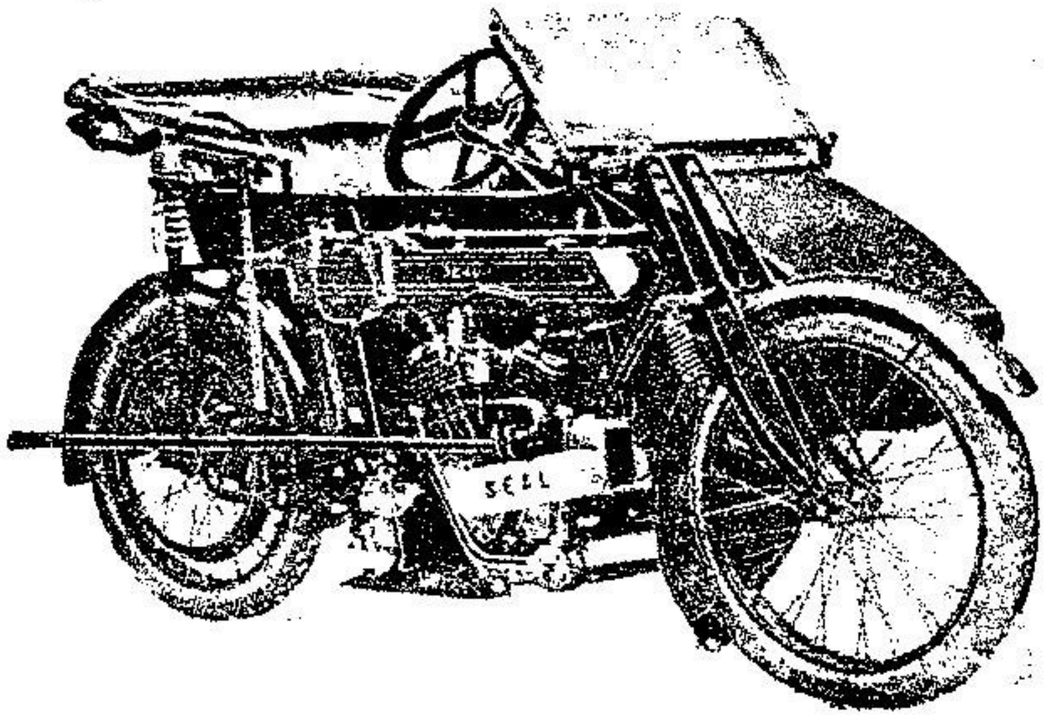
U and I sidecar on the road.

It is perhaps unreasonable to expect too much from any proposition which is only an adaptation, but everything considered, the U and I type of sidecar offered very certain possibilities of development.

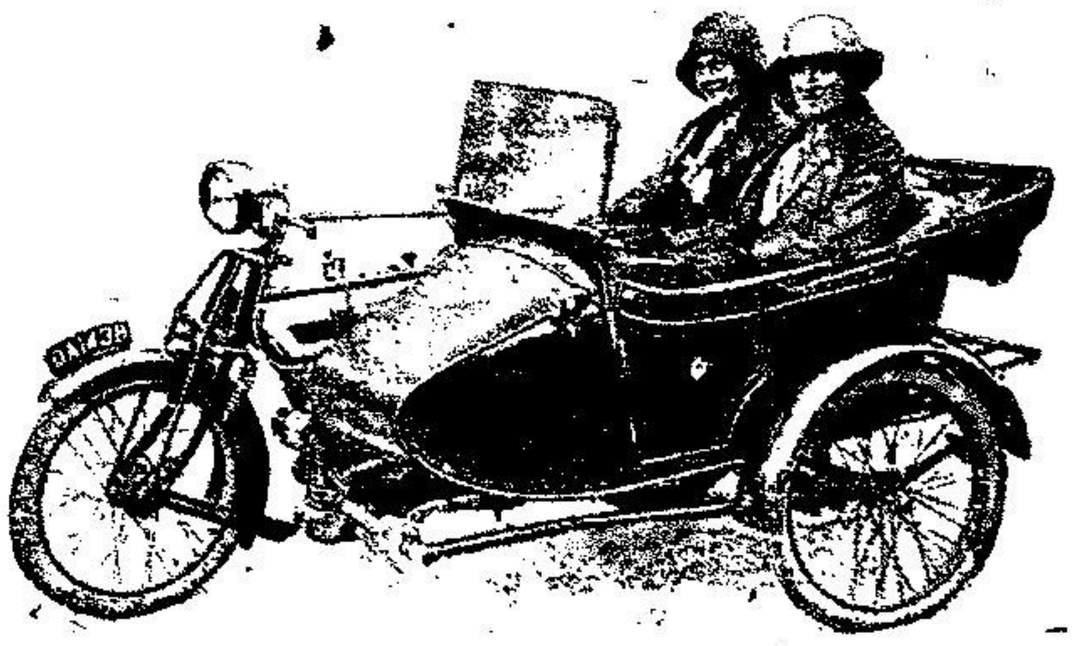
Since the war one well-known motor cycle manufacturer has introduced a sidecar on these lines which was designed and fitted throughout specially for the machine to which it was intended to be fitted. This was the A.J.S. Sociable of 1915, and it will be seen from the illustration that this machine was in no way deserving of the term "hybrid."

The two-seater sociable sidecar need be but little wider than the single-seater attachment, as the space between the body and the saddle can be used to advantage, therefore there is no reason why this type of vehicle should not ultimately become very popular among those who require a machine for two persons at a moderate price.

The question arises as to whether it is not advisable to build the cycle and chassis as an integral unit. That



The Seal patent two-seated sidecar.



A.J.S. sidecar for two. Its very neat appearance attracted favourable comment at the time of its introduction.

The Sociable Sidecar.—

many consider this desirable is revealed in the production of such machines as the Seal, Magnet, H.S.M., and Craven. It is strange but true, however, that immediately this is done the machine becomes a hybrid and difficult to sell, and a second question naturally follows as to the reason for not producing a machine following sidecar lines, but which is not a sidecar. Why not redistribute the material and make a three-wheel runabout of the Morgan type? Hence it would appear that the mere fact that the sidecar is detachable is an important one, and although it has been advocated that cycle frames and chassis should be built integral, it is the writer's opinion that to do so is to place the vehicle in another class—it passes from the top of one class and takes its place at the bottom of another. There are many who prefer a first-class motor cycle to a cheap car costing more.

Design the two units together by all means, but not as one machine. Then the machine can be sold for use as a solo mount, as an ordinary sidecar machine, or as a sociable. If it is built only as a sociable, the sale of the main element is restricted to one class of buyer. This is a trade policy matter, but it affects the buyer also, as a machine built specially as a sociable, and having a comparatively small output, must cost considerably more or be inferior to the article produced in larger quantities.

Further, designers of those machines which have been built as one unit usually have attempted too much, with the result that appearance has suffered for the sake of doubtful advantages. The fact that this type of vehicle has been developed so far should be a hint to designers of motor cycles to leave no stone unturned to make their machines more suitable for riding in all weathers.

VEDETTE.

THROUGH FEMININE GOGGLES.

Experiences and Opinions of a Lady Rider. Points that will Need Attention in the Post-war Machine.

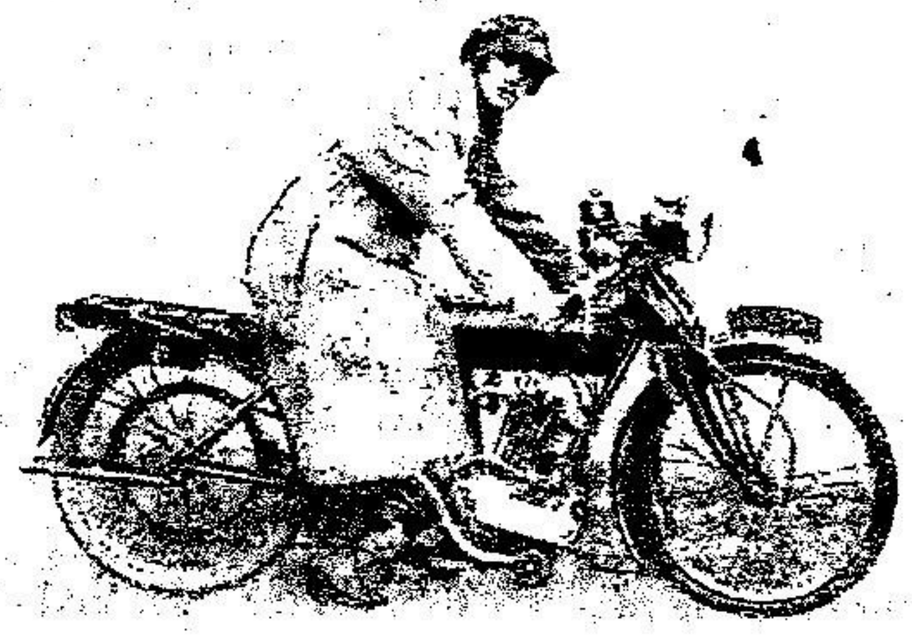
HOME ties in the form of a husband and wee daughter have prevented my joining those happy people who turn their pleasure to such good account in the W.R.A.F. and other branches of the Services—and incidentally serve to keep alive and strengthen the manufacturers' idea of the possibilities and requirements of the post-war market for ladies' machines—but an occasional peep at a 2½ h.p. two-speed Sun-Vitesse languishing in a garage revivifies memories of pre-war pleasures.

In those days I covered some thousands of miles on this machine, and, apart from small adjustments now and again, I never found it wanting—only once did I ever get stuck, and that was in the country far from telephone or station, and I made my return journey, motor cycle and all, perched on a huge steam waggon which happened along. This undignified experience occurred long ago, before I had learned even to diagnose a choked jet.

Somehow my experience with heavier machines has strengthened my preference for a lightweight which can be moved about without much exertion, for all ordinary purposes, and surely that is a good point unless one is a veritable tower of strength. For speed work or touring with a male companion on a road-burner something more substantial is requisite. Otherwise it is necessary to strike a happy medium and not to choose too flimsy a machine. A two-speed model is to be preferred.

To some lady riders it may seem a big disadvantage to have to paddle the machine in order to start, but, after all, it is an easy method, and, though maybe ungraceful, I always found my machine so quick to answer that in less time than it takes to tell I was away without the movement being noticed. No doubt a free engine is favoured by many, but for a novice a clutch is rather difficult to manipulate just at first.

I have had many happy rides on an open frame 3½ h.p. Royal Ruby J.A.P., but for fast riding I infinitely prefer the ordinary frame and semi-T.T. bars, appreciating the grip of the tank and more comfortable riding position. At the same time, from conversations with ladies who propose to have machines of their own after the war, I gather that a large percentage of them would honestly prefer an open frame model for a variety of reasons, and others would also prefer a real lady's model provided the rigidity and accessibility of the diamond frame type could be retained.



The writer on a 5-6 h.p. overhead valved N.U.T.

I never found it necessary to wear a special kind of divided skirt—being always perfectly at home in an ordinary skirt made generously wide so as to allow of easy mounting. I found it clung so much better, the other varieties of skirt being apt to flap in the machinery and belt, and develop a penchant for adhering to the hot cylinder.

A very important point, too, is the finish and mudguarding—particularly for those who have to look after their machines themselves. Cleaning the machine is a horrid job, and one which motor cyclists of my sex are very liable to neglect.

Doubtless, however, the manufacturers have somewhere tucked away plans for models that will cater for every class of lady rider awaiting the days of petrol plenty and Olympia Shows.

M.W.

July - December 1918

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U

V

Hiffe & Sons Ltd., London and Coventry

Originality of Design

speaks in every line of the A.J.S., and because of what this betokens for superior service, prospective after-war buyers are everywhere increasingly deciding in its favour.

Correctly embodying every point essential for supremely-easy control, unfailing power, all-weather protection and perfect reliability — the A.J.S. forcibly evidences the richest results of thought, experience, and mechanical ingenuity. Its many original design-features include:

Scientifically built straight tube frame. Powerful, silent and vibrationless A.J.S. engine. All-enclosed weatherproof chain transmission. Kick-starter with enclosed mechanism. Special three-speed countershaft gear. Patent gate change. Handlebar-controlled perfect multiple plate clutch. Forced lubrication direct to main bearings and big-ends. Internal expanding rear drum brake. Interchangeable detachable wheels. Amply protective mudguards, etc.

Note a few details and prices of Model D: 6 h.p. Twin, 750 c.c., 3-speed, **£84** Coachbuilt Sidecar to suit, **£18 : 18.** Prices subject to 7½% advance. Hood, Windscreen, and Spare Wheel extra.

"Ask the man who owns one"—then enrol on our "Waiting List."

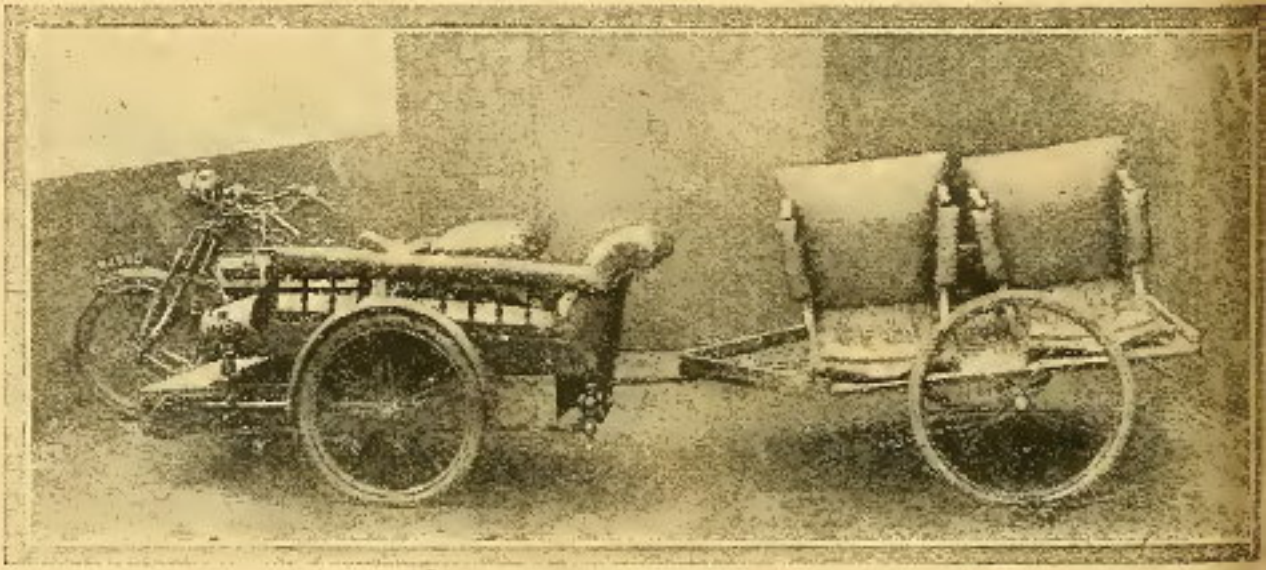
A. J. STEVENS & CO. (1914), Ld., Graiseley House, WOLVERHAMPTON

A·J·S

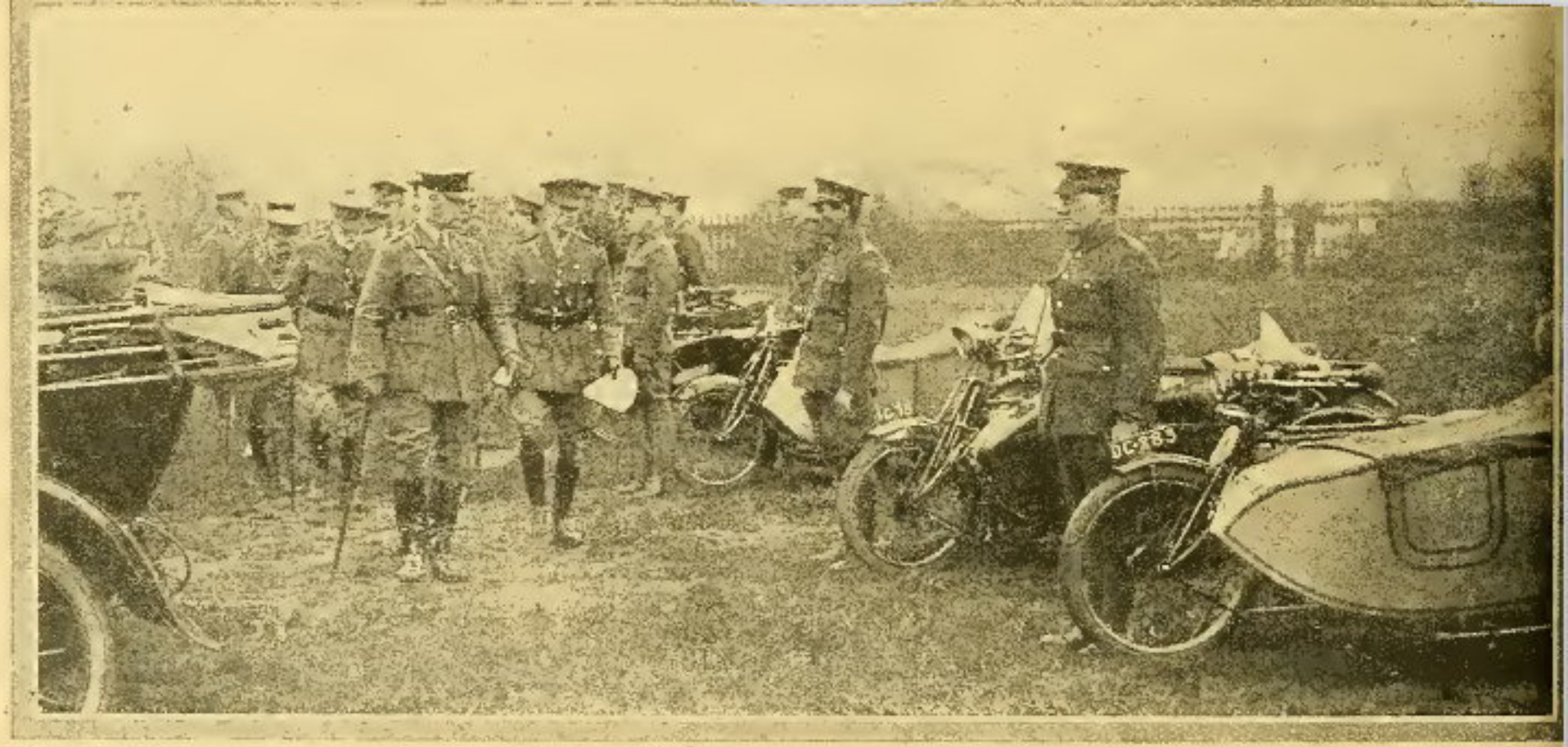
London Agent—H. TAYLOR & Co., Ltd., Store Street, Tottenham Court Road.

THE USE OF THIS BADGE

is an indication that this Firm has been accepted as genuinely British by a Tribunal of Trade Competitors.



An A.J.S. and sidecarrier used by Mr. Wilfred Barnes, furnisher, Sheffield. It is not often one finds the motor cycle put to the purpose of conveying suites of furniture, and the owner of the machine is to be congratulated on utilising his machine to such good purpose. "In these days there is an excuse for overloading, although the A.J.S. always takes the big loads without faltering," says Mr. Barnes.



Major-General Sir Stanley von Donop inspecting the motor cyclists of the East Yorkshire Motor Volunteers at Hull last week after a mobilisation test. A.J.S., Triumph, and New Hudson sidecars are shown in the photograph.

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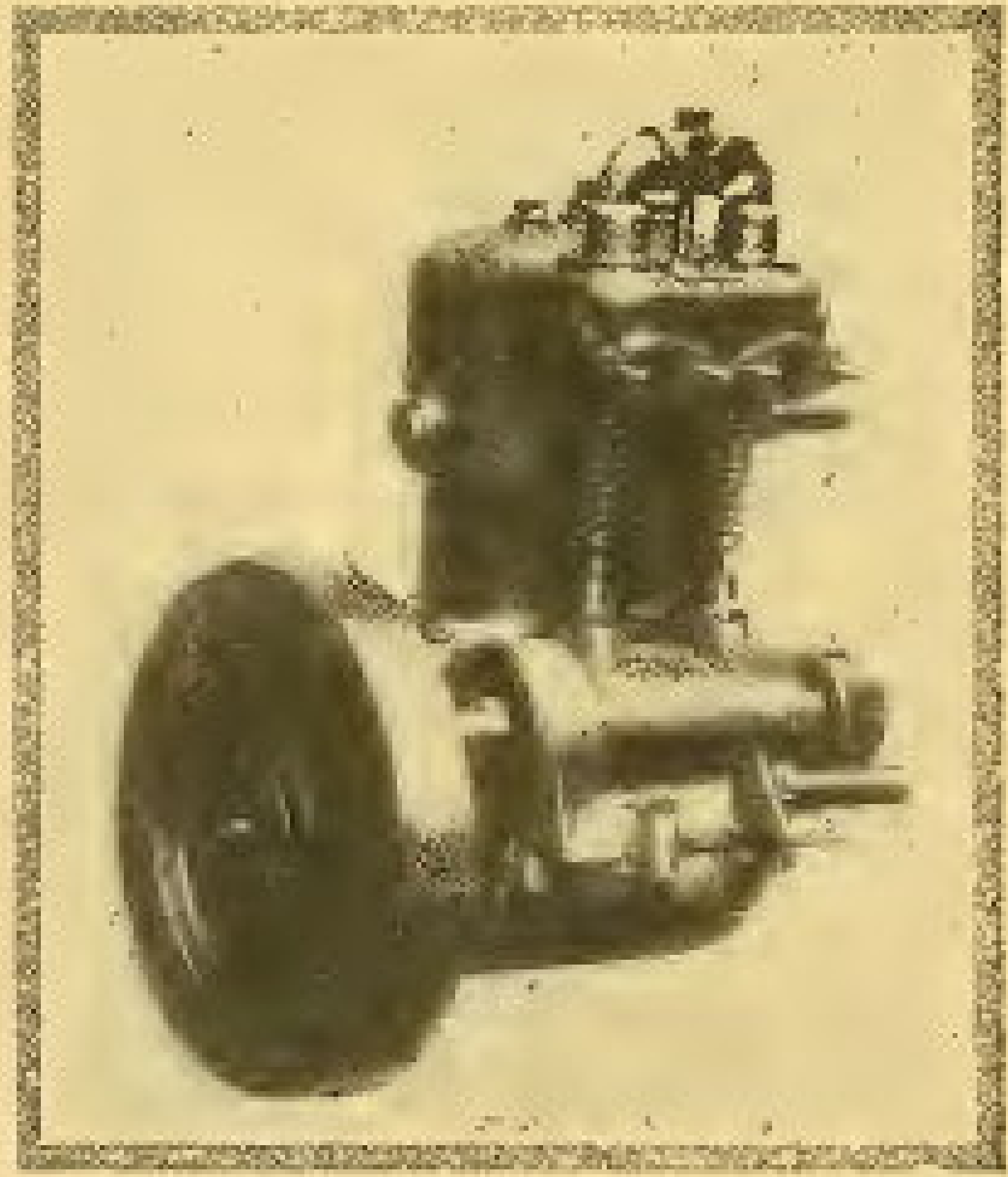
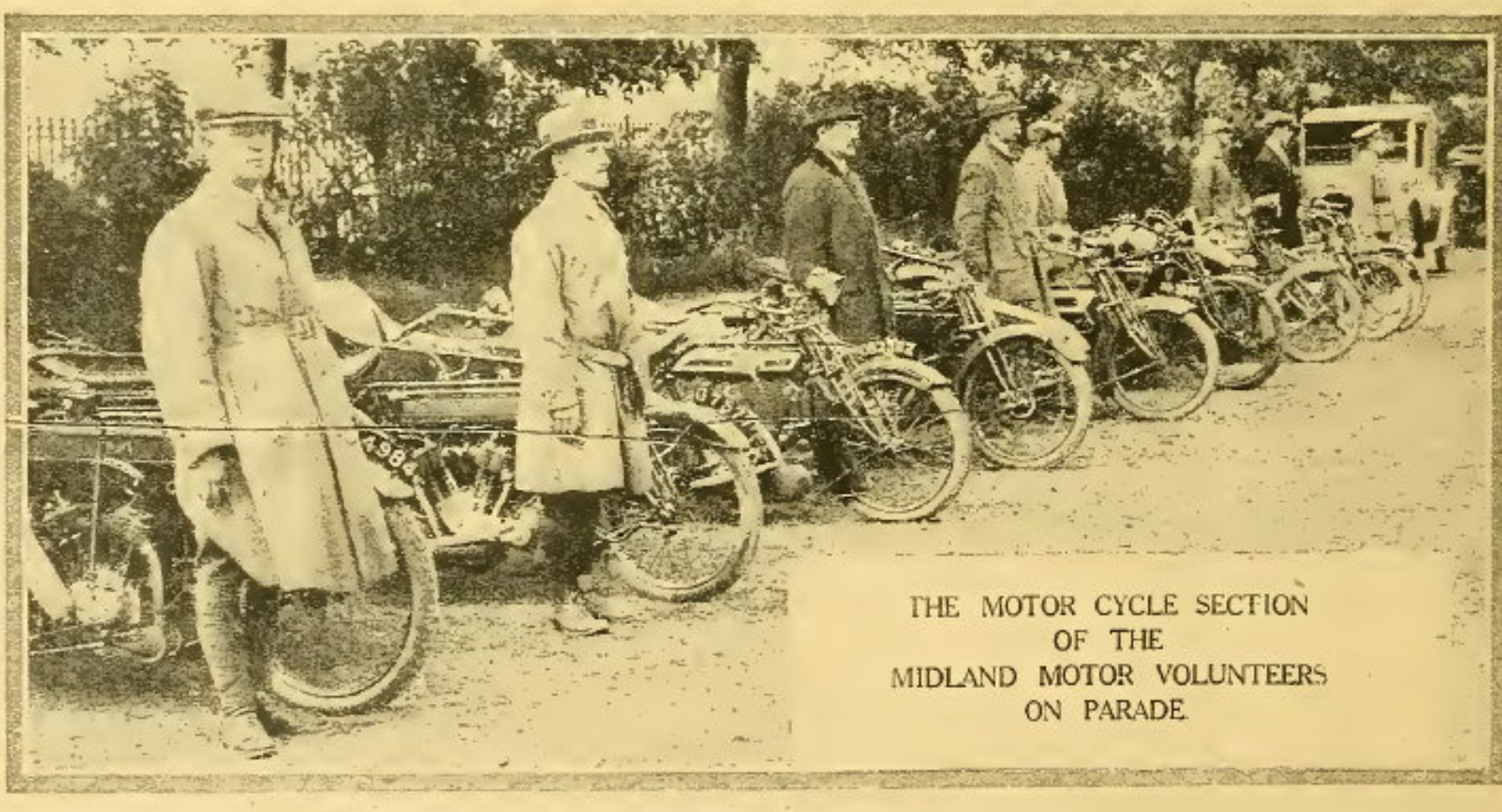


An early A.J.S. side-by-side engine, which was fitted in the Stevens tricar in 1904.



Motor cyclists on parade at the Midland Motor Volunteer Mobilisation Test last week. The machines shown in the photograph are the James, Enfield, Rover, A.J.S.. and Rudge.

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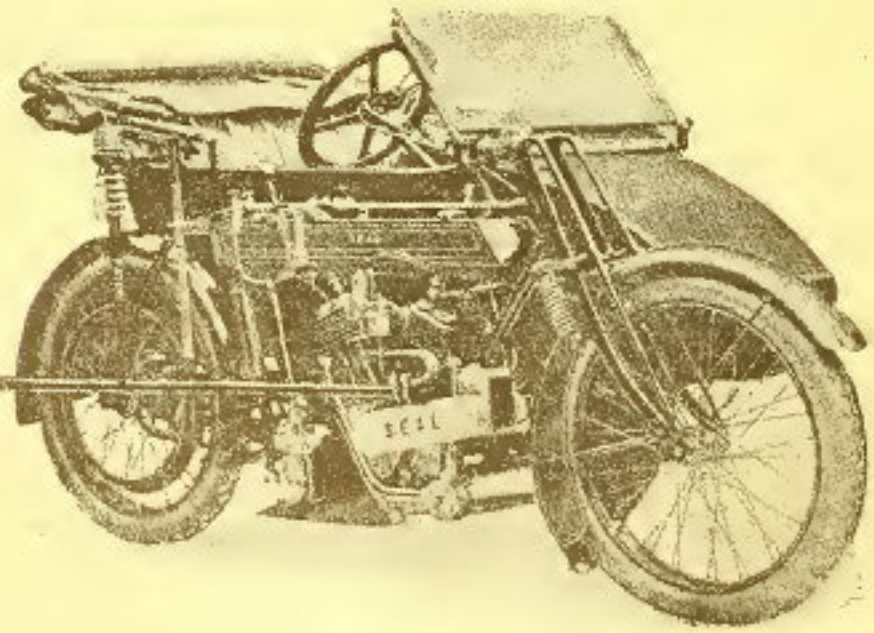


The Seal patent two-seated sidecar.

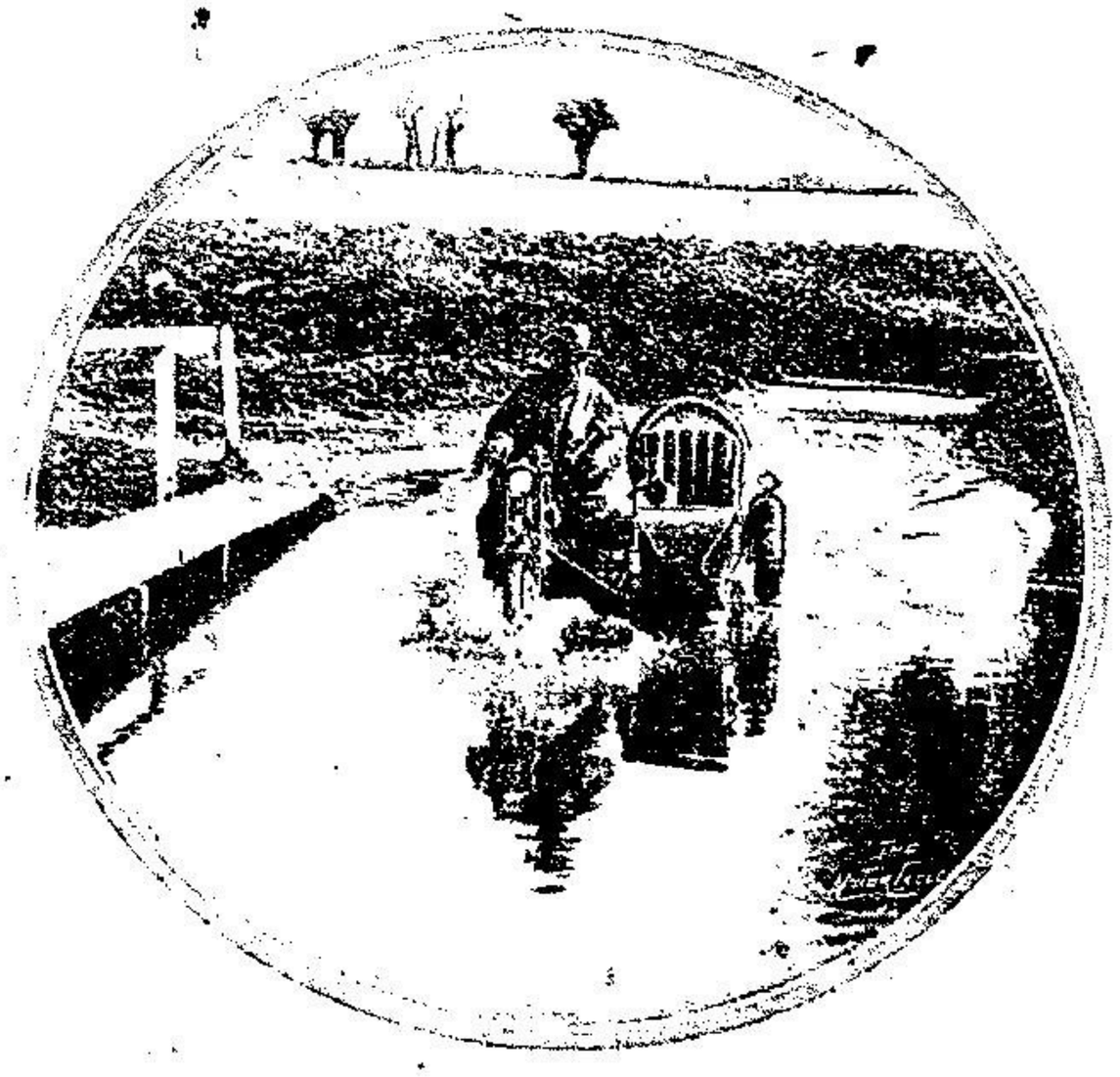
A.J.S. sidecar for two. Its very neat appearance attracted favourable comment at the time of its introduction.

A ROAD TEST of the MILITARY MA

The Russian Government Model as a Passenger Machine.

THE 8 h.p. Military Model Matchless-Jap sidecar combination is a mount which was originally intended for the Russian Government, and was built to suit the ideas of the motor cycle experts of our one-time Ally, with the result that it does not quite meet the views of English connoisseurs in all details. Still, there is not much one can criticise in its design, save the very long magneto chain drive, which, together with the high crank case clearance, are features that render the outfit especially suitable for use in our Overseas Dominions.

A description of the mechanical features of this machine has already appeared in these pages, but until quite recently we had no opportunity of testing its behaviour on the road. However, as the opportunity did come, we armed ourselves with a special short-period permit and a camera, and gave the combination as good a testing as could be got on a minimum petrol consumption. First of all came a long drive out of London through such traffic as is left in the Metropolis, which was just enough to show that the Matchless was possessed of a very flexible engine which rendered it quite a pleasure to drive in crowded streets. It also showed that Messrs. Collier and Sons, Ltd., had taken the trouble to tune the carburetter carefully, and this, combined with the fact that the inlet unions on the latest type J.A.P. engine are absolutely air-tight, rendered the engine capable of running very slowly. The carburetter was of a pattern which is frequently fitted to motor cycles, but is not by any means automatic, so all the more credit is due to the makers for tuning it so



Taking a watersplash comfortably. The high placed magneto and increased crank case clearance enable the Matchless outfit to negotiate the roughest country and to ford fairly deep streams.

successfully. Still, goes against the grai for the all-roun motorist who ha driven all types of motor vehicl during the last fifteen years to hav to close the air after opening th throttle past the halfway point.

What impressed us most after th flexibility of the machine was i extreme comfort. Furnished with a Brooks saddle, 170, with springs which just suited the rider's weigh and a pair of excellent spring forks, it was difficult t imagine that a spring frame machine could hav afforded greater comfort, and as many who are ab to use a motor cycle at the present time are well awar the roads are in places worse than it was thought 1914 that English roads could be.

Starting the Engine.

After our journey home, some difficulty was four in starting up the following morning, which was, firs owing to the fact that the driver was unacquainte with the machine, and, secondly, that no compressio taps or priming devices were fitted, since the Russia experts' stipulation of high crank case clearance le no room for these co veniences. To overcom this difficulty we remove one plug and poured a litt petrol first on the ph points and then into th cylinder. After that th engine was started, a when once warm presente no further difficulty.

Now, the proper way start the engine of sidecar, which is not well known as it should b is to raise the exhaust val with the right hand a with the left grip th luggage carrier. This giv an enormous leverage the kick starter, and t tip when once acquired w enable the largest sidec engines to be start without difficulty, and wi out priming, provided t throttle is only open slightly and the air close

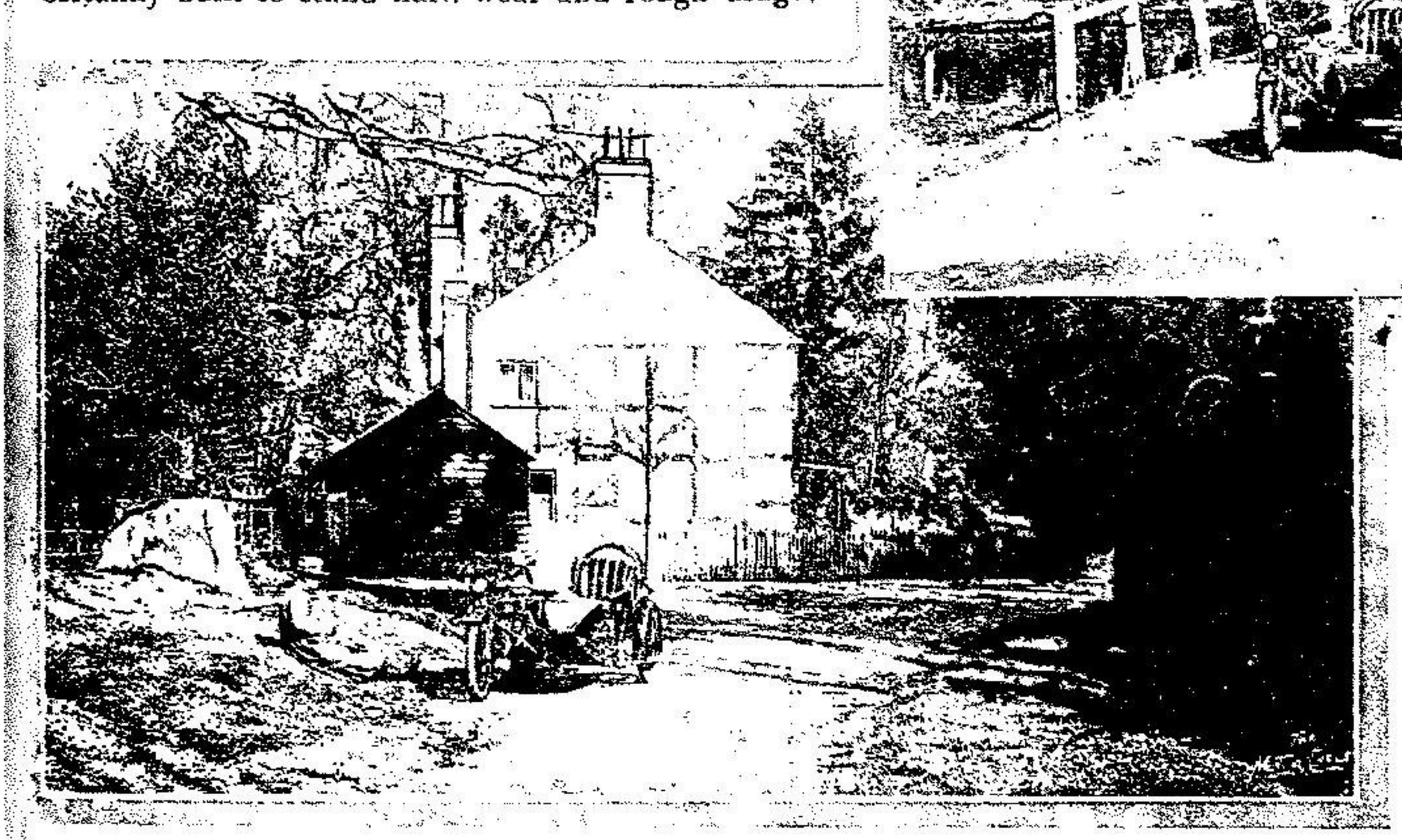
Road Test of the Military Matchless.—

During the test the weather, though brilliantly fine first, became, later, distinctly seasonable. March, is sometimes its wont, went out as it should have me in—"like a lion"—and "April" showers predominated. This gave plenty of chances of seeing ow the outfit behaved on wet roads, and, though we ere caught in plenty of showers, we never wore leg veralls, and yet the bottoms of our nether garments ere hardly wet and little splashed with mud, so excelntly was the mudguarding carried out. Most of our urneys were along by-roads and well off the beaten ack in search of pretty spots to photograph, which tailed slow driving followed by sudden spurts to imb up single figure gradients, nearly all of which ere negotiated on top speed.

The country abounds in watersplashes, and through ese the machine was taken without hesitation, and, wing to the enclosed chain drive and high placed agneto, they were traversed without the slightest ifficulty, and while the ford was often deep, as is own in one of the photographs illustrating this rticle, the rider hardly received a spot of water on is garments.

General Construction.

The machine is strongly constructed throughout, learly built to last, and of a quality which a South frican motor cyclist explained to us the other day is nly to be found in British machines. The Matchless certainly built to stand hard wear and rough usage, and after the war should be ideal as an Overseas model. We naturally drove the machine most of the time it was in our hands; but we did not miss the chance of riding in the sidecar as a passenger, and this we found to be extremely comfortable, even over the roughest roads. Messrs. Collier and Sons themselves admit that this model is not their best, as it was designed for a special purpose, but in our opinion it is a fine machine, especially for Overseas use. We can also speak in the highest terms of the latest J.A.P. engine, which was reasonably silent, and yet quite powerful.



(Top) Near the village of Whitwell. (Bottom) A picturesque scene in the village of Ayot St. Lawrence.

GARAGE CHARGES.

'N the suburbs of most provincial towns there are large numbers of houses renting at about 10s. per week. If one works out the capital involved and he ground area, one must come to the conclusion that ven 2s. per week for garage space for a sidecar comination is too much. It should be possible for an nterprising garage man to build up a big business by letting floor space for one shilling per week. The rider who pays too much rarely buys his supplies from the same garage. If garage rent were low, the rider would be willing to undertake to give the proprietor all his custom, but, as it is, the latter often succeeds in actually driving away other motorists who judge his repair charges by his garaging fees.

A THOUSAND MILES ON A BIG TWIN.

ON THE ROAD WITH A WAR MODEL MATCHLESS.

MESSRS. COLLIER BROS. have long been associated with the popularising of the high-powered sidecar combination, and their big twin has always been a leader in this class, and as my present mount is an 8 h.p. war model Matchless I can say that it fully upholds the reputation of its makers. It is finished "service grey" throughout, and fitted with extra long sidecar body. A triple Orto windscreen ensures the comfort of the passenger. Hutchinson tyres (700 × 80 mm.), in conjunction with a Brooks saddle, give a moderate degree of comfort on our war-time roads; but the one thing needful to turn a luxurious outfit into a three-wheeled "Rolls" is a spring frame. This deficiency is to be remedied in the post-war Matchless. The most useful and novel feature of the machine is the spare wheel; with the detachable and interchangeable wheels fitted the puncture bugbear is reduced to a minimum. Five minutes only is entailed in the changing of a wheel and in getting off again, and, should another tyre puncture, the support on the rear of the sidecar forms an ideal position for repair work. In fact, once having experienced the joys of this fitment, I shall never purchase any machine without it.

The military model Matchless, experiences with which are described on this page.

Mudguarding and Gadgets.

I have, I confess, a mania for gadgets, but only practical and useful ones. Mudshields and a home-made undershield are giving excellent service by reducing time taken in cleaning; knee grips adorn the tank, and plug coolers—again home-made—reduce pre-ignition on war fuels.

Since August the outfit has seen hard service in all weathers, and but for sooted plug—I oil too liberally—and punctures, has never let me down. With regard to tyres, I have been rather unlucky—five punctures and a cut in one month. I then fitted nail-catchers—a spoke almost grazing the tread—and since then I have not had any trouble. Surely if the efficacy of these simple extras was better known they would be fitted as standard by makers. "Madge," as we christened the 'bus, is rather hard on tyres, although carefully driven—possibly the absence of a shock absorber has something to do with this. The chains have not needed attention; from them and their cases one hears never a sound. I recommend them to "Ixion," and the clutch—well, the Matchless clutch is a byword for all that is desirable. In the North a machine gets a thorough testing in every thirty-mile run, and the Matchless shows up to perfection. The rear brake is excellent: the front is the useless rim type. How acceptable would a sidecar wheel brake and a front one of the B.S.A. type be in the descent of such roads as the "Winnats."

For the engine I have nothing but praise. (What a hackneyed phrase, but it is true.) In conjunction with the three-speed gear box, it will take the machine anywhere: it will pull for miles on second gear and on pure paraffin without overheating, and roars up hills as if they were level, and, with the exception of a very "hot" Sunbeam, has passed every combination with which I have "scrapped" on the open road.

An Amac carburetter is fitted which vaporises paraffin perfectly—petrol being used for starting. Consumption runs about 46 m.p.g.—not very good, but the vim in the engine compensates for this.

In traffic remarkable docility is attained by adjusting the throttle so that when it is closed the engine just turns over; there is no fear of stopping it accidentally, and the valve lever and switch suffice for sudden stops.

Speed.

Being young (and foolish), I cannot resist using the ample power in a little speed work. This will probably be interesting to "average speed men." On top gear, down a slight incline on a deserted road, we touched sixty (on petrol), according to Watford speedometer; on second I can do forty all out; and on bottom about eighteen to twenty. But my fastest run—from Castleton to Sheffield, eighteen miles—was done in forty minutes, in order to get in before lighting up time. The final two miles of deserted Tarmac were taken at forty-five without a single falter. This, however, did not succeed in bringing the average for the trip to more than 27 m.p.h., which should make some speed merchants think. So much for speed: and I think it shows that averages of 44 m.p.h. are never made on the road—at least for more than a mile or two.

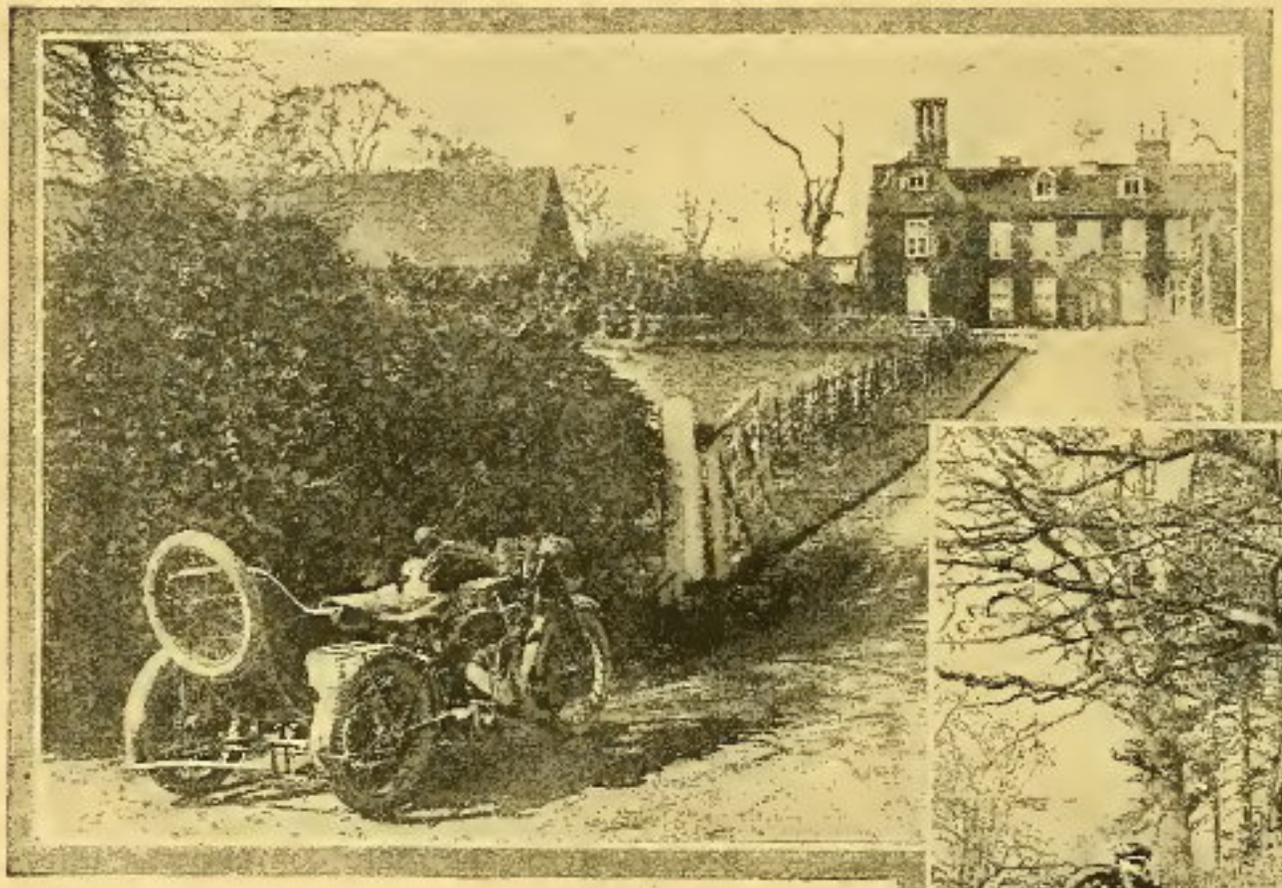
ROTOR.

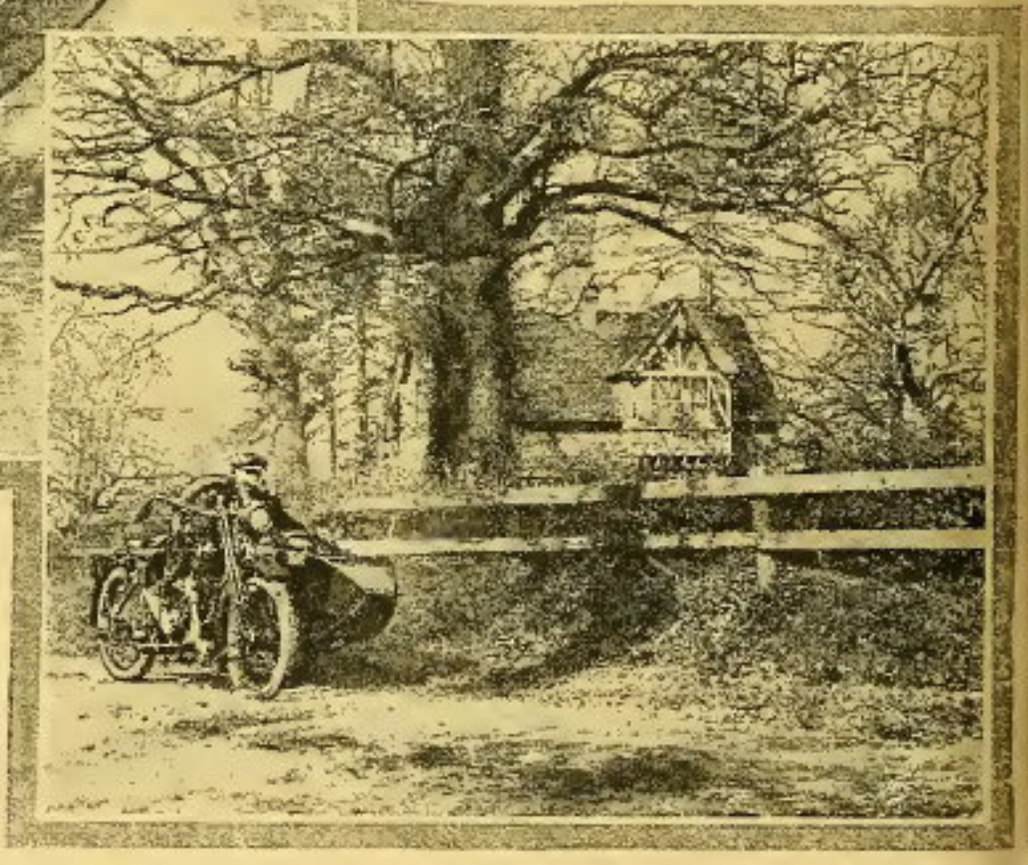
Will the trade make big efforts to capture the Overseas trade? In conversation with two manufacturers recently, we were told that, unless the Government does something to assist foreign business, they would not trouble about Overseas trade, as before the war it was not worth the trouble.

THE "ENDS" OF HERTFORDSHIRE.

Some Charming Houses off the Beaten Track.

MANY places in Hertfordshire are known as "Ends." There is Ayre's End, Lawrence End, Blackmore End, Ansell's End, and a score or more of others. Mackerye End is a charming old house in a quaint mixture of the Tudor and Jacobean styles, lying about a mile north-east of Batford Mill, near Harpenden. It is difficult to find by road, and so is missed by the ordinary tourist as it lies well off the beaten track. For those who in happier times are fond of a quiet spin along the charming Hertfordshire bylanes, it provides a delightful excursion, and may be reached by proceeding along the Wheathampstead-Luton road and taking the second turning to the right after leaving the latte village at the very entrance to Batford. Thereafter th motor cyclist should bear to the right, and afte ascending a steep hill and negotiating sundry shar turns a good view of the house is obtained. It i mentioned in one of the "Essays of Elia," and at th close of the fourteenth century, the house then know as Macry End, was owned by Hugh Bostok an Margaret Macry his wife, who were parents of Abbo John of Wheathampstead, one of th most famous abbots of St. Albans in the abbey of which his inter esting tomb is to be seen. Th sidecar combination is an 8 h.p military Matchless, which prove quite ideal for negotiating the stif gradients encountered in the narro lanes in the neighbourhood.





(Top) Mackerye End, Hertfordshire. The architecture is a mixture of Tudor and Jacobean.

(Bottom) Lawrence End, near Chiltern Green. The outfit in both illustrations is an 8 h.p. Military Matchless.

THE "ENDS" OF HERTFORDSHIRE.

Some Charming Houses off the Beaten Track.

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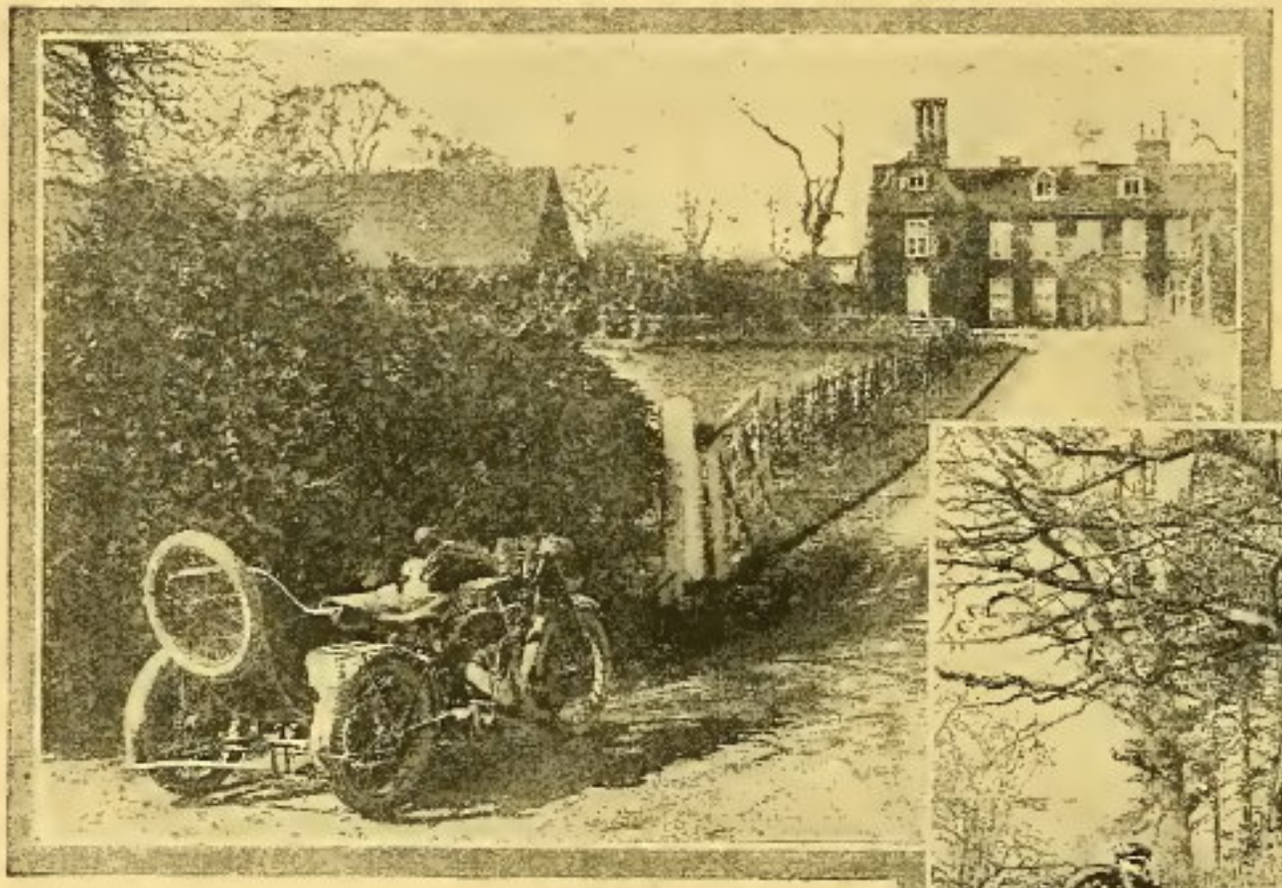

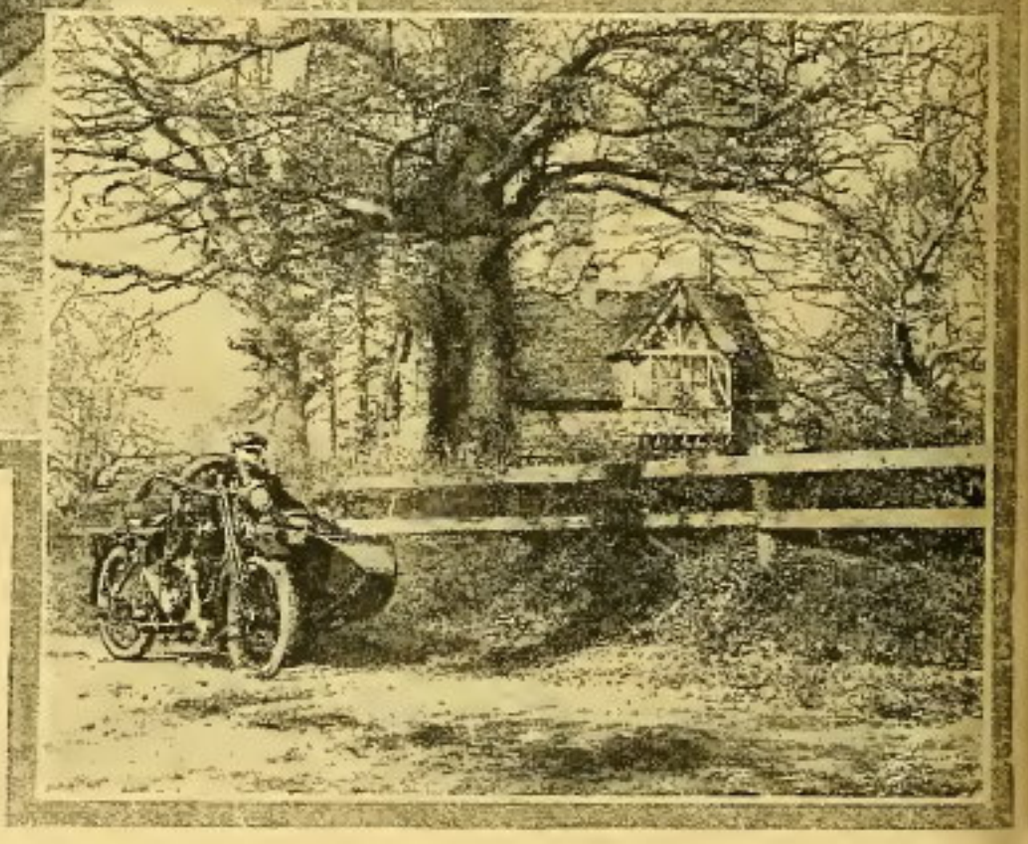

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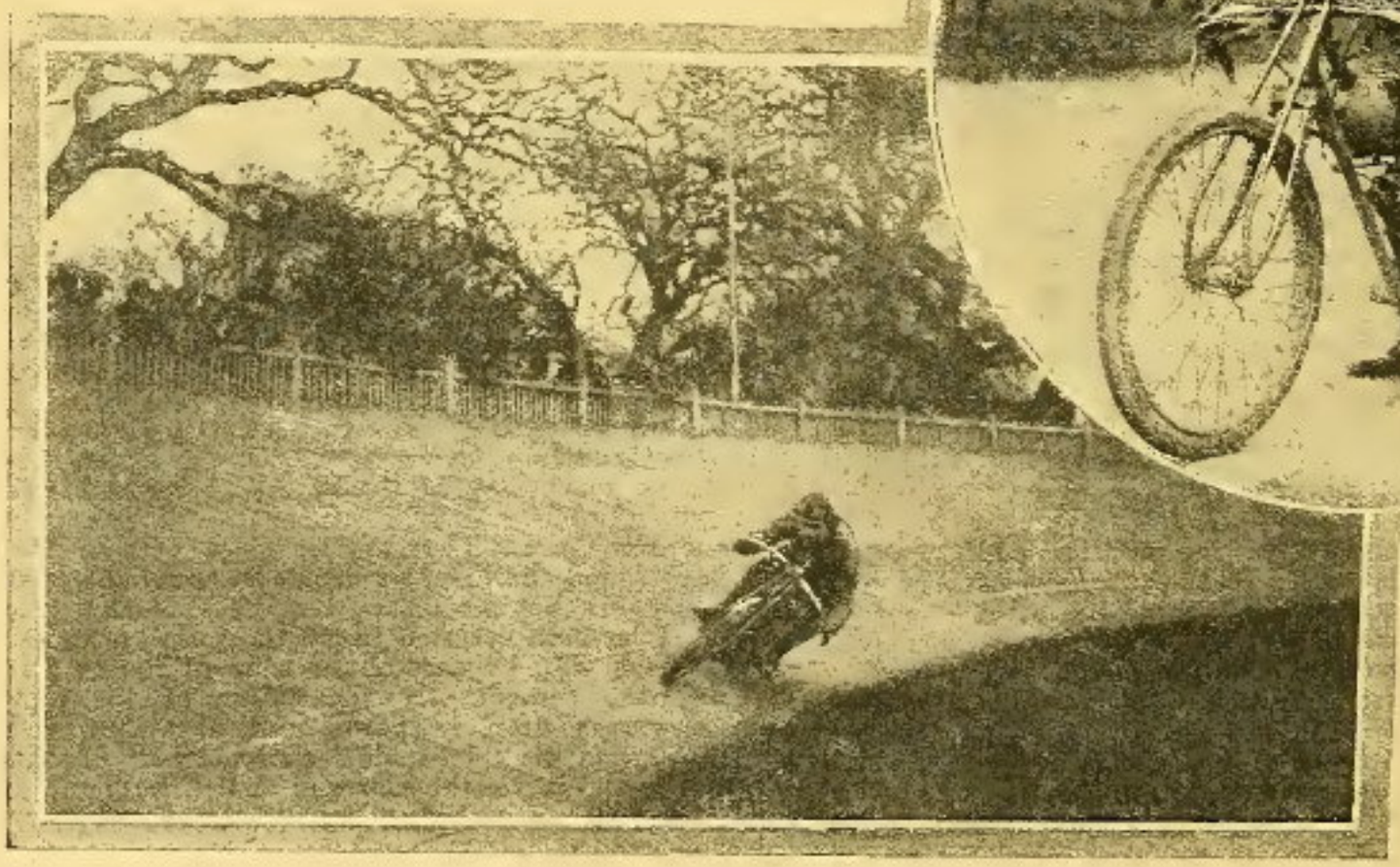
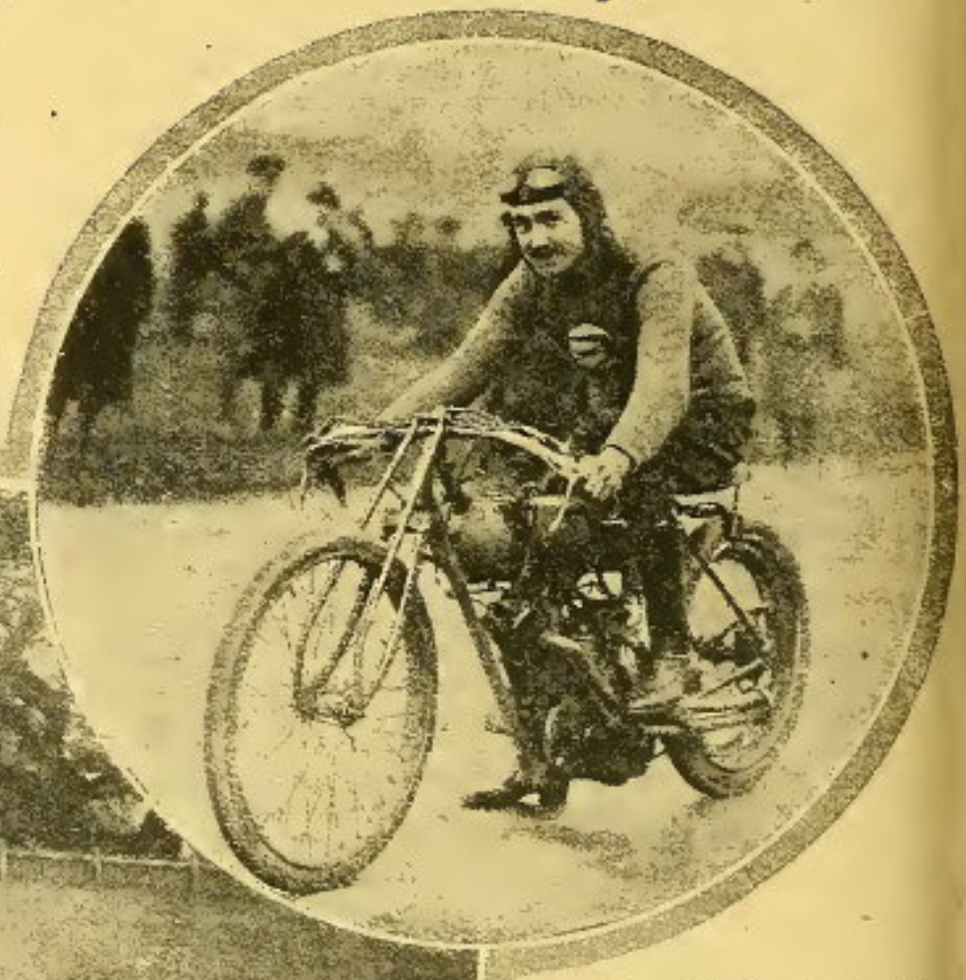
Record Breaking on Good Friday.

At the Southern Counties' Cycling Union of United Service Sports, held at Herne Hill on Friday, March 29th, H. Martin, riding a 3½ h.p. overhead-valved Matchless, reduced his one mile flying start record, which stood at 1m. 19⅘s. His new figures for the mile are now 1m. 12⅕s., equalling nearly 50 m.p.h. He also lowered his existing five miles record, the time for which stood at 6m. 56⅕s. His new time for this distance is now 6m. 31s. All these other records were made on the Herne Hill Track.





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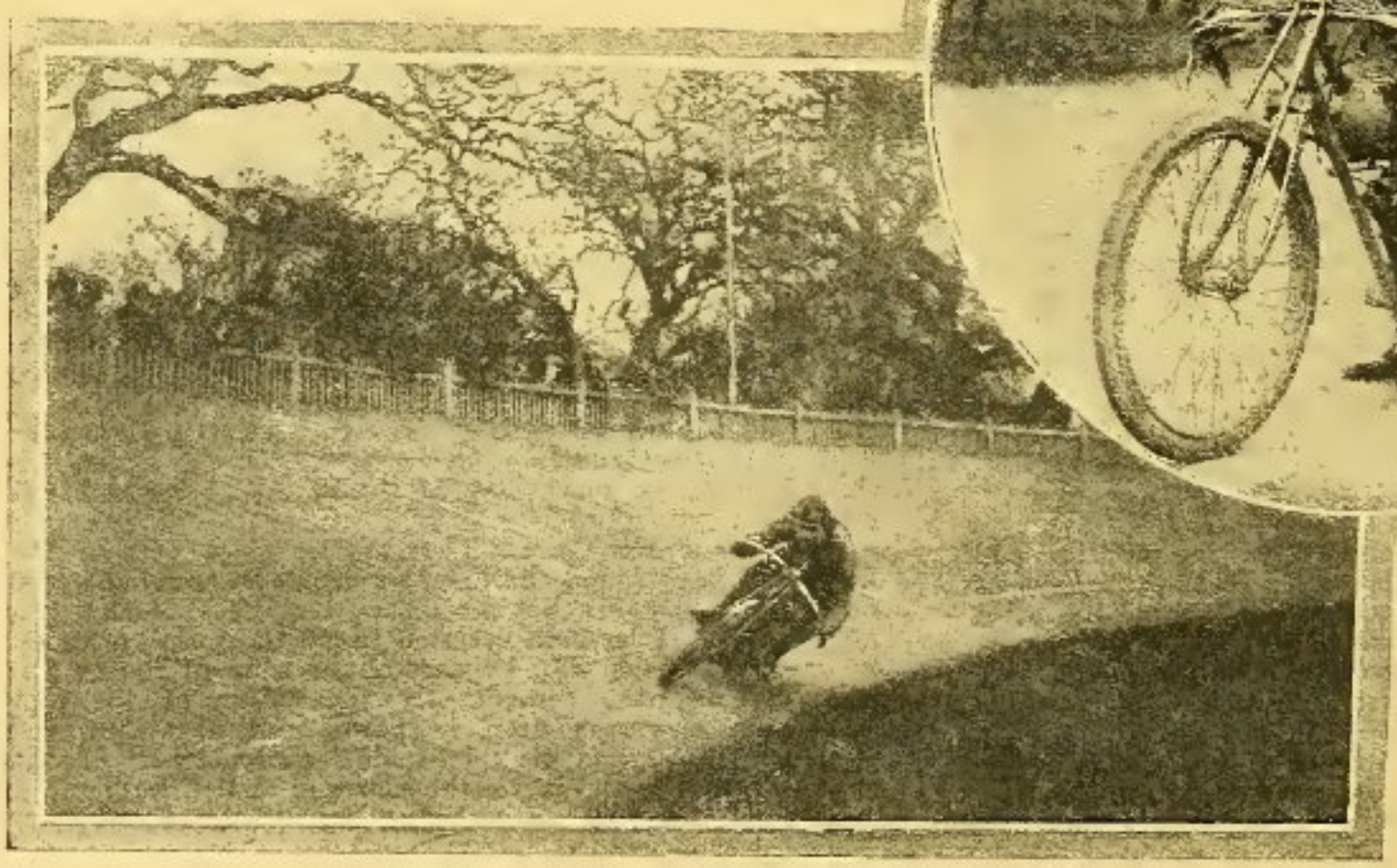

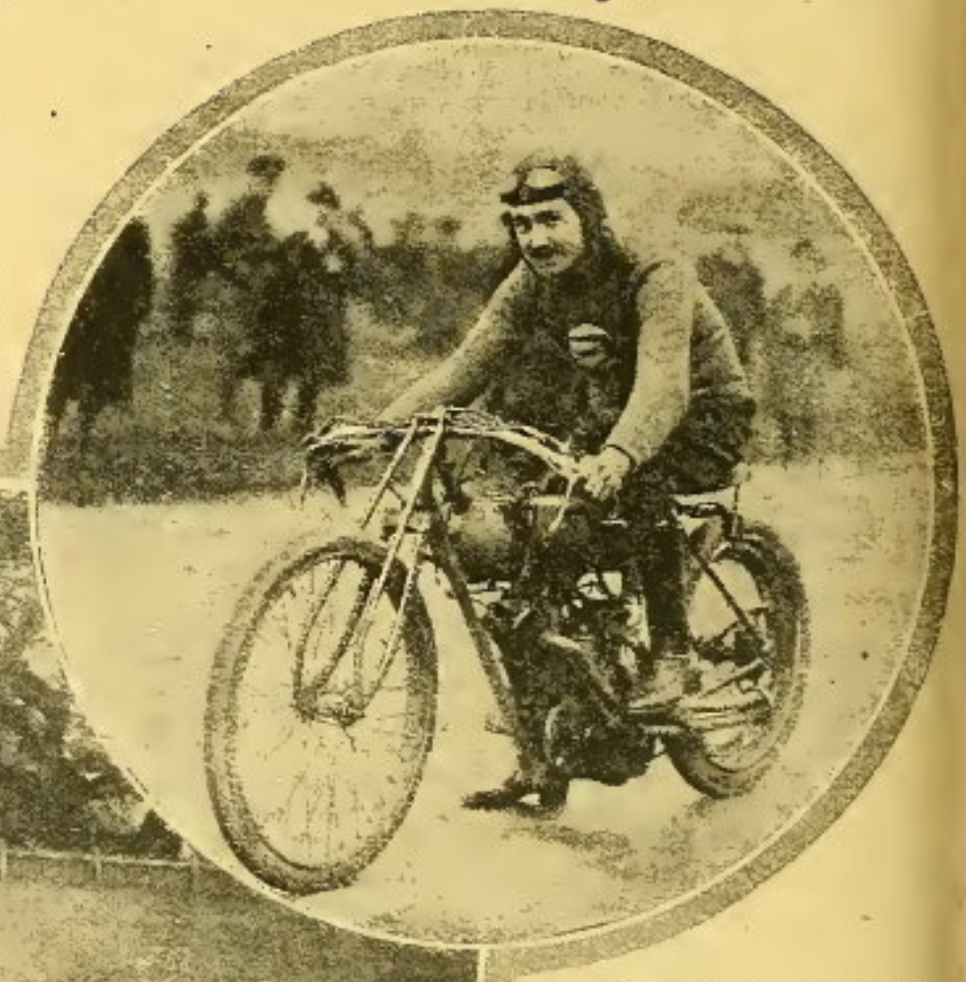

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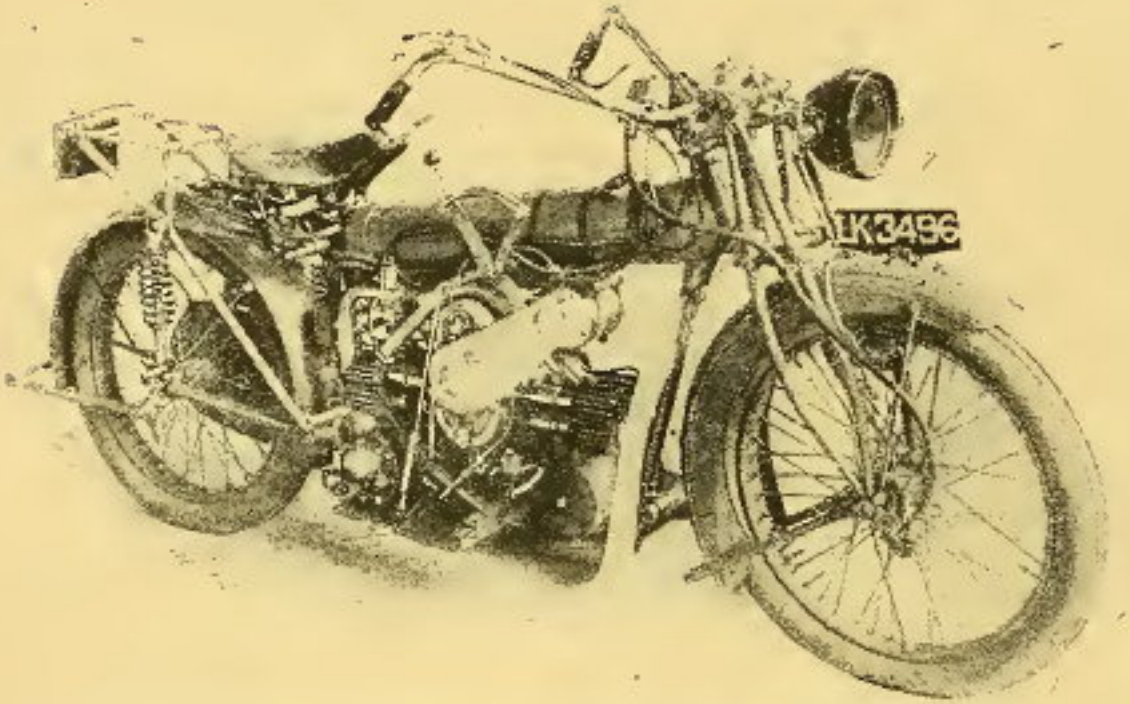
FRAMES EMBODYING THE TANKS.

A Method of Frame Construction not in General Favour, but possessing Several Commendable Features.



6 h.p. flat twin Matchless. One of the most recent designs of motor cycles. This machine possesses, among other unique features, a tubular tank as part of the frame, and in this particular case the system undoubtedly has advantages.

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Probably it has been with a view to giving a machine a cleaner and simpler appearance that makers have experimented with tanks which are integral with the frames. In England the only adaptation of this general idea has been on recently designed machines, *i.e.*, the Matchless flat twin and the Premier two-stroke, in both of which the top tubes only have been used, and these have been enlarged to provide the necessary capacity.

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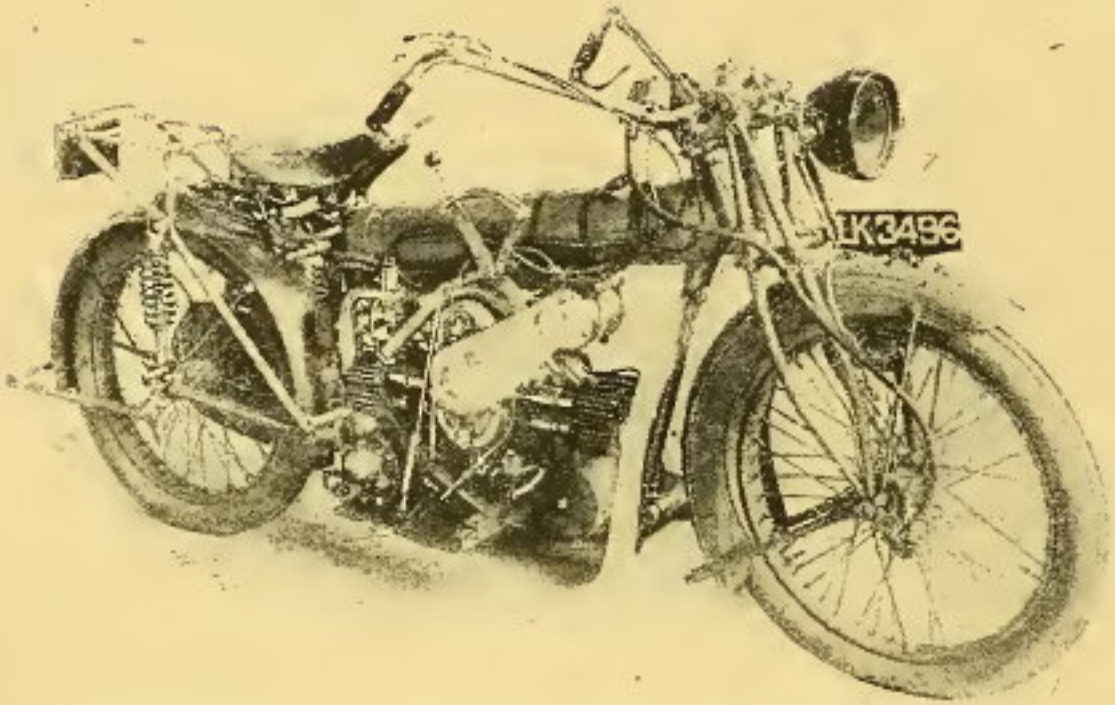

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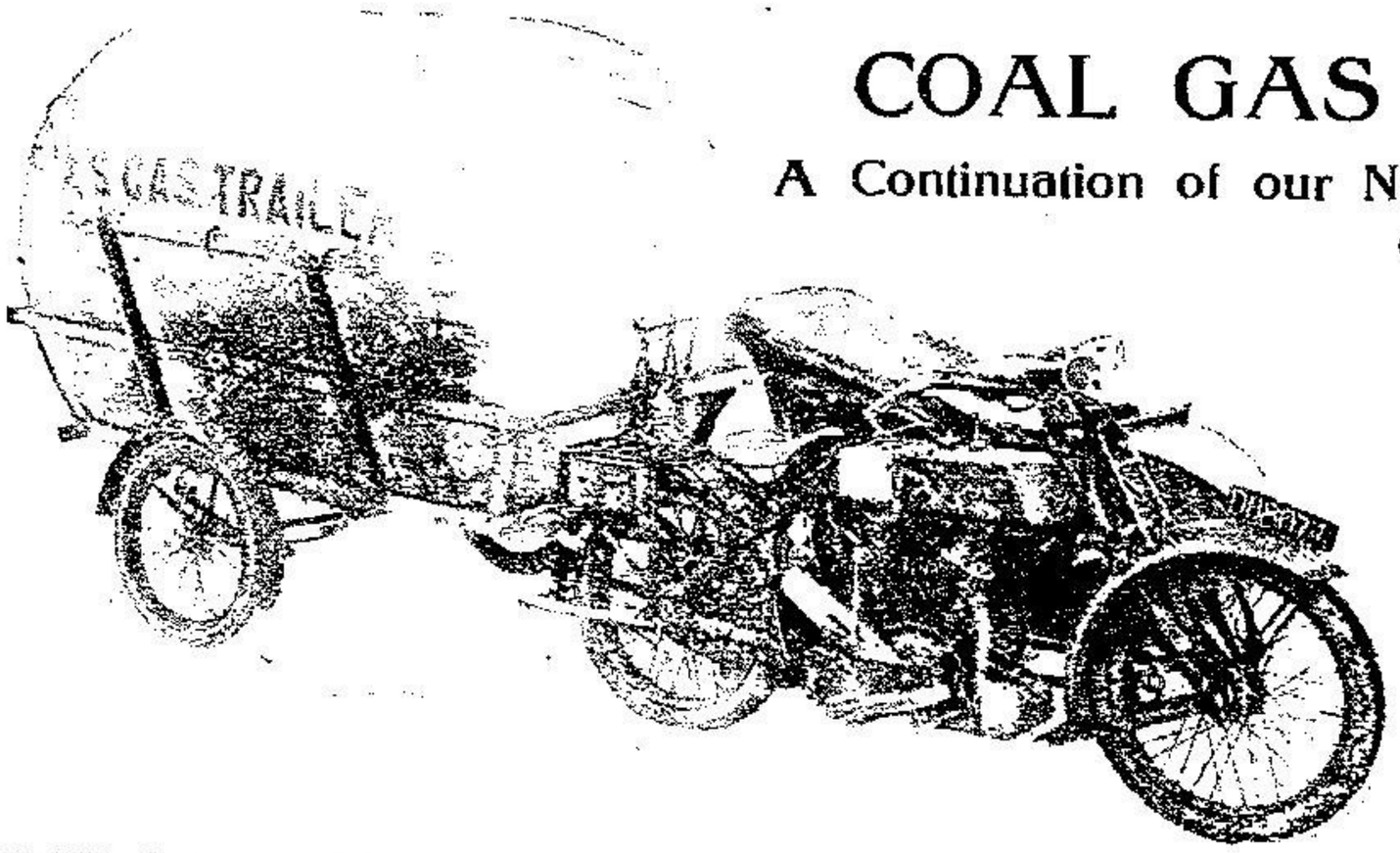
COAL GAS IN PRACTICE.

A Continuation of our Notes based on the Daily Use of Coal Gas.



THE 6 h.p. A.J.S. motor cycle on which we are conducting our experiments with coal gas is badly in need of decarbonisation. With petrol as fuel a distinct "pink" is emitted with each opening of the throttle, and the condition of things is gradually becoming worse, but with coal gas, on the other hand, a decided improvement is noticeable, owing to the increased compression caused by the deposit. We have, accordingly, adopted a simple method of varying the compression to suit the fuel. For running on petrol a solid brass ring is placed under the exhaust valve caps, the ring being $\frac{1}{8}$in. deep, and machined to assure a gastight joint, so that by raising the cap the compression space above the piston of each cylinder is increased in area, thus eliminating the knock. Before switching over to coal gas the rings are removed, and the caps screwed down on their copper and asbestos washers in the ordinary way.

Incidentally these distance pieces are very useful to any rider, as by their use one is enabled to postpone the necessary evil of decarbonising, while they save the engine considerably when a sidecar is occasionally attached to a mount not intended for that purpose.

We should imagine a Scott two-stroke would yield excellent results with coal gas—provided the gauzes were kept perfectly clean so as not to interfere with the volumetric efficiency of the engine.

In muddy weather the gasbag becomes thickly plastered with mud on either side, a constant cascade being thrown by the cycle and sidecar wheels. This accumulation naturally causes excessive chafing of the canvas at the points where it touches the carrier frame, while the repeated saturations will not tend to improve the gas-retaining properties of the fabric. Similarly, the trailer wheel bearings are subjected to an incessant shower during wet weather, and very soon become full of water and grit unless repeatedly packed with grease. We have been compelled to fit both the machine and the trailer with wide mud interceptions, consisting of flaps of linoleum and American cloth, or the life of the gas container would have been a short if merry one. Though these fitments do not improve the appearance of things, one might as well go the whole hog when towing a gas trailer and drop all thoughts of appearance.

A Non-stop Run.

Recently an extended business trip enabled us to test the road capacity of the bag on a non-stop run. We left Coventry with the container fully inflated, and the first ten miles on a good open road with a strong cross wind was covered in twenty minutes, which may be taken as comparing very favourably with petrol. Also very little gas was used.

At this point, however, we were compelled to leave the main road and proceed by little-frequented byways, abnormally heavy with mud deposited by farmers' carts from the fields, and against a powerful wind. Our speed at once dropped down to an average of 20 m.p.h., which may be taken as 5 m.p.h. slower than would have resulted from petrol. Also our consumption went up enormously, and at the end of twenty-three miles it was necessary to recharge the container. This yields a result equivalent to 46 miles per gallon on petrol, while under similar conditions, with that fuel, we have never obtained less than 58 miles per gallon.

Though when running normally the engine does not overheat, its weary flogging becomes somewhat monotonous under continuously perverse conditions. If much gear changing is done the consumption goes up at an alarming rate, and it is found profitable to stick to top gear, for no amount of continued slogging causes the engine to "pink." It will climb almost anything on top gear at its own speed, while the rider can doze in the saddle, unharassed by the necessity for niceties of mixture or delicate fingering of the clutch.

A Starting Tip.

Discounting the equipment necessary for its use, coal gas as a petrol substitute is very much preferable to the paraffin makeshifts, as, given a correct mixture, no difficulty is obtained in starting, and no knocking or other disconcerting symptoms accompany its use. Pressure feed systems will need to be very delicately applied, however, for it is an easy matter when cranking round the engine to flood the cylinders with gas, in which case it is impossible to obtain a start till the engine has been turned over a few times with the exhaust valve lifted and the gas turned off, thus completely getting rid of the old charges. With the container fully inflated and feeding a supply under slight pressure, we have, on many occasions, experienced the utmost difficulty in starting.

GAS FOR MOTOR VEHICLES.

Use for Essential Purposes only.

THE Board of Trade announces that, with the concurrence of the Petroleum Executive, it has been decided that the use of gas for motor vehicles is to be brought under the same regulations and restrictions as the use of motor spirit. It is stated that the reasons for this step are the serious position resulting from the deficiency of tonnage and the probability that circumstances may arise at any time which will require the further reduction of the supplies of petrol available for civilian purposes, and the urgent necessity of reducing to the absolute minimum the expenditure of labour and materials for other than war purposes. Its object is to provide that, to the extent that gas may be available, it shall be used only for essential needs in substitution for petrol, with the object of reducing the consumption of the latter wherever practicable and of conserving stocks.

It is recognised that a certain number of vehicles have already been fitted for the use of gas, and, wherever possible, permits will be granted in these cases to enable such vehicles to be used for essential purposes, as indicated by the Motor Restriction Order. It is not intended to prohibit the use of gas for motor vehicles in so far as, subject to other considerations, it may be available, nor to license the quantity that may be purchased, but only to confine its use to the purposes stated. The best methods of the adaptation of gas for driving motor vehicles and questions relating to the safeguards against any danger attending its use are the subject of investigation by Mr. Walter Long's Committee on Gas Traction.

It is proposed to issue shortly a new Order consolidating and amending the present Motor Spirit Restriction Orders, and the regulation of gas will be dealt with in a new Order, also to be issued in due course.


BEFORE
SETTLING YOUR
AFTER THE WAR
CONTRACTS SEE
THE
P&H
POWELL & HANMER LTD
BIRMINGHAM
ELECTRIC SETS FOR
MOTOR CYCLES.

The Three-jet Binks Carburetter.

Some Notes by a Confirmed User.

PERHAPS the following notes on this much-discussed instrument may be of some interest. I plead guilty to having been a confirmed user for the last four years, and, to me, its greatest interest lies in the wonderful variation in power output that it is capable of effecting. A secondary interest of vital importance to-day is its economy.

The Binks carburetter differs considerably from standard motor cycle types. To begin with it is more solidly made than usual, and the arrangement of the extra air intake in front of the throttle barrel stamps it as unconventional.

The float chamber follows standard practice, and has bottom petrol feed and a neat bayonet jointed cover. Access to the interior of the float chamber is a matter of seconds.

From the float chamber the petrol is taken to a reservoir beneath the three jets, where it is filtered before passing to the jets.

I should like to see another large size filter fitted below the float chamber *in addition*—a purely theoretical improvement, I must admit, because a choked Binks jet, even size No. 00 pilot, has been *a very rare occurrence* in my experience: The throttle barrel and arrangement of the three jets form the heart of the instrument, and a very sensitive heart it is.

The throttle piston is a solid brass cylinder carrying at its lower end jet dampers to prevent petrol wastage, and is drilled horizontally to provide choke tubes for the pilot and second jets. The three jets are arranged to form a triangle. Looking into the instrument from the main air intake the pilot jet is the middle one nearest the observer. No. 2 is to the right-hand, and No. 3 (the main jet) is on the left-hand.

The Phases.

Let us now consider the functioning of this carburetter and compare it with that of the more conventional type. We will suppose that the carburetter is attached to a single-cylinder engine, because this type of engine demonstrates most clearly its one serious fault.

Mr. Binks, I believe, has dubbed his instrument "a three-phase" carburetter. Personally, I should say it exhibits three and a half phases, and until the objectionable extra half phase is eliminated people will experience difficulty with his carburetter.

No. 1 phase is provided by the pilot jet being brought into operation by the initial movement of the throttle piston. This movement lifts the solid pilot jet damper off the jet top and brings the correct pilot choke into operation. With a normal size pilot jet fitted, say, 00 or 0, this provides the engine with a small quantity of approximately correct firing mixture, and enables the engine to start very easily.

Further movement of the throttle ushers in phase No. 2, in precisely the same way as No. 1 came in.

The throttle movement lifts the spring damper off the second jet as the corresponding choke tube for this jet comes into line with its spraying orifice.

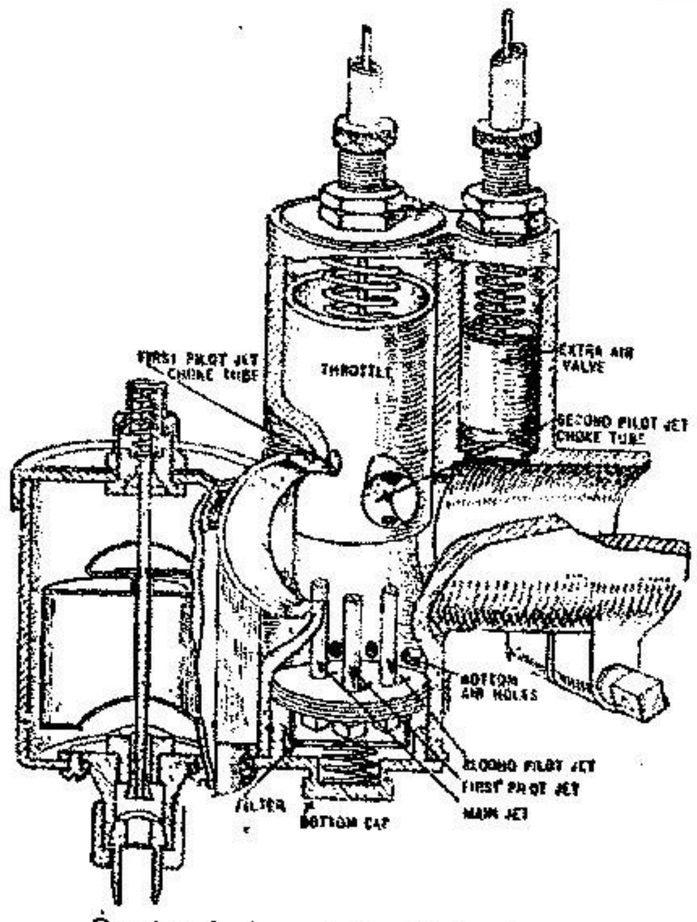
Now the engine is being fed with mixture from two fairly small jets *via* two approximately correct choke tubes. The quantity of the mixture has increased, but the quality (or petrol vapour to air ratio) has remained much the same (again presuming a normal jet setting). For all normal running in level country the two phases Nos. 1 and 2 supply sufficient power, and few people experience any trouble in finding the correct setting for pilot and second jets.

Further throttle movement brings us to the crux of the trouble some people have experienced, which I have dubbed the "extra half phase."

Theoretically, the throttle opens further, uncovering the hitherto damped out third jet, bringing all three jets into operation in a varying choke provided by the upward movement of the throttle piston.

A Hiatus.

At this point I regret to say I am not in agreement with Mr. Binks. Our disagreement centres round what happens at the point when the throttle has just



Sectional view of the Binks three-jet carburetter.

opened on to the main or third jet. On a single-cylinder engine, if the machine is speeded up to, say, 24-26 m.p.h. on pilot and second jets, and then the throttle opened to the stage in question, the engine ceases to fire momentarily, and will certainly stop if the throttle is not brought back on to pilot and second, or opened right up well on to the three jets.

I have attributed this "hiatus" to the fact that at this stage, when the third jet has just been uncovered and is coming into operation, the choke area provided by the ascending throttle piston is inadequate for the mixture requirements of the engine. The engine cannot fire the over-rich mixture supplied, and hence the firing hiatus that has puzzled a number of people. To my mind, this theory is supported by the fact that if the throttle is pushed more widely open, thus largely increasing the choke area, the acceleration of the machine is simply wonderful. I have tried every possible combination of jet setting on singles and twins, two and four-stroke, and I have not yet managed to eliminate the firing pause between second and main jet. Once one learns to use the carburetter, it is easy to mark the "dead" spot on the top of the handle-bar control; and when it becomes necessary to use the full throttle, speed up on pilot and second and open the throttle lever past the dead spot. There will then result an acceleration that will satisfy anyone, especially if the user will remember that his throttle control provides a variable choke tube in addition to its more apparent function.

In practice, I prefer the carburetter as a two-lever instrument, and always set it as such, although it is capable of wonderful automaticity. Especially is this marked on the Scott machine—a machine which the Binks carburetter suits better than any other.

Starting difficulties with this carburetter are rare if the user can resist the temptation to flood the carburetter, and does not use too large a pilot jet. Owing to the small choke area on the pilot jet, a flooding carburetter soon fills the cylinder with a very rich, badly vaporised mixture, and starting difficulty follows as a result. The remedy is to *close the throttle, open the extra air*, and scavenge the cylinder by trying to start with only the extra air open. Then a fresh attempt, without flooding, and utilising only phase No. 1, will generally be successful.

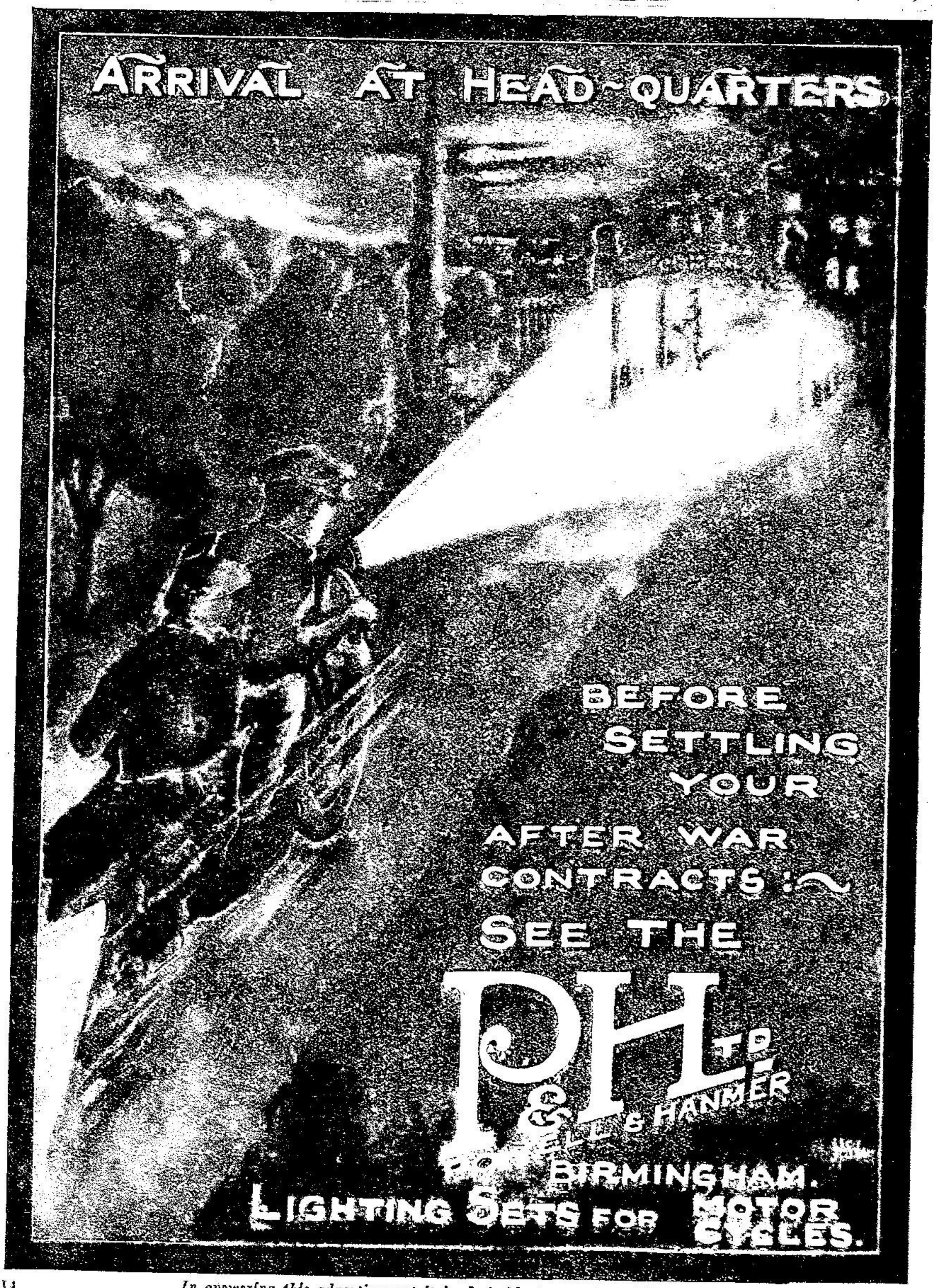
Economical Running.

On the road, in open country I find I can set the Binks control levers to give a good road speed and maximum economy simultaneously. I attain the road speed I desire by using both throttle and extra air levers—say 26-28 m.p.h. Then little by little I cut down the throttle allowance, leaving the extra air well open. As long as the speed can be kept nearly constant the engine can be persuaded to run on the merest whiff of mixture largely adulterated with extra air. Any reduction in speed, however, spoils the setting, and the performance has to be repeated after the road is clear again. The setting of the bottom air is regulated by the metal clip on the throttle body. I confess to removing it before fitting the instrument, as I find it makes very little difference to the starting or to the running.

Jet sizes are a matter for individual experiment: and as two identical engines may vary quite a lot, it is impossible to give any advice on the matter.

To summarise, it is a fine carburetter, capable of marked economy in fuel, and giving good flexibility and engine control; but in my opinion it requires some design alteration to eliminate the "dead spot" already referred to.

ALEXANDER LINDSAY, M.B.



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

Printed and Published by the Proprietors, ILIFFE & SONS Limited, 20, Tudor Street, London, E.C.4, and Coventry

PEACE MODELS.

A Brief Announcement of the Future Policy of Forty-eight Manufacturers and a List of Models likely to be Available in the Near Future.

THREE things prompted us to secure the particulars of post-war policies given on this page. First, we knew that the signing of the armistice would be regarded by motor cyclists as the opening of a new phase in motor cycling; secondly, we appreciated the necessity for the industry to "get going" again as quickly as possible; and thirdly, it is in the interest of the country that all sports, pastimes, and recreations are resumed without delay, because their revival is the nation's finest safety valve during reconstruction.

Despite the limited time at our disposal, our representatives visited the majority of makers in London, Coventry, Birmingham, and Manchester, while the long distance telephone placed us in direct touch with the Nottingham and Yorkshire firms. Obviously, it is impossible to give details here of these conversations with the captains of industry to whom we look for our future motor cycles. Sufficient it is for the moment that most of them were able to give us brief particulars of their post-war plans, a few were not ready to do this, and some preferred to leave the matter entirely in abeyance. We may say that we found most firms exceptionally enthusiastic and eager to resume business with the motor cycling public. Some, however, were more reluctant to say anything, and appeared to be suffering from the reaction of war-time strenuousness. Summarised, however, we do not think it will take long for the bulk of the trade to resume manufacture of their normal productions.

There is no doubt that the end of the war came unexpectedly to the majority of motor cycle makers, who were not prepared for the "change-over"; but, taken generally, there is undoubted satisfaction at the prospect of a fresh start in the world of conventional commerce.

A.B.C.

This company announces that arrangements for mass production of a new model are already completed.

Abingdon.

Messrs. Abingdon-Ecco, Ltd., advise us that the 6-7 h.p. King Dick and its sister 3½ h.p. models will be the first of the peace models.

A.J.S.

Messrs. A. J. Stevens will market their 6 h.p. military model. The lightweight machine, winner of the Junior T.T., will be abandoned in order to permit manufacturing facilities to be devoted to the sidecar machine.

Alldays and Onions.

The Allon single-cylinder two-stroke will be catalogued only. Concentration upon one model will be the policy of this company for the present

Ariel.

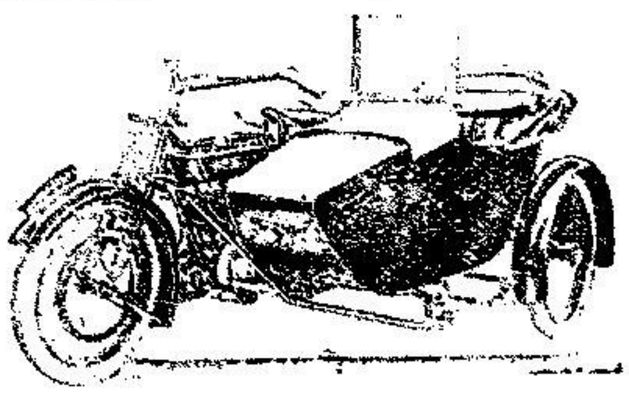
The well-known 3½ h.p. and 5-6 h.p. Ariels will be the immediate post-war models of Messrs. Components, Ltd.

Bradbury.

When "change-over" arrangements in the factory are completed a new lightweight four-stroke model, together with the well-known 554 c.c. single and 750 c.c. twin, will be marketed.

Brough.

A new 3½ h.p. flat twin embodying several innovations will be the sole model of the Nottingham concern, which henceforth will concentrate upon one type. Its features will include new cylinder design, improved carburetter heater, and efficient silencer. This model will be ready almost immediately.



B.S.A.

The 4¼ h.p. single, which has done such good service with the French Army and as the motor light infantry in the African campaign, will be the immediate post-war B.S.A.

Calthorpe.

The Calthorpe range for 1919 will be practically the same as announced before the restrictions compelled a cessation of activities. This includes a 4 h.p. twin, 2¾ h.p. two stroke, and 2½ h.p. four-stroke lightweight.

Campion.

An 8 h.p. twin, 5½ h.p. single, and 2½ h.p. two-stroke will make up the Campion range for 1919.

Chater-Lea.

The 8 h.p. No. 7 combination will be offered as soon as possible.

Clyno.

The post-war model will be an entirely new proposition embodying several interesting features, including 28×3in. wheels, a spring frame, sprung sidecar wheel, and an 8 h.p. twin engine with detachable cylinder heads.

Dot.

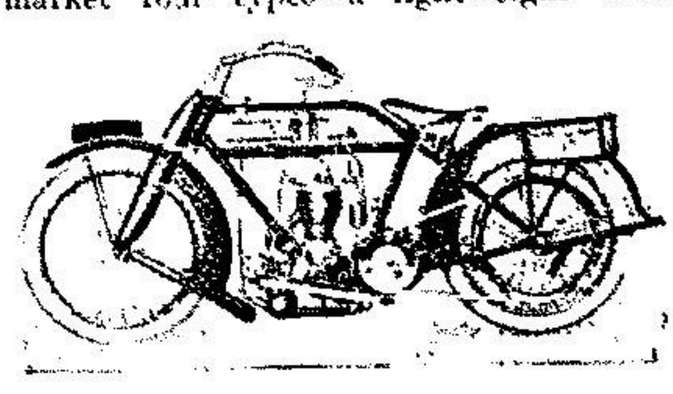
This Manchester concern will concentrate chiefly upon a new lightweight with a 3 h.p. engine and the Dot duplex frame. It is not yet possible for the makers to say whether the engine will be a twin or a single.

Douglas.

The Douglas policy will be announced shortly.

Excelsior.

Messrs. Bayliss, Thomas, and Co., will market four types—a lightweight with J.A.P. 2½ h.p. four-stroke engine, another with a two-stroke unit, and 5-6 h.p. and 8 h.p. twins.



Harley-Davidson.

The importation prohibition makes the English policy of the H.-D. firm uncertain. No doubt immediately restrictions are removed the latest models will be available in limited quantities. The Harley Co. has a new flat twin model.

Hazlewood.

The "Big H." firm anticipates that it will be able to resume manufacture of motor cycles in the new year.

Hobart.

This Coventry firm will market a lightweight with spring frame.

Humber.

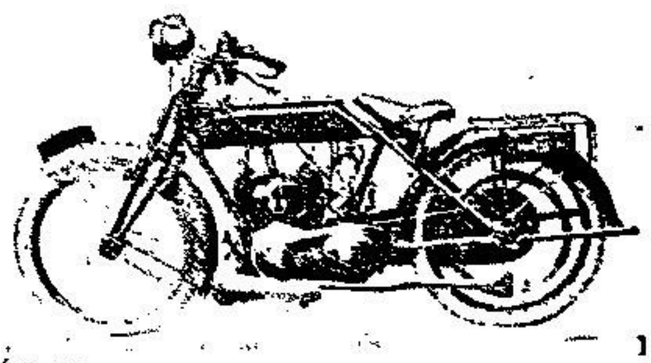
This well-known firm has been so closely allied with the production of aircraft that, with the other branches of its business (cars, bicycles, etc.), it is not expected that more than one Humber motor cycle model will be marketed when the company is able to devote more time to civil business. In all probability this will be the 3½ h.p. air-cooled flat twin.

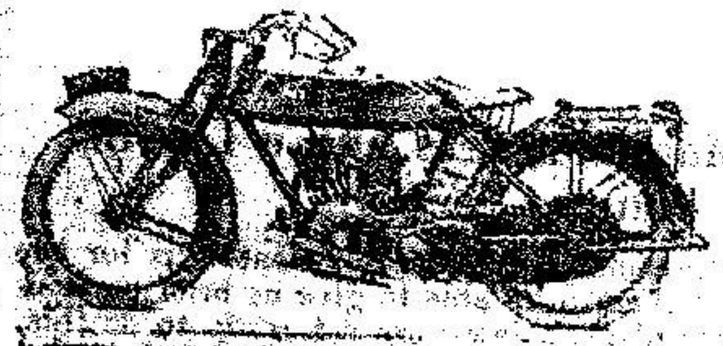
Indian.

The arrival of new Indian models when the embargo is removed is patiently awaited by those British motor cyclists who prefer the American type of machine. The Indian little flat twin has not been seen in this country yet.

Ivy.

A restart should be possible early in the new year, when Messrs. Newman will re-introdnce their two-stroke model which has proved so satisfactory.





James.

This firm is in a position to deliver its several models at once. Orders will be executed in order of rotation. The range includes 500 c.c. twin, 4¼ h.p. "Big Single," 2¼ h.p. two-stroke, and 5-6 h.p. twin.

Levis.

A limited number of the Levis two-stroke will be available almost immediately.

L.M.C.

Two modified war-time models with 4½ h.p. single and 6-7 h.p. twin engines will be marketed early in the new year. These will have countershaft gear and chain-cum-belt transmission. A new spring frame model will be ready soon.

Matchless.

The W.O. 8 h.p. combination is the post-war Matchless, and for the time being Messrs. Collier will concentrate upon this model.

Morgan.

The G.P. and De Luxe tourist models, as supplied on special permits during 1918, will be the immediate post-war machines of the Malvern firm.

New Hudson.

This firm has been so closely connected with the production of munitions that its motor cycle policy is not yet decided.

New Imperial.

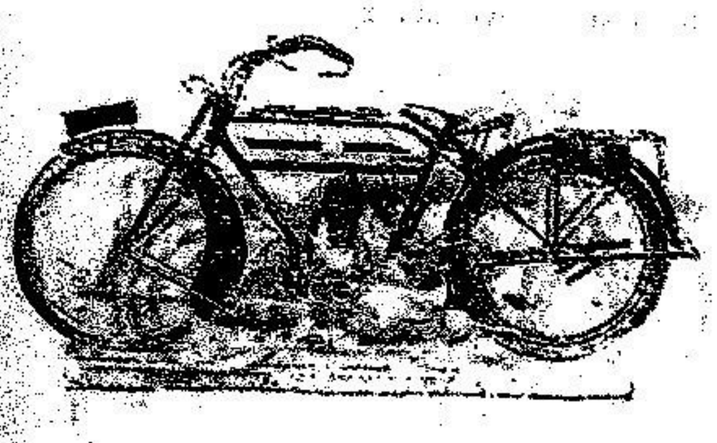
A new spring-frame machine will be available very shortly. In the meantime this firm will market its war-time models.

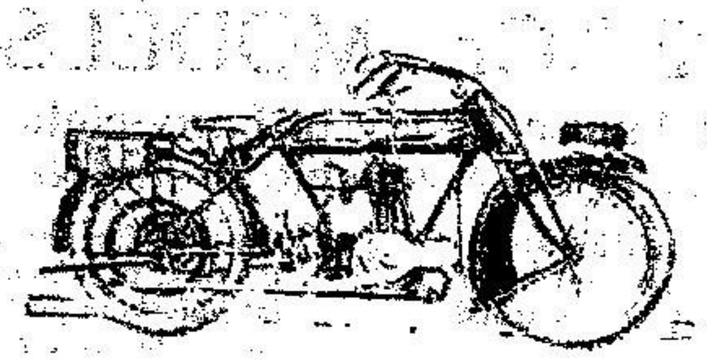
Norton.

"Singles only" is the post-war policy of the "long-stroke" firm. The "Big Four" with chain transmission and countershaft gear, the 500 c.c. single gear speed model, and a 3½ h.p. tourist will be catalogued.

N.U.T.

A rigorous policy has been decided by the Newcastle firm, particulars of which will be announced later.





O.K.

Messrs. Humphries and Dawes have an interesting proposition in the lightweight field. In future this firm will make one model only, and all units and fittings will be built in its own factory.

Overseas.

The first models to be ready will be a 3½ h.p. single and a 6-7 h.p. twin. A new model with spring frame is promised for early in the new year

P. and M.

A new single-cylinder model will be ready early in the New Year.

Premier.

A new passenger machine of interesting design will be ready shortly.

Raleigh.

The makers of the old Raleighette and the well-known Raleigh bicycle will market a 6 h.p. flat twin with spring frame. One of the few entirely new models which will appear on the market.

Rex.

A new big twin Rex with spring frame may be expected in the spring. Manufacturing arrangements are not yet quite ready.

Rover.

The new 6 h.p. twin model probably will be the leading line of the Rover Co., but the 3½ h.p. with countershaft gear undoubtedly will be marketed.

Royal Enfield.

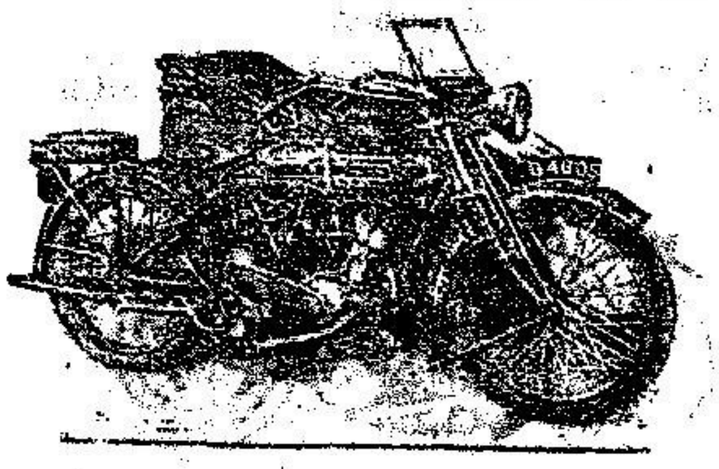
The post-war range of the Enfield Cycle Co. will include most of the pre-war types, including the 6 h.p. combination (8 h.p. engine optional), 3 h.p. twin, and two-stroke lightweights.

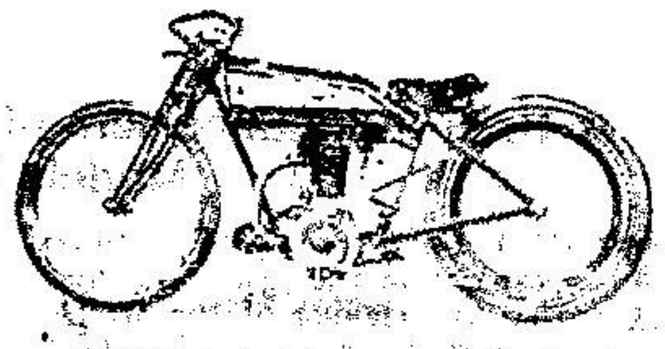
Royal Ruby.

The big twin outfit designed for the Russian Government, but conforming in many ways to the ideals of the British and Colonial rider, will be the post-war model of this concern. It is fitted with an 8 h.p. J.A.P. engine.

Rudge.

As has been anticipated by sporting motor cyclists, the T.T. model—the winner of the last T.T. race—will be





included in the Rudge range of models for 1919. In addition to the T.T. model, the 3½ h.p. tourist and the 750 c.c. single, both with the multi-gear, will be catalogued.

Scott.

Post-war policy undecided.

Sparkbrook.

The post-war model will be a Villiers-engined two-stroke lightweight similar to the one marketed in 1914 and 1915. The manufacture of the 6 h.p. combination will not be continued.

Sun.

The Sun-Vitesse lightweight with semi-open frame, as illustrated in a recent issue, will be the main proposition of this concern. Several other models will be catalogued.

Sunbeam.

The 3½ h.p. Sunbeam, with minor improvements, is being retained as a post-war model, while the twin model will be the 8 h.p. machine, which has been used with such success as a sidecar ambulance in France.

Triumph.

The 4 h.p. countershaft model, used in such numbers by His Majesty's Forces, will be available for the public immediately the Government give the makers permission to accept orders.

Veloce.

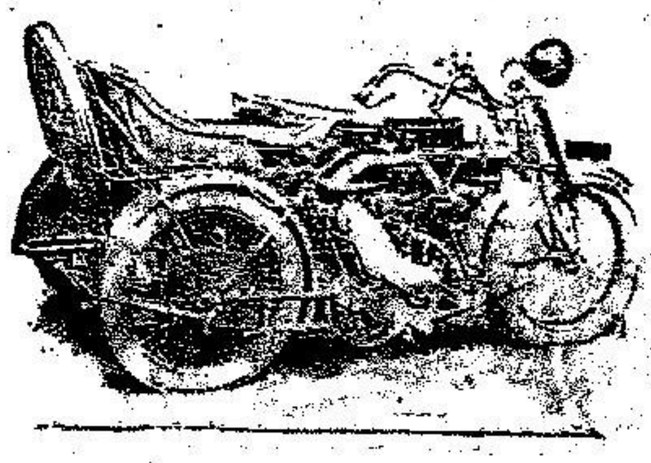
A limited number of the economical model D two-stroke Velocette will be available in a few weeks' time. Early in the new year a new model will be introduced embodying a new frame and a clutch contained in the flywheel. This firm also has a few 3½ h.p. and 2½ h.p. four-stroke models.

Wooler.

This enterprising firm is engaged upon the production of a new type.

Zenith.

Two twin models, with 4-5 h.p. and 8 h.p. engines and the well-known Gradua gear, will be the post-war Zeniths.



WIRING AN ACCUMULATOR LIGHTING SET.

A Selection of Letters from Readers setting forth Various Solutions to the Wiring Problem advanced by "Chinook."

To the Editor of "The Motor Cycle."

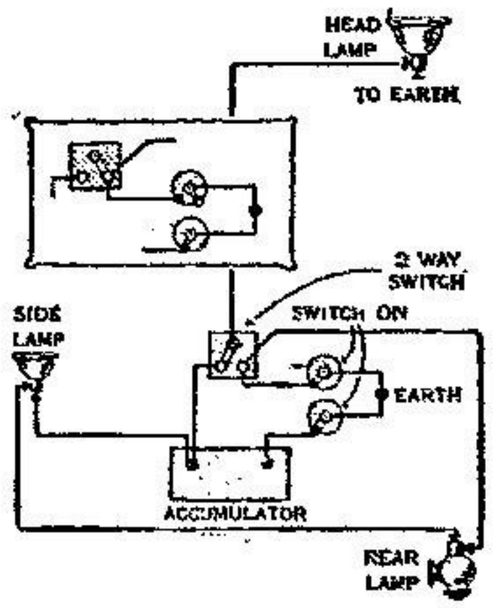
Sir,—My thanks are due to your many readers who have been so good as to write you or me personally *re* the problem of wiring three lamps, two of which are "earthed" to the frame (the third, the sidecar lamp, being mounted on the sidecar body, and therefore insulated) in such a way that all three can be thrown into series, thus consuming a minimum of current from the accumulator when the machine is left standing at the roadside. Such a generous response is really refreshing, and the variety of schemes set forward, each differing from the rest widely or in some detail, is a good illustration of the convenient adaptability of electricity as a lighting medium.

CHINOOK.

[We append, in an abridged form, a selection of the ideas received, and regret that, owing to restricted space, we have had to withhold a large number of interesting suggestions.—ED.]

MR. F. REYNOLDS: "I venture to send a sketch showing one way of doing what 'Chinook' desires, which may be of some use to him and others.

"It will be necessary to insulate the tail lamp from the machine as well as the side lamp, but this can easily be done with the aid of a little insulating material, such as red fibre inserted between the clips holding the lamp bracket to the frame of the machine. A two-way switch will also be required in addition to an extra tumbler switch of the usual pattern.

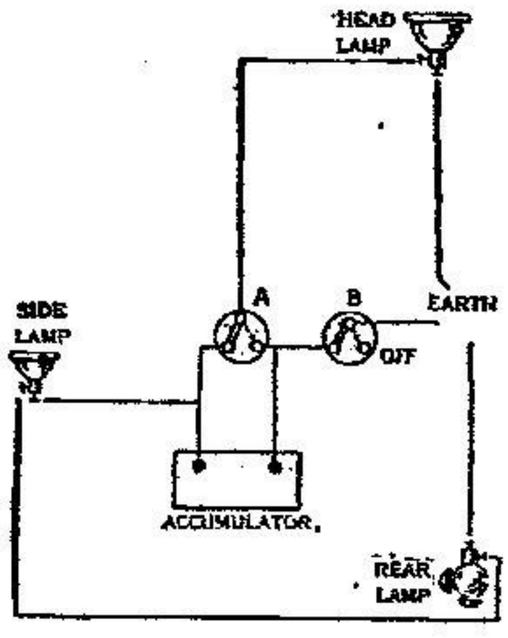


"The diagram gives the position of the switches when the side lamp and tail lamp are in series, and the head lamp in direct circuit with the accumulator. The inset shows the position of the switches for all three lamps in series.

"It will be seen that whichever system is in use at the time the original switch as fitted to 'Chinook's' machine will control all the lights, and no 'short' can take place by wrongly manipulating the switches."

MR. A. WATSON: "In answer to 'Chinook's' request for a method of connecting up his three lamps in series at will, this can be done in a few minutes by the addition of a two-way switch without any extra wire, or at most only a few inches.

"Call the full line position of each switch 1 and the dotted line position No. 2, then we get with: A1 B1=full lights (side and tail in series). A1 B2=no lights. A2 B2=dim lights (all in series). A2 B1=side and tail lights only.

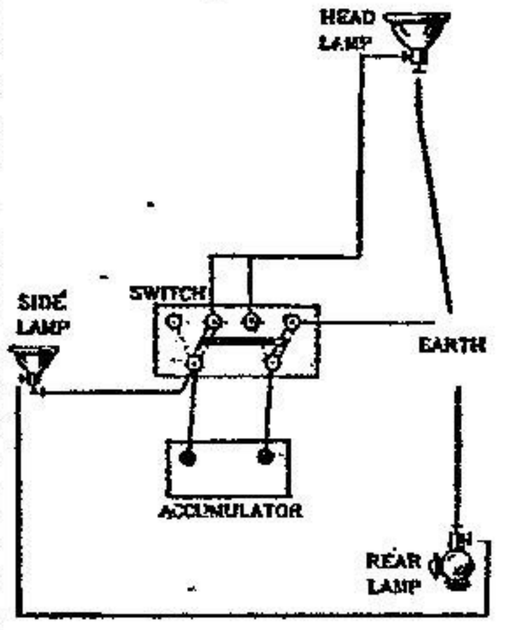


"The operation of the switches would be simplified if they were coupled together. Then, if they were wired correctly, we should get only positions 1 and 3. Position 4 is not required, and position 2 can be obtained by switching off the head light, or any of the three lamps by its own lampholder switch.

"This may seem rather complicated on paper, but in reality it is very simple. Suppose you are riding with lights out and wish to light up. First switch on the head lamp by its own switch, when all three lamps will light in series. Then switch over the two coupled switches, and the lamps will be put in parallel.

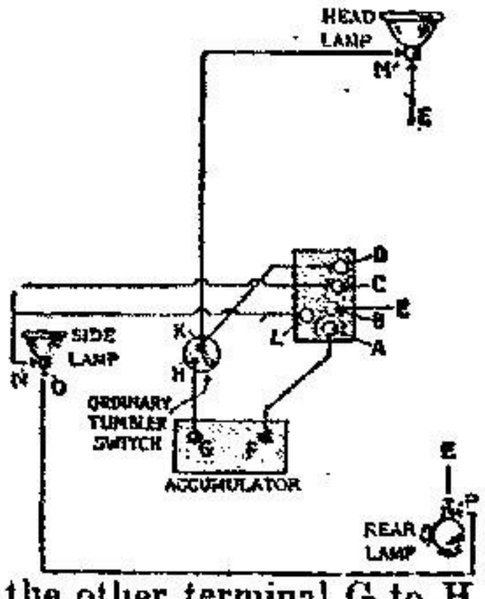
"It would be as well to put the side and tail lamp switches out of action, otherwise, if the lights were put out by either of these, it would necessitate stopping, or reaching over to them to light up while running."

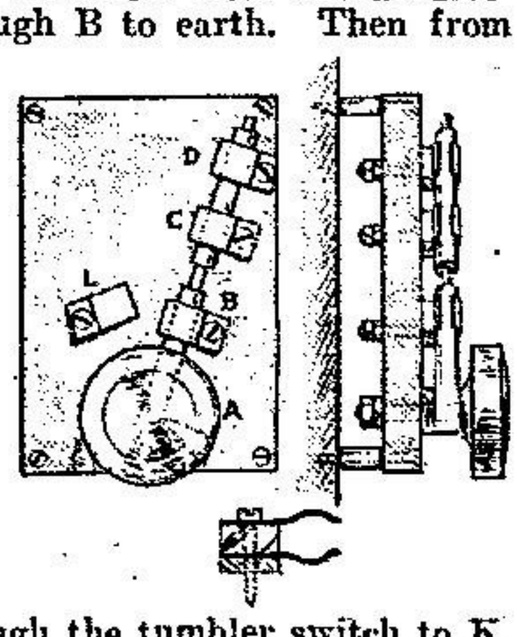
MR. J. GRUNDY: "I was very much interested in 'Chinook's' article on accumulator lighting sets in your issue of December 27th. I notice he requires a system, which will permit all three lamps being thrown in series if desired, for leaving the machine standing, and I have pleasure in enclosing a wiring diagram which fulfils this requirement. The switch at present in use would be replaced by a two-way change-over switch provided with an 'off' position; this could be purchased for a shilling or two, or could be made at home. There would be very little extra wire required, and the existing connections to all three lamps would not be disturbed. Two separate switches could be employed if desired, as suggested by 'Chinook,' but if the rider forgot to leave one in the 'off' position before switching in the other, a short circuit would be caused and injury to the accumulator would probably result."



MR. W. E. COTTIS: "In 'Chinook's' interesting article on accumulator lighting in *The Motor Cycle* for December 27th, 1917, I notice at the end he hankers after a system of wiring whereby he can switch all his lamps in series when standing the machine at the roadside. I give below a diagram, the wiring of which achieves this by the addition of a simple two-way switch, which can be made at home by anyone who is used to pottering about with a few tools. I also give rough sketches of how this switch can be made.

"The arm of the switch is made of hard wood or fibre rod with two brass sleeves over it so that when turned to the right it has the effect of shorting A to B and C to D separately. The current would then flow from the accumulator terminal F to A and through B to earth. Then from the other terminal G to H, through the tumbler switch to K, thence to M, through the head lamp, and back to earth. This gives full light at the head. Starting again at G, through H and K to D, through the twist switch to C, from there to N, through the side lamp to O, thence to P, through the tail lamp to earth, returning to the accumu-

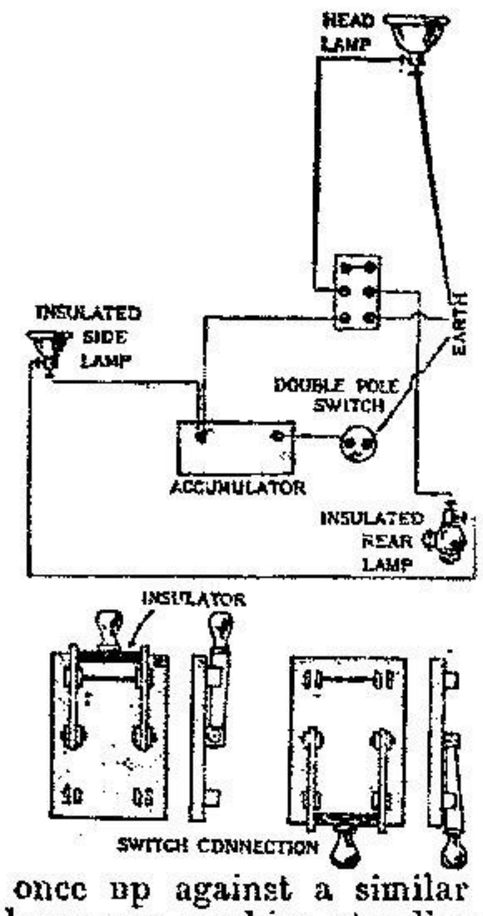


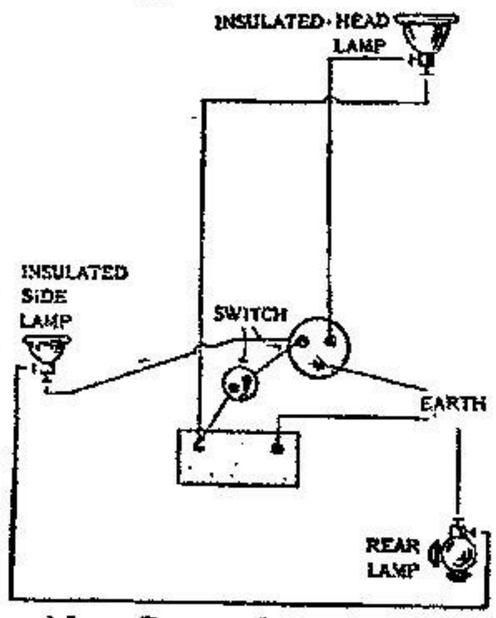


Wiring an Accumulator Lighting Set.—

ator through B and A and F, gives us the side and tail lamps in series. Now, by turning the twist switch to the left we get the current flowing from F to A through the switch to L, thence to N through the side lamp to O and P, then through tail lamp to earth. From here to the head lamp earth, through the head lamp, thence to M and K, returning through the tumbler switch to G. This gives us the whole three lamps in series. The tumbler switch is used for shutting off all lamps in either wiring."

MR. S. BARNETT: "'Chinook' is on a wild goose chase unless he is willing to make a certain amount of alteration to the principles in his system. I was once up against a similar difficulty, and as I often had to leave my machine standing its solution was a rather urgent matter. The accompanying diagram should make my method clear."



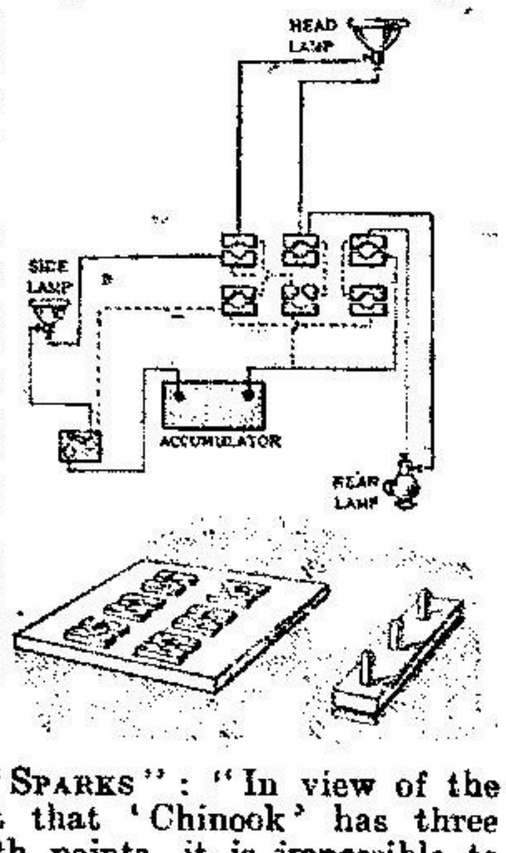


MR. E. WHALLEY: "'Chinook's' small difficulty can be overcome by utilising an extra two-way switch and altering the existing switch to the battery side instead of the earth; also the head lamp will have to be insulated as well as the side lamp. The only difficulty is that the head lamp will have to be operated by its own switch."

MR. C. A. COPINGER: "I have pleasure in submitting a simple means of accomplishing 'Chinook's' desired result, the only requirements being two three-way plugs, which he could make himself or obtain from any electrical stores.

"He, of course, would have to insulate the lamp fittings from the cycle frame, and this would be in any event a great improvement, as by using the frame as a conductor a much greater strain is imposed on the battery than occurs when using two good copper wires.

"In my sketch, by putting the plug top in the upper plug connects all lamps in series, and in the lower plug in parallel."

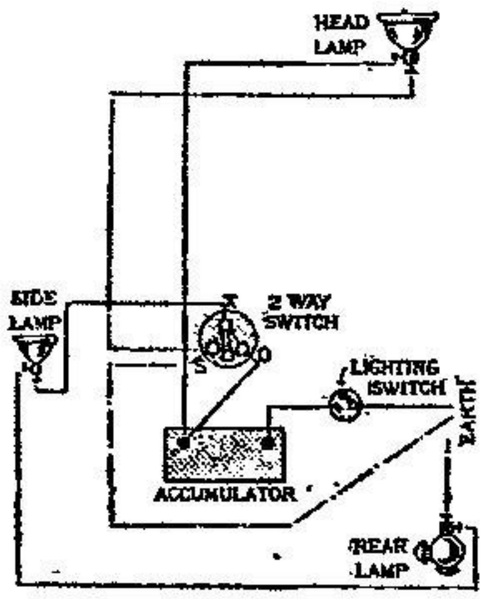


"SPARKS": "In view of the fact that 'Chinook' has three earth points, it is impossible to obtain the results that he desires, but by employing another switch and detaching a wire when the machine is at rest the following might suit:

"Two-way switch at O for running—*i.e.*, head lamp to E, side and tail in series to E.

"Two-way switch at S for stationary—*i.e.*, all lamps in series, but E to be disconnected at head lamp.

"Dotted line shows extra wiring required."



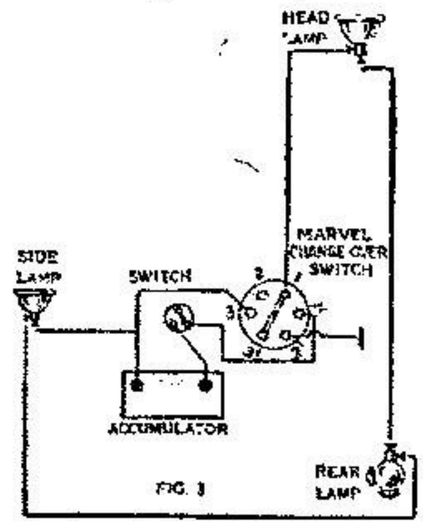
"C.E.S." says: "I should like to bring forward a system by which, as 'Chinook' suggests, all the lights may be left in series whilst the machine is standing.

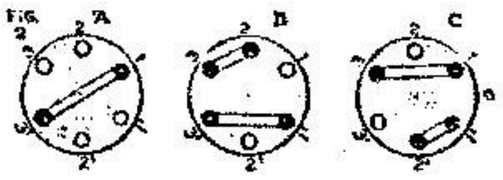
"By adapting a Marvel change-over switch (A. P. Lundberg and Sons, Liverpool Rd., N.), and connecting it as shown, the desired result may be obtained.

"As will be seen, the Marvel change-over switch has six terminals, which are connected by the rocking contacts, as shown in fig. 2 (*b* and *c*).

"The connection shown in fig. 2 (*a*) is to be made by the person fitting switch. The No. 2 terminal is not to be connected in any way.

"The single pole switch is simply used for cutting the current off, the Marvel switch having no 'off' position."





AIR-COOLING FOR CARS.

ALTHOUGH motor cyclists, as such, are not necessarily interested in the engine arrangements of motor cars, an article by "Runabout" in our sister journal, *The Autocar*, of December 29th, should prove of general interest. The question of air-cooling for cars is the subject he takes, and from his own experiences he contends that this type of cooling for cars can be quite satisfactory.

Quoting a leading car designer, he says that no petrol engine can develop its full efficiency at the temperature of the boiling point of water. This implies, of course, that no water-cooled engine can ever be thoroughly efficient, because the cooling arrangements will break down before the engine really gets to work. The result of this discovery in the case of this particular designer has been the final scrapping of water-cooling, irrespective of horse-power and size of cylinders.

A Successful Air-cooled Car.

Most of our readers will be aware of the existence of the Franklin car—an air-cooled car that has for many years been on the American market, and has given every satisfaction under the most arduous tests and in the most regular service. "Runabout" dwells on an oft-treated topic when he says that experiences gained before the war are now so antiquated that they cannot be soundly applied as precedents in the judgment of such a question as this, and he says the dogma of the designer already mentioned is that with a proper cooling system and a suitably-designed cylinder it actually pays to run an engine at far greater temperatures than were previously regarded as allowable. Needless to say, there are still considerable obstacles to be overcome before air-cooling for cars can become a regularly accepted thing, and the two obstacles that give "Runabout" the most trouble are sparking plugs and the appearance of the complete car.

Personally, we are inclined to think that the sparking plug question can be easily overcome, and we agree that the appearance of a car is really judged only by what one is used to. When a novel design has become firmly established and is a common sight on our roads, it automatically becomes a standard of judging beauty in itself.

As "Runabout" says, custom is everything in these matters. In the early days of the motor car we missed the horse and reins; similarly the blunt and businesslike snout of a Clerget-engined scout aeroplane is not now regarded as anything very heterodox, but only different from the commoner type of plane.

The use of aluminium in cylinder and piston construction also has an important bearing on the topic of the air-cooled car, and, as all motor cyclists know, it is likely to be of great importance in the future development of the motor cycle. There is also little doubt that development of the air-cooled car will materially assist development of the motor cycle, as the two types, now so different, will tend to run, in engine matters at least, on convergent lines

A Board of Trade Publication.

A New and Valuable Series.

THE Board of Trade on January 3rd issued the first number of a new series of the *Board of Trade Journal and Commercial Gazette*. This new series is intended to cover the whole sphere of British commercial and manufacturing enterprise, and to give every information to business men and manufacturers likely to be of use in the development of their enterprises, and so of British trade as a whole.

Giving the All-clear signal in a London suburb.

The *Journal* for January 3rd contains a most valuable and instructive "Foreword" by the President of the Board of Trade, which contains most useful advice. The whole *Journal*, of course, is devoted to treatment of potential markets in all kinds of articles and all over the world.

Advice and an Appeal.

The following are two extracts from the "Foreword": "No Government Department can, in my opinion, secure success for our trade unless the traders and manufacturers themselves simultaneously put forth strong efforts on their own behalf. The ultimate success must depend upon the traders and manufacturers themselves.

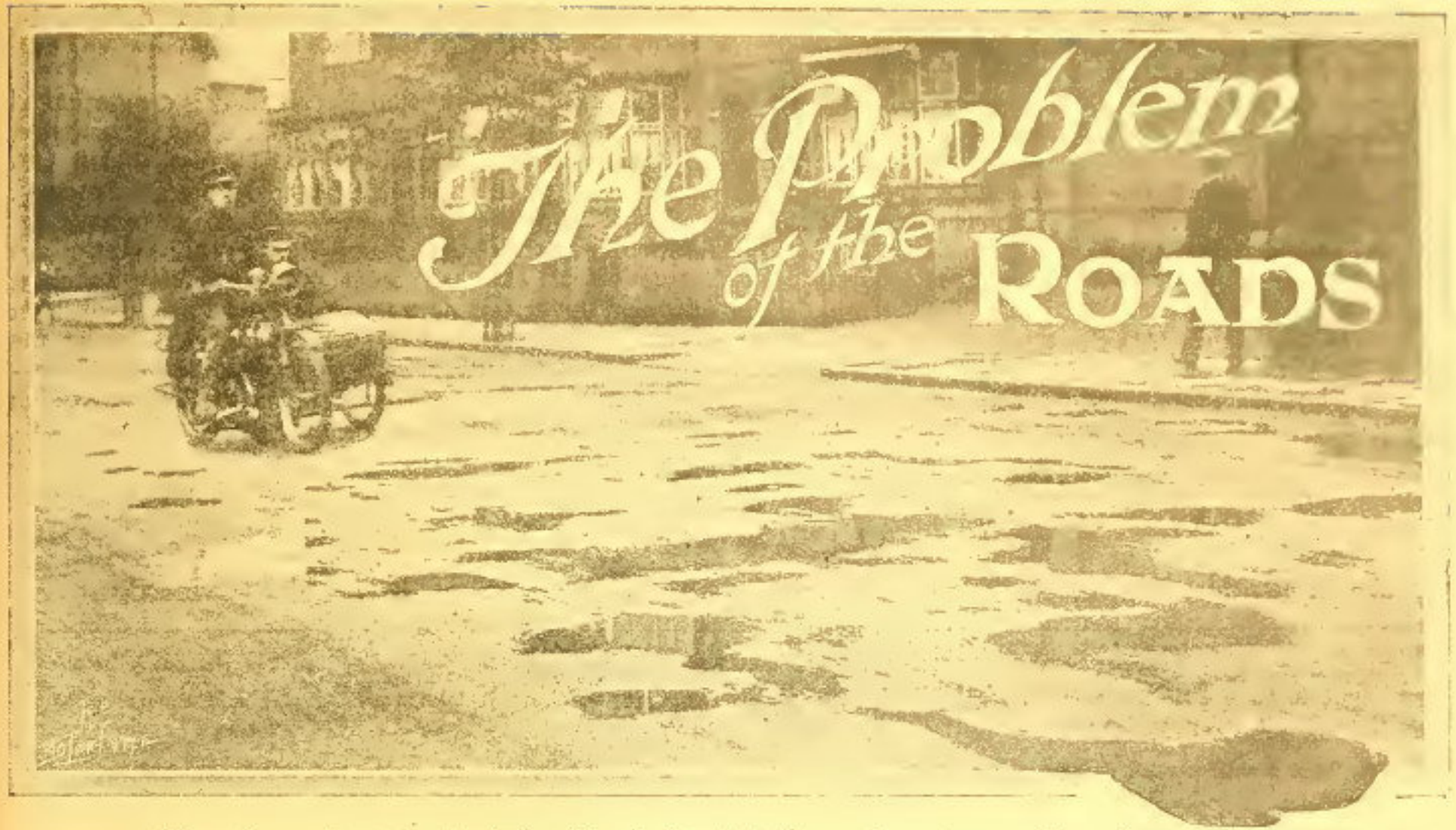
"We propose to give the widest publicity possible to our daily work, and to open the door to suggestions and advice, and in return we ask for the great business world to meet with us frequently in spirit of friendliness and co-operation actuated by one motive only—the advancement of our trading interests in all parts of the world."

"Help us to make it possible to show through the pages of the *Journal* a constant and steady growth in our trade."

Another passage in the "Foreword" says: "The Board of Trade is being recognised and strengthened, and in an early issue of the *Journal* a full explanation of the changes will be published."

AII

A scene on Armistice Day. A heavily loaded Enfield with a youthful burden.



All over the country, roads are to be found in a similar state to the one shown above, requiring entire reconstruction.

A QUESTION OF GREAT INTEREST TO MOTOR CYCLISTS.

A greeting card received from the D.R.'s of A Divisional Signal Company, of which the artist is a member. The sender, who omits his name, says: "With all good wishes and appreciation for the paper that has raised, even in dark days, many a heated argument, and has for a time dispelled the thoughts of war."

From a "Don R."