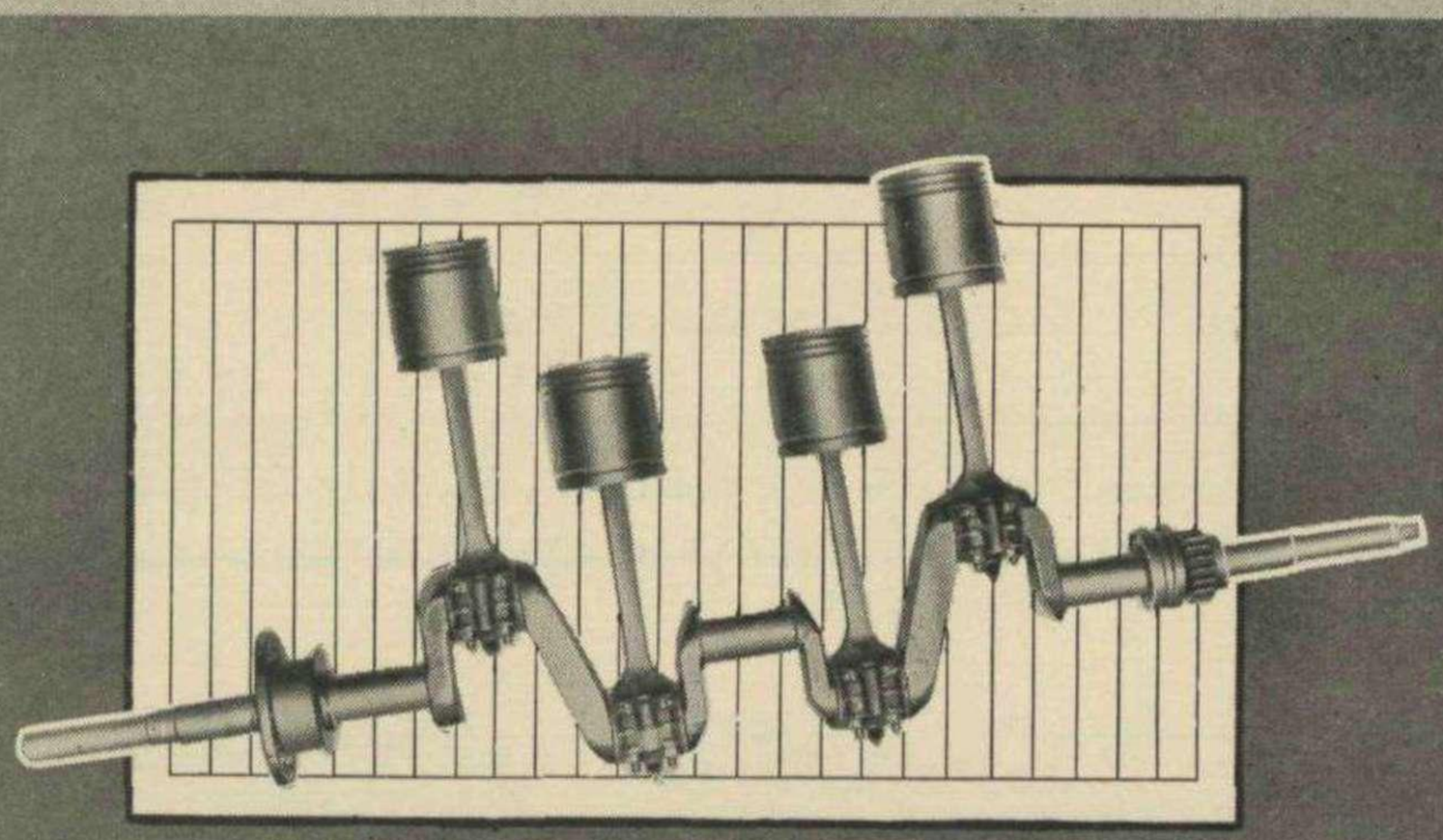


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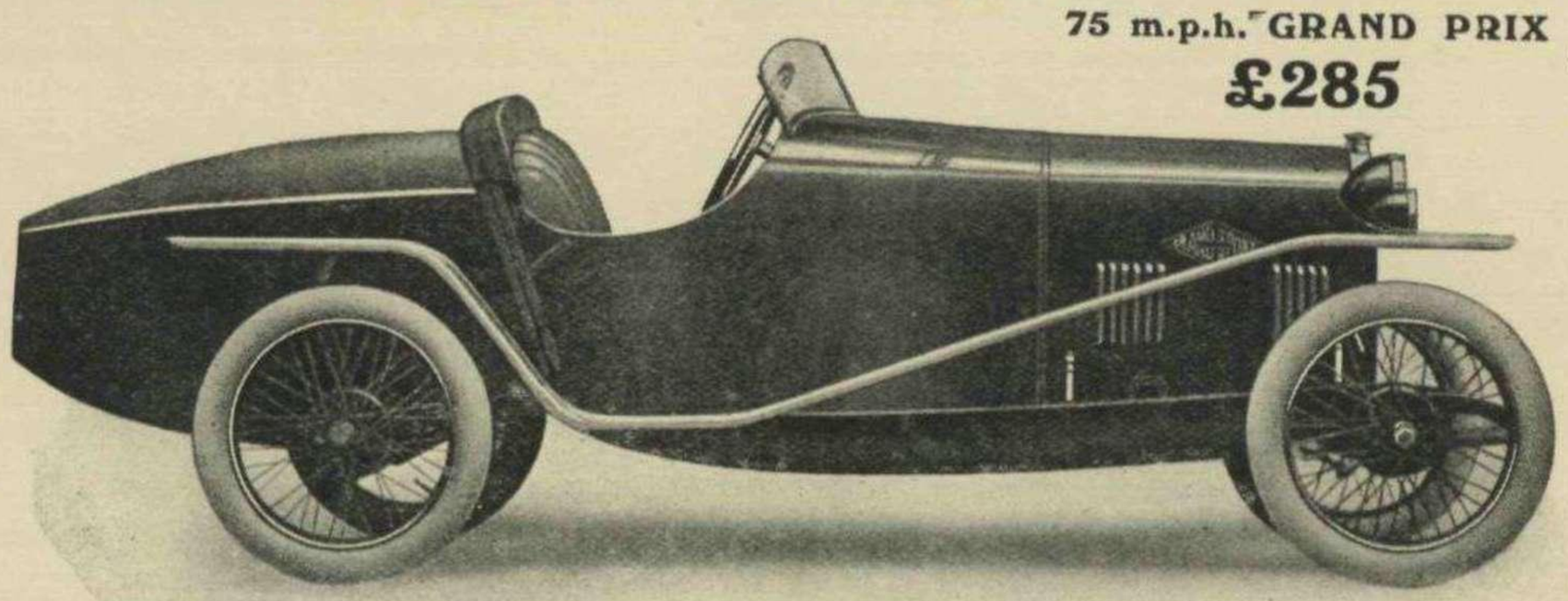
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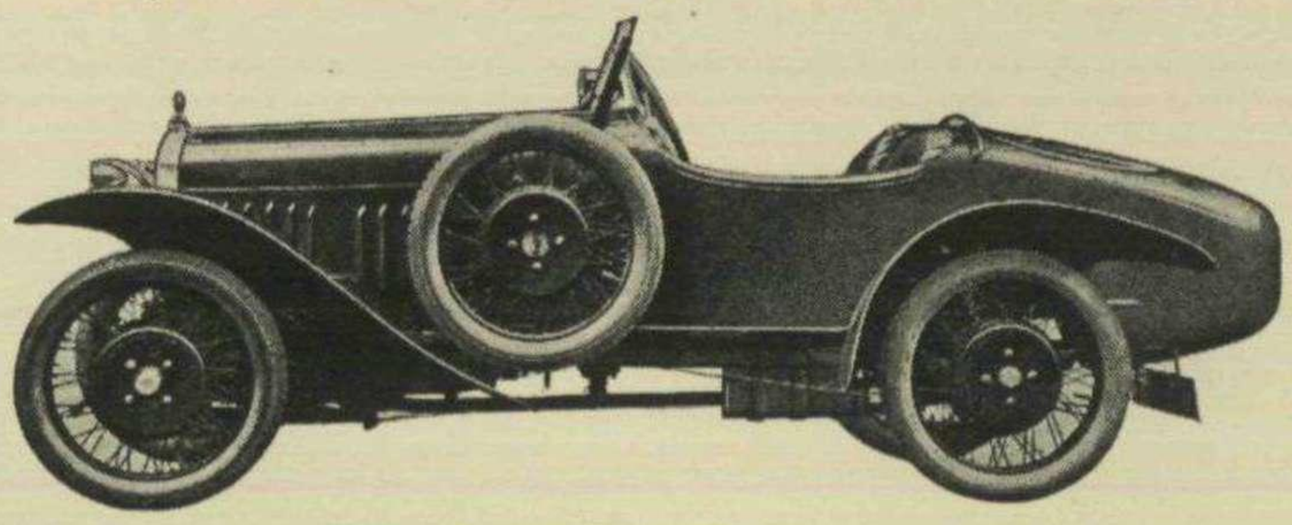
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No. 2. VOL. 3

Edited by RICHARD TWELVETREES, A M.I.MECH.E., M.S.A.E., M.SOC.ING.CIV. (France)

AUGUST, 1926.

EDITORIAL NOTES.

A Plea for a Brighter Brooklands.

THE month of August, 1926, will long be remembered as the time when the first great International car race was held in this country. Whatever measure of success attends the organisation of the R.A.C. Grand Prix, the running of the race may be said to constitute a definite step in the right direction, the thin end of the wedge which may eventually, we hope, lead to a better recognition of the sport of motor racing in this country. The R.A.C. Grand Prix will be followed by other similar events, utilising different variations of the Brooklands Track ; the motor-cycle clubs will follow suit by organising semi-road races over a similar course, and perhaps by 1927, the track authorities can be persuaded to construct a road circuit within the Brooklands estate, on the lines of the J.C.C. high speed trial course, and utilising some of the existing roads. This form of track has been successfully used at Monza and Montlhéry already and it is high time that the Weybridge track was brought into line with modern requirements.

Nothing could be worse from a spectacular point of view than the ordinary B.A.R.C. meeting with its invisible starting and finishing lines and its herd of uninformed spectators in the paddock and on the Members' Hill. Motor-cycle meetings at least have the virtue of concentrated interest at the fork, where are situated paddock, pits, start and finish, though here again the back wall of the Grand Stand quite spoils one's view of the distant side of the track.

Given that even under these miserable conditions, Brooklands does definitely attract a not inconsiderable gate, it seems sheer folly to neglect improvements which might easily lead to doubling of the present normal attendance. A road circuit if carefully designed to have good visibility at interesting points and with well thought out advertisement should bring thousands from all over the country, and what is more they would not journey in vain. Fast cars or motor-cycles on a difficult course provide one of the most intensified forms of excitement, far surpassing any other sport and even rivalling the fantastic stunts of the cinematograph acrobat.

The next step, having shown the public that road racing is really worth watching, and incidentally demonstrating how very safe a motor vehicle really is, even at high speeds, the next step is to continue to foster the interest created by the Brighter Brooklands until a body of public opinion is created that will look upon sporting motorists with more favour than is at present bestowed.

It should not then be a difficult matter to get the long delayed and by now almost abandoned Road Race Bill through the House of Commons.

The introduction of a few well organised road events should do more to popularise motoring generally, until the present spirit of smouldering hostility is finally quenched completely, and the general public made to realise that motors and motorists are not after all such utterly deadly and unpleasant things.

The natural outcome of this would be a general relaxation of the present police persecution that is practised in some parts, together with the drafting of a really fair system of legislation and taxation for motorists.

Castles in the air ? Perhaps—but, large oaks from little acorns grow, etc. !

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CARS FOR THE R.A.C. GRAND PRIX.

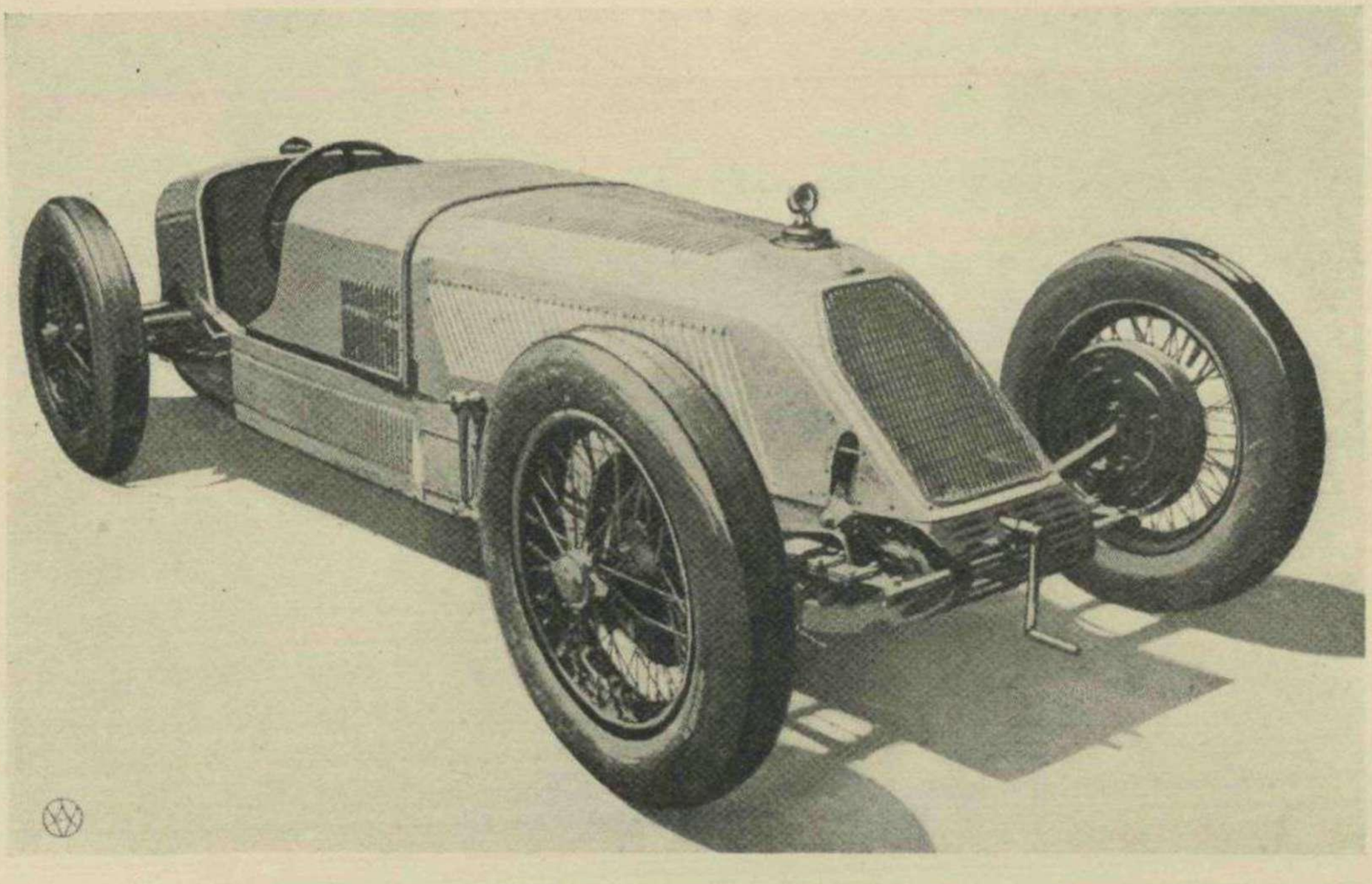
Short Notes on the Probable Starters in this Important Event.

THE TALBOT.

THE S.T.D. concern having raced the three Darracq cars for over three years with such remarkable success have at last produced a team of three new racers with which they hope to repeat or improve upon their previous performance. The new cars, although called Talbots, actually emanated from the French factory, and have already been entered in several important continental events. However, the teething troubles so often associated with a new design have prevented the Talbots from giving a really good account of themselves, though it is confidently expected that these will have been overcome before August 7th. The engine, of 1,500 c.c., is of the now popular 8-cylinder-in-line type, which has practically become the recognised standard for the modern medium-sized racing car. The cylinders are of steel with water jackets welded to them and are arranged in four blocks of two. The valves, two per cylinder, working in the usual hemispherical combustion chamber are operated by twin overhead camshafts driven by a train of gears at the rearmost end of the engine. A supercharger of the Roots blower type draws the mixture through a single solex carburettor, the whole apparatus being arranged low down at the forward end of the chassis. As will be seen from the illustration a sloping radiator is fitted for cooling purposes, supplemented by a centrifugal pump. An interesting point is the oil radiator, fitted below the water radiator and through which the oil is circulated by two mechanical pumps.

Four speeds forward and reverse are provided by the gearbox and a multiple metal plate clutch running in oil comprises the first step in the transmission.

Ignition is provided by two 4-cylinder Bosch magnetos running at engine speed and one sparking plug per cylinder is employed. The chassis is of extremely deep channel section and being liberally cut away is very light. The whole is slung very low, both front and rear axles passing through the side members. The petrol tank, which is easily removable, is carried at the extreme rear end of the chassis immediately above the rear axle, while in order to seat the driver more comfortably the engine is slightly offset, enabling a low and reasonably central position to be obtained. In all probability these interesting cars will be handled by Segrave, Divo and Moriceau, who now comprise the S.T.D. team.



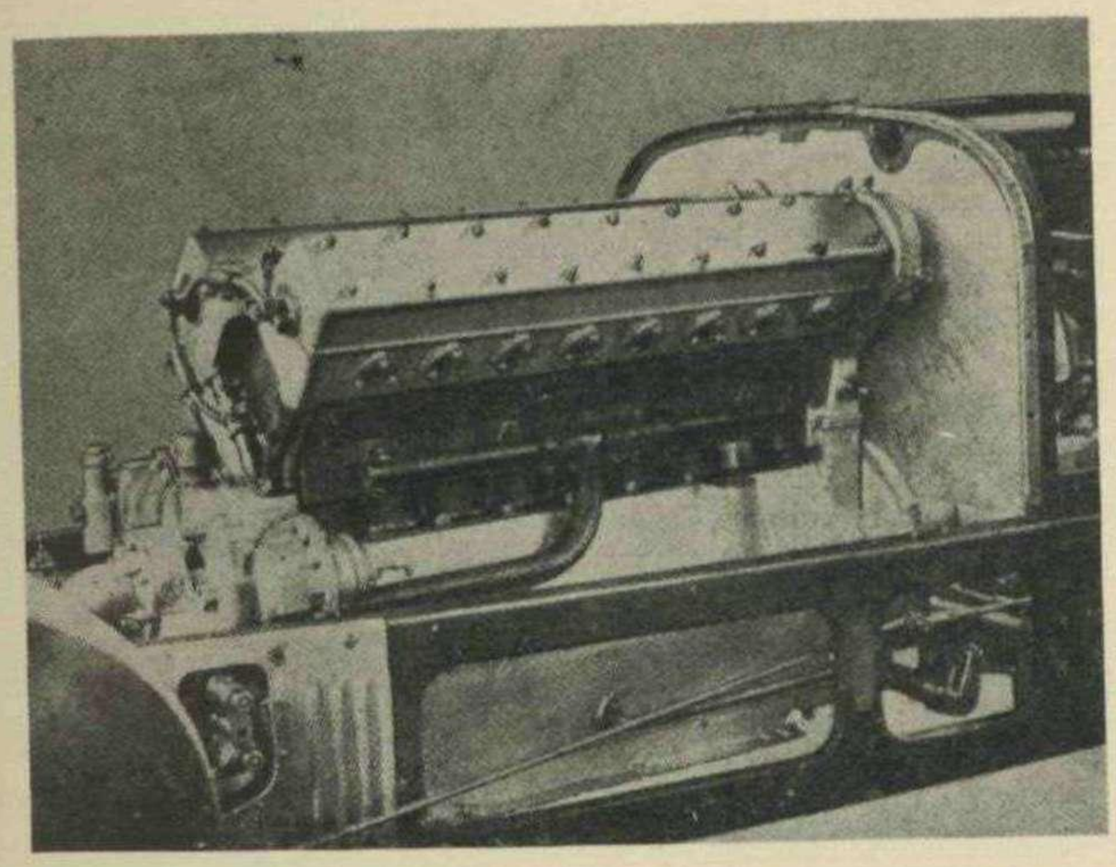
THE 1,500 C.C. GRAND PRIX TALBOT. [*Photo from La Vie Automobile.*

THE DELAGE.

Previous racing Delages have lately been of the 12-cylinder type, but on the introduction of the 1,500 c.c. limit the " straight eight " model was produced and this type will be used for all the 1926 classics.

The cylinders have a bore and stroke of 55.8 mm. by 76 mm. respectively, and two overhead valves inclined at 50 degrees are arranged in the hemispherical cylinder

CARS FOR THE R.A.C. GRAND PRIX—continued.



NOTE THE TWIN OVERHEAD CAMSHAFTS ON THE 8-CYL. TALBOT.

head. A single sparking plug is situated centrally between the valves and ignition is performed by a single magneto at the front of the motor. Two carburettors and two superchargers supply the mixture, the latter being situated between the engine and the carburettors. The water pump and radiator are both at the forward end of the chassis and the lubrication is effected by three pumps, one to lubricate the crankshaft, one the camshaft, and the third drawing the oil from the sump and delivering it to the oil tank where it is cooled.

A dry plate clutch and four speed gearbox are built up in one unit with the engine while the normal racing speed of the engine is 7,500 r.p.m.

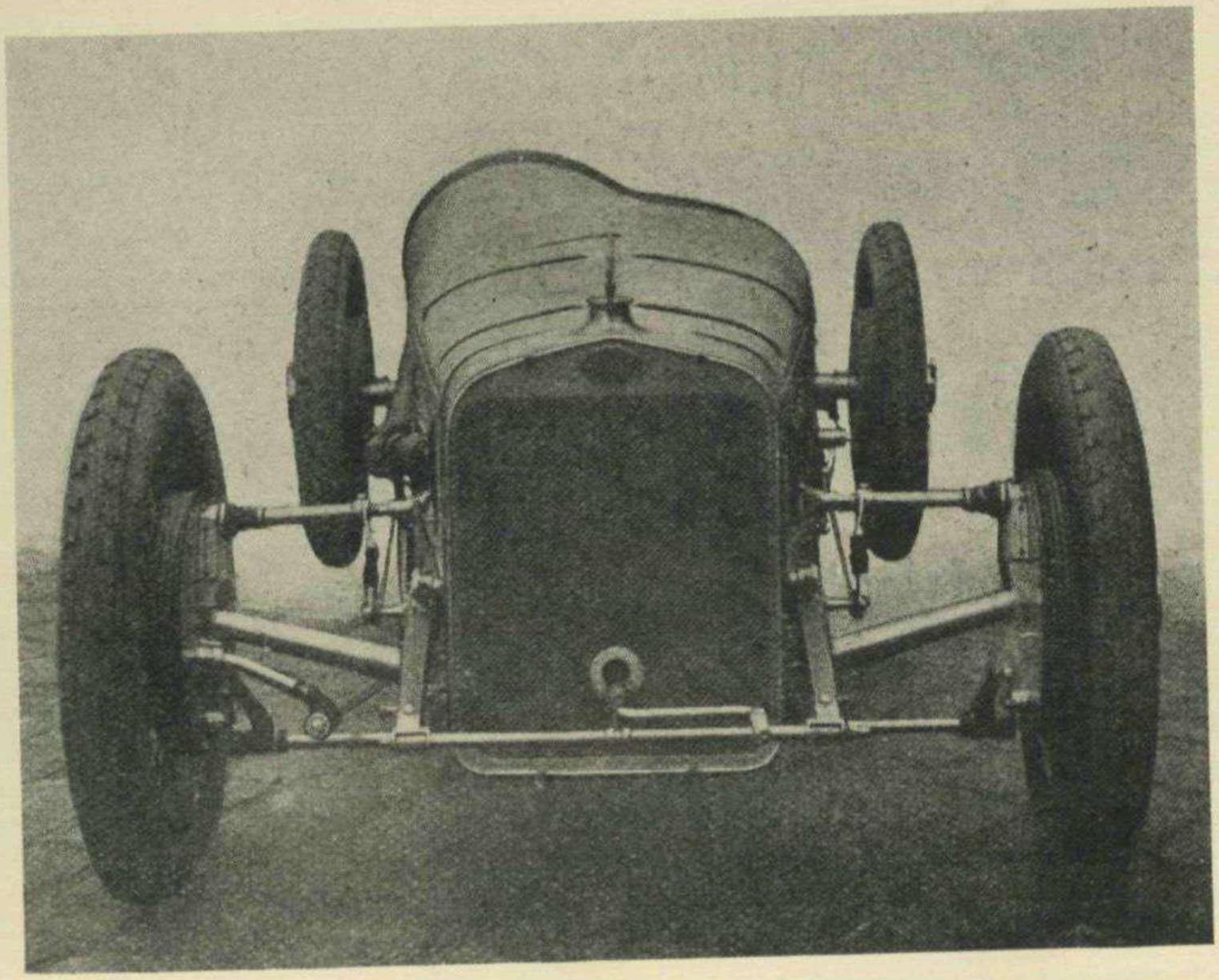
The chassis and body are extraordinary low, the highest point of the whole car being less than 3 feet from the ground, a feature which should ensure great steadiness and speed on corners. It has been found necessary in order to utilise a sufficiently large radiator, to mount the latter in front of the front axle and pierce it to allow for the starting handle.

Hartford Shock-absorbers and the new Silentblocs are fitted to all four Rudge-Whitworth wheels, and as on the Talbot a large petrol tank is carried at the rear of the chassis.

THE THOMAS SPECIAL.

These cars are also of the straight eight type, with aluminium cylinder blocks and steel liners; the conventional detachable head is used having two overhead valves per cylinder, operated by a single overhead camshaft, which is driven by spur gears. The valve gear is very similar to that employed on the big Leyland Thomas, leaf springs being employed to return the valves to their seatings. The supercharger is water-cooled from the engine water jackets.

The chassis is considerably underslung and the radiator slopes back at a sharp angle, thus necessitating an extra water tank under the scuttle, in order to maintain the supply in the engine which is high relative to the radiator. A fabric multi-plate clutch of Thomas design is



FRONT VIEW OF THE DELAGE RACER, SHOWING ITS EXTREME LOWNESS.

CARS FOR THE R.A.C. GRAND PRIX—continued.

used and only one universal joint in the transmission. Dry sump lubrication is employed and the main bearings of the engine are plain white metal bushes. Both hand and foot brake levers operate on all four wheels and the seat position is remarkably low.

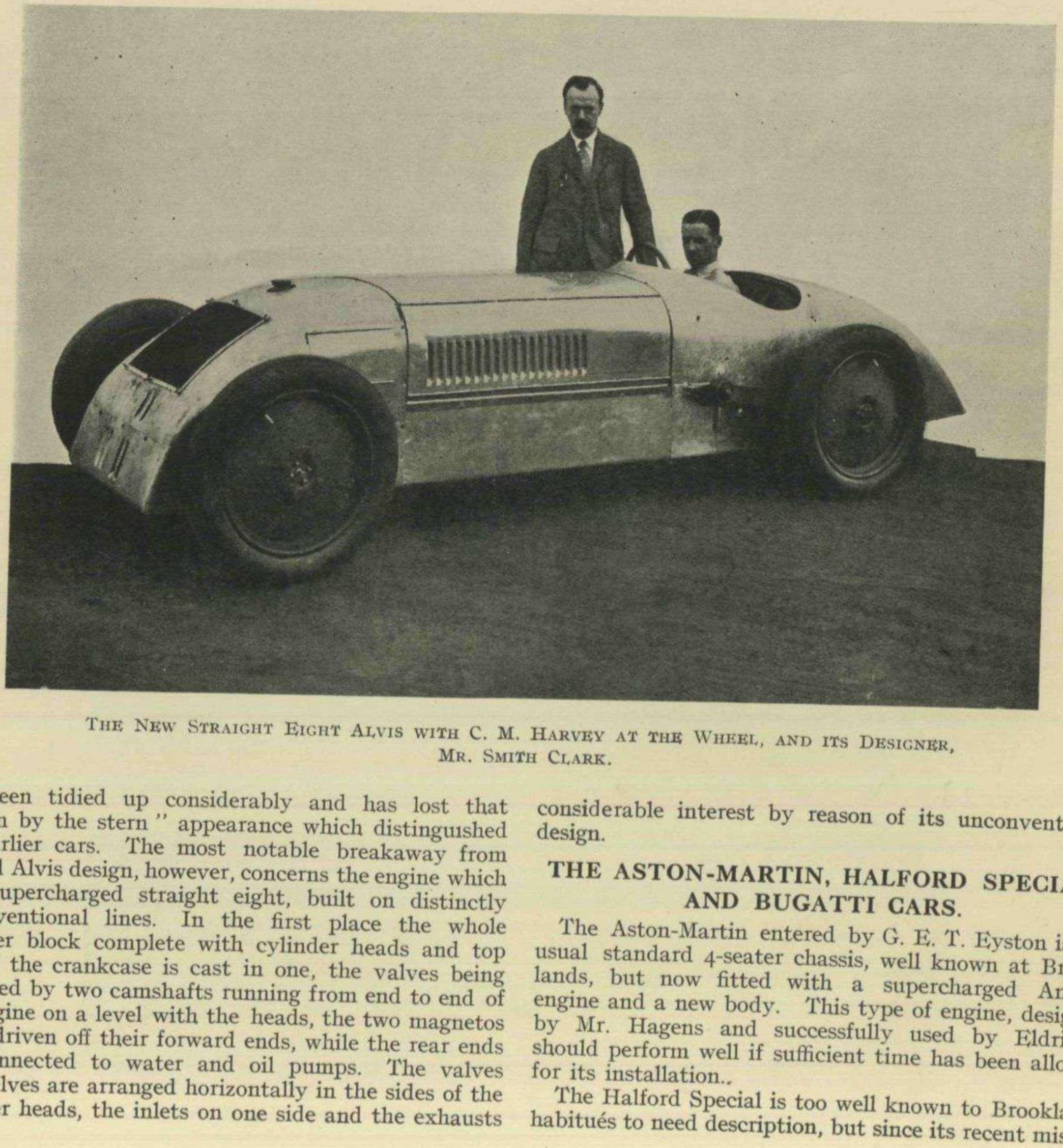
Two of these cars are entered and will be driven by the designer and T. Thistlethwayte.

THE ALVIS.

This very business-like car is to some extent a development of the last year's 200 mile racer, in that the unconventional but nevertheless successful front wheel drive principle is adhered to. The whole chassis, however, has been tidied up considerably and has lost that "down by the stern" appearance which distinguished the earlier cars. The most notable breakaway from normal Alvis design, however, concerns the engine which is a supercharged straight eight, built on distinctly unconventional lines. In the first place the whole cylinder block complete with cylinder heads and top half of the crankcase is cast in one, the valves being operated by two camshafts running from end to end of the engine on a level with the heads, the two magnetos being driven off their forward ends, while the rear ends are connected to water and oil pumps. The valves themselves are arranged horizontally in the sides of the cylinder heads, the inlets on one side and the exhausts on the opposite; this unconventional arrangement has been adopted in accordance with the designer's views on the special conditions engendered by the use of a supercharger, and enables a compact combustion chamber to be used yet with the sparking plug well removed from the piston crown.

The supercharger is situated at the rear of the engine and a multiple disc clutch transmits the power via gearbox and universal joints to the front wheels.

The body is in accordance with modern streamlining ideas, having a flat undershield to prevent "squeezing," with a turtle back. In the hands of C. M. Harvey this car may be expected to give a good account of itself, and in any case is bound to cause considerable interest by reason of its unconventional design.



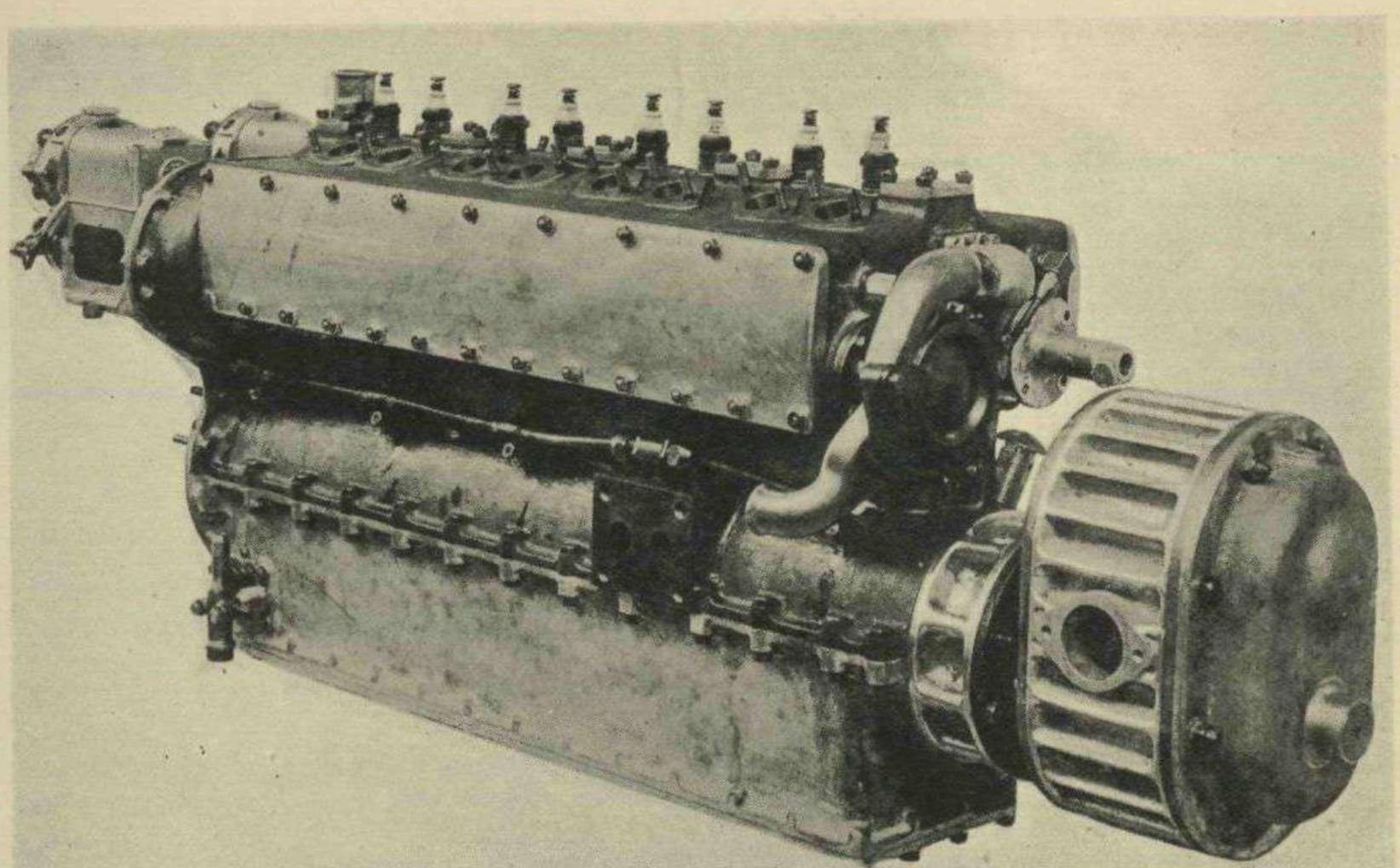
THE NEW STRAIGHT EIGHT ALVIS WITH C. M. HARVEY AT THE WHEEL, AND ITS DESIGNER, MR. SMITH CLARK.

THE ASTON-MARTIN, HALFORD SPECIAL, AND BUGATTI CARS.

The Aston-Martin entered by G. E. T. Eyston is his usual standard 4-seater chassis, well known at Brooklands, but now fitted with a supercharged Anzani engine and a new body. This type of engine, designed by Mr. Hagens and successfully used by Eldridge, should perform well if sufficient time has been allowed for its installation..

The Halford Special is too well known to Brooklands habitués to need description, but since its recent mishap

CARS FOR THE R.A.C. GRAND PRIX—continued.



THE ENGINE OF THE STRAIGHT EIGHT ALVIS. NOTE THE SUPERCHARGER AND THE TWIN MAGNETOS.

at the Essex club meeting, a new radiator has been fitted of a different shape, thus minimising the chance of another similar occurence. The car has, of course, a 6-cylinder supercharged engine of good design and has already proved itself capable of good speeds on the track.

A Bugatti was entered at the last minute by Capt. Malcolm Campbell and will be of the 1,500 c.c. straight eight type that has already won several continental classics this year at Miramas and San Sebastian. The only other entries are two Eldridge Specials which are at present in America and are therefore not likely to compete. With fourteen starters the race should at least create as much interest as the premier continental races for which no larger number of entries are usually received.

THE BELGIAN GRAND PRIX.

The premier Belgian motor-cycle road race proved another triumph for the British machine, which finished first in 3 out of the the 4 classes, a British engine also accounting for the remaining (175 c.c.) class.

J. A. Porter, after breaking his frame in a collision before the race, stayed up all night with Freddy Dixon, who was also riding, and effected a repair which enabled him to win his class at 58 m.p.h., for 185 miles.

G. S. Davison finished second in this class on a New Imperial. The 350 c.c. class was won by F. A. Longman, on a 350 c.c. A.J.S., at 61.06 m.p.h. for the 222 miles, after a struggle with W. L. Handley (Rex Acme), who was forced to retire. Gold medals also went to Putz (Sunbeam) 2nd, Demulder (Indian) 3rd, and Whalley (Douglas) 4th.

Chief interest centred on the 500 c.c. class in which Stanley Woods (Norton) and J. H. Simpson (A.J.S.) fought out a terrific duel for many laps. Simpson eventually drew away and Woods lost still more owing to a puncture.

The result was—

(1) J. H. Simpson (A.J.S.), 67.9 m.p.h.
(2) R. Karner (Sunbeam).
(3) S. Woods (Norton).
(4) S. Ollerhead (Rudge).
(5) G. Nott (Rudge).
(6) G. Stobart (Sarolea).

Distance 259 miles.

J. Milhoux, on a Ready-Blackburne, won the 175 c.c class at 48.63 m.p.h.

THE 24-HOUR RECORD AGAIN.

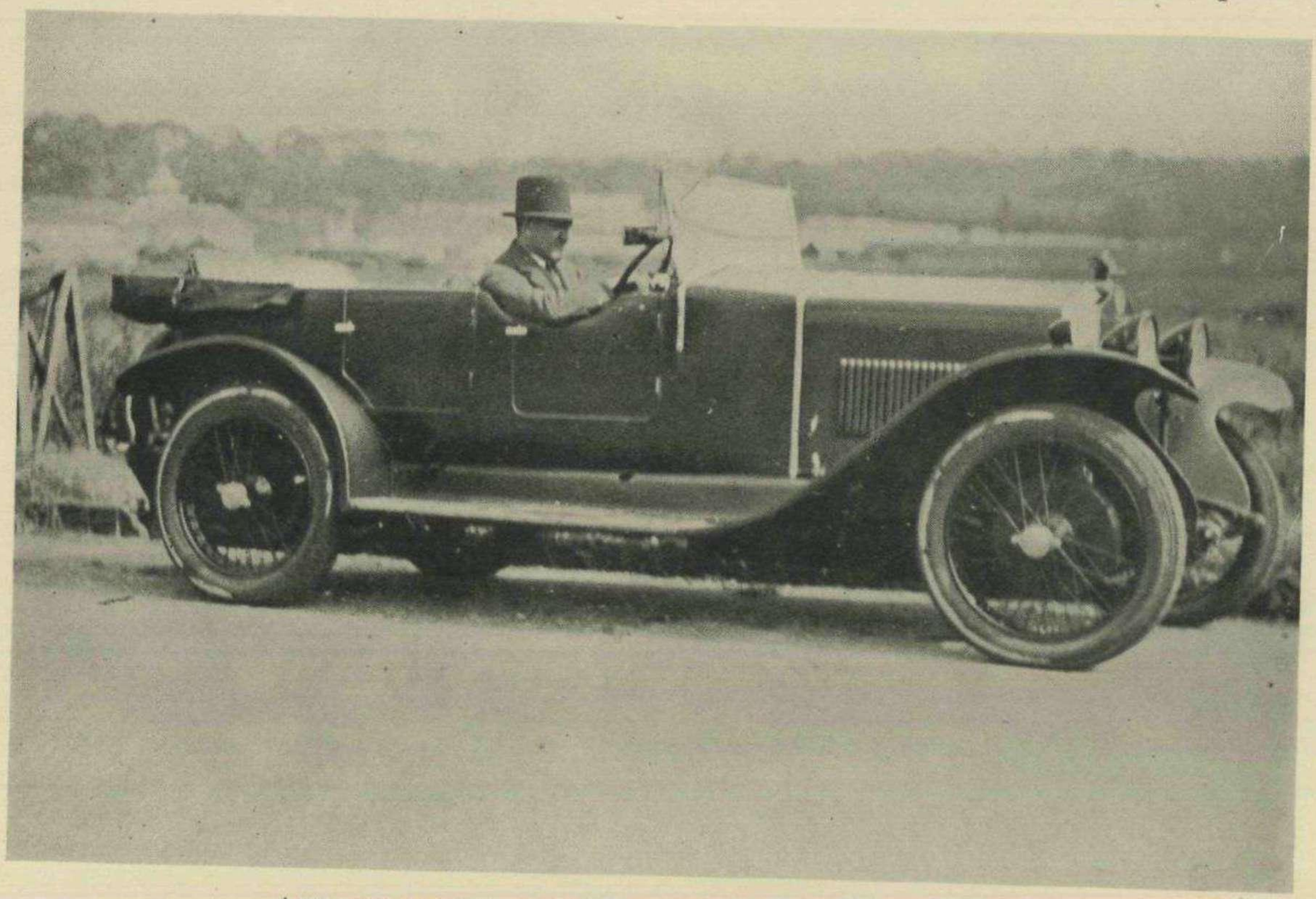
The 45 h.p. Renault once more succeeded in breaking the world's 24 hour record on July 10th at Montlhéry Autodrome near Paris. The car was fitted with a special Weyman single-seater racing "saloon" body and ran throughout without trouble. The average speed for the full time was 108.3 m.p.h., but 1,000 kilometres were covered at 110.3 m.p.h., while to show that the car was quite unaffected by its gruelling the last lap was covered at 119 m.p.h. !

SPORTING CARS ON ROAD AND TRACK.

THE SIX-CYLINDER O.M.

By the ASSISTANT EDITOR.

BY the courtesy of Messrs. L. C. Rawlence and Co., we recently had the opportunity of a run on one of the latest model 6-cylinder O.M.'s, for which cars this concern are the sole agents in the British Isles. In company with Mr. Gerrish we left Victoria Street and began threading our way through the south-western traffic streams en route for Brooklands. The Weybridge track was chosen as our objective for three reasons, firstly, to transact some personal business with a pair of wizards who sell " potted speed " to most Brooklands habitués, secondly, to watch the preparations for the Production Car race on the following day, and finally, because the track itself proves an excellent testing ground on which to try out the capabilities of a fast car.

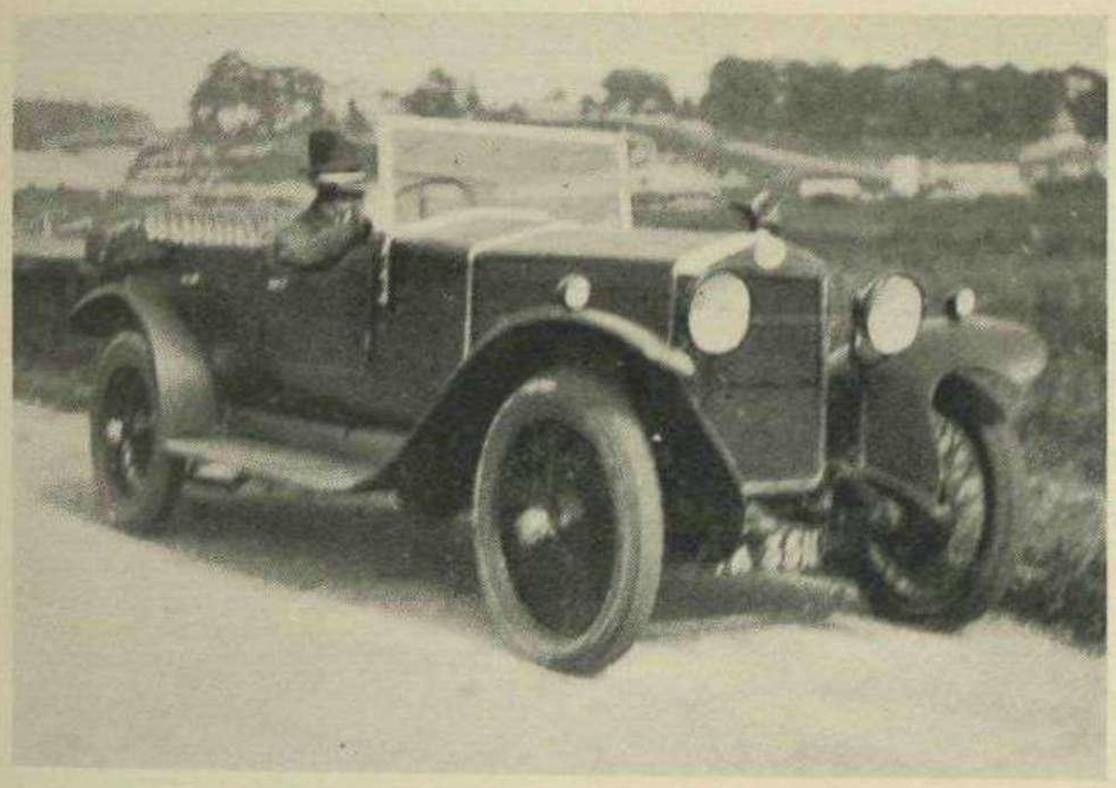


ATTRACTIVE YET CONVENTIONAL LINES DISTINGUISH THE O.M.

Behaviour in Traffic.

The first few miles of traffic showed that the O.M. possessed very good acceleration at the lower end of the scale, and what is just as important, very good deceleration too. A characteristic swish on applying the brakes betrayed the presence of cast iron shoes on all four wheels ; the standard arrangement, according to our guide, being cast iron on the back and Ferodo on the front. The cast iron shoes, while perhaps calling for a slightly stronger pressure on the pedal, have the advantage of added smoothness and longevity. So smooth are the brakes indeed, that one feels that they must be weak until one is faced with one of those emergencies which are so common in these days of infested roads and new drivers ; on such occasions one pulls up with yards to spare and without a suspicion of skidding even on a wet road. To return to the matter of acceleration, four speeds are provided, operated by a centrally disposed lever, and the ratios are such that frequent recourse to the indirect gears is a genuine pleasure owing to the immediate response of the engine on the lower ratios. No clutch stop is fitted, but extremely rapid changes up can be made even when a high speed is attained on the lower gear. The clutch is reasonably smooth and once engaged is absolutely positive in its grip. These features combine to give the car a really lively performance and make it a real pleasure to drive. At the first suspicion of a semi-clear road the accelerator was firmly depressed in 3rd gear from about 25 m.p.h., and passing everything in a flash we breasted Putney Hill at 42 m.p.h. still in 3rd gear. On top gear the slight hum from the gearbox vanished and 40 m.p.h. felt far more like 20 m.p.h., so quiet and smooth is the side-valve engine. Later, a speed of 55 m.p.h. was attained on 3rd gear, and Mr. Gerrish told us that actually 60 m.p.h. can be reached on this gear. Even

SPORTING CARS ON ROAD AND TRACK—continued.



THE TYPICAL ITALIAN RADIATOR IS A FEATURE OF THE O.M.

at this speed only a slight pause is necessary when engaging top gear.

Springing.

The springing of the car with three people on board seemed a trifle harsh at very low speeds, but was admirably adjusted for fast road work, which of course is quite right on a car of this nature. We hope one day to see a car on which the degree of damping on the springs can be instantly adjusted from the driving seat, to meet varying road conditions. On the O.M., the springing, as stated above, was adjusted for speeds in the 40-60 m.p.h. range; for higher speeds it proved a trifle too flexible, but by no means unsafe or uncomfortable. On corners a very slight roll was experienced, but was due entirely to the medium pressure balloon tyres fitted; with the ordinary high pressure tyres, corners can be negotiated really fast without rolling or skidding.

Maximum Speed.

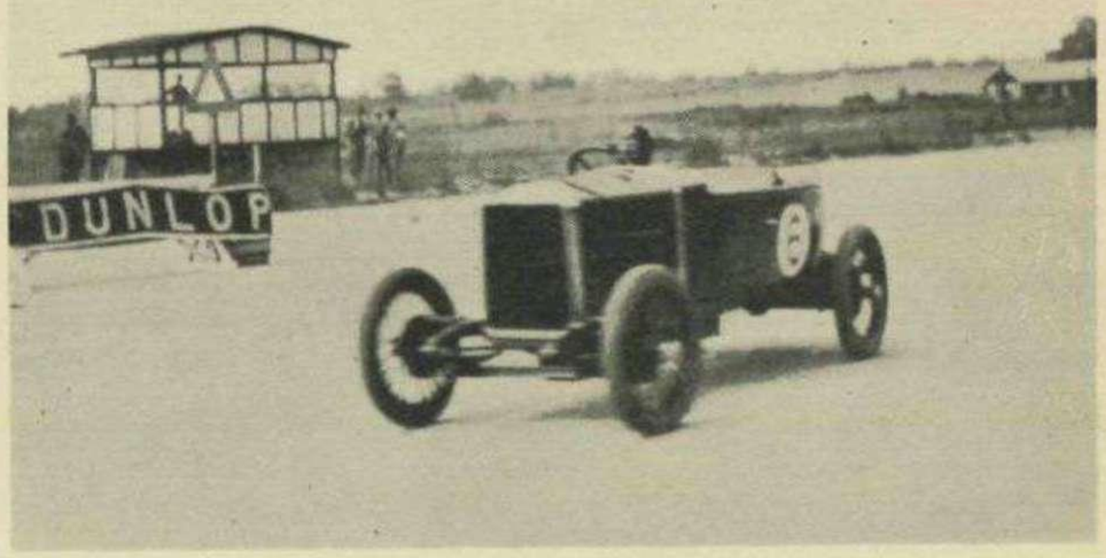
On arrival at Brooklands we proceeded at once to try the car for genuine maximum speed. On the first lap, 68 m.p.h. was held down the Railway Straight and 65-66 m.p.h. for most of the lap. On the second lap the run down off the Members' Banking enabled a speed of 72 m.p.h. to be attained, which speed was easily maintained down the straight and round the Byfleet banking. At this speed the steering seemed every bit as easy and positive as at 20 m.p.h., two fingers on the steering wheel being quite sufficient to preserve any desired direction. Mr. Gerrish, who has long experience of this and other cars, emphasised this point particularly, impressing upon us how by its high steering and general ease of handling it is a car on which high averages can be maintained on long runs with a minimum of fatigue to the driver.

A neat straight-forward 4-seater body, with reasonably sporting lines and red leather upholstery, proved remarkably comfortable at all speeds and should ensure equal comfort to the passengers as to the driver, who is often too preoccupied to be aware of physical discomfort until the run is over

The 1,500 c.c. O.M.

During the afternoon we were introduced to Major R. F. Oates, who was driving a 1,500 c.c. O.M. in the Production Car race. The car driven by Major Oates was standard, even to the 4-seater body, and carried ballast equal to three passengers, yet with ourselves and the driver, a steady 72 m.p.h. was maintained for most of the lap, on several of which we accompanied Major Oates, who was practising for the race. A slight carburettor adjustment improved matters even more and 75 m.p.h. was held for quite an appreciable distance. Acceleration after the hairpin bends was fair, considering the load carried and the generally touring nature of the whole outfit, while the braking seemed even better than that of the larger model. It will be realised then that the makers can produce a car which is capable of being "hotted up" by the owner without much difficulty and without sacrificing any of its docility, so that it can hold its own with most cars on the road, though in view of its comparative weight it might be beaten on hills by some of the nippier and less comfortable sports cars.

However, the rapidly increasing number of O.M. cars seen on the road is the surest criterion of their excellence and of the excellence of Messrs. Rawlence's service, so that anyone who fancies the car need have any hesitation in disbursing the reasonable sum of £695 which is all that is asked for the 2-litre 6-cylinder model.



F. CLARK, A PRIVATE OWNER, DRIVING HIS 4-CYL. O.M. IN THE J.C.C. PRODUCTION CAR RACE.

FOR THE SPEEDMAN.

A very interesting experimental big twin motor-cycle is offered for sale by its designers, who are unable to continue work on it. The price will include numerous patents, sole rights of manufacture of the engine and enough parts to construct several spare engines.

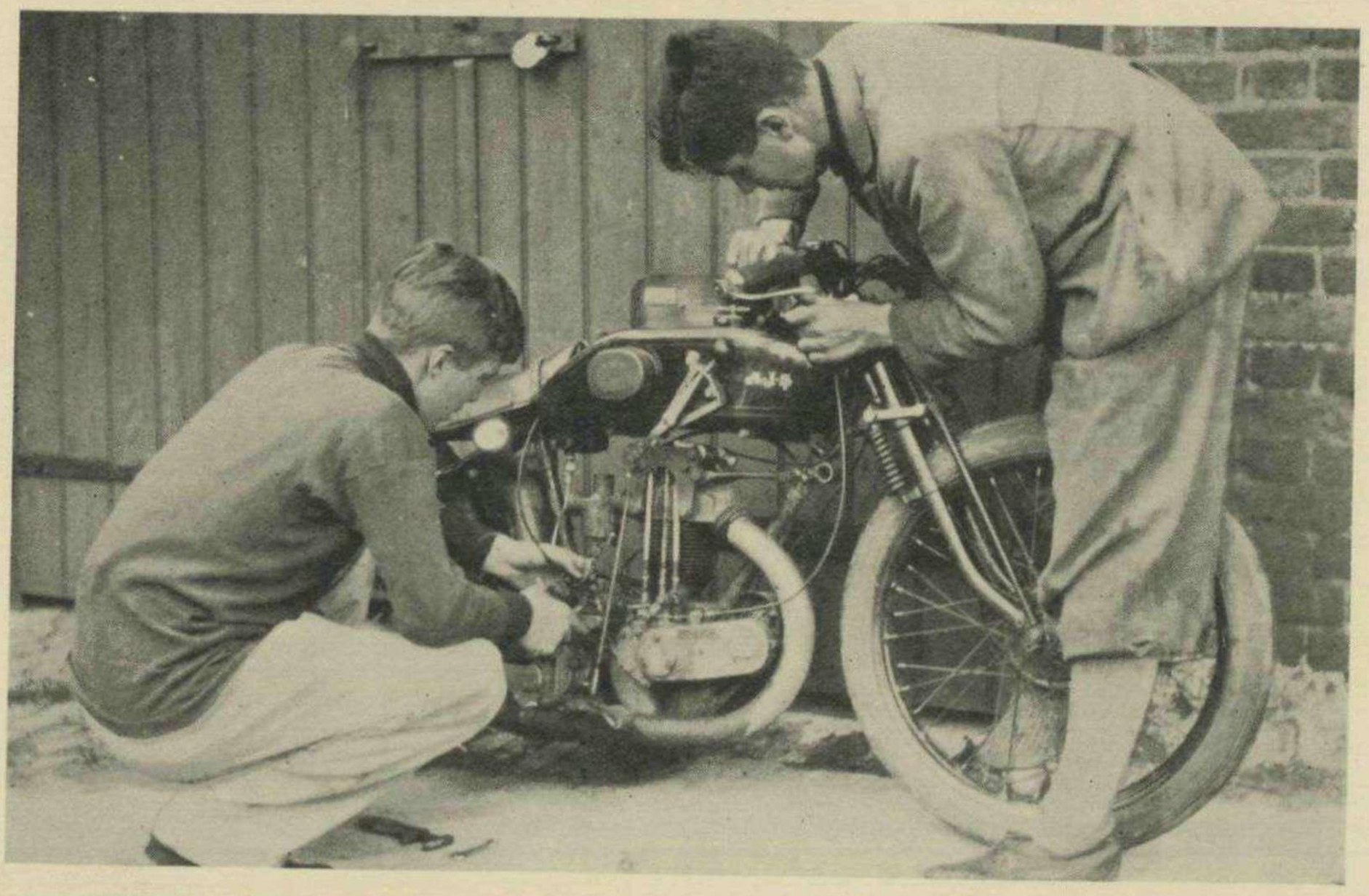
The machine has great possibilities and pressure of other business is the sole reason for sale. Anyone interested should write to "Big Twin," c/o *Motor Sport*.

Tuning A.J.S. Motor Cycles for Competition Work.

By T. G. ROOK.

ALTHOUGH the majority of riders of these machines are quite satisfied with their excellent performance as turned out, readers of " Motor Sport " belong to the class of motorists who are never content with any performance however good, while there remains a possibility of improving it by their own efforts ; and it is for such as these that the following tips, the result of some years ownership of these machines, are intended.

First, I will deal with the side-valve and G.6. O.H.V. models as these are similar as to the crankcase, bearings, timing gear, etc., and it is only by careful attention to these parts, before touching the upper part of the engine, that the best results can be obtained.



THE REMARKABLE ACCESSIBILITY OF AN A.J.S. IS A GREAT ENCOURAGEMENT TO THE AMATEUR TUNER.

The crankshaft is carried in bronze bushes in the crankcase and the first task is to split the crankcase and by the use of a bearing scraper, make these bushes a perfectly free fit on the journals. No play should be detected if this is done properly, but all traces of tightness must be eliminated.

The same remarks also apply to the cast iron bushes in the timing gear. However, it is unlikely that much work will be required here ; the important point to watch is that there is no tightness due to lack of end-play when the timing cover is screwed down tight. A paper washer is fitted between timing cover and case and should not be omitted. All timing case and main bearings are lubricated by oilways cut along the top of the bush.

In the case of the main bearings these only extend a little way along the bearing from the inside of the crankcase and I have found it advisable to continue this oilway to within a $\frac{1}{16}$" of the outer end of the bush. This modification is specially desirable in the case of the older type crankshafts on which the mainshafts are plain ; on the latest models the mainshafts have spiral oilways cut on them and therefore the lubrication should be sufficient for the hardest work.

The big end consists of a single row of rollers on these models and will be found quite O.K. without any further attention. It should be possible to rock the small end of the connecting rod sideways quite appreciably, but when a definite up and down play can be felt, it should be renewed.

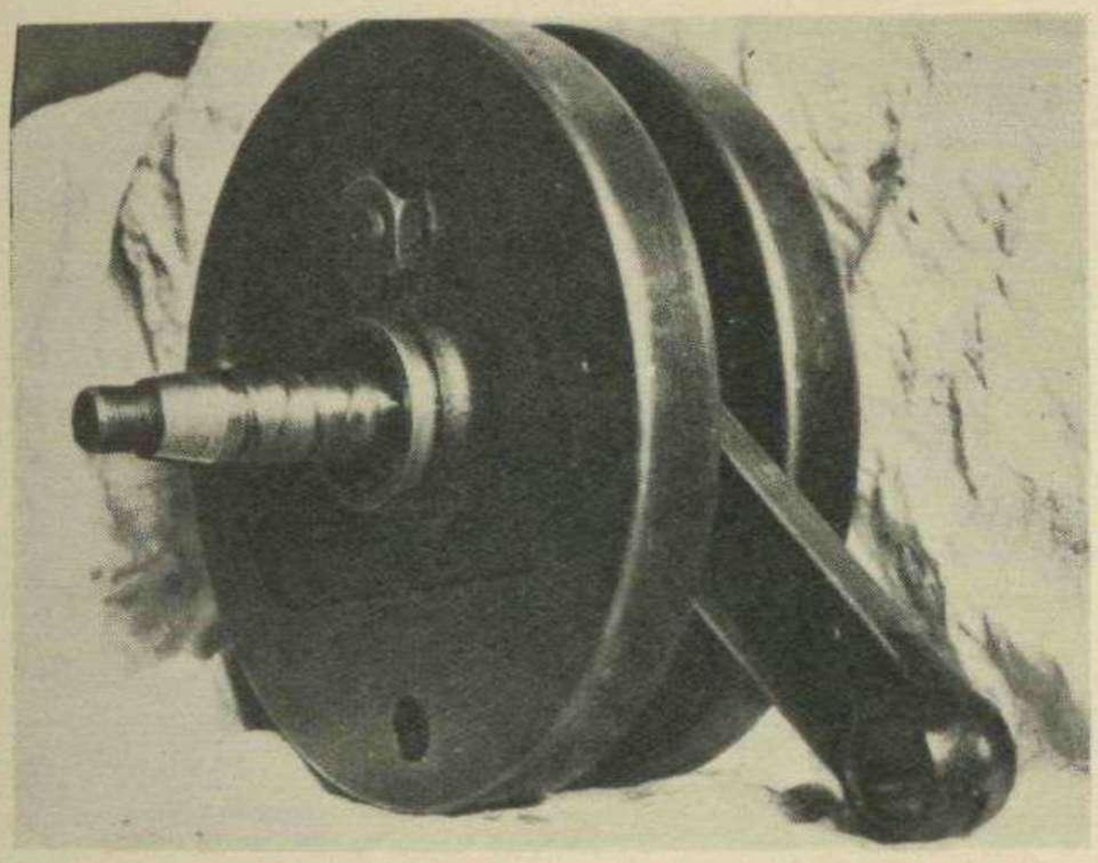
The flywheel alignment should be very carefully checked, if for any reason the flywheel assembly has been dismantled ; this should not be done unless absolutely necessary.

Many amateur tuners think that there is some magic in valve timing by which experts can achieve marvellous speeds, and it is therefore advisable to point out that this is not so, and that no good will be done by altering the valve timing.

The actual timing of the opening and closing points makes very little difference to the performance of an engine, compared with the shape of the opening and closing curves of the cam itself, which are settled on by the makers as the result of their extensive racing experience.

The sports side-valve and O.H.V. models have different cams, each being most suitable for the particular engine, and should be kept to, also the standard timing which is clearly marked.

TUNING A.J.S. MOTOR CYCLES—continued.



FLYWHEEL ASSEMBLY OF 349 C.C. O.H.V. A.J.S. NOTE THE SPIRAL OILWAYS ON CRANKSHAFT.

The piston should be run in carefully at first, and any high spots removed. This process being repeated two or three times. Each period of running in should be faster than the last, the piston being examined each time for high spots, and being taken down with a smooth file where necessary.

The 1922 side-valve machine was fitted with a light cast iron piston, and it will be found an improvement to replace this with the latest type alloy piston, now fitted as standard. I have not found any rebalancing necessary when this is done. The side-valve piston is made in more than one height of dome and the highest type should of course be obtained when purchasing an alloy piston to replace the cast-iron one. All the sports models have very narrow rings which, although best for speed, wear fairly quickly and should be replaced as soon as they show signs of getting "tired," new rings being carefully lapped in with rouge.

The G.6. O.H.V. model is supplied with a low compression piston giving a ratio of 5.5 to 1. For speed work the high compression piston giving a 7.5 to 1 compression ratio should be obtained. This is quite satisfactory for ordinarry use with a 50-50 Benzol mixture, and this may be used for short speed events. However, for best results with this ratio, and especially for long distance work, Discol grade P.M.S.II should be used.

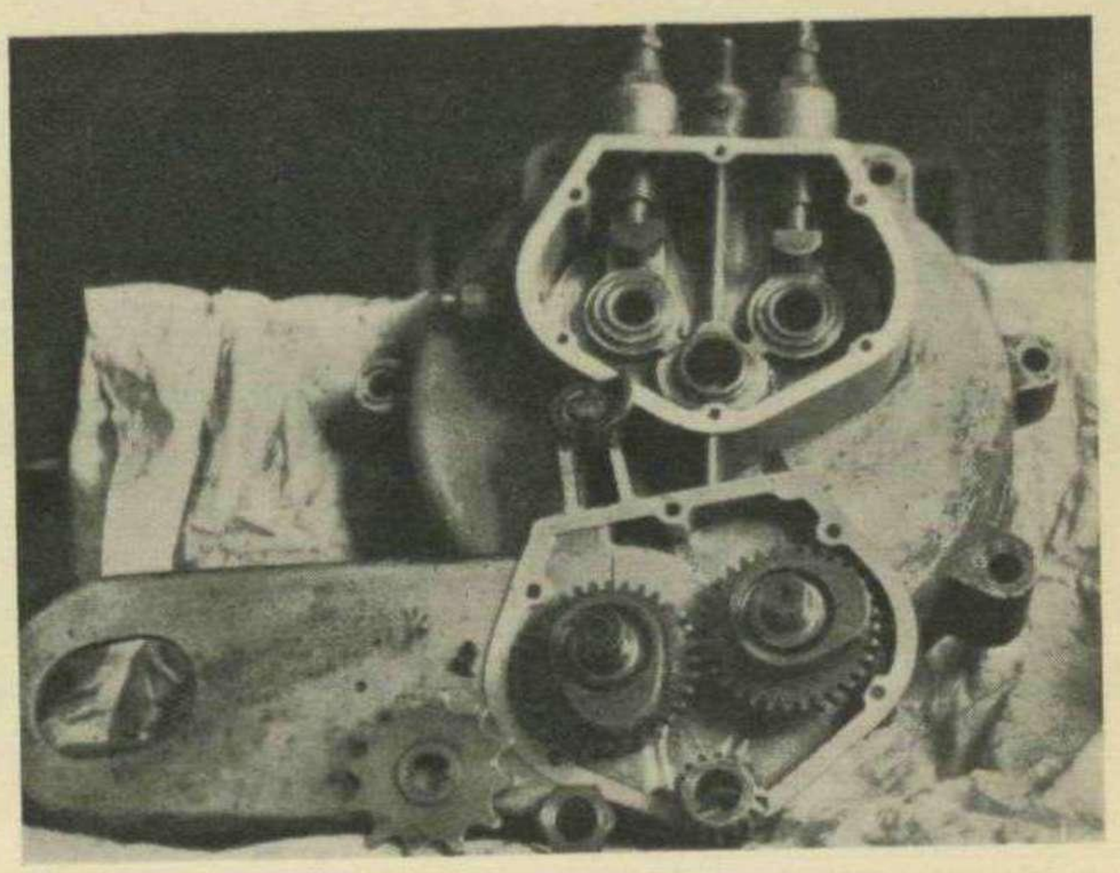
When tuning the carburettor for Discol a jet some 40 per cent. to 60 per cent. larger than that used for petrol will be required. As the price of P.M.S.II is only 1s. 10d. per gallon it cannot be objected to on this score, though the consumption is noticeably greater than with petrol. It has the great advantage of cool running, this making for reliability in long distance racing, though it is by no means essential as the speeds of this years T.T. races shewed. However, it is probable that some of the speeds would have been higher had fuels not been restricted.

The cylinder head and ports should of course be polished, and any irregularity in the ports cut away. However, the standard finish of A.J.S. heads is such that not very much work will be required. With the latest type O.H.V. head nothing need be altered and the valve guides should not be cut down to the level of the port, unless they are to be renewed very frequently; otherwise they will wear excessively causing damaged seatings in the head and possibly a broken valve, and as the extra speed gained is very small, if any, it is not worth the risk.

With the old 1924 type head with the thinner valve stems, breakages were not unknown when racing, and in the case of anyone trying to go really fast with one of these it is worth while having a new exhaust valve made with the stem the same diameter as the latest type, *i.e.* $\frac{3}{8}$", by some firm who specialise in this work.

The latest type valves cannot be used for this purpose, as they have smaller diameter heads. With regard to fitting special valve springs of increased strength to obtain higher revolutions, this should be done with discretion. For all ordinary work, and for all long races, the standard springs are quite sufficient, the only time that stronger ones could be used is for sprint events, where engine speeds of 5,500 to over 6,000 r.p.m. are attained. As only very well tuned engines in experienced hands peak at anything much above 5,000 r.p.m. a definite *loss of power* is the only result of over revving. A gear should be selected that allows the engine to run at the peak revolutions in short events, and in long distance work it should be geared as high as possible consistent with maintaining sufficient speed, and this must be estimated as experience dictates. Many races have been lost solely through over or under-estimating this speed; in the former case by breaking up through going faster than necessary and in the latter case by being too slow to do better, than "a place."

A power curve of the engine in racing tune is invaluable for working out these points, but unfortunately the amateur tuner rarely has facilities for obtaining one, and must learn by "hit and miss" methods, what is the best gear for any given conditions.



RACING CAMS CAN BE OBTAINED FROM THE MAKERS FOR THOSE MODELS NOT ALREADY FITTED WITH THEM.

TUNING A.J.S. MOTOR CYCLES—continued.

The G. 6 model is supplied with a 21 tooth engine sprocket which is most suitable for ordinary work and short flat speed events, but for long distance work a 22 tooth sprocket or even higher can be used, and of course, for hill climbs a lower gear must be used, depending on wind, gradient, length of flying start, if any, etc., and again experience is the only sure guide.

The side-valve models are supplied solo, with a 20 tooth engine sprocket and a definite increase in speed can be obtained by fitting a 19 tooth sprocket giving top gear of 6.1. An aluminium exhaust valve cap should be fitted as this will aid cooling, a point where the side-valve by the nature of the design is necessarily weak compared with the O.H.V.

The standard exhaust valve is liable to distortion, due to heat, this resulting in a loss of power and the need of constant grinding in. Also it is rather heavy in the head for high revolutions.

The best course is to get a pair of light tulip pattern racing valves made, but in case this is considered too expensive it should be noted that a 1923 O.H.V. exhaust valve of the tulip pattern can be fitted to the side-valve without any alteration to springs, etc., as it has a similar cotter fixing. This valve being of special steel will only require very occasional grinding in, and the engine will not lose tune.

The standard inlet valve is quite satisfactory apart from its weight, but the exhaust should certainly be changed. Standard valve springs are quite strong enough. I have obtained engine speeds of considerably over 6,000 r.p.m. without a trace of misfiring, using standard springs on light valves which is much easier on the timing gear than using heavy valves and extra strong springs.

When driving the side valve really hard give lots of Castrol R. A pump every 3 or 4 miles will not be too much as it will help cool the engine.

For ordinary work H.S. 3 K.L.G. plugs are O.K but for racing I find a K.L.G. 246 best for the side-valve and the 180 for the O.H.V. Those who prefer other makes can always obtain the necessary information from their plug makers.

A sound ignition timing for speed is full advance, piston 13 m.m. before T.D.C., and with the O.H.V. 16 m.m. This of course must be varied a little to suit different compression ratios and fuels.

A. J. S. machines are now all fitted with 2-jet Binks carburettors which are very easy to tune. For short events and fast road work increase the main jet till the engine takes full air, when all out. Then increase the pilot jet till the throttle can be opened right up from corners, etc., without choking.

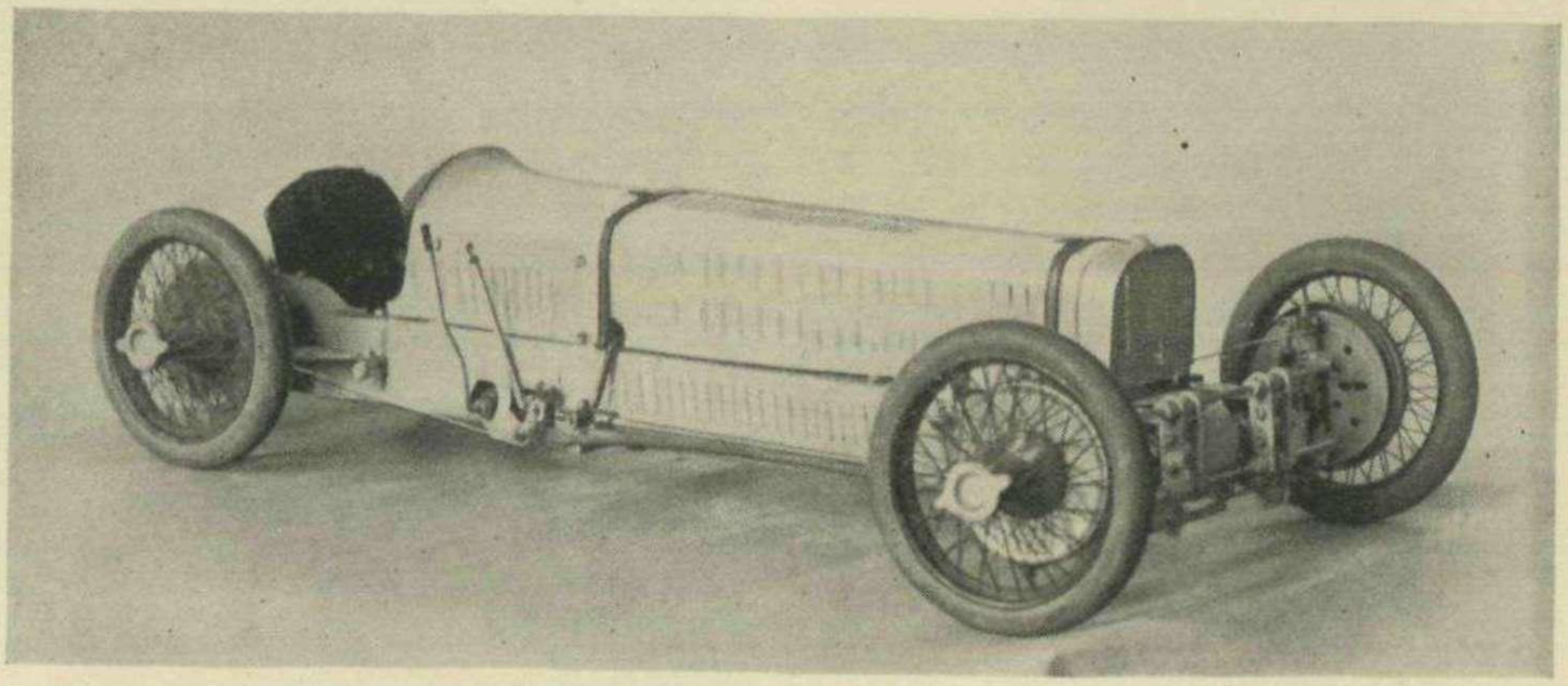
For long distance racing on P.M.S. II, increase the main jet beyond the above setting as much as the machine will take without actually slowing. This will keep it cool. The following settings for petrol will do to start, but of course require modification to suit different conditions.

Side-valve small carburettor. Pilot jet 2, main jet 8.
Sports model Binks No. 305. Jets 3 and 10.
O.H.V. pilot 3, main 8—10.
O.H.V. using Discol. Jets 4 and 16.

The above remarks should also apply to the G. 8 500 c.c. O.H.V. model except that racing cams can be obtained from makers instead of the touring ones fitted.

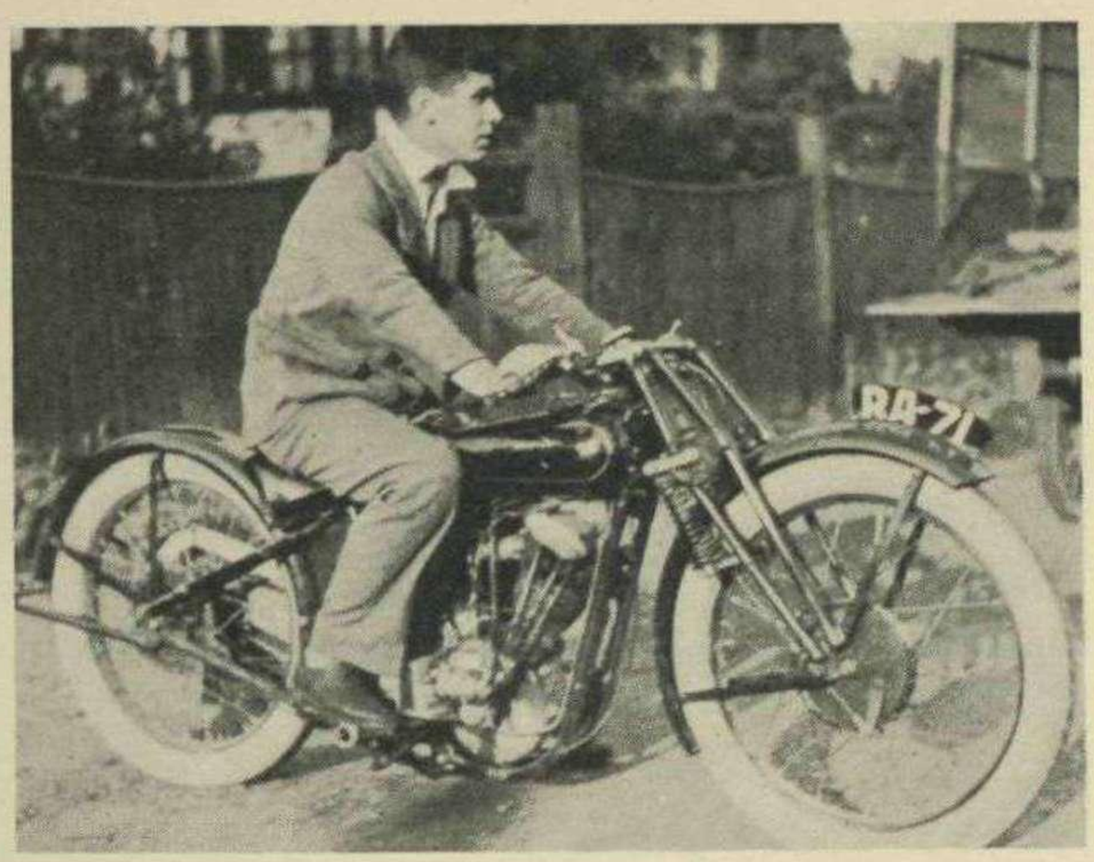
The G. R. 7. and G.10 models which are the racing 350 c.c. and 500 c.c. machines differ from standard in having roller main bearings and ball-bearings for the camshafts, and the G.10 frame is somewhat shorter than the G.8. Both engines have slightly different heads with larger exhaust ports, otherwise the machines are almost standard. The G.10 is still somewhat experimental and is only produced in small numbers as yet, but the G.R. 7. is fully in production.

85 m.p.h. should be fairly easily obtained from the G.6., and I have been timed over a flying quarter-mile on several different occasions at 75 m.p.h. on a side-valve A.J.S. using 19 tooth engine sprocket giving engine speed in top just under 6,000 r.p.m. The engine must not be more than just warm when starting, as when it gets really hot it will settle down to a maximum sustained speed of just over 60 m.p.h. on the level, though down hill about 80 m.p.h. can be obtained all right, *e.g.*, coming down Snaefell in the I.O.M.



HAVE YOU SEEN IT ?

(The interesting front wheel drive racing car seen above, was intended for the R.A.C. Grand Prix, but owing to an unfortunate miscalculation when completed, it had a wheelbase of only 22 inches ! In reality it is a scale model built by one of our subscribers, and has a working 3-speed and reverse gear-box, genuine brakes, and is propelled by an electric motor.)



SPORTING MACHINES ON TEST.

The 996 c.c. McEvoy-Anzani.

By J. X. CRESCENCE.

THE big twin McEvoy, by reason of recent notable successes at Brooklands, and on the Continent, is a machine that is rapidly building up a reputation for itself in a class of which there are only too few representatives. To survive for more than a few months on the market a 1,000 c.c. motor-cycle must be really good, since the demand for this type comes only from a select few of the most hypercritical enthusiasts, who, while willing to pay a high price, at the same time are extremely particular as to their requirements. For such as these Mr. McEvoy has produced the Anzani (or more correctly British Vulpine) engined model, and at the price of £130, which is considerably below that of several other machines in its class, it would be difficult to find a more interesting machine. To begin with, the McEvoy, as one would expect, is fast ; with regard to definite maximum speeds, no recording instrument was fitted, no timing was performed, and readers will appreciate the difficulty of fully trying out a machine of this kind on ordinary country roads, however, the following information may form some slight guide to its actual capabilities. On second gear we had not the slightest difficulty in passing a friend on a well-known sports 3½ whose Bonniksen speedometer registered a steady 64 m.p.h., we were probably doing some 70 m.p.h. On another occasion we passed the same " single " when it was doing a good 68 m.p.h., this time we were on top gear and we left the other machine as though it was stationary. Our speed must have been between 80 m.p.h. and 85 m.p.h., and this on just over half throttle and with the machine still accelerating when the throttle was finally shut for one of those bends which usually appear quite straight on a more sedate vehicle.

A Fast Machine.

We have no doubt that given a clear road 95 m.p.h. would be well within the capabilities of the machine, without any special tuning. The actual model tested was brand new and so far as we know had not been run in except for about 50 miles of fairly gentle touring. With a machine of this type, of course, speeds up to 60 m.p.h. do not harm the new engine and so it is not surprising that we were quite unable to provoke any signs of distress during our test. During the course of a recent week-end we were called upon to assist in the organisation of a small reliability trial ; on this occasion we dispatched the competitors at minute intervals over a 40 mile course and then set off in pursuit.

Behaviour on Rough Going.

We had grave qualms as to the suitability of the big McEvoy for hurrying round loose winding lanes and negotiating deep unrolled gravel, however, the first colonial section, composed of the latter material, showed us that the machine was even easier to handle than the average medium weight ; in spite of a baulk caused by one of the latter brigade measuring his length in front of us we accomplished a completely " feet-up " crossing of about half mile of this stuff. A few miles later we had serious doubts as to the direction taken by a group of competitors, so hastening on we discovered that they had indeed left the route ; swinging round we rushed after the wanderers, plunging into a cloud of dust down the narrowest and " windiest " lane ever seen. Some particularly hectic sliding and skidding, together with some rather dangerous speed, enabled us to overtake the competitors one by one, and drive them back with oaths and gesticulation on to the "straight and narrow way" once more. Then off we went again and without at any time blinding, and including two feet-up climbs of the worst test hill on the route and five minutes conversation with the observers at this point, we arrived at the finish 15 minutes before the arrival of the first competitor,



TOO FAST FOR THE CAMERA ! AN IMPRESSION OF McEVOY CORNERING.

SPORTING MACHINES ON TEST—continued.

whom we duly checked in. The test hill in question was the notorious Tunnel-Slide of Inter-Varsity fame and in spite of immense boulders near the top a slow 2nd gear climb was easily made on ¼ throttle. This morning's performance showed the remarkable easy manner in which the McEvoy could be handled in narrow and rough lanes and provided an excellent test for brakes, stability and comfort. Both front and rear wheels are fitted with 8" Enfield internal expanding brakes, hand and foot operated respectively, and both proved to be smooth and powerful, as indeed they should be on such a fast machine. The rear brake pedal is connected to the brake by a very light cranked rod, this we think would be found inadequate before long and suggest a straight, or alternatively, a much heavier operating rod, in order to eliminate the flexibility of the present system. Having mentioned this one criticism we will take this opportunity of disposing of the only other fault noted, to wit the silencer. As will be seen from the photographs this has all the ugliness of the official "Brooklands Receiver," without the virtue of conforming to the track regulations in detail, thus being useless for racing purposes. Again, apart from its ugliness, it is decidedly noisy, its sheet steel sides reverberating in an awe-inspiring manner. Lastly, on left-hand corners, it is liable to come into violent contact with the ground, as in fact we have proved, with the result that the fish tail split, and eventually dropped off bit by bit. We would suggest either a smaller and neater cast aluminium expansion chamber, or a pair of cylindical silencers of which there are several excellent proprietary makes on the market.

To return to the more pleasant task of describing the machine's merits, a very neat steering damper is fitted below the head and operated by a large milled wheel on the top of the steering column. The steering of the machine both with and without the use of the damper is well above the average, on reasonable roads it is perfectly steady at the maximum speed so far attained, and the damper is really only a sort of Coué device to inspire the nervous rider with greater confidence. On bumpy roads the 3-inch tyres caused considerable bouncing and pitching, under which conditions the damper is more than a mere ornament and effectually checked any unsteadiness of the steering caused by the rider being hurled off the saddle and/or footrests. Speaking of saddles, we were pleased to find the Terry installed, and as it happened, handlebars, footrests and seat were arranged to provide a very comfortable riding position, while the immense round-tube Druid forks, with friction dampers, functioned admirably at the forward end of the machine. The engine, as will have been gathered, is decidedly "fruity" and seems to be reliable, since the only adjustments carried out were to the valve clearances, which if neglected created rather a clatter; when adjusted, the valve gear, which is partially enclosed, is remarkably quiet. One rather clever but well-known feature of the design is that the o.h. rockers operate beneath the valve springs, thus enabling the latter to be well away from the heat of the cylinder head, to the great benefit of their temper! The Sturmey-Archer gear-box is too well known to need description apart from the observation that the lever was arranged for foot operation and that the whole



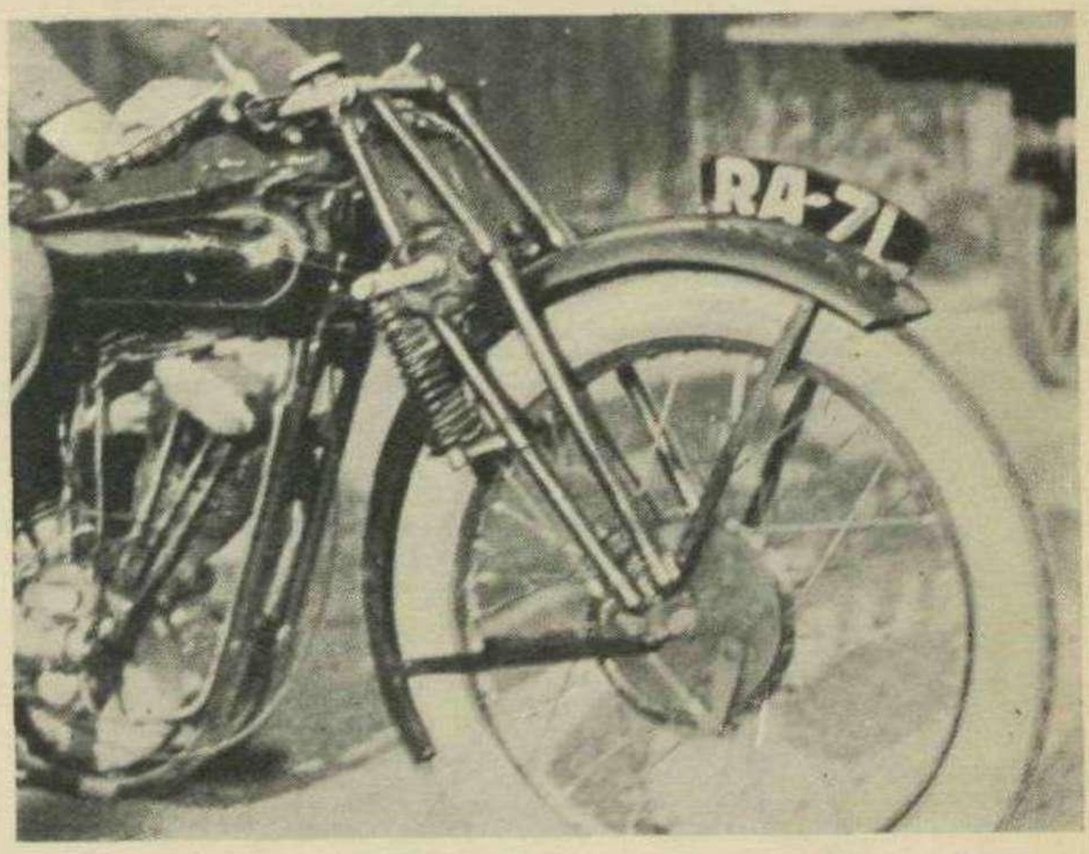
THE COMPARATIVELY SMALL PROPORTIONS OF THE McEVOY MAKE FOR EASE OF HANDLING.

SPORTING MACHINES ON TEST—continued.

apparatus functioned perfectly. As regards details, the finish is good, and apart from the silencer nothing rattled or came loose, mechanical lubrication by a Pilgrim pump worked unfailingly and on every single occasion, hot or cold, flood or no flood, the machine started on the first depression of the kick-starter, a *trait* no doubt mainly attributable to the Binks 2-jet carburettor. Other commendable features include cast aluminium chain guards, quick opening filler caps and John Bull knee grips.

Centre of Attraction.

Naturally by reason of its imposing lines and pleasing finish the McEvoy always attracted a little knot of interested people if left in a public place for more than a few moments, and all who tried it were immediately impressed with the immense feeling of power developed by the big twin motor, the surprising ease of control and the quite unusual comfort of the machine. In fact the main impression left on the rider is of condensed strength, the power being equal to the best, while the whole machine handles like a medium weight, doubtless due to its low centre of gravity and scientifically designed frame. In conclusion, let us remind readers once again of G. W. Patchett's and M. A. McEvoy's very convincing demonstrations of the machine's speed and stability at Brooklands and elsewhere, which should be sufficient assurance that the McEvoy is indeed worth serious consideration by the prospective big twin rider.



A CLOSE-UP SHOWING THE LARGE FRONT BRAKE AND MASSIVE DRUID FORKS ON THE McEVOY.

SAN SEBASTIAN RACES.

Bugatti scored yet another success by winning the recent San Sebastian Grand Prix. In this event, run under conditions of grilling heat, their only rivals were the Delage team whose drivers collapsed owing to the heat. After numerous changes of drivers, however, Delage managed to attain second place from Goux who drive the winning car.

McEVOY
MOTOR CYCLES

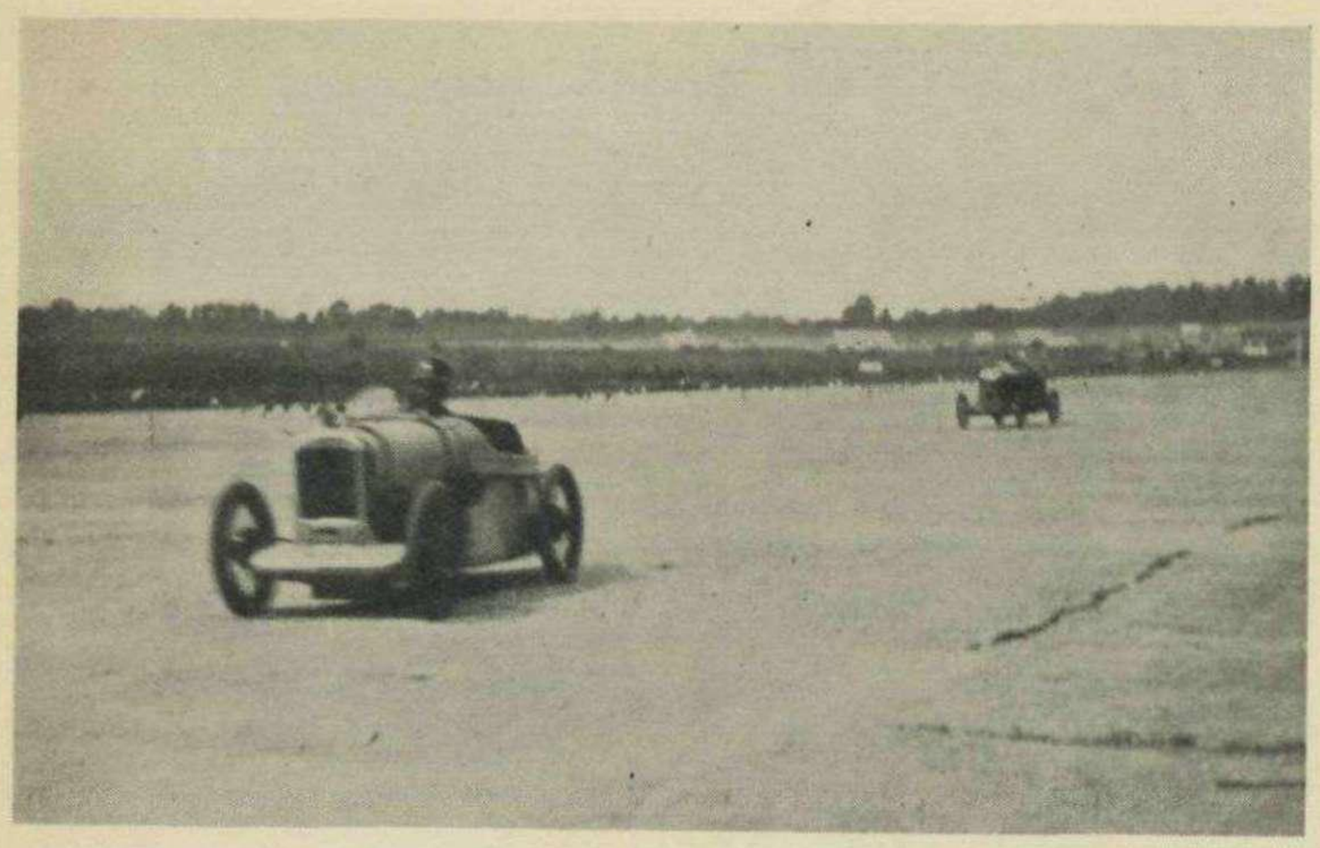
Are DESIGNED and MADE by a RIDER who is prepared to Guarantee 100 m.p.h. with certain Models and prove it on the Track before delivery.



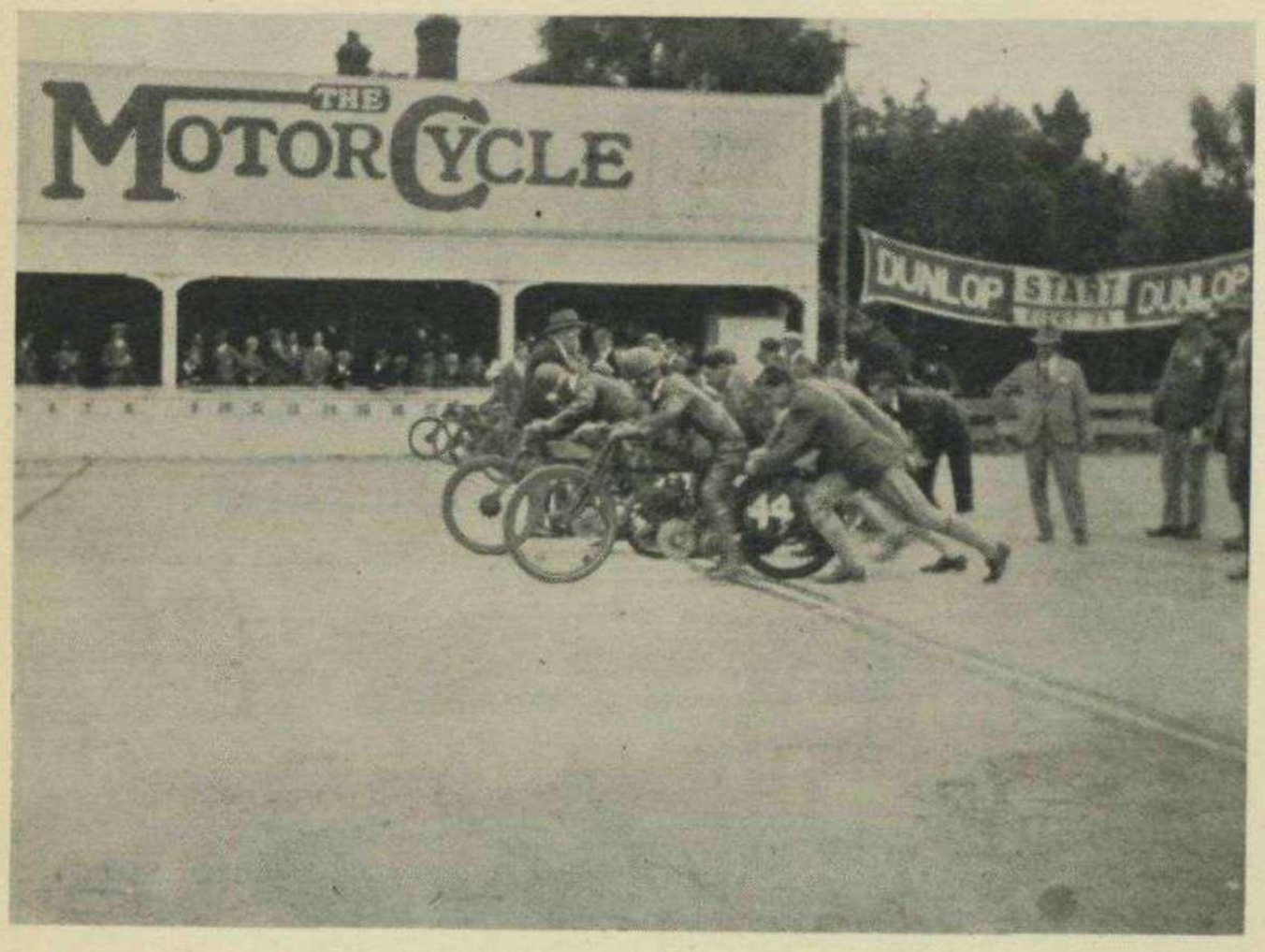
On July 10th, Mr. M. A. McEvoy riding a standard McEvoy and Sidecar, fitted with 8/45 J.A.P. Engine, and Sturmey-Archer Gear-box, obtained 1st place in Race 8 at 85.13 miles per hour.

M. A. McEVOY, DUFFIELD, DERBY, and Depot for Tuning at Brooklands Track.

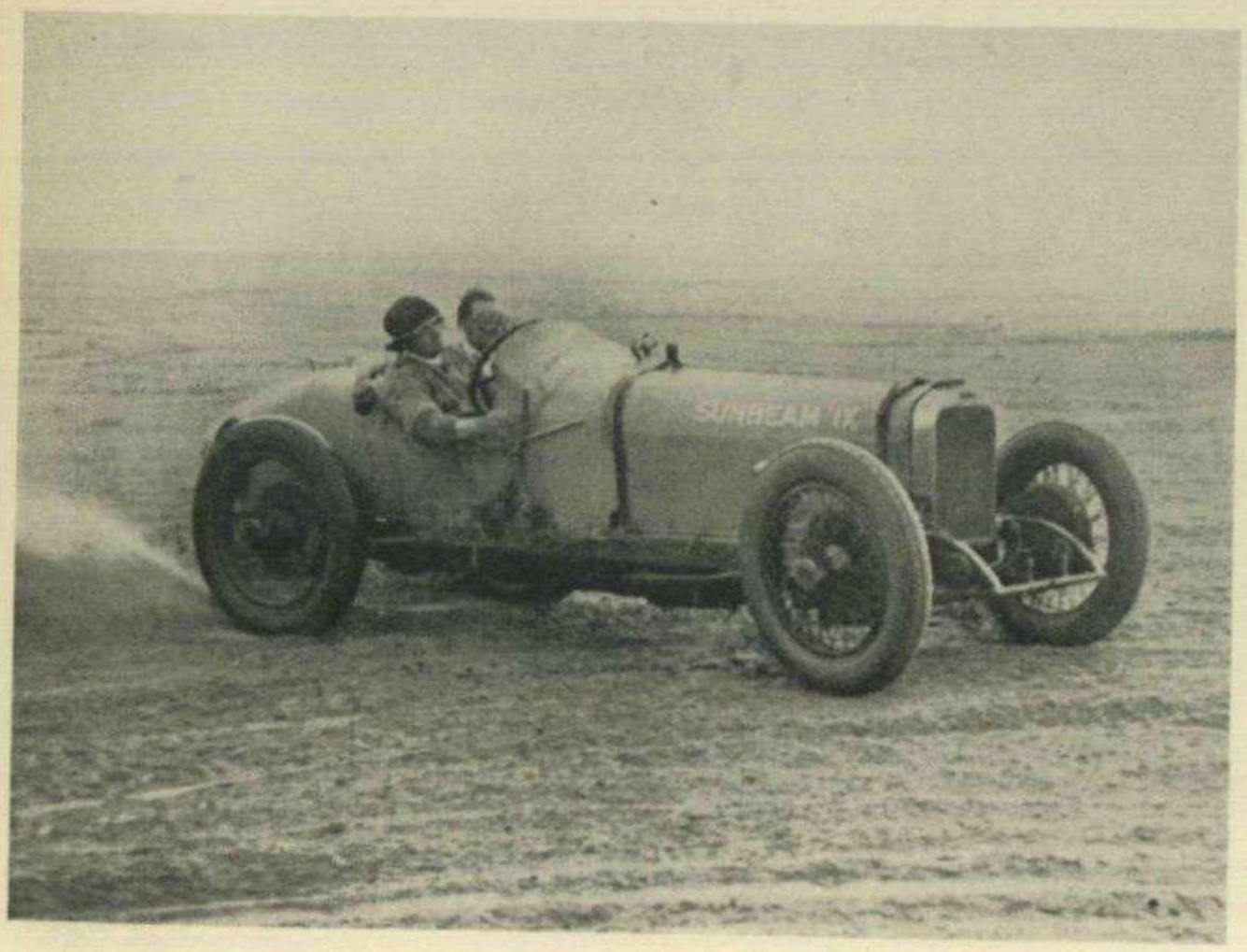
Recent Sporting



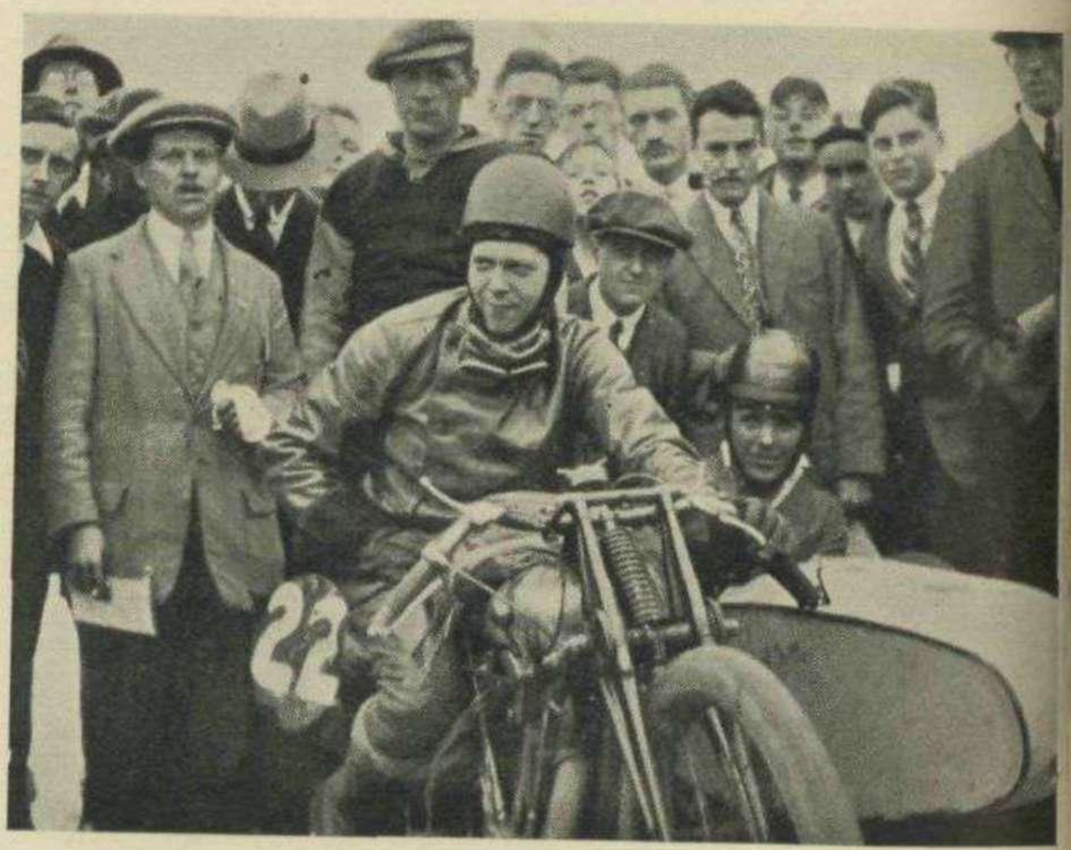
An Austin and a Salmson Between the Corners in the Production Car Race.



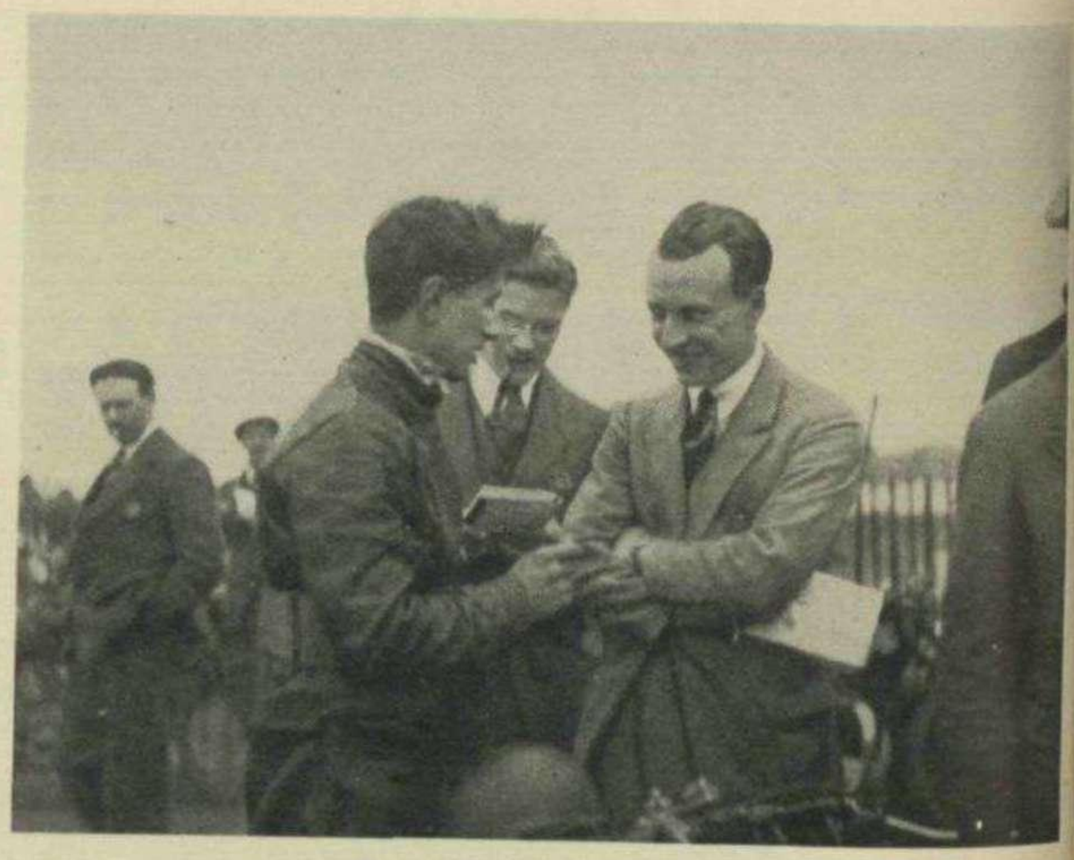
Start of a Race at the B.M.C.R.C. Cup Meeting.



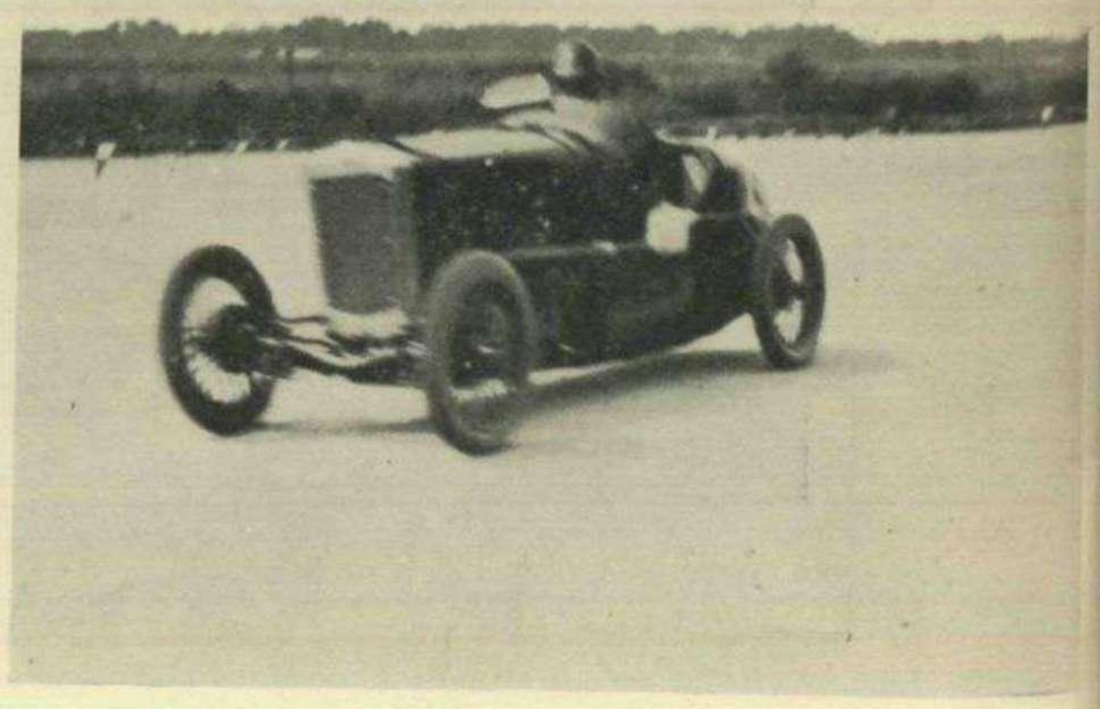
C. R. W. Jackson Skidding a Corner at a Recent Southport Meeting.



H. A. McEvoy, after Winning the Sidecar Race on Cup Day at 85 m.p.h.



J. S. Worters, a successful J.A.P. Exponent, in Consultation with Vivian Prestwich.



H. J. Aldington, on a Frazer-Nash Special, in the Production Car Race.

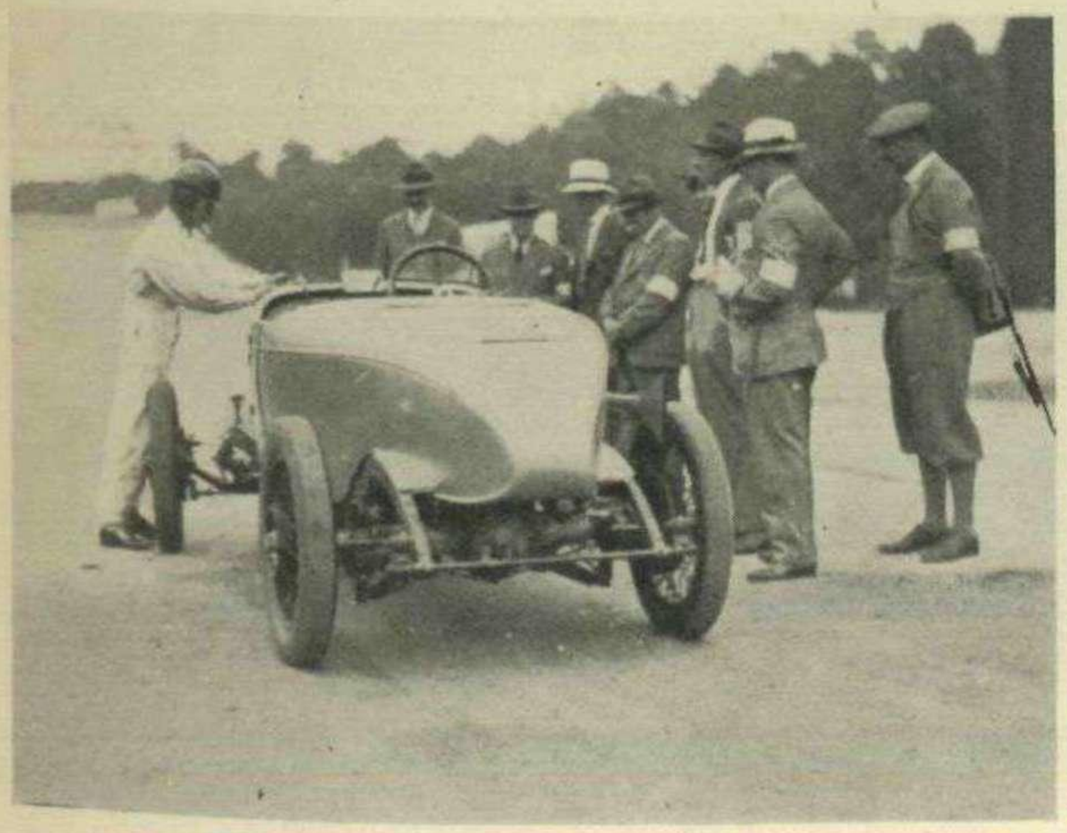
vents in Pictures



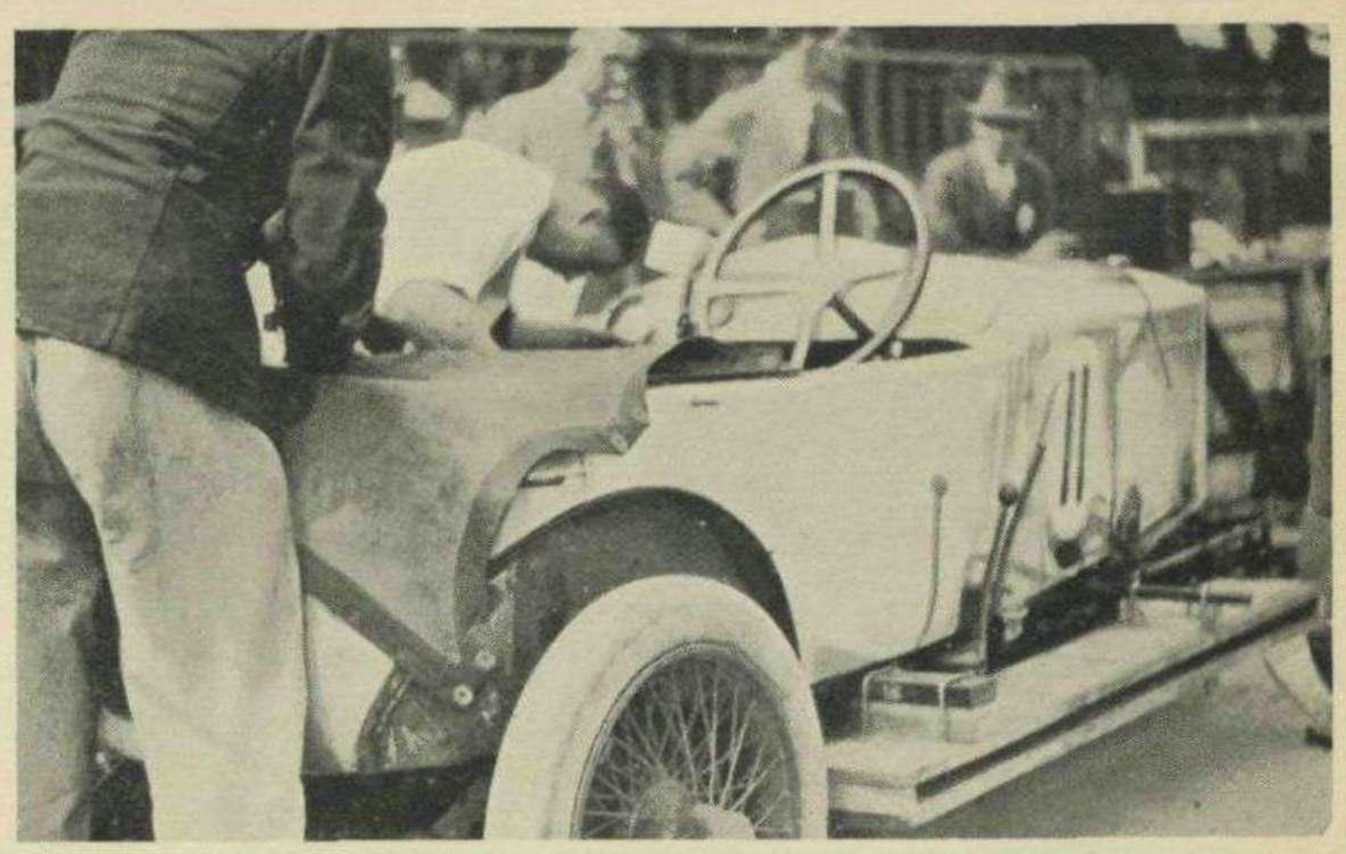
S. H. Newsome (Frazer-Nash), Winning a Car Class at the A.C.E. Club Speed Trials.



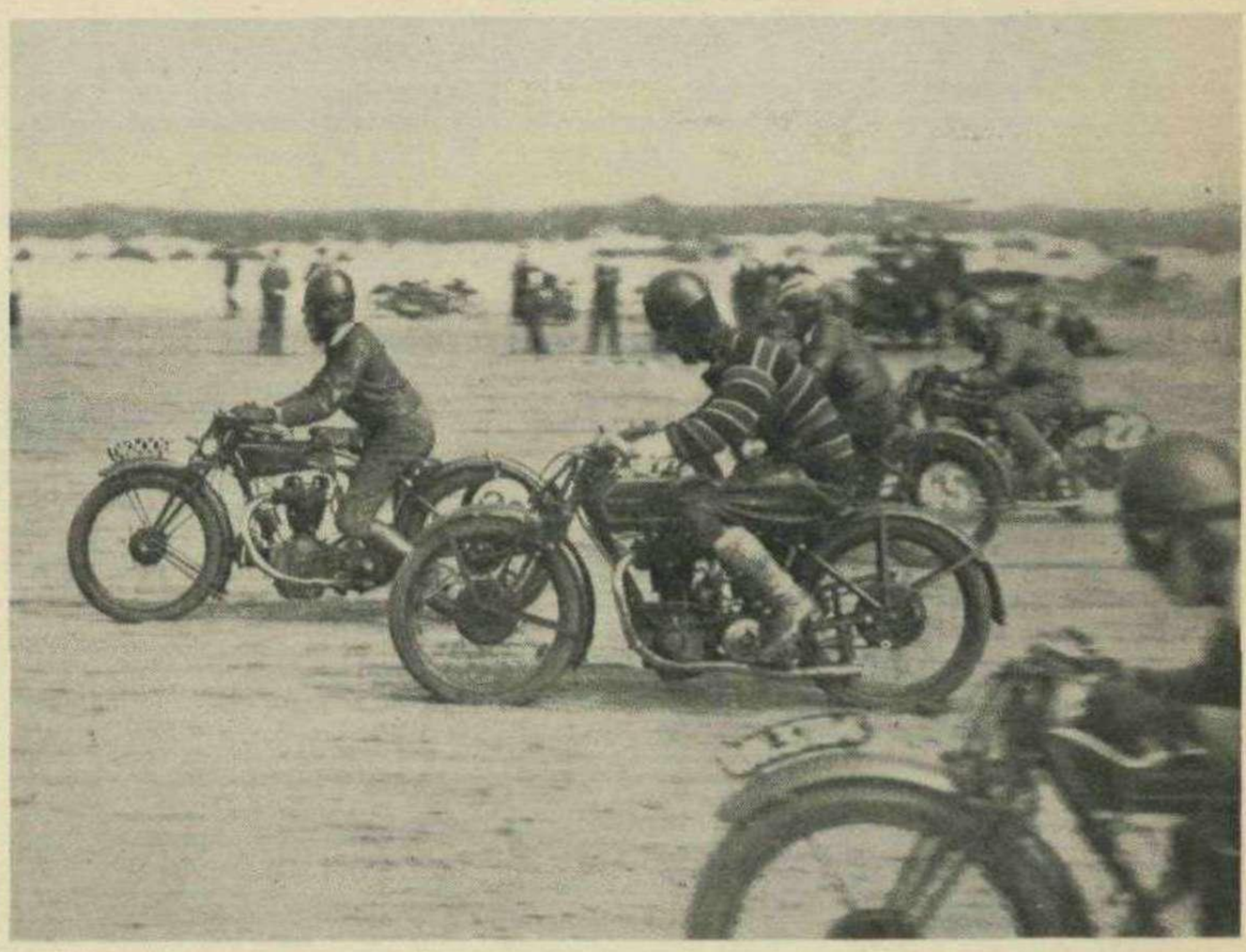
B.M.C.R.C. Cup Meeting. F. W. Dixon's Douglas seems to be Worrying Him.



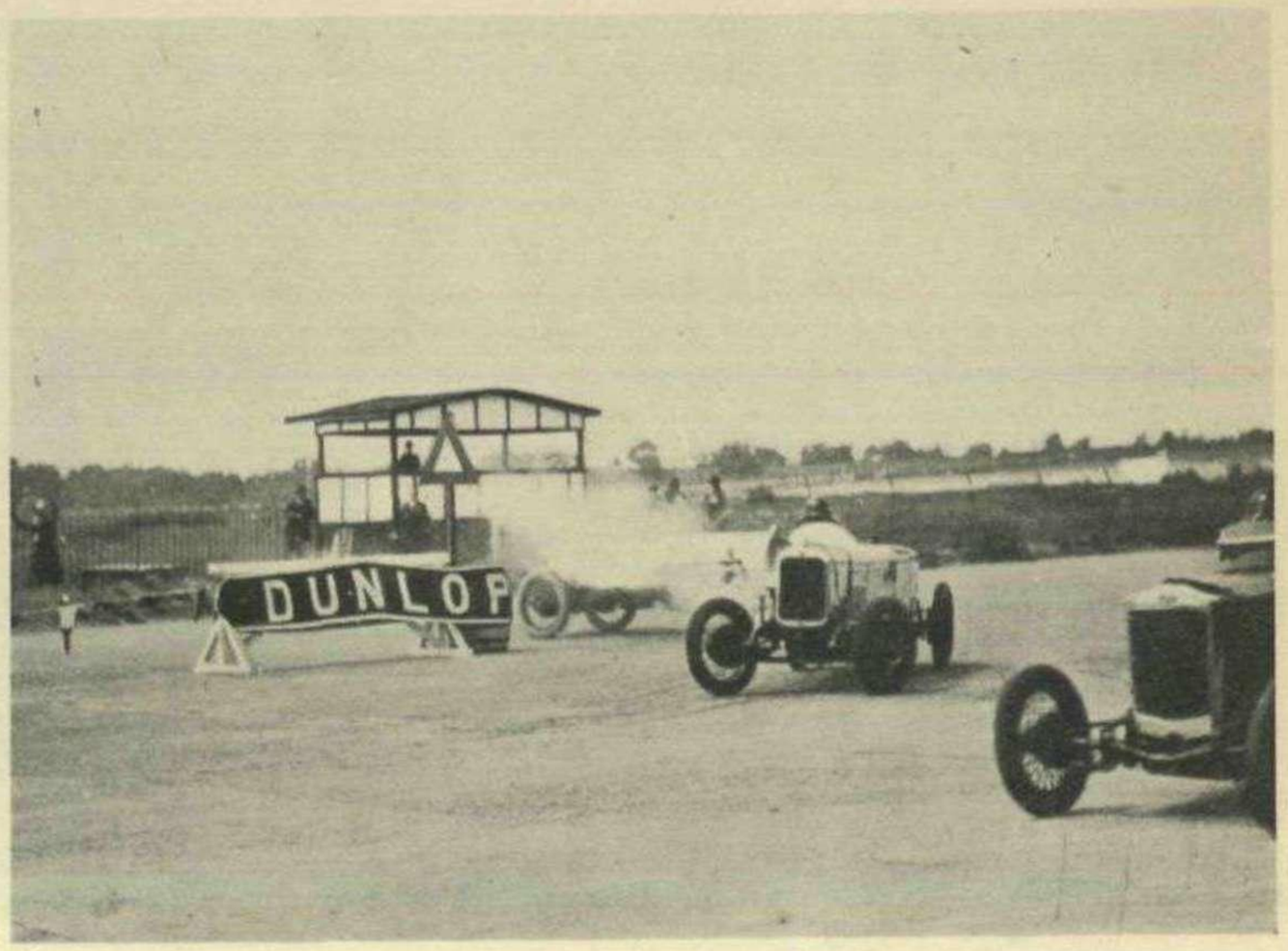
C. M. Harvey (Alvis) about to Restart after a Depot Stop, J.C.C. event.



G. W. Bagshawe, Winner of 1,500 c.c. Class in the J.C.C Race, Replenishing his Frazer-Nash



Start of a Race at the Rochdale Club's Southport Meeting. T. Spann (Sunbeam) is a Prominent Figure.

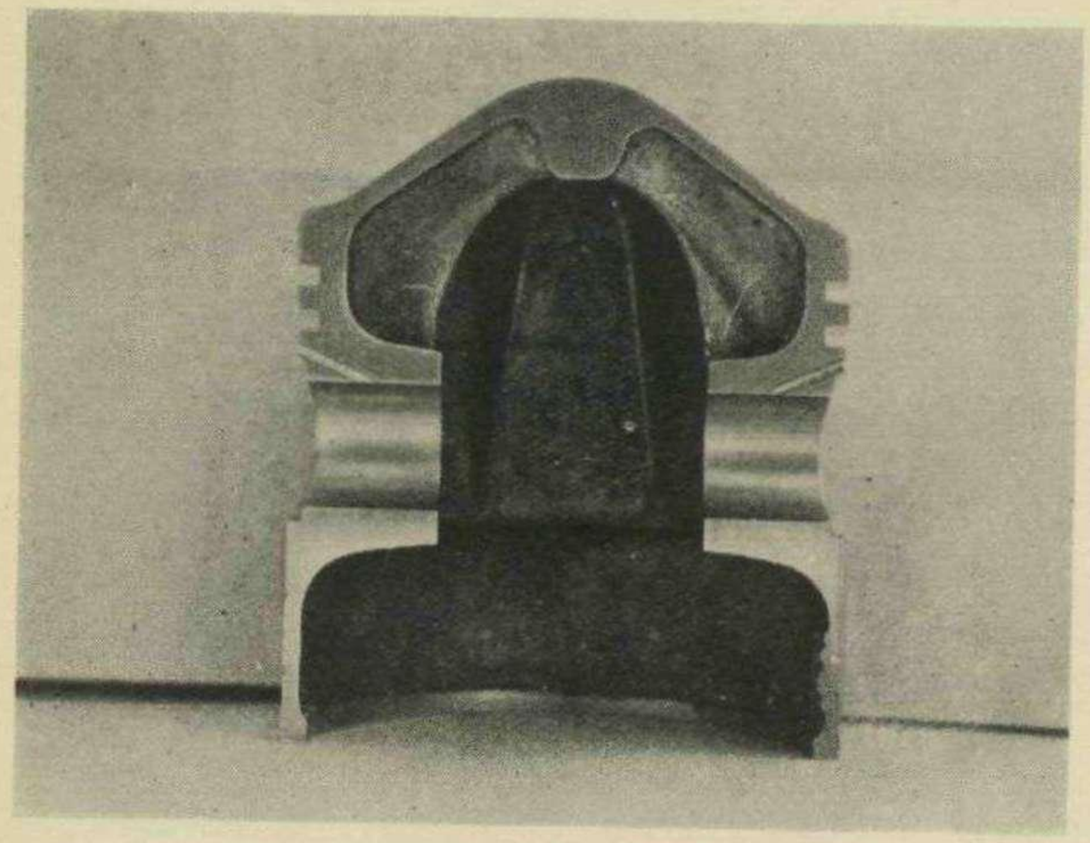


L. to R., R. V. Dykes, C. M. Harvey and H. J. Aldington, Cornering in Close Company in the J.C.C. Race.

HIGH EFFICIENCY PISTON DESIGN.

Including a brief review of the leading proprietary makes.

By W. S. B.



THE SPECIALLOID PISTON IN SECTION.

THE essential feature of any high efficiency engine is its high compression ratio. Many other points exist, such as valves, operation methods, 2-stroke or 4-stroke, etc., on which various views are held, and on which every designer has his own ideas; but the efficiency of an engine definitely increases (up to a point, limited by practical considerations, such as detonation of the fuel) with an increase in the compression ratio. High output entails high temperatures, and unless the heat which is not converted into work can be quickly got rid of, the high temperature will cause failure of the pistons by melting, or seizing from excessive expansion.

From this it will be seen that the first requirement of a racing piston is that it should run cool. The only way this can be done is to get the heat from the piston head to the skirt, as, owing to the large area of the skirt, the heat will get to the cylinder walls easily enough. This means that the material of which the piston is constructed must have a high co-efficient of heat conductivity so as to reduce as much as possible the volume of metal, and thus the weight required. Next in importance is the question of mechanical strength, for, in view of the high engine speeds now common, the forces on the reciprocating parts are very large and will cause cracked pistons, etc., unless steps are taken in the design to provide the required strength.

Aluminium alloy is almost exclusively used for racing pistons to-day, owing to its high thermal conductivity and its lightness, as compared with iron or steel. Owing to its much lower melting point however, it must be run much cooler than either of these in order to avoid burning, while its better heat conductivity is insufficient alone to ensure this. To offset this, many designers increase the thickness, and so the weight of the conventional designs, and this, while cooling the piston, fails to produce the lightness which is so essential for high engine speeds. It should be noted that lightness is of secondary importance to cool running and strength.

As a result of the efforts of metallurgists taken in conjunction with the experience gained in the last few years in racing, aluminium alloys have been produced in which practically all the disadvantages of the earlier alloy pistons have been eliminated. New alloys and accurate heat treatment have rendered possible the production of pistons which do not grow, and which can be run with clearances similar to iron and steel, thus eliminating piston slap. Research has also produced alloys with the very important property of retaining their strength at working temperatures, and it should here be mentioned that figures of tests carried out when cold, are of little value as an indication of how the metal will behave at the temperature attained in the engine.

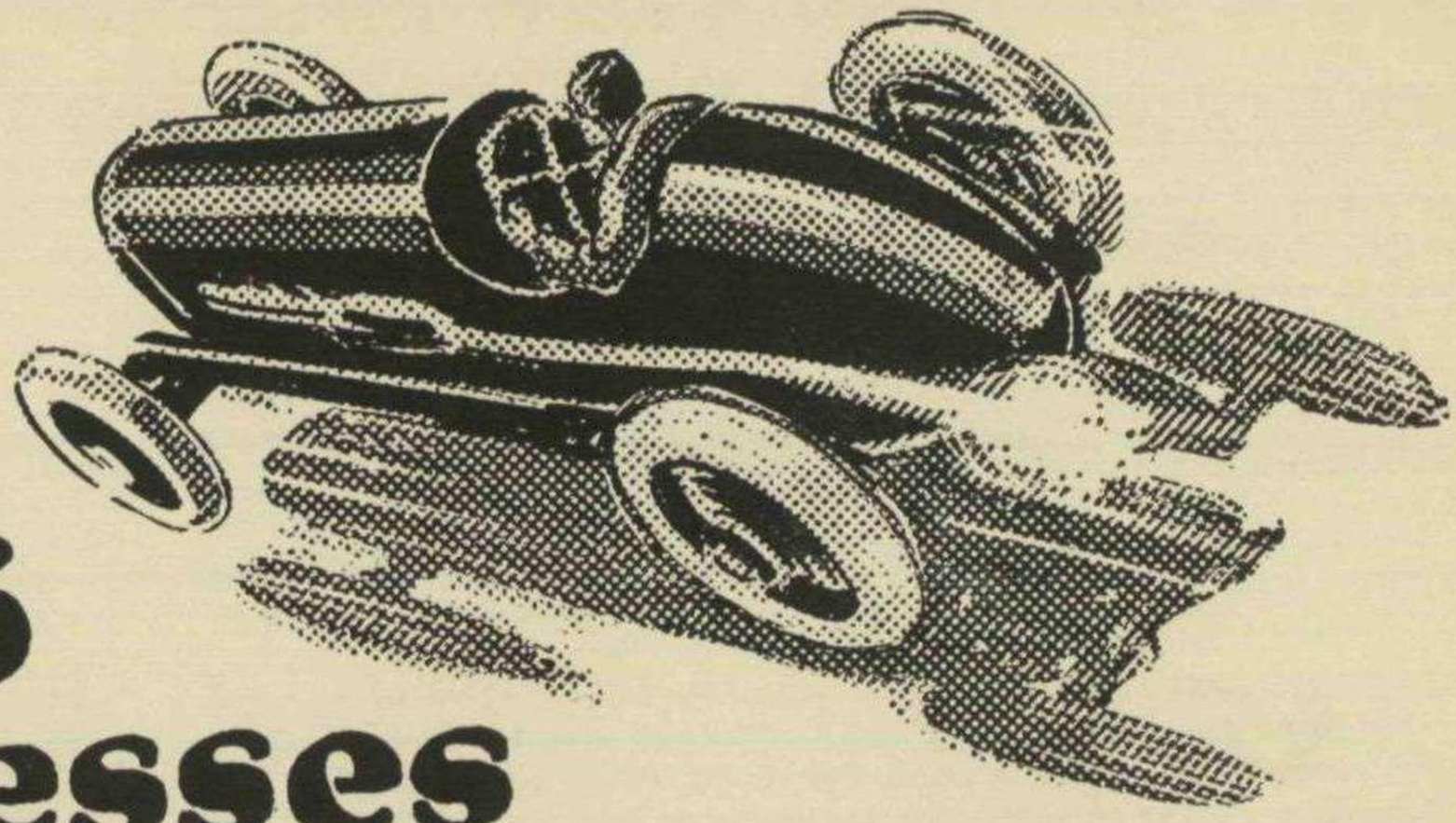
Having set out roughly the requirements of a "fast" piston, it will be of interest to consider the methods used by leading manufacturers, who specialise in this work to overcome the difficulties.

The principal feature of the well-known Specialloid design is the internal ribbed construction, the object of the ribs being to serve as a means of transferring the heat from the head to the skirt, and thence to the cylinder walls.

By this method, a piston is produced which combines good cooling, strength and lightness. Other advantages claimed by the makers are the elimination of growth, and the comparatively small clearances with which they can be run without having to use split skirts, expanders or other of the numerous devices so frequently resorted to. This latter point, in conjunction with the special design of recessed waist and oil return holes, effectually



HIGH COMPRESSION PISTON FOR A 350 C.C. O.H.V. BLACKBURNE.



Some 1926 successes on DUNLOP

HARTFORD CUP

March 28th.

1st and 2nd places.

TARGA FLORIO

April 25th.

One First. Three Seconds.

In three Classes.

RUDGE WHITWORTH CUP

(24 hours race) June 12th.

1st, 2nd and 3rd places.

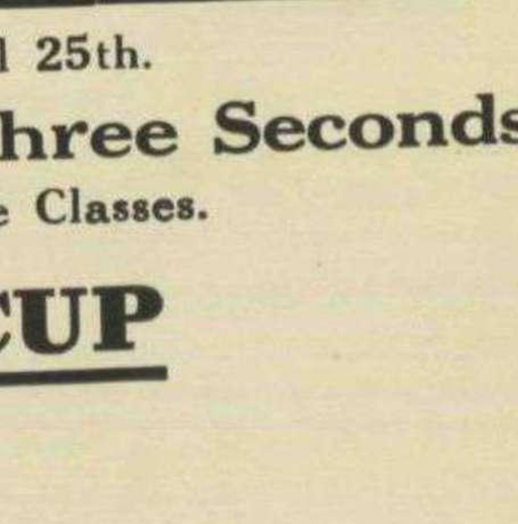
BELGIAN 24 HOURS RACE

July 3rd.

First place in Three Categories.

The moral is—

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DUNLOP—THE STANDARD *by which* ALL TYRES *are* JUDGED

HIGH EFFICIENCY PISTON DESIGN—continued.

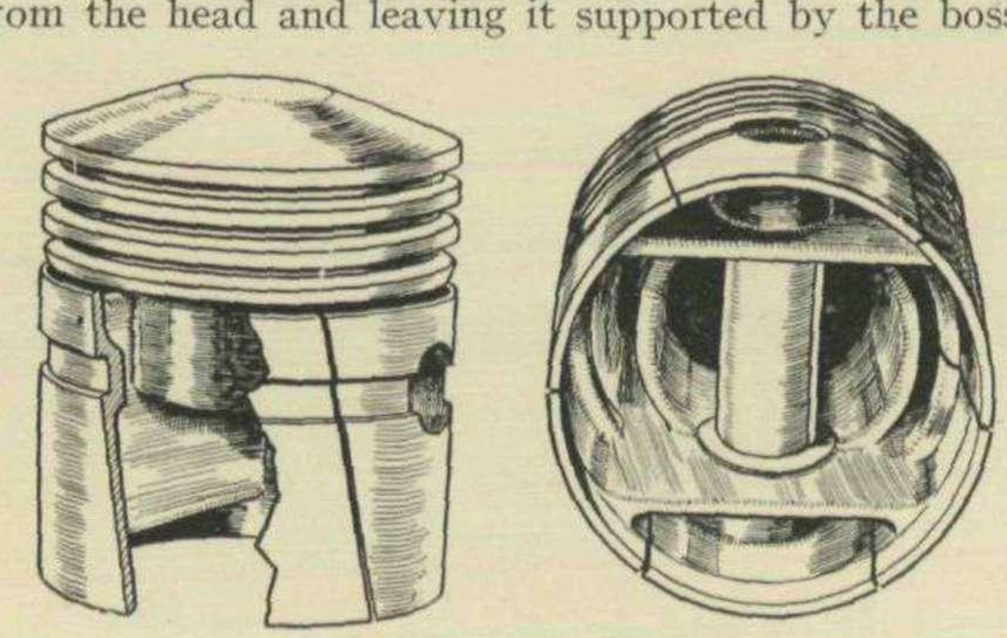
prevents oil reaching the combustion chamber when running at small throttle openings.

Specialloid successes have not been confined to road and track work, and it is interesting to note the world's record for 1½ litre motor boats was recently established by a boat built by J. W. Brooke and Co., Limited, of Lowestoft, and fitted with a Brooke supercharged marine engine using Specialloid Pistons. Incidentally, we had the pleasure of examining some pistons out of this engine which, from the point of view of piston design, formed an extremely difficult problem. Various proprietary designs and makes of piston (including cast iron and steel pistons) entirely failed to withstand the enormous temperature due to the high supercharger pressures used in this engine. The Specialloid Racing Pistons finally fitted have been in use in this engine for nearly eighteen months without any ill effects. Messrs. Specialloid Limited make no claim to have had no failures, and showed us some of their pistons which they had succeeded in burning out by tests of abnormal severity, realising that this is the only way to make sure that the final design which they supply shall be completely reliable. These pistons are the sole product of the firm of Specialloid Limited, Friern Park, North Finchley, N.12, and the range includes every size of engine, a point of interest being the enormous number of pistons supplied to leading Motor Omnibus and Transport Companies, the engines of which get anything but gentle treatment.

The latest Hepolite piston produced by Hepworth and Graddage, Ltd., St. John's Works, Wakefield Rd., Bradford, is of very ingenious construction, and it is claimed that it can be fitted with finer clearances than cast iron, and yet can be put under load without any "nursing" as soon as it is installed.

This is achieved by actually separating the piston skirt from the head. The piston casting is formed of two concentric cylinders, the inner extending from the head to the gudgeon pin bosses which join the two. Thus the head is at the same time supported and heat got away from it by the inner cylinder. In addition, two transverse webs from the bosses support the walls.

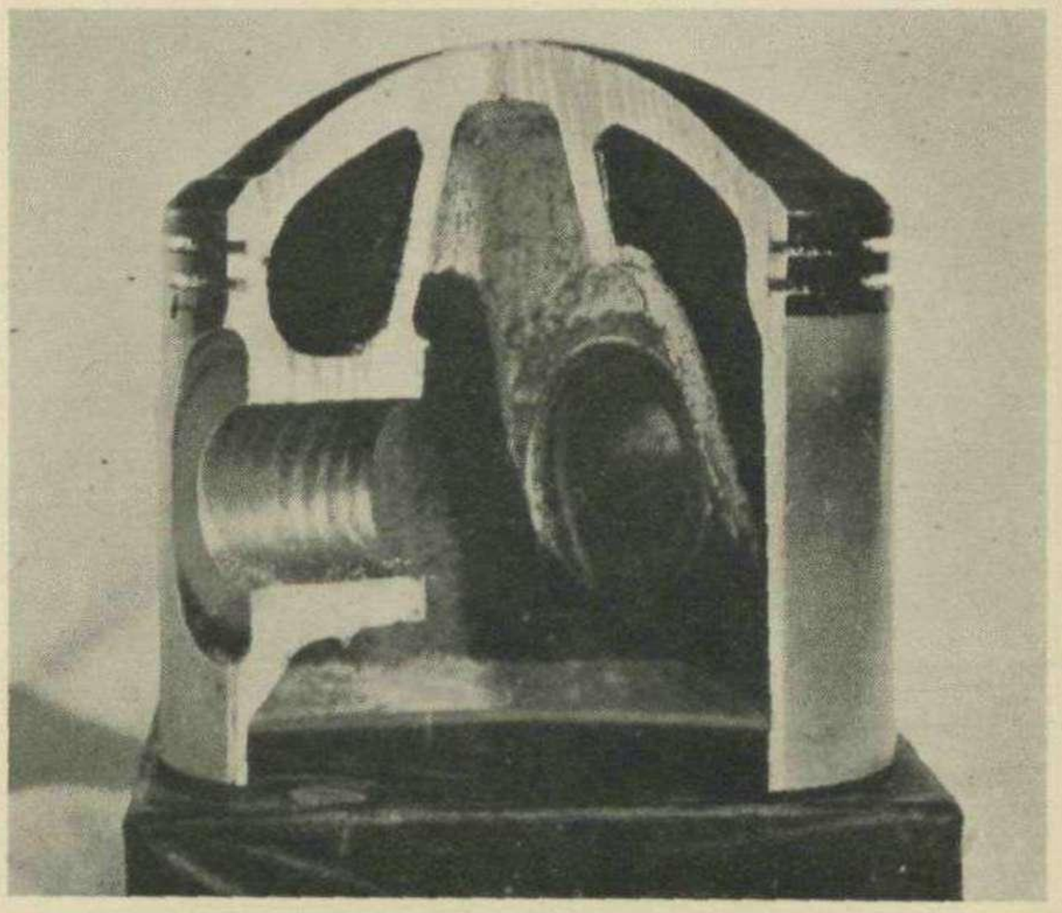
During machining, the walls are cut through above the gudgeon pin, so separating the skirt completely from the head and leaving it supported by the bosses and webs above mentioned. The skirt is then slotted in six places, so that any expansion within the cylinder is compensated for by the closing of these slots.



THESE ILLUSTRATIONS SHOW CLEARLY THE INTERNAL CONSTRUCTION OF THE LATEST HEPOLITE PISTON.

Although all the advantages of alloy pistons—lightness, heat conductivity, etc., are obtained, it is claimed that the Hepolite compensating piston can be fitted with clearances as fine as cast iron, so eliminating slap, at the same time avoiding possibility of seizure.

The many successful users of these pistons include Mr. B. H. Davenport, whose amazing little V-twin Frazer-Nash continues to collect such a remarkable pile of "Firsts" on Southport sands and elsewhere.



A SECTIONAL VIEW OF A MARTLET PISTON FOR A 500 C.C. J.A.P. ENGINE.

A piston which is outstandingly successful at Brooklands, but which does not appear to be as widely known as it deserves, is the "Martlet" made by Messrs. Brewster and Johnson, who have a depot at the track, and are thus in constant touch with the users of their products, and so lose no time in finding out any alterations that are necessary. The great feature of the Martlet piston is the central trunk in the head from which webs come down to the gudgeon pin bosses. This gives very great strength, and at the same time provides two separate paths in parallel by which the heat can flow from the head to the skirt. This means that the portion of the head between the central trunk and the edge can be made considerably lighter than with the conventional design without risk of failure. They are made of a special alloy which it is claimed does not grow and can be fitted with smaller clearances than ordinary alloy pistons.

An argument in favour of these pistons which cannot lightly be overlooked is the fact that, apart from some records in the "baby" classes under 175 c.c. made by a 2-stroke, every motor-cycle record made at Brooklands this season has been made on Martlet pistons. They of course supply pistons for any engine, air or water-

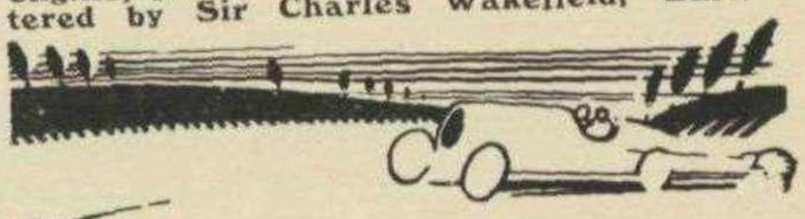
Supreme

IN THE **AIR**



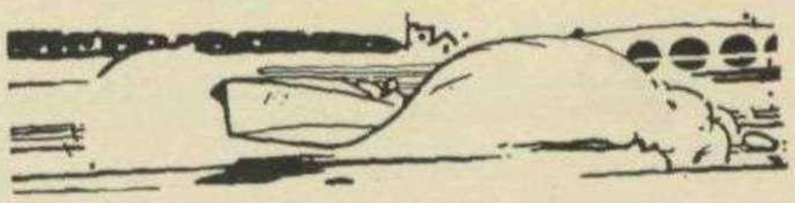
King's Cup Air Race won on PRATTS by De Havilland (Moth) 27/60 h p. "Cirrus" engine, piloted by Capt. H. S. Broad, entered by Sir Charles Wakefield, Bart.

ON **LAND**

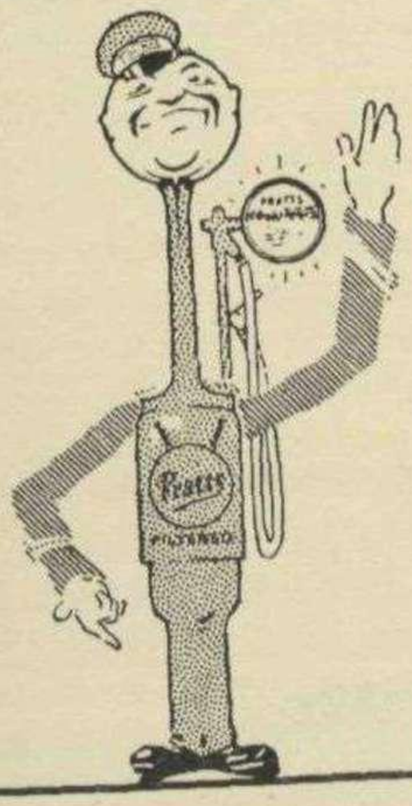


24 Hours' British Built Bentley Record (three-litre class) made on PRATTS.

AND **WATER**

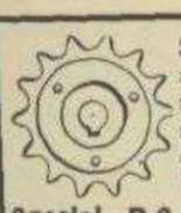


Duke of York's Trophy (Motor Boats) won on PRATTS by Miss M. B. Carstairs' "Newg."



Pratts

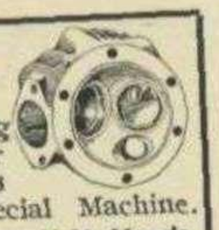
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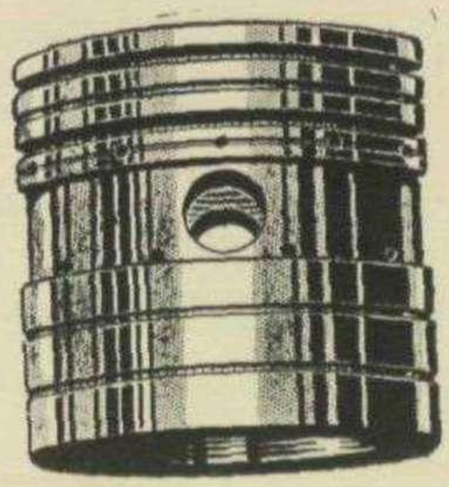
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HIGH EFFICIENCY PISTON DESIGN—continued.

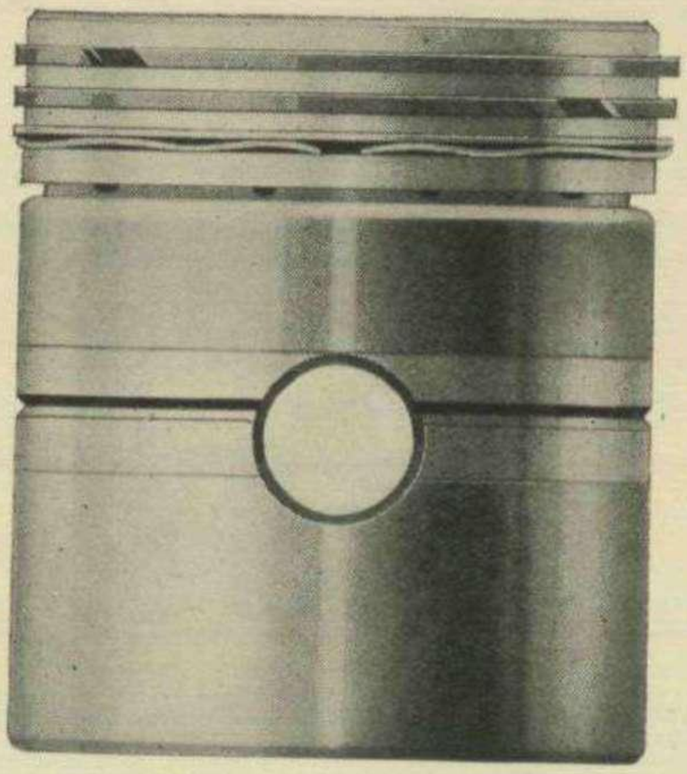
cooled, but there is little doubt that the modern air-cooled racing motor-cycle engine with its very high r.p.m., and terrific compression ratios, combined with the silencer regulations now in force at Brooklands, provides a test for pistons which it would be hard to surpass for severity.

As the Zephyr piston has been on the market since 1910 the views of its inventor are bound to be of considerable interest, as in 1913 many records were broken on a Vauxhall, fitted with Zephyr steel pistons, and they have been widely used ever since.

When aluminium alloy came into use for pistons the inventor at once realized its advantages for cooling purposes, but did not consider it good enough as a bearing metal owing to its liability to wear the cylinder, and the latest composite Zephyr piston is an endeavour to make full use of aluminium as a heat dissipater at the same time retaining the advantages of steel as a hard wearing bearing surface.

The head is of the usual aluminium alloy down to the gudgeon pin, the feature being that the aluminium does not touch the cylinder walls except at the time of maximum expansion. A special alloy steel skirt is bolted to the head and performs all the duties of a bearing. The steel skirt is so resistant to wear that earlier types of Zephyr pistons made from the same material are still in use in the original cylinders after periods of 12 to 14 years. This type of Zephyr piston can be and is made lighter than an all aluminium piston of conventional design as the steel skirt can be made extremely thin.

All Zephyr pistons are fitted with "Zephoil" rings which are claimed to be much more effective as scrapers than the ordinary ring.

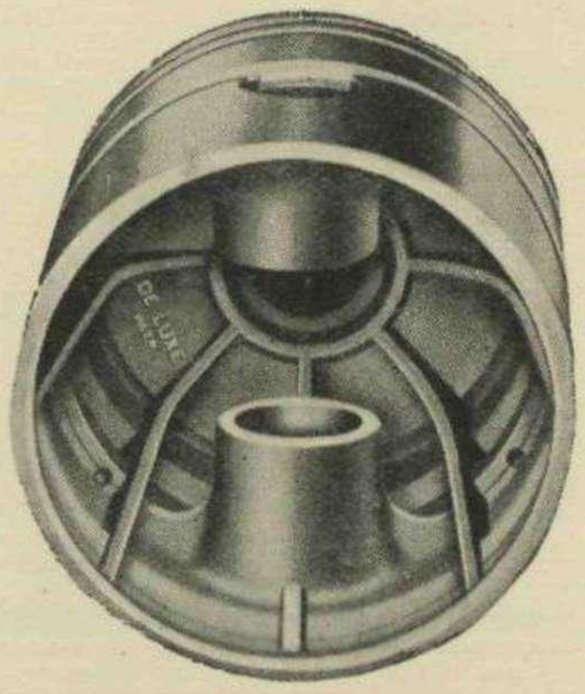


THE LATEST A/S TYPE RACING ZEPHYR WITH STEEL SKIRT.

Miralite Ltd., 87-91, High St., Mortlake, S.W. 14, specialise in castings of special alloy for any pistons, and have the enviable distinction of having supplied the piston castings for the fastest car in the world, J. G. Parry-Thomas' famous "Babs." We understand that finished pistons to any design in Miralite alloy can be obtained from Mr. Thomas, or Miralite will supply castings direct to any design if they are sent the patterns and core-boxes, but they do not themselves supply finished pistons, being alloy casting specialists only.

No article on pistons would be complete without some reference to the firm of Laystall whose standard De Luxe piston, while not used for racing, is much favoured by the owners of sports cars. These De Luxe pistons are remarkably fine iron castings and are so designed to provide equal strength to an aluminium piston of the same weight with a claim to greater longevity. The principal points of design are the internal ribs radiating from the centre of the crown and extending to the skirt, thus allowing very thin walls and consequent lightness without losing strength. From personal experience of these pistons in a Meadows engine we can state that they definitely improve speed and acceleration, wear well, eliminate vibration, and do not seem to overheat any more than an aluminium piston.

Messrs. Laystall of course do not confine themselves to these, their standard product, but in the course of the many racing jobs that they undertake they have to turn out many different designs of aluminium pistons. For this class of special work they have a reputation second to none.



THE LAYSTALL DE LUXE CAST IRON PISTON.

LAND'S END—JOHN O'GROATS RESULTS.

The results of the Land's End to John o' Groat's run promoted by the Motor Cycling Club on July 6th-9th are.

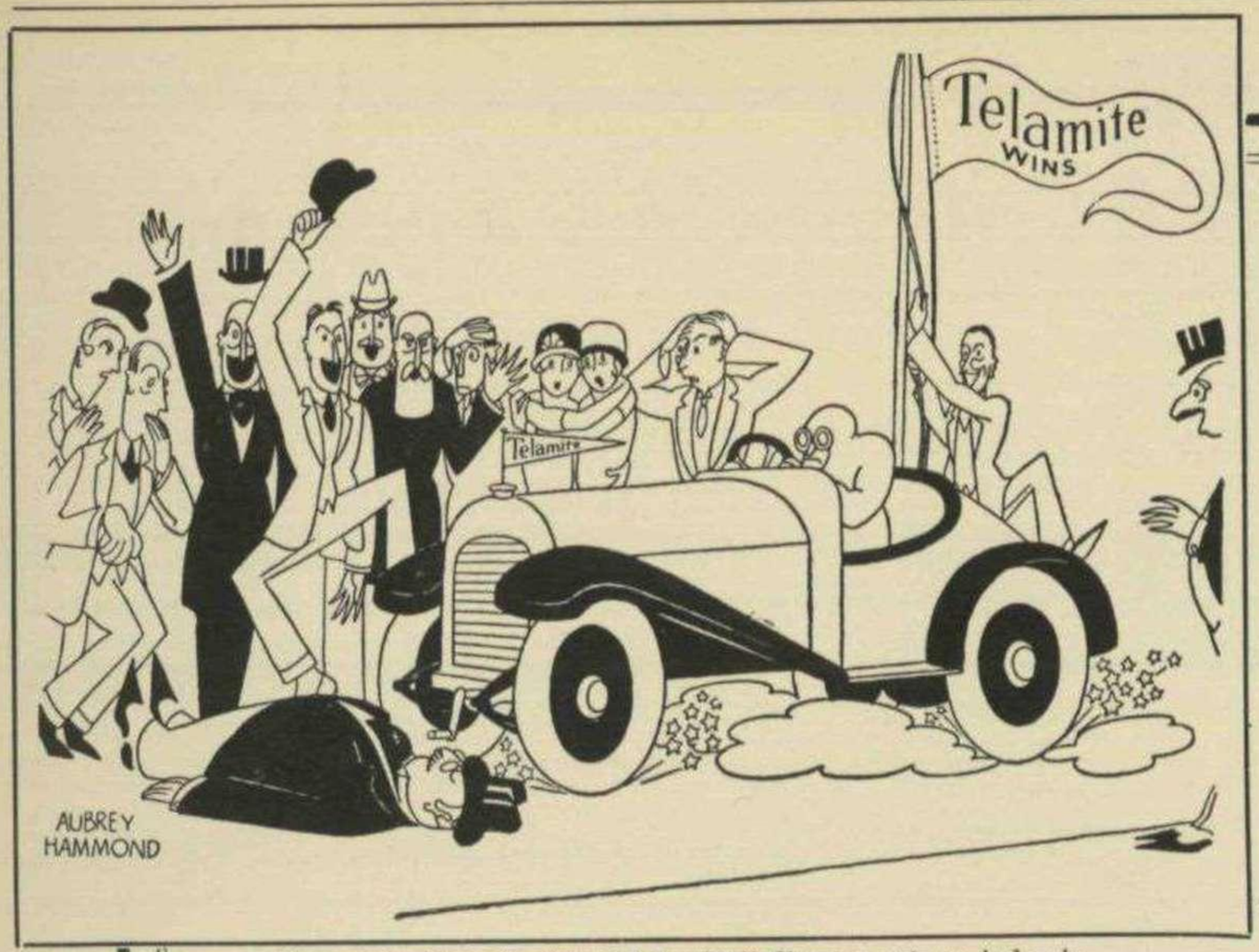
SOLO.

Silver Cups.—C. H. Southey (P. & M.), H. W. E. King (Norton), G. Harvey-Kelly (New Imperial), H. Gibson (Raleigh), P. J. Dyster (Triumph), E. Fecitt (A.J.S.), C. G. Wright (Harley-Davidson), R. B. Willmott (Scott), F. P. Coles (Sunbeam), F. W. Applebee (Levis), G. G. Stone (Humber).

Silver Medal.—D. A. Neale (Sunbeam).

SIDECARS.

Silver Cups.—E. J. Phillips (Rudge), J. T. Boyd-Harvey (Douglas).



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Motor-Cycle Speedmen.

J. S. WRIGHT.

By THE EDITOR.

AS a general rule, the prominent motor-cycle speedmen of to-day have been recruited from the ranks of trade experts, from whence it is only to be expected that the most promising talent should be found. In Joseph Sydney Wright, however, we find a notable exception to the rule, for the redoubtable Zenith wizard finds his principal interests in an altogether different sphere of life, carrying on a prosperous business as a master builder at Egham.

During an interview with Mr. Wright at a recent meeting of the British Motor-Cycle Racing Club, we had the opportunity of gathering a good deal of interesting information concerning this rider, who has come to the forefront of the motor-cycle racing world with such astonishing rapidity.

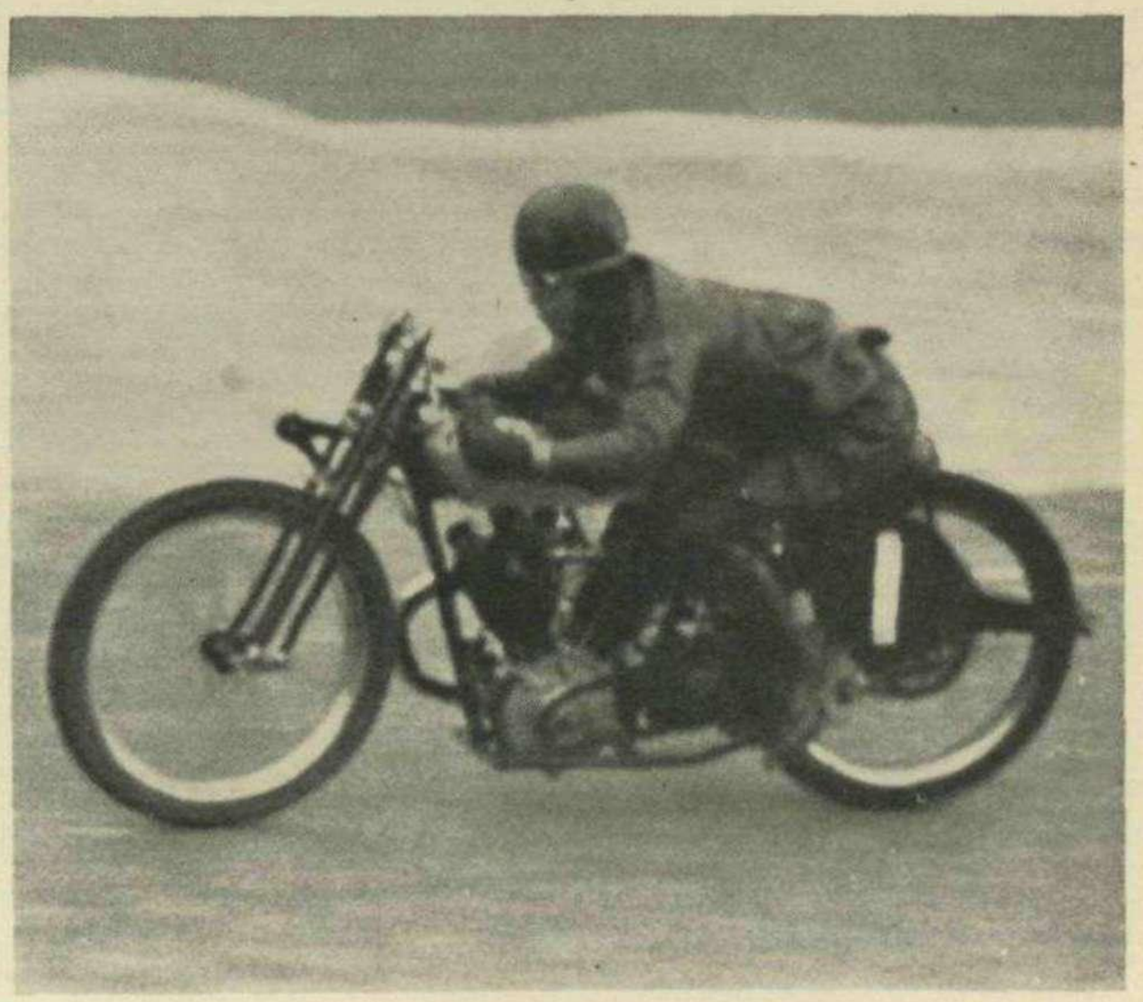
His career on the track is all the more meritorious in that he has consistently ridden his own machines, and has kept them in the best racing condition with little or no outside assistance. For him motor-cycle racing is a hobby pure and simple, his remarkable successes being carried in a level-headed manner, so that Wright, the speedman, does not overshadow the Wright who is normally engaged in extending the parish where his activities are very evident.

It was not until the year 1921 that Mr. Wright began to take an active interest in motor cycling, and then it was principally as a clubman that he followed the pastime. From social runs to club competitions, however, is but a short step, and as a member of the Slough Motor Cycle Club, Mr. Wright showed that he possessed more than ordinary skill awheel. For some time he appeared to have no greater ambition than to participate in club events, and to increase his professional experience, until happening to visit the track at Brooklands during a meeting of the B.M.C.R.C., he became fired with enthusiasm to possess a really fast machine on which to try his skill and to satisfy a growing ambition.

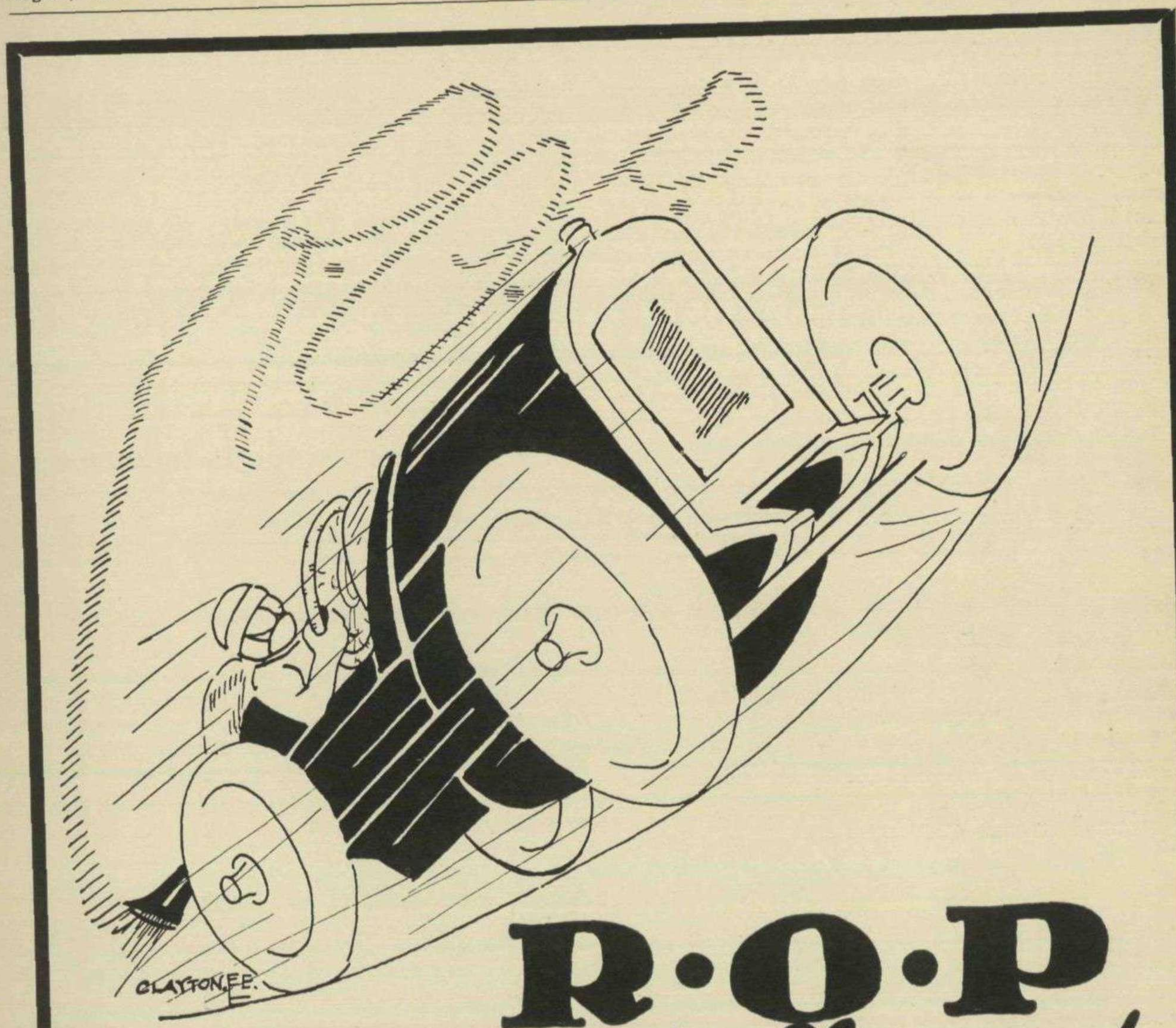
His First Speed Machine.

The first step to this end was to acquire a $2\frac{1}{4}$ h.p. side valve J.A.P.-engined Zenith, with which he made his first appearance on the track in 1923, but his debut was by no means sensational, and, like many another now successful rider, he had for some time to content himself with figuring amongst the "also rans." In this way he slowly gathered the experience necessary for the ambitious programme he had in mind, for as everyone knows the track becomes a very different route as soon as the speed of a machine rises from the "seventies" till it becomes "hundredish."

In 1923 he took part in some speed trials organized by a motor-cycling club at Portsmouth, and was successful in gaining several premier awards, and also put up some encouraging times in the Kop Hill Climbs of that year.



PHOTOGRAPHER CATCHES J. S. WRIGHT LAPPING AT 113 M.P.H.



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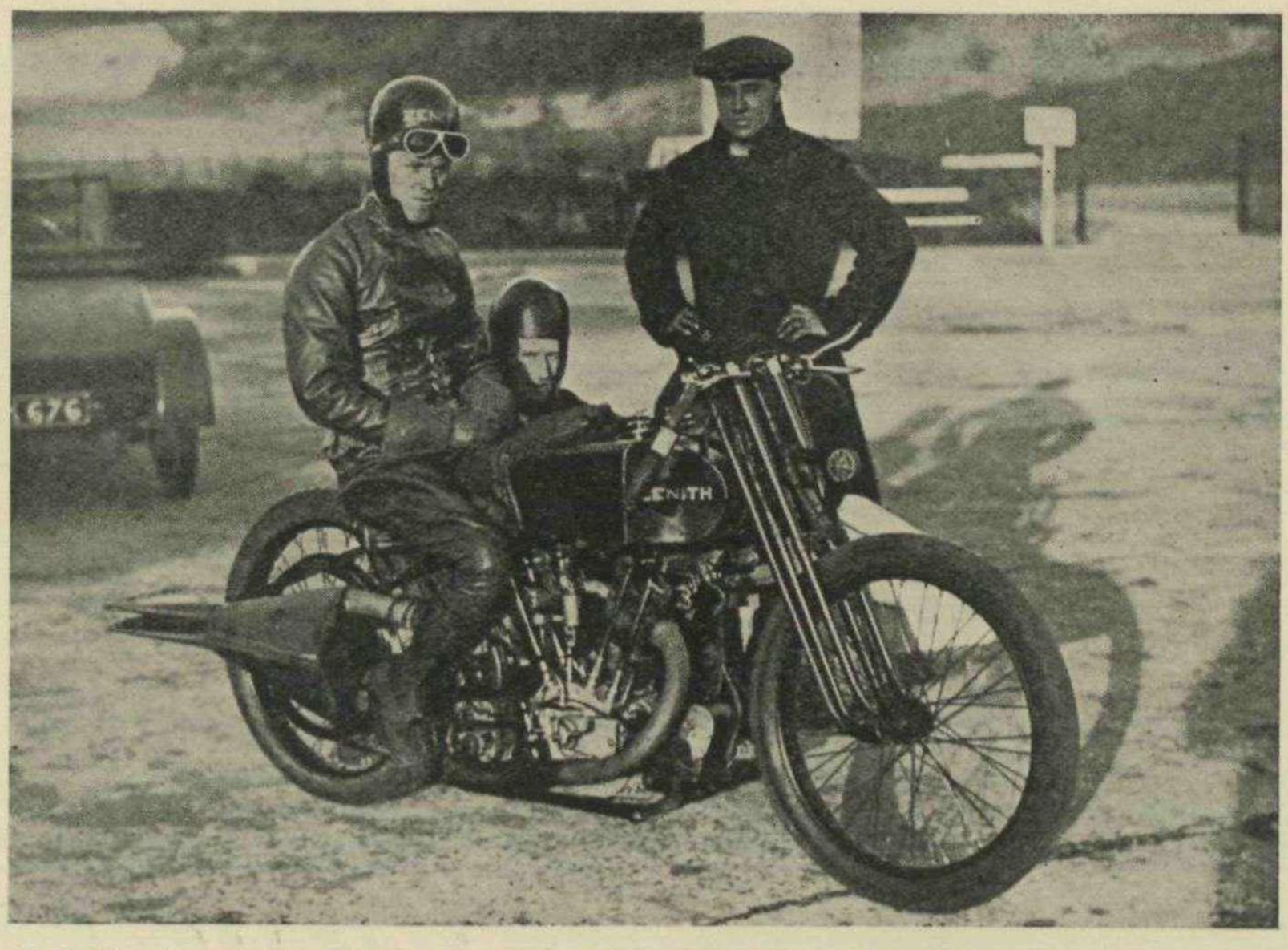
MOTOR-CYCLE SPEEDMEN—continued.

It was not until July, 1925, that J. S. Wright came prominently to the notice of the racing world, when riding a 988 c.c. twin Zenith, he startled everyone by putting up a record lap at Brooklands at the hitherto unheard-of speed of 110.43 miles per hour. The latter figure, however, was still further improved upon in April last, when, at the meeting of the B.M.C.R.C., he won the five-lap scratch race at an *average* speed of 108.51 miles per hour, and during the event, which was the fastest to date, was timed to lap at over 113 m.p.h., thus putting up a sensational record for his afternoon's work. But before this climax was reached, the Zenith crack had achieved numerous other honours on the track, for during last year he came to the top by winning the B.M.C.R.C. Championship Solo Race at 102 m.p.h., and also the B.M.C.R.C. Championship Sidecar Race at 88 m.p.h. On both occasions he used Zenith machines, for which make he has always shown a marked preference.

To his growing list of successes was added a "second" in the 200-miles Solo Race last year, and the capture of the Bailey Cup at the record speed of 103.76 miles per hour. By mentioning the more outstanding of his successes, we leave our readers to conclude how a comparatively unknown figure on the track worked his way to the top by sheer grit and perseverance without many of the opportunities which are enjoyed by the trade rider.

Having become accustomed to high speeds as a more or less regular habit, Mr. Wright found the ordinary racing programme inadequate to satisfy his voracious appetite for "empyaiches," and so we find him breaking out as a world's record breaker, a phase of the sport in which he has become wonderfully adept, even to the dethronement of some of the reigning speed-kings. In his quiet, unassuming way he mounted his machine one fine morning and sauntered round the track to annex the 50-miles and the 50-kilometre records, for which he put up the speeds of 87.37 m.p.h. and 140.76 km. per hour respectively. Setting out to lower the existing times for the 100 miles and the 100 kilometres, J. S. Wright further demonstrated the gentle art of piloting his big Zenith with the wick turned fully up, and finally made a new record for the Class G category by covering 85 miles 1,611 yards in the hour, all the above records being made on a sidecar combination.

The Zenith which has done so well in the hands of Mr. Wright was specially designed for ultra high speeds by "Freddie" Barnes, who has so long been associated with this famous *marque* and was supplied this year. In reply to our question about the value of supercharging Mr. Wright said he did not consider that artificial respiration was likely to add much to existing speeds on the track, which views are extremely interesting as being opposed to those expressed by Mr. Hagens in the course of the article which appeared in our June issue.



J. S. WRIGHT ON THE ZENITH COMBINATION WITH WHICH HE BROKE THE CLASS G HOUR RECORD AT OVER 85 M.P.H.

Except for the remarkable achievements recorded above, the career of this rider has not been very spectacular, and has been accomplished without any flourish of trumpets. It has just been the case of a quiet, unassuming sportman cherishing his own ambition and sticking to his guns until it has been accomplished. For those who believe that success on the track is the monopoly of trade riders, the exploits of Mr. Wright are most encouraging, and his brilliant career proves how a business man may shine in the greatest of all sports if he goes about in the (W)right way.

THE FERNIHOUGH-MORGAN.

By ITS PASSENGER.

A Brief Descriptive History of a most Interesting Vehicle.

WHEN E. C. Fernihough started racing in 1923, his De Luxe Model Morgan, fitted with a standard air-cooled J.A.P. engine, won him six cups in his first event. From that day his ambition was to build a racing chassis, but it was not until Christmas, 1925, that he was in a position to carry it out. A special chassis incorporating a few of his suggestions was brazed up by Morgan's, and the work began.

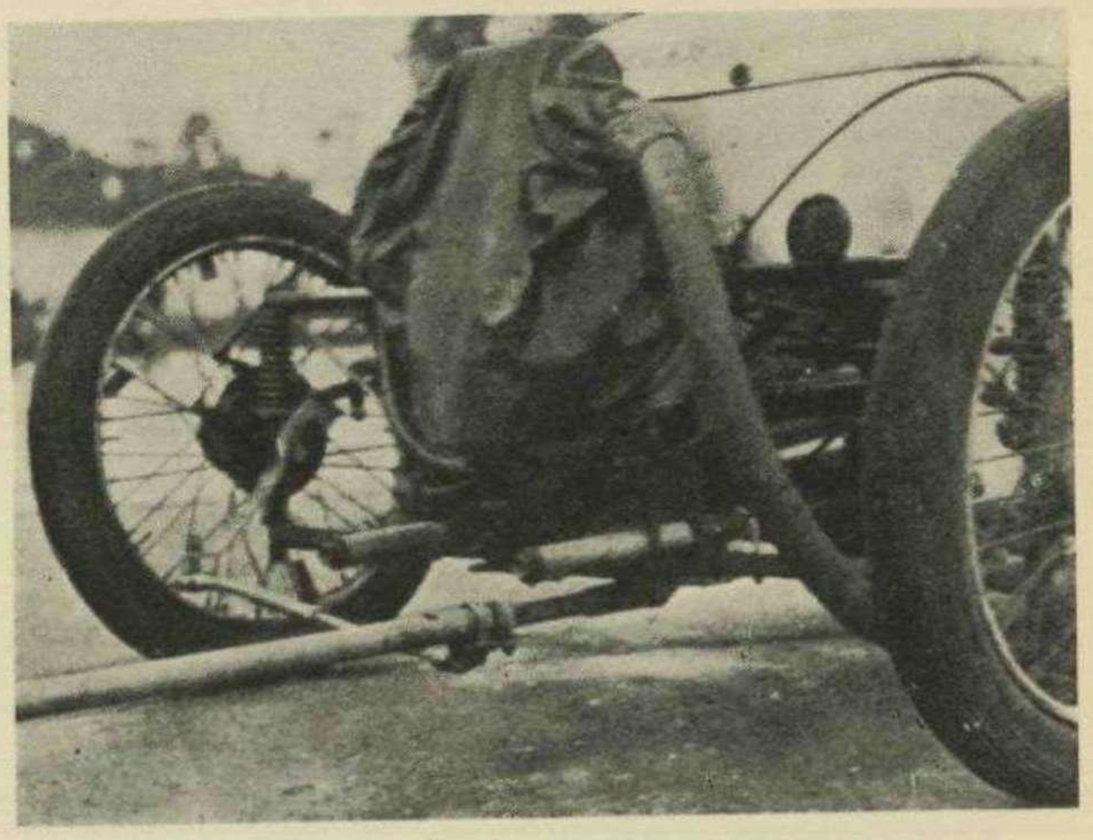
Things went with ominous smoothness, until at length the inevitable snag occurred, in the shape of the somewhat alarming discovery, whilst in motion, that the machine turned in the opposite direction to that of the steering-wheel! A too enthusiastic endeavour to lower the centre of gravity had resulted in the steering-column coming below, instead of above, the link-arm. All-night work, resulting in the addition of much ironmongery, set matters right, and the next day the trial run was made, successfully and without trouble, over 200 miles of snow and ice-bound road.

In these days the machine consisted of the bare chassis with a board to sit on and another for the feet, and in this form easily won its first two events. From this it developed into an aluminium-bodied car of quite reasonable appearance; but as the body is easily detachable, it is removed for long-distance records (so that we can keep an eye on the more sheddable parts of the chassis!), and for certain sprint events, where weight is a matter of consideration, as the complete car weighs 615 lbs.

Constructional Details.

The engine is a standard 1925 single port o.h.v. J.A.P. of 85.7 mm. bore and 85 mm. stroke, giving a cubic capacity of 494 c.c. It has proved very reliable and efficient; a special bearing was found necessary to take the thrust of the Morgan clutch, as naturally the ordinary motor-cycle engine is not intended to stand this strain. A special bevel drive is arranged for the magneto; standard front wheel brakes are fitted, the back brake being dispensed with altogether, owing to the drag of the external band; the original steering was direct, but later a Ford reduction-box was installed; for sprint events the direct steering was undoubtedly handier, but for the track the "Henry" fitting has great advantages. The track-rod is of Ubas steel, and in common with the drag-link is fitted with spring-loaded ball joints, reducing back-lash to a minimum. A 2½ gallon petrol tank is slung underneath the frame, and feeds by an aeroplane pressure-pump via a large filter (also from an aeroplane) to a twin-float-chamber carburettor, but a 4½ gallon tank on the tail serves for long distance work and touring. Lubrication to the bevel-box and chains is arranged by drip-feed, a flap of waterproof material on either side may be turned back to facilitate a change of countershaft sprockets; a large Hartford efficiently keeps the back wheel to the ground (incidentally it was found that the machine lost an extraordinary amount of speed when this was removed). 26" by 3" Avon Speedster motor-cycle tyres show very little wear after nearly 4,000 miles on the front wheels, but it has been found advisable to replace the original beaded rear type with a 26" by 3.5" straight-sided Avon Tricord, owing to the very severe strain undergone by the back wheel of a Morgan.

The machine is by no means uncomfortable; I have been driven in it up to the track (a distance of 90 miles), passengered during some half-dozen laps, and then come back over the aforesaid 90 miles, largely after dark, without being unduly tired or jarred. As a tourer, the Fernihough-Morgan is economical (60 to 70 m.p.g.), flexible and rock-steady, even when the brakes have to be suddenly and forcibly applied at speed



THE INGENIOUS TOWING GEAR USED BY MR. FERNIHOUGH.

Unexpected Docility.

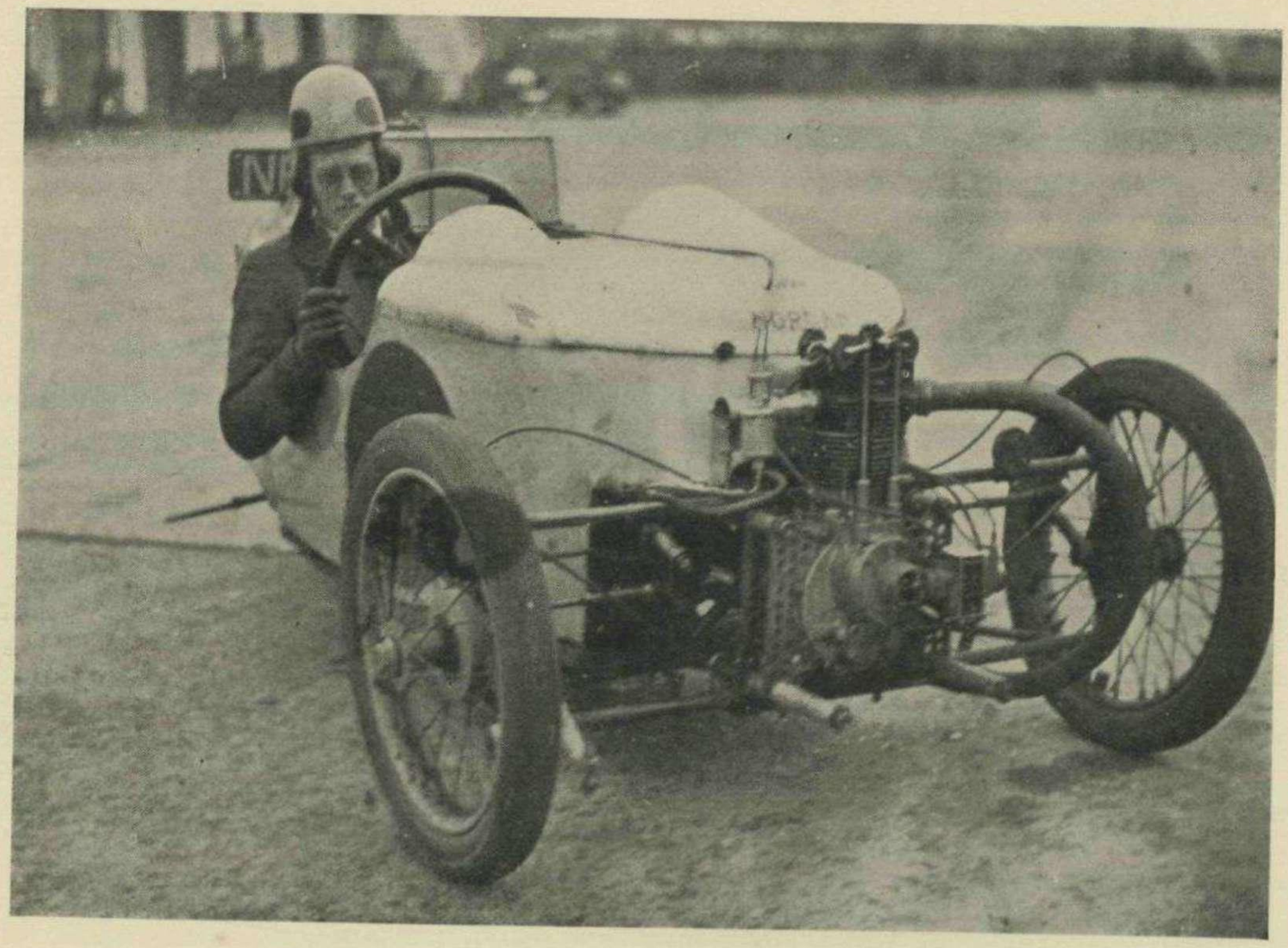
The tick-over is so extraordinary that we have often seen a look of incredulous mirth on the faces of those who think no machine a racer unless its running consists of violent revolutions or "that racing misfire!" Of course, we've had some hectic moments during our acquaintance with the thing. On one occasion while we were timing it three days before an appointment to attack records, an unspeakable Morgan-owner, evidently seeking translation to a better (?) world, clung to the rightmost portion of the crown of the road, and caused us to brake so violently that we dropped 10 m.p.h., through some obscure strain. (One of the most heartbreaking features of the case was that our utter illegality prevented us from telling the man exactly what we thought of him!).

So the next day everything had to come down again; one of the valve guides was making a mistaken effort

THE FERNIHOUGH-MORGAN—continued.

to incorporate itself in the casting, and in the course of persuading it to alter its views, a large deep chisel-cut appeared mysteriously right across the inlet valve seat. (I am thankful to be able to say that I, for one, had not set hand to chisel all day !) It was Sunday, and in any case there was nowhere within reach where we could have got the seat re-cut, as the 10 h.p. Swift which might have saved the situation was in no condition to be used as a means of transport, and there was no time to lose. So we seized a home-made scraper (of the worn-out file, bent, hardened and sharpened variety) and set to work to re-cut the seat with it !—following up the treatment with endless grinding in. By some miracle it worked, and we were able to reassemble the next day with glassy-smooth valve seats and faces—but we had some uneasy moments !

After appalling experiences at the end of a tow-rope, in one of which I had to tow the thing 240 miles in one day, an automatically steering towing-gear was evolved, so that the machine may be towed about without anyone in it. A Charron lorry link-arm was procured from a car-breaker, the ball from one end put through a plate attached to the back axle of the faithful Swift, the other one being anchored to a plate immediately central and in line with the front axles of the Morgan ; this plate is situated underneath the lowest front tube, just behind the engine. The steering arm was cut from 2" by ¼" bright steel, bent, and attached to the offside stub-axle by the nut on same and a U piece going round the extra heavy steering-arm, (these by the way are a feature of the car, being solid steel forgings). The Charron link-arm is lengthened to about 6' by the insertion of a length of 1⅛" tubing, and being spring-loaded for both thrust and pull, makes an excellent towing member. To this, at a distance from the Morgan end ball equal to the horizontal distance from the sliding axle to the ball at the end of the towing steering-arm, a plate is attached by U bolts. A " Henry " link-arm cut to suitable length and provided with adjustment, connects the two. Incidentally the track-rod and link-arm of the car itself are also adjustable. This towing-gear has proved very satisfactory, except for an alarming wobble which occurs at very low speeds over rough roads. Towing at over 50 m.p.h. is possible and safe, fierce braking having no effect on the stability of the Morgan, which follows dead in track.



THE SUBJECT OF THIS ARTICLE WITH ITS OWNER AND DRIVER AT THE WHEEL.

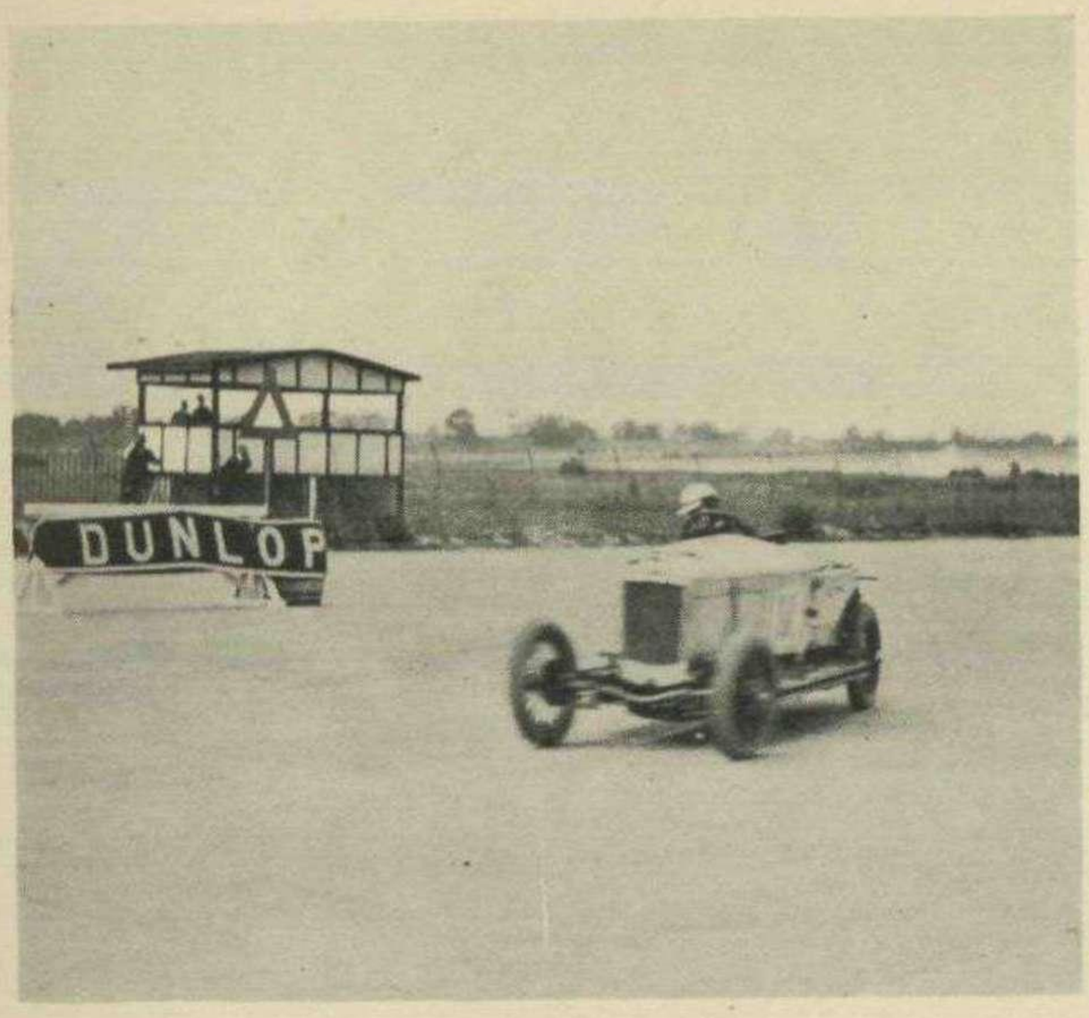
In conclusion, Fernihough considers that the small air-cooled single-cylinder three-wheeler, with its £4 tax, could certainly be produced in the neighbourhood of £70, at which price it should find a ready market.

The following are records set up-to-date.

CLASS I. 500 C.C. CYCLECARS.—

Flying kilo ...	... 71.81 m.p.h.	115.57 Km.p.h.	
Flying mile ...	... 71.71	,,	115.40 ,,
Flying 5 miles	... 73.12	,,	117.68 ,,
Flying 5 kilos	... 73.37	,,	118.07 ,,
Standing 10 miles	... 69.65	,,	112.09 ,,
Standing 10 kilos	... 70.37	,,	113.24 ,,

All these speeds except the mile and kilo beat the 750 c.c. class by over 10 m.p.h.



G. W. Bagshawe Rounding the First Hairpin in his Frazer-Nash.

THE J.C.C. PRODUCTION CAR RACE.

A DAY of few thrills, but not altogether lacking in interest, was the generally expressed verdict on the Production Car race. Previous pessimistic views that the " Production " part of the race would be evaded extensively were not borne out, for most of the cars seemed to be reasonably standard and the efficient scrutineers eliminated the only doubtful entries on the eve of the race.

Eighteen eventually started, eleven in the 1,500 c.c. class, three in the 1,100 c.c. class, and four Austins to do battle in the 750 c.c. class on their own.

As was expected the Alvis driven by C. M. Harvey immediately began to set the pace and gradually piled up an increasing lead during the earlier laps. The course used was the same as that of last year's 200 mile race, with two hairpin bends making a 3.14 mile lap which had to be negotiated for 3 hours. The first casualty was Oates (O.M.) which blew a cylinder head joint very early in the proceedings and caused his retirement. Captain Waite also lost a great deal of time during the earlier stages of the race owing to various forms of ignition trouble on his Austin 7, when eventually he got going properly he ran through to the finish, but had lost too much time to win his class. The Alvis's driven by W. Urquhart Dykes, W. H. Green and Ian Macdonald, were all running well to begin with, having a general dog fight with each other and with the two Frazer-Nash's driven by Aldington and Bagshawe.

In the 1,100 c.c. class, Hazlehurst (Salmson) was going strongly and hanging on well to the 1,500 c.c. leaders, while Hendy was leading the Austin quartette.

After 5 laps, more troubles began to make themselves felt. Green's Alvis ran a big end and Ian Macdonald injured his hand performing some particularly violent work on the steering wheel, at the first hairpin bend. Three laps later he also experienced big end trouble and retired.

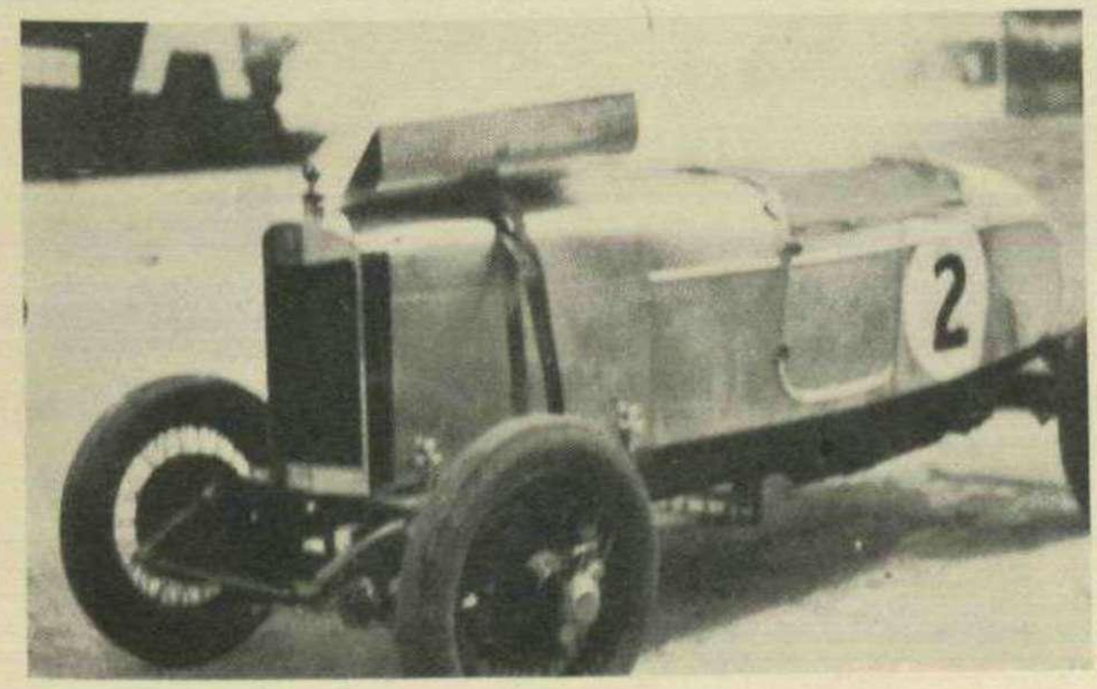


C. M. Harvey tries to induce his Alvis to Fire on Four Cylinders.

As usual, Vernon Balls, driving one of the new Amilcars, was giving his characteristic display of violent skidding on the corners ; his brakes and tyres stood up to this treatment remarkably well and it was no uncommon sight to see him dash past some much faster car just before the bend and pull up all standing in a few yards even towards the end of the 3 hours when the brakes might be expected to have worn down somewhat. It was curious to notice the Amilcar negotiating the second bend with the inside front wheel locked for many yards at a time.

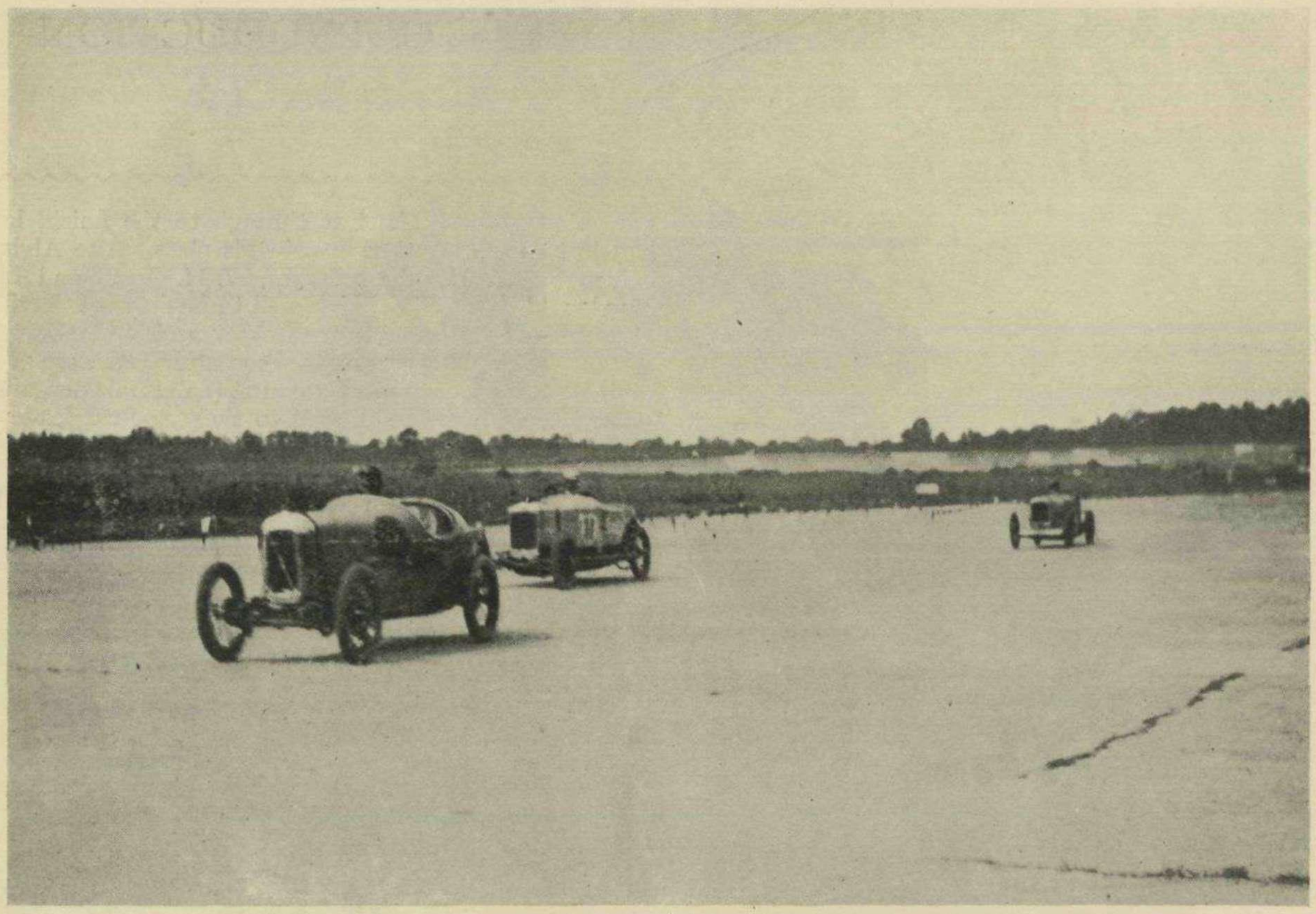
Few other drivers were particularly violent on the corners, but Dykes, whose Alvis had no front brakes, usually cornered with his inside rear wheel spinning wildly owing to a tendency to lift ; incidently this car had a peculiarly harsh and uneven note.

After 12 laps Hendy's Austin ran a big end and he retired, while Norris's Lea-Francis was delayed by a broken oil pipe after it had been running well.



Norris's Lea-Francis Belching Smoke at the Pits during the Production Car Race.

THE J.C.C. PRODUCTION CAR RACE—continued.



H. E. HAZLEHURST (SALMSON), G. W. BAGSHAWE (FRAZER-NASH), AND AN AUSTIN RACE FOR THE SECOND CORNER.

Harvey had now several laps lead, being followed by Aldington and Bagshawe (Frazer-Nash's) and Dykes' Alvis. In the 1,100 c.c class Hazlehurst and Martineau's Salmsons were still ahead of the spectacular Balls.

The 750 c.c. class provided a little diversion hereabouts as Walther (in the lead) chewed up his gearbox, dismantled it and continued on top gear only, accelerating gently and quietly away from the bends each time round. When Aldington stopped to replenish, Bagshawe, the Oxford undergraduate, passed him, thus annexing 2nd place, while Balls eventually got ahead of Martineau.

At about half time Samuelson's Austin was eliminated by fire thus leaving the crippled Walther and the unlucky Waite to fight out a lonely duel, and at about the same time both Aldington and Norris were forced to retire owing to lubrication troubles.

An Alvis victory now seemed almost certain since Harvey had established a lead of 5 laps, his lap speed being sometimes as high as 68 m.p.h., however, " there's many a slip—" and after 50 laps the Alvis began to misfire and after several depot stops Harvey set out to finish on three cylinders, his trouble being apparently due to broken valve springs, and a stretched valve stem. By this time Bagshawe had taken the lead in the 1,500 c.c. class, though in point of fact Hazlehurst's Salmson was about half a lap in front of him but was running in a different class and carrying less ballast.

With but four minutes to go Bagshawe caused great consternation in his pit by stopping and complaining of " funny noises " in the clutch or back axle. However, he was urged on by his supporters and Captain Nash and eventually was flagged as winner of the 1,500 c.c. class. The Frazer-Nash victory was particularly deserved as this make has long been Great Britain's chief challenge to the small continental sports car and has always deserved greater recognition from the motoring public. Besides this it was a standard four-seater with ballast equivalent to three passengers, and this race was only Bagshawe's second appearance on the track.

Other commendable performances were those of Hazlehurst's Salmson and Ball's Amilcar, while under the circumstances the speed of the Austins was very creditable.

RESULTS (Subject to confirmation) :—

1,500 *c.c. Class.*

(1) G. W. Bagshawe (Frazer-Nash), 61.7 m.p.h.
(2) C. M. Harvey (Alvis), 59.1 m.p.h.
(3) W. Urquhart Dykes (Alvis), 58.0 m.p.h.

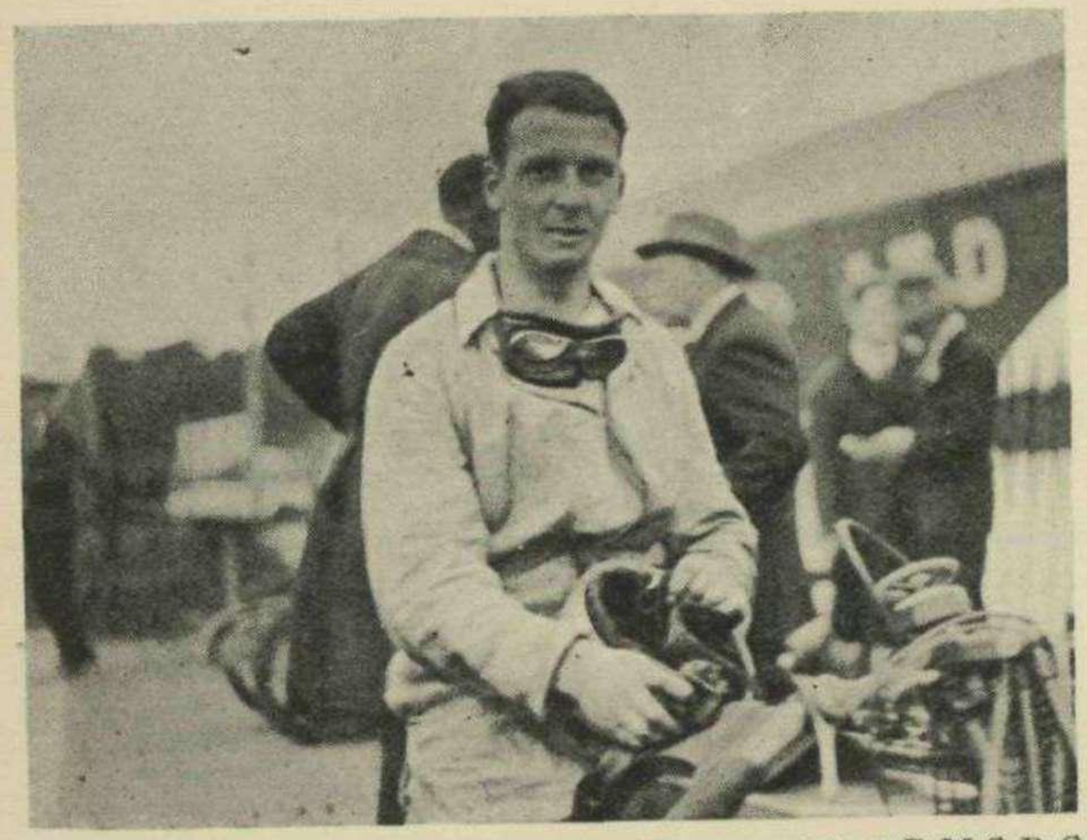
1,100 *c.c. Class.*

(1) H. E. Hazlehurst (Salmson), 62.9 m.p.h.
(2) V. S. Balls (Amilcar), 60.51 m.p.h.
(3) G. H. Martineau (Salmson), 59.9 m.p.h.

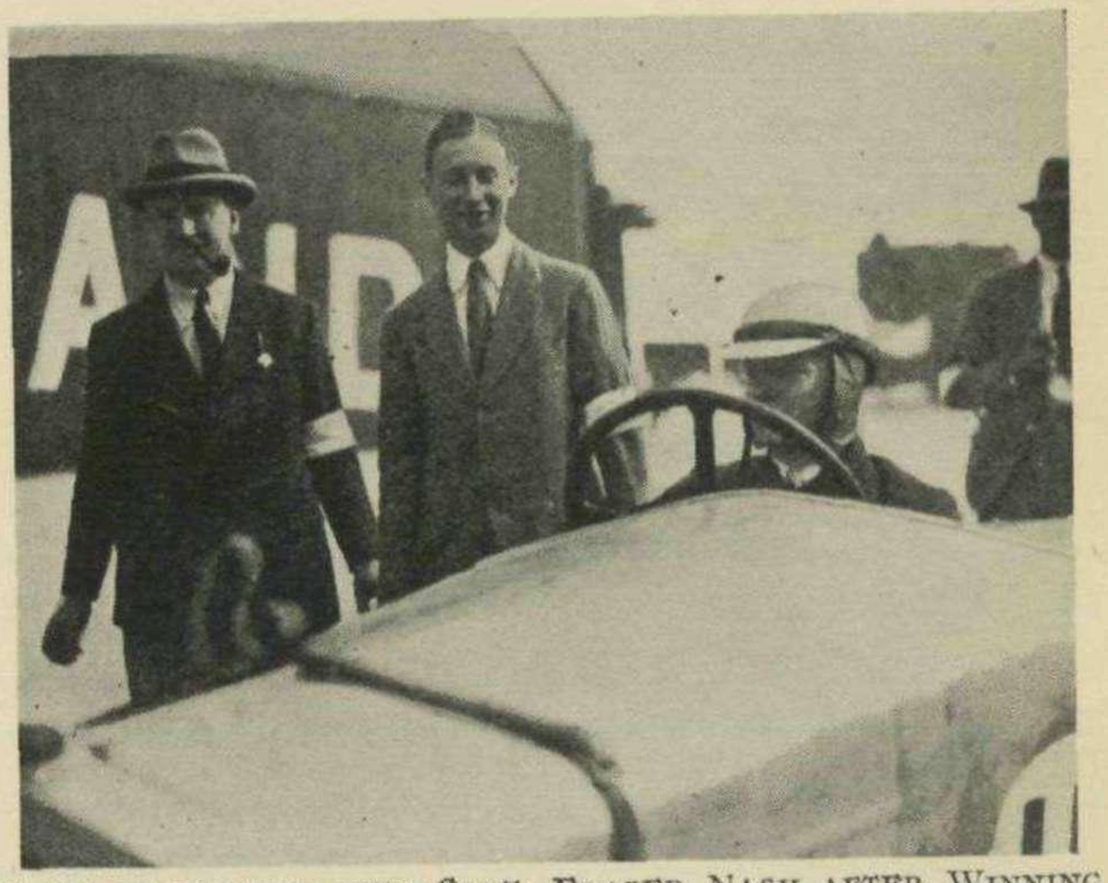
750 *c.c. Class.*

(1) C. Walther (Austin), 51.23 m.p.h.
(2) A. Waite (Austin), 46.54 m.p.h.

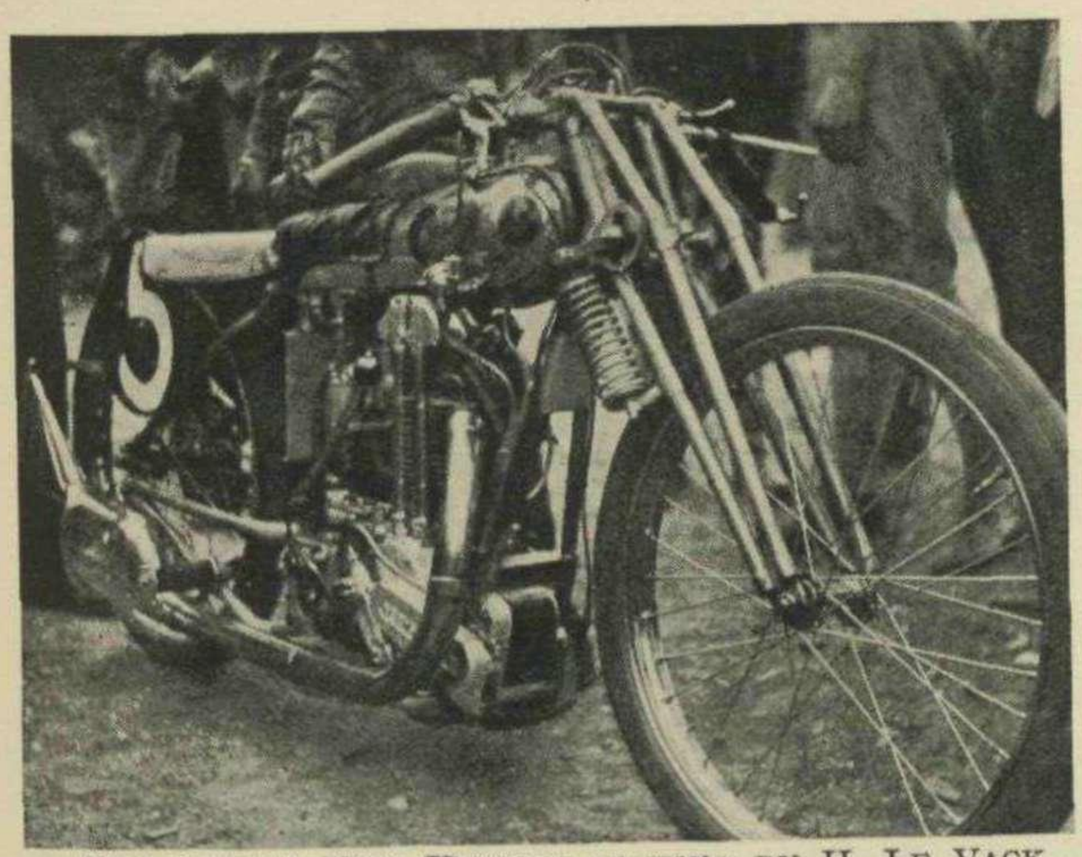
PICTURES FROM VARIOUS SOURCES.



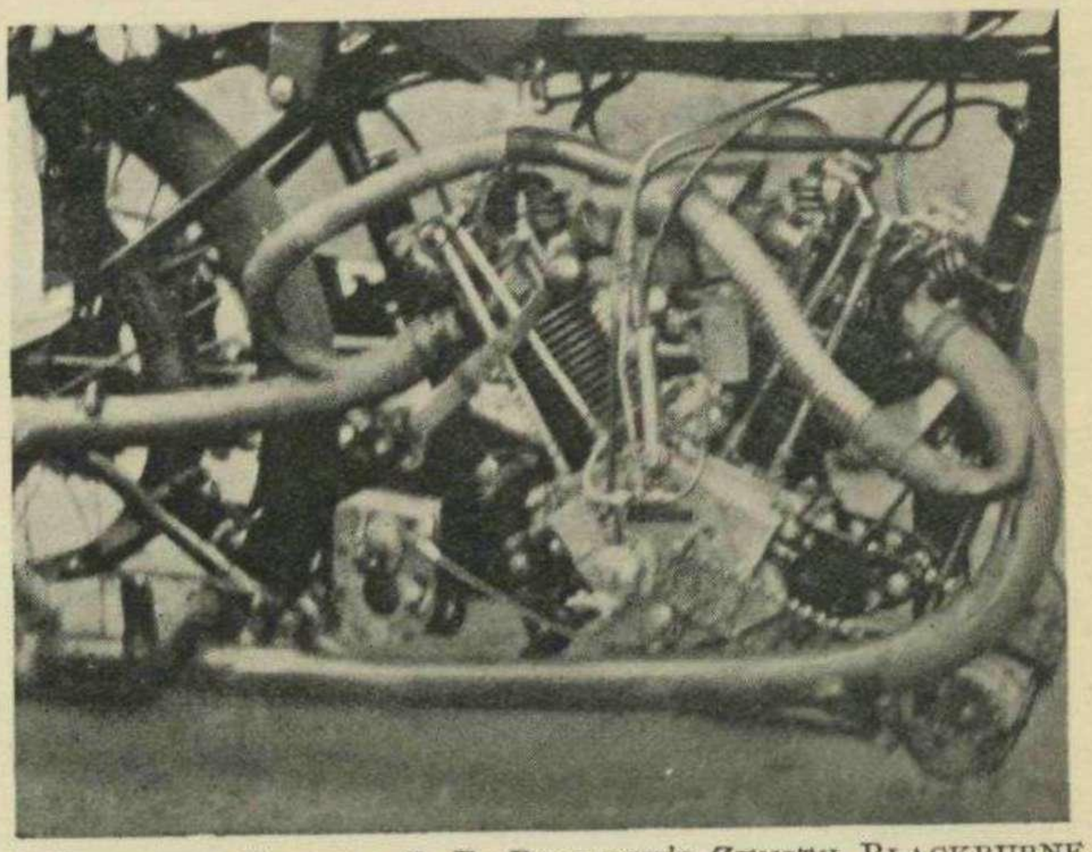
C. S. Staniland who Won Several Races at the B.M.C.R.C. Cup Meeting on a Norton.



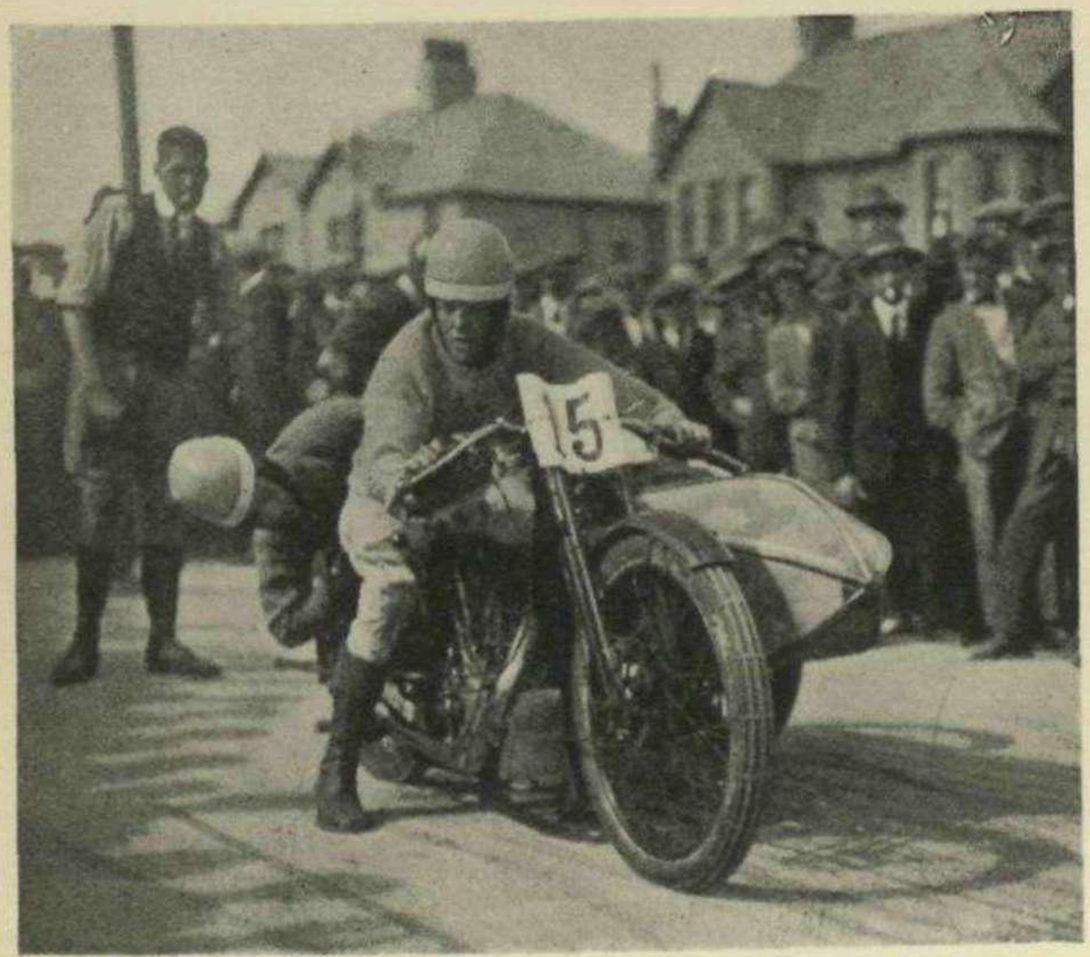
G. W. Bagshawe with Capt. Frazer Nash after Winning his Class in the Production Car Race.



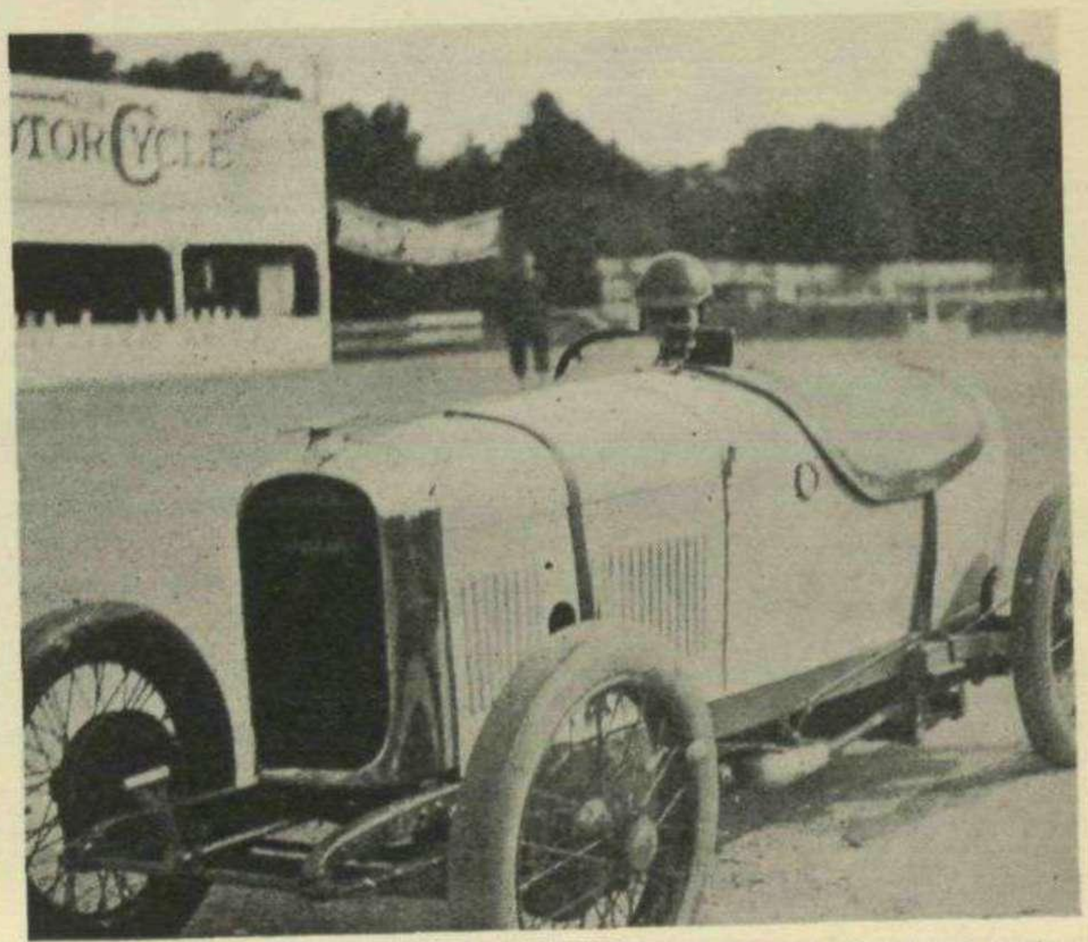
The Latest New Hudson as used by H. Le Vack at Brooklands.



A Study in Piping. I. P. Riddoch's Zenith Blackburne.



H. Hudson, (Brough Superior), Starting in the Northern Centre Speed Trials.



Vernon Balls on the new Amilcar which ran so well in the Production Car Race.

THE B.M.C.R.C. CUP MEETING.

NOTHING very thrilling distinguished this meeting, held on July 10th, if we except an exhibition of frightful wobbles by J. S. Wright, who once more succeeded in going a little faster over a certain distance than anyone has ever done before on a motor-cycle.

Speeds on the whole were good but close finishes were rare, and as is becoming a regular feature at Brooklands, the longest race was remarkable only for the few finishers. Le Vack staged an interesting "come-back" on the New Hudson, and went very fast but not very far, while the irrepressible Staniland, riding for Spring, annexed his usual brace or so of wins. One hears rumours of altered valve timing on the Spring Nortons, but whatever the truth is, the 490 c.c. model lapped at 99.1. m.p.h., and maintained 93.44 m.p.h. for 10 laps. M. A. McEvoy further enhanced the growing reputation of his machine by winning the sidecar handicap at over 85 m.p.h. for 5 laps, while another promising rider who went very fast was P. M. Walters on the 490 c.c. Sunbeam-J.A.P.

An amusing sight during the last race was Freddy Dixon, who failed to start, cringing against the wall of the Vicker's shed with his Douglas in pouring rain, while Staniland's handlebars whizzed past him at 95 m.p.h. on each lap!

The first race incidentally was the fastest 350 c.c. race ever seen at Brooklands, though no records were actually broken.

RESULTS.

350 *c.c.* 5-*Lap Scratch Race.*
(1) J. S. Worters (344 Excelsior).
(2) W. L. Handley (348 Rex Acme).
(3) C. W. G. Lacey (344 Grindlay Peerless).
Won at 91.89 m.p.h.

350 *c.c.* 3-*Lap Private Owners' Scratch Race.*
(1) R. V. Packman (348 Cotton).
(2) H. Jeffree (348 O.K.).
(3) J. A. Welch (248 Excelsior).
Won at 74.55 m.p.h.

1,000 *c.c.* 5-*Lap Scratch Race.*
(1) J. S. Wright (980 Zenith).
(2) O. M. Baldwin (980 Zenith).
(3) H. M. Walters (730 Zenith).
Won at 107.34 m.p.h.

10 km., and 10 mile records at 107.67 and 108.88 m.p.h. respectively.

500 *c.c.* 10-*Lap Scratch Race.*
(1) C. S. Staniland (490 Norton).
(2) F. W. Dixon (496 Douglas).
Won at 93.44 m.p.h.

350 *c.c.* 3-*Lap Handicap.*
(1) A. Greenfield (349 Connaught), 1 min. 30 secs.
(2) W. R. Stevens (347 Sunbeam), 1 min. 18 secs.
(3) C. R. Godwin (249 Connaught), 1 min. 54 secs.
Won at 73.24 m.p.h.

350—1,000 *c.c.* 3-*Lap Handicap.*
(1) C. S. Staniland (490 Norton), 24 secs.
(2) P. M. Walters (490 Sunbeam-J.A.P.), 24 secs.
(3) G. C. Cobbold (493 Sunbeam), 42 secs.
Won at 94.5 m.p.h.

Solo Heat of Wakefield Cup Race. 5-Laps.
(1) W. A. Jacobs (349 Rex Acme), 3 mins. 30 secs.
(2) P. M. Walters (490 Sunbeam-J.A.P.), 5 secs.
(3) R. V. Packman (348 Cotton), 1 min. 30 secs.
Won at 67.85 m.p.h.

Sidecar Heat of Wakefield Cup Race. 5-Laps.
(1) M. A. McEvoy (980 McEvoy), 30 secs.
(2) R. M. Spring (588 Norton), 1 min.
(3) W. D. Marchant (348 Chater Lea), 1 min. 20 secs.
85.13 m.p.h.

Final for Wakefield Cup. 5-Laps.
(1) W. D. Marchant (348 Chater Lea Sc.), 2 mins. 10 secs.
(2) W. A. Jacobs (249 Rex Acme).
(3) V. Horsman (599 Triumph Sc.).
Won at 77.69 m.p.h.

250 *c.c.* 5-*Lap Scratch Race.*
(1) J. S. Worters (246 Excelsior).
(2) C. W. Johnston (249 Cotton).
(3) C. R. Godwin (249 Connaught).
Won at 74.89 m.p.h.

3-*Lap Private Owners' Handicap.*
(1) A. G. Walker (348 Chater Lea), 54 secs.
(2) J. A. Welch (249 Excelsior), 1 min. 33 secs.
(3) H. G. Webb (998 Indian Sc.), 1 min. 12 secs.
Won at 77.81 m.p.h.

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