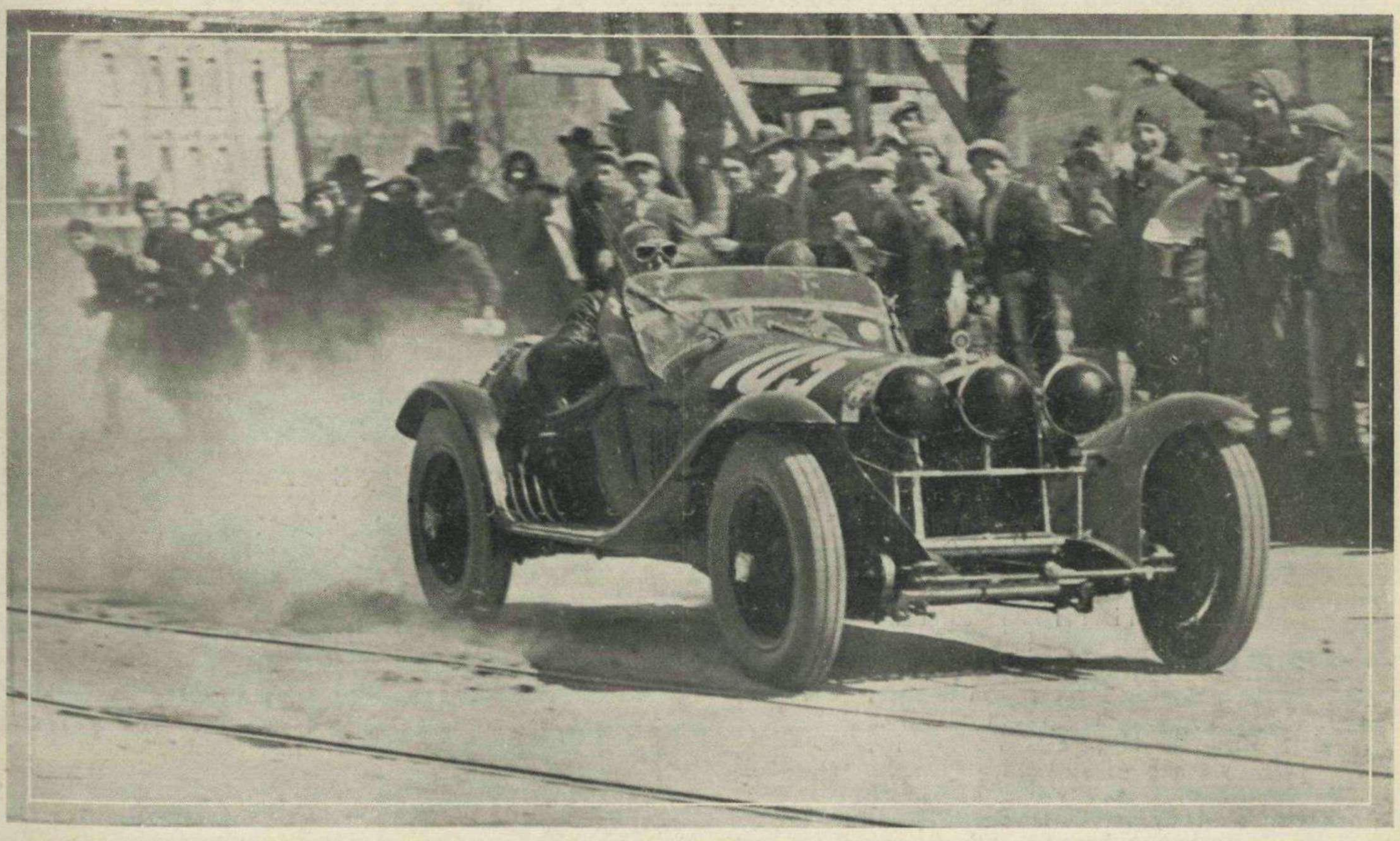
Vol. VIII. No. 7 May, 1932

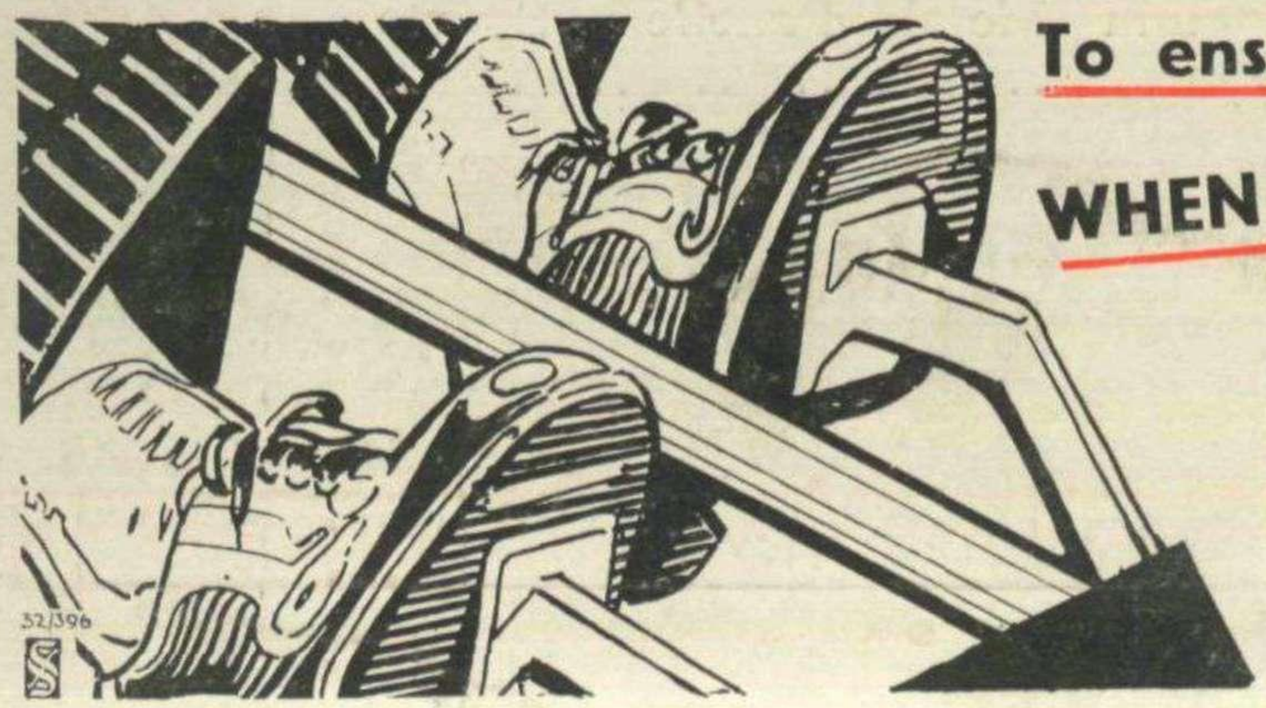
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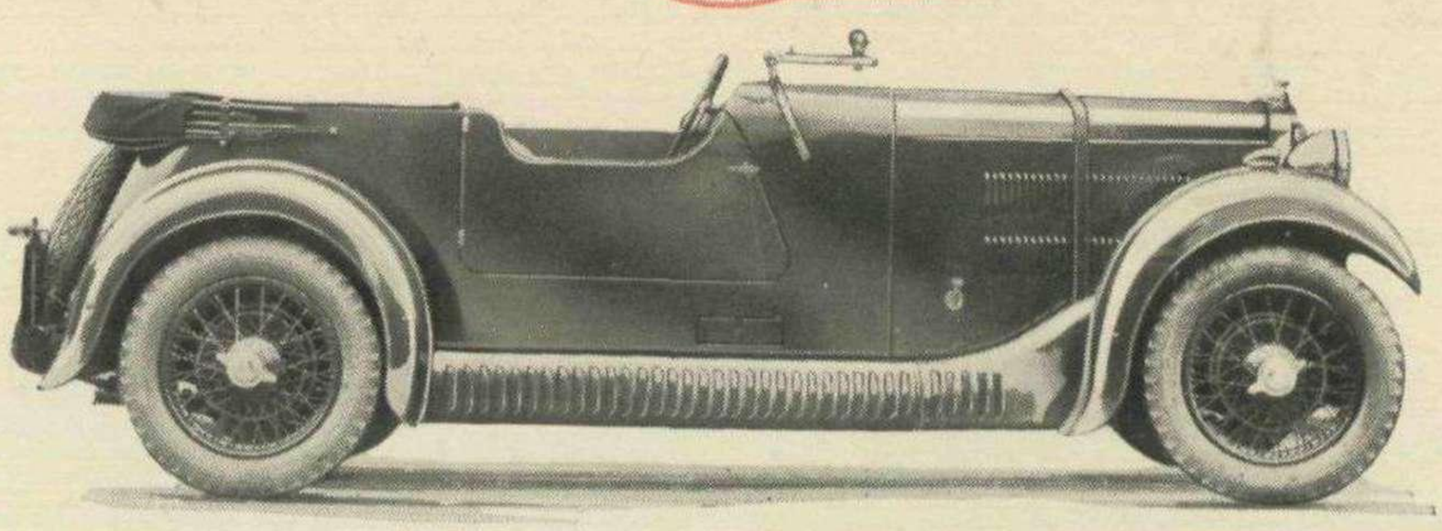
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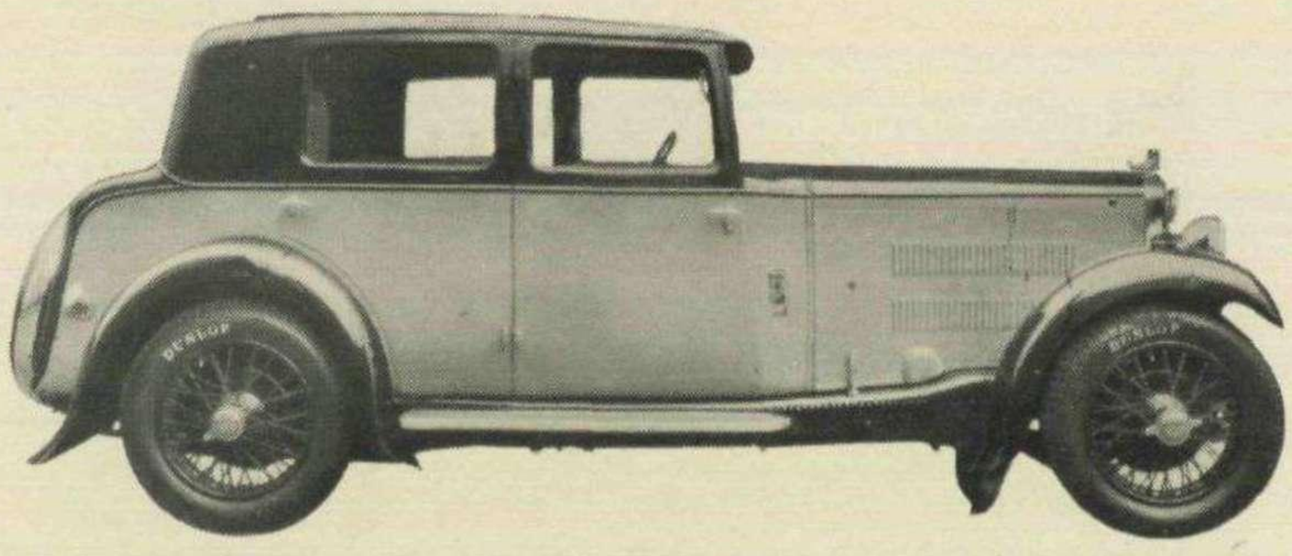
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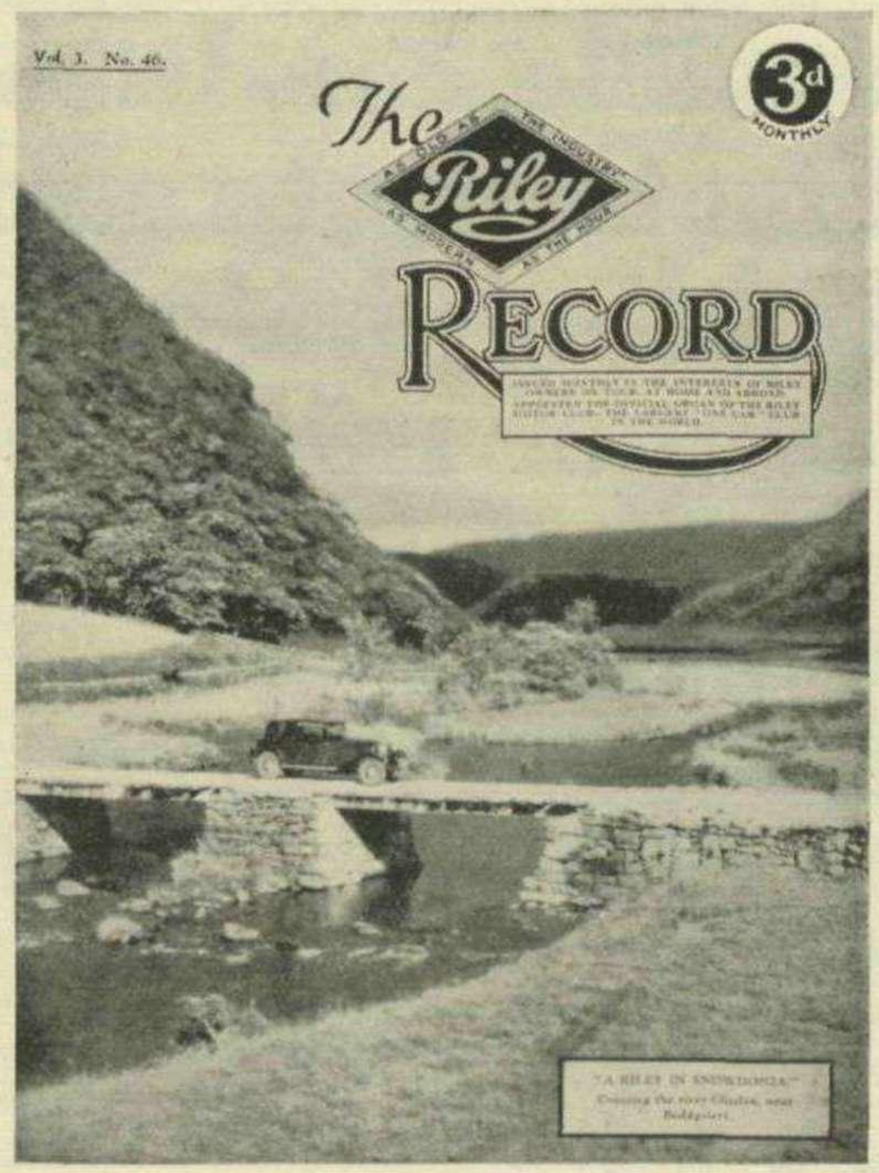
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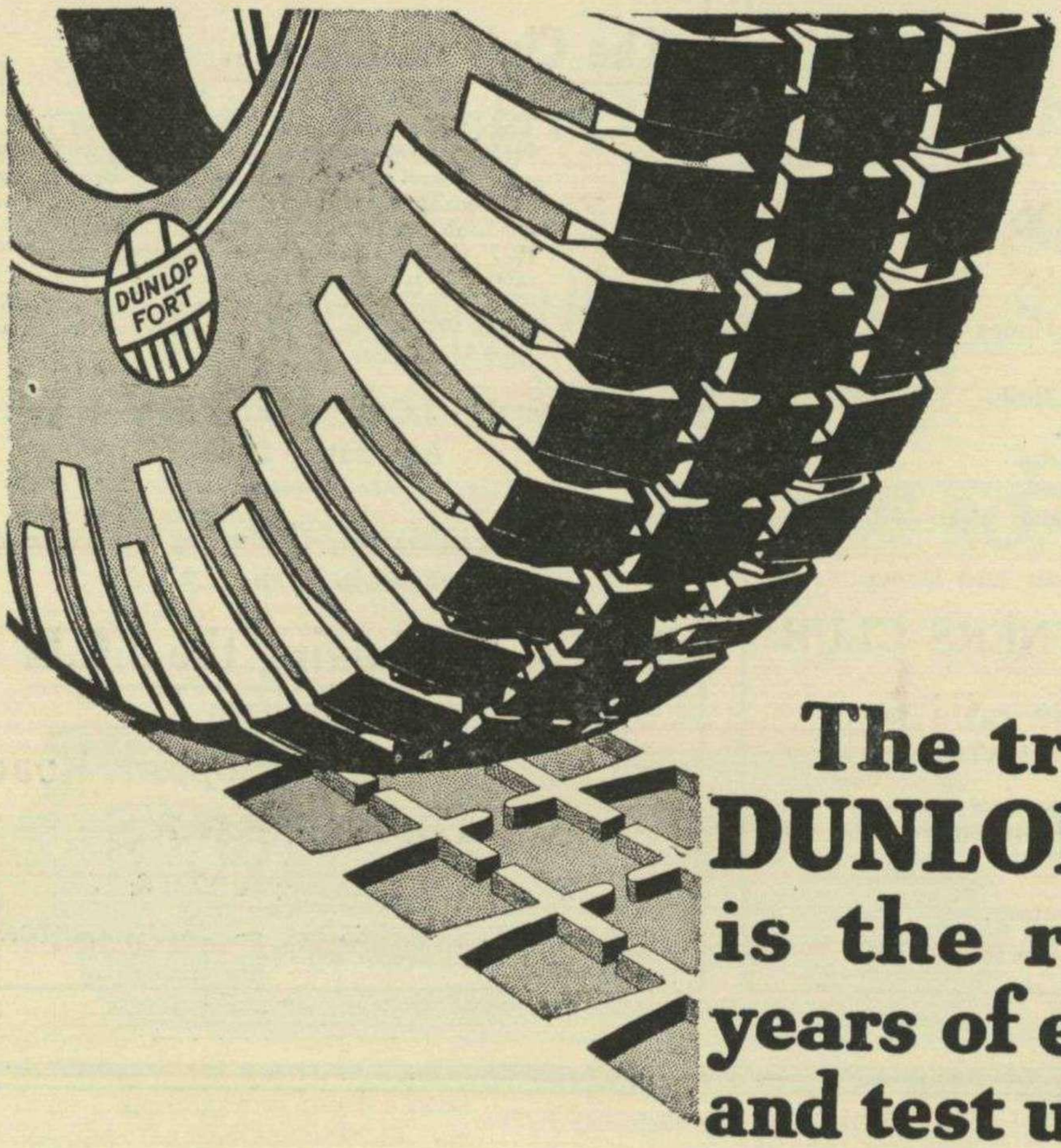
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MOTOR SPORT

INCORPORATING THE BROOKLANDS GAZETTE

JOINT EDITORS } *GRENVILLE G. O. MANTON.*
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39, VICTORIA STREET, LONDON, S.W.1

Telephone: Victoria 5218.

THE WAY OF THINGS.

REMOVE THE RESTRICTIONS

THE benefit of the pure racing car to the sport and the industry has never been seriously denied except by those who wish for an excuse to avoid progress.

To save expense there has been, in the last few years, a tendency to suppress races for such cars and to have races for standard models only. This move was bound to fail as the demand of progress cannot be denied, and however much cars may be intended to be standard, the rules must allow for considerable departures, if the races are to serve any purpose other than as an elaborate window display, which provides no useful knowledge.

Thus, in spite of everything, the temporary screen which was drawn over the pure racing car to hide its utility has soon been pulled aside, and makers in this country are realising more than ever that unrestricted development is the most economical method in the end.

We have now passed the stage in automobile engineering where the road-racing car is anything in the nature of a freak, and therefore the fewer restrictions on design that are imposed in race regulations, the better for all concerned. The R.A.C. regulations for this year's Tourist Trophy, show the way we are gradually going back to the racing car.

On the continent, the opening races of the season have shown the great popularity of motor racing, which is steadily increasing, but the reason for this success is not only due to the growing public interest in the sport, which is becoming more evident than ever, but to the races themselves and the cars that take part.

Two things are absolutely essential before motor racing can ever grip the public of this country as it has the people of France, Italy and Germany. One is that the races must be scratch races, where all start together, and the first man home is the winner. The other is that the cars must be really fast, and by freedom of development become evenly matched. On another page is our full report of that magnificent race, the Grand Prix of Monaco. Imagine that race run on handicap for cars of varying size and performance,—what a fiasco it would be in comparison!

It is plain that we must soon return in this country to the race where the fastest car wins, and run the smaller classes as separate events. Then the country as a whole may understand what it is all about, the value of a victory will be enhanced, and Britain will stand with the Continent as a true exponent of the sport of motor racing.

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THE J.C.C. HIGH-SPEED TRIAL

MEMBERS' DAY AT BROOKLANDS.



A group of cars splashing up the finishing straight in the High-Speed Trial.

THE High Speed Trial run by the J.C.C. has always been one of the most interesting events staged at the track, for the simple reason that it gives the ordinary amateur with a normal sports car a chance to show his skill in driving and tuning, without being hopelessly outshone by special cars. It also gives the onlookers a chance of settling many arguments as to which of two standard cars of different makes is the faster.

Hitherto this event has been held on a course comprising some of the roads on the Brooklands Estate in addition to a portion of the track. This time it was decided that it would give better sport for both drivers and spectators, as well as being safer, if the event was confined to the track itself and the "road" element was maintained by making up a course on the lines of the old J.C.C. 200 miles races. Cars proceeded round the track in the normal manner until the Vickers sheds were reached, when they took a left-hand hairpin round a tub in the middle of the track, and doubled back to Chronograph Villa where they took the right-hand hairpin which figures in the mountain races at all B.A.R.C. meetings.

It seems a pity that courses on these lines are not more frequently used to vary the normal Brooklands fare, which although excellent of its kind, has a taste of monotony at times. This is not an original suggestion, having been offered by MOTOR SPORT on many occasions, but the success of the J.C.C. meeting once more gives proof of its soundness.

Unfortunately for those taking part in the morning's motoring, the day commenced wet, and not till the cars had proceeded for three-quarters of an hour in pouring rain did the weather take pity on the soaking drivers, and desist.

The full permissible entry for the High Speed Trial of 50 cars, quite unperturbed by the dismal prospect, lined up for the start, and just after 10.30 a.m. the 750 c.c. 1,100 c.c. and 1,500 c.c. classes set off in massed starts of each class at minute intervals.

The opening laps produced the rather comic situation of a flock of cars which had all set off with the idea that they were in a race, arriving at the tub hairpin to find a very good imitation of the rush hour in Piccadilly Circus. They then remembered that the trial, although in spirit a race for many of the entrants, did not entail being the first man home to claim an award, and therefore possessed themselves in patience till a few laps had separated the cars sufficiently for those who felt like it to start showing the others where they got off!

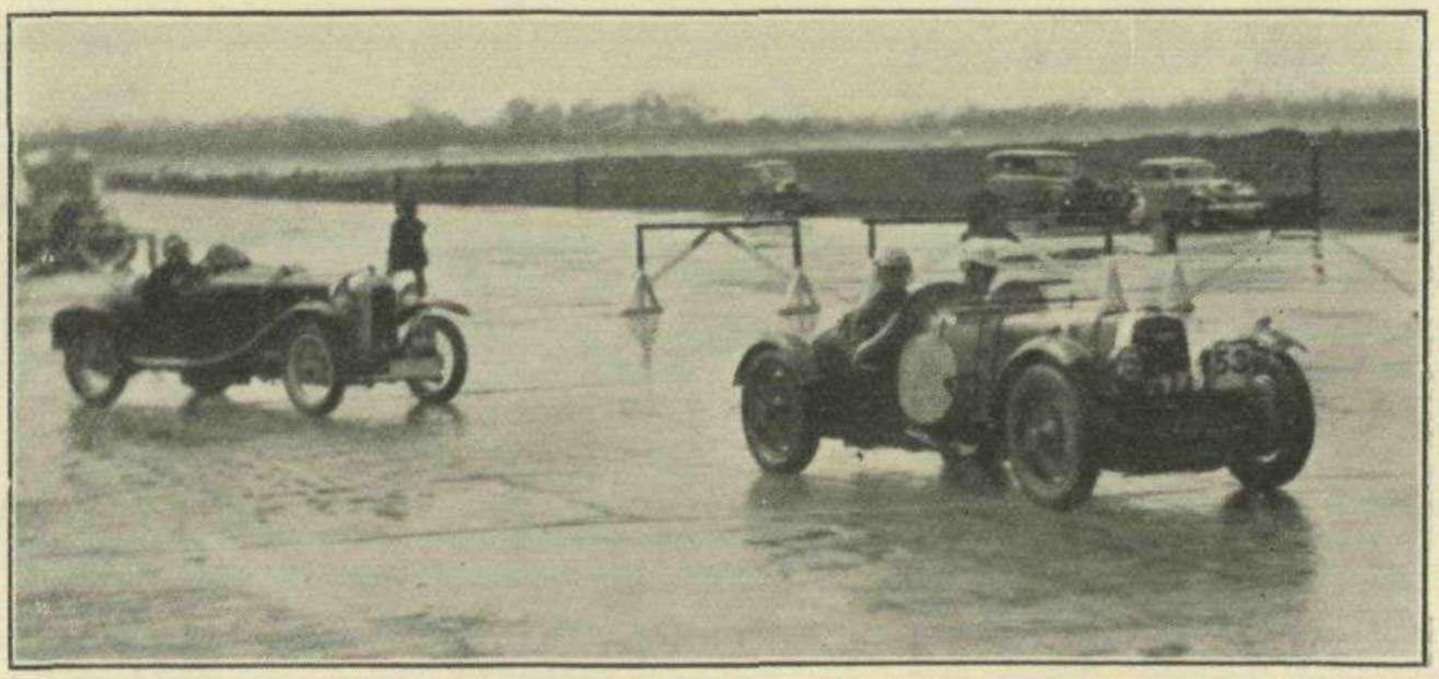
Quite a racing atmosphere was lent to the proceedings by a large Aston-Martin entry, including the three cars which formed the last year's Ulster team. One of these driven by Morris Goodall, was the first car round and began to establish a lead, but it soon became evident that he was not going to have things all his own way, and R. L. Bellamy, on his veteran Frazer-Nash took up the challenge, and the leaders in spite of the perfectly foul conditions, began to give a very good exhibition of driving, awkward moments being very rare.

In the 1,100 c.c. class the Rileys were steady, and as a make put up one of the most consistent performances of the day. An interesting lone entry in this class was the Alta, driven by G. Taylor, which went very well throughout, and was noticeable for good braking.

Morris Goodall was unable to cope with Bellamy's Nash, and eventually dropped back with some minor trouble, and the latter had the honour of completing his required 20 laps before anyone else. M. H. Scott, on a fairly old Aston-Martin, was also very good and drove neatly, while another good performance was that of F. S. Hutchens, who was driving one of the latest E.W. Hornet Specials. The car was steady and showed good acceleration.

Fairtlough's Salmson was a good performer in the "1,100s" and particular mention should be made of C. Anthony in a very ordinary looking Morris Minor, which seemed to have little difficulty in keeping up with many larger cars, all without any fuss or violence on the corners.

The tub hairpin was too slow to produce



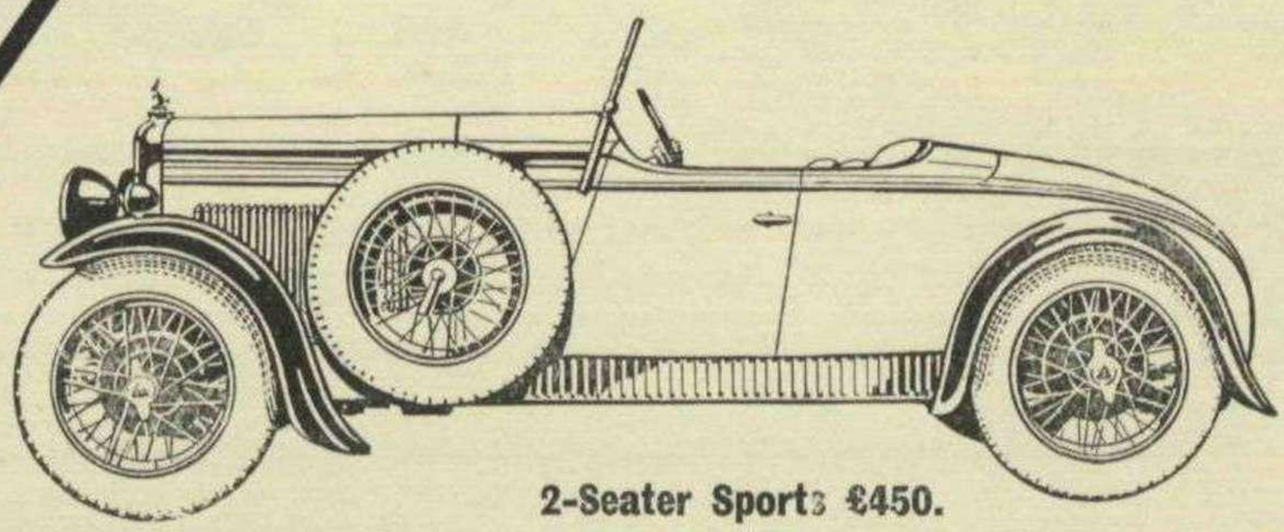
[*Motor Sport photographs*]

Morris Goodall (Aston-Martin) and N. H. Weddle (Salmson) at the fork.

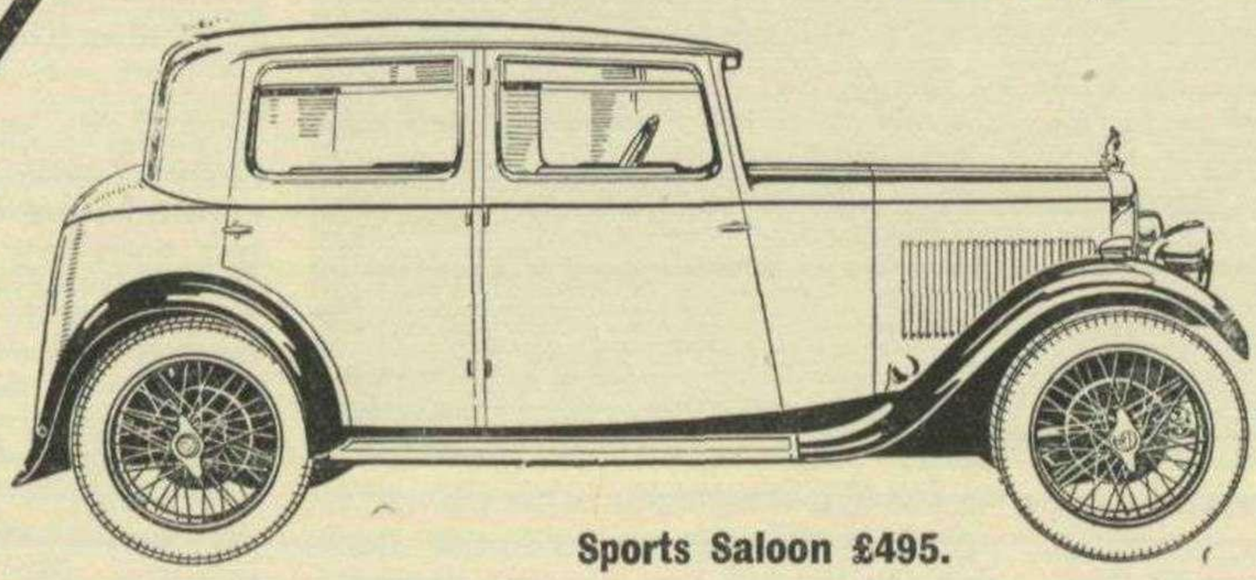
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THE J.C.C. HIGH-SPEED TRIAL—continued.

much excitement, even in the wet, the only difficulty being caused by the fact that it had been arranged so that the exit from the corner was considerably narrower than the entrance, which made most of the cars come very near the pit counter as they accelerated away.

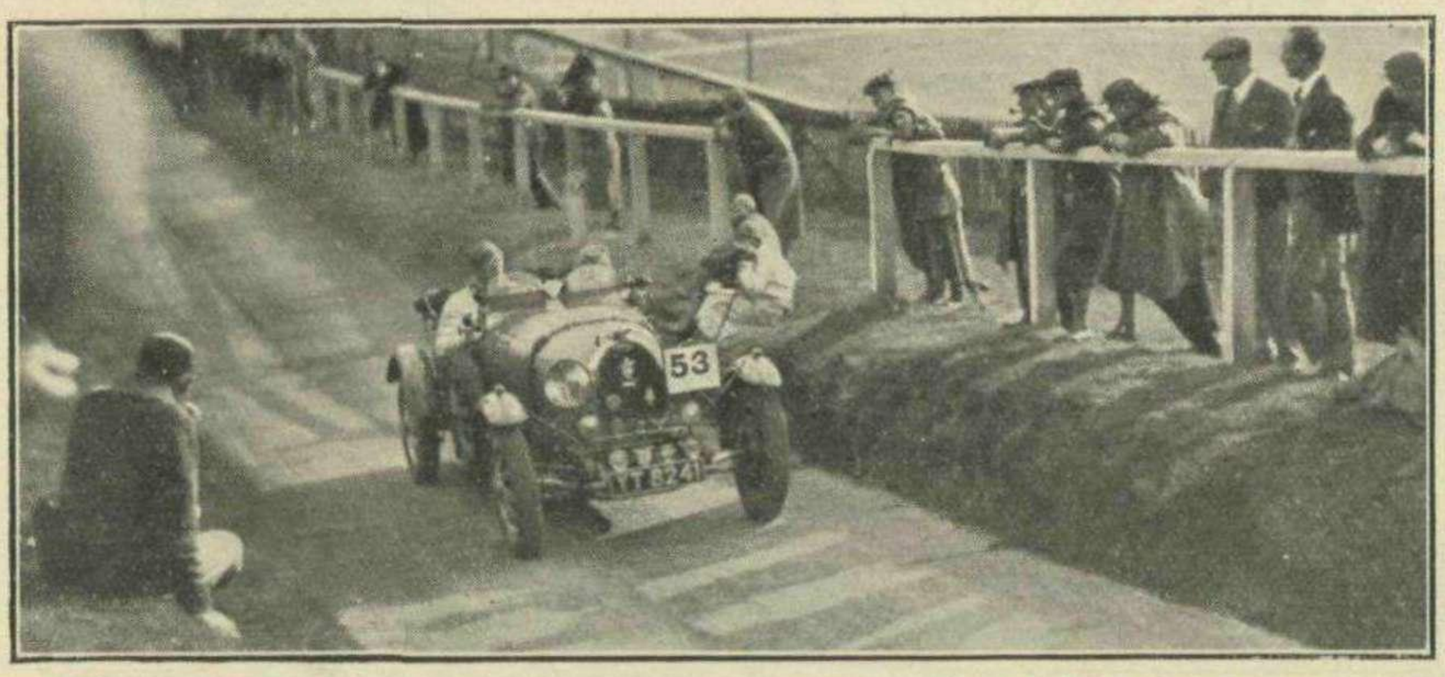
The Fork bend itself, being rather faster, produced a good bit more variety, and when after some 45 minutes running, the sun came out and started to dry the concrete slightly, there was plenty of skidding as the cars came away from the bend.

This was usually coped with simply enough, but Hepburn on a Midget varied the usual procedure by rotating peacefully in front of Peatys' Frazer-Nash, which had to pull smartly over to go inside him. On another occasion Mitton Waterfield sailed gently into the barrier on his Riley, without doing any harm.

The standard of care in driving was high throughout, though actual cornering methods were rather variable, and the reliability of the cars also spoke well for the care taken in preparing them for their contest with the track's far-from-even surface.



E. K. Rayson (Riley) and G. Taylor (Alta) leading another Riley through the "tub" hairpin.



D. G. Evans (Bugatti) in the Test-Hill Sweepstake.

Following this event those who had not too much to do to their cars indulged in lunch, preparatory to turning out for the afternoon events, which were a series of one and two lap races.

The first of these was a one-lap race with W. K. Faulkner's 2,300 c.c. supercharged Bugatti on scratch, giving the limit man, S. Watt's Fiat, 37 seconds. D. G. Evans was also on the scratch mark with a similar car to Faulkner's, but when the flag fell for them, the latter shot away from Evans, and roared through the field to come home a winner by about 100 yards, at the very useful speed for a standing lap, of 85.87 m.p.h., with Waller's Alvis and Rayson's Riley second and third.

The next one lap race gave a very good finish between Linsey and Hartwell on Aston-Martins, the former giving away 7 seconds and just getting home with about 10 yards to spare. Duncan-Smith (Frazer-Nash), from the same mark as the winner, was a close third.

The third of the one-lap races had an even closer finish. Mitton Waterfield's Riley came through well from the 16 sec. mark though hotly pursued by Westbrook's Alvis, which failed by some 3 yards to make up the 3 seconds he was giving him. W. A. L. Cook's Lagonda was third.

The next three races were similar events over two laps, the first having a similar entry to the first one lap, only Faulkner was rehandicapped to owe 13 seconds, while Rayson and Waller were also put back as a result of their previous speeds. Faulkner again got off the mark well but failed to appear at the end of the first lap. Rayson and Waller were not affected by their rehandicap and finished first and second, with Cookson's Aston-Martin third and Powis-Lybbe (Alvis), a very close fourth.

The next two lap with entry practically the same as the corresponding one lap was won by Linsey's Aston-Martin in spite of a rehandicap, with Duncan-Smith's Frazer-Nash, also rehandicapped, second. Major Gardner, in a speed model Rover, gained third place from scratch.

The final two-lap race went to E. L. Clarke on a very smart Rover coupe, which showed a fine turn of speed and put up 71.76 m.p.h. J. Reville on an Alvis, the limit car, was second, and Cook's Lagonda third.

One-lap handicaps of the one-make variety followed for Standard, Austin, and M.G. cars and a driving skill test, over a tortuous course in the finishing straight, completed the afternoon with the exception of the test hill sweepstake, in which L. G. Bachelier's 2,300 c.c. Bugatti was the star turn.

The large entry failed to upset the very efficient organisation, and the result was a very good day's sport for all concerned.

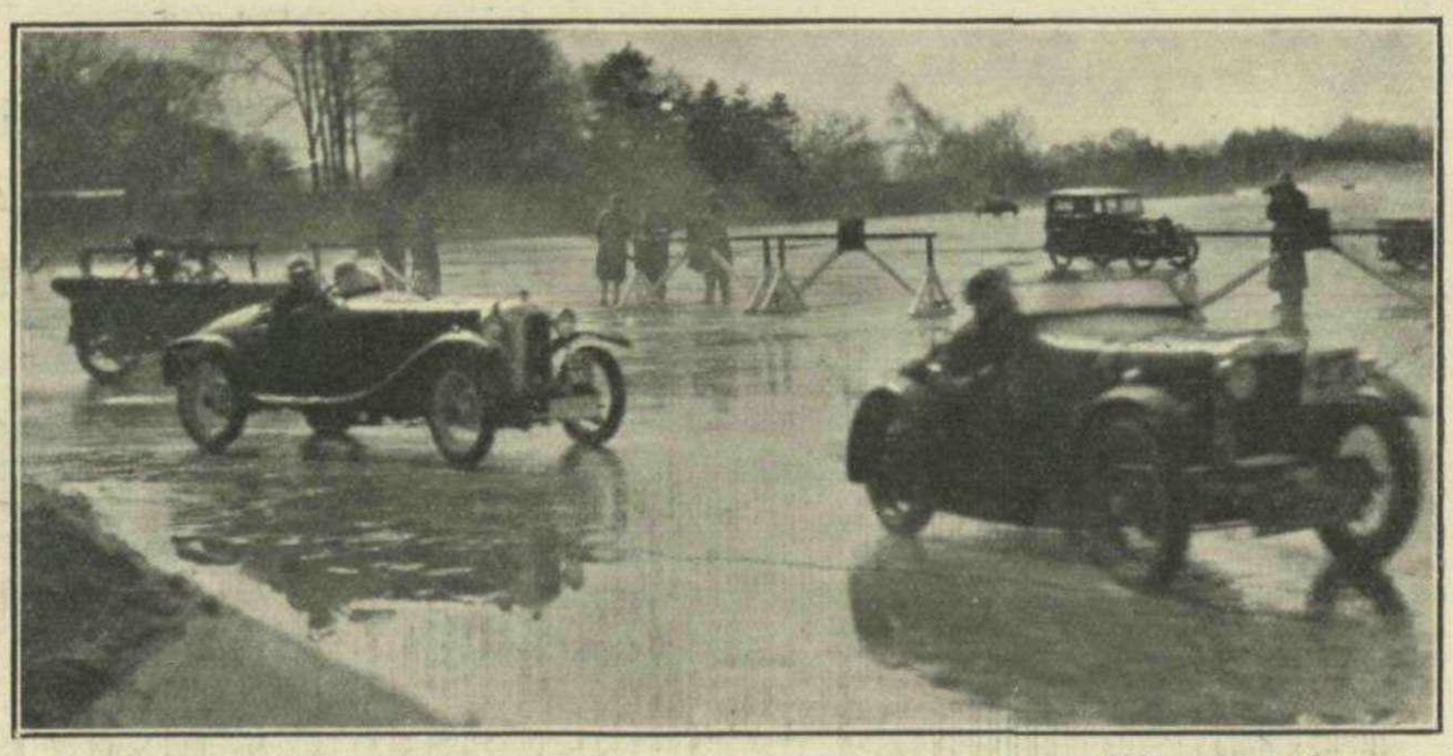
PROVISIONAL RESULTS.

HIGH SPEED TRIAL.

CLASS A.

Special Awards (20% faster than Standard) :—H. J. Searle, G. H. Goodson, G. H. R. Chaplin, M. Gorringe, H. Metchini, P. K. Sartory (Austins), D. M. Letts, D. G. Evans (M.G. Midgets s/c). (Standard speed 37 m.p.h.)

(*Continued od page 338*)



[*Motor Sport photographs*]

A group at the fork. The leader is C. E. Wood (M.G. Midget).

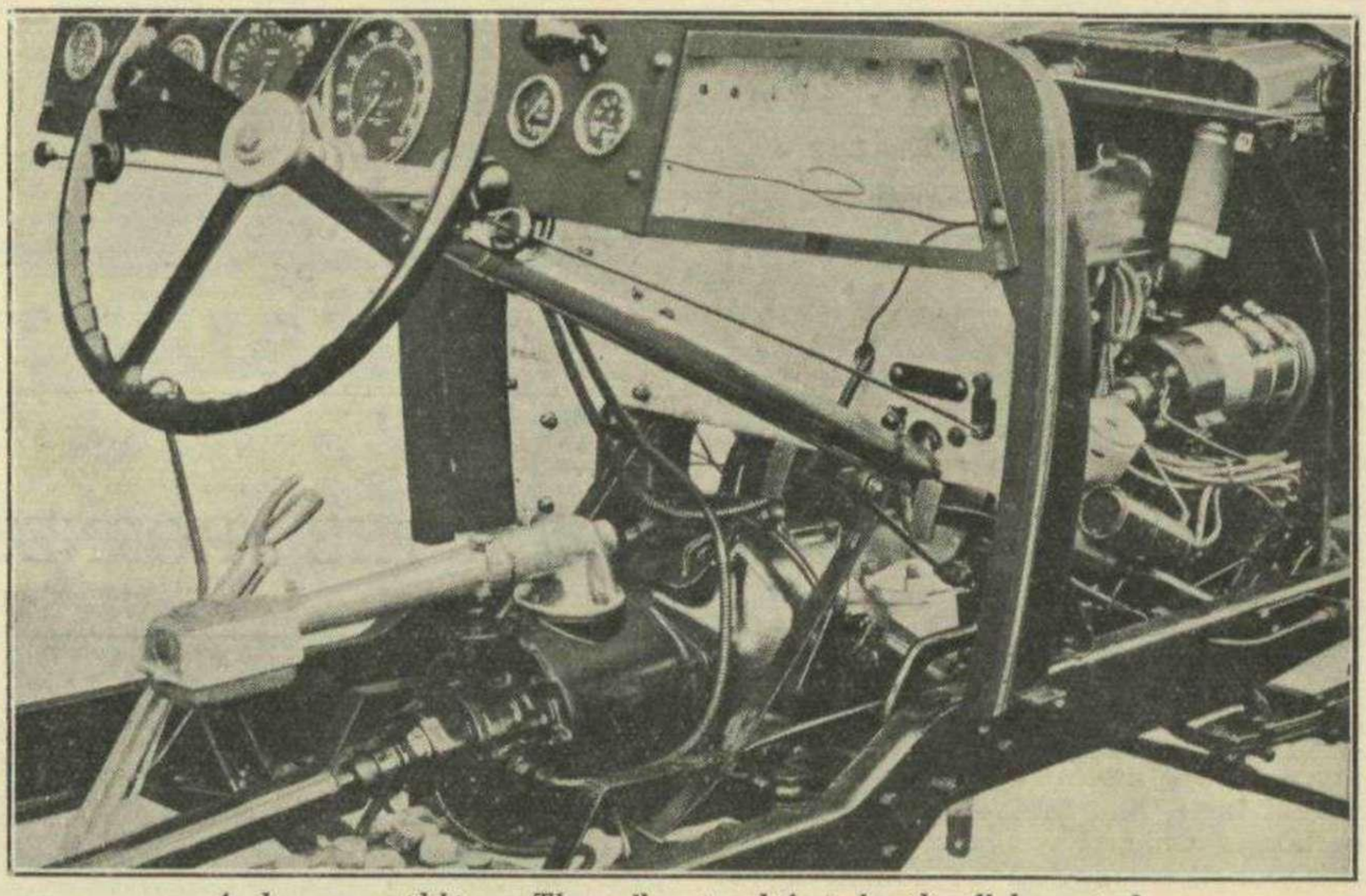
A "HORNET" DEVELOPMENT.

Special Chassis designed for Sports use.

THOSE prophets who recently predicted the universal adoption of the closed car of the "family" type are shown to be completely confounded by the great increase in popularity of the open type, which when combined with a high performance chassis, makes motoring a real pleasure, as well as a most reliable and convenient means of transport.

The latest addition to this type is the Wolseley Hornet "Special," which has a host of features designed to appeal to the keener type of motorist.

The chief differences from the previous Hornet lie in the modified induction and exhaust systems, the cooling of the lubricating oil, the larger brake drums, and narrower track rear axle.



A close-up amidships. The well-equipped facia-board will be noticed.

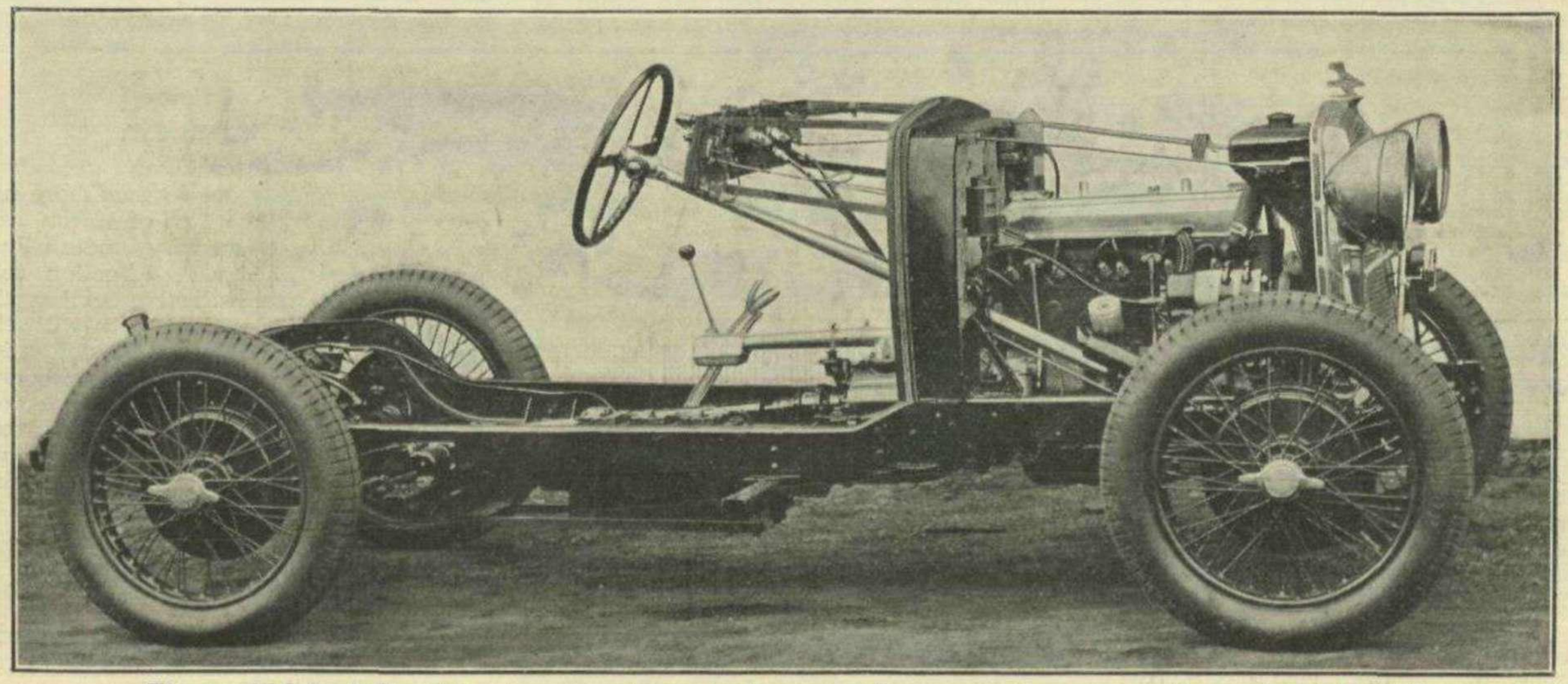
The car is supplied in chassis form only to coach builders, from whom it may be obtained in a variety of attractive body types, and its price is £175. When one considers the remarkable refinements in its specification one begins to realise the astounding development of luxurious motoring at low cost.

The general layout follows accepted practice, the six cylinder engine having its cylinders cast monobloc, with a detachable head carrying the overhead valves and camshaft.

The whole of the valve mechanism is enclosed, and duplex valve springs are employed. The camshaft drive is by roller chain in two stages, the first being by single roller chain with automatic adjuster to a countershaft mounted on the front of the block.

From here, a double roller chain takes the drive to the camshaft, the latter chain being adjusted by an eccentric bearing on the countershaft. These bearings, in common with the other engine bearings, are pressure-fed.

From the 4-bearing crankshaft a drive is taken to the oil-pump. Oil is passed from the sump to an external wire gauze strainer before entering the pump, and from this to an



The new Wolseley "Special" as it appears in chassis form. It differs in several ways from the standard "Hornet."

A "HORNET" DEVELOPMENT—continued

oil cooler and large filter before entering the main bearings. The filter is readily removable for cleaning.

Mixture is supplied by two S.U. carburettors, and on the exhaust side three pipes lead to a single pipe and thence to the silencer.

The rear tank supplies the carburettor via an S.U. Petrolift pump on the dash. Ignition is by battery and coil.

A single plate fabric clutch takes the drive to a close ratio 4-speed gearbox mounted integral with the engine. The constant mesh and third speed pinions are double helical to ensure silence on third.

Transmission is by open propeller shaft with Hardy-Spicer universal joints at each end to the ¾ floating rear axle. The rear hubs are carried on large double row ball bearings.

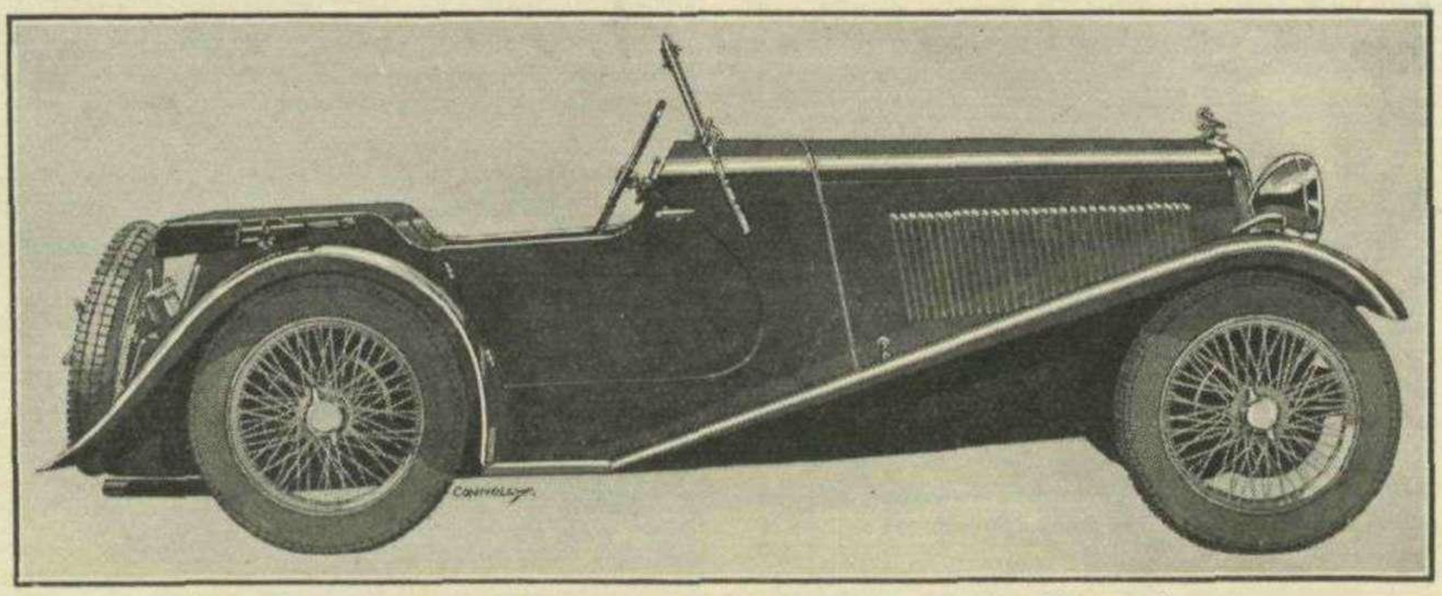
Suspension is by semi-elliptic springs controlled by Luvax hydraulic shock absorbers. The brake drums on this model are 12in. diameter, and the shoes are operated by the Lockheed hydraulic system.

Equipment is very complete including rev. counter, 12 volt. lighting and starting, headlamp dipping mechanism and the usual fittings, while Rudge Whitworth racing type wheels or the Magna type are optional.

COACHWORK FOR THE "HORNET SPECIAL"

AS the new Hornet chassis is produced specially for coachbuilders, no standard body being supplied for it by the makers, ample opportunity is given for the motorist to satisfy his individual taste, and in the extensive range of bodies which have been designed for this car there should be something to please every taste and pocket.

The higher compression ratio and other modifications to the engine, combined with stiffer chassis, bigger brakes, more powerful lights, and other attractive features, form an excellent basis for the coachbuilder's art.



The graceful and thoroughly practical Jarvis "Hornet Special"

Abbey Coachworks Ltd.

This firm is producing two new bodies for this Hornet. One is called the Abbey Special, which is similar to the well known model on the standard Hornet, except that a 12 gallon wedged shaped rear tank is fitted, with a quick release filler cap. The scuttle is curved to deflect the wind over the driver's head when the screen is down, and both doors are cut away to give plenty of elbow room. The price is £265.

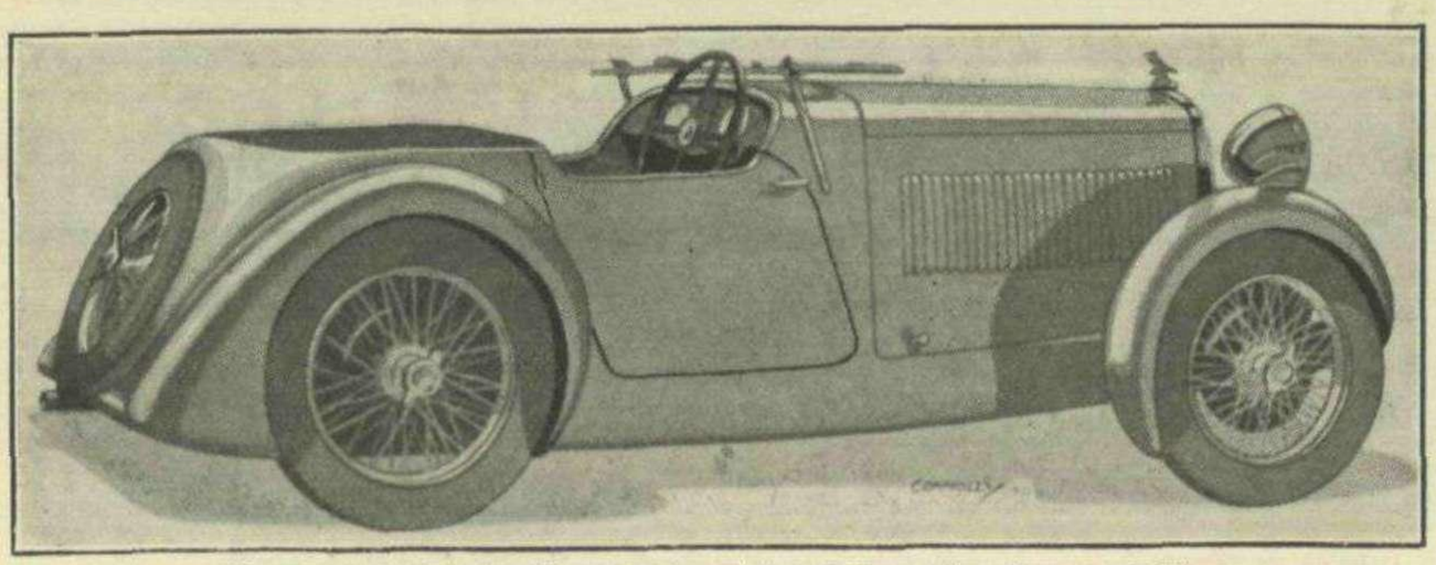
The second model is the "Falcon," a full 4-seater model with a disappearing hood, and the spare wheel sunk into the back. The price is £275. Both models include full equipment, such as an Ashby steering wheel, screen folding from top or bottom, and double windscreen wipers.

Eustace Watkins Ltd.

A choice of three bodies is provided for the new Hornet by this concern, a short road test of the "Daytona" open 2-4 seater appearing on another page. This model has an 11-gallon rear tank, with electric petrol gauge on the dash, cycle type wings, stoneguards, etc., and is specially tuned to reach 80 m.p.h. Other items include a racing type screen and wind deflectors, also an Ashby flexible steering wheel. The price is £275 or £250 with the standard E. W. body as fitted to the standard Hornet.

Two closed bodies are also provided, the 2-4 seater "Silex" coupé, at £280, and the Tickford coupé, with folding head, at £285. Both models have extremely attractive lines and remarkable room in the interior, and are available in a large choice of colour schemes.

Access to the rear compartment is easy owing to the very wide doors and hinged seats. The "Silex" model, which has a fixed head, is fitted with celluloid lights in the roof to give increased light and vision. All models are on view at 12, Berkeley Street, W.



Known as the "Falcon" model, this Abbey "Hornet" is listed at £275.

Kevill-Davies and March Ltd.

A special 2-seater with occasional seating or luggage space for two more has been designed by the Earl of March, and is distinguished by its very modern lines and excellent finish. A 12-gallon rear tank is fitted, while the bonnet has the louvres at an angle to conform with the body lines. Other features include quick filler cap, reserve tap on dashboard, double screen wiper and wind deflectors on the scuttle. The tool box is fitted above the petrol tank, and the wings follow sweeping lines instead of being close up. An Ashby steering wheel is fitted, and the price is £289.

Patrick Motors Ltd.

This well known Birmingham sports car firm are specialising in an open sports body with full room for four passengers, the rear compartment being unusually

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LUVAX
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are fitted on the
Wolseley "Hornet" Special

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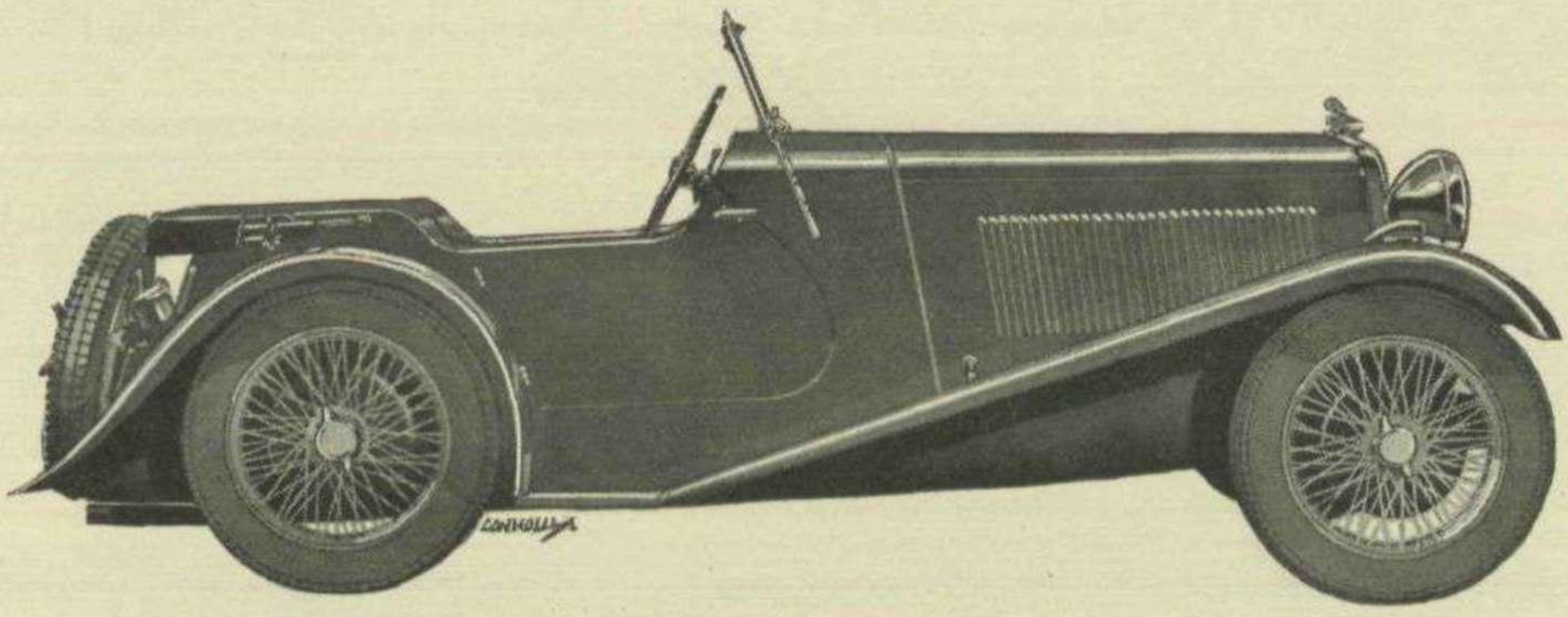
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COACHWORK FOR THE "HORNET SPECIAL"—continued.

roomy and fitted with wells in the floor. The bonnet-louvres, screen, and other lines are raked uniformly. This model is one of the lowest priced obtainable, selling for £250 complete.

Swallow Coachbuilding Co. Ltd.

Two body types for this chassis are offered by this concern, whose products are distributed by Henlys Ltd., of Euston Road, N.W.1. The price in each case is £255, and the models are a two-seater on the lines of the previous model on the standard Hornet chassis. This is one of the most distinctive and smartest bodies that has been produced for this type of car, and it is not surprising that it is being continued on the new model.

For those who require a full 4-seater, the same concern offer a very neat model with ample room and well balanced lines.

The low price of these models, coupled with their makers' reputation in the matter of smart bodywork, make them both very attractive propositions.

Jarvis & Co. Ltd.

This Wimbledon firm, who have as long an experience of sports car body building as anyone in the trade, are marketing a special model of the new Hornet, with a 2-seater body of their well known type with ample luggage accommodation. It includes very complete all-weather equipment, twin electric windscreen wipers, and a 15-gallon rear petrol tank. Other features are a one-man hood, combined hood bag and tonneau cover, folding screen, etc.

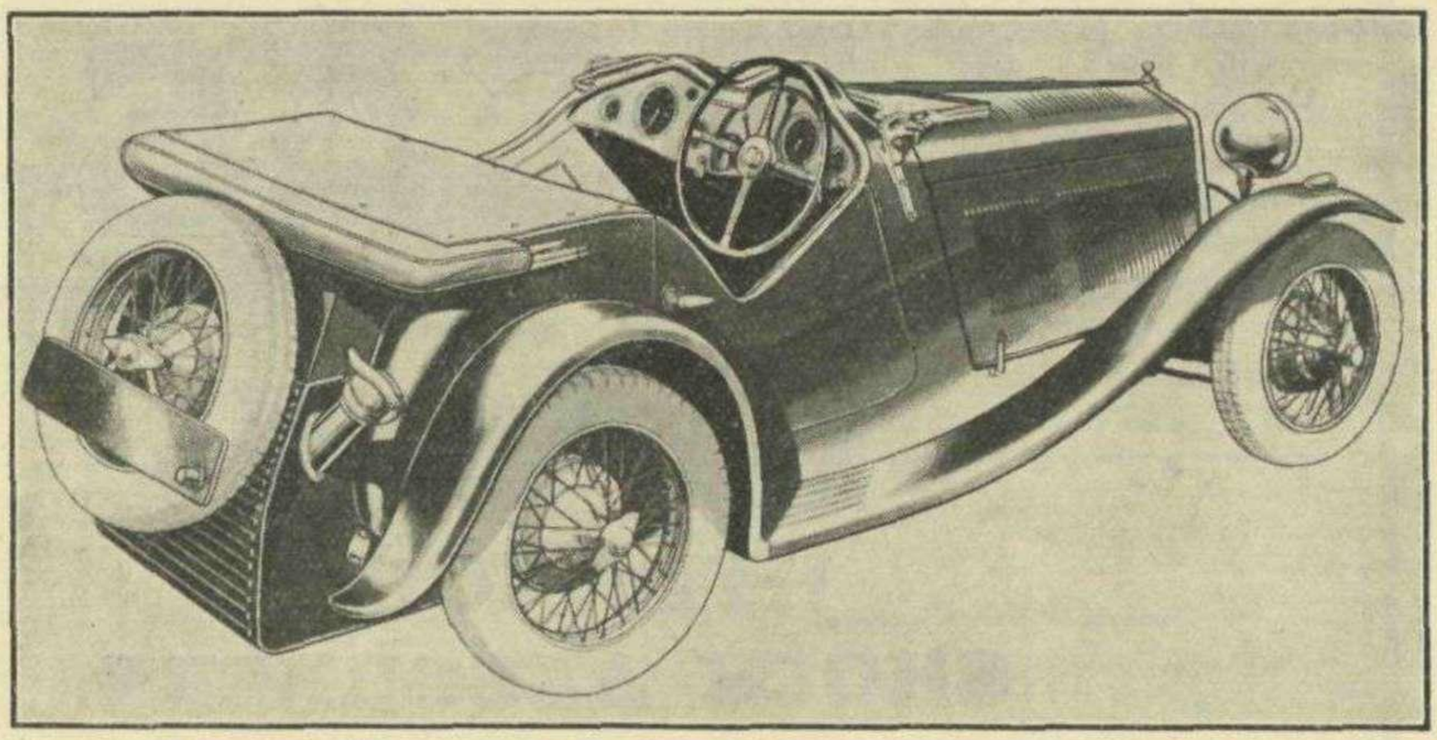
The price is £269.

A. P. Compton & Co.

The makers of Arrow coachwork are introducing a model on the new Hornet chassis, being an occasional 4-seater with very full equipment at £292 10s.

Jensen Motors Ltd.

This firm has announced a sports coupé on this chassis to sell at £275, and it is hoped to be in production shortly.



Another fine example—the model produced by Kevill-Davies and March, Ltd.

THE "HORNET SPECIAL" TESTED

New Model with E. W. "Daytona Special" Body Displays Many Attractive Characteristics.

WHEN the Wolseley Hornet was first introduced to the motoring public it was as a family saloon. It was only when the remarkable smoothness and excellent acceleration of this engine became known that various enterprising coachbuilders began to realise that here was a car which was particularly suited for use in a more sporting guise. The result of this was the range of Hornets with sporting coachwork which soon found a ready sale, and are now on the road in such large numbers.

The success of these "special editions" led the Wolseley Company to concentrate on the development of a model specifically intended fro high road speeds, to be sold as a chassis to coachbuilders, who could then express themselves as they wished in the production of various individual types.

A full description of this new chassis, known as the Hornet Special, is given in this issue, and here we are more concerned with the exact effect of the latest introductions on the performance and handling of the car on the road.

Brief Specification.

Engine: 6-*cylinder*, 57 *x* 83 *mm. bore and stroke, capacity* 1,271 *c.c. Tax* £12.
Gearbox: 4 *speeds, central change. Ratios* 17.5, 11.35. 6.64 *and* 4.89 *to* 1. *Reverse* 17.5,
Dimensions: Wheelbase 7*ft.* 6½*in. Track* 3*ft.* 9*in. front,* 3*ft.* 6*in. rear. Overall chassis width* 4*ft.* 5¼*in. Clearance* 6¼*in., turning circle* 39*ft. Chassis weight* 10 *cwts.*
Tyres: Dunlop 27 *x* 4.75*in. or* 27 *x* 4.40*in.*
Engine speed at 60 *m.p.h. on top gear,* 3,720 *r.p.m.*

For purposes of this test we took the opportunity of a run in the E. W. "Daytona Special," as it is called, this being the open sports model produced by Eustace Watkins, Ltd., of 12, Berkeley Street, and listed at £275 complete with a most pleasing specification.

This model is specially attractive to the man who wants to vary his ordinary motoring with a little competition work, and who does not want a car which will suffer from hard driving over rough country. Inspecting this model with this point of view in mind, we were particularly impressed by the great rigidity of the body work, and the immense strength of the cycle type wings. The new and much larger brake drums of the new model have given the chance of mounting this type of wing rigidly on the anchor plate, and the way this has been done in this case is very good indeed. In addition to the stiff mounting and the full valance on the inside of the wheel, giving excellent protection for the body, the edges and tips of the wings are heavily reinforced, and

THE "HORNET SPECIAL" TESTED—continued.

should stand up to the hardest treatment.

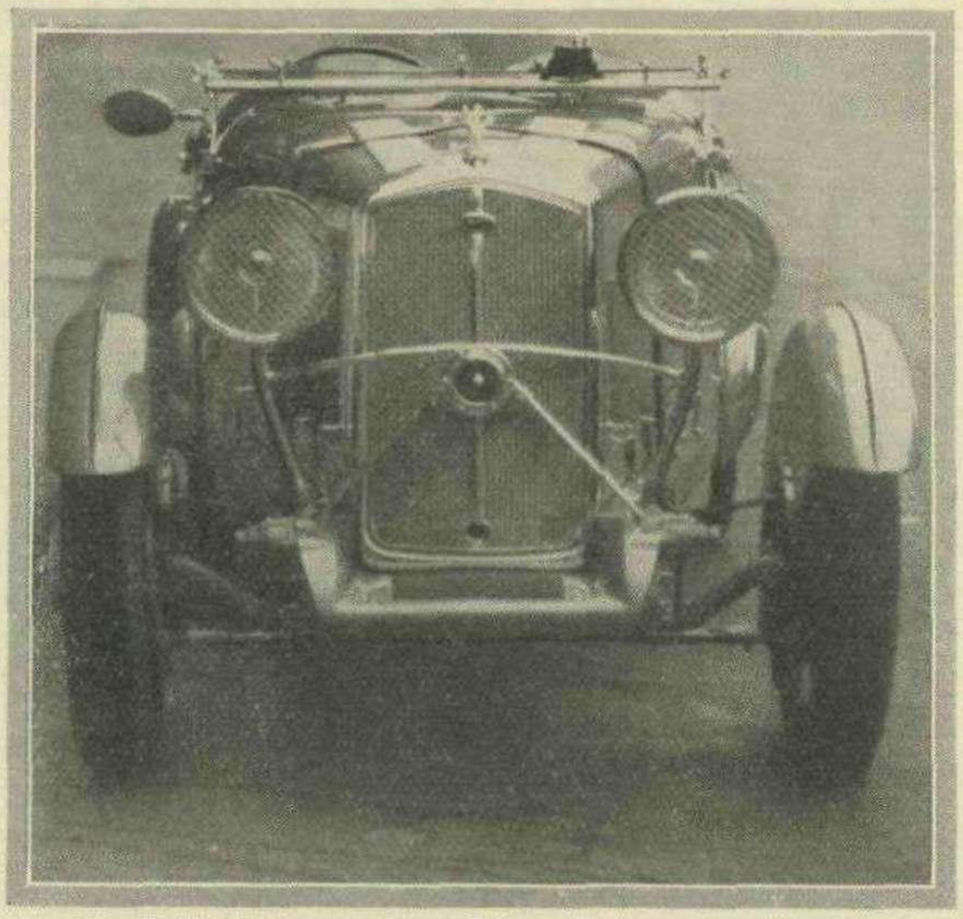
The body itself is very comfortable, the controls falling well to hand, and in spite of the short wheelbase, there is excellent leg room, and the seats are fully adjustable.

One of Ashby's "Brooklands" flexible steering wheels adds greatly to the finished appearance and also to the comfort and ease of driving.

On the road the points that immediately strike the driver are, firstly, the extreme ease of control under all conditions without strength or effort, and, secondly, the feeling of great rigidity in the chassis.

Excellent acceleration, combined with an exceptionally easy gear change, make the car well suited for modern road conditions, and this is well matched by the power of the brakes. These are very light to operate, but progressive and free from fierceness, and really positive in results.

The steering is very light, and, in common with many modern cars, rather low geared, but owing to good self-centreing this is little noticed.



The E. W. "Daytona Special" is very imposing when viewed from the front.

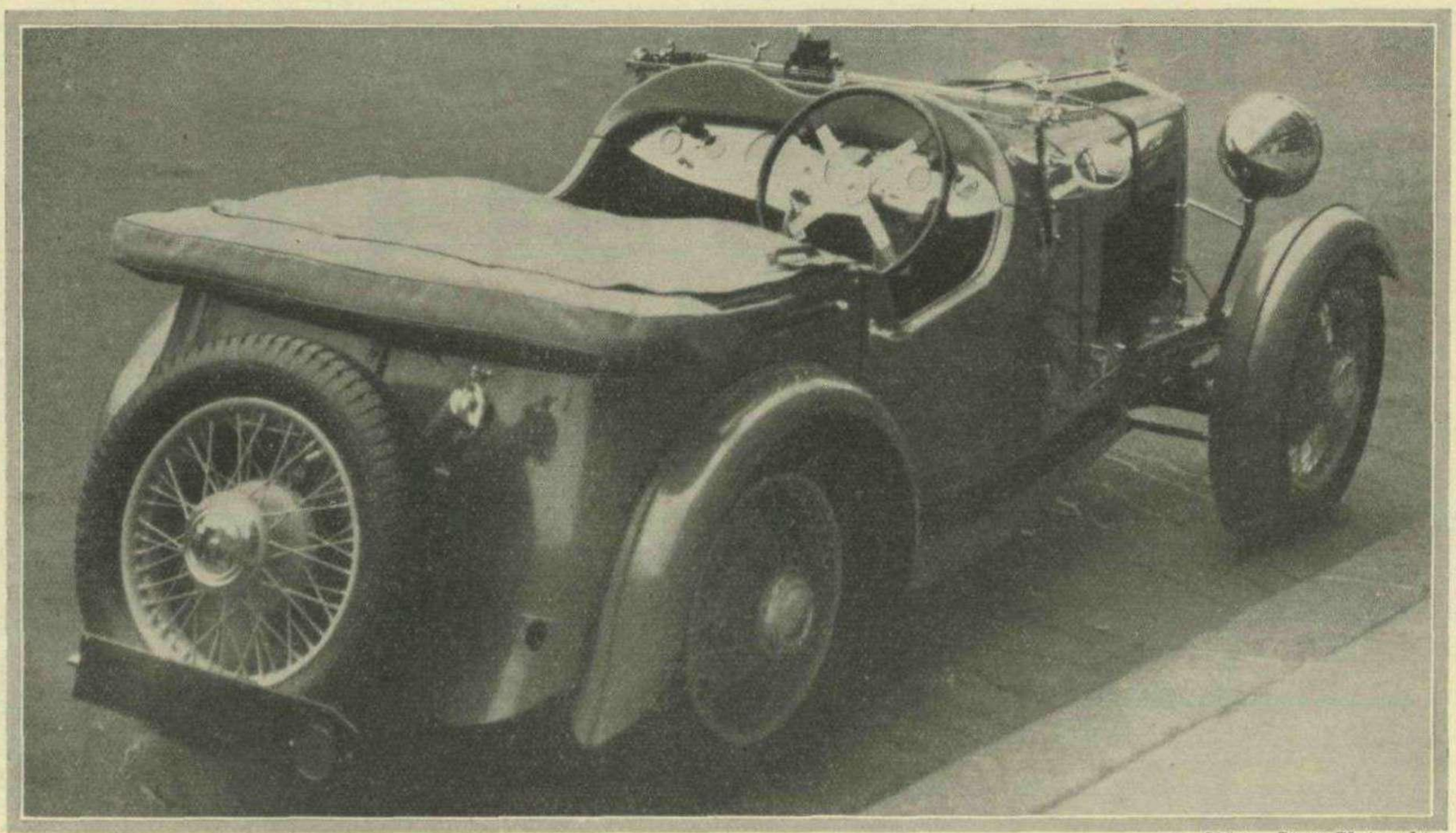
Steadiness on corners is remarkable, and the front of the car—probably due to the "crab track" of the new model—is absolutely steady and free from skidding under really violent treatment. This lateral stability inspires great confidence, and with the excellent road holding on the straight, makes it a car on which really long journeys would not be at all tiring.

Further contribution to this feature is made by the extreme mechanical silence of the whole chassis, third gear being indistinguishable from top as far as noise is concerned.

The twin carburetter system and new exhaust arrangements have given a very lively engine which combines real flexibility wit "snap" acceleration. This model is a real 75 m.p.h. machine, and can be obtained with an 80 m.p.h. guarantee. An 11-gallon rear tank with a quick filler cap completes the equipment of a car which is definitely going to enjoy a very large market.

THE SCIENCE OF LUBRICATION.

EVERY keen motorist is interested in the vital problem of lubrication, and in *Lubricating Oil Tests*, by J. E. Southcombe, M.Sc., published by the Henry Wells Oil Co., Ltd., there is a wealth of information lucidly expressed. This book deals with the various essential properties such as viscosity, "oiliness," and the decomposition of oil in use, and gives details of the methods by which these are measured in the laboratory.



[Motor Sport Photographs

The high dash and bonnet line, coupled with ample leg room and width help to make the "Daytona Special" a really comfortable sports vehicle.



ALL OUT

by

Mark Pepys

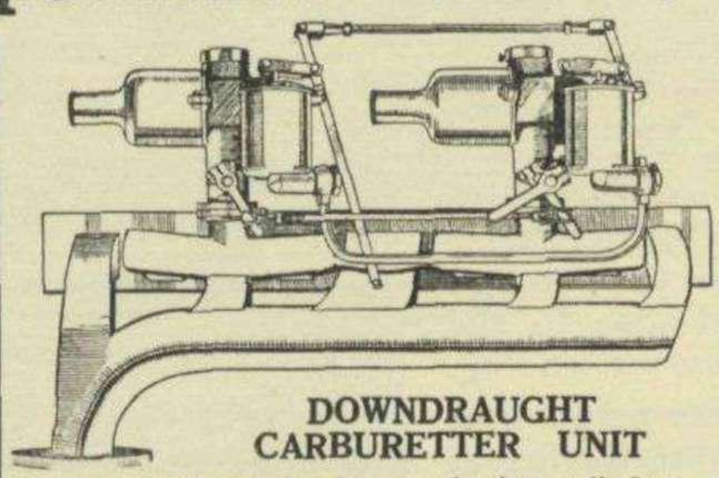
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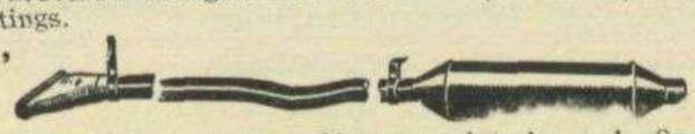
Mixture being assisted by gravity into cylinders, these Units enable far more power to be developed than normally. Brake Tests on a Hornet engine show at 3,500 r.p.m., 2 additional b.h.p., and at 4,000 revs. 4 additional, and progressively up to gain of 10 b.p.h. at 5,000 revs. Speed, acceleration and climbing power are all remarkably improved. Unit comprises: special inlet and exhaust manifold, S.U. Downdraught Carburettors. Petrolift, all fittings.

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THE MONACO GRAND PRIX

AN ALFA-ROMEO VICTORY— NUVOLARI'S BRILLIANT DRIVE.



The scene at the start. The "pack" about to be released.

IN these hard times, when organisers of important motor-races are generally faced with the difficulty of securing sufficient entries, the Monaco Grand Prix comes as a refreshing reminder that motor-racing is far from showing signs of decline. Indeed, the entry list, which is by invitation only, was filled many weeks before the race.

Let us review the list of competitors. To begin with, Bugatti was represented by Divo on the new experimental 4-wheel drive 4.9 litre car which, although comparatively untried and only entered for the race as a severe test, was rumoured to be incredibly fast on the corners, and therefore capable of springing a surprise; while Chiron, the Monegasque favourite, and winner of last year's race, Varzi, who hides beneath a nonchalant diffidence a determined will to win, and Bouriat, keen and alert, were all mounted on 2.3 double-camshaft models. In addition, the marque was represented by sundry private entrants, all, needless to say, first-class drivers namely, Earl Howe, Penn-Hughes, Czaikowski, Lehoux, and Williams, winner of the first Monaco Grand Prix. Small wonder that the great Ettore was reputed to have said that he had so far won every Monaco Grand Prix, and that he didn't intend to let any other name appear on the list of winners.

But this year Bugatti had to face stronger opposition than ever before. For the first time Alfa-Romeo had entered an official team, all the famous 2.35 cars and handled by such masters as Borzacchini, fresh from his triumph in the 1,000 Miles Race, the veteran Campari, and the daring Tazio Nuvolari. Alfa's private entries were tremendously strong, being the same type of cars as those in the official team, and driven by Caracciola, probably one of the world's four best drivers, Zehender and Philippe Etancelin.

Then there were the Maseratis, specially built cars with a shorter wheelbase than usual, and powered by engines of 2,500 c.c. Their drivers were the Frenchman, Dreyfus, Fagioli, winner of last year's Monza Grand Prix, and one of Italy's most promising drivers, and Ruggeri. This awe-inspiring list of entries was completed by Zanelli, who was down to drive a Nacional Pescara.

This year improvements had been made to the road, a special non-skid surface having been laid and the tram-lines having disappeared, for Monte Carlo now has motor-buses instead of trams. England's chances of success received a set-back when Penn-Hughes crashed at the Station hair-pin, the foot-brake of his Bugatti failing to work as he approached the corner—very hard luck indeed.

During the second day's practice the lap-record was beaten over and over again, the best times being by Borzacchini (2m. 4 4/5s.), Varzi and Etancelin (2m. 5 4/5s.), Dreyfus (2m. 6s.), Chiron and Lehoux (2m. 6 3/5s.), Caracciola and Williams (2m. 6 4/5s.). Earl Howe's best time was 2m. 10s. Finally, on the third and last day, Saturday, Chiron did a lap in 2m. 4s.

Sunday, the 17th April, dawned clear and fine, but later, fortunately for the drivers, the sun went in. Thousands of people swarmed everywhere, seeking vantage points from which to witness the race. The temporary grand-stands were full, and every hotel window adjoining the course was filled with eager spectators. The organisation was perfect, and shortly before 1.30 p.m., the loud-speakers announced that Sir Malcolm Campbell was about to open the course by driving round in his Rolls-Royce touring car. Everywhere round the circuit Sir Malcolm was given a splendid ovation. The excitement grew intense. The cars were lined up in rows of three.

The actual arrangement of the cars was as follows:—

Ruggeri (Maserati), Etancelin (Alfa-Romeo), Williams (Bugatti).

Czaikowski (Bugatti), Campari (Alfa-Romeo), Chiron (Bugatti).

Dreyfus (Maserati), Borzacchini (Alfa-Romeo), Lehoux (Bugatti).

Nuvolari (Alfa-Romeo), Bouriat (Bugatti).

Earl Howe (Bugatti), Caracciola (Alfa-Romeo), Varzi (Bugatti).

Fagioli (Maserati), Zehender (Alfa-Romeo), Divo (Bugatti).

Last minute alterations were the withdrawal of Zanelli of his Nacional Pescara, and the announcement that Divo was going to drive an ordinary 2.3 double camshaft model.

Promptly at 1.30 p.m. the starter raised his flag, there was a rising crescendo from the exhaust pipes of seventeen perfectly tuned cars, and with a sudden drop in the note, which quickly rose again, the pack tore away.

Speculation was rife as to who would be leading at the end of the first lap, but

THE MONACO GRAND PRIX—continued.

we were not left in doubt for long, for amid tremendous applause Chiron appeared first, 4 2/5s. in front of Williams.

It soon became apparent that Chiron's popularity was well deserved, for he steadily increased his lead over Williams by 7s., 8s. and 9s. on successive laps. On the tenth lap he broke Dreyfus's record with a lap of 2m. 5s. The field began to assume a definite plan, and certain drivers who were handicapped by being in the last rows at the start, gradually took their true position. Nuvolari improved his place from 7th on the 2nd lap to 4th on the 6th lap, and on the 8th circuit he passed Lehoux to take third place. Williams was still second, but he was losing ground rapidly to Chiron, and at the same time was being overhauled by Nuvolari. On the 10th lap the order was :—

Chiron, 21 m. 10s. ; Nuvolari, 21m.27s. ; Williams, 21m. 29s. ; Lehoux, 21m. 33s. ; Varzi, 21m. 34s. ; Borzacchini, 21m. 38s. ; Dreyfus, 21m. 40s. ; Caracciola, 21m. 42s. ; Fagioli, 21m. 47s. ; Campari, 21m. 48s. ; Ruggeri, 21m. 52s. ; Czaikowski, 21m. 58s. ; Earl Howe, 22m. ; Bouriat, 22m. 4s. ; Zehender, 22m. 5s. ; Etancelin, 22m. 7s. ; Divo, 22m. 9s.

Then the character of the race began to alter. Chiron no longer increased his lead over Nuvolari, but on the other hand Nuvolari could not reduce the lead between them, try as he might, and this in spite of breaking the lap record with a time of 2m. 4s. On the 10th lap Varzi passed Williams to take third place.

At this stage the first retirement was announced, Ruggeri experiencing trouble with his Maserati Lord Howe was driving a splendid race, being fast and steady.

On the nineteenth circuit Varzi returned a wonderful lap in 2m. 2s., and at the 20th lap Chiron was 16 seconds in front of Nuvolari, who led Varzi.

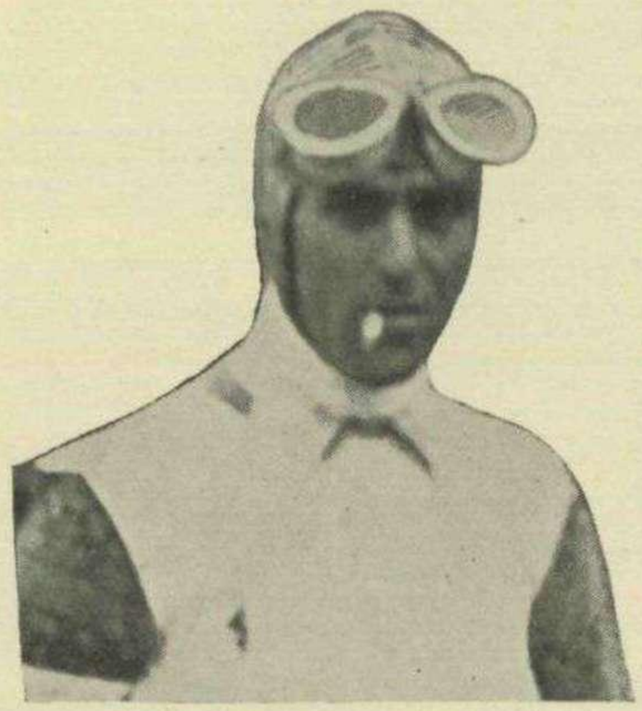
Nuvolari began to press Chiron hard, and actually gained about one second every lap, until only three seconds separated the two of them on the 29th lap. Then came a sudden change of fortune. Chiron, realising that he was being caught by Nuvolari, was making every effort to keep ahead, but on the 30th lap, in trying to pass two slower cars, he just grazed the sand-bags on the corner at the Quai de Plaisance. The car leapt into the air and overturned, throwing Chiron into the road, fortunately uninjured except for some cuts and bruises



Caracciola, the second man home.

On the 30th lap the order was :—

Nuvolari, 1h. 2m. 55s. ; Varzi, 1h. 3m. 1s. ; Borzacchini, 1h. 3m. 28s. ; Caracciola, 1h. 3m. 36s. ; Fagioli, 1h. 3m. 48s. ; Dreyfus, 1h. 4m. ; Williams, 1h. 4m. 1s. ; Campari, 1h. 4m. 24s. ; Etancelin, 1h. 5m. 5s. ; Czaikowski, 1h. 5m. 8s. ; Bouriat, 1h. 5m. 12s. ; Lehoux, 1h. 5m. 13s. ;



The victor, Tazio Nuvolari.

Earl Howe, 1h. 5m. 18s. ; Zehender, 1h. 5m. 21s. ; Divo, 1h. 5m. 31s.

Pit stops are almost fatal in a race of this description, and at this juncture several drivers were in at the pits, Lehoux being held up for 5 minutes with oil leakage.

Varzi began to reduce Nuvolari's lead, bringing it down from 28 to 17 seconds, but he himself was being challenged by Borzacchini, who was only 13 seconds behind.

The beginning of the second half of the race found the leaders unchanged, but a terrific duel began between Borzacchini and Caracciola, the honours of which finally fell to the latter, who became third.

Then a second dramatic incident was announced, and incidentally a cruel blow at Bugatti's chance of success. On the 57th lap it was announced that Varzi had retired with a broken axle-shaft. At 60 laps the order was :—

Nuvolari, 2h. 6m. 20s. ; Caracciola, 2h. 6m. 50s. ; Borzacchini, 2h. 6m. 58s. ; Fagioli, 2h. 7m. 27s. ; Williams, 2h. 8m. 46s. ; Campari, 2h. 9m. 3s. ; Zehender, 2h. 10m. 12s. ; Earl Howe, 2h. 10m. 42s. ; Bouriat, 2h. 11m. 9s. ; Lehoux, 2h. 10m. 45s. ; Divo, 2h. 21m. 31s.

Bugatti's hopes fell, with Alfa holding the first three positions and Maserati fourth. A tremendous struggle was going on between Nuvolari and Caracciola, the latter was gaining several seconds every lap, and reduced the distance between them from 30 to 9 seconds. Meanwhile, several drivers had stopped at the pits, and the laggards were falling steadily behind. Among those who stopped for a brief moment was Borzacchini, who thereby lost third place to Fagioli. A minor incident occurred at this stage when Bouriat ran into the sand-bags at the station hair-pin, but he managed to keep going after changing the damaged wheel at his pit.

The order at 90 laps was :—

Nuvolari, 3h. 10m. 27s. ; Caracciola, 3h. 10m. 34s. ; Fagioli, 3h. 12m. 14s. ; Zehender, 3h. 16m. 48s. ; Earl Howe, 3h. 17m. 17s. ; Lehoux, 3h. 22m. 41s.

The concluding stage of this race was marked by a memorable struggle between Nuvolari on the "Works" Alfa, and Caracciola on his privately-owned car. Caracciola was slowly gaining ground every lap. The distance between them was 7 seconds, which was a lap later reduced to 5 seconds. Then Caracciola had to follow Zehender through a winding part of the course for some distance, where passing was impossible, and his chances of wresting the lead from Nuvolari began to fade. Nothing daunted, he made a tremendous final effort, and was only three seconds behind when Nuvolari crossed the line, the winner.

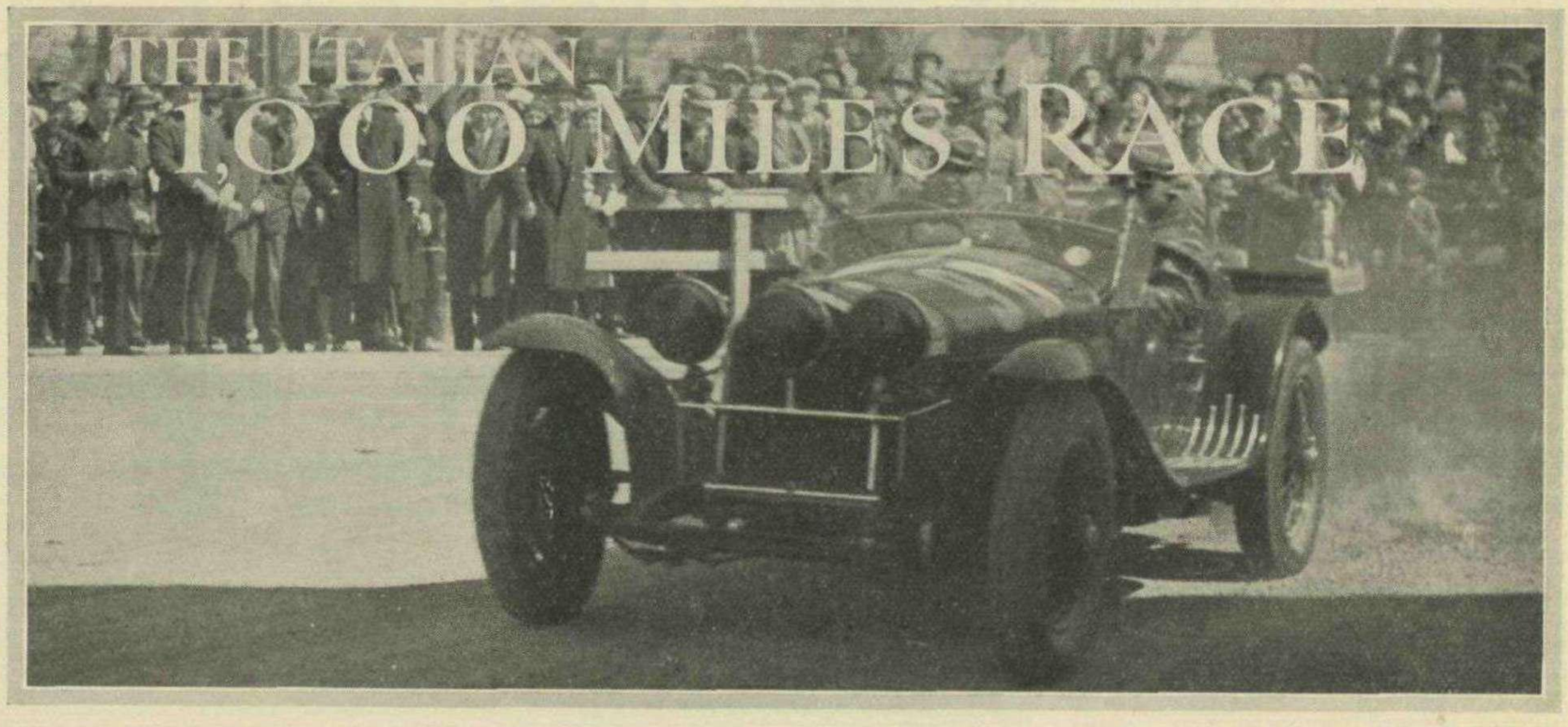
Of the remainder, everyone was gratified that Fagioli gained third place in his Maserati, especially as the marque had sustained such a loss in the recent death of the late Alfieri Maserati, and Earl Howe achieved one of the finest performances of his career in securing fourth place, piloting the first Bugatti home.



Earl Howe, who secured fourth plaee.

RESULTS.

1. Nuvolari (Alfa-Romeo), 3 hrs. 32 mins. 25 secs. ; average speed, 55.8 m.p.h.
2. Caracciola (Alf-Romeo), 3 hrs. 32 mins. 28 secs.
3. Fagioli (Maserati), 3 hrs. 34 mins. 43 secs.
4. Earl Howe (Bugatti), two laps behind winner.
5. Zehender (Alfa-Romeo), four laps behind winner.
6. Lehoux (Bugatti), five laps behind winner.
7. Williams (Bugatti), five laps behind winner.
8. Bouriat (Bugatti), seven laps behind winner.
9. Divo (Bugatti), nine laps behind winner.
10. Campari (Alfa-Romeo), 14 laps behind winner.



THE ITALIAN 1,000 MILES RACE

WHEN Charles Jarrott wrote his fine account of the Paris-Madrid race of 1903 he deplored the closing of the era of town to town races which marked the early days of motoring. His view was that the modern type of race over a short closed circuit lacked the sporting qualities of the older type, and though the series of Grand Prix races has shown that his fears were without cause, there is no doubt of the appeal of the race covering great tracts of country.

From 1903 till 1927 the circuit race was the only road race available. In the latter year was conceived the brilliant idea of the Italian Mille Miglia, over a course from Brescia to Rome and back to the starting point which formed a giant figure of eight over the whole of Italy, and embraced every type of road over which a car is likely to travel.

The route goes from Brescia through Bologna and over the Apennines to Florence, then to Siena and Rome, where it turns back again and leads through Terni, Perugia, Marcerata, Ancona, and Bologna, where it crosses the outward road, and goes via Treviso and Verona to Brescia. Such a course has all the romance and variety which anyone could desire, and provides a test of endurance for cars and drivers unequalled by any motor race in the world.

History of the Race.

In 1927, the first year this now famous classic was held, it was won by Minoia and Morandi driving a 2-litre O.M. in 21h. 4m. 48s. at an average speed of 48 m.p.h. while similar cars were second and third.

In 1928 the victory went to the famous Milan firm of Alfa-Romeo, who, with a 1,500 c.c. model driven by Campari and Ramponi, beat a 2-litre O.M. by the narrow margin of 8 minutes. Their time was 19h. 14m. 5s., a speed of 52 m.p.h.

1929 saw a repeat victory for Campari and Ramponi, this time on a 1,750 c.c. Alfa, again taking their place from a 2-litre O.M., 10 minutes behind them, with another 1,750 c.c. Alfa third. This time they took 18h. 4m. 28s., a speed of 55.6 m.p.h.

1930 brought another win for Alfas again with a 1,750 c.c. car, driven this time by Nuvolari and Guidotti, while the first four places were occupied by similar models. The winners' time was much shorter than hitherto, being 16h. 18m. 59s., speed 62 m.p.h.

Last year, 1931, saw the introduction of two models new to the event, the 2,300 c.c. Alfa-Romeo, and the 4,900 c.c. Bugatti. Once more Alfas put up a great fight but were defeated by the lone entry of Caracciola on the 7-litre supercharged Mercédes, who broke all previous records for the race in 16h. 10m. 10s., his speed being 62.85 m.p.h. under difficult weather conditions.

This year the race was favoured with dry weather and 88 cars left Brescia on their long journey. The big cars, as usual, started after the utility class and included no less than 31 Alfas out of 48 cars, the largest number of any other make being 4 O.M.'s. This class also included the 105 Talbot driven by Brian Lewis, who put up a very fine show against the strong entry of supercharged cars, and in spite of a crash which would have been enough for most drivers, got going again and finished 25th. As only 41 cars finished, the strenuous character of the race can well be imagined.

From the first it was obvious that the pace was going to be terrific, and on the first stage to Bologna which is the fastest piece of road in the course, three cars were practically equal. These were Nuvolari and Guidotti on one of the 2,300 c.c. Alfas, Caracciola and Bonini on another, and Varzi and Castelbarco on a 2,300 c.c. Bugatti. Five seconds of time covered these three cars while they had put up the almost incredible average speed for the 130 miles of 101 m.p.h.

Such a pace was bound to cause trouble, and by the time Florence was reached two of the Alfas had crashed. Ghersi first came to grief, fortunately sustaining only minor injuries, and in turning to look at the wreckage, Nuvolari also left the road and had to retire.

At Florence, 195 miles, the order was :—

1. Caracciola-Bonini (Alfa-Romeo), 2h. 36m.
2. Campari-Soczi (Alfa-Romeo), 2h. 40m.
3. Siena-Taruffi (Alfa-Romeo), 2h. 42m.
4. Broschek-Sebastian (Alfa-Romeo), 2h. 43m.
4. Varzi-Castelbarco (Bugatti), 2h. 44m.
6. Borzacchini-Bignami (Alfa-Romeo), 2h. 46m.

The next section of the route saw the end of the Bugatti chances, when Varzi went out of the race with a damaged petrol tank. Caracciola was still holding his lead, but Broschek had pulled up to second place, and at Siena was only four and a half minutes behind the leader.

The Small Class.

In the small class much favourable comment was caused by the performance of the supercharged M.G. Midget driven by Lord de Clifford and V. G. Selby. They had bad luck in the early stages through being held up with a puncture, and lost much ground on Tuffanelli, who, at the wheel of a 4 cylinder 1,100 c.c. Maserati, had established a firm lead in his class. However on the mountainous section the M.G. went to such purpose that it gained on its larger rival and got up to second place in the 1,100 c.c. class. Unfortunately near the end of the race the M.G. had to retire with a sheared camshaft drive.

At Rome (376 miles), the order was :—

1. Caracciola (Alfa-Romeo), 5h. 22m. 52s.
2. Siena (Alfa-Romeo), 5h. 31m.
3. Campari (Alfa-Romeo), 5h. 32m. 20s.
4. Trossi-Brivio (Alfa-Romeo), 5h. 39m. 31s.
5. Borzacchini (Alfa-Romeo), 5h. 40m. 12s.
6. Broschek (Alfa-Romeo), 5h. 54m.

THE ITALIAN 1,000 *MILES RACE—continued.*

Caracciola was driving a truly magnificent race, having averaged over 70 m.p.h. to Rome, and looked like repeating his success of last year. Borzacchini was driving with his usual cunning and not forcing his car too much, while Caracciola had to stop at Terni to adjust his brakes which were beginning to give out under the strain of the pace he was setting.

This stop cost him nearly the whole of his lead, and Campari and Siena were closing up on him, and eventually passed him.

At Perugia (495 miles), the order was :—

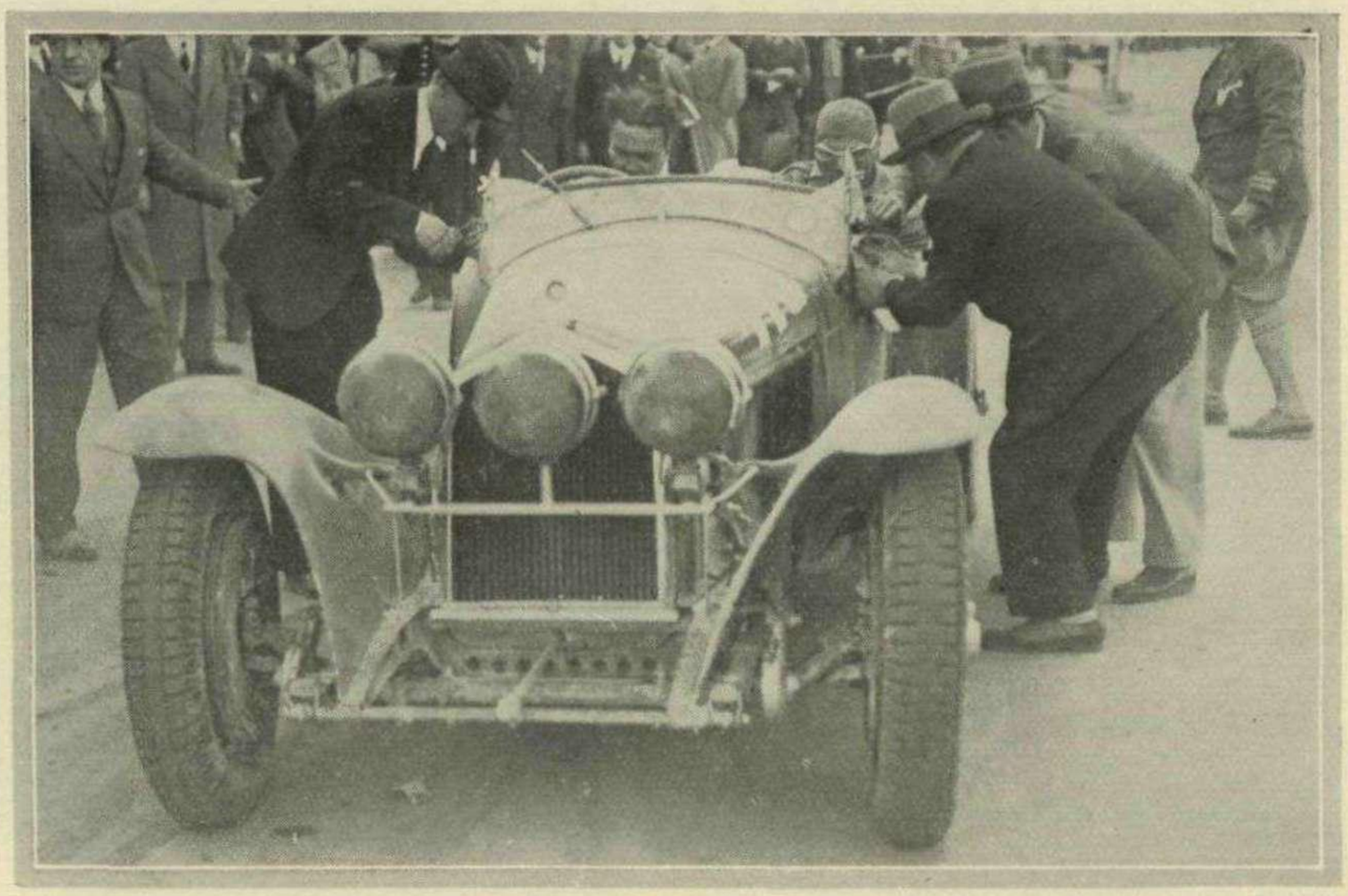
1. Siena (Alfa-Romeo), 7h. 14m.
2. Campari (Alfa-Romeo), 7h. 14m. 35s.
3. Caracciola (Alfa-Romeo), 7h. 18m.
4. Borzacchini (Alfa-Romeo), 7h. 20m.
5. Trossi (Alfa-Romeo), 7h. 35m.
6. Scarfiotti-d'Ippolito (Alfa-Romeo), 7h. 37m.

Scarfiotti's car was a 1,750 c.c. model, all the others being the famous 2,300 c.c. type. Between Perugia and Marcerata the winding and difficult roads caused further changes in the leaders, and Campari took the lead from Siena, who dropped back to third, second place being taken by the wily Borzacchini, who was now beginning to show once again his remarkable ability under difficult driving conditions, and when they reached Ancona he had taken the lead, not to lose it again.

At this control Campari was lying second but as he was leaving the town disaster overtook him. Wishing to replace his goggles which he had pulled down in the control, he left the wheel to his co-driver Soczi. However, this method of control was insufficient to cope with an awkward moment, and the car left the road and was rendered *hors-de-combat* fortunately without injury to the drivers.

On the run from here to Bologna, Borzacchini really showed his hand, and in spite of the complete darkness covered the intervening 130 miles at the perfectly horrible average of nearly 89 m.p.h. This remarkable feat of driving gave him a really comfortable lead, the second man now being Caracciola who had made a last effort, but to no avail as his car finally gave out at Verona, and he retired after a fine drive.

(*Continued on page 330*)



The German "ace" Caracciola with his Alfa at Rome. He failed to finish.



BRESCIA BOUND. The Talbot driven by Brian Lewis, who made a very gallant show in the great Italian race.

THE GRAND PRIX OF TUNIS

VARZI'S DECISIVE WIN AT 90 M.P.H. ON A BUGATTI

RESULTS.

UNLIMITED CLASS.

1st. Achille Varzi (2,300 c.c. Bugatti), 3 hours, 14 mins., 18 secs. Speed 90.3 m.p.h.

2nd. Marcel Lehoux (4,900 c.c. Bugatti), 3 hrs. 17m. 14s.

3rd. P. Etancelin (2,300 c.c. Alfa-Romeo), 3 hrs. 18m., 25s.

4th. Sieva (2,300 c.c. Alfa-Romeo), 3 hrs., 19m., 58s.

5th. Count Czaikowski (2,300 c.c. Bugatti), 3 hrs., 21m. 18s.

6th. Louis Chiron (2,300 Bugatti), 3hrs. 24m. 42s.

7th René Dreyfus (2,800 c c. Maserati) 3hrs. 27m. 49s.

8th. J. de Maleplane (2,200 Maserati), 3hrs. 32m. 57s.

1500 C.C. CLASS.

1st. Joly (1500 c.c. Maserati), 3hrs. 34m. 32s. Speed, 81.4 m.p.h.

2nd. Pierre Veyron (1,500 c.c. Maserati), 3hrs. 37m. 15s.

3rd. Castelbarco (1,500 c.c. Bugatti), 3hrs. 38m. 56s.

4th. José Scaron (1,100 c.c. Amilcar), 3hrs. 45m. 10s.

5th. Mme. Itier (1,500 c.c. Bugatti), 35 laps completed.

6th. Mme. Mareuse (1,500 c.c. Bugatti), 34 laps completed.

Race held over 37 laps of the circuit of Carthage April 3rd. Distance 470.418 kilometres.

ALTHOUGH this year's race over the Carthage circuit was only the fourth of the series, it has already become one of the classics of motor racing, and the 1932 race fulfilled all expectations. It was wonderfully organised and this, in conjunction with the excellence of the circuit gave the enthusiastic Tunisian spectators a fine showing of what a race should be. The main exceptions to the regular progress of the race were Fagioli and Chiron. The former held second place for a long time but had to retire with supercharger trouble, while Chiron was beset with petty troubles which kept him out of the picture.

On the other hand Varzi, last year's winner, was at the top of his form, and led from start to finish in his own incomparable manner. Lehoux, who was second, put up a brave show, as he was by no means fit, and he did well to finish. Etancelin was driving his last year's Alfa, which was definitely not as fast as his rivals, but by driving a well planned race, managed to get home in the first three.

In the 1,500 c.c. class Joly showed that the unfortunate death of Alfieri Maserati has not affected this marque's desire to carry on his name with success, while Scaron's famous Amilcar once more showed that he is almost unbeatable in his own class, and more than a match for many "1,500's."

A remarkable feature of the race was the eclipse of the 4,900 c.c. Bugattis by the 2,300 c.c. model. These were apparently not so well prepared, and though their maximum speed should have been high enough, they are not so easy to handle, and most important of all, not nearly so well braked.

On such a circuit as this, perfect braking is vital, and without it a fast car is out of the picture.

There is little doubt that the 2,300 c.c. double-camshaft Bugatti will stand as a landmark in the history of racing car development, and its road-holding, ease of handling, performance, and reliability are eloquent testimony to the experience of the Molsheim manufacturer.

Brilliant weather favoured the start, and the 20 cars roared away in a bunch at the fall of the flag. Almost at once Varzi drew ahead and established a slight lead, with Lehoux right on his heels. On the second lap Lehoux actually got in front for a brief space, but could not hold it and dropped back.

At the end of the five opening laps the two 2,300 c.c. Bugattis held the lead closely chased by the Alfas, with the 4,900 c.c. Bugatti following again. Shortly after, Chiron began to suffer from ignition trouble, and gradually lost all hope of victory, while Etancelin pulled up a few places.

After 10 laps the order was Varzi (Bugatti), Fagioli (2,800 c.c. Maserati), Dreyfus (2,800 c.c. Maserati), Lehoux (4,900 c.c. Bugatti), then Etancelin, Siena, Wimille, Czaikowski; while Joly led the "1,500's."

Then things began to happen, the hot weather probably contributing slightly to some of the engine troubles.

Fagioli, who had held his pace well and looked a safe second, had to retire with supercharger trouble. Wimille who was running sixth on his 4,900 c.c. Bugatti, found trouble developing in the oiling system, and finding the pressure dropping badly, also retired. Von Morgen, on a similar car had trouble with his brakes seizing, and withdrew. It was certainly a bad day for the big Bugattis.

Alone of the "4,900's" Lehoux pluckily held on, and at the end of twenty laps was second, less than 3 minutes behind Varzi, the order being Varzi, Lehoux, Etancelin, Siena, Czaikowski, Dreyfus, Chiron.

In the 1½ litre category, Joly held his lead, with Veyron and Castelbarco second and third on Maserati and Bugatti.

Galay (1,500 c.c. Bugatti) had to retire with incurable overheating, while Everhardt, on a similar car completely wore out his brakes, and pulled out of the race after over thirty laps.

At this distance Varzi had a lead of 3½ minutes over Lehoux, followed by Etancelin, Siena, and Czaikowski.

In the small class Castelbarco had got in front of Veyron, but Joly still held his lead of the class. Scaron's amazing Amilcar was fourth.

From then to the finish little happened to change the running. Lehoux had managed to refuel his car in the record time of 25 seconds, and was wildly cheered as he got away from the pits.

To see how the various drivers were held up by troubles, the times taken at the pits and the reasons are given below:

Varzi, one stop for refilling in 50 seconds.

Chiron, three stops with plug trouble, totalling 9 mins, 55 secs.

Dreyfus, four stops for plugs and refuelling, 10 mins., 40 secs.

Czaikowski, one stop for plugs, 1 min. 12 secs.

Lehoux, refuelling 25 secs.!

Scaron, refuelling 40 secs.

Mme. Mareuse, two stops for plugs, 4 mins. 55 secs.

Castelbarco, refilling and plugs, two stops totalling 1 min. 50 secs.

Von Morgen, stop for plugs, 3 mins. 40 secs.

Fagioli, plugs, 2 mins. 35 secs.

Joly, one fill-up, 1 min. 45 secs.

Siena and Ozannat (Bugatti 1,500 c.c.), 1 min. 13secs. and 2 mins. respectively for refuelling.

A glance at these times shows that no unnecessary time was lost at the pits in most cases.

In the final stages, Chiron, his car at last running satisfactorily after much trouble, broke the lap record with a circuit in 5 mins. 3 secs., an average of 94 m.p.h.

So ended a fine race, well organised and free from mishaps, with a well deserved victory for Achille Varzi.

CHATEAU-THIERRY HILL CLIMB

POOR weather conditions failed to affect the Chateau-Thierry hill-climb which was run off before a large crowd and produced many fine performances. Once more the fastest time of the whole event was put up by a motorcyclist, Georges Monneret, on a 1,000 c.c. Koehler-Escoffier. In the car classes the best time was put up by Druck (2 litre Bugatti) at an average speed of 63.5 m.p.h., which was also a new record in the 2 litre class.

Giraud-Cabantons, on an 1,100 c.c. Caban, was second in the general classification, and set up a new 1,100 c.c. record for the course. Sommer, on the Chrysler which he drove in the Paris-Nice, beat the existing 5 litre sports car record, while Mary on a Ballot, another Paris-Nice competitor, won the 2 litre sports class.

Robert Senechal's big Minerva put up a new record in the 8 litre class, though a long way behind Druck's new 2 litre record. Rosengarts gained two firsts in the hands of Jacob and Simon respectively. At the end a demonstration of fast commercial vehicles was given by Colin on a Saurer, and Lamberjack, on a Saurer-Diesel, thus finishing off a well run event.

THE CHATEAU-THIERRY HILL CLIMB—continued.

RESULTS.

SPORTS CARS.

750 c.c. Class.
Jacob (Rosengart), 1m. 8 2/5s. (new record).

1,100 c.c. Class.
Jalian (Toril-Salmson), 52 2/5s.

2 litre Class.
Mary (Ballot), 52s.

3 litre Class.
Brunet (Bugatti), 39 2/5s. (fastest sports car).

5 litre Class.
Sommer (Chrysler), 46 3/5s. (new record).

RACING CARS.

750 c.c. Class.
Simon (Rosengart), 1m. 8 1/5s.

1,100 c.c. Class.
Giraud-Cabantons (Caban), 37 4/5s. (new record).

2 litre Class.
Druck (Bugatti), 35 1/5s. (new class record and fastest car time of the day).

8 litre Class.
Senechal (Minerva), 43 3/5s. (record set up).

COMMERCIAL VEHICLES.

1. Colin (Saurer), 1m. 31 3/5s.
2. Lamberjack (Saurer-Diesel), 2m. 16 3/5s.

New Plug for Sports Engines.

THE Massa Sparking Plug Co., Ltd., of 178, High Street, Teddington, Middlesex, have placed on the market a new sparking plug specially designed for sports engines, and we have recently tested a set of these in a 4¼-litre supercharged Bentley.

These plugs, which are known as the M.S.H. type, are mica-insulated and are of the detachable pattern with the usual gland-nut. The central electrode is in one piece, aud at the gap end is three-sixteenths of an inch in diameter; a single point is used.

A feature of the M.S.H. is the "thermic" washer, which is thimble-shaped and of copper. This is pressed into the body, and it is intended to dissipate heat and prevent oiling up. The plugs have a large gas space which further aids in obviating this. The whole is well made and the body is finished in chromium plate.

The Massa is not intended for racing engines, but the makers claim that it will withstand high temperatures and is entirely immune from oiling up.

In our test we attempted to oil them up by running the Bentley engine slowly when warming up, and then indulging in about two hours of town driving, and we found that they withstood this treatment quite successfully We then tried them for heat-resisting qualities by running for lengthy periods at a speed of approximately 80 m.p.h. (3,000 r.p.m.).

At this speed the plugs behaved quite satisfactorily, and on dismantling them, we found no signs that the running had been too much for them. It appears, therefore, that the M.S.H. does all that the makers claim for it. Its price with standard reach and metric thread is 5s. 6d.

The manufacturers are making a special offer to readers of MOTOR SPORT, and attention is drawn to their announcement appearing elsewhere in this issue.

A Motoring Novel.

NOVELISTS, almost without exception, display a lamentable ignorance of motoring terms. Such sentences as "He started up his engines," "The panting monster leapt forward," and "He threw the car into top gear" are common occurrences in novels by well-known authors, and it came as a refreshing surprise to motor-racing enthusiasts to hear that the Earl of Cottenham had written a motoring novel.

In "*All Out*" (Cassell, 7/6 net) Mark Pepys, the Earl of Cottenham, describes how Tom Furness, motor sportsman, his wife Jill, their friend "Fatty Strut," one of England's leading road-race drivers, and Madeleine, a French girl, fall foul of an international gang of crooks, headed by a crazy American dilettante, and how after many thrilling rides in Tom's "Boulogne" Hispano, and his front-wheel drive Alvis, Fatty's "Berz" saloon, and a friend's "Puss Moth," the gang is eventually brought to book.

The chapter on the French Grand Prix run on the "Montbleau" road-cum-track course near Paris, is a most thrilling affair—and incidentally contains a terrifyingly realistic description of a car leaving the road at high speed, and crashing into some trees. It is interesting to guess, by occasional clues, the identity of the "Rugotti," "Larone" and "Berz" cars.

"*All Out*" is a most welcome addition to the all-too-small shelf of motor-racing books.



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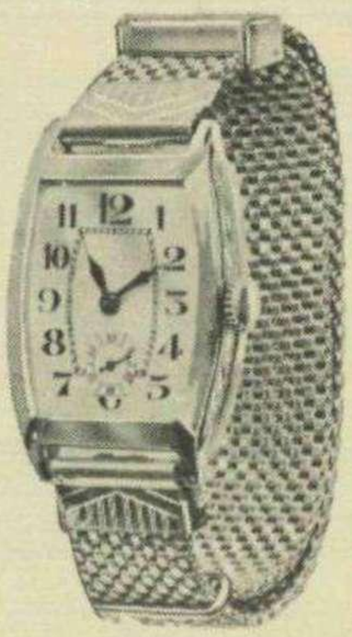
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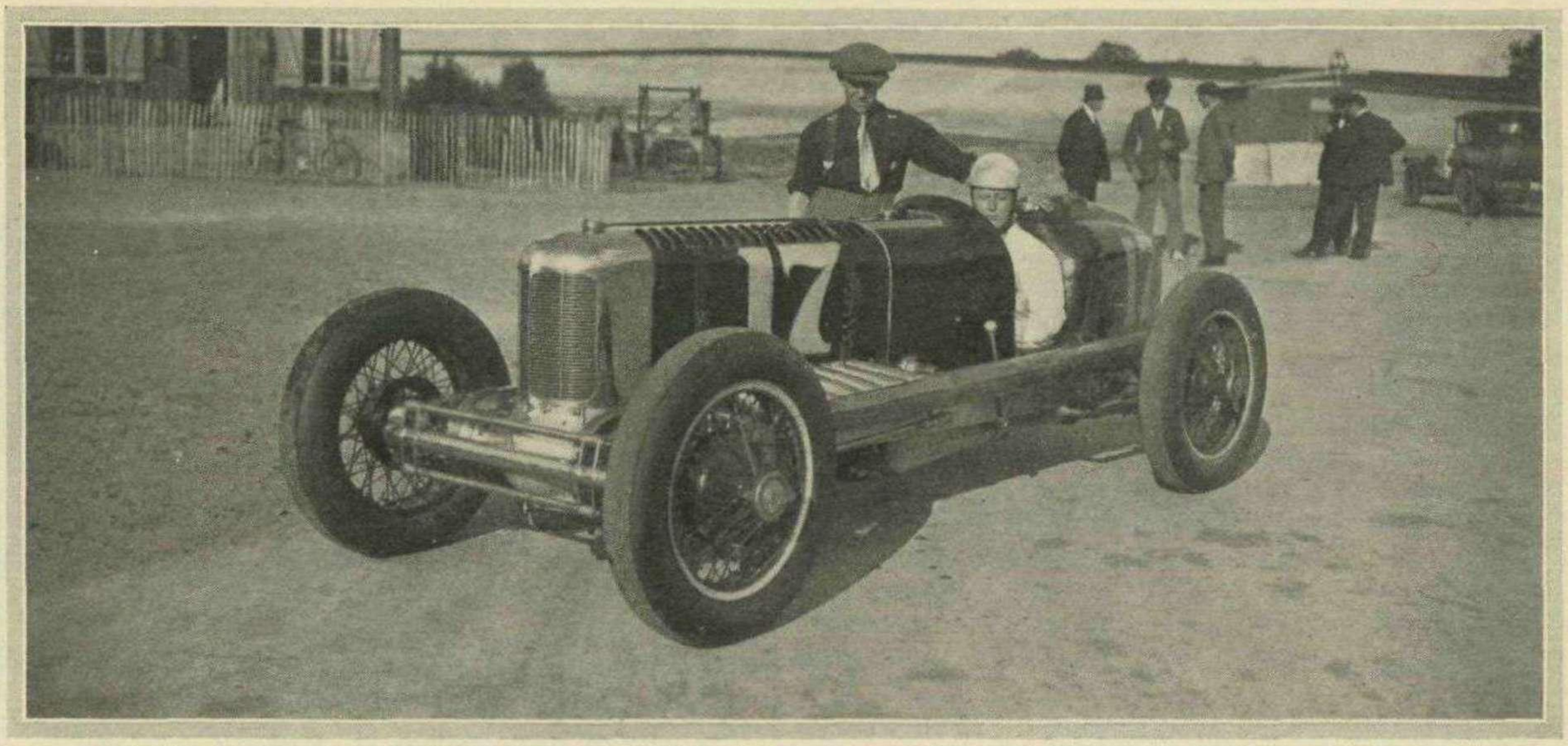
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PRESENT-DAY RACING CARS

III.—THE DERBY-MILLER



A highly successful trio. The Derby-Miller with Mrs. Stewart at the wheel, and Mr. Douglas Hawkes standing alongside.

Principal Characteristics

Engine : Straight-eight supercharged, with interchangeable cylinder blocks (size normally used—59 mm. x 76.5 mm.—1,673 c.c.) ; two valves per cylinder operated by separate overhead camshafts (20 degrees overlap) ; five-bearing crankshaft, tubular steel connecting rods, Martlet aluminium pistons, Bosch magneto, modified Wingfield downdraft carburettor. Blower pressure : 15-25 lbs. per square inch, depending on engine speed and gear ratio ; compression ratio from 6.8 to 1 to 8 to 1, according to duration of trial. Power at 6,500 r.p.m. 200 h.p. approx.

Transmission : F.W.D. through three-speed gearbox straight-toothed crown wheel and pinion, and two universally-jointed half shafts.

Suspension : Front—four quarter elliptics : rear—two semi-elliptics (front and rear axles are tubular).

Brakes : One on each rear wheel, and one with separate drums on each side of front transmission case.

FOR several years now the development of the motor-car in America has been on strictly utilitarian lines, and the United States possesses no firms of sporting repute to compare with Bugatti or Alfa-Romeo. Racing there mainly consists of board track events, and of course, the annual 500 mile race at Indianapolis. Millers, with their front-wheel drive layout, have been conspicuously successful in these events, and in the hands of Mrs. Stewart the Derby-Miller, a modified version of the original car, has performed equally well at Montlhéry.

Mrs. Stewart's car was bought in 1930 by Mr. Hawkes, and already had a good record behind it, having put up a speed of 139 m.p.h. on Altoona Speedway. It was brought to Europe and raced without alteration, but being designed for the smooth board tracks of America, it was found not to be strong enough to withstand the pounding of Montlhéry, and has since been modified until little of the original car remains.

The engine is a straight-eight, originally fitted with cylinders of 56.6 x 76.20 mm., giving a cubic capacity of 1,480 c.c., but now run with various blocks and pistons, the usual size being 59 x 76.5 or 1,673 c.c. The crankshaft runs in five plain bearings, and the tubular steel connecting rods have plain big-ends. The valves are operated by two gear-driven overhead camshafts, which actuate the valves by means of steel pistons. Following the usual practice of American racing cars, the supercharger is of the centrifugal type, and runs at 40,000 r.p.m. Considerable trouble was experienced with the ball bearings, but a comprehensive system of forced lubrication and the fitting of a third bearing has overcome the difficulty.

Other alterations to the original unit include a modified and very much stiffened-up crankcase, re-designed main bearings for the crankshaft, and new type connecting rods and camshafts. The engine runs at 6,500 r.p.m. The plate clutch has not given any trouble, probably because a positive drive comes into operation when it is fully home.

The gearbox, while doubtless satisfactory for the rolling starts in vogue in America, was not strong enough

PRESENT-DAY RACING CARS—continued.

to withstand the strain of standing starts, and had to be re-designed. It still has three speeds.

The front-wheel-drive mechanism, the salient feature of the Miller, has behaved well. A tubular front axle connects the two stub axle pins, and two universal joints between each driving shaft and wheel overcomes the "flick" which occurs on a lock with only one universal. The rear axle is tubular, and a slot in the petrol-tank allows of free movement. Incidentally, the Miller front-wheel-drive mechanism forms an excellent instance of the value of racing in developing new inventions, for it is used almost unchanged in the Cord cars, and largely due to experience gained with this type of transmission, a very simple and effective front wheel drive lay out has been evolved for the new Derby car, which is manufactured by Mr. Hawkes.

The Derby-Miller has had a very successful career in France. Mrs. Stewart has held the following records:

World's record for 10 miles, flying start, at 137.21 m.p.h. (220.810 k.p.h.), and the 100 and 200 kilometres records at 206 and 195 k.p.h. respectively, an amazing performance for a 1½ litre car. She also holds four records in Class E (1,501-2,000 c.c.) the 5 km., 50 miles, 100 miles and the coveted one-hour record. In Class F she holds the 200 kilometres, 100 miles and again the hour. On Montlhéry the car has reached 142 m.p.h.

World's 10 miles (f.s.), 137.21; 100 kms. (s.s.,) 206.1; 200 kms. (s.s.), 194.9. Class E., 1,501-2,000 c.c.; 5 miles; 5 kms.; 10 kms.; 10 miles; 50, 100, 200 kms.; 1 hour. Class F., 1,100-1,500; 200 kms.; 100 miles; 1 hour.

The record in class E for 5 kilometres is the fastest is the world, apart from straight-run two-way records, being at a speed of over 140 m.p.h.

The 10 miles World's Record of 137.21 m.p.h. has recently been beaten by Norman Smith in New Zealand on a car ten times the size, and on a straight run on the open beach.

As has been said, the car has been stiffened up all round, and the weight has actually been put up 3 cwt. by these alterations. It is not yet suitable for Brooklands, but the suspension has been re-designed, and Mr. Hawkes hopes to bring over the Derby-Miller later in the season.

"We did not have much hope last year," he said, "as the car was brought over in bits and put together on the spot."

"Brooklands is very rough, and so far the track record has always been held by a heavy car," he continued, "but I am convinced that the Derby will be successful. With front-wheel-drive at Montlhéry we found that we could drive high or low on the banking as we desired, and it will overcome the difficulty of getting off the Byfleet banking which all high-speed cars experience."

Unfortunately, Mrs. Stewart has had to undergo an operation lately, and will not be fit to drive for a month or more. She hopes to make an attempt on the World's Hour Record, and Mr. Hawkes is convinced that she can get it, even if it is set a little higher than the present figure, by the time Mrs. Stewart is able to drive again.

LOOK FOR THE YELLOW SIGN

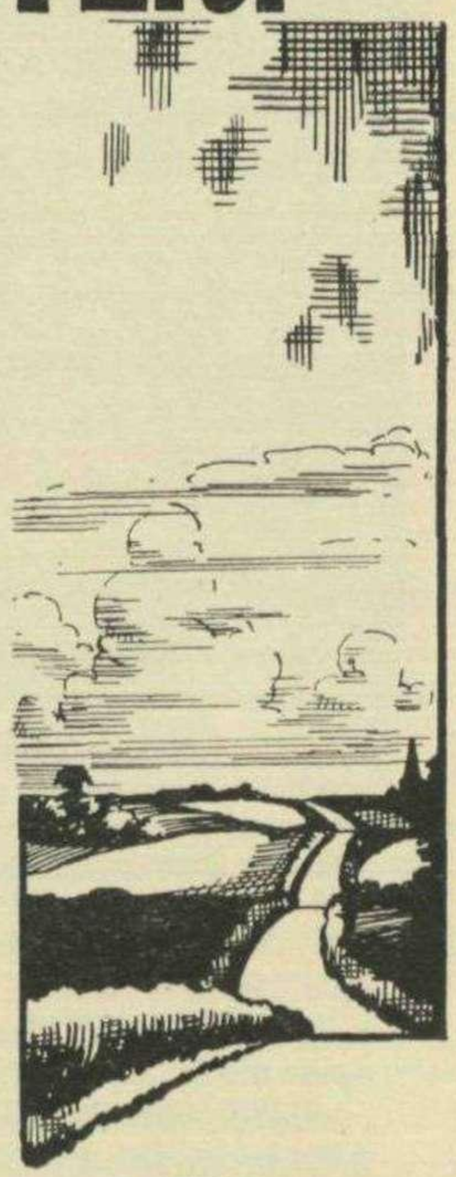
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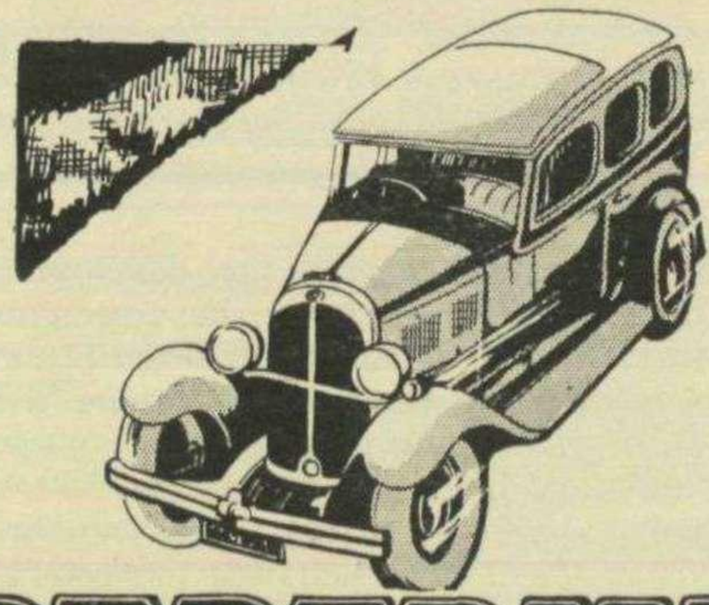
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Overall width : 4ft. 4¼in.
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Petrol tank capacity : 15 galls.
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Price : Supercharged £285.

THERE was a time when the mention of a second-hand sports car, especially one that had been used extensively for competitions, conveyed the impression of a machine which had seen better days, and should only be obtained by someone who was prepared to spend a lot of money on bringing it up to scratch.

Things have changed greatly in the last few years, and the very high standard of maintenance required if a car is to be successful in competitions, has made the last season's racer a car to be sought after. After a big race it is usual to give cars a very extensive, and in some cases almost unnecessary overhaul, not only replacing actual worn or damaged parts, but stripping the whole chassis to examine everything possible before the next event.

This makes our road test of a supercharged Montlhery M.G. Midget, which was taken out as a second-hand car, more comparable with the ordinary tests of a new one, as there was so little "second-hand" about the vehicle in question, apart from the point of actual date.

We took over the car from the really remarkable stock of J. H. Bartlett of Pembridge Villas, Notting Hill Gate, who is already well-known to many of our readers as a successful competition driver as well as a sports car specialist.

Incidentally this is one of the few firms which claim to deal mainly in sports cars where the genuine article is so very much in evidence, and when one talks to Mr. Bartlett or his colleagues and realises their remarkable knowledge of the pros and cons of every model past and present, it is easy to see why an increasing number of motorists go there to choose a car.

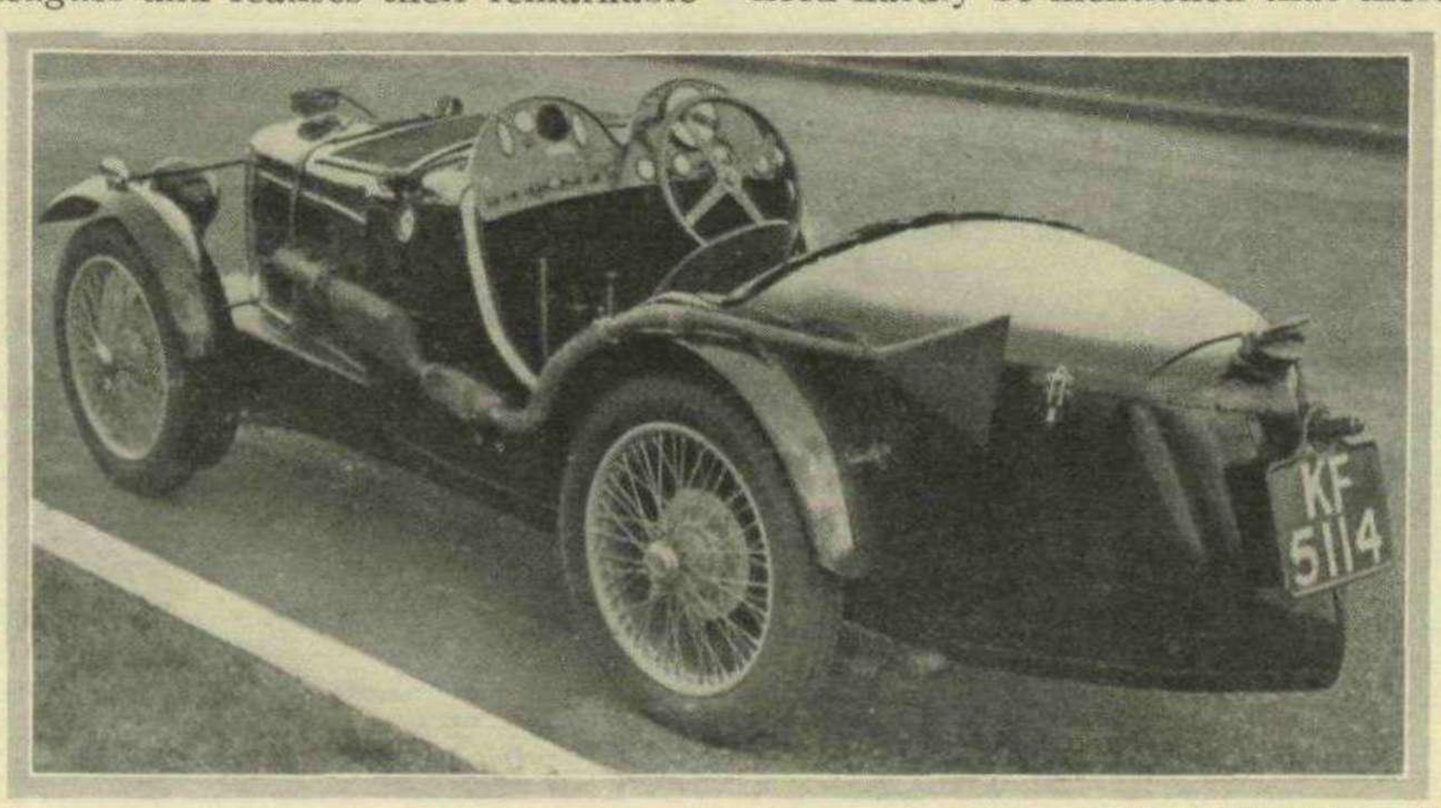
Having decided that the M.G. — one of last year's Dublin and Ulster cars— would give us an entertaining day's motoring we proceeded to warm it up and sallied forth. These cars, being intended specifically for racing, need to be treated accordingly, and though this does not mean that they are unsuitable for ordinary road work, there are certain points to be watched.

For instance, if they are to be given full throttle for more than a few seconds, they obviously require a fairly hot plug, and the Champion R.11's which so admirably fulfil this purpose can hardly be expected to be suitable for warming up and pottering through traffic. Therefore, the best course is to put in a set of fairly mild plugs kept for the job, and when once out of town and thoroughly warmed up, the racing plugs can be substituted, and everything will be O.K. till the next start from stone cold or a long run in traffic.

As soon as we were clear of traffic we began to see why this model was so successful in the 1931 sports car races. It is hard to realise, when using the full acceleration of this wonderful engine, that it is only 750 c.c. It is really happy at revs. which few motors can attain, and the warning mark on the big rev. counter at 5,500 r.p.m. is no mere ornament, as the needle easily slips past it on the indirect gears, if not watched. It would be difficult to find a smoother engine at all r.p.m., and the acceleration is most exhilarating.

At all speeds the road-holding is simply amazing for so light a car, and the steering although rather low geared, centres well and makes for positive control. It need hardly be mentioned that these cars are definitely quick, and this car as taken out returned a maximum speed of 83.5 m.p.h. on the level, or 5,500 r.p.m. in top gear.

In actual road racing trim this can, of course, be exceeded, but we would once more warn readers about comparing an actual speed of 83 m.p.h. with the "80 m.p.h." which a flattering speedometer



[*Motor Sport photograph*]

The subject of our test. The 1931 supercharged Midget.

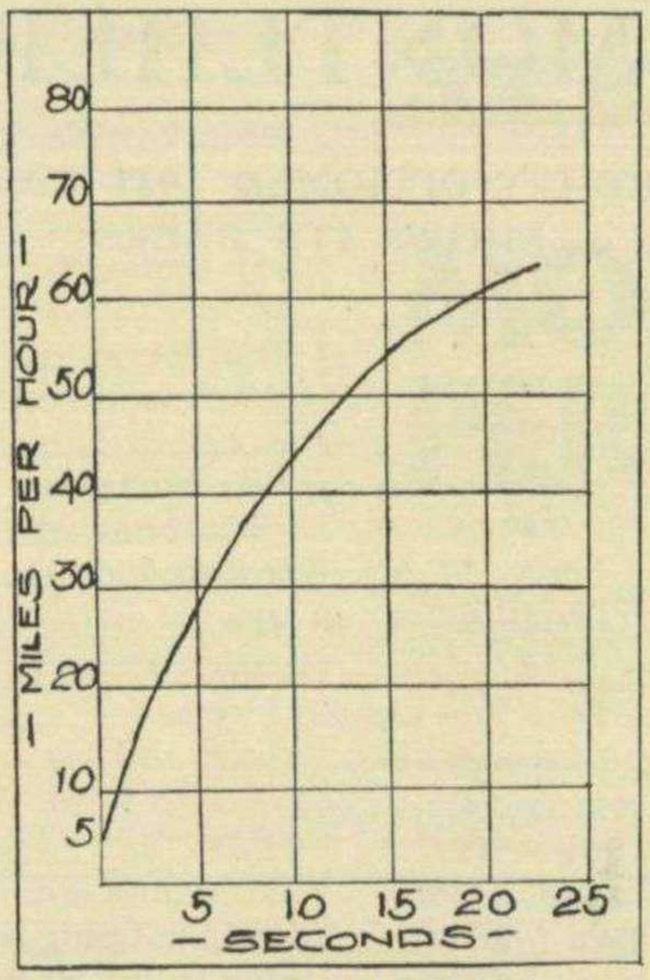
ON THE ROAD WITH A BLOWN MONTLHÉRY MIDGET—continued.

may sometimes tell them they are achieving!

The very high average speeds of which this car is capable is almost entirely due to its acceleration. The brakes are adequate, but require considerable pressure and are not quite up to the very high standard set by the rest of the car. They will bring the car to rest from 40 m.p.h. in 65ft. on dry tarmac.

The 4-speed gearbox is a delight to use, being unusually fool-proof and quite positive in operation, which is a very important point on a car where 5,000 r.p.m. is a normal changing up speed.

The equipment is extremely lavish including 6in. rev. counter by Jaeger, oil gauge, oil thermometer, petrol tank gauge, oil tank gauge, 8-day clock, two electric fuel pumps (one picking up a reserve 2 gallons) and separate switches for the two headlamps.



Acceleration curve of the Montlhery Midget.

The auxiliary oil tank feeds automatically to the sump through a float feed control, thus maintaining a constant level. The Powerplus supercharger is mounted between the front dumb irons and driven at three quarters engine speed, while other items include Rudge-Whitworth racing wire wheels and Dunlop Fort tyres.

The whole car had been overhauled and was in excellent condition and of very smart appearance, and a careful examination of the chassis and bodywork details showed that the entire renovation had been well and conscientiously carried out.

The price asked for this particular job was £285.

"MOTOR RACING."

MOTOR-RACING, like most other forms of activity, can be divided into a series of epochs. The early days have been worthily described in Charles Jarrott's "10 Years of Motor Racing," though the period from then to 1914 still lacks a chronicler. Mr. S. Davis has been fortunate enough to take part in nearly all the English races from 1921 to 1930, and also drove at Le Mans from 1925 onwards.

In "Motor Racing" he has set down a straightforward and very readable account of the sports car era as he saw it, and apart from the humorous incidents which make the game worth while, we learn in some cases for the first time, the true story of the failures and adventures which occurred in these events.

Though the accounts of the actual races are justifications in themselves for reading the book, the insight into the methods of pit management and team control is almost equally important to anyone actively engaged in racing. The author was associated closely with the Bentley team, which under the management of W. O. Bentley and Kensington-Moir, attained the high-water-mark of organisation. Anyone reading the description of their pits at Le Mans, and the alterations and improvements affected on various other cars in preparation for races, cannot fail to pick up a good number of useful tips, and if everyone follows this up in the course of the present season, we should see a wonderful improvement in the standard of pit-work of the private entrant.

The book is personal without self-emphasis, and its steady march forward from the early days at the Daimler works to the proud moment of the first road-race is a great encouragement to those seeking recognition in the world of motor-racing.

Favoured by nothing except a tremendous enthusiasm, Mr. Davis won his way to his great ambition, which just shows the value of doing with all one's heart that which one sets out to do.

FORTHCOMING EVENTS

INTERNATIONAL FIXTURES—1932

MAY.

1st. *Hungary—Grand Prix de Hongrie.*
1st-3rd. *Czecho-Slovakia—Carlsbad Rally.*
8th. *Hungary—Record Meeting.*
8th. *Italy—Targa Florio.*
15th. *Italy—Coupe Messina.*
15th. *Spain—Course de cote de la Rabassada.*
16th. *Great Britain—B.A.R.C. Race Meeting (Brooklands).*
22nd. *France—Grand Prix Automobile de Casablanca.*
22nd. *Germany—Avusrennen fur Kraftwagen.*
29th. *Italy—Circuit de Mugello.*
30th. *United States—Indianapolis 500 Miles Race.*

JUNE.

1-8th. *Roumania—Concours International de Tourisme.*
3rd-4th. *Great Britain—Junior Car Club's 1,000 Miles Race.*

JUNE.

5th. *Italy—Gran Premio of Italy.*
12th. *Germany—Internationales Kesselbergrennen.*
12th. *Poland—Grand Prix de Lwow.*
18th-19th. *France—Le Mans 24-hour Race.*
19th-26th. *Poland—Concours International de Tourisme.*
19th. *Italy—Course de Pontedecimo-Giovi.*
26th. *Italy—Coupe Sila.*
29th-3rd July. *Germany—Internationales Baden-Badener Automobilturnier.*

JULY.

3rd. *France—Grand Prix de L'A.C.F.*
9th-10th. *Belgium—Grand Prix de Belgique.*
10th. *France—Course de Vieil Armand.*
17th. *Germany—Grosser Preis of Germany.*

MOTORING SPORTSMEN

(NEW SERIES).



IV.—SIR HENRY BIRKIN.

IT is sometimes said that the temperament of the average Englishman is too phlegmatic to allow of his performing in a motor race with that verve and dash which is common among the leading drivers on the Continent.

Whether this is so or not is very much open to question, but if there is more than a shred of truth in it, one can cite at least one notable exception in Sir Henry Birkin whose spectacular and vigorous handling of high-speed automobiles invariably make any event in which he takes part something which is well worth watching, and indeed, in the absence of "stars" from France and Italy, he can be relied upon to give onlookers all they require in the demonstration of superb and masterly driving.

In some respects Birkin is a little unique as a motorist: for instance, although he comes second to none as a most consistent British entrant in every event of note both at home and across the Channel, his mileage as an ordinary road user amounts to not more than 600 per annum. This is because the "open road" holds little charm for him, and he does, in fact, confess to a certain dislike of traversing highways which, in his opinion, are now so overcrowded with incompetents as to be really unsafe!

Naturally, he graduated to the track and the race circuit via the usual channels by owning and using ordinary common-or-garden vehicles. But that was long ago. One vaguely remembers that, just before the outbreak of the War, he drove sundry Morgans in hill-climbs and trials, though, as he says, without any particular success.

The commencement of the "great unpleasantness," as with the majority of Birkin's generation, compelled the abandonment of these peaceful pursuits, and he joined up, to serve in the infantry—in the Notts and Derby Regiment — subsequently transferring to the Royal Flying Corps, where he rose to the rank of captain.

In this way, Sir Henry's War-time career was similar to those of many other racing drivers, and one is led to the belief that flying during the 1914-1918 period must have induced an urge for high-speed travel on the ground. At any rate, a little time after his demobilisation, he started to race in earnest at Brooklands, and during the seasons of 1920, 1921, and 1922, he regularly appeared at the track with D.F.P.'s—a make which in years gone by, met with no small measure of success in racing, but which is now no more. Then came a break, and Birkin gave up racing for five years, to return in 1927 at the wheel of a 3-litre Bentley. He drove this car, it may be remembered, in the Essex Six Hours Race, and gained third place in spite of the fact that he had experienced gearbox trouble. His performance in this race may be said to mark the entry of Sir Henry into the ranks of first-class race drivers, for from that time up to the present day he has piled success upon success, and in achieving them, he has shown himself to be a man who is equally at home both on road and track.

The expression "a born driver" is very often loosely applied. A man may be supremely confident and skilful in controlling a racing machine, but it does not necessarily follow that he has an entirely natural aptitude in that direction. Deprive him of the opportunity of gaining experience over a long period, and of constant practice, and it may well be that his ability will not be above the average. With Sir Henry Birkin, however, one would not be exaggerating in calling him a born driver, for his intense precision, his skill, his *finesse*, while obviously having the backing of lengthy experience, does not appear to vary with the amount of time he puts in at the wheel. Years ago, before he had attained the position he now holds in the racing world, he revealed a definite flair for the game, and with no intensive training and practising he drives always in a manner which might lead one to imagine that racing was his sole pursuit. But such is not the case, and as a general rule he occupies the driving seat only when he is competing in some event, utilising the rest of his spare time in shooting—a sport of which he is very fond, though it seems far removed from that in which he has made his name.

Of his many triumphs one has only space to recount the most outstanding. And by "triumphs" one does not necessarily mean the gaining of premier awards. There was that affair at Le Mans in 1928, for example. During that strenuous event a tyre burst, when Birkin's Bentley was travelling at a terrific speed, and the mangled cover was so entangled in the wheel that he had to cut it away. He then proceeded on the rim. This harsh treatment culminated in the collapse of the wheel before the stands were reached, and the delay in getting jacks and fitting a new wheel cost Birkin three precious hours. Nevertheless, he did not retire, and by dint of a marvellous piece of driving he brought the Bentley into fifth place, set up a record lap at 79 m.p.h., and finished just within the time limit for the Rudge-Whitworth Cup.

In the same year, at Ulster, he gave another brilliant display, and led for the first few laps. He met with some ill luck, however, when an oil pipe broke, and he was held up for some considerable time. But

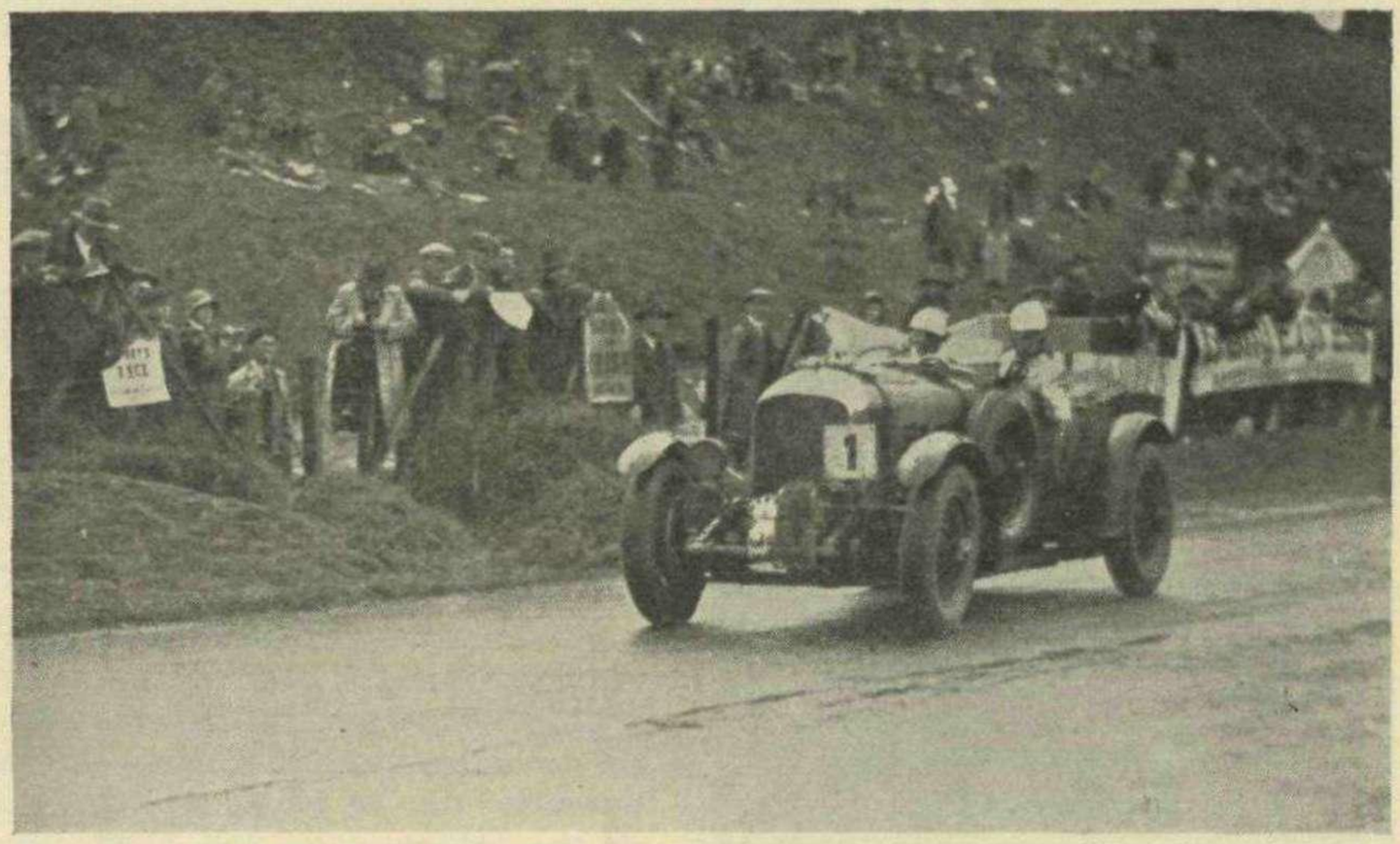
MOTORING SPORTSMEN—continued.

having carried out repairs, he set out on a dogged battle to gain a place, and though he was not in the first three, he succeeded in finishing well up the list—and in doing so made a record lap at 65.67 m.p.h.

In considering his outstanding achievements in past seasons, one readily recalls his winning the 1929 Le Mans 24-hour race with a six-cylinder Bentley, when in company with Barnato he thundered home at 73.6 m.p.h. And, again on the same circuit in the following year, when he put up a lap at 89.69 m.p.h., with a smooth tyre, and gave Caracciola a great run for his money—to the intense delight of the dense crowd which thronged the course. A "side-show" which attracted less attention than it deserved, was the gaining of second place by Sir Henry Birkin in the French Grand Prix during the same season. On this occasion he used a four-seater supercharged Bentley which was simply stripped of wings and accessories. His speed for the entire race was 88.5 m.p.h., and he finished only three minutes behind Etancelin, who was on a 2-litre supercharged Bugatti.

During last year his greatest triumph was, perhaps, at Le Mans. On this occasion he was driving, in company with that other great sportsman, Lord Howe; the car was a 2,300 c.c. Alfa Romeo, and by a brilliant piece of driving, they worked their way through the entire field—and won at 78.7 m.p.h.

Though much of Birkin's racing has been done on the road, he is, as has been said, equally at home at Brooklands. Like Kaye Don, he may be described as a "lap record specialist"; previous to the latter annexing it, with the "Tiger" in 1930, Sir Henry held it with a 4½-litre Bentley, and now it has fallen to him again, for only quite recently he beat Don's figure by one-fifth of a second, and the speed now stands at 137.96 m.p.h.



[*Motor Sport photograph*]

Sir Henry Birkin in the 1930 T.T. Race.

Up to the present, Birkin has used Bentleys, Alfa-Romeos and Maseratis for his racing, but for this season, like Don and Earl Howe, he has added a 4,840 c.c. Bugatti to his stud. He will use this machine in the French, German and Belgian Grands Prix, and also in the Avus race, which is scheduled to take place on the 22nd of this month. Sir Henry, in an interview, told us that he is looking forward greatly to the latter event; the route lies over two stretches of arterial road which are connected by two acute bends—"the whole providing the very best chances of blowing up one's motor car," as Sir Henry remarked.

After outlining his racing programme (which will keep him very much engaged, from what he told us), we touched upon the sore and delicate subject of "British cars suitable for racing." "English drivers are certainly handicapped by the lack of cars of the right type," he said, and he contrasted the Le Mans races of 1929 and 1931. In the former his mount was a 6½-litre and weighed 2½ tons. By driving it as hard as he knew he was able to average about 72 m.p.h., while in 1931 with 2½-litres he got home quite comfortably at 78 m.p.h. "Obviously," he said, "I am not prejudiced against British cars, and if I can get one which will suit my requirements I shall use it at Ulster, but it is clear that, up to the present, our own manufacturers have not turned out anything which can compete with the Continental stuff on equal terms." But like a great many of us, he is watching the progress of the new Rileys, and awaiting the arrival of the Bentley-Rolls with hopeful anticipation.

Meanwhile, with some of the finest cars in the world at his disposal and a whole-hearted interest in the sport, Sir Henry Birkin has an excellent chance of enhancing his reputation still further before many months have passed.

A NEW FIRE PREVENTER

THE risk of fire is ever present on any petrol driven machinery, and in a sports car or fast motor boat (quite apart from aircraft) its effects are especially disconcerting. Nearly all fires start at the carburettor, and the first thing to do is to cut off the petrol supply to avoid feeding the conflagration. The latest anti-fire device which we have come across is an ingenious yet simple device for doing this automatically, and without the delay inevitable when it has to be done by hand.

It consists in effect, of a tap fitted in the pipe line near the carburettor, in which the closing of the pipe is done by a valve which is released by the heat of the flame, The flame of a candle is quite sufficient so that the supply is cut off immediately. It is an extremely simple matter to replace the used valve after a fire, thus rendering it clean and inexpensive, as well as a very useful safeguard to prevent spreading of the flames. It is marketed by Messrs. Brent & Co., Finsbury Pavement House, Moorgate, E.C.2. The price, with spare refills is 13s. 6d., and further refills are supplied free if a fire has occurred.

TWO DAYS WITH AN S.S.11

A SMART COUPÉ WITH GOOD PERFORMANCE.

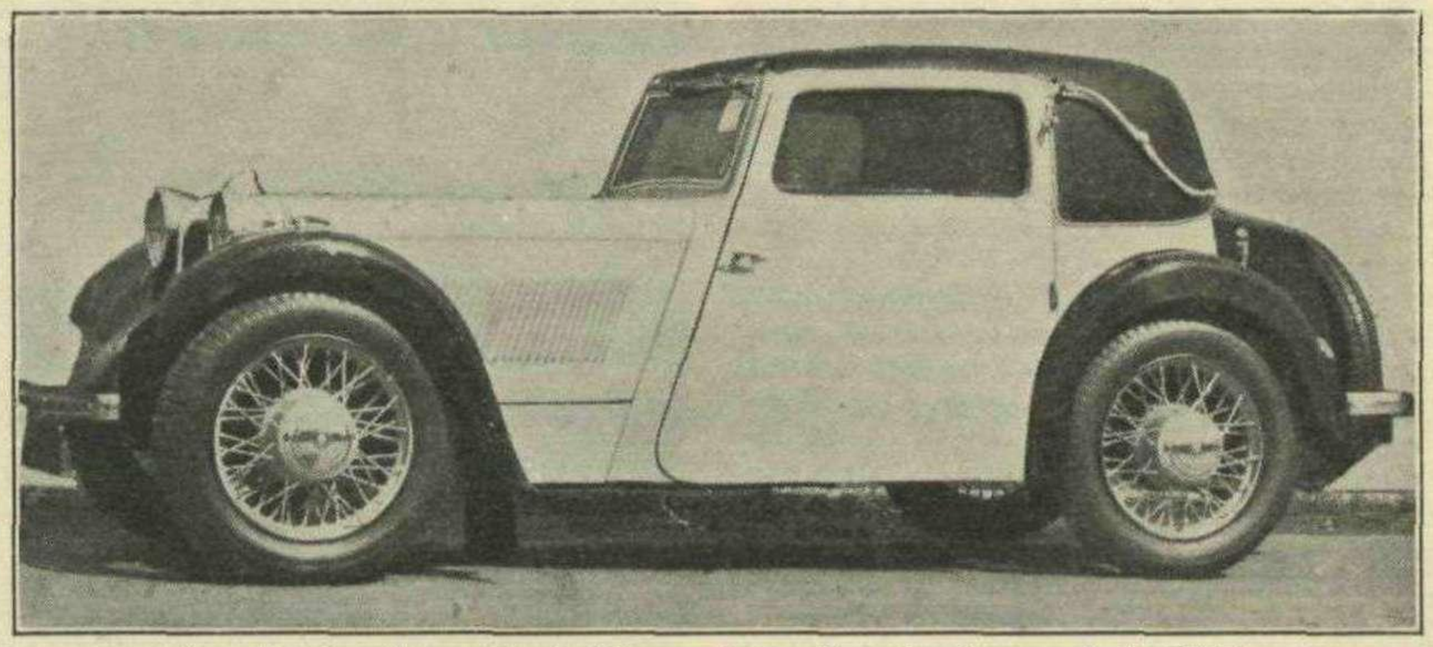
ON visiting the Motor Show at Olympia each year one usually goes fully prepared for one or two "eye openers" about which there has been much talk in the advertisement columns of the motoring press for several weeks before the opening date, and at the 1931 show, the S.S. models were undoubtedly one of the sensations.

Recently we had an opportunity of trying for ourselves one of the smaller editions of this Swallow range, namely, the S.S.11. As our readers are no doubt aware, the power unit of this model is the Standard "Little Nine," mounted in a specially lowered chassis.

The engine is a four-cylinder of 60.25 mm. bore, and 88 mm. stroke, giving a cubic capacity of 1,005 c.c., the tax on which is £9. The crankshaft is exceptionally stiff, and is supported by two main bearings, which are lubricated under pressure by a gear type pump. The valves are side by side, and this fact no no doubt accounts for the extraordinary lack of mechanical noise from the engine throughout its entire range. Ignition is by coil and battery with an automatic control of advance and retard of the spark.

The power is transmitted by means of a single dry plate clutch to a three speed gear box, fitted with a "silent second." The gear ratios are 5.22, 9.61, 19.05 on top, second and low respectively. The propellor shaft is tubular, with two all-metal universal joins. The front axle is considerably dropped to allow for the low build of the car, and is of H-section beam. The steering is by worm and nut, and provides a turning circle of 34 feet. This, combined with the fact that it is high geared, would make the S.S.11 ideal for negotiating acute hairpin bends in trials. The springs are half elliptic all round, and they are fitted with Hartford shock absorbers.

A commendable feature is the 5 gallon rear petrol tank, from which the petrol is supplied to the single Solex carburettor by means of an Autovac. Dunlop Magna wheels complete the specification. An interesting point for sporting owners is that the engine is specially tuned by the Standard Motor Company before being supplied to the Swallow people.



A combination of exceptional riding comfort and sporting lines mark the S.S.11.

The body, as will be seen from the accompanying illustrations, is an exceedingly well proportioned close-coupled coupé. Naturally, on such a small chassis, the rear seats are somewhat small, and are really only intended for juvenile passengers, or for the occasional use of an adult. This fact, however, is more than fully compensated by the exceptional comfort of the front seats, which provide ample room for three passengers. There is plenty of leg-room for the tallest driver.

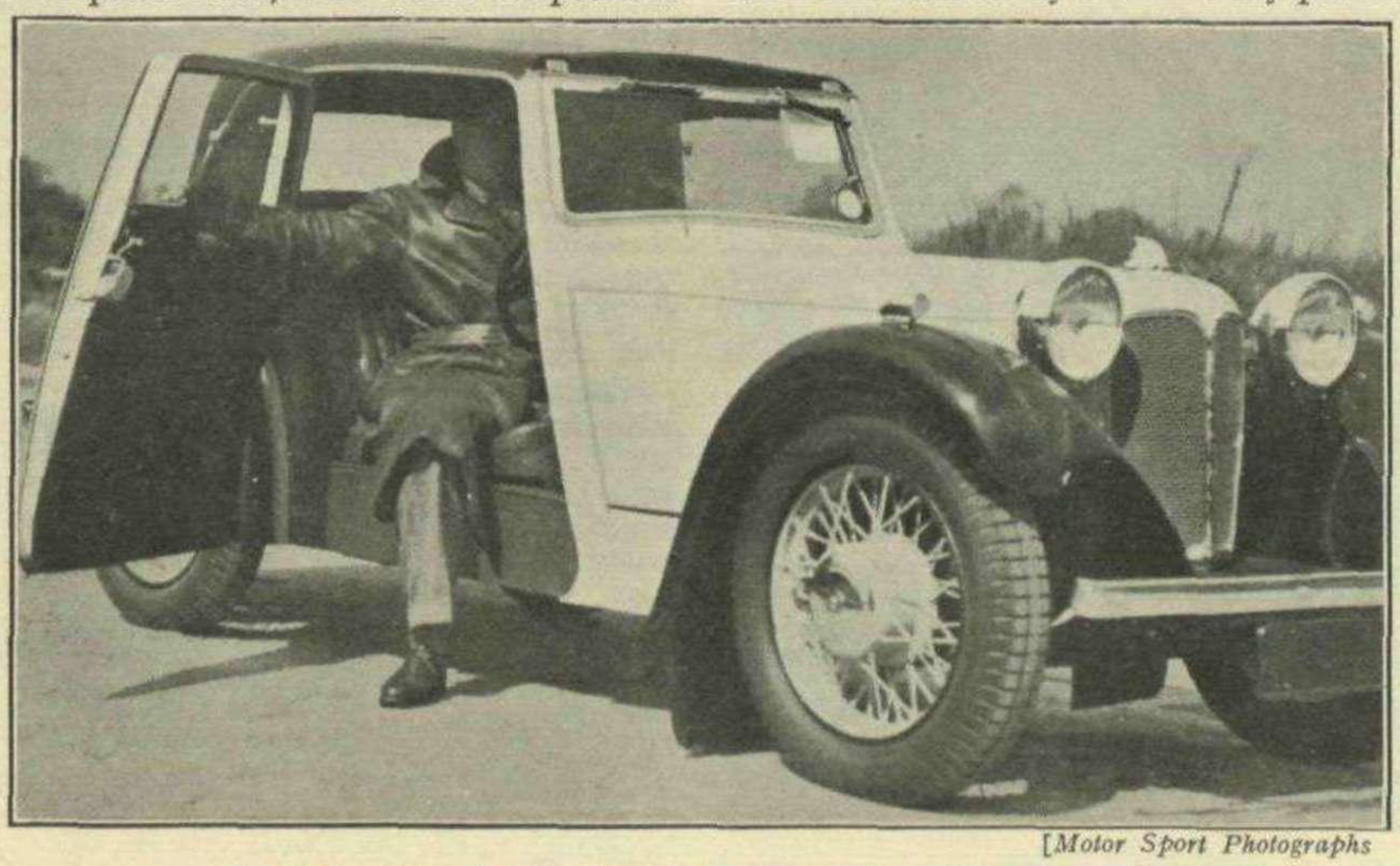
The tools are conveniently housed under the bonnet, while there is a spacious luggage locker fitted with chromium plated hinged security catches and key-lock, at the rear of the car. Thanks to the generous width of the doors, ingress to the front seats is a simple matter, a process which is further assisted by the centrally placed controls. Added refinements include a very neat and easily operated sliding roof of new design, which is flush fitting when closed, Lucas tandem screen wipers, spring-spoke steering wheel, and dipping ray head lights.

On taking the car over at Henly House, the head office of Messrs. Henlys Ltd., who are the London agents for all Swallow products, we were first impressed by the extraordinary compactness of the car as a whole. Threading our way through the heavy Saturday morning traffic of the West End, we quickly discovered the first of the many roles this car can fill, that is to say, the S.S.11 is an ideal car for anyone who drives to town every day from the outskirts of London and has to travel about in thick traffic during the course of his job of work. Quick acceleration, light but high geared steering, exceptional brakes combined with good visibility and a thoroughly comfortable body in any weather, give the S.S.11 full marks for traffic work.

Our destination was Whitstable, and after clearing the suburbs, the second aspect of this remarkable little car was revealed. On an arterial road the cruising speed is a comfortable 50 m.p.h., a tribute to the design of the Standard engine which was perfectly smooth throughout its range. Incidentally the maximum speed reached was 60 m.p.h.

The road-holding and steering were all that could be desired and corners could be negotiated at respectably high speed with a real feeling of security. Indeed one soon forgets that the wheel-base is only 7 feet 6 inches, such is the general comfort and "big" feeling of the car. Main-road hills were taken in our stride, and on the second day of our test, we found the SS.11 to be a wonderful performer on rough hills in Surrey such as White Hill (Caterham), Bagden, and White Downs.

Summing up, the S.S.11 is excellent value at £210, giving its owner a brisk performance in addition to the satisfaction of possessing a car which attracts attention wherever he goes. Both the Standard Motor Company and the Swallow Coachbuilding Company are to be congratulated upon such a happy combination.



[*Motor Sport Photographs*

By the provision of wide doors, the driving seat is made very accessible.

YOUR TYRES

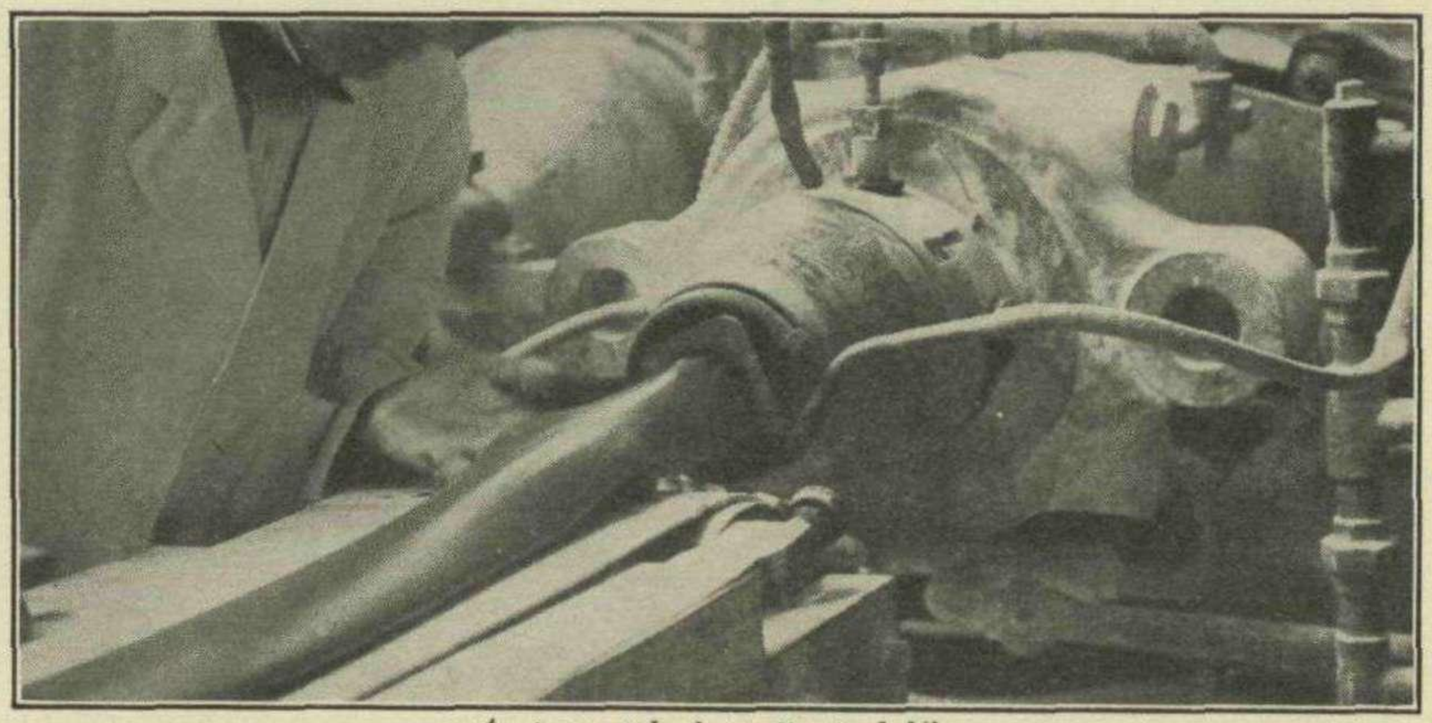
THE PROCESS OF THEIR MANUFACTURE AT THE DUNLOP FACTORY.

THE modern automobile with all its multitudinous accessories and components has now reached so high a state of dependability that the average motorist tends to take everything very much for granted, accepts things without question, and seldom pauses to think how and why such reliability is obtained.

Tyres, for example. Of the thousands of car owners whose motoring is carried out from one year's end to another with complete immunity from trouble, few, very few know of the precise, intricate processes which are embraced in the manufacture of tyres and tubes, and a visit to the Birmingham works of the Dunlop Rubber Co., would, without doubt bring a bewildering revelation. Within this vast, very modern single-storey factory, a huge personnel work in the production of tyres for every purpose. All is high systematized and highly scientific.

Piloted by a guide the visitor first enters the raw rubber store where the material is kept in the form of "smoked sheet."

Raw compressed rubber is almost as hard as wood, and to make it workable it needs to be softened. This is accomplished by passing it between rollers running at different speeds which tear it apart, and masticate it ready for the next process. It is then ready for cleaning, which is effected by forcing it through a fine metal mesh of 2,500 holes to the square inch. A great deal of heat is generated, and the machine has to be cooled by water. The rubber when it emerges looks like brown cords slightly warm, sticky and easily pulled apart. In order to get the tough elastic substance required for inner tubes, raw rubber has to be mixed with sulphur and various other substances; colouring matter, heat resisting material and the like are also put in. The raw rubber and the various powders are passed between enormous steel water-cooled rollers and gradually amalgamated. When the process is complete, the rubber is cooled, and sent to the tube-making department.



An inner tube being "extruded."

After its journey, the tube stock is softened once more by passing it through rollers. Then follows one of the most important factors in making a good tube, the repeated passing of the rubber between close-set rollers to crush out any lumps of powder which may have been left. An inflated tube is subjected to great stresses, and if a fragment of hard material is left in it, a weak spot will occur, with a consequent failure at an early stage. The "straining" of the raw rubber and the repeated passage of the mixed compound effectively removes foreign bodies.

The pinkish, mixed rubber is then conveyed to the extruder. This device has been likened to a sausage machine, and by means of a screw forces the rubber through dies in the form of a tube, *the* tube in fact! The extruder is water-cooled like the raw rubber straining machine, and by means of a chalk "carburettor," chalk is blown into the interior of the tube, which prevents it sticking together.

The extruded tube then passes along a belt conveyor to a series of water jets, which cool it after its passage through the die, air jets dry it, printers mark the place for the valve patch, and a cutting machine chops it off to length, all without being touched by hand. The lengths are then taken off the conveyor to be weighed, but the control is so accurate that few pieces come outside the narrow limits set down.

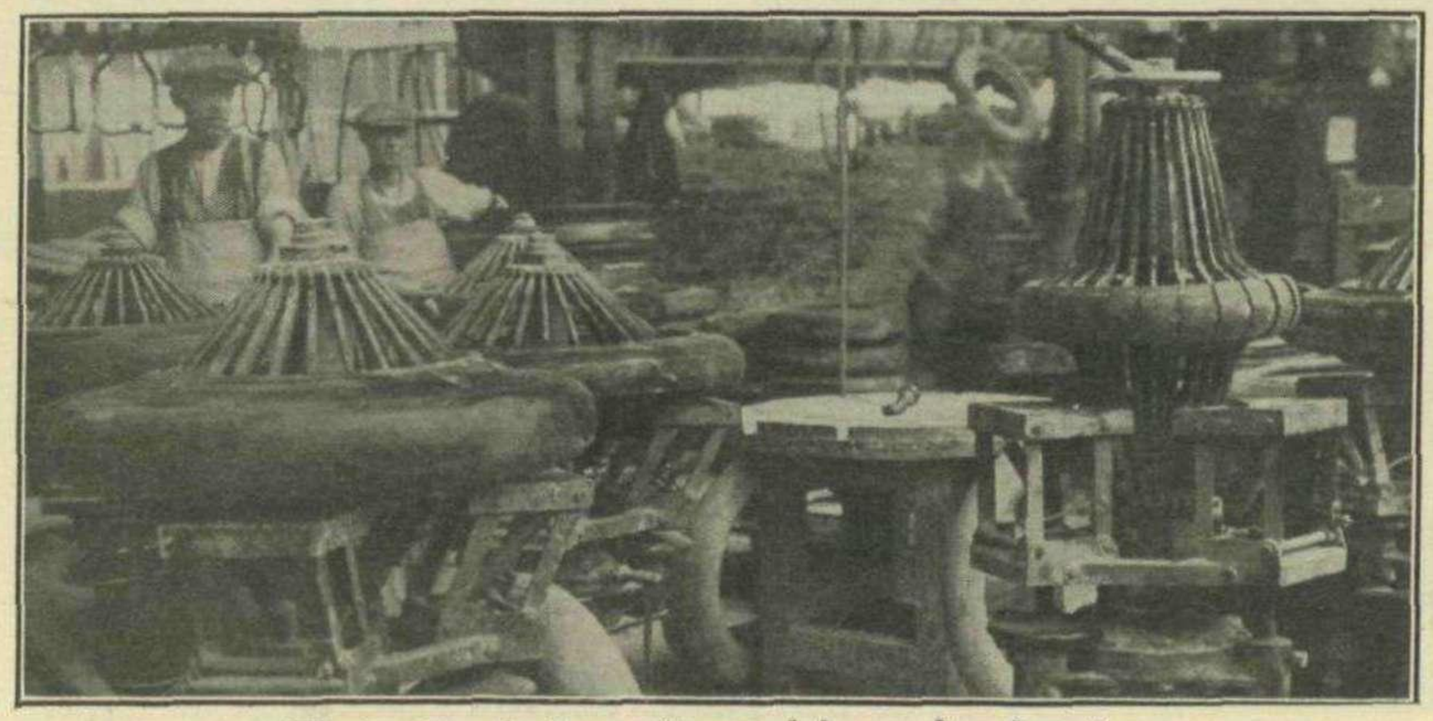
The next stage is to convert the tough length of tubing into the elastic substance which we know as rubber. This is done by vulcanising. In order to make the finished tube fit into the cover without creasing, it is forced over a curved duralumin mandrel of circular section and clamped into place with a special clip which at the same time bevels the end of the tube ready for the joint. The slipping over of the tube requires considerable skill and strength, for the unvulcanised rubber has very little stretch, but by applying a blast of compressed air between tube and mandrel the expert operator slides it on like a glove. The loaded mandrels are next hung in long boiler-like tanks, and subjected to heat for about 30 minutes. When the tubes come out they have become the springy substance with which we are all familiar, and after removal, the lengths are hung on conveyor hooks, and carried round to the next stage of manufacture.

First the valve hole is drilled, the ends of the tube solutioned and the valve thrown into the interior and the ends put together, all without removing the tube from its conveyor. It is then whipped off, and put on a joint-vulcanising machine.

The tube afterwards goes on its travels once more, and comes to a girl who finds the valve, pushes it through the hole, and with the aid of a power spanner, quickly screws on the outer parts. Ultimately the tube is tested in a water tank.

The tubes are then deflated (the last trace of air being removed by a vacuum pump), examined, numbered and finally packed.

The outer cover consists roughly of two parts— the tread and the carcass. The manufacture of the former resembles the beginning of the inner tube process.



The ingenious shaping machines used for rounding the casings.

YOUR TYRES—continued.

Blocks of "smoked sheet" provide the raw material, but for tread purposes it is much more heavily "compounded" in order to provide the necessary physical qualities. There are the vulcanising agents, the accelerators of vulcanisation, the reinforcing and toughening agents, the dispersing agents, the antioxidants, and so forth. And it is in the technologists skill in this compounding that much of the success of the tyre is obtained. The mixture is weighed out on platform scales fitted with magnifiers, so that quantities are closely checked; the tread stock is then carted away to be mixed, an operation performed either by the ordinary rollers, as in the case of tube rubber, or in the Banbury mixer. This latter device is able to deal with 800 lbs. of tread mixture at a time, and consists of rotors revolving in a steel casing. The sulphur has to be added afterwards, owing to the great heat generated, and the mixture when it comes out of the machine looks like some sort of black road mending material. This lumpy condition is soon overcome by passing it through rollers, where the sulphur is put in, and it emerges as smooth black sheets. These sheets are passed through further rollers called profile calenders, shaped so as to form the tread with side walls attached. The tread strips are quite smooth, the pattern being imprinted at a later stage of manufacture when the tyre is in the mould for the purpose of vulcanisation.

Making the Cord.

The cord for Dunlop tyres is made in their mills at Rochdale. It comes down in hanks and is wound into cone-shaped balls and taken to the impregnating machine. The cones, 1,700 in all, are arranged in racks, and the threads are brought parallel to one another and fed in between two rollers. Raw mixed rubber is fed from the top and below, and the cords form a web about 5½ feet wide, coated and held together with rubber. The web is wound off between rolls of cloth to prevent sticking and the complete roll is taken off and brought to the cutting machine. The "Spadone" cutter stands about 12 feet high, and when set, feeds a pre-determined length of the cord web over a roller at the top. Across the web, as it hangs down, runs a slotted steel guide which can be set at any required angle, a steel knife works in the guide across the web, and severs the sheet. Each strip cut off is called a ply, and two plies assembled together with cord threads running in opposite directions is formed into a "pocket."

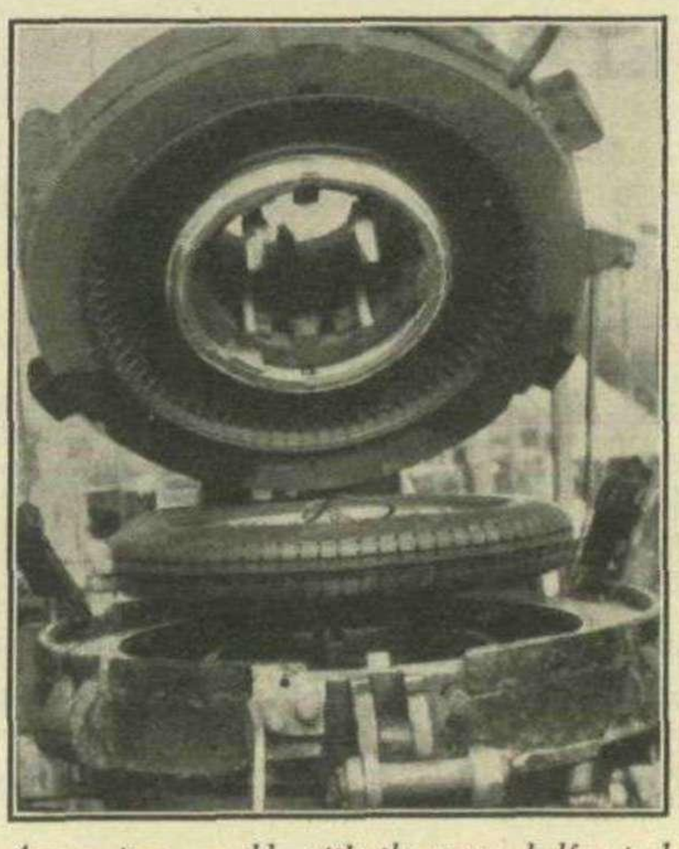
Most passenger-car tyres are made on cylindrical wooden formers. A pocket is put on, its ends overlapped and wiped with solvent and stuck together. The cords run diagonally across the ply, and two are so arranged that the bias runs in the opposite direction. Two or three pockets are put on according to the type of tyre. Filler strips which protect the bead are then fixed about quarter way from each rim, and over them go the bead wires. Two more plies come on the top of this, then the parts of the lower plies projecting beyond the beads are folded over, locking the wires immovably. Rubber cushion strips go round between the beads, and on top of the casing in certain sizes of tyre are put fabric breaker strips. These strips distribute road shocks transmitted through the tread, and form a second line of defence to objects which have penetrated it. The outer breaker is usually what one sees when a tyre is "worn down to the canvas." A strip of the tread and sidewall material is now taken, and wrapped round and stuck down by naptha; the construction of the tyre is now nearly complete.

The built-up tyre comes off in the shape of a flat band, and the rounded cross-section is given by stretching on an air-shaper, which in appearance resembles two umbrellas with aluminium spokes arranged points outwards. On the ends of the spokes are fixed aluminium sectors, and the tyre is put over these. Pressure on a pedal makes the tops of the "umbrellas" come together, forcing out the sectors and stretching the tyre into the finished shape.

The finished tyre gets its shape from being expanded against the side of a mould, and in order to do this an air-bag is put inside.

The moulds consist of enormous pairs of discs of steel, five or six feet across with half the pattern of the tread cut into each. The tyre is dropped into one half mould, while its fellow half descends on an overhead track and is dropped into place over the other. The assembly is then given a push along a roller conveyor into a pit, where the "curing" takes place. The pit or autoclave, to give it its correct name, contains a hydraulic ram. This is at the top when the first mould goes in and is lowered for each following one. As it goes in, each air-bag has to be connected to an air-supply to keep it blown out when curing is taking place.

When the pit is full the lid is lowered, air is turned on, the ram raised and steam is admitted. The vulcanising takes about two hours, and when the tyre comes out of the mould, it is almost finished. The tread pattern, size, and other marking has been embossed, the joint where the tread was joined has disappeared, and the rubber and the layers of cord all united together in the form in which they appear when one buys the finished product. Giant fingers expand the cover and allow the air bag to be withdrawn, a man trims off the mould "spue" and the tyre is then cleaned and packed.



A tyre in a mould, with the upper half raised.

Testing Methods.

The days of trial and error in tyre-building are past, and the laboratories at Fort Dunlop form one of the most important departments. Every batch of rubber and mixture is tested at frequent intervals for quality and uniformity.

Laboratory tests cannot altogether replace actual trial on the road, so a fleet of vehicles ranging from the heavy commercial type to pedal-cycles is in constant use. Most of the running is done on ordinary main roads, moving the tyres from wheel to wheel every 500 miles, but the testers also use certain very rough sections of road to imitate overseas conditions.

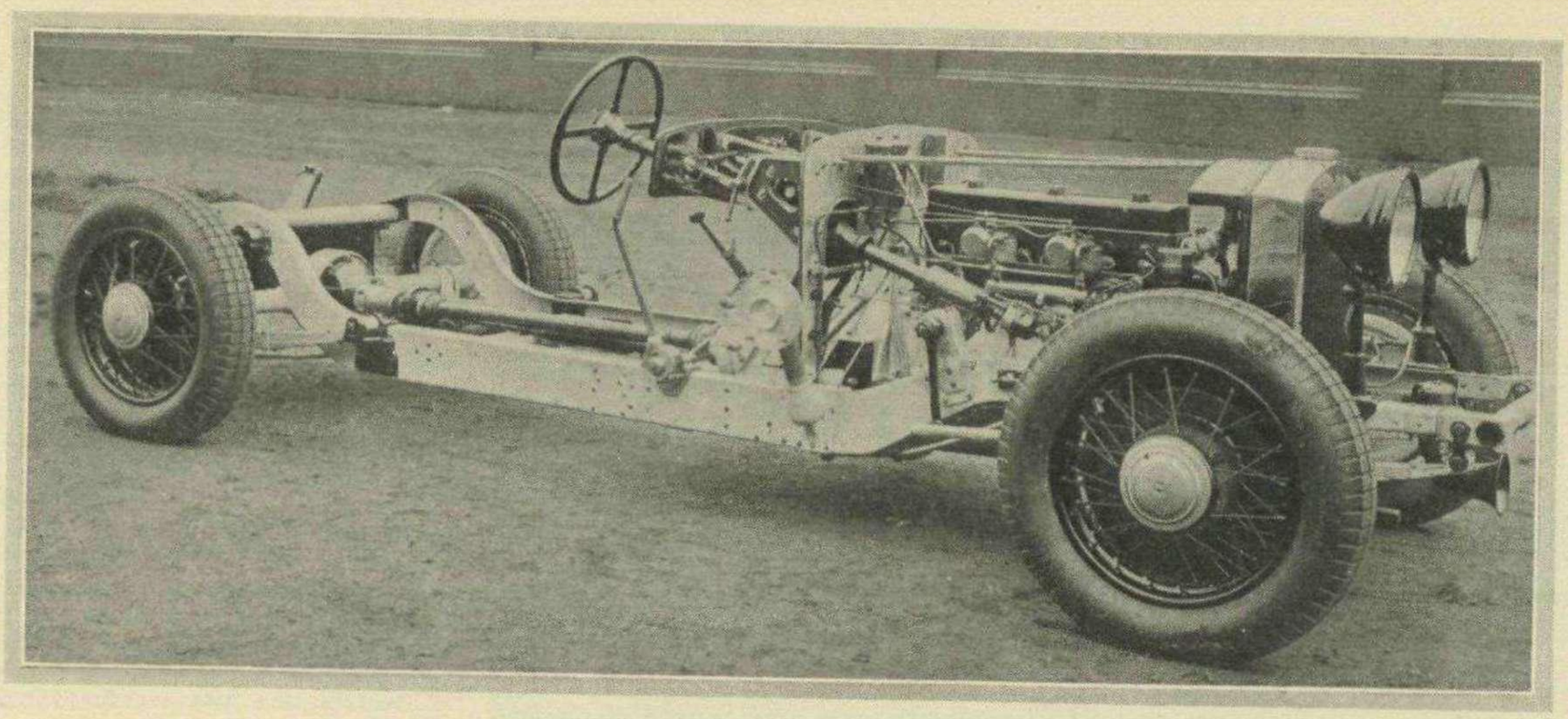
For intensive testing on the premises an interesting batch of machines is installed. One type consists of a circular concrete pit in which a beam pivoted in the centre carries an axle with wheel and tyre. An electric motor drives the axle, which is fixed to the beam by car-type springs and shock-absorbers. One of the pits has a normal surface, while the other has patches of tarmac, loose stones, or any other material on which the designers may wish to test the tyre.

The apparatus most interesting to readers of MOTOR SPORT is the high-speed tester. In lay-out it follows the lines of the testers just mentioned and has the same pivoted beam. The tyre however, is forced into contact with a drum. Treads are liable to fly off at high speeds, so the wheel is surrounded with a steel shield, and the apparatus is operated by means of remote controls from a room outside the test-house; the tyre is watched through peep-holes in the door.

This apparatus will run up to 300 m.p.h. and is used for testing tyres like those used on Sir Malcolm Campbell's "Blue Bird." Incidentally Sir Malcolm uses straight-side rims on the front, and well-base rims with fillers on the back. A special cord casing is used, and the tyres have no tread at all in the usual sense of the word, the cords showing plainly through their rubber coating.

The world record tyres stand at the opposite end of the scale to the ordinary and Fort tyres, wearing qualities being unnecessary compared with heat-resistance and structural strength. The tread of the Fort tyres will withstand many thousands of miles on the road, and is safe up to speeds as great as 120 m.p.h. Beyond that, the racing type has to be used, as centrifugal force acting on the tread would cause it to disintegrate. Racing tyres, therefore, have stronger carcasses and lighter treads, wear being a secondary consideration.

There is a restless spirit about Fort Dunlop, a feeling that no one is content to rest on achievements already attained and while such institutions are with us, Great Britain's supremacy in the realms of motoring sport will not fail.



A SPORTS THREE-LITRE

THE MOVEO WITH MEADOWS ENGINE AND SEVERAL INTERESTING FEATURES

THE designer of a new car is in the happy position of not being hampered in his search for the best by trying to avoid having to scrap old jigs, and similar manufacturing considerations, and the sports-car manufacturer usually has further scope because the potential purchasers are prepared to pay a good price for something which is good and out of the ordinary in lay-out and performance. This is exemplified in the case of the Moveo car, which has been built as the result of two years' experiment by its designers, Messrs. Haythornthwaite and Houlding, and which is now in production.

There are some unusual features about this car. For instance, the front ends of the chassis sidemembers are straight and not curved to form the dumb-irons. The frame is swept downwards and outwards to the rear spring anchorage, and then is curved over the back axle. The centre part of the frame is 6in. in depth, and the whole makes an exceptionally sturdy structure. The side members are braced together by tubes, one joining the forward extremity of the dumb-irons and another behind the radiator, while a third situated behind the gear-box is 3in. in diameter. Two tubes brace the chassis at the rear spring bracket, and there is another at the top of the upsweep, and the rear end of the chassis is tied by yet another tube. Cast iron brackets are not used and no bolts larger than $\frac{1}{4}$ inch pass through the chassis. Hitensile bolts are used throughout, a large number, of course, being fitted where great strength is required, and all are secured with special locking washers.

The power unit is the well-known Meadows engine of three-litre capacity, having six cylinders (72.5 by 120 mm.) and overhead valves operated by push-rods. It gives 74 h.p. at 3,800 r.p.m. Coil ignition is used, the units being mounted accessibly on the off-side. Two Amal carburettors fed from a 14 gallon rear tank by two Morriscot Petrolifts comprise the fuel system.

A single plate clutch transmits the drive to a Moss four-speed gear box fitted with a silent third, thence through a tubular propellor shaft fitted with Hardy Spicer couplings to a spiral bevel final drive. Unit construction is used for engine and gear-box, and the former is silentbloc suspended from three points, one being a cross member in front of the engine, the other two being sturdy brackets bolted on to the side-members below the dash.

Suspension is by flat semi-elliptic springs fitted with shackles at their outer ends and the other ends moving on slides. Braking reaction is taken by cables, as on the Aston Martin, and spring damping is adjustable from the dash by means of a hydraulic Telecontrol. The brake-drums are 17 inches in diameter, and are made of chromium steel, with finned aluminium cooling rings attached thereto by a taper and setscrews. The brakes operate on the Lockheed system. Instead of a ratchet, the hand brake is held in the " on " position by means of jambing rollers, and is instantly released by a touch in the opposite direction.

The radiator, often the Achilles' heel of the sports car, should give no trouble on the Moveo. It consists of top and bottom tanks connected by gilled tubes. These tubes have tapered ends fitted with rubber washers, which in turn fit into tapered holes in the tanks, the whole being held together by four long bolts. This construction has been tested successfully at 70 lbs. pressure, but if a tube were to fail, replacement can be carried out easily by separating the two tanks. The front is protected by a honeycomb grid which enhances the appearance of the whole.

The designers have made a great point of easy maintenance, and there are only three oil nipples on the chassis—one for each king pin and one for the front

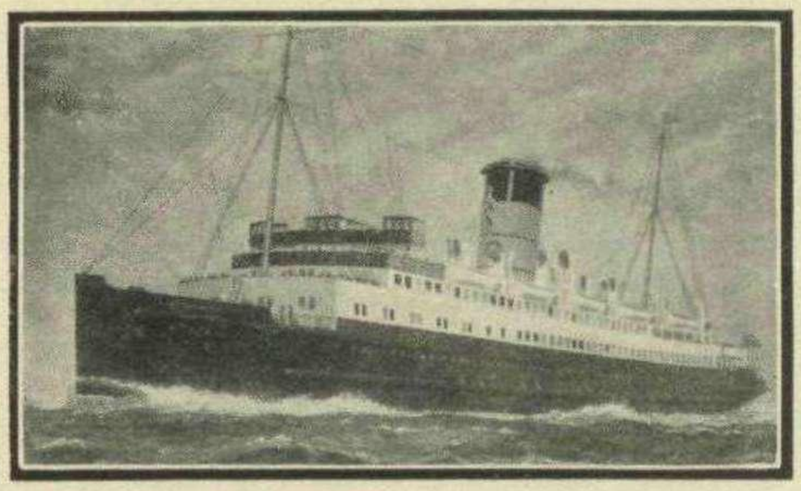
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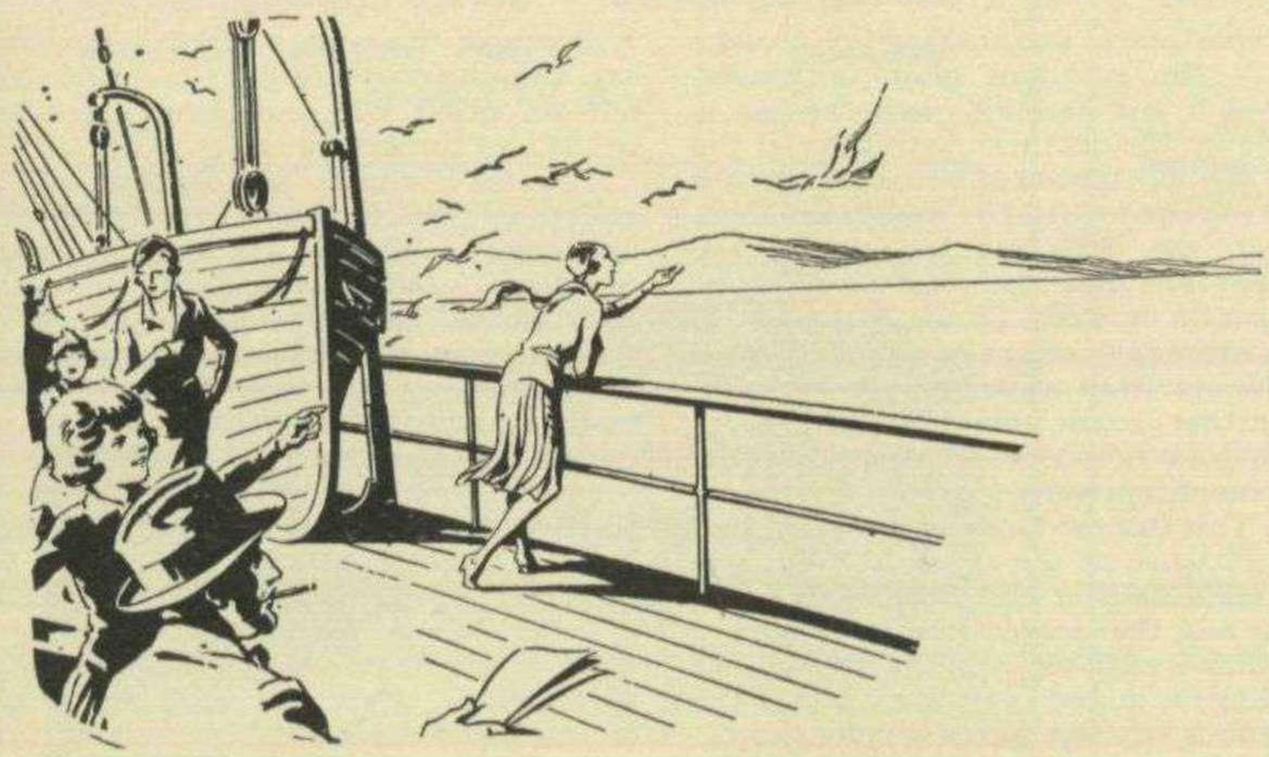
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A SPORTS THREE-LITRE—continued.

universal. The engine is well silenced by two exhaust pipes opening into four Carbjectors arranged in tandem.

With the power unit at present used, the manufacturers claim a speed of 80-85 m.p.h. They also state that it is hoped to supply the three-litre engine supercharged later, while there is room in the chassis for the 4½ litre Meadows if required.

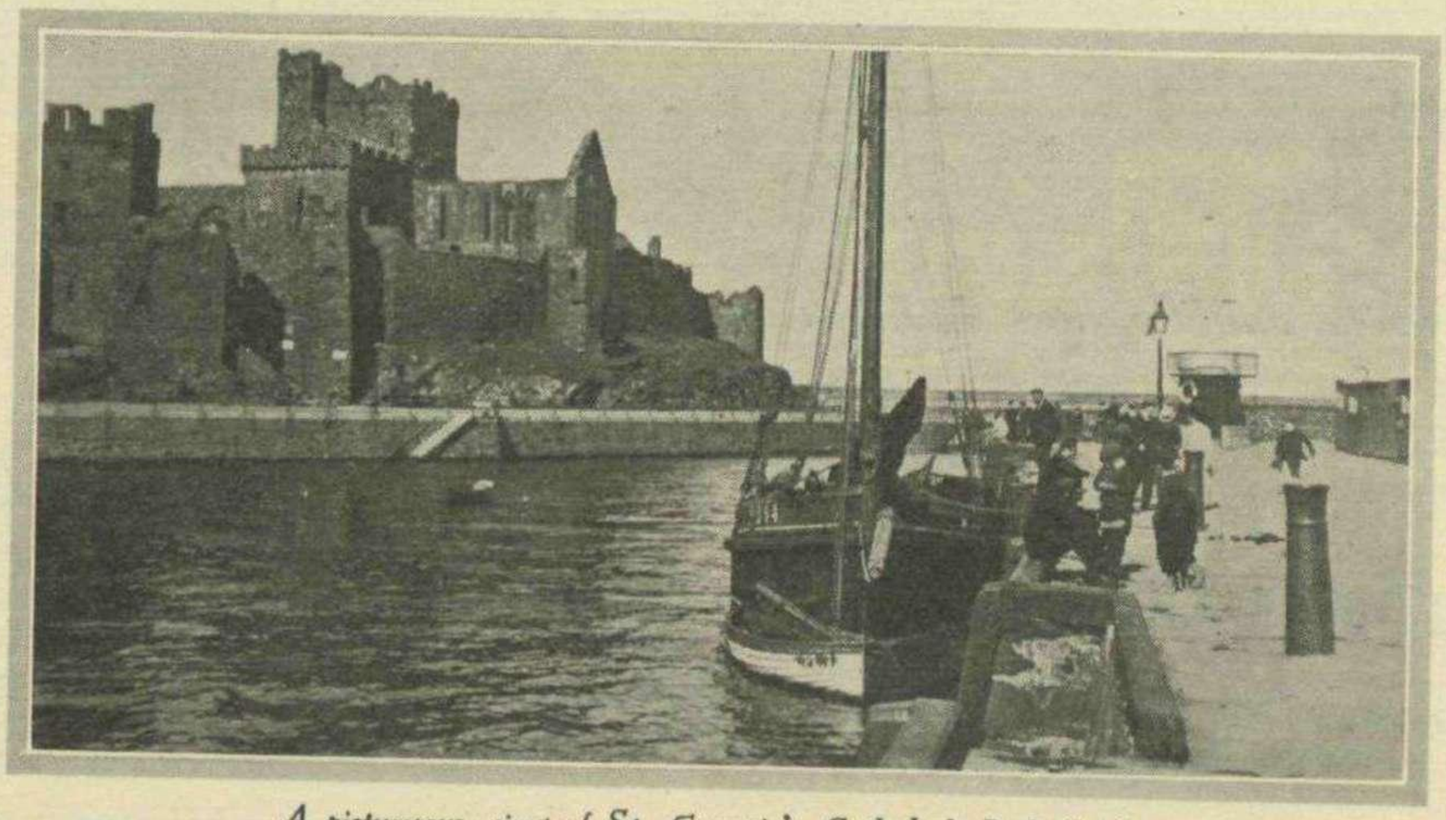
The makers' address is Moveo Car & Engineering Co., De Lacy Street, Preston, and the three litre chassis is priced at £575.

TRY THE ISLE OF MAN

A MOTORING VISITOR'S IMPRESSIONS

NEXT month the attention of thousands of followers of the sport will be centred on the Isle of Man, for once again the world-famous Tourist Trophy Races will be held on the island circuit.

But how many of these know anything of its many attractions, apart from its being the venue of our great motor cycle classsic? As a place where one may spend a holiday, it is, in fact, unique, for although it measures but 30 miles by 10 miles it embraces a variety of scenery seldom to be found in an area of vastly greater proportions. And there are 400 miles of good roads which enable the motorist to penetrate to every corner. There are high moorlands, and mountains, a sweeping, flat alluvial plain, quaint little villages and well-developed seaside resorts. Amenities to intrigue and pander to every taste.



A picturesque view of St. Germain's Cathedral, Peel Castle.

Some of the wilder beauty spots resemble those of Devon: the wooded combes of that county have their equivalent in the Manx glens, though the roads in the latter are, as a rule, wider. But on the minor routes steep and formidable gradients (signified on the Ordinance maps by a "V") provide a welcome relief after the miles of top-gear running which the motorist finds in many parts of England.

Leaving the sea behind, as one drives inland, the characteristic grassy sod ledges give place to stone, such as one finds in the north of England, while the thatched cottages with their whitewashed walls are not unlike those on the west coast of Ireland. Higher still, and one reaches the limit of cultivation; gorse and heather border the roads, their bloom a wonderful sight in June or August, and in a mile or two, from the scenery one might be in Scotland. Rolling hillsides or plateaux covered with heather or coarse grass harbour grouse and various other kinds of game, and in sheltered hollows are the ruins of stone-built farmhouses, each with its little clump of trees, a peculiar air of desertion and secrecy brooding over them.

The coastline is as varied as the scenery inland. The northern plain is fringed with beach and sandhill, and the sea is building up the northern extremity of the Island at the expense of the coast further south. As one follows the west coast down however, the cliffs get bigger and the hills approach near the coast until, a few miles south of Peel, Crouk na Irreyhan and its attendant heights drop steep down into the sea from a height of 1,300 feet. The further south one goes, the more rugged does the coast become, and the grassy mountain sides give place to rocky cliffs. This feature is at its most striking at the Chasms, at the south of the island where cliffs 300 feet high drop sheer down into the sea, the twisted strata of the rock face which is exposed, and the deep cracks extending far inland bearing witness to the tremendous volcanic forces which moulded the terrain in days gone by.

The elevated backbone of the island, apart from its scenic considerations, holds stretches of colonial section and steep hills such as would delight the eyes of any trials secretary, and one is often tempted to wonder whether a one-day sporting trial held round about the T.T. week would not be well supported. At any rate, members of the Fraser-Nash-Wolseley-Hornet brigade will find obstacles as severe as any in Devon or Cornwall if they are prepared to look for them, and it is well worth bringing one's car from England for that alone.

And then there is the T.T. course. Starting about 500 feet above sea level from a site overlooking Douglas Bay, it dives down the steep and tricky Bray Hill, at the bottom of which, speeds of over 100 miles an hour are reached by the faster motorcycles, and continues downwards to the sharp Quarter Bridge corner. The road then follows the valley which runs across the island, the many fast corners allowing the old hand to keep up a high speed, but necessitating constant gear-changing and skilful driving. At Ballacraine the course turns northwards, and running through a valley with high hills on either side, and interspersed with bends and corners, provides a further test.

The road climbs steeply out of the valley by the famous Creg Willey hill, now much widened, and then a gradual downward grade sets in until one reaches Kirkmichael, which is practically at sea level. From here the course runs along at the foot of the hills, and the wide level roads allow very high speeds to be obtained. The modern 500 c.c. motorcycle is capable of about 110 m.p.h. and to see the leaders streaking along the famous Sulby straight is a sight never to be forgotten.

Sulby Bridge marks the beginning of another winding section, which continues to Ramsey. Here the most severe part of the test begins.

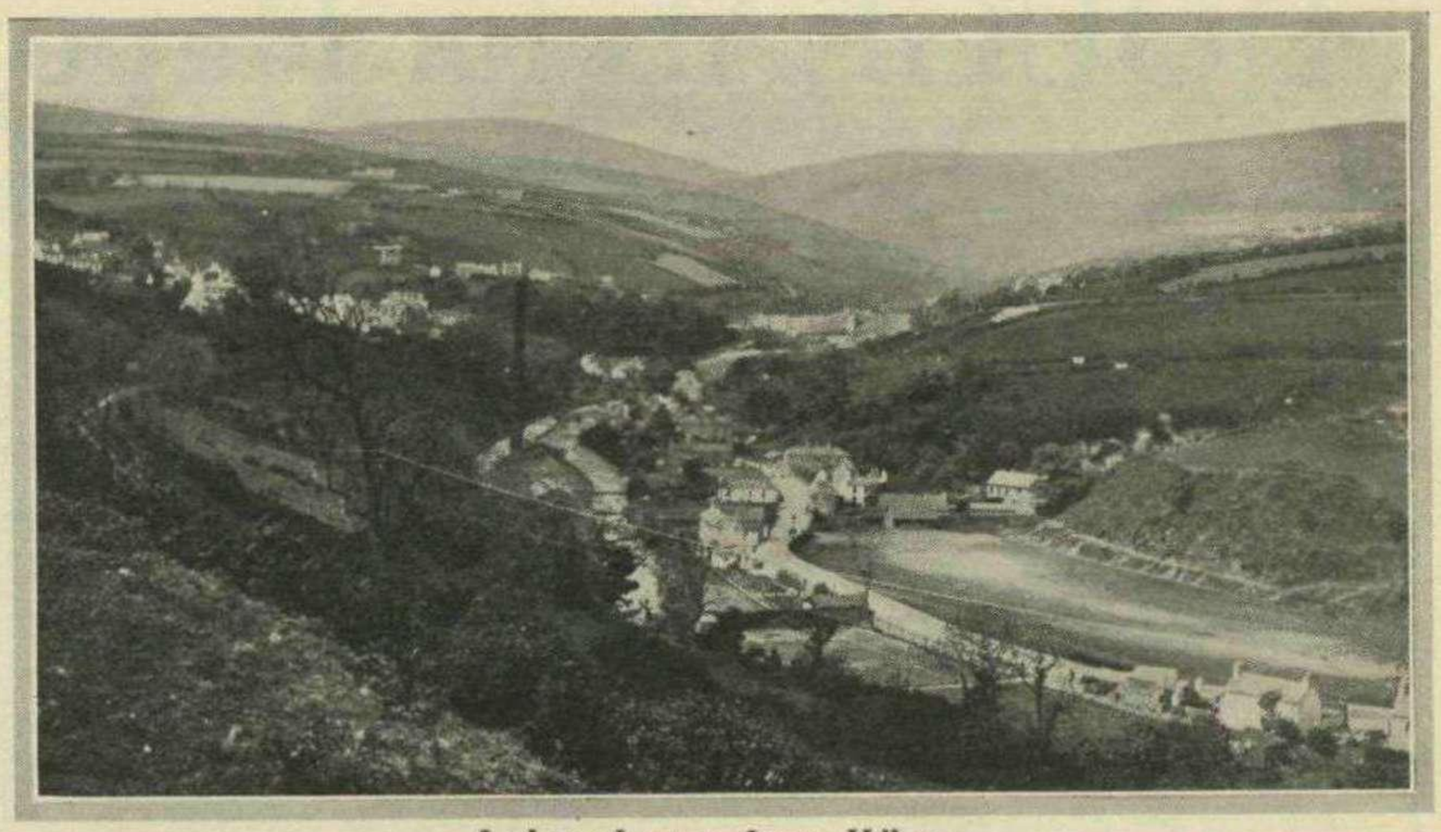
North Barrule, which is the northern extremity of the central mountain system, is 1,700 feet high and rises steeply from the northern plain. The T.T. course rises steeply from Ramsey, passes round the famous hairpin bend, the less known but much more dangerous Waterworks corners and the Gooseneck, and reaches a height of 1,100 feet in 4 miles. The number of corners and the severity of gradient entitles the Manx course to a position not far behind the Targa Florio, and if such a course existed on the Continent it would certainly be as widely famous. Unfortunately, the roads are not wide enough for anything except the small racing car of Bugatti type, so that

TRY THE ISLE OF MAN—continued.

only our motorcycle manufacturers, who have proved themselves supreme in the racing world, are able to take advantage of this peerless testing ground.

We have left the riders climbing the northern part of the course, which nowadays does not take them very long! Their road then runs along the open moorland which clothes the central ridge, a fast run with the "33rd milestone," and other dangers to trip up the unwary, not to mention the chance of mist or even, in practice time, an occasional sheep. Soon the riders reach Keppel Gate and prepare for their downhill swoop back to the start. Tremendous speeds are achieved from there down to Creg-na-baa, while waves in the road demonstrate forcibly those machines on which weight distribution is correct. Fierce braking at the Creg, which is almost a right angle, another swoop down to Hillbery, tricky going through the Nook to the hairpin of Governor's Bridge, then a roar up the other side and we have reached the stands again, after 37 miles of the most strenuous driving it is possible to devise.

Seven laps of this, soon weeds out all but the best riders and machines. It really is the most thrilling event one can imagine, and the fact that Prince George is to watch the June races this year shows how widely this is appreciated.



Looking down on Laxey Village.

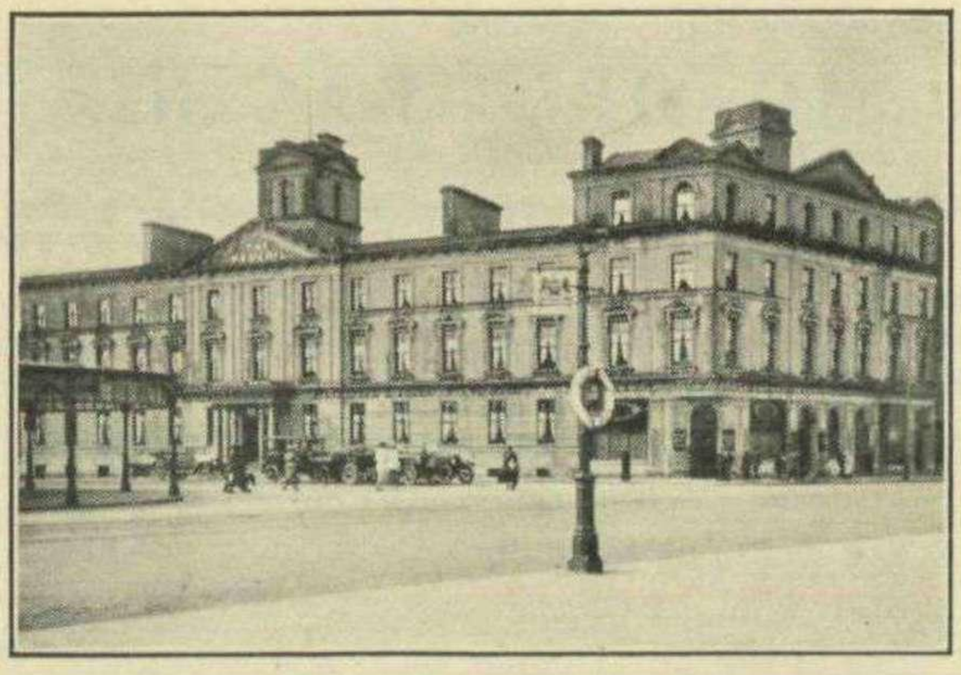
The races this year promise to be as interesting as they have ever been, and the usual international entry will provide an additional draw.

A new departure for the Isle of Man is the proposed air race. The course and regulations have not yet been announced, but one may be sure that the race will start and finish from the Ronaldsway Aerodrome in the South of the Island, which is the only landing ground of sufficient area.

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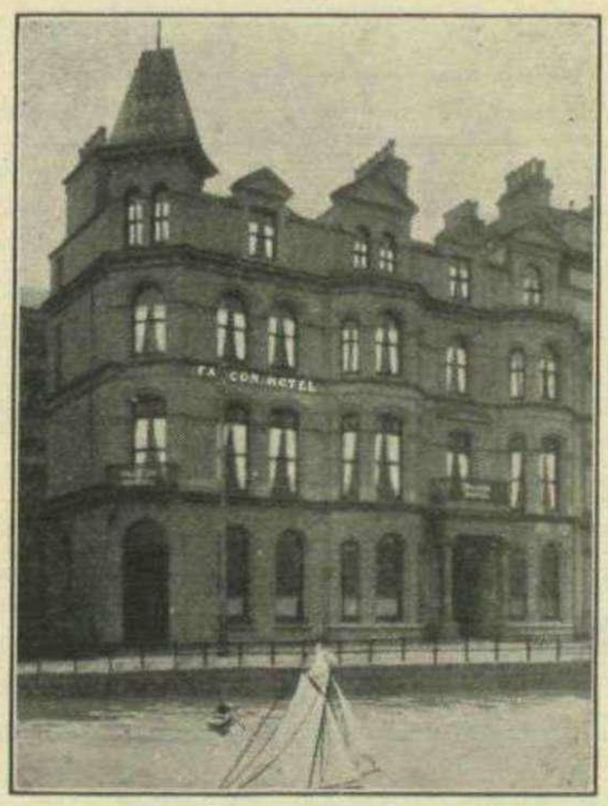
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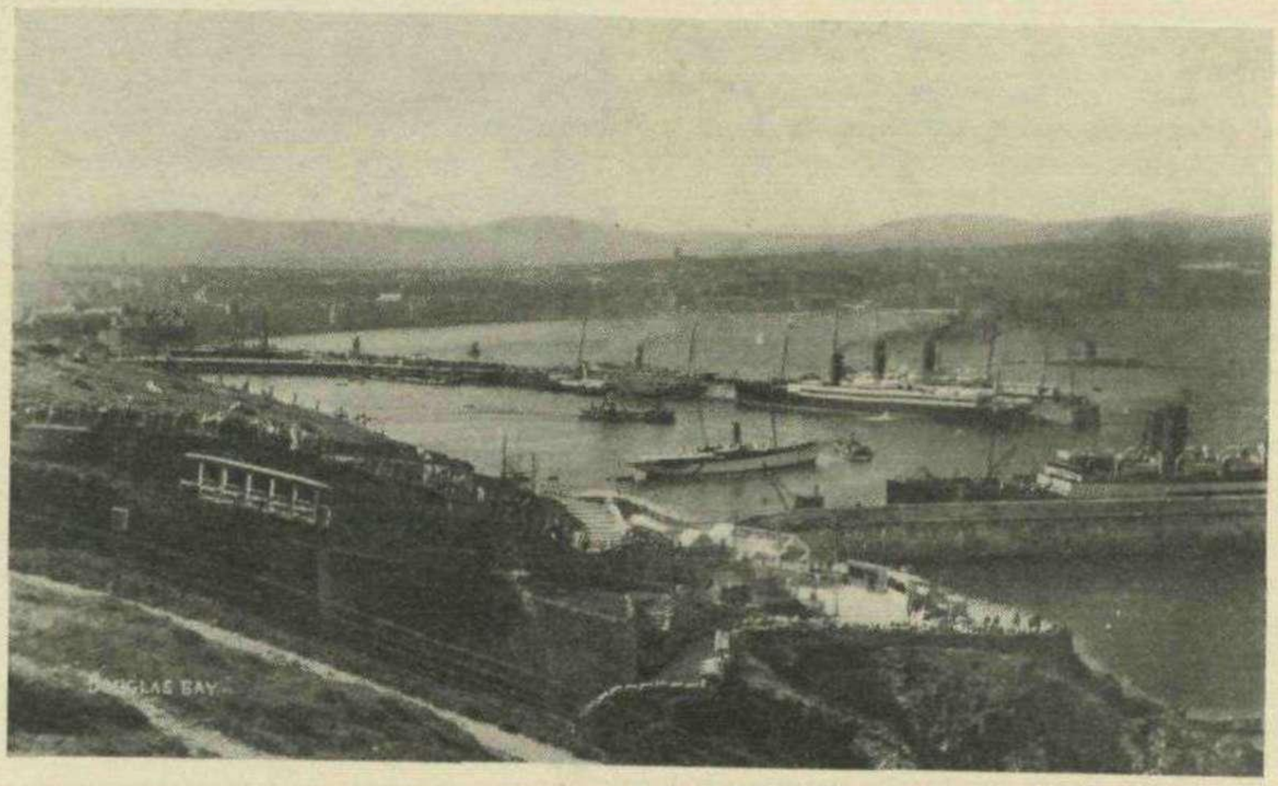
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Rumblings



T.T. handicaps

NOW that the regulations for the 1932 race on the Ards Circuit are available, we can see who has been treated kindly or otherwise in the matter of handicapping. The same system as last year will be used, that is, time and credit laps, with the scratch cars having 30 laps to complete. The new rules take into account the last year's form and also the fact that all cars should be faster this year owing to being run in stripped state.

The supercharged "750's" which did so well last year have received 4m. 8s. less start than last year, while the unsupercharged editions, which never had a look in last year, are 5m. 50s. better off than they were. Superchargers are also penalised in the 1,100 c.c. class to the extent of a further 3m. 18s., but the unsupercharged cars of this size are 2m. 5s. better off.

An unexpected feature of the allowances is the stiffer handicapping of the 1,500 c.c. class, which last year was not in the picture, and a great deal of development will be required if this class is to prove able to shoulder the extra handicap. Supercharged 2-litres are slightly better off, unsupercharged 3-litres are unchanged, while the same class with superchargers, which supplied the second car home last year, are docked 1½ minutes. The latter class starts level with the unsupercharged 5-litres which give away another 2 minutes when blown.

The unsupercharged Rileys and Talbots will therefore stand a better chance than last year, but till the entries are forthcoming it is impossible to form any definite idea of the probable winning class. The race this year will be held on August 20th. It is hoped that the absence of mudguards will encourage M. Bugatti to enter a team, his views on the subject being very strong indeed.

There is a hope of new entries to the racing field in the form of a Crossley team, while other firms may try different classes. Perhaps the 1½-litre Rileys may show up. All entries in this class will be particularly welcome as it has always been one of the most popular sports car sizes for the motorist of moderate income.

Other prospects for the season in this country appear hopeful, and I have noticed various individuals getting busy with their models for the season.

It is a very fascinating business keeping an oldish model in trim for competition work, especially when it has already shown it can perform really well, while an old car whose tricks are known to its owner is often more reliable than a more recent, but less known vehicle.

J. H. Bartlett's Salmson is a good example of the sport which can be obtained from a comparatively old car, and when I was round there recently he was busy getting it ready for some more Brooklands work. It is now considerably lowered, and looks very smart, while extensive work on the engine should ensure its keeping up its old and very snappy performance.

The "Terror."

R. J. G. Nash has great hopes of the 'Terror,' his single seater Frazer-Nash, and as this year's Shelsley Walsh is apparently the last which will be held, he will be out to attempt to bring the record back to this country. He made fastest time of the day in the open climb last year, but Von Stuck's record of the year before is still a second better than anything else which has been done, so that Nash, or anyone else will have his work cut out to better it.

A number of last year's supercharged Midgets have been sold this winter and will be reappearing this season in other hands. D. G. Evans has bought the spare car which was taken over for last year's Ulster race, and is very pleased with it, while among those who have decided to hang onto these remarkable little cars for another season is Major Gardner, whose car has been going extremely well so far.

Sports cars in demand

The increasing demand for sports cars has been one of the features of the last few years, and now more than ever, motorists are demanding high performance as one of the most important assets of a car. Proof of this is well provided by the Frazer-Nash concern, who, in spite of having opened a new works less than two years ago, are finding it quite unable to cope with the demand for their products, and I notice that they are now building a large extension. This should be able to keep things up to time for a little, but judging by the number of these cars about now, I should not be surprised to see a further increase in their works before very long.

RUMBLINGS—continued

Lea-Francis Busy.

A visit to the Lea Francis works which I made recently revealed scenes of considerable activity. The well-known 12-40 four cylinder is being continued, but most of the factory's energies are being devoted to the new two litre "16-70." The power unit is a six cylinder designed by Mr. Van Eugen of Lea Francis, and is of noticeably clean finish. Cylinder block and crank-case are in one, and I was told that Invar strut alloy pistons are used and that the connecting rods are duralumin, with plain big ends.

The valves are operated by an overhead camshaft running in needle bearings with further locating bearings, and special attention has been devoted to lubrication. A down-draft Stromberg carburettor has given excellent results, and allows a speed-range of 5 to over 75 m.p.h. on top.

The gear-box is of tubular section and, I should say, should prove extremely strong. It is fitted with a silent third gear and right hand change.

The Hyper-Sports 1½ litre supercharged, which is, of course, fitted with a Meadows engine and Cozette supercharger, is being continued in two and four-seater form. The lines of the former have been much improved by increasing the length of the tail. A sensible detail of the four seater cars is that they are provided with two spare wheels.

The 1½ litre Hyper Sports costs £550 in two or four seater form, while the price of the six-cylinder is £445.

At the Track.

Brooklands is beginning to show signs of increasing activity, and when I was down there recently on a practice day a lot of work was going on, both on the track and in the various workshops. R. R. Jackson's shop was quite full up with work in preparation for the British Empire Trophy and other events, one of the most interesting items there being the new edition of the Horton Special.

This is a light chassis with Frazer-Nash transmission, which was previously fitted with a V-twin engine. It is now fitted with an experimental Alta engine with a Villiers supercharger, and the results of research on this engine may be used to produce a standard blown Alta.

There is also, of course, the usual repair work on motor cars which have gone a little too fast, and I noticed that Fotheringham's Bug. had suffered a slight internal derangement which appeared to have something to do with a big-end, but had introduced complications, as the doctors say.

Thompson and Taylor were finishing off Campbell's Sunbeam (last used by Kaye Don) and the car now has new axles and brakes, and looks very business-like.

Cobb's big Delage was being got ready for the fray, but his other proposed record car is still on the drawing board, though the engine has been delivered.

Straight's Maserati, which last season belonged to Birkin, was dismantled for overhaul, and is a very interesting vehicle. The brake mechanism is worthy of note, as it is compensated by differentials on the cross shaft, thus equalising each side, while the fore and aft compensation is dealt with by chains and sprockets at each end of the cross shaft. This bears out the point generally accepted in modern brake practice, that if you are to compensate at all you must do it properly.

The old Leyland Thomas (with touring body) is for sale again at £350, and is said to be capable of 110 m.ph. It has four carburettors.

Driscoll seemed pleased enough with his Austin, as he well might be, but he says that the engine has had absolutely no modifications since last year. He finds, however, that being strapped in is a great help in controlling such a light motor, and enables him to keep his foot down harder.

THE TARGA FLORIO.

ETTORI BUGATTI is this year making a really determined effort to regain once more the Targa Florio for France. This race, the blue riband of road racing for the pure racing car, has fallen to this marque more frequently in recent years than to any other. Last year, however, the only Bugatti was that driven by Varzi, which after a terrific race under appalling weather conditions, was beaten by Nuvolari and Borzacchini on Alfa-Romeos, after making the pace in the early stages.

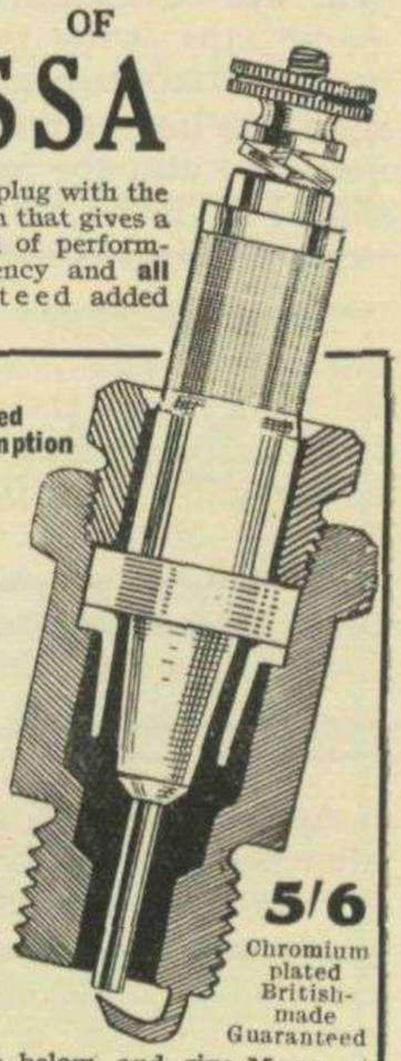
This season's event, which will be the twenty-third race over the arduous mountain course in Sicily, will provide a historic battle. The Bugatti team, consisting of Louis Chiron, Achille Varzi, Albert Divo, and Count Conelli, will be matched against the very successful Alfa team, with Maserati ready to take instant advantage of their smallest mistake.

The 1932 Targa will be worth travelling thousands of miles to see.

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Club News

THE LIGHT CAR CLUB.

DUE to its expansion, the Light Car Club has found it necessary to appoint an assistant secretary, with a London address, to whom all communications should be sent in future. Members should note that Mr. Harold J. Jones has been appointed to this post, and his address is : 22, Basinghall Street, E.C.2.

The latest list of the club's fixtures contains the following :—May—8th, Sporting half-day trial ; 21st, Speed hill-climb ; 28th, Grand Cup trial. June—Inter-club trial ; 18th-19th, Brighton-to-Beer trial. July—2nd, Madresfield speed trials ; 16th, International Relay Race ; 29th-30th, London-Barnstable trial. September—16th-17th, Long Distance trial. October—8th, Dussek trial.

ROYAL SCOTTISH AUTOMOBILE CLUB.

The Royal Scottish Automobile Club has now completed full arrangements for the holding of the Scottish Rally, which is to take place during the period 4th-9th July. The event will be run on similar lines to those of the R.A.C. Rally held in March last, and the starting controls will be as follow :—London, Droitwich, Harrogate, Edinburgh, Glasgow, and Aberdeen. The routes from these to the final control will be appoximately 1,200 miles, and the total will be split up into four stages of—1st stage 600 miles—2nd and 3rd stages 250 miles, and 4th stage 100 miles. During the run competitors will pass through the principal touring centres of Scotland, including Oban, Strathpeffer, Gairloch, Dornoch, Fort-William, Braemar, and Gleneagles.

Full particulars, copies of regulations, and entry forms can now be obtained from Robert J. Smith, Esq., Secretary, Royal Scottish Automobile Club, 163, West George Street, Glasgow.

THE HORNET CAR CLUB.

Members of the Hornet Club are reminded that the Kent and Sussex Light Car Club have issued an invitation to the club to take part in their speed trials, which are scheduled to be held at Lewes on Saturday next, 7th May. It is hoped that as many Hornet Club members as possible will turn up for this event.

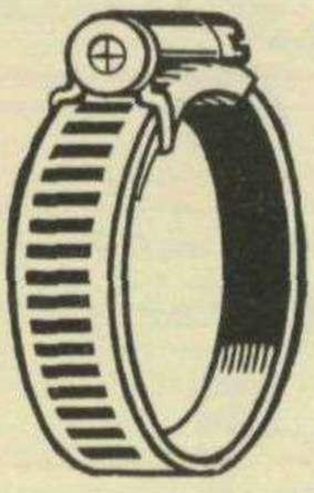
It is interesting to note that the Club's membership now exceeds 100, and one of the latest "recruits" is Mr. Percy Bradley, the popular Clerk of the Course at Brooklands.

BRIGHTON & HOVE MOTOR CLUB.

The club is holding its twelve-hour trial this week-end (30th April-1st May). It is open to cars, three-wheelers, sidecar combinations and motor cycles. Amongst the car clubs competing are the North-West London Club, Junior Car Club, M.G. Car Club, Light Car Club, Bugatti Owners' Club, and the Mid-Surrey A.C.

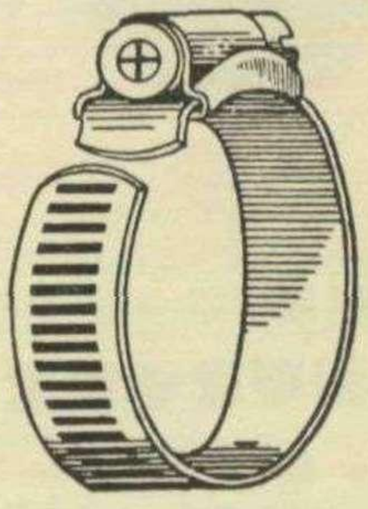
The Editor invites Club Secretaries to send details of their fixtures, sporting and social, for publication in these columns. These items should be sent to reach this office not later than the 16th of the month.

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ON THE DASHBOARD

WHEN I look at the neatly arranged instrument board of a modern sports car, I cannot help thinking of a car I owned, not so many years ago, on which the only break in the barren uniformity of the dashboard was provided by a small pressure gauge and the handle of an oil pump. Even this gauge would have been absent had we used a gravity tank, but as it was necessary to force the fuel from the rear tank, it was also advisable to know how hard it was being forced. Electric fuel pumps, to-day so common, had not been thought of, while the success of its lubrication system depended on the driver's ability to gauge accurately, by sound, smell, and experience, which portions of the machinery required oil, the same being directed thither by the said pump handle and a battery of taps concealed from the driver's view.

As for computing speed, this was a matter of judgment, checked by the results sheet, after a hill climb or speed trial.

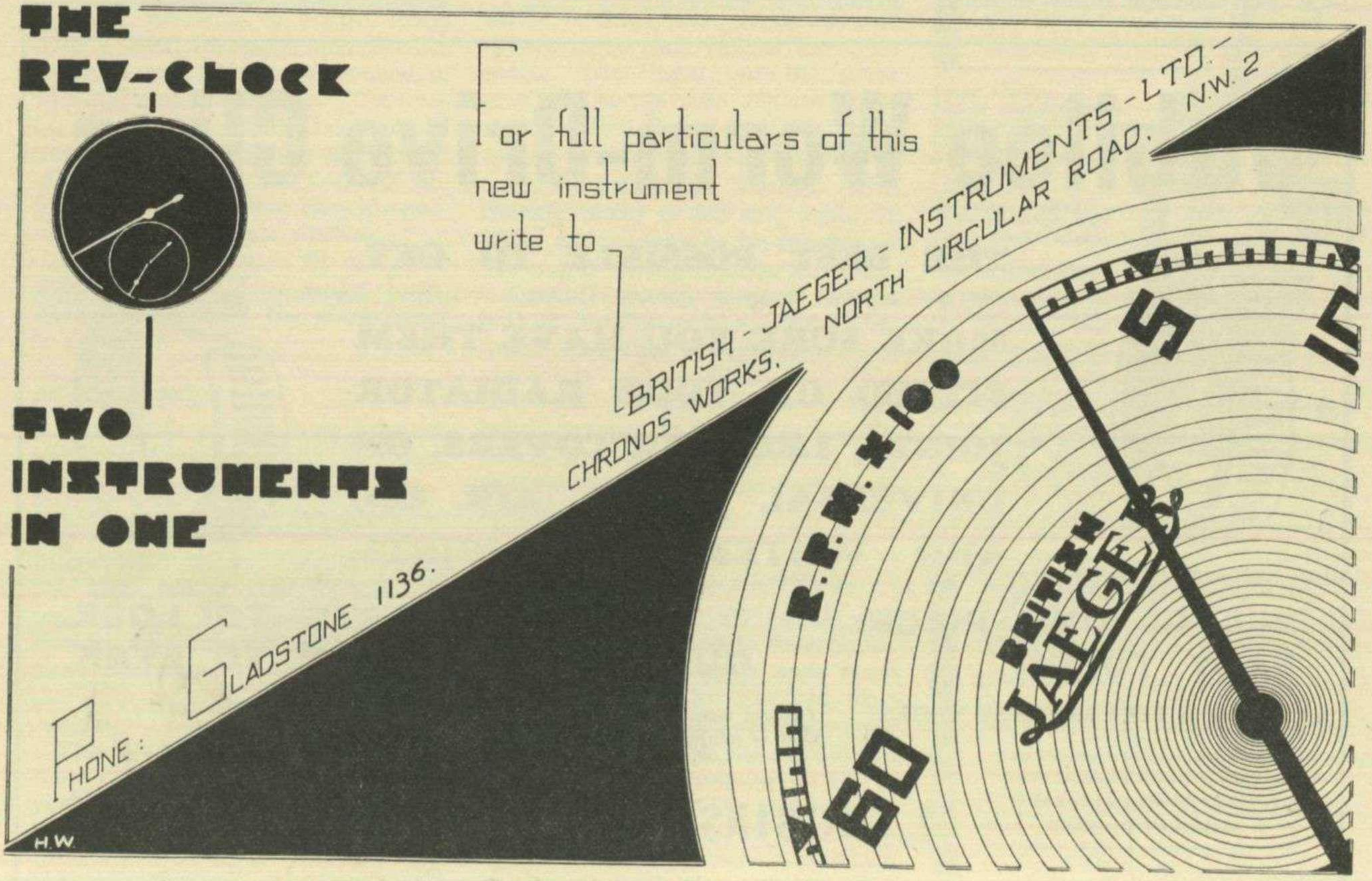
Such methods may have taught people to know the feel of machinery, but they would never do now. Take a modern sports car, fitted with a supercharger, and what do we see on the dashboard? An engine rev. counter, speedometer, oil pressure gauge, oil thermometer, water thermometer, speedometer, clock, blower pressure gauge, and petrol tank gauge, apart from the usual electrical equipment.

The oil indicators are the most important to watch in normal travel, as a broken pipe, or lack of oil in the sump will be immediately shown by a drop in the pressure, while a choked pipe somewhere will cause a sudden and unusual rise. In either case the cause must be investigated, and the timely warning may save a lot of money and trouble.

Another important item in ensuring reliability is the rev. counter. On most engines the safe limit, whether governed by lubrication, crankshaft strength, valve bounce, or whatever it may be, is usually known, and this instrument is the only really accurate way of telling that the limit is not overstepped.

The thermometers are also valuable warnings of trouble, and the radiator temperature is particularly useful when tuning a car, to check that a change of mixture or ignition timing is not causing excessive heat, leading to damage which could have been avoided.

Passing from the instruments which govern the safety of the mechanism, we come to those which show its performancc. Here the rev. counter has dual purpose, backed by the speedometer, and if possible by a clock with stop mechanism, so that acceleration times to various speeds can be checked and compared with the best known performance. Both Smith's and Jaeger's produce a variety of indicators and clocks, the latest productions of the latter firm



ON THE DASHBOARD—continued.

being a very ingenious combined clock and rev. counter, which should be of interest to the sports car owner.

Speedometers are also made which record the running time as well as the distance, and are excellent for checking performance on a long run. An important point with speedometers is to make sure that the drive gear-ratio is correct, as many of the optimistic speed claims one hears are due to the gear ratio being incorrect, and are no fault of the instruments themselves, but of the makers who fit them.

Another interesting fitting is the gradient meter, which also gives a measure of acceleration, braking and frictional losses. The Tapley is probably the best known example of this type, which works on the principle of a pendulum. Two scales are given, one giving the gradient (only correct if the car is travelling at uniform speed), and the other giving the pull (either acceleration or braking) in pounds per ton.

The accuracy of the modern instruments has played a great part in the development of the sports car, and those who wish to get the best out of their motors should take due note of their readings.—B.

NEXT SATURDAY AT LEWES.

A VERY comprehensive programme has been drawn up by the Kent and Sussex Light Car Club for their Speed Trials which are to be run off at Race Hill, Lewes, next Saturday, 7th May.

In all there will be fifteen classes, these being as follow :—(1) Touring cars—unlimited, (2) M.G. Midget—any type, (3) Wolseley Hornet closed cars, (4) Hornets with 3-speed boxes, (5) Hornets with 4 speeds, (6) Super-sporting cars up to 1,100 c.c., (7) Standard sporting cars up to 1,500 c.c., (8) Sporting cars up to 2,000 c.c., (9) Super-sporting cars up to 1,500 c.c., (10) Super-sporting cars unlimited, (11) Racing cars up to 1,100 c.c., (12) Racing cars up to 1,500 c.c., (13) Racing cars up to 2,000 c.c., (14) Racing cars unlimited, and (15) Handicap class based on entrant's previous times.

Two runs will be allowed in each class, the best time to count. The length of the track is 700 yards, and the surface is excellent, so that, given good weather conditions, the event should prove highly successful. The meeting will start at 2.30 p.m., and intending competitors should note that entries (accompanied by the fee of 10s.) should be submitted to the Club's secretary not later than Wednesday next, 4th May. His name and address is : H. V. Warren, Esq., 51, Ringwood Road, Eastbourne.

VETERAN CAR CLUB'S RALLY.

THE Veteran Car Club, which, although one of the youngest, is already one of the most enthusiastic clubs in the country, has started its 1932 season in fine form. The event which culminated at the Cricketers Hotel at Bagshot on Sunday, 17th April, took the form of a Rally, and managed to combine most of the qualities of a sporting with a social event.

The rules governing the affair were, as a matter of fact, somewhat vague, for competitors could start as early as they liked, whence they liked, and travel by what road they chose to the Cricketers' Hotel, Bagshot, where they had to arrive at 2 p.m. on Sunday, 17th April, and where both they and the organisers hoped they would arrive in time for lunch at one o'clock. Logically it seemed that as the start could be made at any time one might have counted to one's credit the whole mileage which one's veteran car had covered since it first saw the light of day in the 'nineties, but everyone seemed to be interpreting the spirit rather than the letter of the regulations, and the whole affair went off in the best possible manner.

The little town of Bagshot was electrified on that Sunday morning when the strange apparitions from the past began to appear, and grunting and banging pulled up at the Cricketers' Hotel. Twenty-four had been entered in all, and of these all but two duly turned up. The awards were made on the basis of the formula $A^2 \times D$, where A = the Age of the car, and D the distance travelled to the Rally. In practice this system of marking seemed to work extremely well, and everyone felt that the winner richly deserved his victory. This was Mr. Pruen, who on an 1897 Daimler, employed by a hotel as a station 'bus, had started from Burnham-on-Sea and travelled 130 miles to Bagshot. R. C. and W. H. C. Blake on an 1898 M.M.C. Daimler had started from Winchester, but by travelling round the countryside they too had piled up 130 miles and were placed second as the result of their year's juniority. Third place went to E. K. H. Karslake, whose 1904 Darracq started from Exeter and had come 155 miles to the Rally.

Unfortunately, the weather had not been too kind, and it was a cold and hungry collection of crews who gratefully sat down to luncheon, during which they were regaled with more than a few amusing anecdotes of the early days by Commander Grahame-White. Then once more they trooped out to their cars, ancient engines were resuscitated into life, and the trek home began.

Several machines which we do not remember having seen before, turned up at Bagshot, which goes to prove that all the old cars in the country have not yet been pressed into the service of the V.C.C. Among these was a charming little belt-drive Pieper, driven by E. L. Wood, who had deserted for it his usual Léon Bollée. Evidently, however, he cannot get away from belts, and he proudly showed us a collection which the Pieper had chewed up on the way. R. O. Shuttleworth also turned up with the latest addition to his stable, a massive Arrol-Johnston dog-cart of imposing appearance, while at the other end of the scale a little Peugeot motor cycle with a Minerva engine was ridden by C. S. Burney. All this augurs well for the coming season, in which we are promised a run to Poole, another to Ramsgate, a third round Kent, a Concours d'Elegance or two, and to crown all, the historic Brighton Run—enough to keep the owners of veteran cars quite busy and contented !

B.A.R.C. ENTRY FORMS.

MR. PERCY BRADLEY informs us that entry forms for the Brooklands meetings are only sent out to those members who are likely to be competitors. Anyone who wishes to have these forms sent and who has not already received them should send his name to the Secretary, B.A.R.C., who will put his name on the waiting list.

A SUGGESTION.

OWING to the very heavy demand for the April issue of MOTOR SPORT, all supplies of the journal were exhausted within a few days of publication and as a result many readers were unable to obtain copies.

In order to avoid disappointment in the future we suggest that you place a regular order with your newsagent.

THE ITALIAN THOUSAND MILE RACE—continued.

At Treviso (855 miles), Trossi gained second place, in which order they reached the finish at Brescia, the winners' average speed of 67.7 m.p.h. beating all previous records by a handsome margin. Brian Lewis on the Talbot had a narrow escape when travelling at over 90 m.p.h. with only one headlight working. He failed to see a bend in time and left the road, finishing in a wide ditch. By some miracle neither car nor driver were noticeably damaged, and with enthusiastic local assistance the car was eventually got back onto the road, and he managed to finish 25th in the general classification, a very fine effort under the circumstances.

The results were as follows:—

GENERAL CLASSIFICATION.

1. Borzacchini-Bignami (Alfa-Romeo, 2,300 c.c.), 14h. 55m. 19 2/5s. Average speed, 109.884 km.p.h.
2. Trossi-Brivio (Alfa-Romeo 2,300 c.c.) 15h. 10m. 59s.
3. Scarfiotti - d'Ippolito (Alfa - Romeo 2,300 c.c.), 15h. 44m. 41 3/5s.
4. Minoia-Balestreri (Alfa-Romeo 1,750 c.c.), 16h. 54m. 37 2/5s.
5. Carraroli-M. Ghersi (Alfa-Romeo), 17h. 4m. 3 4/5s.
6. Guilai-Venturi (Alfa-Romeo), 17h. 9m. 14 2/5s.
7. Santinelli-Berti (Alfa-Romeo), 17h. 10m. 55 1/5s.
8. Strazza-Gismondi (Lancia-Lambda), 17h. 14m. 22 3/5s.
9. Lurani-Caverni (Alfa-Romeo), 17h. 22m. 54s.
10. Gazzabini-Diaz (Alfa-Romeo), 17h. 26m. 21s.

UTILITY CLASS.

Gilera-Sartoni (Fiat), 19h. 53m. 25 2/5s.

SALOON CLASS.

Minoia-Balestreri (Alfa-Romeo), 16h 54m. 37 2/5s.

1,100 c.c. CLASS.

Tuffanelli-Bertocchi (Maserati).

1,500 c.c. CLASS.

Guilai-Venturi (Alfa-Romeo), 17h. 9m. 14 2/5s.

2-LITRE CLASS.

Scarfiotti-d'Ippolito (Alfa-Romeo), 15h. 44m. 41 3/5s.

3 LITRE CLASS.

Borzacchini-Bignami (Alfa-Romeo), 14h. 55m. 19 2/5s.

OVER 3 LITRES.

Strazza - Gismondi (Lancia - Lambda), 17h. 14m. 22 2/5s.

EYSTON'S NEW HOUR RECORD

THE history of motor racing has been marked throughout by the series of struggles to possess that most coveted record—the Hour. The reason is that it is probably the most difficult of all to prepare for correctly, and when ready, to drive successfully.

In sprint records, and even those up to 50 miles and more, the element of reliability is less important than that of speed, and somewhat risky tuning can be used successfully on occasion. In very long distance records, reliability is everything, and the car and driver with sufficient stamina can frequently, by merely keeping going, set up new figures.

The hour is just intermediate, and is very similar to the quarter-mile in the athletic world, in that almost sprint speed must be maintained for the entire distance.

A number of drivers have been and still are preparing for attacks on this record, and when Eyston went out for his records Divo, on a 2,300 c.c. Bugatti, had just secured the 50 miles at 130 m.p.h., and the 100 kilometres at 130.14 m.p.h., he was unable, however, to get as far as the hour record. When Divo had finished, Eyston took out the big "Razor-Blade" Panhard, and on his way to the coveted hour record which has stood for no less than five years, he broke both Divo's records and went on to cover 130.73 miles in the hour. The previous record, set up by Marchand on a Voisin was at 128.35 m.p.g. The car was fitted with the normal design of 8-litre Panhard sleeve-valve engine, which makes one still wonder whether this type will become more generally used. The engine speed in this record was only 2,800 r.p.m.

The chief incident of the attempt was the deflation of a rear tyre due to hitting a piece of fencing which had blown onto the track. This record is one of the greatest tests of a driver's physical endurance of any track event, and Eyston's performance is all the more meritorious for this reason, and it is very gratifying that although the car was not British, the driver was.

His total bag of records was as follows:

WORLD'S RECORDS.
(Also Class B Record.)

50	miles	132.01 m.p.h.
100	kilometres	131.8 m.p.h.
100	miles	131.67 m.p.h.
200	kilometres	131.14 m.p.h.
1	hour	130.73 m.p.h.

CLASS B RECORDS ONLY.

50	kilometres	130.79 m.p.h.

The equipment used included Castrol oil, B.P. Plus petrol, and K.L.G. plugs.

CIRCUIT DE L'AISNE

THE racing in the various classes of this event was chiefly notable for the Bugatti victories in the sports and racing classes, and the fine team performance of the two Licornes in the 1,100 c.c. sports class. The latters' cars finished together, winners of this class at the new record speed of 55.3 m.p.h.

The course is over a lap of 13 miles, 13 laps being covered by the larger cars, while the 700 c.c. class has only 9 laps to complete. The results were as follows:

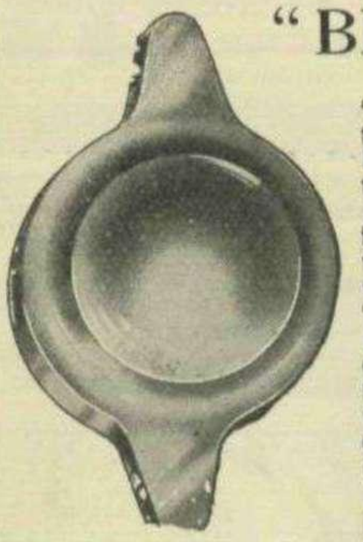
SPORTS CARS.

750 c.c. 9 laps, Jep (G.A.R.), 48 m.p.h. 1,100 c.c., 10 laps, Galoisy and Vallon (Licorne), equal first at 55.3 m.p.h. 1,500 c.c., 11 laps, Doublot (Bugatti), 51.6 m.p.h. 2-litres, 12 laps, Mme. Siko (Alfa-Romeo), 63.4 m.p.h. 3-litres, 13 laps, Cattaneo, 72.2 m.p.h. 5-litres, Flipo (Lorraine).

RACING CARS.

1,100 c.c., 11 laps, Robert (Salmson), 61 m.p.h. 1,500 c.c., 12 laps, Auber (Bugatti), 67.2 m.p.h. 2-litres, Druck (Bugatti), 68.5 m.p.h.

"BROOKLANDS" SPORT EQUIPMENT

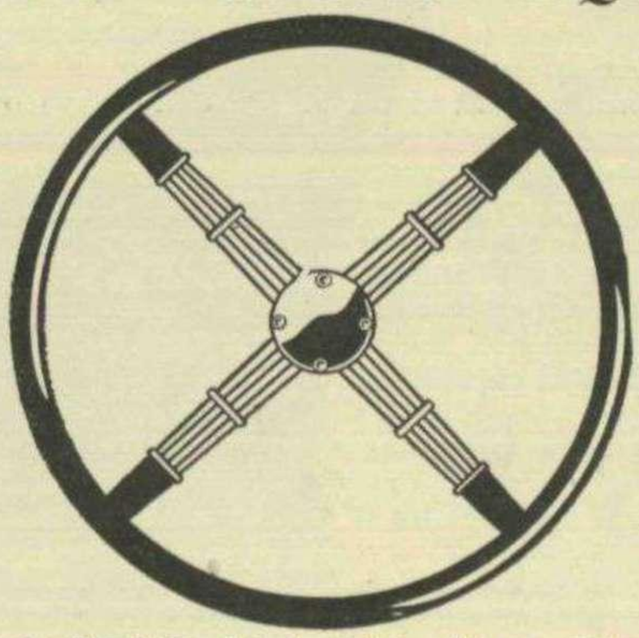


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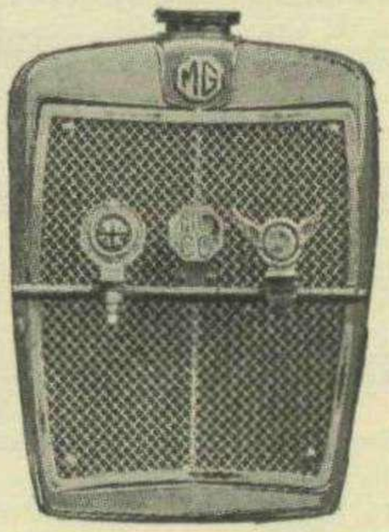
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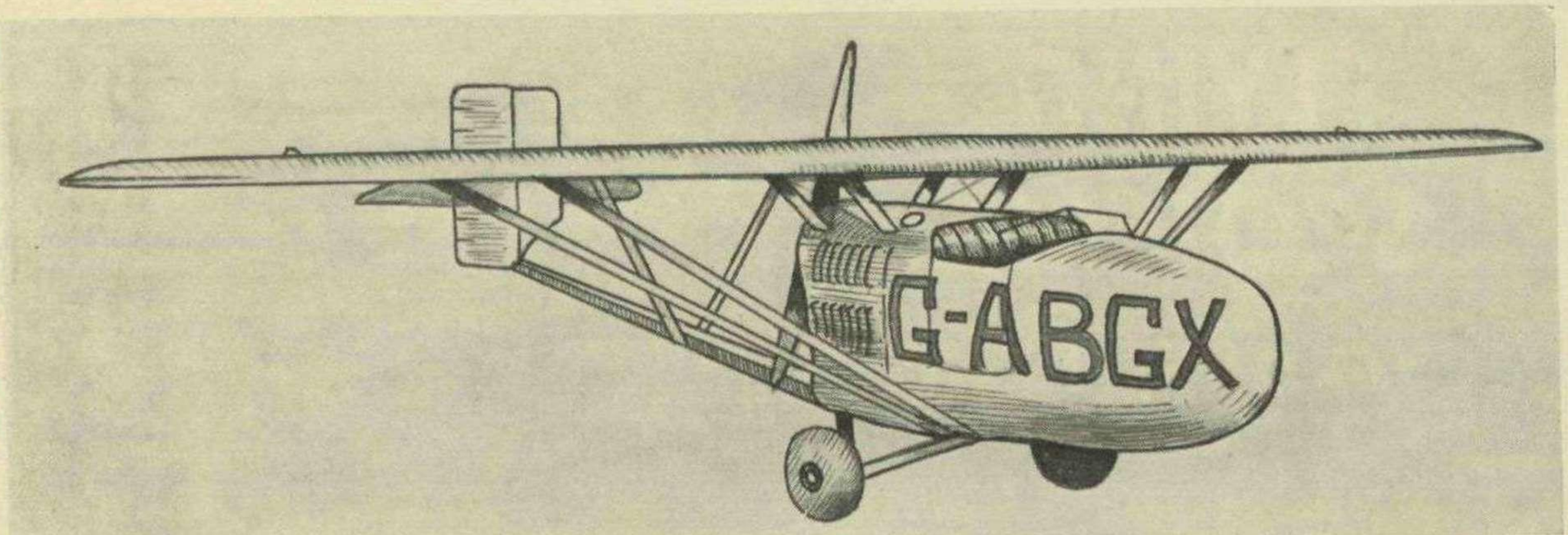
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AIR.

THE PUSHER—WHY NOT REVIVE IT?

A PLEA FOR ITS RE-ADOPTION.

In seeking means for improving the comfort, visibility and other points in the present-day light aeroplane, the writer of this article puts forward the suggestion that the pusher type should be reintroduced. While we do not necessarily agree with his views, we publish them as being of considerable interest.—ED.



How the modern pusher might look, according to the suggested layout in the following article.

ALTHOUGH the market for light aeroplanes is steadily expanding, and new types and makes are being produced, one can discern—with one notable exception—little attempt on the part of designers at a breakaway from accepted, orthodox design.

It cannot be denied that the modern aircraft has advanced enormously in such vital points as controllability, ease of housing, strength, reliability and performance.

Yet if one compares the general arrangement of the typical biplane (which is far and away the most popular type) with that of a machine built fifteen or more years ago, the similarity is striking—and a little depressing to those who wish for a less slavish following of the ordinary, well-worn design. By this, one does not mean to advocate the introduction of freak types, or drastic, unreasoned attempts at "being different," but a bolder move towards eradicating sundry bad features which are painfully noticeable in very nearly every aeroplane produced at the present time.

These defects, which are obviously inherent to the tractor type are (1) discomfort through airscrew slipstream, and engine noise, (2) inferior visibility, and (3) difficulty in making entry and egress from cockpits. It is equally obvious that so long as the tractor is retained, no amount of ingenuity on the designer's part can satisfactorily eliminate all these, and one comes to the logical conclusion that only by adopting that lay-out which was popular in bygone years—the pusher—can comfort and convenience in flying be increased.

That this has not been carried out is, on the face of it, a little difficult to understand; with the engine aft of the cockpit, and the pilot and passenger accommodated well forward it is possible to provide a greatly improved view all round, while, as anyone who has flown in a pusher will agree, freedom from draught, vibration and drumming is a marked feature. Further consideration will show that it would be a simple matter to incorporate side-by-side seating in a pusher arrangement, since it would fall in well with a nacelle shaped in true streamline form, and an elaboration could be made to make the machine convertible from the open to the cabin type by means of a sliding roof and side panels without difficulty.

It may be argued that if a prejudice exists against the pusher aeroplane, it is because it gained an unsavoury reputation in the early days. It is true that pushers have been involved in numbers of bad accidents, but the fault lay not so much in the fact that they were *pushers*, but rather that the design of the machines as a whole was unsound, and that the engines were unsuitable and notoriously unreliable.

Nowadays, however, with vastly greater knowledge and precise technical data at their disposal, designers are able to avoid the pitfalls which they themselves and their predecessors met with in the past, and by applying the fruits of experience in reviving the pusher, they could, without doubt, evolve a machine which would lack none of the excellent characteristics of the tractor aircraft, and which, at the same time, would possess those qualities which are nowadays absent but none the less required.

Thus, the modern high-lift cantilever type wing could be embodied in the general arrangement, so as to give a wide speed range, anti-stalling characteristics, low-landing speed, and good load carrying capacity. At the same time drag-producing struts and bracing could be avoided, and mounted above and to the rear of a well streamlined nacelle, the whole would present a neat and clean assembly which would contribute towards the machine's good performance.

The recent development noticeable in engine design would also favour the constructor, especially in arranging the propeller's thrust line to the best advantage, and here one immediately thinks of the in-

ENGLAND-CAPETOWN RECORD FALLS TO "FLYING SCOTSMAN" -4 DAYS 17 HOURS



Mr J.A.MOLLISON again chose WAKEFIELD Castrol XXL For his D.H.PUSS MOTH

THE PUSHER—WHY NOT REVIVE IT?—continued

verted D.H. "Gipsy" or the compact, light and efficient Pobjoy unit. "Airwheels" and a split axle undercarriage could be incorporated to follow standard practice, and the structure connecting the tail-unit and the main body of the machine could be a combination of a box-type fuselage and tailbooms, or alternatively, simply tailbooms. Another point which was bad in old designs but which could be cleaned up, thanks to modern development, is the arrangement of elevator and rudder controls; on such aircraft as the War-time F.E. these consisted of lengthy and complicated runs of cable, operating through numerous pulleys and fairleads, but with the Arens control system the modern pusher would not be so encumbered. Other up-to-date features come to mind by which the designer could eliminate all those faults which, either in theory or practice, led to the scrapping of the pusher type, and the more one considers it, the more firmly one feels that the adoption of the "engine behind" principle would be well worth while. That sundry problems and difficulties would materialise in the evolution of an aircraft built on the lines suggested there is no doubt. But is it unreasonable to ask—The pusher—why not revive it?

NATIONAL AVIATION DAY

Sir Alan Cobham's Big Campaign in Full Swing.

UNDER the leadership of Sir Alan Cobham, what is undoubtedly the biggest effort so far made in this country to popularise flying was launched last month, when his "National Aviation Day" was opened with an initial meeting at Luton.

Sir Alan's idea in organising this tour goes far beyond merely providing an aerial circus to amuse the general public, and his principal object is to arouse a much wider enthusiasm for aviation than at present exists in this country. To use his own words—"There are still millions of people in Britain who have never seen an aeroplane at close quarters, and have never been in the air." And as far as he is able, he intends to familiarise these people with aviation, because he believes that as things are at the present time the development of flying in all its branches can progress only slowly.

The National Aviation Day has entailed an enormous amount of organisation. Each day sees the entire fleet of some dozen aircraft with attendant transport operating at a different town or centre, and a programme embracing over twenty events is given twice a day.

Included in this programme are demonstrations of various types of aircraft, aerobatics, pylon racing, parachute descents, wireless intercommunication between aeroplanes and the ground, and flights with towed sailplanes.

In addition to these, passenger flights are given continuously.

Apart from the display, Cobham is giving much publicity to a Mandate, and is collecting signatures from the public for it to indicate their desire for a more energetic development of flying. The Mandate has been compiled by eleven leading aeronautical organisations, each of which has contributed a clause dealing with an urgent necessity lying within its own particular province. Most welcome amongst these is that of the Royal Aero Club, which reads as follows:—

> That air racing and record breaking achievements should be given greater encouragement by the Government and the fact recognised that there is no sounder investment for the British nation than to build aircraft for record breaking and air racing: because—
>
> (*a*) The scientific knowledge gained from such achievements has done more to improve British aircraft than possibly any other single activity. The record speed of to-day is the commercial speed of to-morrow.
>
> (*b*) The sporting nature of flying has always been the backbone of British interest in the air, and continued endeavour in this direction is necessary to the life of British aviation.

Another clause which is of particular interest is that put forward by the British Gliding Association, which states:—

> That the Government make a grant of an adequate sum of money spread over a number of years, (*a*) for the establishment and maintenance of Central Scientific and Training Stations to enable the Youth of Britain, and scientifically and technically minded people, to develop and carry out research work through motorless flying for the benefit of British aviation; (*b*) a grant be made for the establishment of a central fund available for the purpose of assisting clubs, to establish flying grounds, erect hangars, buy machines and equipment. That the British Gliding Association be entrusted with the establishment, maintenance, direction and control of such stations and the administration of the grants to clubs.

All the projects which Sir Alan Cobham has carried through in the past have been of a genuinely high value to aviation, and whereas a good number of flying achievements of recent years have served only as a means of fleeting publicity to their sponsors and participants, Cobham's long-distance flights across Continents definitely "blaized the trail" for future air line routes, and were thus of real importance. That he should now be devoting so much time and work to this National Aviation Day campaign compels one to regard the effort as something of more than ordinary interest and significance.

His fleet of aircraft will continue to operate until October, and at the conclusion it will have visited 170 centres from Land's End to John O'Groats and from East to West of the country.

BROOKLANDS AS A FLYING CENTRE

WHERE KINDRED SPIRITS MEET.

ONE does not have to delve very deeply into history to discover that in years gone by aviation and the sport of motor racing were closely linked together.

Men who had devoted their energies to improving the efficiency of the automobile, and who had achieved, prominence by their accomplishments in design and racing were, when the time arrived, eager to " join up " in the then new science of flying, and so the centre of British motor racing—Brooklands—took on a fresh aspect. Sheds and workshops were erected, and while four-wheeled monsters thundered round the track, divers and strange craft took shape within those buildings, and ultimately took the air.

All that was long ago, and the puny infant aviation has grown to robust maturity, rivalling its early ally in attraction, progress and triumphs. But the bond still holds between the two, and there is no place where it is so apparent than at the scene of those early days.

Brooklands as an aviation centre is old, but it is also very up-to-date, The people there keep abreast of the times and no new development, scheme or method which may make their headquarters and activities really modern and go-ahead is overlooked or ignored. Most visitors to the track must have noticed during the past few months the erection of a new building in the vicinity of the aeroplane sheds. This is the clubhouse of the Brooklands Aero Club, and it has just recently been opened. And it *is* a club house. Built on really modern lines it embodies all those amenities which the flying club member or aerodrome visitor has sought for so long. On the ground floor one finds—after entering the hall—a spacious restaurant, a bar, and a lounge sumptuously furnished, warm and well-served. These things are needed at aerodromes—places of long waits, bleak winds and other things that try the traveller.



The handsome and very modern premises of the Brooklands Aero Club.

The roof of the building is flat, and this, together with the look-out tower, which surmounts the whole, forms a perfect vantage point from which to witness flying events.

The flying side of the club is attended to by the Brooklands School of Flying, which under the leadership of Captain H. D. Davis, A.F.C., has an instructional staff of the highest class. Captain Davis is a pilot and instructor of very great experience; his connection with flying, in fact, dates back long before the War, when he was associated with that great pioneer, Colonel Cody. And it is here interesting to note that the two grandsons of Colonel Cody are on the staff of the B.S.F. With Captain Davis are Messrs. G. E. Lowdell and S. A. Thorn, both of whom saw considerable service in the R.A.F. and who have had wide experience in commercial aviation.

The Brooklands School of Flying by sheer merit has expanded in business considerably during the past few years, and when it is stated that the total flying time of the instructional staff now exceeds fifteen thousand hours, any prospective pupil to the B.S.F. or member of the Brooklands Aero Club will realise that he will start his aviation career under the best possible conditions, in the safest hands, and under the most expert guidance.

But besides learning to fly, he may if he so desires study the allied subjects of air navigation, aircraft and engine maintenance and so forth, for provision is made for this in lecture rooms adjoining the hangars. A visit to these shows that they are extraordinarily well-equipped with sectioned engines, wings, control systems, scale models



[*Motor Sport Photographs*

The big main hangar of the Brooklands School of Flying, which houses a great variety of light aircraft.

BROOKLANDS AS A FLYING CENTRE—continued.

of the aerodrome, and in fact, all the essentials of the modern aero-technical school. A development more recently incorporated in the school's highly-systemized method of instruction, and which one would hazard, will prove an important factor in the near future, is the installation of a wireless transmitting and receiving set, which already has proved its value in allowing the instructor to keep contact with and advise a pupil while flying solo.

The machines which form the fleet of the flying school are "Moths," some of which are fitted with hoods and full complement of instruments for blind flying instruction. The "Moths" however, are not the only occupants of the big hangar which ranges alongside the new club building, for here are housed numbers of privately-owned machines, demonstration machines, and sundry aircraft for sale.

Indeed, outside an aero show one would seldom find so wide a variety of light aircraft under one roof. Going further afield one comes to the repair shops of the B.S.F. where all types of machines are re-conditioned. This is just another branch of the concern's activities.

Tucked away in the far side of track, this "air colony" is, perhaps, overlooked by the average race-fan who regularly comes to Brooklands. To these, one would tender the suggestion that they lose no time in taking the road that skirts the aerodrome and leads thither. By doing so, if they are not air-minded already, they will, without doubt, reach that happy state before they make their return.

KING'S CUP ENTRIES

THE King's Cup Race, which will be flown on 8th and 9th of July, has so far attracted a respectable number of entries—amongst them being several new and interesting types of machines.

There are three of the latest D.H. aircraft—the "Fox Moth," for example, the Percival "Gull," an Avro "Cadet," an Avro Mailplane, and two Monospars; it will be interesting to watch the performances of these newcomers.

Comper "Swifts" number no less than six in the list given below, and as we go to press we learn that another has been entered by H.R.H. the Prince of Wales. Flight-Lieutenant E. H. Fielden will be the pilot, while yet another "Swift" will compete, entered by P. de W. Avery. Additional entries include an Arrow "Active II." two Spartans, a "Puss Moth" and an unnamed machine entered by J. G. Ormston, making a total of fifty-one. Prince George has entered a "Puss Moth," which will be piloted by Flight Lieutenant J. G. D. Armour.

ENTRANT.	AIRCRAFT.
A. S. Butler	D.H. Fox Moth
Mrs. A. S. Butler	D.H. Puss Moth
A. E. Hagg	D.H. Fox Moth
Captain G. de Havilland	D.H. Puss Moth
E. W. Hart	D.H. Puss Moth
Fl.-Lt. H. M. Schofield	"Monospar"
Miss Winifred Brown	Avro Sports Avian
W. L. Runciman	D.H. Puss Moth
The Rt. Hon. Lord Wakefield of Hythe	D.H. Fox Moth
John Grierson	D.H. Moth
J. D. Siddeley	Avro "Mailplane"
Air Marshal Sir John F. A. Higgins	Avro 631
G. E. de Lengerke	Segrave Meteor
Miss W. E. Spooner	D.H. Moth
W. Lindsay Everard, M.P.	D.H. Puss Moth
Captain Gerard Fane	Comper Swift
F. R. Walker	Comper Swift
Miss F. J. Crossley	Comper Swift
Flying Officer H. Bailey	Comper Swift
Captain I. C. Maxwell	Comper Swift
Lieut. C. R. V. Pugh, R.N.	Avro Sports Avian
H. V. Mayers	Comper Swift
W. L. Hope	D.H. Puss Moth
Sq.-Lr. J. McKelvie	D.H. Moth
A. C. Thornton	Arrow "Active"
A. J. A. W. Barr	Avro Avian
Flying Officer E. C. T. Edwards	Martlet
Mrs. L. B. Rhodes-Moorhouse	D.H. Moth
R. Westenra	D.H. Moth
Sir Robert McLean	Vickers "Viastra"
K. C. Gandar Dower	D.H. Moth
J. F. Legard	Avro Avian
Lady Bailey	D.H. Puss Moth
G. Kenning	Blackburn Bluebird
R. Blackburn	Blackburn Bluebird
M. A. Lacayo	Comper Swift
Lieut. Caspar John, R.N.	Avro Avian
A. C. M. Jackaman	"Monospar"
Lt. Commdr. E. W. B. Leake	Percival "Gull"
Lt. Commdr. G. Rodd, R.N.	D.H. Puss Moth
M. D. Scott	D.H. Puss Moth
Captain the Rt. Hon. F. E. Guest	Hawker Tomtit
L. G. Anderson	DH.51.

CIVIL AIR DISPLAY

THE Guild of Air Pilots and Air Navigators is organising a Civil Air Display to take place at Brooklands on Friday and Saturday, May 27th and 28th.

The objects of the display are to endeavour to institute an annual event in civil aviation which eventually, if not at once, will become the counterpart of the Royal Air Force Display, and a fixture of prime importance to the whole industry.

The proceeds of the display will be devoted to the Guild, to initiate an Endowment Fund which will place it on a firm financial footing.

Hitherto, the Guild, which has been in existence for only two years, has depended for its existence on the support of the Hon. Wardens.

There is to be a "trade" and press day on May 27th, and the organised flying programme will take place on Saturday afternoon, May 28th. This will contain items of outstanding interest, and the public may be assured that they will see flying of a standard equal to anything at the R.A.F. Display; incidentally, one item will be provided by Service pilots.

As regards admission, there are to be only two prices: 5/- and 2/6 per person; motor cars 2/6.

There will be a special Guild enclosure to which admission will be by badge only, and tea and refreshments will be obtainable in the public enclosure.

Capt. H. Duncan Davis, A.F.C., of the Brooklands School of Flying, is the organiser, and Flight-Lieut. R. C. Preston, A.F.C., the Secretary of the Display, and they state that from the support now being received, there is every indication that the occasion will be a great success.

Meanwhile efforts are being made to provide a novel feature in the programme in which early aircraft will be displayed and—if possible—flown. Very few really ancient machines are to be found in the country in these days, and this fact is presenting a difficulty to Captain Davis. He has, however, one or two old-timers in view, and if any readers of MOTOR SPORT can assist him in unearthing any others — either pre-War or War-time types — such help will be gratefully received.

THE SPORT AFLOAT.

THIS OUTBOARD RACING

—Its Steady Decline in Popularity—and The Move to Bring an Improvement.

THROUGHOUT history, the British people have always excelled in a crisis. Well, there is a crisis for them now.

From the end of 1929, outboard racing has suffered a steady decline in popularity. Spectators no longer turn up, and competitors have grown fewer and fewer ; deeper and deeper has the general depression become. The London Motorboat Club has held their first meeting of the year at the Welsh Harp. There on the pontoon stood many of the men who had made outboard history. But they wore overcoats and a defeated expression. Now and again one would turn to another, and ask if he remembered the time when Mr. Cotton walked into the boat house at Rickmansworth in the middle of a race, and asked if we could help him remove his hydroplane from a flower bed ; or the time when Peter Godfrey and half London motorboat men arrived at the Watermota works in the middle of the night and said they were sorry, but Peter had dropped his engine into the lake ; and could they get some of the mud out of it in time for to-morrow's race ? And for a moment the gloom would lift. Yes ; those were the days.

To what end ?

It is true that people with a vivid imagination could gain a considerable thrill from a glance at the average man's steering and control wires ; this has always been so. But, the thrill should be provided by the racing, not by a potential accident.

This state of affairs, does not seem to worry the more responsible club members, who, when they have recovered from their surprise at having been questioned on the subject, take you on one side and say :— " Young fellow ! you have the wrong idea. We are not trying to organise a successful race meeting. These enthusiasts have come here for an afternoon's amusement." We English certainly take our pleasures sadly.

Let us follow the rise and fall of outboard racing.

The noise problem.

In the first place ; one or two people discovered that a small boat, skimming over the water provided a great thrill, so they gathered together and raced. The public meanwhile, turned up to satisfy its curiosity and the whole affair was quite a success. Gradually, the little motors developed and began to go quite fast ; race meetings were organised, and the public turned up and was greatly entertained. Still a success. Race after race was run, and the sport began to take on almost national importance. Then came one or two complaints about noise, a few court cases, and finally the threat of an injunction. This, unfortunately, caused something of a panic and the M.M.A. immediately issued a series of rules which, out of respect for the dead, shall not be criticised.

From then on, every make and type of engine had to be passed for silence. Engines were transported by the dozen to an engineering works at Teddington, and their exhaust notes tested by a weird and wonderful German instrument known as an " Audiometer." Engines were then sold to the public complete with an enormous mass of iron at the back, and the public decided to make the best of it. This was not all, however. Each individual engine had to possess a certificate of silence (price 10/-) which was granted to people who fitted approved silencers, which had to be approved at a cost of 2 guineas. If, on the other hand, a man wished to fit a silencer, of his own, he had to send his engine to the Audiometer to be tested ; also at a cost of 2 guineas. Wider and wider grew the grins of the silencer salesmen, until at last they decided that engines required silencing at the carburettor end as well.

An engine fitted with all these contraptions soon began to lose its charm, and one or two drivers began to drop out. Nobody particularly wanted to see outfits silently labouring round and round, so spectators began to dwindle as well. Immediately the cost of racing went up owing to the lack of ' gate,' and once again ' the powers that be ' had to think of some solution to the problem. They thought of the speed dinghy, as it did not capsize.

Now the speed dinghy is one of the most ingenious developments of modern motorboating, but as a sprint racing craft for a place like the Welsh Harp : Well——

During all this time there was a rule stating that none but standard engines might be raced. This rule was brought in ostensibly to prevent wealthy men from making expensive additions and alterations to their motors, thereby raising the cost of racing, although ' the powers that be ' at the time seemed to consist mostly of people who were interested in the sale of new motors.

A concerted effort.

There must be several thousand people in this country who will rejoice at the news that the unsatisfactory state of outboard racing has at last been realised in influential circles, and a strong movement is afoot to remove the ' standard engine ' rule altogether, and to put racing on a much sounder basis.

May this be successful.

It certainly has the backing of all those who would like to race but cannot afford to do so.

When discussing a situation as serious as the present one, it is impossible to avoid annoying a few people whose views differ, but perhaps in this case they will make a real effort to sink their differences for the common good and *pull together*.—R.C.

THE NEW CHALLENGER

Work on "Miss England III." Well in Hand

THORNYCROFTS are now well under way with Miss England III., in the quiet, efficient manner that is typical of this all-British concern.

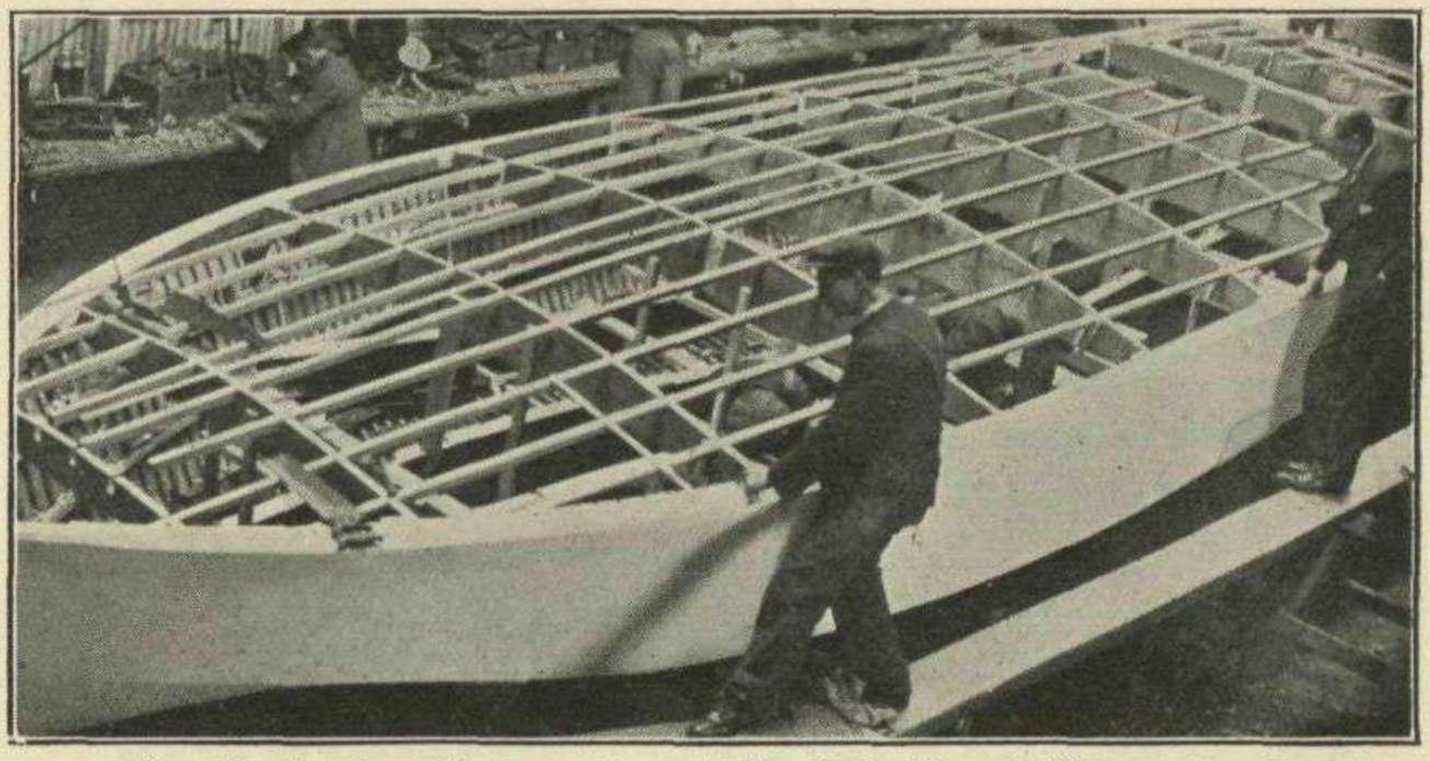
Although all the important details of this craft are now settled, it is as yet too early to reveal some of them. For instance, the underwater construction must remain a mystery for the time being, as must the gearbox ratios and so forth. Those points that may be discussed, however, are extremely interesting. As is generally known, the hull construction is double skin, the inner planking being diagonal, while the outer is fore and aft. The propeller shafts emerge just behind the step, and are supported by cutless rubber bearings, both on emerging from the hull and at the stern brackets.

The mahogany engine bearers run the whole length of the boat, and are an integral part of the hull.

There will be only one mechanic beside the driver, the wheel being offset to starboard. The two engines will run entirely independently, with separate throttle control to keep the r.p.m. of each identical.

The cooling water scoops will be at the stern, and will be assisted by circulating pumps. Before starting the engines, water must be pumped to the cylinder jackets by hand, after which the flow is controlled by thermostat, with an additional hand control.

All the materials used are the very best it it is possible to obtain. The rudders are of hundred-ton steel, while the propellers are being machined from a solid forging.



Kaye Don (on the right) inspects the new "Miss England" at the Thornycroft works.

The two 12-cylinder Rolls-Royce engines each develop 2,000 h.p. approximately, at some 3,500 r.p.m. As in the case of Miss England II., the drive is taken forward, this time to two gearboxes, and then back at an acute angle to the horizontal. One of the chief advantages of the forward drive system is that the propeller shaft can be nearly horizontal.

Many people seem to think that Miss England III. is provided with two propellers to overcome torque reaction; but this is not so. The torque reaction remains, and is a loss just the same, only in the case of a twin-screw vessel, it has no effect on the steering. The propeller speed of Miss England III. has not yet been announced, but it is fairly safe to assume that this will be considerably lower than in the case of Miss England II., probably in the neighbourhood of 6,500 r.p.m. Although the propeller of Miss England II. turned at 12,000 r.p.m., this speed was never thought to be the most efficient, but lower revs., and a consequently large propeller, would have rendered the torque reaction too great for a single screw boat. The question to be decided is: Will they have a single screw, with a very little drag, running at a slightly inefficient speed, or will they have two propellers running at their efficient speeds, and a little extra drag? We shall see which is the better.

The contest for the World's water speed record will be extremely keen this year, as Gar Wood states that his new boat will be capable of 120 m.p.h., which, as every keen motor-boatist knows, means that he will travel at approximately one hundred and twenty miles per hour.

COMPETITORS AT GARDA.

AT Lake Garda, this year, there will be nine American pilots including Miss Turnbull, and probably three from England.

AN OUTBOARD FILM.

THERE will shortly be seen in the suburban cinemas a film entitled "The Freshman's Finish." This is a typical American comedy, dealing with outboard racing. The hero, as usual, is kidnapped on the eve of a big race meeting, and his boat rendered somewhat unseaworthy. He escapes at the last minute and wins the race with his motor fixed on a bath tub. When will the first real motor boat film be produced?

THE MIAMI AFFAIR.

AN eye witness of the race for the Colonel Green trophy, at Miami says that the double-faced clock was faked so that all the competitors not "in the know" went over the line too soon, including of course, Harrison.

During the race the hands were, apparently, re-synchronised, and none of the officials were any the wiser.

It seems a pity that some of the Americans, reputed to be the most hospitable race in the world, should find it so difficult to behave themselves when an Englishman is racing against them.

A NATIONAL OUTBOARD ASSOCIATION.

VARIOUS methods of dealing with the outboard crisis have been suggested but one of the soundest seems to be the forming of a "National Outboard Association" with branches in various parts of the country, taking the place of the existing clubs. Racing would then be controlled from a central body while fixtures and so forth could be arranged for the general benefit. It certainly seems a good idea.

TWO MORE JOHNSONS

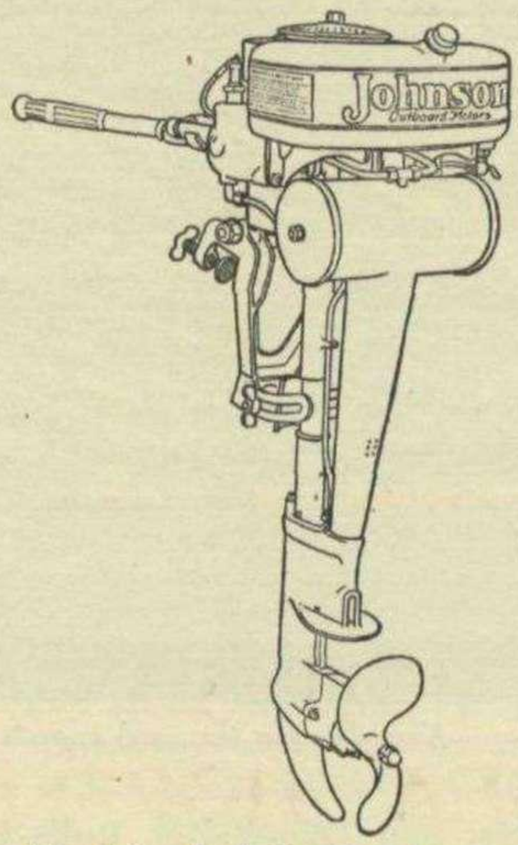
NEW 327 c.c. MODEL AND A "LIGHT TWIN."

VANADIUM LTD., of 64, Victoria St., London, S.W. 1, announce two additional models to their already extensive range of Johnson motors.

There is the "Standard Twin" which is a 327 c.c. motor and is intended for use on large rowing boats or very light weight semi-displacement boats. The cylinders are opposed and slightly offset to permit the use of normal straight connecting rods. The pistons are of Lynite, and all main bearings of bronze.

Both the "Standard Twin" and the "Light Twin" are designed with a view to simplicity, and rotary valves are not incorporated in either model; the gas being led from the carburettor to the induction ports by an ordinary manifold. At 2,800 r.p.m., the 'Standard Twin' develops 7 h.p. It has a total weight of 60 lbs.

The "Light Twin", a 154 c.c. motor, might be termed the Standard Twin's "little sister." It is almost identical in design, but has cast iron pistons and only weighs 45 lbs. This motor develops 3 h.p. at 2,800 r.p.m.



The "Standard Twin" Johnson.

Both motors can be supplied with long shafts for use on larger boats, and an underwater exhaust system is standard in both cases. The prices are £41 and £30 respectively.

Although not new, the world's lightest outboard motor is of interest. This is the "Sea Horse Single," a 1½ h.p. motor weighing 27½ lbs. It has a single cylinder, and delivers its power at 2,700 r.p.m. In spite of its small size, it has all the features that have made other Johnson motors famous; including, full tilting movement, full pivot steering (which means that the motor can be turned right round to propel the boat backwards), and a waterproof flywheel magneto. The price in this case is £29.

Messrs. Vanadium are exhibiting a range of Johnson engines and Vanadium dinghies at the Used Car Exhibition at the Agricultural Hall, Islington.

READERS' QUERIES.

We are always pleased to answer readers enquiries, and if these are of general interest we shall be equally pleased to publish them. Your full name and address must be sent, however, as the subject is not always suitable for publication.

C. H.

THE World's Unlimited Outboard Speed Record is at present held by Tommy Estlick at a speed of 56.71 statute miles per hour. This was achieved on Saltona lake, California, which is considerably below sea level. The advantage of this is that the atmospheric pressure is abnormally high, giving a slight super-charging effect. A Johnson motor was used.

M.D.

A SECOND-hand C. Class motor of 1929 should cost about £28. We advise you to get in touch with Outboards Ltd., of 618, London Road, Isleworth, Middlesex.

C.S.

SPEED boat trips are given near London at the following venues:—Colnbrook Water Sports, Crystal Palace, and the Welsh Harp, Hendon.

THE J.C.C. HIGH-SPEED TRIAL—continued from page 298.

CLASS B.

Special Awards:—G. Taylor (Alta), J. A. Driskell (B.N.C. s/c), A. W. S. Young (Amilcar), I. M. C. Hepburn, A. Jones, C. E. Wood (M.G. Midgets), H. C. Hunter, E. N. Ward, R. J. Appleton, E. K. Rayson, E. Brookes, M. P. Simpson, C. E. Childe Freeman (Rileys), S. Watt (Fiat), A. C. Fairtlough. C. L. Guiver N. H. Weddle (Salmsons), G. W. Olive (Standard), C. Anthony (Morris Minor).

Standard Awards (41 m.p.h. average):—A. A. Polard, M. T. O. Collier, T. A. W. Thorpe (M.G. Midgets), R. S. H. Bevington, Miss Hedges, Miss J. Richmond (Rileys).

CLASS C.

Special Awards:—I. S. Macdonald, M. H. Scott, S. C. Whitehouse, R. A. Cookson (Aston-Martins), R. L. Bellamy, H. P. A. Peaty (Frazer-Nashes), J. L. Tully, B. S. Clavering (M.G. Magnas), F. S. Hutchens (E.W. Hornet Special).

Standard Awards (44 m.p.h. average):—M. H. Morris Goodall (Aston-Martin).

ONE-LAP HANDICAPS.

RACE A.

1. W. K. Faulkner (Bugatti s/c, 2263 c.c.).
2. I. L. Waller (Alvis 2,148 c.c).
3. E. K. Rayson (Riley 1,089 c.c.).

Won by 100 yards at 85.87 m.p.h.

RACE B.

1. A. R. Linsey (Aston-Martin 1,482 c.c.).
2. G. R. Hartwell (Aston-Martin 1,482 c.c.).
3. D. Duncan-Smith (Frazer-Nash 1,496 c.c.).

Won by 10 yards at 68.22 m.p.h.

RACE C.

1. R. Mitton Waterfield (Riley 1,089 c.c.).
2. H. F. Westbrook (Alvis 1,496 c.c.).
3. W. A. L. Cook (Lagonda 1,954 c.c.).

Won by 3 yards at 69.66 m.p.h.

TWO-LAP HANDICAPS.

RACE A.

1. E. K. Rayson (Riley 1,089 c.c.).
2. I. L. Waller (Alvis 2,148 c.c.).
3. R. A. Cookson (Aston-Martin 1,482 c.c.).

Won by 20 yards at 79.55 m.p.h.

RACE B.

1. A. R. Linsey (Aston-Martin 1,482 c.c.).
2. D. Duncan-Smith (Frazer-Nash 1,496 c.c.).
3. A. T. G. Gardner (Rover 2,565 c.c.).

Won by 40 yards at 73.89 m.p.h.

RACE C.

1. E. L. Clarke (Rover 2,565 c.c.).
2. J. Reville (Alvis 1,645 c.c.).
3. W. A. L. Cook (Lagonda 1,954 c.c.).

Won by ½ mile at 71.76 m.p.h.

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1. J. C. C. Davies (2,056 c.c.).
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3. G. W. Olive (2,054 c.c.).

Won by 250 yards at 62.27 m.p.h.

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1. G. J. Axtell (749 c.c.).
2. P. W. Marriage (749 c.c.).
3. G. G. C. Knight (749 c.c.).

Won by 1 yard at 59.36 m.p.h.
-2 yards 2nd and 3rd).

M.G. RACE.

1. J. E. Hewens (2,468 c.c.).
2. D. G. Evans (747 c.c. s/c).
3. A. Jones (847 c.c.).

Won by 30 yards at 64.93 m.p.h.

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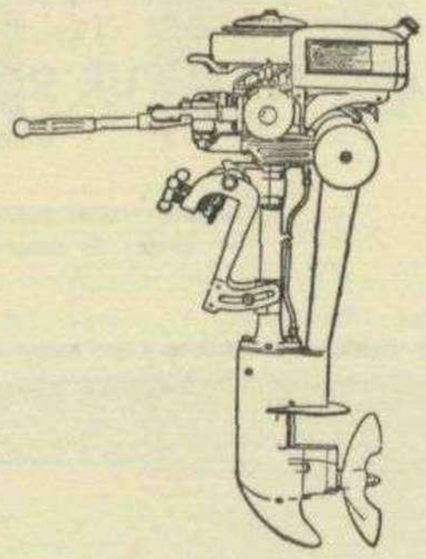
1930 Alfa Romeo 1½-litre supercharged sports 2-seater, black and chromium, small mileage. £500. Alfa Romeo British Sales Ltd., 3, Baker Street, W.1. Welbeck 2582.

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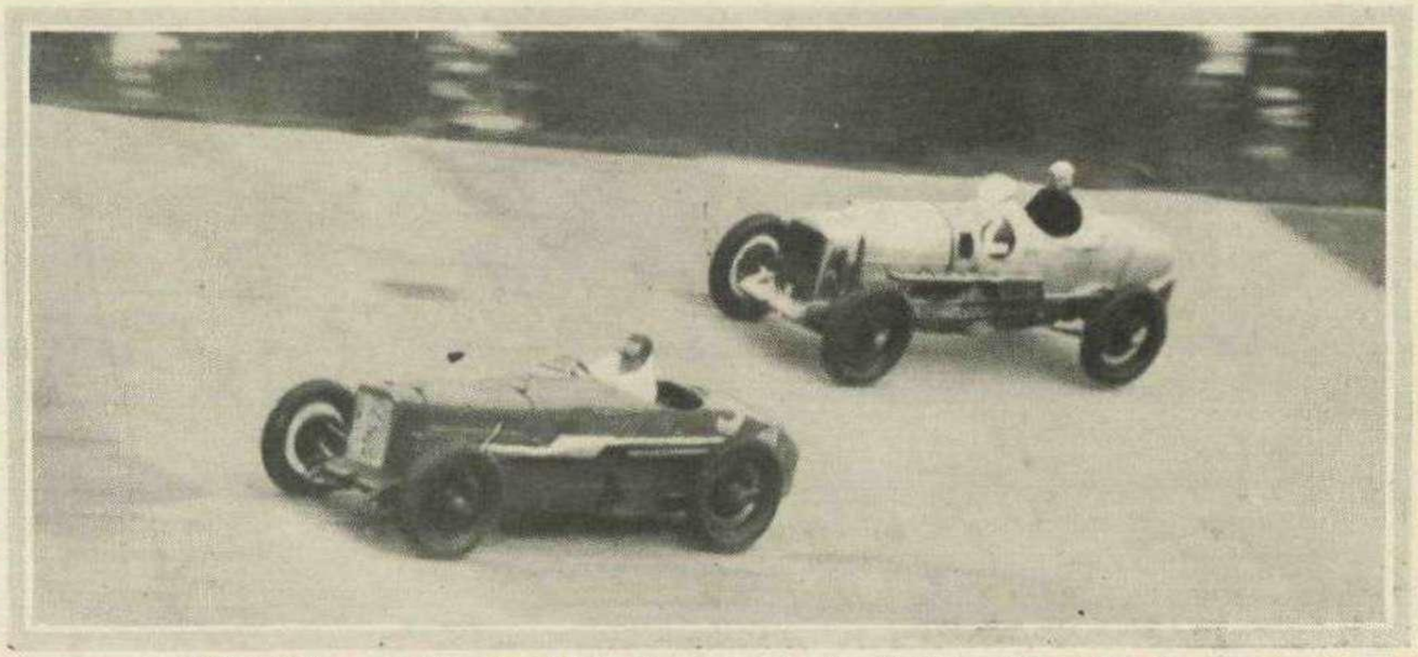
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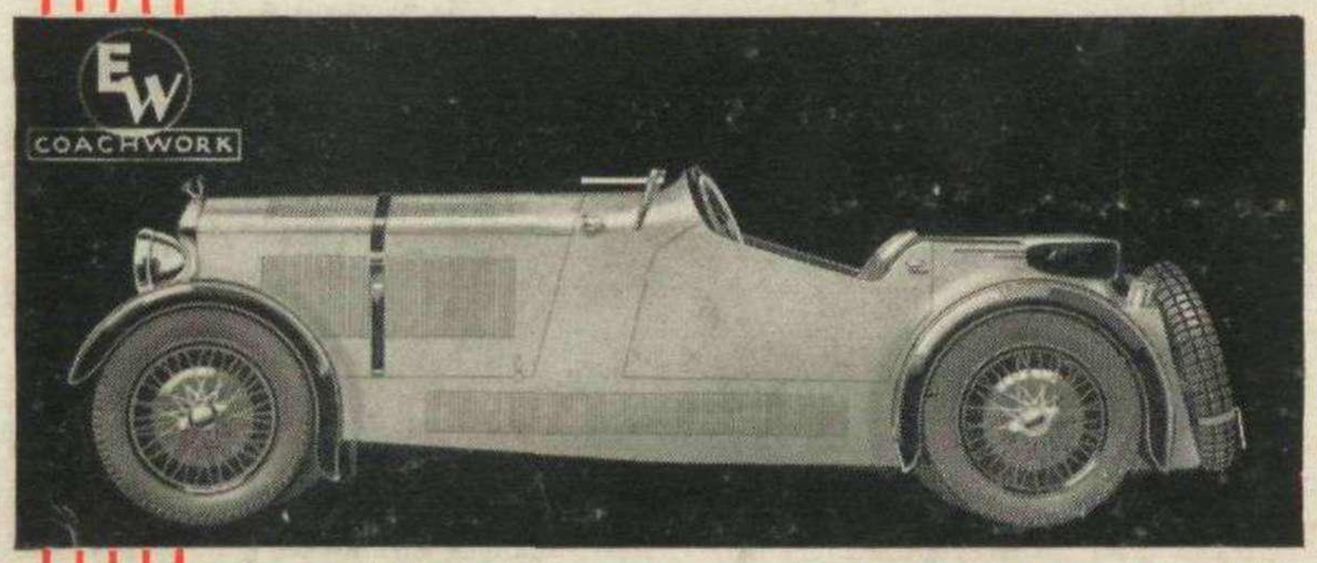
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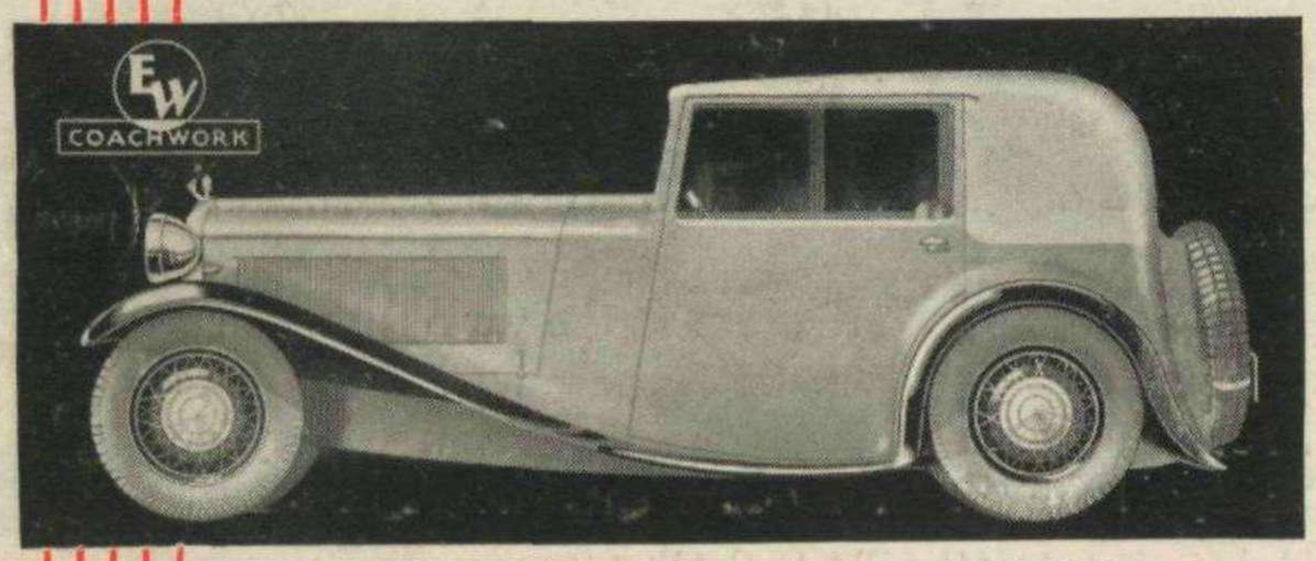
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