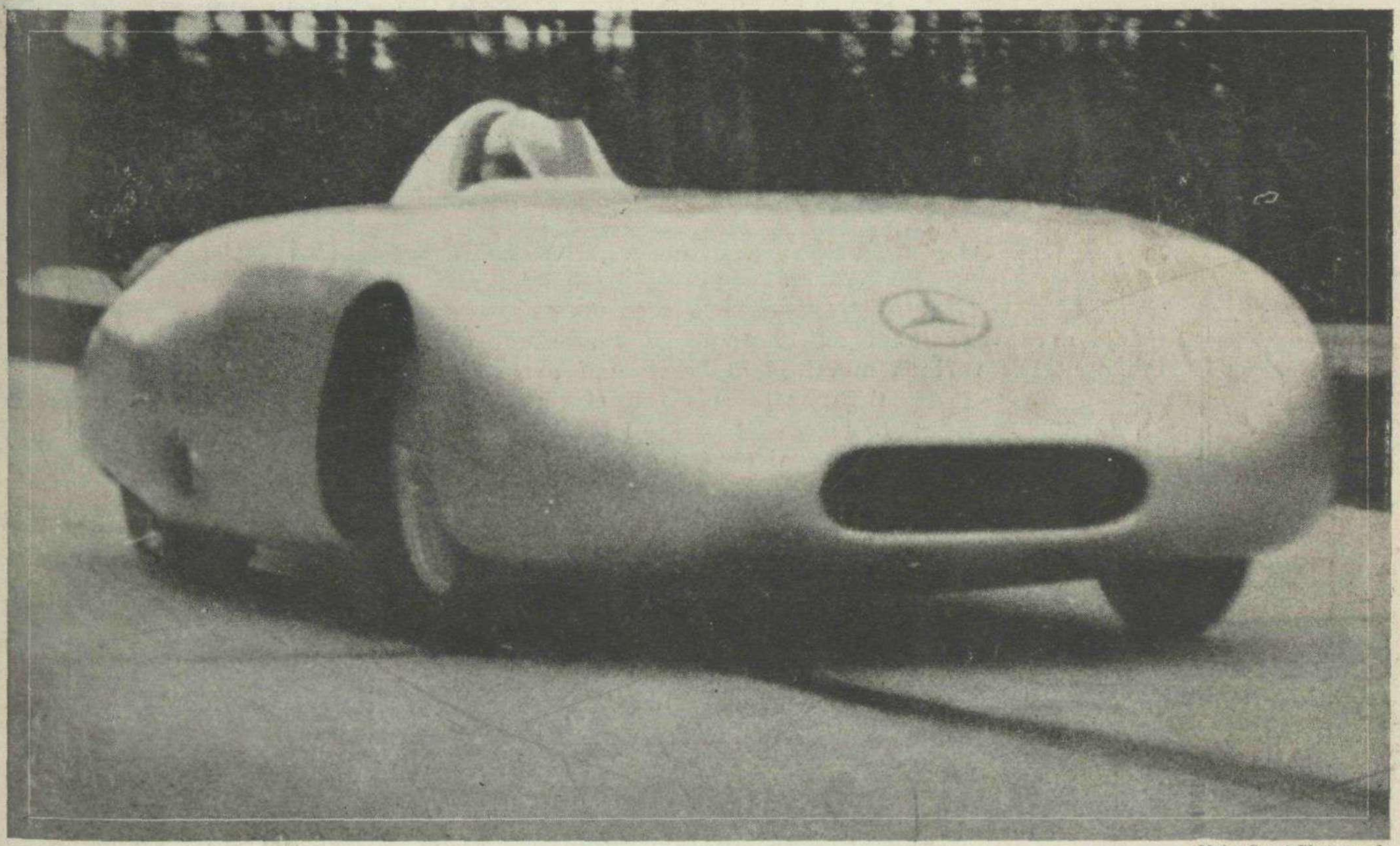
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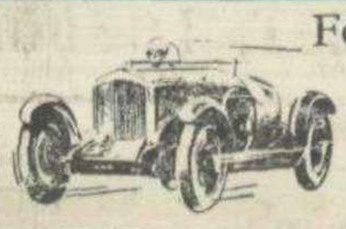
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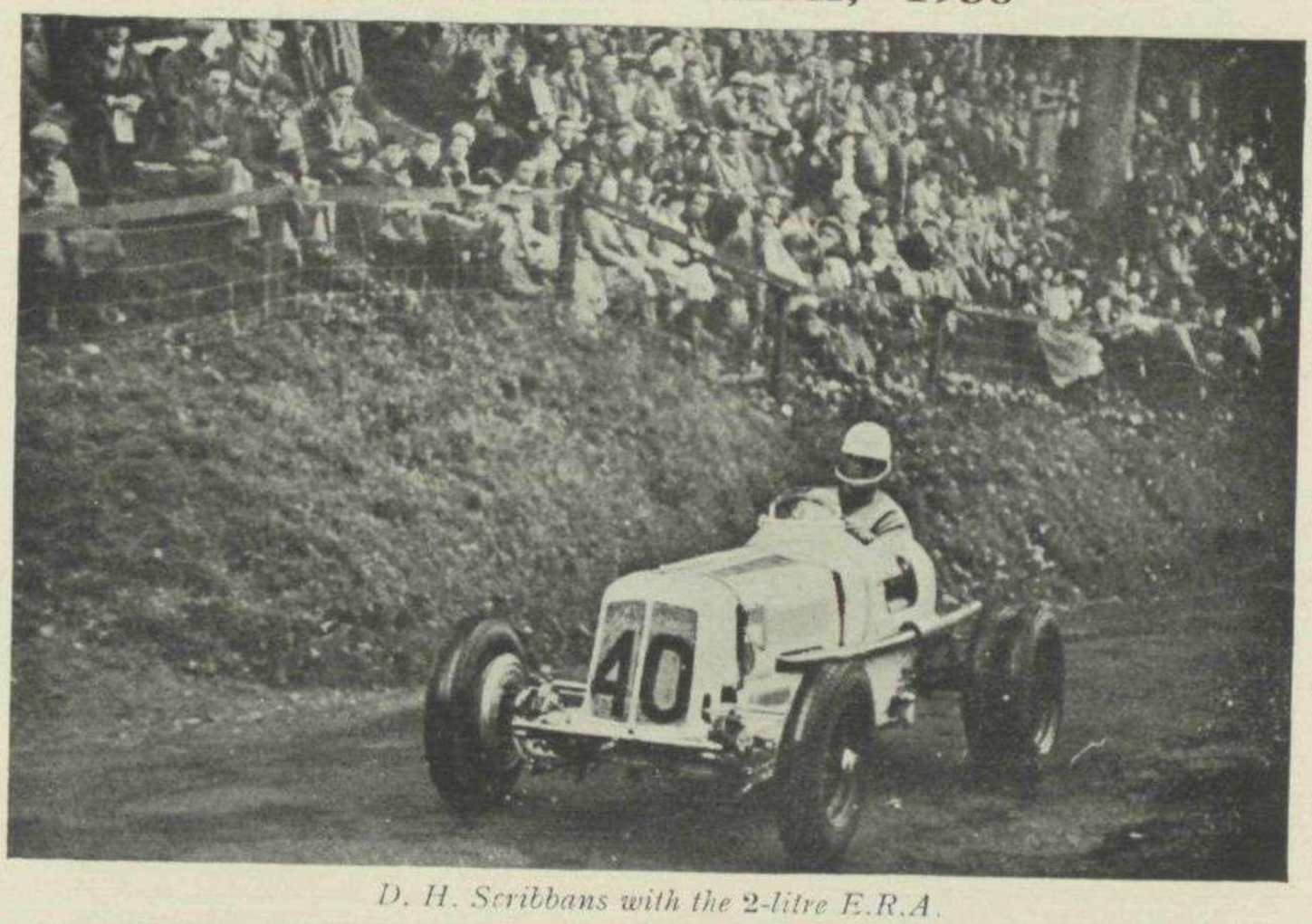
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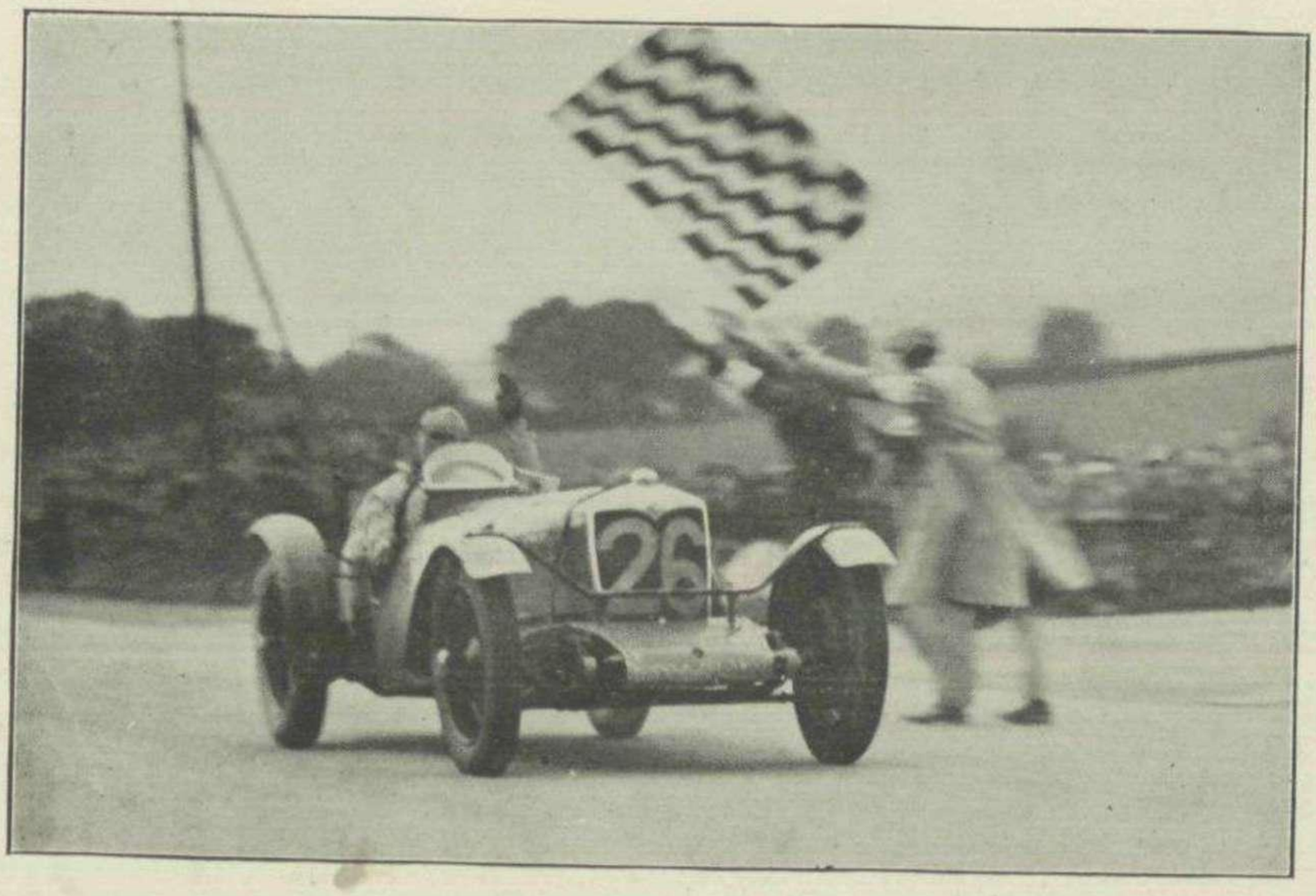
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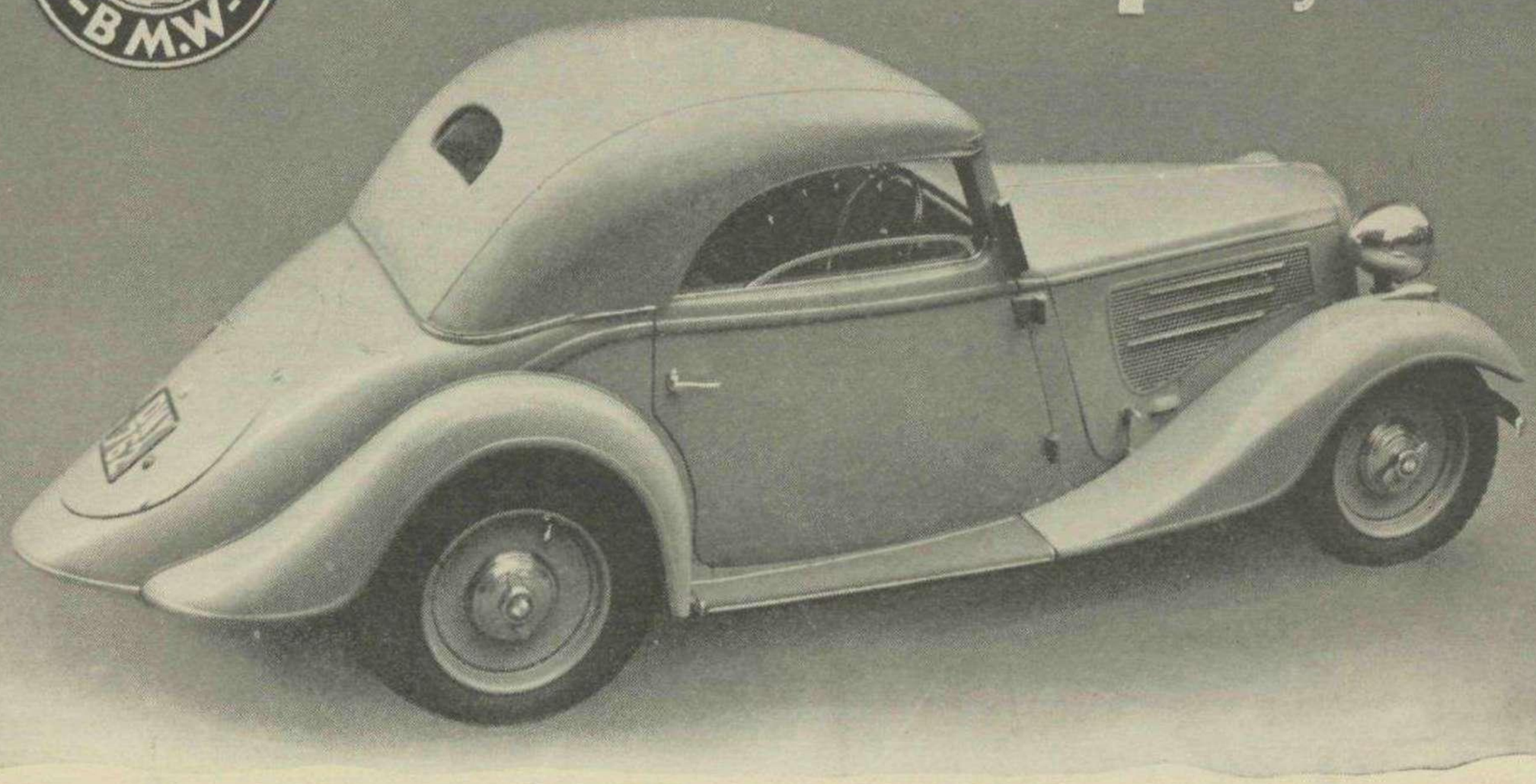
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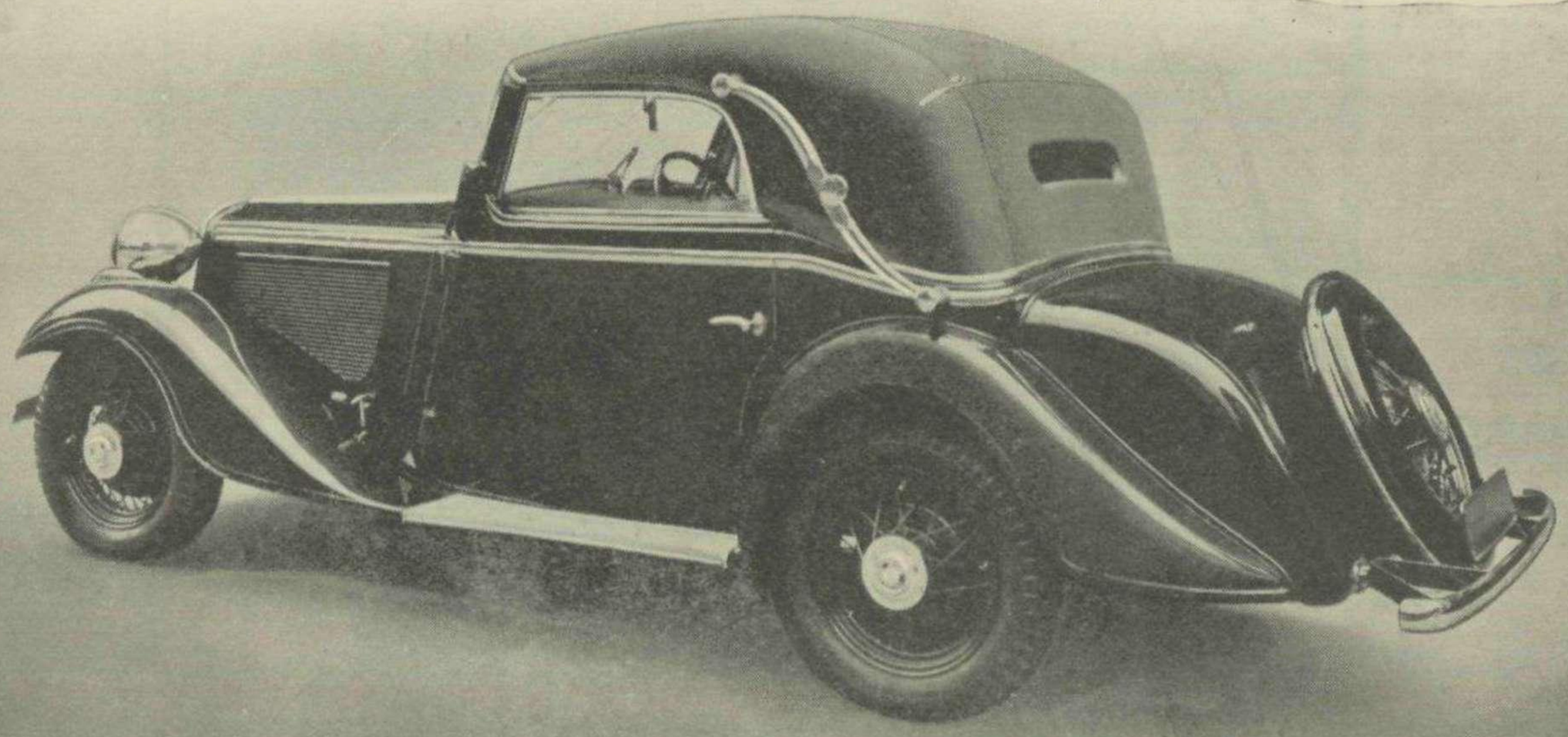
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NEW YEAR PROSPECTS OF MOTOR RACING

Political and economic tension, all over the world, casts a shadow of doubt over the future of motoring sport during the new year.

A full international calendar, and equally comprehensive national calendars, have been planned, and while a few events will no doubt be cancelled for various reasons, arrangements are at this very moment being made to carry out the majority of them.

Grand Prix racing continues to confound the sceptics by showing no signs of waning, although its followers would feel a little more secure if additional factories could be induced to participate. Dependence on three entrants for the bulk of the field may simplify the question of judging form, but it hardly gives this type of racing a firm foundation.

Point to this criticism is given by the precarious position of Germany to-day. Authoritative opinion is at one in declaring that the testing time of this great nation is at hand. Whatever form the change may take, the result is almost bound to be fatal—at least temporarily—to Grand Prix racing, for two-thirds of the competing cars to-day are German.

While the possibility of Grand Prix racing dying out is deeply to be deplored, it is fortunate that in the meantime sports-car racing is being steadily revived, both in Britain as well as on the Continent. But here it is necessary to draw attention to the fact that this form of "production car" racing appears to lack the power of attracting as many spectators as does Grand Prix racing. The French Grand Prix and the Marne Grand Prix, run in 1936 as sports-car races, failed to draw financially adequate attendances. And, be it noted, races that consistently lose money for their organisers are soon dropped.

It is perfectly true that vast crowds attend the Tourist Trophy race at Belfast, but the majority do not pay for admission. As a popular spectacle, then, sports-car racing has yet to be proved a financially attractive proposition—which is not to say that it cannot be made so, given proper organisation.

Apart from the T.T. and the proposed 12-hour race at Donington, the rest of our home events are for 1,500 c.c. cars and racing-cars of any type. The 1½-litre class holds the promise of a successful 1937 season. The numerical preponderance of E.R.A.s in most races is offset by the superiority of the lone Delage, and the possible presence of some new Maseratis will add to the interest of these races.

The supply of racing-cars of more than 1,500 c.c. capacity must be giving sleepless nights to organisers of Britain's three road circuits. At present these cars consist entirely of discarded racing machines from the Continent. Even as matters stand to-day, there are scarcely enough of them in this country to fill the race-cards of three competitive tracks, and the possibility of Continental strife in some form or other putting an end to Grand Prix racing must be extremely disturbing.

All of which reminds us forcibly of the sad fact that Britain does not produce any racing-cars of the heavy brigade. All praise is due to Austin, Alta and E.R.A. for their magnificent efforts in the smaller categories, but it is a thousand pities that we have no representatives in the over 2-litre groups.

Perhaps the existence of a demand will bring forth a supply?

In conclusion we sincerely hope and look forward to an even brighter year of racing, both at home and abroad, for all enthusiasts and wish all our readers a successful season.

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MEMORIES

To those whose memories of motoring go back to the days immediately following the War, it should not be difficult to recall the peculiar glamour which attached to that period. This may have been due in part to the general reaction from war-time conditions, to the unleashing of enthusiasms pent up during the long spell of motoring stagnation. Be that as it may, the first models to appear, and the early activities with these motors, seem to be invested with more than usual interest in retrospect, unequalled by anything that followed.

To the writer, then a callow youth, avidly devouring word or sign of renewed activities, the first post-War models are unforgetable. The first Show numbers, eagerly awaited, announced the New Age. And what motors they depicted. Time has dimmed the details, but one recalls vividly the air-cooled flat-twin Rover ; the 11.9 Bean ; the first six-cylinder Siddeley, V radiatored and impressive ; a radial-engined Enfield of wonderous design ; as well as a host of old favourites developed from their pre-War brethren.

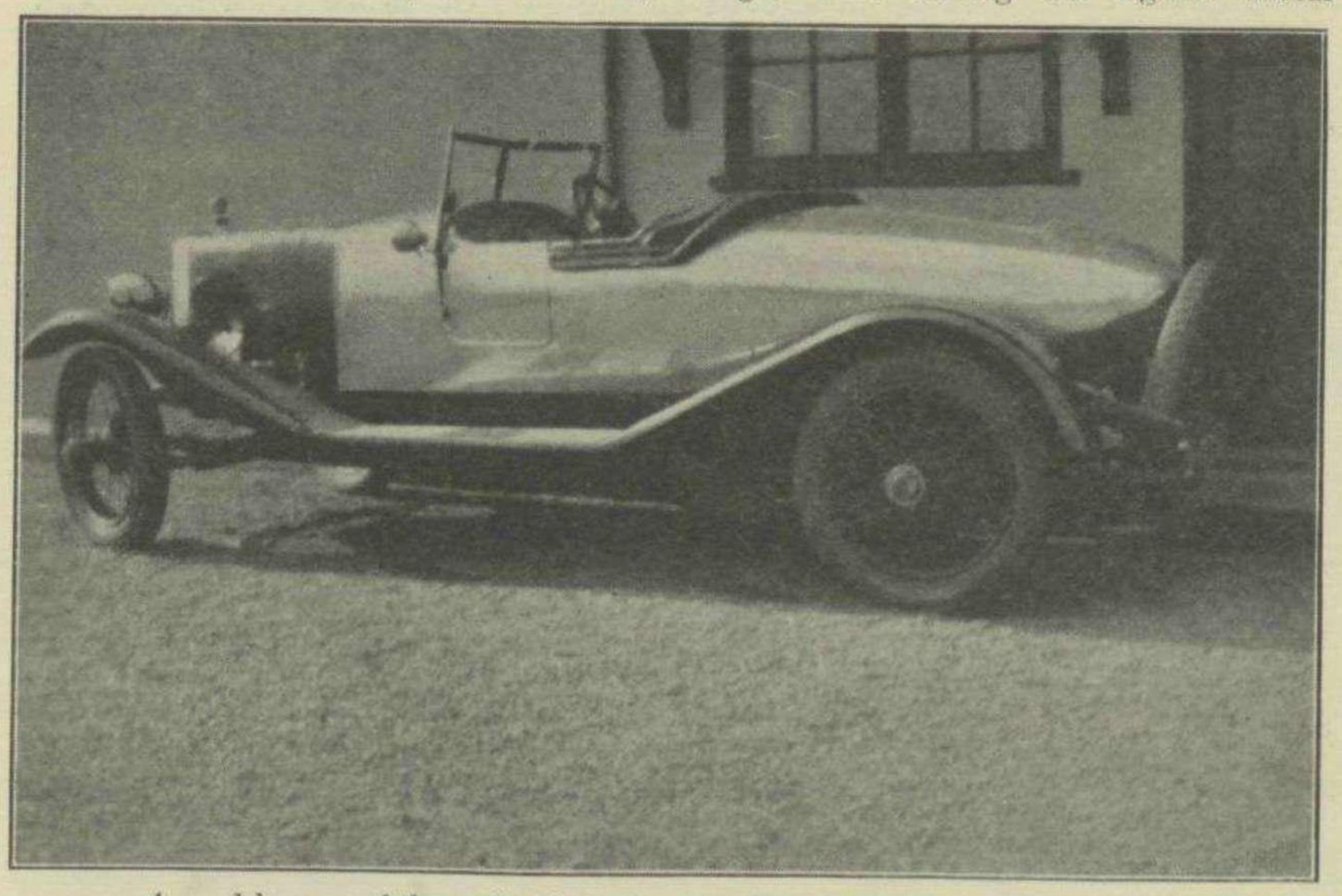
Days of fantastic prices, of motors existing only on paper, for which eager buyers paid incredible deposits on the slender promise of delivery in six months. In the meantime a substantial cheque would secure something pre-War to carry on with.

Although listed sports vehicles were few and far between, the standard products seemed more closely allied to the sport than their present-day brothers. These included such rousing cars as G.N., Enfield, A.B.C., Calthorpe, Beardmore, A.C., Swift, Lagonda, Carden and A.V. Monocar, any of which would be classed to-day as essentially sporting vehicles.

The writer's interest led him inevitably into a humble position in the motor trade, which he made use of to drive any and everything on wheels that came his way. Experiences came early. A test run amply compensated for hours of drudgery with paraffin bath and valve-grinding paste. Then came showrooms and the road. In those days of one or two agencies to a business, the multitude of makes handled was surprising. Gwynne, A.B.C., Charron-Laycock, Hillman and a V-twin product of the Armstrong Siddeley Company, the Stoneleigh, were among the lighter metal offered to the public. The Gwynne, with its narrow track and hip-bath body, would hardly be classed as a sports-car to-day, yet it endeared itself by a liveliness quite outstanding in a car of under 1,100 c.c., and would give some 1936 models a run for their money. One has poignant memories of failing on one's first hill in one's first trial in a specimen of this marque ; and that through ham-handedness. The Charron-Laycock, regrettably demised, was a beautifully finished car, admirably mannered, and a notable performer. One remembers one of the breed running in the first 200-Mile Race, driven by Pradier.*



" The legendary G.N. . . . "



A road-burner of the early nineteen-twenties—the sports Austin Twenty.

The A.B.C., however, was a vehicle of outstanding sporting interest. A product of Sopwith, with aircraft design much in evidence, this was an enthusiast's car *par excellence*. An o.h.v. 1½-litre air-cooled flat-twin, big brother to the lamented motor-cycle engine of the same breed, delivered no mean poke, and was a formidable wrist breaker if one was forgetful with the ignition. Coupled with a light chassis and a four-speed box it was a fascinating specimen of its time. A dummy radiator, the cap of which formed the petrol tank orifice, caused much confusion among conventionally minded garage hands, and the gear change was unique. The writer's first visit to London was made to collect one of these cars, and he was abandoned to his fate outside the showrooms by a heartless salesman with more important matters on his mind. Feeling very bucolic, and too timid to ask for instruction, he wrestled with a deceptively ordinary-looking gear lever for twenty minutes in an agony of confusion, before discovering that it travelled through a vertical gate, and had to be pressed downwards and forward in order to engage first gear. Once mastered, however, it was a very snappy box to handle, and an average of nearly 40 m.p.h. was maintained from London to Doncaster, by way of " larning it." It seems surprising, incidentally, that more interest has not been taken in the A.B.C. as a basis for " special " motors by the sprint specialists, for the engine, apart from certain inherent

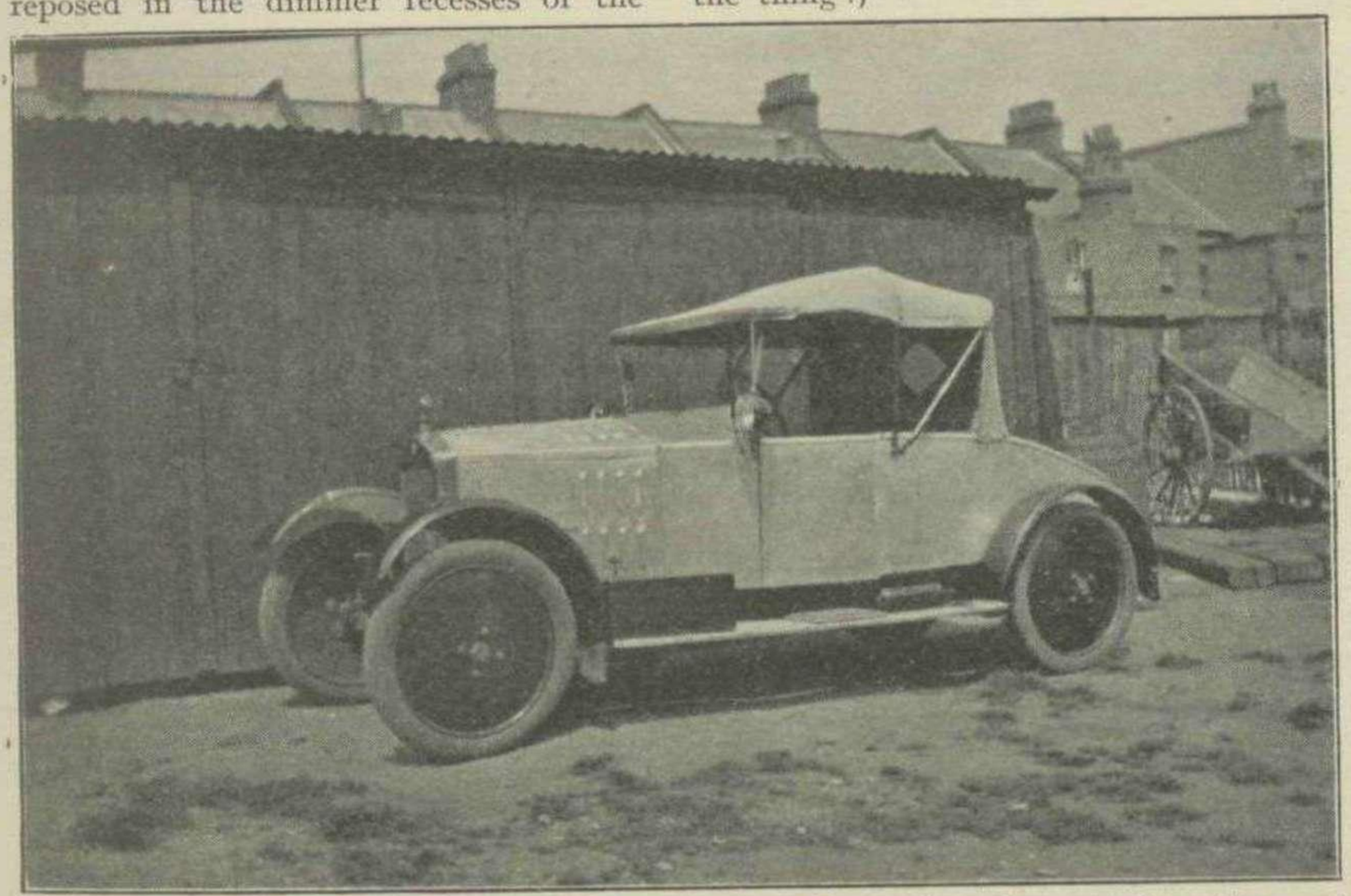
* It was extensively streamlined and has been illustrated in MOTOR SPORT—ED.

MEMORIES—continued

valve troubles, lent itself admirably to tuning, and was beautifully made. Introduction to the now legendary G.N. was made in somewhat embarrassing circumstances. A second-hand specimen reposed in the dimmer recesses of the establishment, and, an unlikely looking gentleman in a bowler hat having betrayed interest in the vehicle, we were ordered to "give him a trundle down the road." The car in question was a Vitesse model, and the ratios having been sorted out by a process of elimination, good progress was made, until the aforementioned headgear blew off. Anxious to demonstrate the car's versatility, we reversed at speed to retrieve it. To those conversant with G.N. steering no more need be said, beyond mentioning that the term "over-correction" was made abundantly clear to all concerned, and a shaken prospective purchaser decided that something less exciting would fill his need.

The borrowing of conveyances for week-ends lent itself to fun and games, and materially furthered the education. As junior member of the firm, one was allotted some interesting if uncertain mounts. In this fashion one had intimate moments with such machines as the Bleriot Whippet, with its beefy Blackburne engine and a problematically variable belt-drive, which passed through the cockpit, protected by a housing. A club might well be formed, on the lines of the Rip-Cord Club*, open exclusively to those who have mended and replaced a broken belt on a Bleriot Whippet on a wet night, heartened by the witticisms of one's female passenger.

Two pre-War Morris-Oxfords featured frequently as leisure-time mounts; grand little cars, both, with the well-known White & Poppe T-head engine. They required a certain amount of humouring, (plus a little piece of wood to hold the clutch out) when getting away from co'd, and their maximum speed was in the very early forties, but many hundreds of trouble-free miles were covered on them, with never an involuntary stop. (To a true enthusiast, stops to attend to the vagaries of acetylene lighting don't count—the machinery's the thing!)



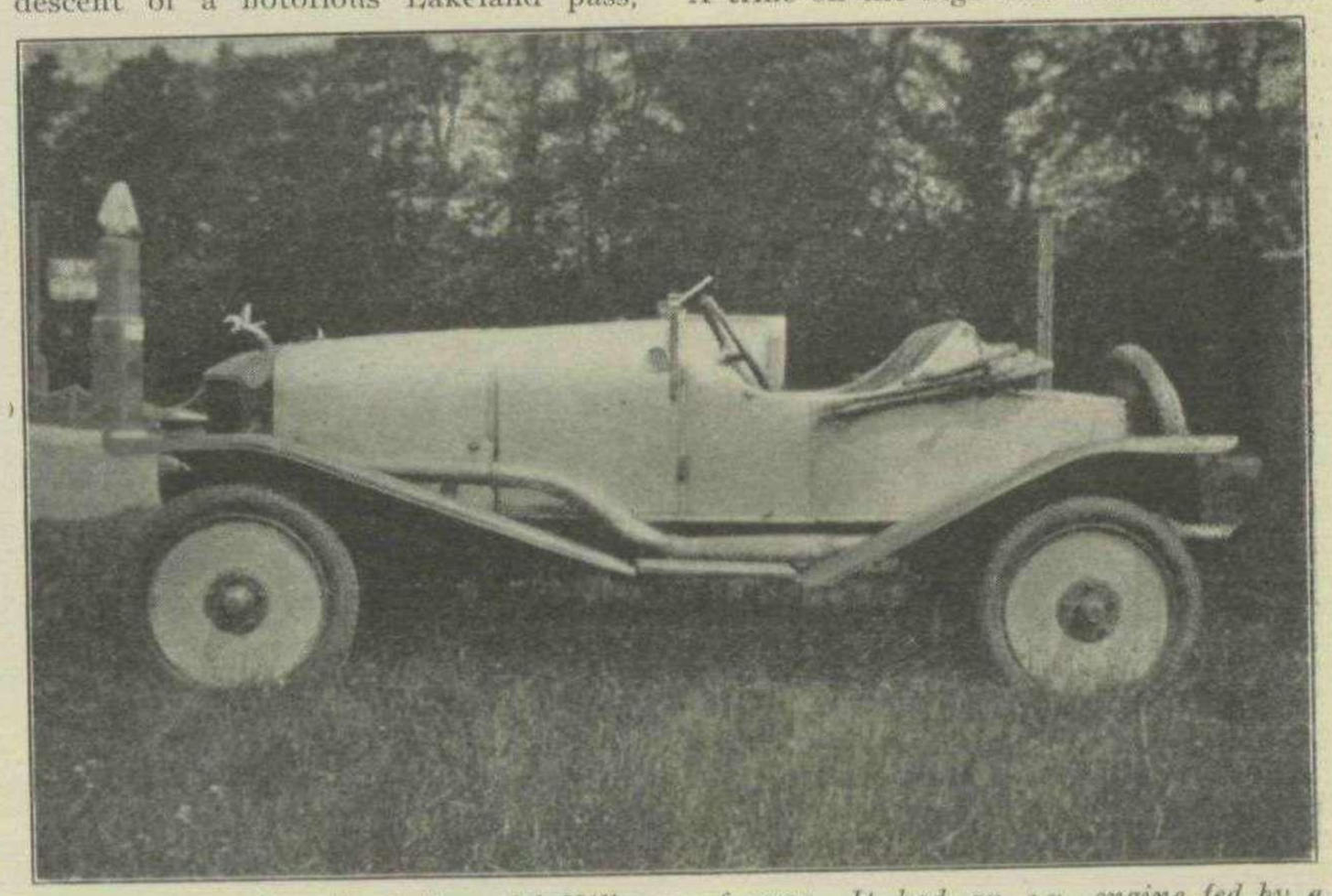
A 1924 sports Lewis, with air-cooled V-twin M.A.G. engine, three-speed gearbox and aluminium body. Made by Abbey Industries Ltd. of London, a reader used one up to 1927.

Another hack vehicle of hallowed memory was a Glegg Darracq two-seater, on which one driver achieved a record descent of a notorious Lakeland pass, due to defective brakes and the loss of bottom gear. His negotiation of the hamlet at the foot must still live in the memories of the inhabitants. To the Darracq's credit, however, it must be recorded that on the up grades not a few post-War models were left astern.

Another fruitful source of experience was a system whereby batches of less saleable "second-handers" were taken in convoys to London to the auction rooms. This entailed a journey of over 200 miles, frequently on extremely vintage motors, and being willing to try anything once, we were gladly entrusted with the more exciting specimens. One journey without a dull moment was provided by a four-cylinder Sizaire-Naudin of unknown date, of most sporting appearance and homicidal tendencies. A full half-turn of slack in the steering, smooth small section tyres and uncertain carburetter setting were contributing factors to the setting-up of new figures in the All-Comers' Long-Distance Skid in the Edgware Road, heartily bending a stub axle. Preceding this, a fire in the bonnet was extinguished in the neighbourhood of Hatfield, by a well-meaning road-man, with clods of earth, which did nothing to improve either appearance or performance.

Amongst other memories is a fast run with an Alphonso Hispano, a replica of which we managed to acquire in later days, a Prince Henry Vauxhall, a brace (or should it be scuttle?) of Scripps Booths, and an early Bearcat Stutz, which looked as though it had come straight from Hollywood, and was about the fastest thing on wheels that at that time could be handled.

An outstanding sports motor of the early post-War period was the Hillman. Many readers will remember the rakish aluminium-bodied two-seater, with its distinctive radiator, impressive copper exhaust-system and modern-looking tail. A trifle on the high side to modern eyes, but nevertheless a real speed-model. Raymond Mays successfully commenced his racing career with "Quicksilver" of this marque, and Bedford took the hour record with a similar car. A standard edition, which the writer drove and enjoyed over a long period, was distinctly fast for its day, and was almost as speedy in its high second gear as it was in top.



The 9.8 h.p. "Brooklands" model Hillman of 1921. It had an s.v. engine fed by a Binks's "mousetrap" carburetter.

Continued on page 48

*Caterpillar Club?—ED.

THE VAUXHALL-VILLIERS

SOME TECHNICAL NOTES ON THE MOST POTENT SPRINT-CAR OF THE 1936 SEASON

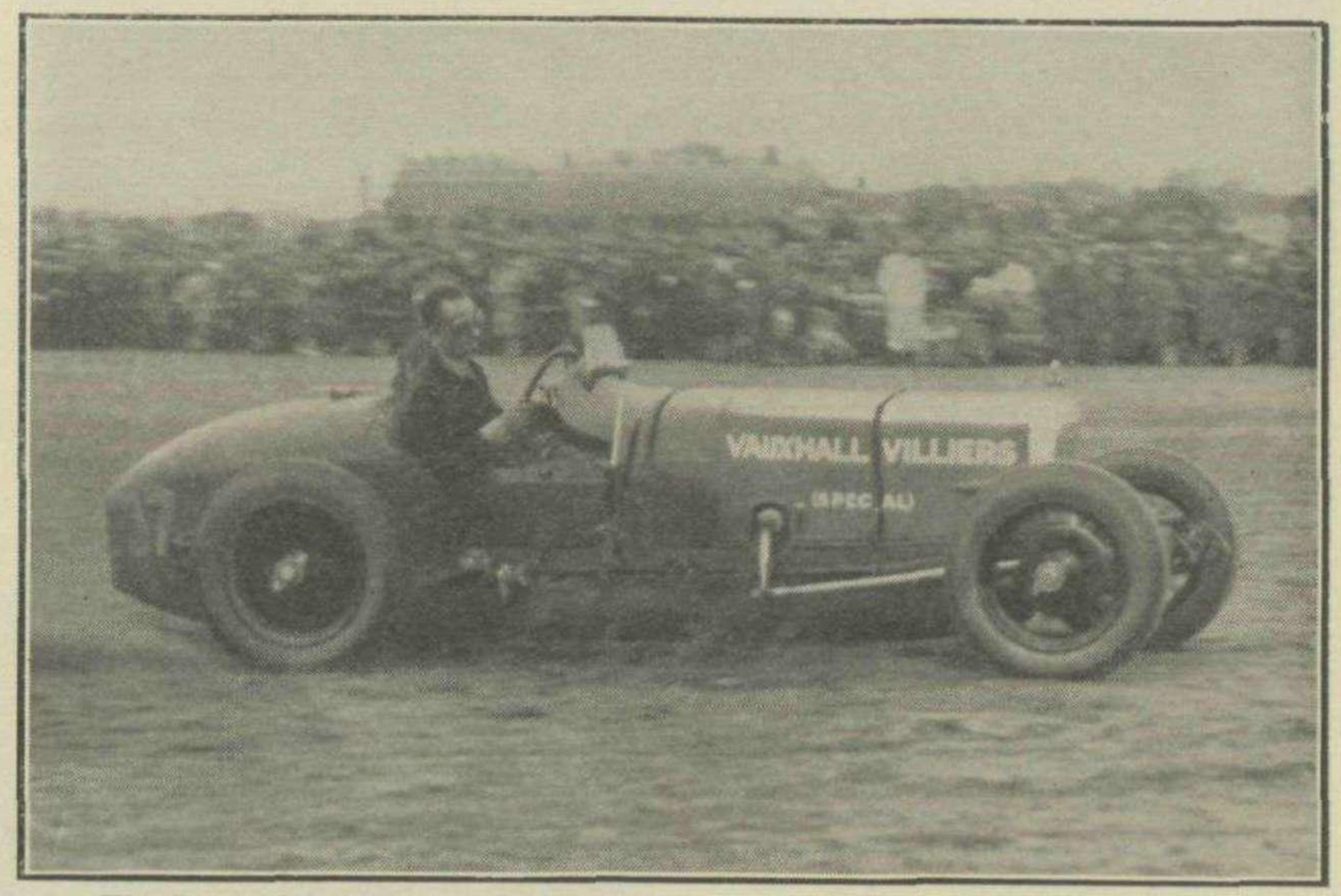
Although a very large number of persons saw S. E. Cummings and the 3-litre Vauxhall-Villiers in action in sprint contests last year, few people seem to know much about the specification of this car, which has been, in fact, up to now very much a "dark horse," in spite of its extreme interest as representing a British designed and built car assembled regardless of cost for racing purposes.

Accordingly, we are indebted to Mr. Cummings for permission to disclose the following details, which he was only too glad to pass on to us in a recent interview.

Raymond Mays, when he commenced his racing career just after the war, with Hillman and Brescia Bugatti cars, was closely associated with the well-known automobile engineer, C. Amherst-Villiers, and, seeking greater achievements after capturing practically every course record of note with his two Bugattis, Mays collaborated with Villiers in the construction of two special cars for sprint work. These were the Vauxhall-Villiers, both of 3-litres capacity, one of which, with worm-drive axle, subsequently passed into the hands of David Brown, and later of Arthur Baron, and is now being rebuilt by Tim Carson, and the other, which was Mays's personal car, is the car which Cummings has driven so successfully and sensationally of recent times.

The T.T. Vauxhall was a very advanced piece of machinery when produced in 1922, and it will be recalled that Jack Barclay afterwards had some extremely successful seasons at Brooklands with a stable of these cars from 1925 to 1927, winning many races at average speeds in the neighbourhood of 100 m.p.h., realising a lap speed in the region of 118 m.p.h. When Mays and Villiers decided to go ahead with their plans in 1928, they used the T.T. Vauxhall as a basis for the new cars, and the car now owned by Cummings was originally the one raced by Humphrey Cook, with which he took the Kop Hill record in 1924. It must be emphasised that the engine in question was of extremely advanced design in 1922 and Villiers so modified it subsequently that a legend soon sprang up to the effect that the only Vauxhall component remaining was the base-chamber. Of late years Cummings has carried out further modifications, so that the description that follows is, in effect, that of a modern car.

A particularly significant point is that the Vauxhall-Villiers now develops as much power as the present Grand Prix cars, in spite of giving them considerably over a litre in swept volume. When Villiers was responsible for the car the power was given as 260 b.h.p. at 6,000 r.p.m. Since then Cummings has very considerably exceeded this output and there is every reason to suppose that the Vauxhall-Villiers unit gives a greater power output per litre than any existing car engine. We were shown the power-curves, which have been accurately plotted every 500 r.p.m., so that power fluctuations at varying speeds are easily traced, but refrain from publishing them, at the owner's request. While the foregoing may seem dubious, applied to a 3-litre engine, supercharged to a not excessive pressure, and peaking at a speed which, while reasonably high for this size of racing engine, is again not sensational, it must be borne in mind that with a first-class design the actual combustion conditions, the control of heat-flow, and particularly the mechanical functioning of parts not designed with ultra-low weight the essential factor, are features in which the highest efficiency can be realised, with an important bearing on power delivered at the crankshaft, which should be taken into account when examining the claims for the Villiers.



The Transitional Stage. R. Mays with the Vauxhall-Villiers at Southport.

Some idea of the frictional losses experienced can be gleaned from the fact that tested on a rear-wheel roller-brake, the car was found to absorb 50 horse-power at maximum revs., through transmission losses alone, not taking into account tractive resistance or wind-pressure.

Last year, at Brighton, the car was seen pitted against some of the later G.P. jobs and its performance, taking into consideration its weight of 28 cwt. against the 15 cwt. or less of G.P. cars, serves to qualify the foregoing remarks. In actual fact, the highest possible figure was not realised at Brighton, because the Villiers is a very tricky motor-car to handle, and braking at 140 m.p.h. at the end of his first run Cummings found that the twin rear tyres dragged unpleasantly. Consequently his second, and faster run was made with single rear covers, when it was impossible to use the maximum acceleration in getting away, and under which circumstances the driver cut out some 150 yards from the finish. To requests for explanations of this comparison between the performances of Grand Prix cars and the Villiers, Cummings just says that some horses are larger than others, and that his car must use the ones with big hairy legs.

Mays and Villiers, aided by Peter Bethon, carried out the first work on the Vauxhall-Villiers during the spring of 1928, and the car made second fastest time at Shelsley, runner-up to Davenport's G.N., and won the Southport 100-Mile Race. In 1929 the car ran only at Shelsley, making the fastest ascent, in 49⅗ secs. at the first meeting, and setting up a new record of 45⅗ secs. at the second meeting. For 1930 further modifications were adopted, including a vast inter-cooler between engine and supercharger. A fallen tree caused Mays to miss his runs at the opening Shelsley Meeting, but the Villiers made fastest time at the second meeting in 46⅘ secs. At the first 1931 meeting this figure was reduced to 45.0 secs., and the car did 46 secs. in the wet at the second meeting. (At this stage the car was giving about 170 b.h.p. at 4,600 r.p.m.) Finally, in 1933, the Villiers made fastest time (44⅘ secs.) at the first Shelsley Meeting, and clocked 42⅘ secs. at the Autumn meeting. Last year Cummings was successful at Southsea and Brighton, unofficially broke the Lewes course record, and made fastest time at Weatherby and second fastest time at Poole and Madresfield, after hectic runs. At the second Shelsley Meeting the Villiers turned completely round at the "S" on its first ascent, owing to Cummings being misled by wet leaves on a drying road, and then clocked 49.61 secs. on its second attempt.

Some remarkable work was put in after the sensational crash at Weatherby on the Sunday preceding the Brighton Speed Trials. The Villiers, almost a total wreck, was lifted by two cranes on to a hired lorry and work commenced as soon as it was back in London. Cumming-

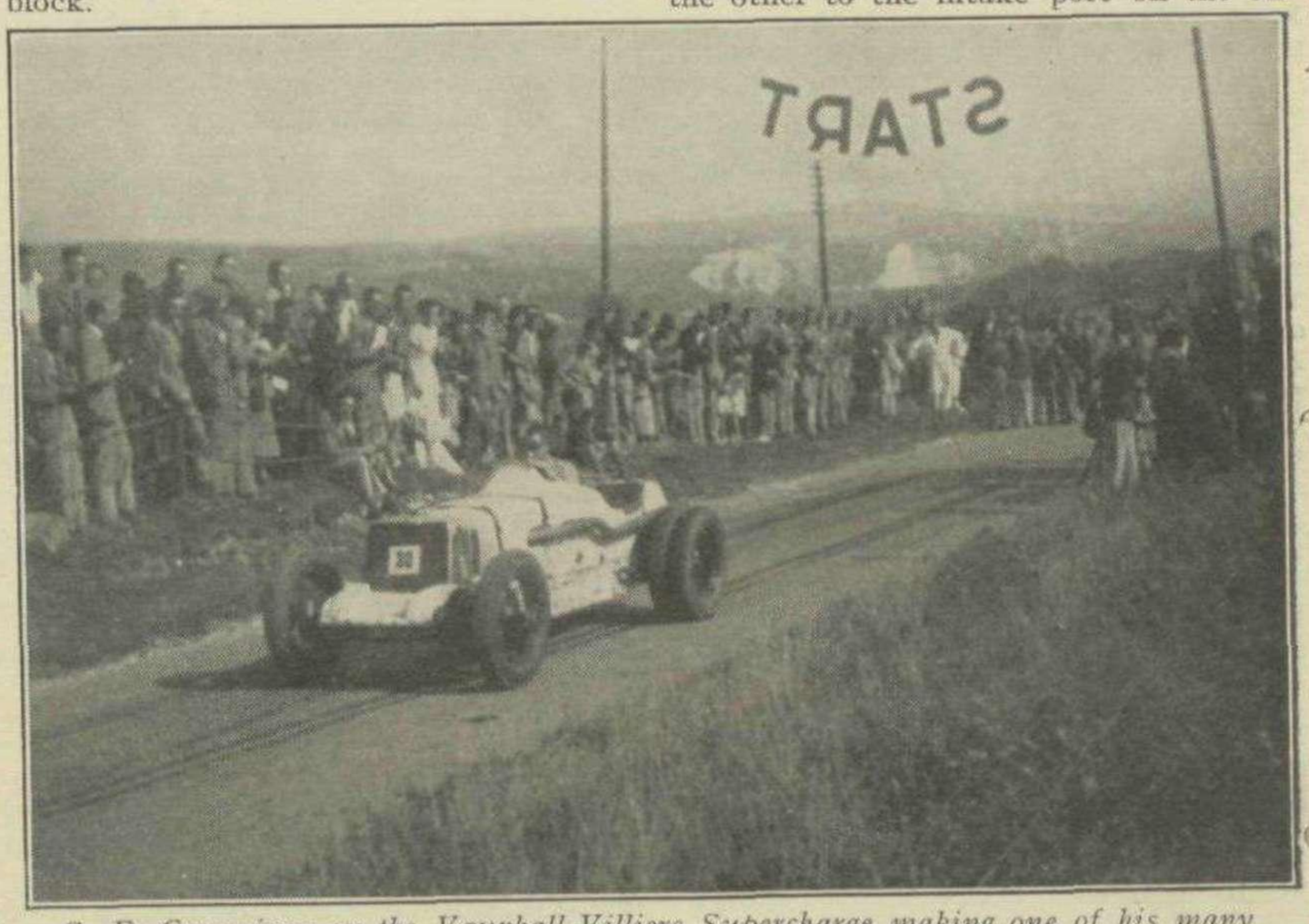
THE VAUXHALL-VILLIERS—continued

and his mechanics thereafter put in twenty-four hours a day until the following Saturday, when the car left for Brighton at midday and after a hectic tow was delivered at Brighton in time to establish fastest time of the day, in spite of being in many respects an unknown quantity and not, as we have explained, being fully extended.

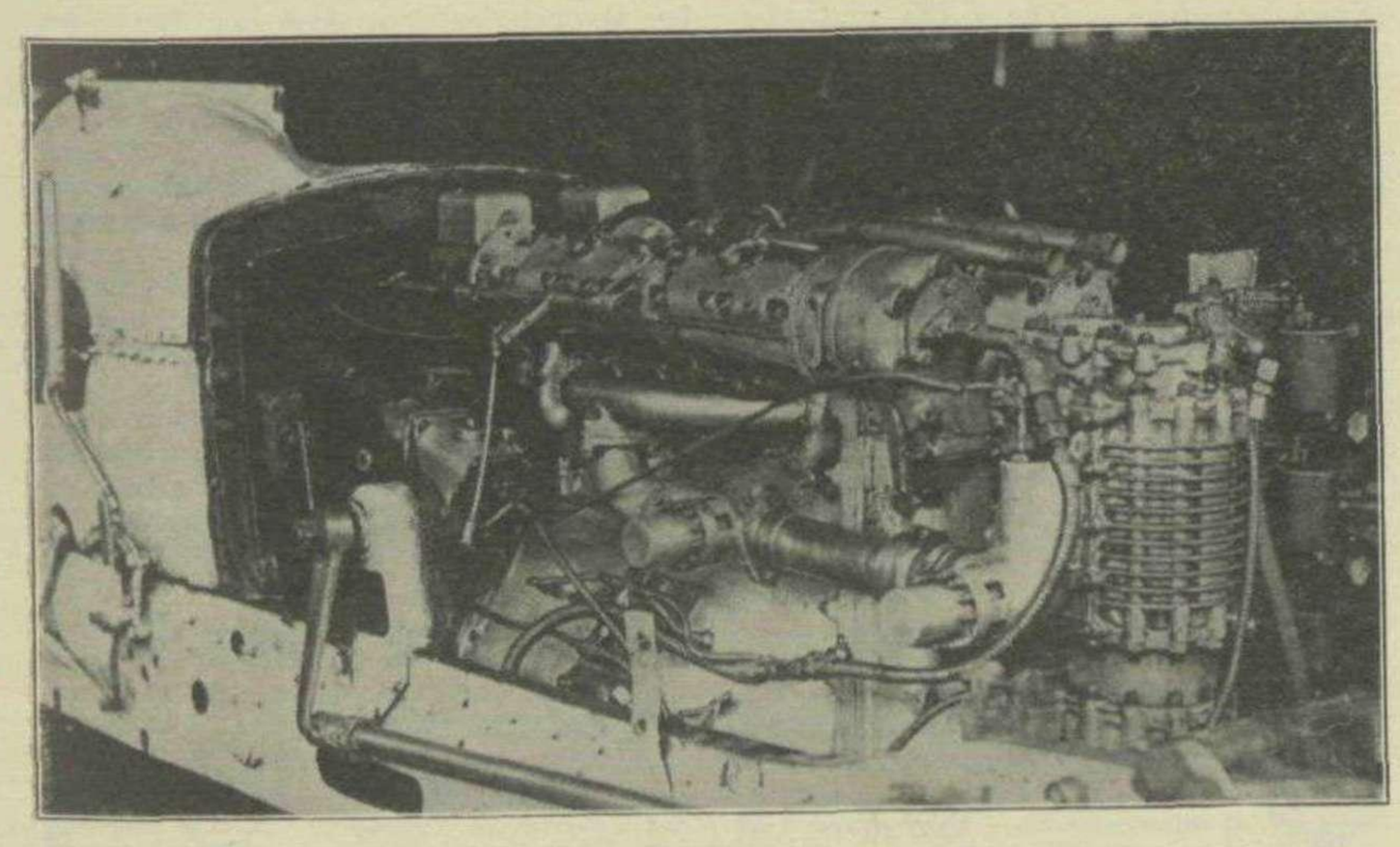
Seeing the car in the workshop one realises what a massive motor the Villiers is, and what fine engineering there is beneath its bonnet. We can well believe that it shows a very pronounced inclination to slew sideways in getting from the line, and that, even on a 7.7 to 1 bottom gear, it will destroy its tyres if one is casual with clutch and throttle.

The four-cylinder 2,998 c.c. engine runs safely up to 6,100 r.p.m., but will exceed this speed for brief periods. The stroke is 132 m.m., so that at peak revs. (6,000 r.p.m.) the piston-speed is very considerable. The cylinder block is aluminium alloy, with wet liners. The detachable bronze cylinder heads seat directly on to the barrels and the block is separate from the deep alloy crankcase.

The crankcase, sump and gearbox casing are heavily ribbed internally, and of generally modern conception. The crankshaft runs in five roller-races and roller big-ends are used, the connecting-rods being of I section in 120 ton steel. The alloy pistons were made to Cummings's own design by the Martlett Eng. Co. of Brooklands Track. The original pistons had a curious pent-shape crown following the shape of the cylinder heads, but the new pistons have domed crowns with concave tops. The cylinder heads are of pent-roof formation, each



S. E. Cummings on the Vauxhall-Villiers Supercharge making one of his many appearances at Lewes.



The engine view of the Vauxhall-Villiers Supercharge.

having four valves per cylinder, and provision for three plugs, set vertically in line with the crankshaft.

The valves are operated by two o.h. camshafts running directly above them, driven from a train of gears from the front of the crankshaft. The valve stems and springs are exposed for cooling purposes, but the ingenious cam gear is enclosed by four cam cases, each held down by eight studs. The timing gear is enclosed in casings and there is a bracing piece between the cam cases at the rear of the block.

Lubrication is by a single piston-type pump, driven from the crankshaft, which feeds valve-gear, cylinders, big-ends and main bearings, the auxiliary feeds being in the form of external piping from a junction on the crankcase. The lubricant is contained in the sump, but the con-rods run clear of the oil. The crankpins have lubricant-retaining arrangements in conformity with highly advanced aero-engine practice.

The very big heavily-ribbed Villiers-Roots supercharger is mounted vertically behind the radiator and driven by bevel-gears from the nose of the crankshaft. Three Zenith 40-choke carburetters with rapid-flow needles are bolted one above the other to the intake port on the off side of the casing, an arrangement which not only ensures that fuel starvation at maximum throttle openings is obviated, but which also provides the best possible distribution of mixture within the blower. On the opposite side the outlet port is set at right angles to a large blow-off valve. The delivery pipe, which is plain and now devoid of inter-cooling, is connected to the outlet port by a length of hose and at the opposite end to the manifolds, another blow-off valve being accommodated between flange-joints at the centre. The manifolds are of moderate bore and unribbed. They are set one within the other on the same plane, the inner one feeding cylinders Nos. 2 and 3, the outer one the end cylinders.

The blow-off valves employ very strong springs. The supercharge pressure is varied by alteration of the drive ratio, and we are asked not to disclose the boost now employed. Actually, a pressure up to 32 lb. per sq. in. is obtainable, but maximum power is achieved at a lower figure. The present compression ratio is approximately 8.5 to 1.

There is provision for three plugs per cylinder but only two are used, fired by two B.T.H. type F.E.4 polar inductor magnetos, driven one from the rear end of each camshaft. Water cooling is used, the pump being set beside the block on the rear side and driven from the timing gears by shaft. The return water pipe emerges from the centre of the head and is connected by a "T" union and two long pipes to the radiator, which is a square-shape honeycomb bearing Villier's own badge and a Humber cap mascot.

THE VAUXHALL-VILLIERS—continued

The staggered eight-branch exhaust manifold feeds into a straight-through pipe on the near side, but a Brooklands silencer is available as considerable testing is done at Weybridge.

Dope fuel of Cummings's own make-up is used, and with the addition of liquid ether the car starts up instantaneously. Incidentally, there has only been one major overhaul during the 1936 season.

The engine is mounted in the chassis at three points; a bronze clamp behind the gearbox, and tubular members which bolt to four-stud flanges in the middle of the crankcase on each side. The gearbox gives four speeds and reverse, the ratios being varied to suit different venues. A typical sprint setting is: second 8.56, third 4.60 and top 3.75 to 1. Actually the Villiers will effectively pull ratios of 7.7, 5.3, 3.57 and 3.0 to 1. The clutch is a multi-disc type with eleven plates, the male plates being lined on each side with Ferodo. The female plates are steel. The drive passes via an open shaft to a bevel-driven rear axle, the half-shafts having both a taper and spline mounting. The clutch is engaged for a racing start at approximately 2,000 r.p.m.

The chassis frame is of straightforward layout, with underslung half-elliptic suspension and a low build. Two single Hartford friction shock-absorbers per spring are used at the front, set ahead of the axle, and at the rear a pair of double Hartfords is used, accommodated behind the axle. At Brighton the car ran without shock-absorbers. The rear fuel tank would hold about forty gallons. The braking system is hydraulic, believed to be of French manufacture. The shoes are actuated from pistons via a toggle mechanism with roller engagement, and are of self-energising type. The pedal operates on all wheels, and there is a safety hook-up from the rear shoe-toggles to the hand-lever, by way of heavy levers and the old Vauxhall external linkage.

As the original master-cylinder was damaged, Cummings obtained an A.E.C. Green Line coach cylinder from Lockheeds, which serves instead. Ferodo lining is used and the brakes are now really useful. The steering-wheel boss bears the inscription "Cam Gears," but the reduction box is believed to be of Burman make. The tyre-size is varied to suit different conditions, but the wire wheels are 19″×5.50″ and 6″ section tyres are used with single rear wheels. The facia carries a big Jaeger rev-counter before the driver, driven from the forward end of one of the camshafts, two thermometers, one of which is out of action, a blower-pressure gauge reading—15 lb. to +30 lb.,—a St. Christopher badge and three oil gauges. Usually no bulkhead is used to blank off the engine and the wood-mounted pedals come uncomfortably close to the machinery. The accelerator is a small-roller pattern, centrally placed. The big hand-lever is outside the scuttle, and the short gear-lever inside on the right, working in a visible gate. The seats are slightly staggered and there is no suggestion of streamlining. The weight is approximately 1 ton 8 cwt. The Villiers is a difficult car to handle, for, apart from a strong tendency to slew sideways in getting away, the wheelspin is excessive, and Cummings believes that the maximum performance has been reached with rear wheel drive. A clutch stop is fitted, but upward changes are difficult on account of layshaft spin. At Brooklands an average of over 100 m.p.h. has been obtained for a standing-start half-mile, but this entails entering the Byfleet Banking at over 160 m.p.h. and Cummings tells us that this is an experience that has decided him against seriously extending the car round the outer-circuit. With due deference to stable secrets we may mention that the Villiers is faster in third gear, than are the majority of Brooklands cars on their highest ratios. Also that from practice times returned in the dry at Shelsley last year we very much want to see Cummings's ascents next meeting. He anticipates running regularly at sprint meetings during 1937, but may possibly dispose of the car. Four-wheel drive has been contemplated, while another plan Cummings has in mind is that of installing the engine in a 4.9 Bugatti chassis and running it at very modest output. Certainly, in its existing form, the old Vauxhall-Villiers has little to fear in contemplation of another season's activity.

MEMORIES—continued from page 45

Probably the cycle-cars of the early twenties represented the truest parallel with the modern sports-car. Their roadworthiness was often doubtful, but their designers did not stint themselves in the matter of power-weight ratio, and many of them gave surprising satisfaction and a phenomenal measure of fun. Names now unhappily sunk into oblivion figured largely in competition barely fifteen years ago. Apart from the evergreen G.N., such enterprising vehicles as the A.V. Monocar, Tamplin, with its JAP engine and countless feet of belt-drive, Carden, notable for a twin two-stroke motor mounted unsprung on the rear axle, Graham White, Black Prince and Douglas offered unlimited scope for the seeker after excitement.

Open competition was beyond our slender purse, but much fun was to be had with local clubs. (The writer's first sign of the great Fred Dixon was in a northern trial, performing astonishing feats with a Douglas combination.) Apart from trials, highly illegal speed events were held in isolated spots by one or two small clubs, unsanctified by official permits. The clubs and the venues must be nameless, but they gave many of us our first taste of real motoring. An old sixteen-valve Bugatti was borrowed on one of these occasions, and despite losing one plug on the line, it retained enough life to frighten us considerably, and the man at the finishing line not a little. We subsequently ascribed the uneven exhaust note to "valve-bounce at anything over 4,000, old boy." On another occasion, "fastest time of the evening" was made with an aged 30/90 Vauxhall, "borrowed," in the absence of authority, and smuggled back after the stains of battle had been laboriously removed. The feat was less meritorious than it might appear, the runner-up being an 8 h.p. A.V. Monocar, which the owner found no mean handful at anything approaching full bore, despite having taken up what appeared to be several feet of slack in the wire and bobbin steering arrangements before starting. Another regular competitor in these orgies was a wonderful T model Ford, with such a multiplicity of forward speeds that it is doubtful if the owner could have stated his ratio with accuracy at any given moment.

It was all the greatest fun. Compared to present-day motoring, it was doubtless crude, slow and not very scientific, but it cannot have been wholly without virtue if it inspires some of us to look back with genuine pleasure and amusement, and to sigh a sigh occasionally for the days that are no more. G.H.D.



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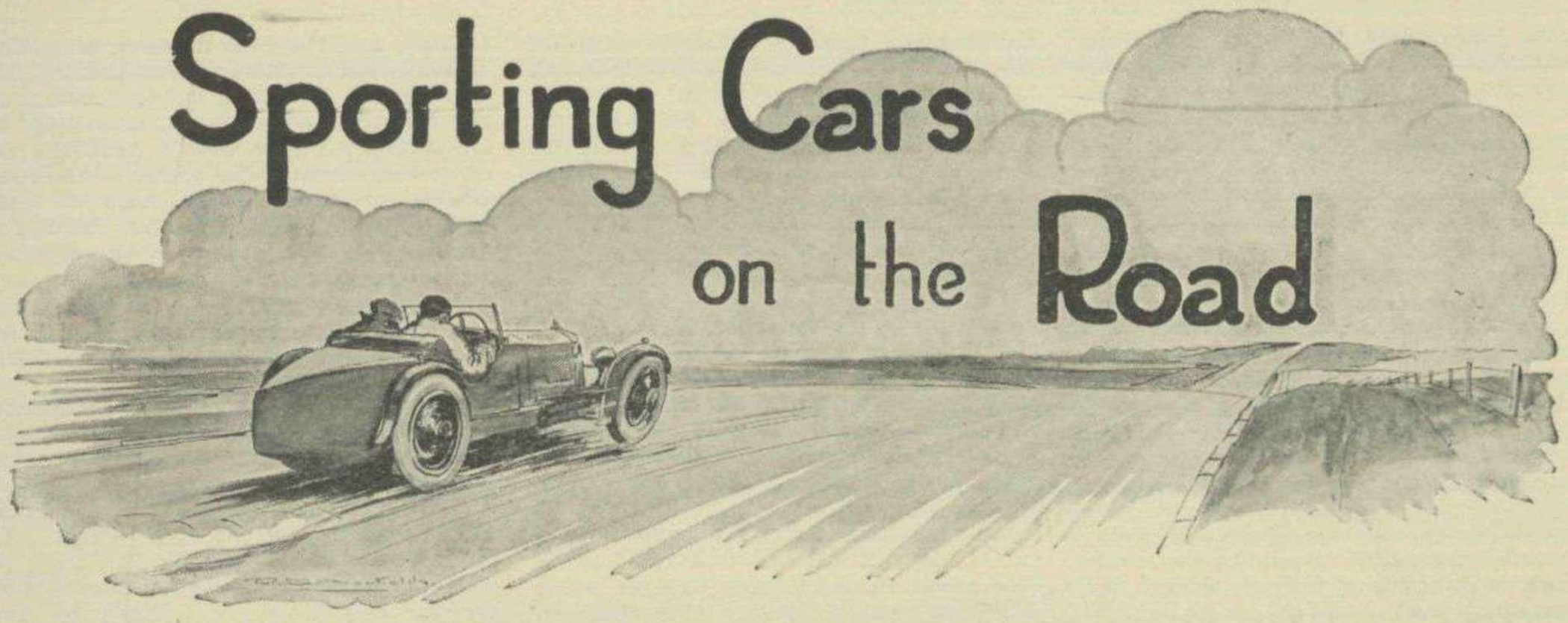
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THE 3½-LITRE SIX-CYLINDER BROUGH-SUPERIOR SALOON

George Brough has long been known as the producer of the very best big-twin motor-cycles that money can buy, and consequently his entry into the sports-car market was an event of outstanding interest, especially when it became known that he was using as a basis of his Brough-Superior car that high-performance chassis, the Hudson, and was asking the aid of Fred W. Dixon in its modification to British requirements.

We had our first experience of the Brough-Superior car during a long week-end last month, covering nearly 600 miles under a variety of conditions that embraced town, main-road, by-way and off-the-beaten-track motoring by night and day, in warm sunshine, heavy rain, mist, snow, sleet, hail and ice. So that the impressions that follow were gleaned after more than a casual test run in the car.

Starting our test in the rush-hour period of London's traffic we appreciated the ease and security with which this by no means small motor-car can be handled in town traffic.

Although one sits behind a long expanse of flat-top bonnet with the near-side wing invisible, the excellent driving position and wide single panel screen are effective palliatives, though until one is quite used to the car the roof pillars seem rather thick when negotiating round-abouts or turning in restricted places.

The driver's seat adjusts close up to the wheel, which is itself close to the screen. The remote gear-lever is very conveniently placed when one is sufficiently acquainted with the car to drop the right hand directly on to it, the hand-brake necessitates stooping to apply and release but is not really badly positioned, and the pedals are closely spaced, with the brake pedal a trifle higher set than the right-hand treadle accelerator, though it was only very occasionally that this resulted in slight inconvenience, and there was never the slightest anxiety about applying both simultaneously. The horn-button, ivory finished, is in the centre of the wheel, with a high-tone control on the facia,

BRIEF SPECIFICATION

Engine : 6 cylinders. Bore 76.2 mm., stroke 127 mm., capacity 3,455 c.c. R.A.C. rating 21.6 h.p. Tax £16 10s. Side by side valves. Downdraught carburetter. Coil ignition.

Gearbox : Three speeds and reverse. Synchro-mesh on 2nd and top gears. Ratios : 4.0, 6.6, and 10.0 to 1. Central, remote change.

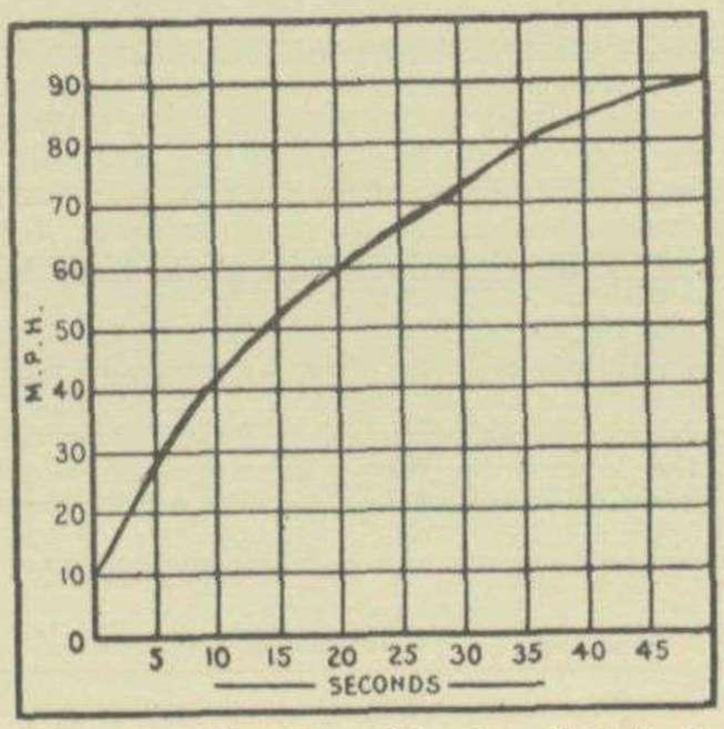
Suspension : Half-elliptic springs. Luvax double-acting hydraulic shock-absorbers.

Brakes : Lockheed hydraulic operation with mechanical, emergency hook-up.

Dimensions : Wheelbase 10 ft. 0 in.
Track 4ft. 9½ in.
Turning Circle 42 feet.

Price : Four-door, four light, sliding roof saloon, **£695.**

rather blanked by the wheel spokes, and the direction indicators, of non-cancelling pattern, are on the extreme right of the dash, within easy reach of the right hand. Ignition control is automatic and the foregoing features, allied to a reserve of power that calls only for second gear of the three-speed box down to crawling pace and a synchro-mesh gear-shift, render the Brough a pleasant car in congested areas. After a short experience of it in built-up areas we embarked on an all-night run down to the West Country with the utmost confidence and in anticipation of a fast and satisfactory journey. At speeds up to 30 m.p.h. the car runs in absolute silence, all surface irregularities smoothed out by the suspension system.



The acceleration chart of the Brough-Superior

On extending it there is some noise from the region of the engine and with the driver's window lowered a hiss of air is heard entering the carburetter during acceleration, and over certain surfaces an up-and-down motion is imparted, reminiscent of a racing-type of sports-car at lower speeds. However, along the deserted Watford By-Pass we discovered that 60 m.p.h. is a very effortless cruising speed, at which the engine becomes quite silent and remains absolutely smooth, so that only the storm noise round the bodywork indicates the pace. This storm noise is more pronounced than usual, but not unpleasant. Although a speedometer speed of 60 m.p.h. seems to represent the Brough's best gait on ordinary roads, we went up to 70 without any mechanical protest on every short straight stretch available.

By the time the narrow winding roads leading to Aylesbury were reached we had had time to appreciate the rapid clean pick-up of the car, undeterred by vibration periods or any trace of "flat-spots," and had found the Lockheed brakes vastly reassuring. The Lucas P170 headlamps gave about the best driving vision we have ever experienced at night and the dipper, conveniently positioned for the right toe, commanded the respect of approaching travellers, cutting out the off headlamp and dimming the other. We particularly appreciated the arrangement of the lamp switch, which has the "off" position remote from "sides only," so that in well-lit areas it was possible to extinguish the head-lamps without anxiety lest all lamps had been inadvertently turned out—which has several times happened to us in the past. But the dashboard lighting seems rather dim, though the concealed lighting of both cubby-holes obviates annoying fumbling when small objects are wanted

THE SIX-CYLINDER BROUGH-SUPERIOR—continued

in a hurry, and the interior lighting, controlled from the facia, is entirely adequate. The inset clock in the central driving mirror might well have a separate switch, as it distracts the driver's attention somewhat and comes on with the instrument lighting, which is frequently used in this Belisha regime.

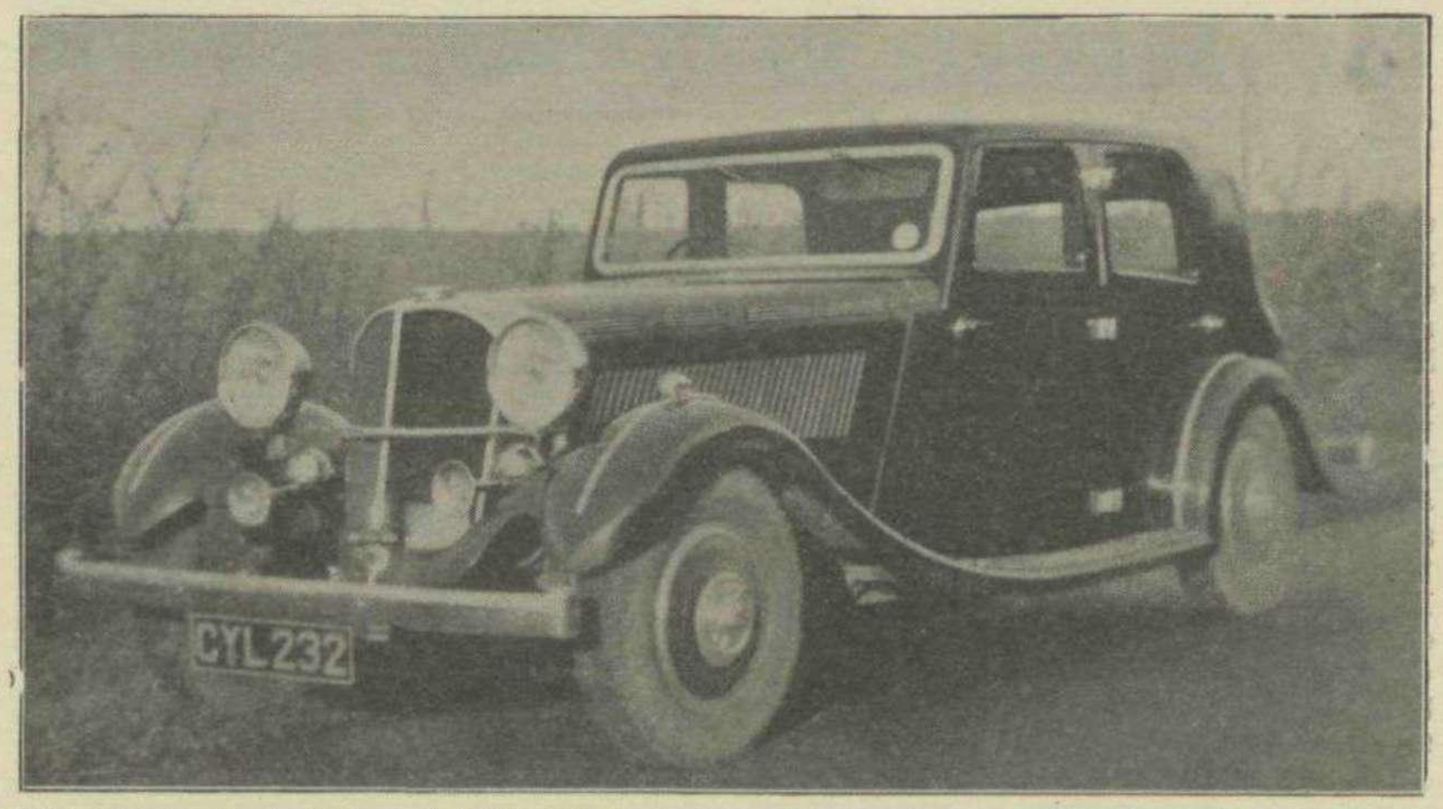
The Brough is definitely a silent car, for, apart from storm noise and a certain presence of engine roar at around 30 to 40 m.p.h., nothing disturbs the going, and there is virtually no pronounced exhaust note. Save for a slight squeak, and some vibration from the vicinity of the dashboard approaching maximum revs. on the indirect ratios, the bodywork is completely unprotesting and its Silent Travel door-locks are in keeping. We spent long periods in the driving seat, and found Connolly covered Dunlopillo to contribute vastly to our lack of fatigue, though the back squab position did not seem absolutely correct. The rear seat has a wide disappearing central arm-rest, takes three if required, and there are deep footwells for the rear passenger's feet. Head-room is a trifle limited by the sliding roof arrangements. The doors are hinged to the central pillar and entry and exit would be facilitated if their movement was a little more generous.

The clutch is extremely good, taking up the drive smoothly over a small range of the pedal movement, standing any amount of abuse without weakening, and feeling positive, while the spring pressure was only a little greater than in a small car, asking no real effort. The Brough starts on first gear, though a test start on top would pass unnoticed except for a certain judder of the engine on its rubber cushions, transmitted through the gear-lever. Once under way most of the running is done in the highest ratio, and the performance up appreciable secondary road gradients, even when slowed to a crawl, is particularly praiseworthy.

Second gear provides very brisk acceleration and this is continued in top gear, so that excessive engine speeds are never called for in ordinary driving. However, the engine appears to enjoy turning over fast and the acceleration seems to improve from 65 to 70 m.p.h. in top. If a racing get-away is the order of the day changes at about 23 m.p.h. on first and 45 to 50 m.p.h. on second produce speed in the seventies in a very short distance.

The gear change has synchro-mesh on second and top gears. On account of the remote control the lever movement is unusual, bottom being forward left, second back, right, and top forward, left. Reverse is consequently in the usual first-gear position for a three-speed box, that is, back, left. No reverse catch is fitted, however. The gear lever is very short and rigid. At low speeds it was inclined to stick in position but with the pinions turning over faster this was less pronounced. Rapid changes call for double-declutching both up and down, when the lever will go through rapidly without especial judgment. Otherwise a pause in neutral is necessary to prevent the synchro-mesh from crunching, though a brutal driver might get a fast change with single clutch movements if he disregarded this. Actually, we are of the opinion that the synchro-mesh on the Brough is not abnormally slow but rather it is the rigid lever and short movements that amplify the need for pauses in neutral if one wishes to make full use of the simplified change. This pause is also necessary in going from first to second gear, but downward changes into first are a matter of quite normal double-declutching.

First gear emits a quite high pitch hum, which personally we liked. Second gear gave a much less pronounced hum on the overrun only. The transmission feels pleasantly taut on the overrun and there is no noise from the final drive. A driver whose judgment we value was particularly enthusiastic over this aspect of the Brough, but we are inclined to agree with him that the engine suits a four-speed gearbox, and this would probably result in faster gear changes using only the synchro-mesh, unassisted by double-declutching. At least, it would be an interesting experiment.



The four-seater saloon model listed at **£695** *has a handsome and well-balanced appearance.*

The Lockheed brakes, which have an automatic hook-up to prevent embarrassment in the unlikely event of a pipe-line breakage, are really excellent. They work with a light pedal pressure, are progressive, even in action and entirely positive. They are extremely powerful and at the end of the test had not noticeably weakened and if a squeak had developed it was so slight and occasional that we merely record it as an impression and certainly not as a criticism. On a dry tarmac surface we pulled up from 40 m.p.h. in approximately 63 feet at the first attempt and in approximately 57 feet at the second attempt, using only the foot-brake. The slightly spongy feel as the hand-brake is released, peculiar to hydraulic operation, is in no wise inconvenient for restarting on a gradient. The push-button release was apt to jamb badly if the lever was fully applied, which was not necessary for holding the car in the ordinary way. During the tests the wheels locked equally for about half the distance.

The steering is not quite high enough geared to make control a matter of wrist movement alone on twisty going, but $2\frac{3}{4}$ turns take the wheels from lock to lock, and the lock is generous. The action is light, without being finger light, there is full and rapid castor action, and the Brough can be steered accurately at all speeds. Under heavy braking and on certain surfaces the action of the road wheels returned in the form of light high-frequency kicks, but as there was considerable lost motion in the steering gear of the car we had for test, this may have been responsible. After long spells in the driving seat we felt no fatigue and taken all round it was generally satisfactory steering.

The Brough-Superior feels essentially safe and stable at all speeds. It goes into open bends at high speed with certainty, but there was pronounced tail swing on coming out of such corners, necessitating considerable work at the wheel. At first we were inclined to put this down to nose-heaviness, but later we found that the car was adversely affected by dry tram-lines and that the steering was pulling to the left, so that adjustment of tyre-pressures would doubtless have obviated this floating tendency. That the Brough is more than usually safe on bad surfaces was strikingly demonstrated when we struck an unexpected patch of ice at 70 m.p.h. The car ahead of us overturned in the ditch and we ourselves went into a nasty slide on applying the brakes. The headlamps picked out other crashed cars and people frantically waving us to a standstill. We took off the brakes and the Brough corrected normally and was brought safely to rest, leaving its three occupants with a high respect for its road-holding abilities. Attempts to provoke tail slides on ordinary wet surfaces had to be very determined to achieve the desired result and when achieved could be instantly corrected. The car does not roll on fast corners, and no cornering noise is emitted by the Goodyear "G.3" tyres.

The suspension leaves a very good impression, for the Brough is an outstandingly comfortable car without employing springs supple enough to result in fore and aft dipping and rising under racing starts or heavy braking. All kinds of surface irregularities are effectively damped out at all speeds, and

THE SIX-CYLINDER BROUGH-SUPERIOR—continued

pitching is never pronounced. There is a slight sense of a very rigid frame giving rise to a feeling of "deadness," but this is a controversial impression, and probably dependent upon the car's being driven immediately previous to the test. The tyres are sensitive to changes of surface and the wheel discs may accentuate such noises.

The front end of the car has a thoroughbred rigidity, the wings being firmly cross-braced and the radiator shell exhibiting no trace of unnatural movement. The headlamps were subject to high-frequency vibrations. The steering column is well supported; the dashboard absolutely rigid.

The Brough-Superior not only handles extremely well, and performs refreshingly, but it is also very well appointed and equipped and imparts a sense of high quality. The bodywork, we have said, is silent, its windows do not rattle, and draughts do not enter the car. The gear-lever, brake-lever and minor controls were taut and the sliding roof, which opens over both compartments, functions well.

After a strenuous week-end's driving we headed for Brooklands, having no hesitation in putting the cruising speed up to 80 m.p.h. on open deserted roads. The engine, which starts very easily with the temperature at below freezing point on using the choke with the throttle half open, warms up instantly and is ready to pull without any previous running. In hard driving the water thermometer remained at 65° to 75° C. and it was at this temperature when we commenced the track tests. The acceleration figures given in the graph were obtained three up, as straightforward attempts, R. G. J. Nash being at the wheel at the time. From a standstill we reached 50 m.p.h. in 13¼ secs. No rev-counter is fitted so we cannot quote the maximum r.p.m. on the gears, but in terms of road speed, the maximum on 1st gear is 40 m.p.h. and on 2nd gear 60 m.p.h. The engine does not become unduly distressed until these speeds are reached. Owing to the annual track repairs we were hampered in obtaining maximum speed readings, and no timed tests were made, but a speedometer reading of 86 m.p.h. was achieved at the end of a short run, at which speed the Brough rode steadily and effortlessly. The instrument was 3¾ m.p.h. fast at 60 m.p.h. After fast driving on Brooklands the temperature rose momentarily to 90°C., but we attribute the increase to water surge as the needle returned instantly to the normal position. Some water was added. No oil was added in 580 miles; no pressure gauge is fitted, but there is a warning light if loss of pressure becomes serious. The dynamo just balanced the output at cruising speed with all lamps, save the interior lights, in use. The Brough was prone to pinking on No. 1 petrol and we ran on benzole or ethyl fuels. The consumption worked out at 16-17 m.p.g., including town work, hard driving, getting unbogged from a muddy lane, all warming-up and the Brooklands tests. The fuel gauge was optimistic, but there is a reserve supply controlled by a tap beneath a trap in the luggage locker. The radiator has an external filler-cap, the dip-stick is easily operated, and the fuel filler has a quick-opening action. The range is approximately 200 miles. We attempted Kineton Hill after the Gloucester trial competitors had reduced the surface to a morass and would undoubtedly have got up had we not stopped in awe of some unpleasant boulders strewn in our path, when restarting proved to be just impossible.

Subsequently the Brough made a very fine and rapid ascent of Beachylees Hill in Kent, in spite of having five people



The four-door Brough-Superior saloon is given a distinctive appearance by its long bonnet.

aboard, the Goodyears defeating the very tricky surface of chalk and wet leaves.

The single-pane screen opens up horizontally with the bonnet; a valuable feature in fog or snow. A bulkhead between the engine and front compartment is effective in abolishing fumes and the Brough is a very snug car, though as no window louvres are used a window setting that suits the front-seat occupants is sometimes annoying to those at the rear. The windows open or close easily, though their operating handles are just a shade low-geared and transcribe a rather wide arc. The central interior mirror is rather limited in vision by the down slope of the roof, but the large rear window offers excellent vision for reversing. The blind is effective, but required assistance from the rear-seat passengers to persuade it to respond to its control cord. The twin electric screen wipers coped admirably with snow, rain and sleet, working fast and silently. The instrument panel and interior decoration is tastefully carried out in real burr walnut. The instruments, etc., grouped in an oval, are as follows: left to right: fuel gauge; water thermometer of dial type; dynamo "window" light below it; switch for interior lights; speedometer with big dial, reading to 100 m.p.h. with inset total and trip readings; ammeter; switch for dash lighting below it; lamp and ignition switch; oil warning light below it. On the extreme right, below the cubby hole balancing the cubby hole on the left, the following:—starter button, high-note horn button, ivory-finished choke, and direction indicator switch. The doors have deep pockets. Both Lucas wind horns have a pleasantly musical note. There is ample leg space in the front compartment, with no need to rest one's foot on the clutch pedal. The front adjustable bucket seats have fold-forward backs and are of very "arm-chair" dimensions. The large steering-wheel is of spring spoke pattern. Three outstanding items of equipment are the four-wheel jacking, the automatic chassis lubrication, and the master battery switch on the floor beneath the passenger's front seat. The steering wheel partially obscured the 30 m.p.h. section of the speedometer.

There are push-in ash-trays for the rear-seat passengers. The bonnet has push-down clips that work well. The tools are accommodated beneath the bonnet in a well, concealed by lift-up aluminium panels. We could not ascertain the low-speed running on top gear as the engine tick-over corresponded to a road-speed of 12 m.p.h., and there is no hand-throttle, but second gear sufficed for crawling down to 5 m.p.h., from which speed the pick-up was clean and rapid. Outwardly the Brough has very good lines. The radiator shell has a big diameter, flat cap and imitation honeycomb, the bonnet has horizontal waist-line louvres, and the tail incorporates a roomy luggage locker, behind which is mounted the cased spare wheel. Plain, rather light bumpers are fitted, with weighted ends. The wheels have Ace-avion discs held by knock-on imitation hub-caps. We had a rear disc rattle towards the end of the test and discovered that the nuts are finger-tight and daily adjustment is advised. The rear number-plate is high-set and keeps clean. Incorporated with it is a big rear light and a reversing light operated automatically by the gear-lever. Beneath the bonnet on the near side is a big drum-type air cleaner, connected by a long flexible tube to the carburetter on the off side, the belt-driven dynamo, and the dip-stick. On the off side is the automatic carburetter, and the neatly polished manifolding. Over the cylinder-head is a polished domed imitation o.h. valve cover, held down by two knurled nuts, though the illusion

THE SIX-CYLINDER BROUGH-SUPERIOR—continued

only holds good when viewed from the sides, as the ends of the cover are open. The fuses are accessibly placed by the tool well, including the trafficators' fuse and horn relay. Anti-dazzle fold-down flaps are fitted inside the screen, the passenger's having an inset mirror, which appeals to the fair sex.

Turning to the mechanical aspect, the chassis is basically Hudson. The six-cylinder engine has a bore and stroke of 76.2 mm. x 127 mm. giving a swept-volume of 3,455 c.c., and an R.A.C. rating of 21.6 h.p., and it is claimed to develop 100 b.h.p. at 3,300 r.p.m. The valves are side by side and an aluminium cylinder-head is used, the compression ratio being approximately 7 to 1. The crankshaft is balanced, the weights being integrally forged, and it carries a Lanchester vibration damper at the forward end. Alloy pistons on steel connecting-rods are used. The clutch and gearbox are in unit with the engine and three-point mounting on rubber cushions damps out vibration and torque reaction. A single down-draught carburetter is used, with fully automatic mixture regulation throughout the temperature range and an automatic choke to ensure prompt starting. An air-cleaner on the opposite side of the engine is connected to it by a long flexible tube. Intake and exhaust manifolds are bolted together, on the off side of the block. The radiator area is considerable and a cased-in fan is belt-driven from the crankshaft. Thermostatic control limits the water temperature rise to 86°C. The engine is isolated by a bulkhead from the bodywork, special louvres relieving under-bonnet air pressure. The belt-driven 12-volt dynamo has automatic voltage control and the battery has a capacity of 120 amp. hr. The starter works quite silently and it was advisable to operate the accelerator to get an instant response.

The clutch is a single-plate type, oil-cushioned, with heat-treated cork inserts. The gearbox gives three speeds and reverse with synchro-mesh on top and second gears, and the remote control tunnel is lengthy, but compact and well placed. The semi-floating rear axle has spiral bevel drive. The box-girder frame has central cruciform bracing, angular bracing at the front and further stiffening in the form of a pressed-steel undertray.

Suspension is by long half-elliptic springs encased in gaiters and controlled by Luvax hydraulic oversize shock-absorbers. The front springs are shackled at both ends, as all axle movement and braking torque is resisted by H-section radius arms pivoted to brackets beneath the main frame-members and swivel mounted on the axle-beam. Silent bloc bushes are employed at the pivots. The brakes have Lockheed hydraulic application to all four wheels, with a master-cylinder beside the engine, and there is a mechanical connection to safe-guard against pipe-line breakage. The hand-lever operates mechanically.

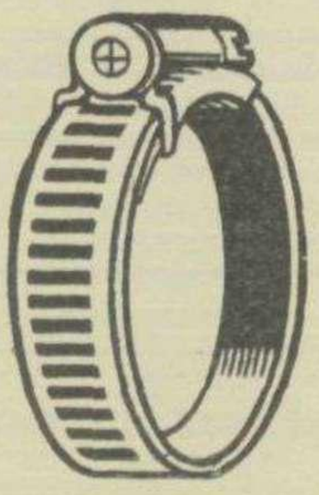
The steering is of worm type. The four-wheel jacking system is of the Smith's Jackall hydraulic type, which completely raises the car in two minutes and lowers it in five seconds, controlled from the driving compartment. The chassis lubrication is looked after by engine suction, the Bijur layout being used. The exhaust pipe terminates in a cast fan-tail. The 16" x 6.00" wheels carry Ace discs and "G.3" Goodyear covers. The wheelbase measures 10 ft., and the track 4 ft. 9½ in. The saloon tested is priced at £695. The guarantee is valid for six months. A drop-head dual purpose four-seater is offered at £665, and the open four-seater "Alpine Grand Sports," for which 110 m.p.h. is claimed, at £845. The latter car has a Centric supercharger driven by triple belts, and the drop-head model is available with this addition for £775. The saloon is only available as tested. There is also a range of straight-eight Brough-Superiors, available blown and unblown, the "eight" having been put on the market before the "six" was announced.

The Brough is available in black, or nine colours, with upholstery in grey, green or brown to choice. The "Alpine Grand Sports" model is finding a ready market in the U.S.A.

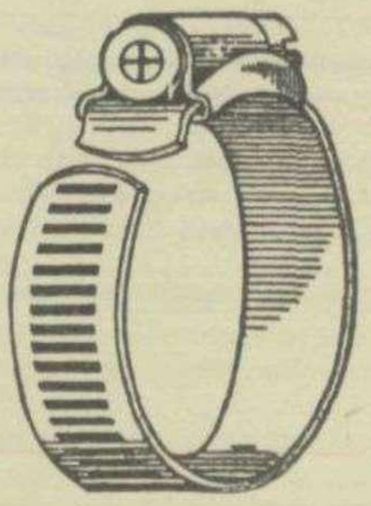
Summing up, the Brough-Superior is a responsive car that goes about its work easily and unobtrusively, in a manner that belies its out of the ordinary performance. It appeals particularly to those who seek an individual car that does all that one has come to expect of a good American automobile with considerably more charm, and possessed of bodywork and equipment in keeping with those of high-class British productions.

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Little Mary

Amongst the more exciting preparations for the coming season are those of John Bolster, who will again run his famous "Mary" in sprint contests. John is now planning a new car which is to have four of the old 980 c.c. V-twin J.A.P. engines in a frame with Lockheed braking, independent front suspension, and only two speeds. Transmission will be by chain and quite how this 4-litre eight-cylinder cycle-car will function along the straight and narrow is as much a matter of conjecture and morbid interest as when Bolster announced his original "Mary." It is a wise move to retain the old car, so that by restoring its two engines from the new motor it will be available as before. Certainly we admire Bolster's brave and individualistic endeavours to capture sprint honours. The pity is that speed-trial organisers cannot pay him starting money!

The Silver Hawk

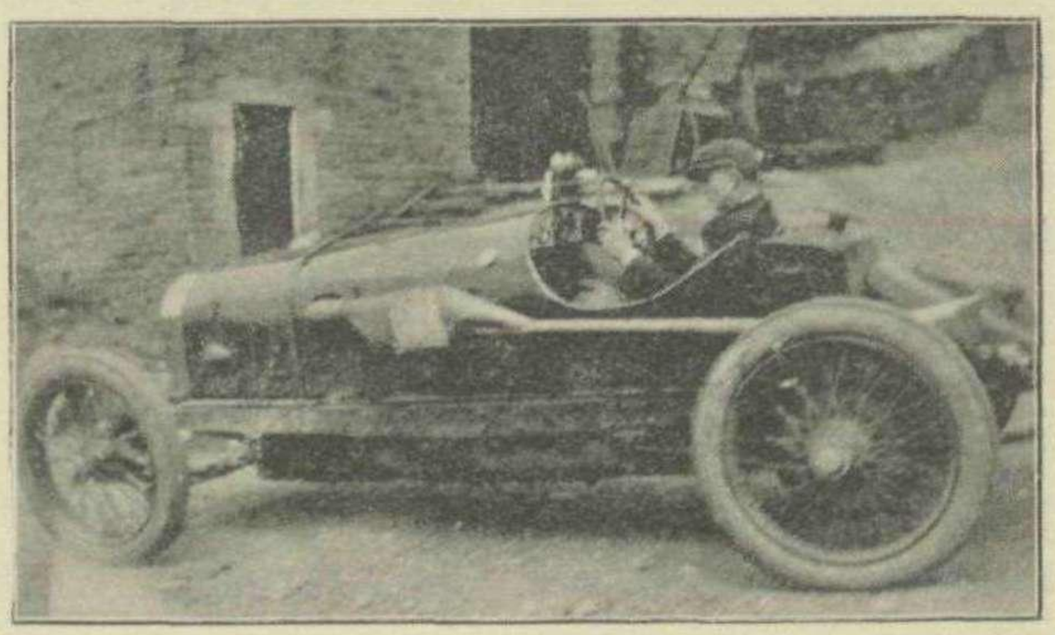
Amongst Brooklands cars of the past the Silver Hawk seems to have lived on in many people's memories, although few appear to know anything of the car, other than its name. Actually, very few of these cars were made. The chassis was pre-war Swift and a 1½-litre Anzani or Coventry-Simplex engine was used. George Duller commenced his racing career with the latter type, winning several Brooklands races at between 67 to 68 m.p.h. average. Legend has it that the Swift gearbox had a useful life of 100 miles to a set of bearings (plain). We reproduce a photograph of a Silver Hawk, which came with a covering letter in which the writer naively remarks that the best thing about the car was its exhaust note!

T.T. Bentley—Old School

It is a far cry from the 4¼-litre Bentley, on which E. R. Hall had his fine drive in the last T.T. race, to the 3-litre Bentley depicted here. The latter car is one of the team that ran in the 1922 Tourist Trophy, the first big road race in which the Bentley marque competed. Later it was acquired by the late George Porter who ran it successfully at Southport, having cast away much avoirdupois by extensive drilling of the chassis members. Porter was killed in the car near Blackpool as a result of encountering an unexpected shower of rain on a sandy road. Mrs. Millington, then Miss May Cunliffe, bought the remains in 1926 and ran the old Bentley at Southport and Shelsley, until she crashed it seriously at Blackpool. In 1927 it was rebuilt and supercharged (which is interesting), but that is another story. The older racing-cars had attached to them strong associations with definite venues or personalities, so that their very ownership was a source of satisfaction, quite apart from the pleasure of tuning and driving them. And in the case of the Bentley marque, these old-time associations are handed on to the present examples, which partially explains the popularity of, and enthusiasm for, the modern 4¼-litre.

Port of Call

If your tank shows signs of running dry as you approach Peterborough, remember Cook's Garages Ltd. on the London Road, if you have time for a chat about the early days of motoring sport. The proprietors know a lot about this sort of thing, although their present joy is the Jowett, in passenger and commercial forms. They have been associated with some amusing hybrid efforts, and on a recent visit we were shown a photograph of a touring Rolls-Royce with 40/50 Napier gearbox and a Rolls-Royce "Hawk" aeroplane motor, possessed of intriguing exposed



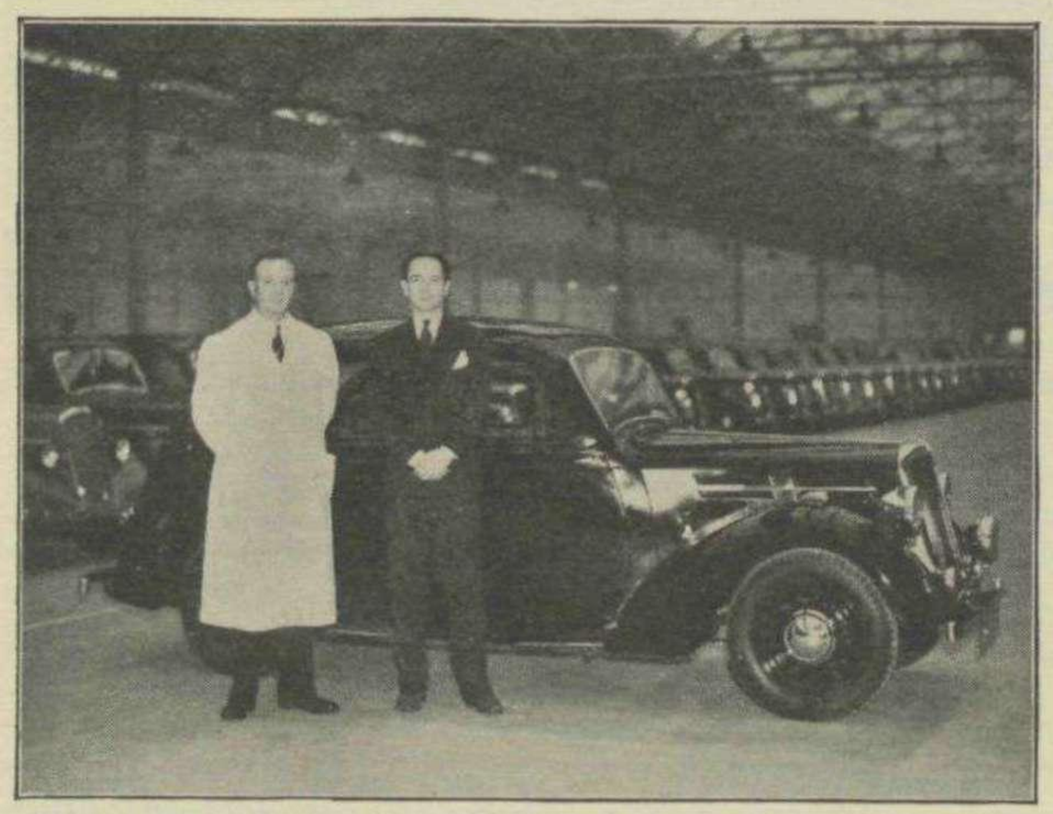
The 1922 T.T. Bentley raced by May Cunliffe.

RUMBLINGS—continued

o.h. camshaft valve gear, and claimed to develop 87 b.h.p. at the extremely moderate crankshaft speed of 1,300 r.p.m.

Abingdon Activities

The M.G. Car Company Ltd. has every reason to feel elated for production has exceeded all previous records. The Midget 1½-litre and 2-litre cars are built on assembly lines, but the hustle and bustle of a mass-production factory is not in evidence in this



Raymond Mays, Shelsley Walsh record holder, takes delivery of a "Flying Standard" Saloon.

purely sports-car factory, and although the engine units are fully tested before arrival at Abingdon, the complete cars receive a thorough road-test before they go into the "finished" bay, both in chassis form and with bodywork fitted. It is a fallacy that M.G.s used to maintain a special racing department; in fact, the racing-cars were usually accommodated above the body shop. In future trials a team of model "T" Midgets will carry on the work performed by rather special cars in the past. The idea of installing a 1.3-litre £7 10s. tax engine in the Midget frame was a brilliant one on somebody's part, and much interest should attach to the road-test impressions published elsewhere in this issue. To see the cars taking shape on the assembly lines in the factory is to appreciate the very vigorous demand that exists for the M.G. sports-cars, and also explains the reason for this activity, for a bare chassis is the best guise in which to examine a car for its good or bad features. And the present M.G.s have extremely fine frames and exceptionally good detail work goes into them. Very liberal use is made of rubber mountings, and the facia of the new Midget is a simple rigid pressing. The bodywork is carefully hand finished, after chassis parts have been spray-painted, and the fine lines of the latest coachwork can be admired at leisure in the vast bay where new M.G.s await their future owners.

It makes one glow inside to see visible proof of the continued and growing popularity of the sports-type of motor-car. Incidentally, M.G. personnel make extended use of their own products. George Tuck, who manages M.G. publicity, is running a "T"-type Midget of his own. So that they understand every aspect of their cars before the most enthusiastic private owner has done his first 1,000 miles. Incidentally, the model craze has extended to Abingdon and I saw some excellent miniature Mercs. and closed-body Auto-Unions in Tuck's office.

Sports-Cars for Sports-Car Races

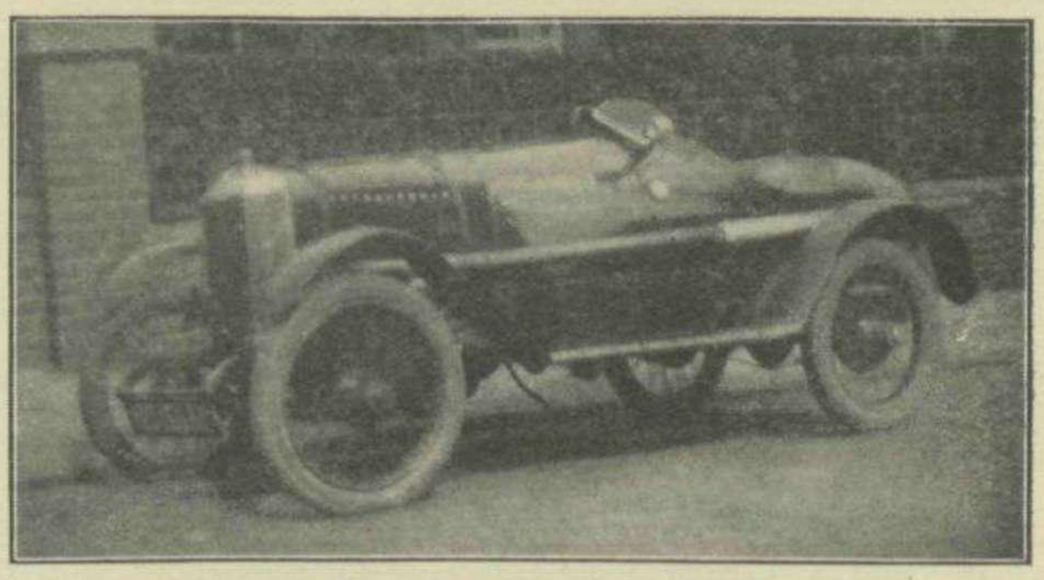
To obviate the use of Grand Prix bodywork (if not Grand Prix chassis) for sports-car races, new rules were framed at the last meeting of the International Association, covering specifications of bodywork for the Le Mans, Tourist Trophy, "French Grand Prix," "Belgian Grand Prix," Monte Carlo Rally and certain Italian sports-car races. Two doors are required, one on either side, 40 c.m. (approximately 16 in.) in width, 20 c.m. (approximately 8 in.) from the floor-boards. Width of body across the seats must be 85 cm. (34 in.), an increase of 5 cm. Seat dimensions are governed, but two-seaters qualify for most races and rulings have been made covering hoods and screens where these are compulsory, and wings must surround one-third the circumference of the wheels and come down to hub-level. Doors must be proper ones, mounted on hinges, but can be bolted up for safety.

1½-litre Activity

We are at present refraining from saying much about the interest that is latent about 1½-litre racing, because at the moment it is uncertain just which concerns and individuals will support limited capacity racing this year, though the E.R.A. will continue very prominent. "Bira" has bought Seaman's Delage, and the Ellison-Cholmondeley-Tapper Association may run an E.R.A., the Maserati being up for sale. Charlie Martin has plans for one of the 1926 straight-eight double o.h. camshaft Talbot engines in the 2-litre twelve-cylinder Delage chassis, presumably the car owned by the Conan Doyles, though Talbot engines must be scarce.

A prominent Continental driver is rumoured to be acquiring one of the twelve-cylinder 2-litre 1924 Delage cars, presumably to run lined down to 1½-litres. We understood that an inherent fault in the con-rod formation prevented the Conan Doyles using this remarkable car for record work, so that if the present rumour be true there looks like some enthralling redesigning work for someone.

R. G. J. Nash will run his Frazer-Nash-Union-Special in 1½-litre classes at sprint meetings as before.



The "Silver Hawk" 1½-litre racing-car.

Club News

KENTISH BORDER C.C.

The third annual Sporting Trial started from Charing, Kent, with sixty-three runners out of an entry of seventy-seven.

R. M. Andrews (blown M.G. Midget) was put out by reason of the exhaust pipe puncturing his fuel tank—a nasty business which suggests a severe surface—and on Postman's Walk A. Broadley's Singer stopped with water in the gas works.

Only ten cars successfully tackled Shrubs Wood, these being :—J. Dyer's Riley, A. Carminati's Triumph, W. Green's blown M.G. Midget, E. Mobbs's M.G. Magnette, C. Anthony's Aston-Martin, K. Shackel's Wolseley, A. Broadley's Singer, K. Hutchison's Ford V8, D. Silcock's M.G. and J. Bond's Morris Minor. In the restart test at Cavert Woods, D. Loader's Ford V8 was fastest, recording 7.7 seconds. Miss Baskin (S.S.) was the best performer in the Downhill Brake Test, in 9.4 seconds. Five failed on Palmstead, which is quite steep and of interesting length. Seventeen cars then managed the final section. C. M. Anthony (Aston-Martin) was the best performer, K. R. W. Shackel (Wolseley) the best member, K. Hutchison (Ford V8) best in the opposite class, and the Southsea " B " team were winners of the Team Award, with a team composed of C. S. Dewey (M.G.), J. Dyer (Riley), and A. R. Carminati (Triumph). J. Dyer scored for Southsea, Anthony for the Great West, Bond for Brighton, and C. J. Hawkes (Ford V8) for Margate. First-class Awards were gained by C. S. Dewey, D. G. Silcock, and W. J. Green (M.G.s), C. A. N. May, and E. G. Mobbs (M.G. Magnettes), J. G. C. Bond (Morris Minor), J. Dyer (Riley), A. R. Carminati (Triumph), and D. Loader (Ford V8).

A Christmas party was held on December 14th, at Bromley Country Club, to which entrants in the Sporting Trial were invited. This is one of the more go-ahead small clubs.

MAIDSTONE & MID-KENT M.C.

Twenty entries were received for the Founder's Cup Trial, which started from the Tudor House, Bearsted. There were four teams. A special test on Thurnham Hill failed no one and only two came to rest on Coldharbour Hill.

However, Allington Hill stopped 80 per cent. of the entry and only four M.G.s and a Singer got up. After a pause for lunch twelve cars got up Temple with Pentony (M.G.) the star-driver. The finish was at the Tudor House, for tea, when the results were speedily announced. The cup went to Pentony (M.G.) and H. Huckins (Singer) was runner-up. H. J. Barwick (M.G. J2) was third. This is the sort of minor trial over which competitors and marshals alike can have a good day's outing and gain valuable experience for sterner things to come. A dinner and dance will be held at the Tudor House, Maidstone, on January 20th.

Hon. Secretary : A. W. Jupp, 203, London Road, Maidstone.

W.A.S.A.

The W.A.S.A. has moved into new premises at 2, Hamilton Place, W.—a London mansion of the better kind, next door to the Chilean Embassy. This is one of the few motoring bodies with its own headquarters where members can meet and stay. The W.A.S.A. puts over some extremely good motoring events, and has done much to establish trials driving and racing as no more unwomanly a pastime than golf, tennis or swimming. May it be well suited at its new home.

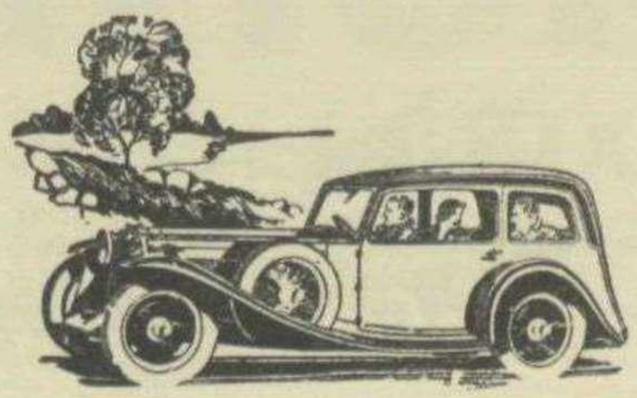
CEMIAN MOTOR CLUB

The annual dinner and dance was held at the new Burlington Gallery, Burlington Gardens, on the 8th of last month. It was very successful, and nearly 200 people were present. Special features of the evening were the happy and friendly atmosphere which prevails at all Cemian Motor Club events, and the complete absence of unnecessary formality. The Club's chairman, Mr. P. Knowland, presided and the awards won during the year were presented by Mrs. Knowland. The " party " terminated at 1.30. The secretary is always happy to hear from prospective members. He is A. A. Bolsom, of 33, Heath Street, N.W.3.

LIVERPOOL M.C.

The Percy Butler Trial covered interesting ground in North Wales. Seventeen cars finished, seven with clean sheets. The trial was divided into two distinct sections, of which " A " was for sports-cars and " B " for normal cars, the latter by-passing the more arduous sections.

Bwlch-pen-Barras stopped J. R. White (Hillman Minx), P. Markwald (Singer) and R. H. Gregory (Morris). In spite of such hills as Maes y Safn, Boundary Stone, Hendre Quarry and Ysceiflog, only a few of the class B people lost marks here, from which we surmise that just leading a trial into Wales is not alone sufficient to provide abnormal fun and games. On the other hand, bear in mind Cae Glas Uchaf, which stopped every class A competitor, excepting C. E. Stothert (Fiat) and J. F. A. Clough (Riley).



The Druid Hotel, Llanferres provided tea and tables where results were worked out, which were largely decided on speed error. The Percy Butler Challenge Shield went to Stothert's Fiat and he and Clough (Rover) were the only winners of First-class Awards. In the class B section, G. Good (Ford) and A. G. Sugg (Rover) gained First-class Awards, and interest always attaches to such "standard-car " classes.

Recently speed trials were held over a stretch of concrete road, when Rolt made fastest time of the day, driving an interesting car, in the form of a blown Dolomite Triumph. Leathart's M.G. was second. Over a flying half-mile Rolt's Triumph clocked 101.75 m.p.h. and Talbot's Ford V8 registered 81.05 m.p.h. The latter event was staged by the Liverpool University M.C.

BERWICK & DISTRICT M.C.

Out of seventeen starters in the recent trial, only J. N. L. Harrison (Ford V8) came through clean, in spite of sunny weather following a frosty night rendering the course easier than the award-givers had anticipated.

W. Forrest (M.G.), L. Robinson (Morris) and Harrison put in some excellent displays of driving ability.

RESULTS

First-class Award : J. N. L. Harrison (Ford V8).
Second-class Awards : J. R. McBain (Ford), R. Graig (Ford), L. Robinson (Morris), J. Stoddart (Lancia) and H. B. Byers (M.G.).

GENERAL NOTES

Whatever the pessimist may mumble about the present and future of the sport, the fact remains that the reliability trial is by far the most popular aspect of competitive motoring, in spite of the proving-ground involving, with isolated exceptions, the public highway and by-ways. As so many people file their copies of this paper for reference purposes I feel that an attempt should be made to list the outstanding trials drivers of the past season, together with the mounts that they favoured. The task is by no means a light one, and the following analysis outlines merely the winners of the premier award for best performance, in the more classic events :—

RESULTS

Sporting O.D.C. S. C. H. Davis Trophy: L. R. Swain (M.G.).
Scottish S.C.C. Winter Trial : J. Flint (Frazer-Nash-B.M.W.).
Wye Cup : A. B. Langley (M.G.).
Southsea M.C. President's Trophy: R. W. G. Collins (M.G.).
Harrow C.C. C.L.J. Cup: Mrs. A. E. Moss (Marendaz-Special).
Colmore Trophy : H. Laird (McEvoy-Special).
West Hants Hartwell Cup : E. N. Wright (M.G.).
N.W.L.M.C. Coventry Cup : C. A. N. May (M.G.).
Hospital's Cup : G. N. Mansell (M.G.).
Bristol M.C. & L.C.C. Full Moon Cup : C.C. Evans (M.G.).
Leicestershire C.C. President's Trial : J. H. Rawson (Wolseley Hornet).

CLUB NEWS—continued

C.U.A.C. Barton Trophy : K. M. Petter (M.G.).
Newcastle & D. M.C. Travers Trophy : H. Laird (McEvoy-Special).
M.C.C. Land's End Team Prize : Macdermid-Bastock-Langley (M.G. Team).
Sunbac Inter-Team Prize : Toulmin-Crawford-Jones (M.G. team).
Margate & D. C.C. Jackson Cup : D. R. Mount (M.G.).
M.G. Challenge Trophy : L. J. Onslow-Bartlett (M.G.).
Kentish Border C.C. John Belmont Taylor Cup : S. H. Allard (Ford V8).
Liverpool M.C. Jeans Cup : C. E. Stothert (Fiat).
Hospital's Cup : Mansell (M.G.).
Lawrence Cup : S. H. Allard (Ford V8).
West Hants L.C.C. Banfield Cup : J. E. S. Jones (M.G.).
Plymouth M.C. Allen Trophy : H. Turnbull (Morris 12).
Southsea M.C. Cannon Trophy : M. W. Sheppard (M.G.).
J.C.C. Half-Day Trial : F. L. Cox (M.G.).
Brighton & Hove Trophy : R. A. Macdermid (M.G.).
J.C.C. Evening Trial : D. E. Harris (Singer).
Welsh Rally : G. L. Boughton (Triumph).
M.C.C. Torquay Trial & Rally : Sir Stenson Cooke Trophy : T. S. Weston (M.G.).
Salisbury M.C. Budgen Trophy : P. S. Flower (M.G.).
Barnstaple Trial : A. B. Langley (M.G.).
Lancashire A.C. Sporting Trial : J. F. A. Clough (Singer).
Eltham "100" : J. G. Arrow (Morris).
L.C.C. Buxton Trial : J. D. Barnes (Singer).
M.G. Challenge Trophy (Scottish Section) : J. M. Anderson (Anderson-Special).
Hagley & D. L.C.C. Clair Cup : R. Smart (M.G.).
Wye Valley A.C. Zimmerman Cup : J. E. Orgee (M.G.).
Knott Cup : P. S. Flower (M.G.).
Pointing Trophy : J. Twyford (M.G.).
Edna Flood Trophy : J. F. Lambert (Singer).
Brighton M.C. & L.C.C. J. H. King Cup : J. H. Waller (M.G.).
W.A.S.A. Trophy : Miss P. Goodban (Frazer-Nash-B.M.W.).
d'Espiney Trophy : J. Newman Clarke (Singer).
Gliksten Trophy : H. K. Crawford (M.G.).
Torbay & Totnes M.C. B.C.R. Bowl : J. F. Lambert (Singer).
Kentish Border M.C. Great West Tankard : C. M Anthony (Aston-Martin).
Bugatti O.C. Giles Cup : C. P. Hampton (Bugatti).
Percy Butler Challenge Shield : C. E. Stothert (Fiat).
Maidstone & Mid-Kent M.C. Founder's Cup : G. Pentony (M.G.).
Gloucester Cup : C. A. N. May (M.G.).

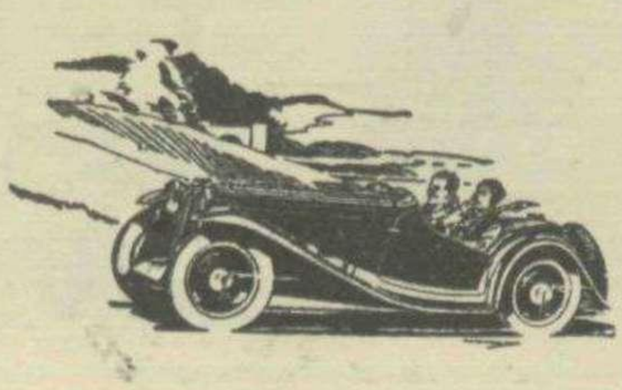
An enthusiast has afoot a scheme to organise a run for light cars and cyclecars of the **1912-1920** era. This was a very fascinating period of motoring history, before Sir Herbert Austin had solved for all time the problem of providing motoring for the million, when optimistic folk with little engineering knowledge and less business instinct set up curious little works in all manner of odd places and turned out even more curious vehicles, in depressingly limited quantities as a rule. As late as **1927** something of the sort was launched on the market. MOTOR SPORT carried out a road-test at the time and after a while we published the experiences of someone who had been engaged in building and selling these "pop-bottles," who told his story with lightly veiled disgust. Even recently there have been **half-hearted** efforts to revive this sort of thing. But it is the genuine article, out of history, that my friend wishes to assemble for another competitive outing, and quite apart from the interest to people who motor in comfort and security in present-day £100 light cars, there is tremendous scope for a spot of unique motoring adventure for enthusiasts of any imagination.

You might think that with Morrises, Clynos, Singers, and similar cars of **1925-26** vintage on sale all over the **place at** around £5 all the really early stuff would long ago have been pensioned off. But I am told that there is a good chance of an early Gwynne and a pre-war two-cylinder staggered-seat Swift being entered and someone else has offered the support of an antique Lagonda. And a Mr. Cutler has written to say that he has a **1924** Rover Eight which he bought three years ago for £5, and which has since done **25,000** trouble-free miles, and that if something like **300** miles in the day is contemplated, the Rover would doubtless prove willing. He mentions that late last year there were two of the old three-wheel two-track Scott Sociables running about in Luton and that a New Hudson three-wheeler is still in use in the Aylesbury district.

At this rate I foresee something of a revival of that enthusiasm that was in force before the first Veteran's Run to Brighton, with people frantically wandering from breaker's yard to country garages in search of suitable cars, with the important difference that whereas the historic old 'uns fetch something like £40 to £70 or more, ancient small cars should be purchasable for a few shillings! It has not yet been decided whether the run will be organised by a club or merely on impromptu lines, or even that it will take place at all, but I shall be glad to forward letters from anyone interested enough to offer support. The latest news is that a **1910** tiller-steered Jowett is a possible entry.

Having been in reminiscent mood in these columns for some time past I was rewarded as the year drew to a close with more motoring adventure crammed into a period of twenty-four hours than normally come the way of the ordinary enthusiast. It so happened that three of us set out from London town at midnight with the idea of seeing something of a classic trial, due to take place in the West Country on the morrow. The car was an English version of a high-performance American, well-suited to this kind of motoring, and, after spending the evening at a more than usually cheery party, we bade our slightly incredulous hosts goodbye, setting off in optimistic mood.

Unfortunately, as we have discovered only too frequently, the best of motor-cars is a depressing possession when the tank is dry, and our supply, taking advantage of a lethargic fuel gauge, and the crew's lightheartedness, ran out at 2 a.m., somewhere beyond Bicester. Help came quickly, in the form of a Standard saloon engaged on trials duties, and our navigator went off cheerfully, saying he would return very soon. So we settled down to wait, looked through some summer snapshots, noted the disappearance of the moon and arrival of rain . . . A heavy milk lorry awoke us at 8 a.m. Like most "heavies'" crews they were only too glad to lend a hand, and forthwith undid most of that lorry's fuel system to obtain for us half a gallon of dirty petrol, conveyed to our tank in the lid of a milk-churn. Restarting, we pondered on the fate of the navigator, who had been gone six hours or more.

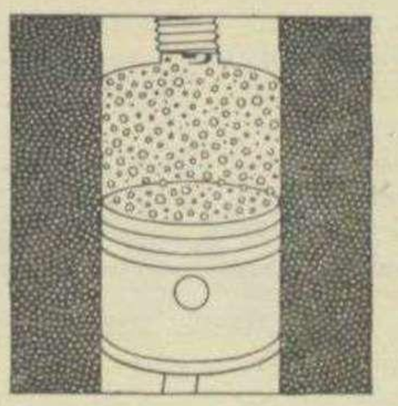


Some ten miles up the road we came upon a Morris Eight van which pulled up with a squeal of brakes. Getting out we observed it making reversing manœuvres that would shame any trials driver explained by the presence therein of our navigator, who thought that we had failed to see him!

Our troubles seemed to be over and a rapid calculation showed that we might yet see quite a bit of the trial. Whereupon changing from bottom to second, the clutch pedal vanished completely. To stop was out of the question, for our Morris van was leading the way through tricky country to a garage at a good 45 m.p.h. Consequently we just drove on whereupon the thermometer needle rose to a decent reading for the first and last time during our acquaintance with this particular car. Arrived at the garage we explained things to the astonished staff and repaired to the pub where the navigator had slept—yes, slept!—earlier that morning—on a wooden bench before an empty grate. Back at the garage we passed a weary three hours inspecting a Lanchester Forty landaulette that intrigued by reason of immense rear brake drums and the famous water-lever where you usually find a radiator badge, the most dilapidated Morgan even seen, that intrigued us even more because it proudly displayed a job-card reading "fit new valve" (only a valve!) and a sporting line in Amilcars that had just changed hands for £4. Incidentally, to show that this is not fiction, let me say that the garage in question is that of Messrs. Young and Major, of Chipping Norton, and that they charged us only **16/6** for some 3½ hours' work by two men in making up a new clutch bolt, including the journey to bring us fuel. Also incidentally, their workmen provided a lucid and instructive lecture on the inaccessibility of modern cars.

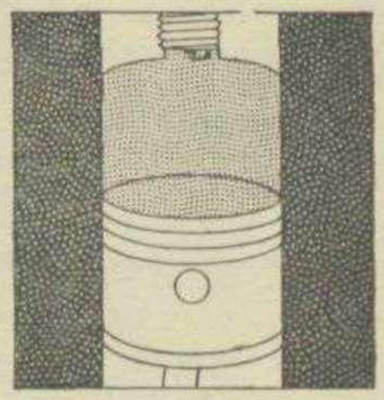
Off again, we further delayed progress by taking a wrong turning and arriving in what can only be described as the "washing yard" of a country mansion, where expensive cars were being cleaned by chauffeurs who showed no astonishment at our arrival, merely waving solemnly for us to drive round the place, in lieu of reversing. Cheered by this friendliness and quite warm sunshine, we decided (or at least the driver did) that it would be fun to tackle one of the hills that had figured in the trial earlier on and to which the route-card would conveniently lead us. Our ascent coincided with the disappearance of the sun and the commencement of a healthy hail and snow storm and in due course the driving wheels ceased to drive. The sort of stone wall that is typical of Gloucestershire provided plenty of material, but

HE *explains* 'STARTABILITY'



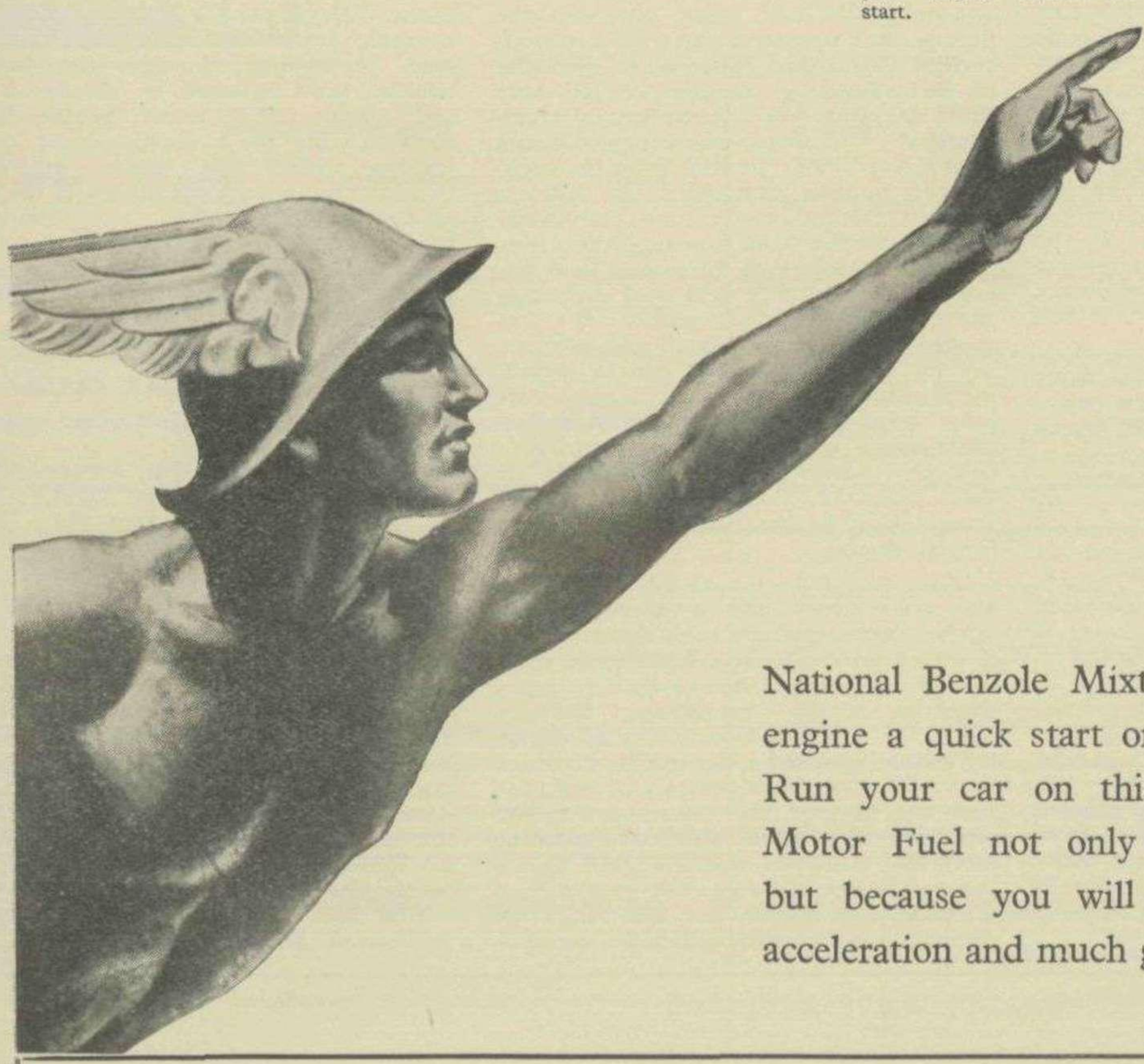
ORDINARY MOTOR SPIRIT

does not vaporise easily in cold weather. Instead of a gas, the cylinder is filled with a sort of 'scotch mist' of liquid fuel. The sparking plugs cannot ignite the drops of fuel—and so your engine refuses to start.



NATIONAL BENZOLE MIXTURE

is highly volatile. Even on an icy day it vaporises easily in the carburetter, filling the cylinder with a comparatively dry, rich gas that can be ignited by the first spark. This also means better pulling away from cold.



National Benzole Mixture will give your engine a quick start on the coldest day. Run your car on this British Benzole Motor Fuel not only for easy starting, but because you will also get smarter acceleration and much greater power.

NATIONAL
BENZOLE MIXTURE
The fastest spirit motorists can buy

National Benzole Co., Ltd., Wellington House, Buckingham Gate, London, S.W.1.
(The distributing organisation owned and entirely controlled by the producers of British Benzole)

CLUB NEWS—continued

after an hour or so we got tired of road-building, and, with the sun nearly set, went off in search of civilisation. The nearest village provided provisions and, for half-a-crown, the biggest horse we had ever seen . . . An amusing meal in Broadway put us in fine fettle for the homeward run, and the discovery that it was snowing hard in no way dismayed us. The average was most satisfactory to the man behind the wheel, who attempted to look not too closely at the road surface. Then, beyond Oxford, a Ford Eight ahead did most alarming things, that plainly said "ice." And ice it was, so that we spent the rest of that night helping people out of overturned cars, eventually to crawl home with an unbelievable respect for the brake pedal. Very ordinary adventure in some ways, but very good fun for all that, and we set off again, in a snowstorm, at 9 a.m. on the Sunday for another dose. Certain vivid impressions are retained; devouring empty West Country roads in wintry sunshine at 80 m.p.h., climbing up Fish Hill at a fine gait in second, with the view blanketed out by snowflakes; and the feat of the navigator, who ate six eggs for his breakfast and was astonished when we drew his attention to it. By the way, the next day we found a reserve petrol-tap, tucked away where you do not usually look for such things . . . ! It's a good life ! !

Another December week-end was spent remaking the acquaintance of the M.G., in the form of a series T. Midget, which proved a thoroughly stimulating experiment, so that some very satisfactory averages have since been entered in the log-book. On the Saturday an optimistic effort to get round a well-known trials course, guided by an old route-card, rapidly passed the morning and increased our respect for the motor-car. Later, a long-postponed expedition was made to Bentley, in Hampshire, in an attempt to locate one of the more exciting of the Zborowski Mercédès, an expedition that ended up at Windsor Richards's garage, where we paid our respects to his well-known racing 30/98 Vauxhall and chatted with an enthusiastic owner of a J2 M.G. Midget. Also, we learned that the Merc. had vanished, as happens inevitably, it would seem, to these veterans from a sterner age.

The homeward run was productive of an intriguing duel with a touring Riley Nine, when the manifestations of Hore Belisha were temporarily forgotten. The following day a start was made for a destination up the Great North Road when the M.G., doubtless intrigued, as we ourselves always are, by that black-and-yellow placard "The North," comfortably put over fifty miles into the first sixty minutes, in spite of full respect for all the built-up areas encountered in that period. The opening stages were rendered more than usually soul-satisfying on account of a duel which we had with an Armstrong-Siddeley saloon, which appeared to possess an identical maximum and which rolled lustily on its damping arrangements. Thereafter we branched off, for no especial reason, to St. Neots and Cambridge, and were rewarded not only with fast roads, but with the unique and beautiful sight of a closed-cockpit Drone that appeared to specialise in hedge-hopping, though we felt sure that its pilot was attempting a cross-country. Unable to resist the possibilities that seemed likely to arise from the high-pitched buzzing that filled the stillness of the morning every time the wildly swaying Drone sank towards the trees, we tried to follow it up a lane that terminated in a muddy field, and thereafter the average went all to pieces. We proceeded via Chatteris, March and Whittlesey to "A1" roads that can be recommended to those motorists who appreciate long, level, deserted straight stretches, punctuated by plenty of open double bends. Arrived at our destination we met three of the realest enthusiasts imaginable, so that lunch *was* a prolonged sitting.

Then our M.G., joined by a P-type of the same breed and a fierce Morgan whose owner thought nothing of driving it with a broken front-axle tube, we withdrew to a certain piece of road to settle disputes about maximum abilities, when the "T" nobly upheld Abingdon by sailing past the older model, in which two very wind-swept mortals wished they had not lowered the screen and hailed with joy the end of the foot-extending stretch. Albeit it was remarked that a lowered screen is productive not only of a shade more speed, but also raises the appetite-content of the vehicle's occupants. At all events, we disposed of a hearty country tea before resuming the road, to return to town by a devious route, duelling with a red "P" type M.G. during the going. But perhaps modern motoring seemed a trifle tame after the tea-table conversation, which centred round fascinating cars of the early nineteen-twenties. Some of the stories told could never be committed to print, but "G.H.D." has written up his milder experiences elsewhere in this issue. That the moderns have a good deal to commend them we appreciated when a friend arrived in a rear-engined Trojan, whose many "features" occupied a humorous half-hour, at the end of which probing someone remarked that the car could boast at least one good point—that there was room inside to hold a sizable party, if not to stage a dinner-dance. Never mind ! That car has earned a worthy reputation locally, having been seen proceeding through the neighbouring town followed by clouds of fire and smoke. Not many people have ascribed this to a starting-lever cable trailing within the centre tramline. Incidentally, we ran out of fuel at the end of the Barnet By-Pass, but this time there were three reserve gallons to be burnt beforehand, so that the passenger's comments were completely justified. Yes ! It's a great life !

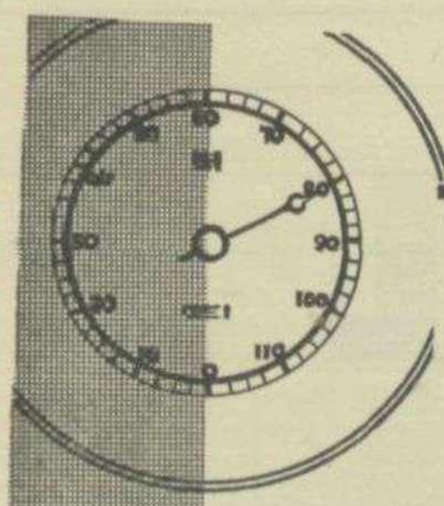
VINTAGE SPORTS CAR CLUB

The Annual General Meeting will be held on January 13th.

P. J. Robertson-Roger, owner of the blower four-seater 4½-litre Bentley, now has a half share in the 1908 Sixty Itala with Clutton. New members come in at the rate of about one per week. They include J. F. Fry, who runs Bentley No. 5, built in 1921.

Marcus Chambers has acquired one of the Double Twelve Bentleys and is engaged in the rejuvenating process. The next bulletin is scheduled for the New Year. Incidentally, Clutton has discovered that his 155×160 mm. Itala is *not* a 12-litre car, as taking pi as 3.14159 the capacity was found to be 11,999.3 c.c. No wonder this club can afford to apply obtuse formulæ to its speed events !

Hon. Sec. : E. T. Lewis, 152, Kew Road, Richmond, Surrey.



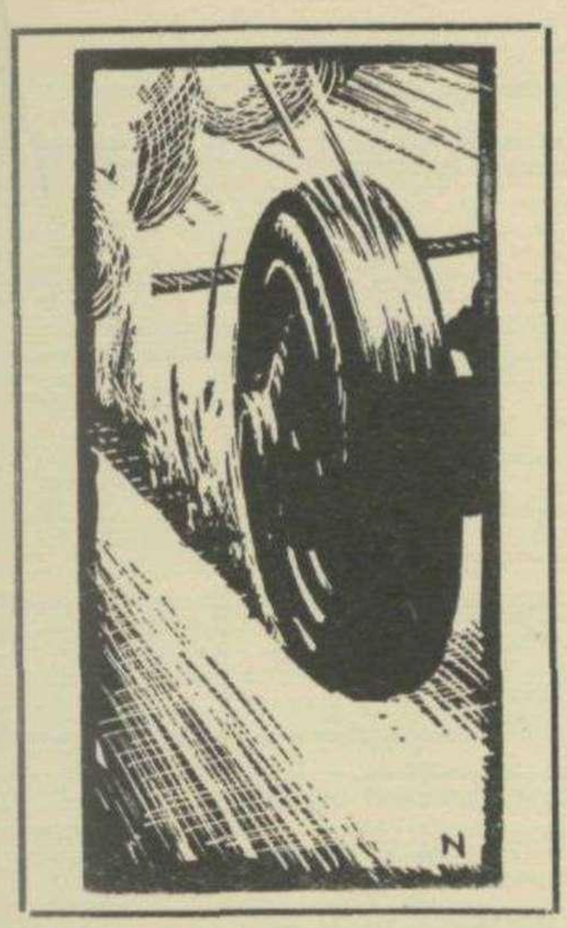
when the hand moves to 80...

...90...that is when the necessity of correct tuning is most apparent ; easy handling at top speeds is the keynote to success. We specialise in tuning cars for racing and reliability events.

The 2.6 litre supercharged Alfa-Romeo, in which I. F. Connell won a special cup for fastest average speed in the Leinster Trophy Race, was tuned and prepared by Monaco.

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MONACO MOTOR & ENGINEERING CO. LTD. * HIGH STREET WATFORD *



1936 RECORDS

World's and International Class Records to date



WORLD'S RECORDS

Record	Speed m.p.h.	Car and Drivers	Track
1 km. (s.) ...	101.56	Auto-Union (Stuck)	Avus
1 ,, (f.) ...	276.16	Campbell Special (Sir M. Campbell)	Daytona
1 mile (s.) ...	117.23	Mercedes-Benz (Caracciola) ...	Gyon
1 ,, (f.) ...	301.13	Campbell Special (Sir M. Campbell)	Salt Beds
5 kms. (f.) ...	292.12	,, ,, ...	,,
5 miles (f.) ...	251.40	,, ,, ...	Daytona
10 kms. (s.) ...	238.67	,, ,, ...	,,
10 miles (f.) ...	207.22	Mercedes-Benz (R. Caracciola) ...	Frankfurt
50 kms. (s.) ...	165.21	Auto-Union (H. Stuck) ...	Salt Beds
100 ,, (s.) ...	167.62	Napier Railton (J. Cobb) ...	,,
200 ,, (s.) ...	170.29	Mormon Meteor (A. Jenkins)	,,
500 ,, (s.) ...	167.11	,, ,, ,, ...	,,
1,000 ,, (s.) ...	166.65	,, ,, ,, ...	,,
2,000 ,, (s.) ...	157.18	,, ,, ,, ...	,,
3,000 ,, (s.) ...	153.95	Napier Railton (Cobb and Others)	,,
4,000 ,, (s.) ...	152.60	Mormon Meteor (Jenkins and Stapp)	,,
5,000 ,, (s.) ...	153.96	,, ...	,,
10,000 ,, (s.) ...	148.97	,, ...	,,
15,000 ,, (s.) ...	89.93	Citroen (Marchand and Others)	Montlhery
20,000 ,, (s.) ...	87.77	,, ,, ,, ...	,,
25,000 ,, (s.) ...	85.69	Voisin (Marchand, Morel and Kiriloff)	,,
30,000 ,, (s.) ...	84.37	Austin Special Yacco (Marchand and Others)	,,
35,000 ,, (s.) ..	83.86	,, ...	,,
40,000 ,, (s.) ...	84.13	,, ...	,,
45,000 ,, (s.) ...	77.64	Citroen (Marchand and Others)	,,
50,000 ,, (s.) ..	77.56	,, ,, ,, ...	,,
60-300,000 ,, (s.) ...	75.82-58.08	,, ,, ,, ...	,,
50 miles (s.) ...	167.38	Auto-Union (H. Stuck) ...	Frankfurt
100 ,, (s.) ...	169.57	Mormon Meteor (A. Jenkins) ...	Salt Beds
200 ,, (s.) ...	171.30	,, ,, ,, ...	,,
500 ,, (s.) ...	168.44	,, ,, ,, ...	,,
1,000 ,, (s.) ...	165.73	,, ,, ,, ...	,,
2,000 ,, (s.) ...	152.96	Napier Railton (Cobb and Others)	,,
3,000 ,, (s.) ...	153.60	,, ...	,,
4,000 ,, (s.) ...	150.53	,, ...	,,
5,000 ,, (s.) ...	149.42	,, ...	,,
10,000 ,, (s.) ...	89.71	Citroen (Marchand and Others)	Montlhery
15,000 ,, (s.) ...	85.50	Voisin (Marchand, Morel, etc.)	,,
20,000 ,, (s.) ...	83.67	Austin Special Yacco (Marchand and Others)	,,
25,000 ,, (s.) ...	84.14	,, ...	,,
30,000 ,, (s.) ...	77.63	Citroen (Marchand and Others)	,,
40-180,000 ,, (s.) ...	75.27-57.97	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 170 1,758	171.00	Mormon Meteor (A. Jenkins) ...	Salt Beds
3 hrs. (s.) 505 650	168.46	,, ,, ,, ...	,,
6 hrs. (s.) 994 565	165.72	,, ,, ,, ...	,,
12 hrs. (s.) 1,847 1,322	153.98	Napier Railton (Cobb and Others)	,,
24 hrs. (s.) 3,690 679	153.77	Mormon Meteor (Jenkins and Stapp)	,,
2 days (s.) 7,134 88	148.63	,, ...	,,
3 days (s.) ...	90.43	Citroen (Marchand and Others)	Montlhery
4 ,, (s.) ...	89.97	,, ,, ,, ...	,,
5 ,, (s.) ...	89.69	,, ,, ,, ...	,,
6 ,, (s.) ...	87.83	,, ,, ,, ...	,,
7 ,, (s.) ...	86.49	,, ,, ,, ...	,,
8 ,, (s.) ...	85.94	Voisin (Marchand, Morel, etc.)	,,
9 days (s.) ...	84.11	Austin Special Yacco (Marchand and Others)	Montlhery
10 ,, (s.) ...	84.32	,, ...	,,
10 ,, (s.) ...	83.68	,, ...	,,
11 ,, (s.) ...	83.90	,, ...	,,
12 ,, (s.) ...	84.07	,, ...	,,
14-133 ,, (s.) ...	77.65-58.07	Citroen (Marchand and Others)	,,

INTERNATIONAL CLASS A—Over 8,000 c.c.

1 km. (s.) ...	88.52	Napier Railton (Cobb) ...	Brooklands
1 ,, (f.) ...	276.16	Campbell Special (Sir M. Campbell)	Daytona
1 mile (s.) ...	102.52	Napier Railton (Cobb) ...	Brooklands
1 ,, (f.) ...	276.82	Campbell Special (Sir M. Campbell)	Daytona
5 kms. (f.) ...	268.47	,, ,, ...	,,
5 miles (f.) ...	251.40	,, ,, ...	,,
10 kms. (f.) ...	238.67	,, ,, ...	,,
10 miles (f.) ...	167.10	"Speed of the Wind" (Eyston)	Salt Beds
50 kms. (s.) ...	164.87	Napier Railton Special (J. Cobb)	,,
100 ,, (s.) ...	167.62	,, ,, ...	,,
200 ,, (s.) ...	170.29	Mormon Meteor (A. Jenkins)	,,
500 ,, (s.) ...	167.11	,, ,, ...	,,
1,000 ,, (s.) ...	166.65	,, ,, ...	,,
2,000 ,, (s.) ...	157.8	,, ,, ...	,,
3,000 ,, (s.) ...	153.95	Napier Railton Special (Cobb and Others)	,,
4,000 ,, (s.) ...	152.60	Mormon Meteor	,,
5,000 ,, (s.) ...	153.96	Mormon Meteor (A. Jenkins and Stapp)	,,
50 miles (s.) ...	166.77	Napier Railton (J. Cobb) ...	Salt Beds
100 ,, (s.) ...	169.57	Mormon Meteor (A. Jenkins)	,,
200 ,, (s.) ...	171.30	,, ,, ...	,,
500 ,, (s.) ...	168.44	,, ,, ...	,,
1,000 ,, (s.) ...	165.73	,, ,, ...	,,
2,000 ,, (s.) ...	152.96	Napier Railton (Cobb, Richards, Hindmarsh & Brackenbury)	,,
3,000 ,, (s.) ...	153.60	Mormon Meteor (A. Jenkins)	,,
4,000 ,, (s.) ...	150.53	Mormon Meteor (A. Jenkins and Stapp)	,,
5,000 ,, (s.) ...	149.42	,, ,, ...	,,
mls. yds.			
1 hr. (s.) 170 1,758	171.00	,, ,, ...	,,
3 hrs. (s.) 505 650	168.46	,, ,, ...	,,
6 hrs. (s.) 994 565	165.72	,, ,, ...	,,
12 hrs. (s.) 1,847 1,322	153.98	,, ,, ...	,,
24 hrs. (s.) 3,690 679	153.77	,, ,, ...	,,
48 hrs. (s.) 7,134 88	148.63	,, ,, ...	,,

INTERNATIONAL CLASS B—5,001-8,000 c.c.

1 km. (f.) ...	226.4	Mercedes-Benz (R. Caracciola)	Autobahn Frankfurt Darnstadt
1 ,, (s.) ...	77.82	Panhard (Dore)	Arpajon
1 mile (f.) ...	228.0	Mercedes-Benz (R. Caracciola)	Autobahn Frankfurt Darnstadt
1 ,, (s.) ...	90.59	Panhard (Dore)	Arpajon
5 miles (f.) ...	209.3	Mercedes-Benz (R. Caracciola)	Autobahn Frankfurt Darnstadt
5 kms. (f.) ...	211.6	,, ,, ...	,,
10 ,, (f.) ...	206.2	,, ,, ...	,,
10 miles (f.) ...	207.2	,, ,, ...	,,
50 kms. (s.) ...	165.21	Auto-Union (H. Stuck) ...	,,

1936 *RECORDS—continued*

Record	Speed m.p.h.	Car and Drivers	Track
100 kms. (s.) ...	163.40	Auto-Union (H. Stuck) ...	Darnstadt
200 ,, (s.) ...	151.46	Duesenberg Special (D. A. Jenkins)	,,
500 ,, (s.) ...	151.32	,, ,, ...	,,
1,000 ,, (s.) ...	137.16	,, ,, ...	,,
2,000 ,, (s.) ...	138.03	Duesenberg Special (Jenkins and Gulotta) ...	,,
3,000 ,, (s.) ...	138.68	,, ,, ,, ...	,,
4,000 ,, (s.) ...	133.90	,, ,, ,, ...	,,
5,000 ,, (s.) ...	135.08	,, ,, ,, ...	,,
10,000 ,, (s.) ...	68.83	Studebaker (Gulotta & Others)	Atlantic City
15,000 ,, (s.) ...	68.77	,, ,, ,, ...	,,
20,000 ,, (s.) ...	68.60	Studebaker (Stewart and Others)	,,
25,000 ,, (s.) ...	68.61	,, ,, ,, ...	,,
30,000 ,, (s.) ...	68.59	,, ,, ,, ...	,,
35,000 ,, (s.) ...	68.50	,, ,, ,, ...	,,
40,000 ,, (s.) ...	68.46	,, ,, ,, ...	,,
45,000 ,, (s.) ...	68.28	,, ,, ,, ...	,,
50 miles (s.) ...	167.32	Auto-Union (H. Stuck) ...	Frankfurt
100 ,, (s.) ...	166.04	,, ,, ...	,,
200 ,, (s.) ...	151.72	Duesenberg Special	Salt Beds
500 ,, (s.) ...	141.19	,, ,, ...	,,
1,000 ,, (s.) ...	137.87	Duesenberg Special (Jenkins and Gulotta) ...	,,
2,000 ,, (s.) ...	138.54	,, ,, ...	,,
3,000 ,, (s.) ...	134.78	,, ,, ...	,,
4,000 ,, (s.) ...	68.70	Studebaker (Gulotta and Others)	Atlantic City
5,000 ,, (s.) ...	68.80	,, ,, ,, ...	,,
10,000 ,, (s.) ...	68.81	,, ,, ,, ...	,,
15,000 ,, (s.) ...	68.59	Studebaker (Stewart and Others)	,,
20,000 ,, (s.) ...	68.54	,, ,, ,, ...	,,
25,000 ,, (s.) ...	68.47	,, ,, ,, ...	,,
30,000 ,, (s.) ...	68.36	Studebaker (Gulotta and Others)	,,
mls. yds.			
1 hr. (s.) 152 256	152.15	Duesenberg Special (D. A. Jenkins)	Salt Beds
3 hrs. (s.) 423 102	141.02	,, ,, ...	,,
6 hrs. (s.) 823 292	137.20	Duesenberg Special (Jenkins and Gulotta) ...	,,
12 hrs. (s.) 1,660 414	138.35	,, ,, ...	,,
24 hrs. (s.) 3,251 764	135.48	,, ,, ...	,,

INTERNATIONAL CLASS C—3,001-5,000 c.c.

1 km. (s.) ...	98.03	Mercedes-Benz (Caracciola) ...	Gyon
1 ,, (f.) ...	197.35	,, ,, ...	,,
1 mile (s.) ...	117.23	,, ,, ...	,,
1 ,, (f.) ...	199.00	Auto-Union (Hans Stuck) ...	Pescia-Altopascio
5 kms. (f.) ...	193.85	Mercedes-Benz (Caracciola) ...	Avus
5 miles (f.) ...	147.45	Union 76 Special (Frame) ...	Murock
10 kms. (f.) ...	152.90	Maserati (Borzacchini) ...	Cremona
10 miles (f.) ...	146.71	Union 76 Special (Hartz) ...	Murock
50 kms. (s.) ...	136.52	Union 76 Special (Frame) ...	,,
100 ,, (s.) ...	134.53	Bugatti (Benoist)	Montlhery
200 kms. (s.) ...	135.38	Bugatti (R. Benoist)	,,
500 ,, (s.) ...	125.50	Bugatti (Benoist and Veyron)	,,
1,000 ,, (s.) ...	126.41	,, ,, ,, ...	,,
2,000 ,, (s.) ...	122.21	Bugatti (Wimille, Veyron and Williams)	,,
3,000 ,, (s.) ...	123.74	,, ,, ,, ...	,,
4,000 ,, (s.) ...	124.58	,, ,, ,, ...	,,
5,000 ,, (s.) ...	110.81	Delahaye (Perrot, Dhome and Girod)	,,
10,000 ,, (s.) ...	104.72	,, ,, ,, ...	,,
15,000 kms. (s.) ...	84.61	Austin Special Yacco (Marchand and Others)	Montlhery
20,000 ,, (s.) ...	83.57	,, ,, ,, ...	,,
25,000 ,, (s.) ...	84.06	,, ,, ,, ...	,,
30,000 ,, (s.) ...	84.37	,, ,, ,, ...	,,
35,000 ,, (s.) ...	83.86	,, ,, ,, ...	,,
40,000 ,, (s.) ...	84.13	,, ,, ,, ...	,,
50 miles (s.) ...	139.61	Union 76 Special (Frame) ...	Murock
100 ,, (s.) ...	135.17	Bugatti (Benoist)	Montlhery
200 ,, (s.) ...	127.73	Bugatti (Benoist and Veyron)	,,
500 ,, (s.) ...	127.00	,, ,, ,, ...	,,
1,000 ,, (s.) ...	123.81	Bugatti (Williams, Veyron and Williams)	,,
2,000 ,, (s.) ...	123.86	,, ,, ,, ...	,,
3,000 ,, (s.) ...	110.86	Delahaye (Perrot, Dhome and Girod)	,,
4,000 ,, (s.) ...	110.40	,, ,, ,, ...	,,
5,000 ,, (s.) ...	109.89	,, ,, ,, ...	,,
10,000 ,, (s.) ...	83.03	Austin Special Yacco (Marchand and others)	,,
15,000 ,, (s.) ...	83.97	,, ,, ,, ...	,,
20,000 ,, (s.) ...	83.67	,, ,, ,, ...	,,
25,000 ,, (s.) ...	84.14	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 135 743	135.42	Bugatti (Benoist)	,,
3 hrs. (s.) 377 1,715	125.99	Bugatti (Veyron and Benoist)	,,
6 hrs. (s.) 761 756	126.90	,, ,, ,, ...	,,
12 hrs. (s.) 1,479 73	123.27	Bugatti (Wimille, Veyron and Williams)	,,
24 hrs. (s.) 2,974 528	123.93	,, ,, ,, ...	,,
2 days (s.) ...	109.54	Delahaye (Perrot, Dhome and Girod)	,,
3 ,, (s.) ...	84.24	Austin Special Yacco (Marchand and Others) ...	,,
4 ,, (s.) ...	84.58	,, ,, ,, ...	,,
5 ,, (s.) ...	83.00	,, ,, ,, ...	,,
6 ,, (s.) ...	83.48	,, ,, ,, ...	,,
7 ,, (s.) ...	83.87	,, ,, ,, ...	,,
8 ,, (s.) ...	84.11	,, ,, ,, ...	,,
9 ,, (s.) ...	84.32	,, ,, ,, ...	,,
10 ,, (s.) ...	83.68	,, ,, ,, ...	,,
11 ,, (s.) ...	83.90	,, ,, ,, ...	,,
12 ,, (s.) ...	84.07	,, ,, ,, ...	,,
13 ,, (s.) ...	66.43	Hotchkiss (Tchernousky, Vasselle, etc.)	,,
14 ,, (s.) ...	66.14	,, ,, ...	,,
15 ,, (s.) ...	66.24	,, ,, ...	,,
16 ,, (s.) ...	65.90	,, ,, ...	,,

INTERNATIONAL CLASS D—2,001-3,0000 c.c.

1 km. (s.) ...	93.73	Maserati (G. Furmanik) ...	Route Firenze
1 ,, (f.) ...	155.13	,, ,, ...	Monc
1 mile (s.) ...	102.86	,, ,, ...	,,
1 ,, (f.) ...	154.44	,, ,, ...	,,
5 kms. (f.) ...	131.03	Bugatti (Divo)	Montlhery
5 miles (f.) ...	126.85	Sunbeam (Dunfee)	,,
10 kms. (f.) ...	138.77	Alfa-Romeo (Brilli-Peri) ...	Cremona
10 miles (f.) ...	126.48	Sunbeam (Dunfee)	Montlhery
50 kms. (s.) ...	130.50	Maserati (Zehender)	,,
100 ,, (s.) ...	131.78	,, ,, ...	,,
200 ,, (s.) ...	124.67	Bugatti (Divo)	,,
500 ,, (s.) ...	119.98	,, (Divo and Chiron) ...	,,
1,000 ,, (s.) ...	114.28	Alfa-Romeo (Raph and Others)	,,
2,000 ,, (s.) ...	113.10	,, ,, ,, ...	,,
3,000 ,, (s.) ...	98.61	Citroen Special Yacco (Marchand and Others) ...	,,
4,000 ,, (s.) ...	97.61	,, ,, ,, ...	,,
5,000 ,, (s.) ...	96.69	,, ,, ,, ...	,,
10,000 kms. (s.) ...	90.48	Citroen (Marchand and Others)	,,

SOME OF THE RECOR



P. Veyron. *Williams.* *T. Nuvolari.* *J. Cobb.* *G. E. T. Eyston.* *Sir M. C*

1936 *RECORDS—continued*

Record	Speed m.p.h.	Car and Drivers	Track
15,000 ,, (s.) ...	89.93	Citroen (Marchand and Others)	Montlhery
20,000 ,, (s.) ...	87.77	,, ,, ,, ...	,,
25,000 ,, (s.) ...	78.24	,, ,, ,, ...	,,
30,000 ,, (s.) ...	77.87	,, ,, ,, ...	,,
35,000 ,, (s.) ...	77.42	,, ,, ,, ...	,,
40,000 ,, (s.) ...	77.65	,, ,, ,, ...	,,
45,000 ,, (s.) ...	77.64	,, ,, ,, ...	,,
50,000 ,, (s.) ...	77.56	,, ,, ,, ...	,,
60,000 ,, (s.) ...	75.82	,, ,, ,, ...	,,
70,000 ,, (s.) ...	74.92	,, ,, ,, ...	,,
80,000 ,, (s.) ...	74.11	,, ,, ,, ...	,,
90,000 ,, (s.) ...	65.37	,, ,, ,, ...	,,
100,000 ,, (s.) ...	64.83	,, ,, ,, ...	,,
110,000 ,, (s.) ...	64.76	,, ,, ,, ...	,,
120,000 ,, (s.) ...	64.79	,, ,, ,, ...	,,
130,000 ,, (s.) ...	64.84	,, ,, ,, ...	,,
50 miles (s.) ...	131.47	Maserati (Zehender)	,,
100 ,, (s.) ...	132.43	,, ,, ...	,,
200 ,, (s.) ...	118.00	Bugatti (Divo and Chiron) ...	,,
500 ,, (s.) ...	119.24	,, ,, ...	,,
1,000 ,, (s.) ...	112.95	Alfa-Romeo (Raph and Others)	,,
2,000 ,, (s.) ...	98.60	Citroen Special Yacco (Marchand and Others) ...	,,
3,000 ,, (s.) ...	96.88	,, ,, ,, ...	,,
4,000 ,, (s.) ...	96.16	,, ,, ,, ...	,,
5,000 ,, (s.) ...	90.63	Citroen (Marchand and Others)	,,
10,000 ,, (s.) ...	89.71	,, ,, ,, ...	,,
15,000 ,, (s.) ...	78.14	,, ,, ,, ...	,,
20,000 ,, (s.) ...	77.77	,, ,, ,, ...	,,
25,000 ,, (s.) ...	77.66	,, ,, ,, ...	,,
30,000 ,, (s.) ...	77.63	,, ,, ,, ...	,,
40,000 ,, (s.) ...	75.27	,, ,, ,, ...	,,
50,000 ,, (s.) ...	65.78	,, ,, ,, ...	,,
60,000 ,, (s.) ...	65.04	,, ,, ,, ...	,,
70,000 ,, (s.) ...	64.78	,, ,, ,, ...	,,
80,000 ,, (s.) ...	64.84	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 124 1,196	124.68	Bugatti (Divo)	,,
3 hrs. (s.) 361 1,614	120.64	,, (Divo and Chiron) ...	,,
6 hrs. 683 1,108	113.94	Alfa-Romeo (Raph and Others)	,,
12 hrs. 1,349 1,066	112.47	,, ,, ,, ...	,,
24 hrs. (s.) 2,355 1,672	98.16	Citroen Special Yacco (Marchand and Others) ...	,,
2 days (s.) ...	90.58	Citroen (Marchand and Others)	,,
3 ,, (s.) ...	90.43	,, ,, ,, ...	,,
4 ,, (s.) ...	89.97	,, ,, ,, ...	,,
5 ,, (s.) ...	89.69	,, ,, ,, ...	,,
6 ,, (s.) ...	87.83	,, ,, ,, ...	,,
7 ,, (s.) ...	86.49	,, ,, ,, ...	,,
8 ,, (s.) ...	78.14	,, ,, ,, ...	,,
9 ,, (s.) ...	78.48	,, ,, ,, ...	,,
10 ,, (s.) ...	77.88	,, ,, ,, ...	,,
11 ,, (s.) ...	77.83	,, ,, ,, ...	,,
14 ,, (s.) ...	77.65	,, ,, ,, ...	,,
21 ,, (s.) ...	75.71	,, ,, ,, ...	,,
28 ,, (s.) ...	74.04	,, ,, ,, ...	,,
35 ,, (s.) ...	65.45	,, ,, ,, ...	,,
42 ,, (s.) ...	64.69	,, ,, ,, ...	,,
49 ,, (s.) ...	64.82	,, ,, ,, ...	,,
54 ,, (s.) ...	64.65	,, ,, ,, ...	,,

INTERNATIONAL CLASS E—1,501-2,000 c.c.

1 km. (s.) ...	89.73	E.R.A. (Mays)	Brooklands
1 ,, (f.) ...	147.79	Derby Special (Mrs. Stewart)	Montlhery
1 mile (s.) ...	94.01	Bugatti (Prince Liechenstein)	Tat
1 ,, (f.) ...	147.79	Derby Special (Mrs. Stewart)...	Montlhery
5 kms. (f.) ...	140.35	,, ,, ,, ...	,,
5 miles (f.) ...	140.17	,, ,, ,, ...	,,
10 miles (f.) ...	138.34	Derby Special (Mrs. Stewart)	,,
10 kms. (f.) ...	140.07	Derby Special (Mrs. Stewart)	Montlhery
50 ,, (s.) ...	126.83	,, ,, ,, ...	,,
100 kms. (s.) ...	128.16	,, ,, ,, ...	,,
200 ,, (s.) ...	121.75	,, ,, ,, ...	,,
500 ,, (s.) ...	112.27	Hotchkiss	,,
1,000 ,, (s.) ...	112.26	,, (Eyston and Denly)	,,
2,000 ,, (s.) ...	99.33	Adler-Triumph (Lohr and Others)	Reichsautobahn Frankfurt (M) Virnheim
3,000 ,, (s.) ...	100.27	,, ,, ,, ...	,,
4,000 ,, (s.) ...	99.65	,, ,, ,, ...	,,
5,000 ,, (s.) ...	96.66	Hotchkiss (Eyston and Denly)	Montlhery
10,000 ,, (s.) ...	77.39	A.C. (Mr. and Mrs. Bruce) ...	,,
15,000 ,, (s.) ...	75.73	,, ,, ,, ...	,,
20,000 ,, (s.) ...	66.76	A.C. (Mr. and Mrs. Bruce and Joyce)	,,
50 miles (s.) ...	127.97	Derby Miller (Mrs. Stewart)	,,
100 ,, (s.) ...	121.64	,, Special ,, ...	,,
200 ,, (s.) ...	117.67	Sunbeam (Dunfee and Bamber)	,,
500 ,, (s.) ...	112.25	Hotchkiss (Eyston and Denly)	,,
1,000 ,, (s.) ...	109.50	,, ,, ,, ...	,,
2,000 ,, (s.) ...	100.39	Adler-Triumph (Lohr and Others)	Reichsautobahn Frankfurt (M) Virnheim
3,000 ,, (s.) ...	96.69	Hotchkiss (Eyston and Denly)	Montlhery
4,000 ,, (s.) ...	95.76	,, ,, ,, ...	,,
5,000 ,, (s.) ...	94.73	,, ,, ,, ...	,,
10,000 ,, (s.) ...	69.10	Citroen Special Yacco (Marchand and Others) ...	,,
15,000 ,, (s.) ...	68.01	A.C. (Mr. and Mrs. Bruce and Joyce)	,,
mls. yds.			
1 hr. (s.) 121 1,324	121.75	Derby Special (Mrs. Stewart)...	,,
3 hrs. (s.) 337 465	112.42	Hotchkiss (Eyston and Denly)	,,
6 hrs. (s.) 665 831	110.91	,, ,, ,, ...	,,
12 hrs. (s.) 1,189 326	99.10	Adler-Triumph (Lohr and Others)	Reichsautobahn Frankfurt (M) Virnheim
24 hrs. (s.) 2,394 1,726	99.79	,, ,, ,, ...	,,
2 days (s.) ...	95.36	Hotchkiss (Eyston and Denly)	Montlhery
3 ,, (s.) ...	69.62	Citroen Special Yacco (Marchand and Others) ...	,,
4 ,, (s.) ...	69.70	,, ,, ,, ...	,,
5 ,, (s.) ...	69.78	,, ,, ,, ...	,,
6 ,, (s.) ...	69.09	,, ,, ,, ...	,,

INTERNATIONAL CLASS F—1,101-1,500 c.c.

1 km. (s.) ...	85.35	E.R.A. (Mays)	Brooklands
1 ,, (f.) ...	143.30	Packard Cable Special (Duray)	Arpajon
1 mile (s.) ...	96.08	E.R.A. (Mays)	Brooklands
1 ,, (f.) ...	164.01	Miller (Lockhart)	Murock
5 kms. (f.) ...	139.54	Parkard Cable Special (Duray)	Montlhery
5 miles (f.) ...	139.22	,, ,, ,, ...	,,
10 kms. (f.) ...	138.92	,, ,, ,, ...	,,
10 miles (f.) ...	135.33	,, ,, ,, ...	,,
50 kms. (s.) ...	120.06	Miller (Eldridge)	,,
100 ,, (s.) ...	122.46	,, ,, ...	,,
200 ,, (s.) ...	118.88	Bugatti (Veyron)	,,
500 ,, (s.) ...	115.14	,, ,, ...	,,
1,000 ,, (s.) ...	113.34	,, ,, ...	,,
2,000 ,, (s.) ...	101.04	Riley (Eyston and Maclure) ...	,,
3,000 ,, (s.) ...	92.68	Bugatti (Veyron and Others)	,,
4,000 ,, (s.) ...	79.81	Adler (Heckel and Others) ...	Avus
5,000 ,, (s.) ...	79.59	,, ,, ,, ...	,,
10,000 ,, (s.) ...	78.51	,, ,, ,, ...	,,
15,000 ,, (s.) ...	58.95	Peugeot (Marchand and Others)	Montlhery
20,000 ,, (s.) ...	58.44	,, ,, ,, ...	,,
25,000 ,, (s.) ...	58.47	,, ,, ,, ...	,,
30,000 ,, (s.) ...	58.36	,, ,, ,, ...	,,

BREAKERS OF 1936.



mpbell. *R. Kohlrausch.* *R. Caracciola.* *A. T. Gardner.* *A. Denly.* *R. Mays.* *H. von Stuck.* *Prince Birabongse of Siam*

1936 *RECORDS—continued*

Record	Speed m.p.h.	Car and Drivers	Track
35,000 kms. (s.) ...	58.16	Peugeot (Marchand and Others)	Montlhery
40,000 ,, (s.) ...	58.31	,, ,, ,, ...	,,
45,000 ,, (s.) ...	58.46	,, ,, ,, ...	,,
50,000 ,, (s.) ...	58.55	,, ,, ,, ...	,,
60-300,000 (s.) ...	58.40	,, ,, ,, ...	,,
	58.08		
50 miles (s.) ...	121.88	Miller (Eldridge)	,,
100 ,, (s.) ...	119.01	Bugatti (Veyron)	,,
200 ,, (s.) ...	116.51	,, ,, ...	,,
500 ,, (s.) ...	114.29	,, ,, ...	,,
1,000 ,, (s.) ...	102.35	Riley (Eyston and Maclure) ...	,,
2,000 ,, (s.) ...	91.65	Bugatti (Veyron and Others)	,,
3,000 ,, (s.) ...	79.73	Adler (Heckel and Others)	Avus
4,000 ,, (s.) ...	79.90	,, ,, ,, ...	,,
5,000 ,, (s.) ...	79.37	,, ,, ,, ...	,,
10,000 ,, (s.) ...	58.21	Peugeot (Marchand and Others)	Montlhery
15,000 ,, (s.) ...	58.43	,, ,, ,, ...	,,
20,000 ,, (s.) ...	58.43	,, ,, ,, ...	,,
25,000 ,, (s.) ...	58.32	,, ,, ,, ...	,,
30,000 ,, (s.) ...	58.52	,, ,, ,, ...	,,
40,000 ,, (s.) ...	58.42	,, ,, ,, ...	,,
50,000 ,, (s.) ...	58.41	,, ,, ,, ...	,,
60-180,000 ,, (s.) ...	58.39-57.97	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 119 26	119.01	Bugatti (Veyron)	,,
3 hrs. (s.) 343 996	114.52	,, ,, ,, ...	,,
6 hrs. (s.) 677 1,526	112.98	,, ,, ,, ...	,,
12 hrs. (s.) 1,213 313	101.10	Riley (Eyston and Maclure) ...	,,
24 hrs. (s.) 2,206 783	91.94	Bugatti (Veyron and Others)	,,
2 days (s.) ...	79.85	Adler (Heckel and Others) ...	Avus
3 ,, (s.) ...	79.79	,, ,, ,, ...	,,
4 ,, (s.) ...	76.86	,, ,, ,, ...	,,
5 ,, (s.) ...	61.88	Citroen (Marchand and Others)	Montlhery
6 ,, (s.) ...	58.96	,, ,, ,, ...	,,
7 ,, (s.) ...	58.18	,, ,, ,, ...	,,
8 ,, (s.) ...	58.35	,, ,, ,, ...	,,
9 ,, (s.) ...	58.48	,, ,, ,, ...	,,
10 ,, (s.) ...	58.34	,, ,, ,, ...	,,
14-133 ,, (s.) ...	58.41	,, ,, ,, ...	,,
	58.07		

INTERNATIONAL CLASS G—751-1,100 c.c.

1 km. (s.) ...	82.1	Appleton-Riley (R. W. J. Appleton) ...	Brooklands
1 ,, (f.) ...	138.345	Maserati (Furmanik)	Florence
1 mile (f.) ...	131.96	,, ,, ...	Route Firenze
1 ,, (s.) ...	91.3	Appleton-Riley (R. W. J. Appleton) ...	Mare Brooklands
5 kms. (f.) ...	128.69	M.G. (Eyston)	Montlhery
5 miles (f.) ...	128.62	,, ,, ...	,,
10 kms. (f.) ...	128.58	,, ,, ...	,,
10 miles (f.) ...	128.53	,, ,, ...	,,
50 kms. (s.) ...	119.84	,, ,, ...	,,
100 ,, (s.) ...	121.65	,, ,, ...	,,
200 ,, (s.) ...	120.82	,, ,, ...	,,
500 ,, (s.) ...	108.89	M.G. Magnette (Hertsberger)	,,
1,000 ,, (s.) ...	99.26	Riley (Eyston and Denly) ...	,,
2,000 ,, (s.) ...	85.43	Amilcar (Duray and de Gavardie)	,,
3,000 ,, (s.) ...	84.95	,, ,, ,, ...	,,
4,000 ,, (s.) ...	68.39	Adlerwerke (Schweder and Others)	Avus
5,000 ,, (s.) ...	68.37	,, ,, ,, ...	,,
10,000 ,, (s.) ...	66.63	,, ,, ,, ...	,,
15,000 ,, (s.) ...	65.99	,, ,, ,, ...	,,
50 miles (s.) ...	120.72	M.G. (Eyston)	Montlhery
100 ,, (s.) ...	121.13	,, ,, ...	,,
200 ,, (s.) ...	109.74	M.G. Magnette (Hertsberger)	,,
500 ,, (s.) ...	98.18	Riley (Eyston and Denly) ...	,,
1,000 ,, (s.) ...	85.33	Amilcar (Duray and de Gavardie)	,,
2,000 ,, (s.) ...	85.00	,, ,, ,, ...	,,
3,000 ,, (s.) ...	68.35	Adlerwerke (Schweder and Others)	Avus
4,000 ,, (s.) ...	68.23	,, ,, ,, ...	,,
5,000 ,, (s.) ...	67.57	,, ,, ,, ...	,,
10,000 ,, (s.) ...	66.09	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 120 1,554	120.78	M.G. (Eyston)	Montlhery
3 hrs. (s.) 325 820	108.49	M.G. Magnette (Hertsberger)	,,
6 hrs. (s.) 504 692	99.07	Riley (Eyston and Eldridge)	,,
12 hrs. (s.) 1,025 525	85.44	Amilcar (Duray and de Gavardie)	,,
24 hrs. (s.) 2,041 1,056	85.00	,, ,, ,, ...	,,
2 days (s.) ...	68.40	Adlerwerke (Schweder and Others)	Avus
3 ,, (s.) ...	67.56	,, ,, ,, ...	,,
4 ,, (s.) ...	66.64	,, ,, ,, ...	,,
5 ,, (s.) ...	65.95	,, ,, ,, ...	,,
6 ,, (s.) ...	66.02	,, ,, ,, ...	,,

INTERNATIONAL CLASS H—501-750 c.c.

1 km. (f.) ...	140.5	M.G. Midget (B. Kohlrausch)	Gyon
1 mile (f.) ...	140.7	,, ,, ,, ...	,,
1 km. (s.) ...	83.6	Austin (Dodson)	Brooklands
1 mile (s.) ...	93.42	M. G. Midget (B. Kohlrausch)	Gyon
5 kms. (f.) ...	128.50	M.G. (A. Denly)	Montlhery
5 miles (f.) ...	128.08	,, ,, ...	,,
10 kms. (f.) ...	127.45	,, ,, ...	,,
10 miles (f.) ...	125.56	,, ,, ...	,,

Record	Speed m.p.h.	Car and Drivers	Track
50 kms. (s.) ...	118.15	Austin (Dodson)	Brooklands
100 ,, (s.) ...	116.38	,, ,, ...	,,
200 ,, (s.) ...	111.04	,, (Horton)	,,
500 ,, (s.) ...	91.77	,, (Eyston and Denly) ...	Montlhery
1,000 ,, (s.) ...	91.77	,, ,, ,, ...	,,
2,000 ,, (s.) ...	77.18	,, (Maillard-Brune and Druck)	,,
50 miles (s.) ...	116.65	Austin (Dodson)	Brooklands
100 ,, (s.) ...	115.06	,, ,, ...	,,
200 ,, (s.) ...	95.02	M.G. (Eyston and Denly) ...	Montlhery
500 ,, (s.) ...	92.50	,, ,, ,, ...	,,
1,000 ,, (s.) ...	88.36	,, ,, ,, ...	,,
2,000 ,, (s.) ...	69.95	,, (Eyston, Denly and Wisdom)	,,
mls. yds.			
1 hr. (s.) 113 1,741	113.99	Austin (Dodson)	Brooklands
3 hrs. (s.) 283 1,344	94.59	M.G. (Eyston and Denly) ...	Montlhery
6 hrs. (s.) 556 1,341	92.79	,, ,, ,, ...	,,
12 hrs. (s.) 1,040 131	86.67	,, ,, ,, ...	,,
24 hrs. (s.) 1,831 —	76.30	,, (Maillard-Brune and Druck)	,,

INTERNATIONAL CLASS I—351-500 c.c.

1 km. (s.) ...	65.32	D.K.W. (J. Moritz)	Gyon
1 ,, (f.) ...	100.76	Nibbio (Count G. Lurani) ...	Florence
1 mile (f.) ...	100.52	,, ,, ,, ...	,,
1 ,, (s.) ...	76.09	,, ,, ,, ...	,,
5 kms. (f.) ...	83.97	De Rovin (De Rovin) ...	Montlhery
5 miles (f.) ...	82.49	,, ,, ...	,,
10 kms. (f.) ...	82.73	,, ,, ...	,,
10 miles (f.) ...	81.91	,, ,, ...	,,
50 kms. (s.) ...	79.88	Standard (von Fuchsenfeld and Meyer)	,,
100 ,, (s.) ...	78.82	,, ,, ,, ...	,,
200 ,, (s.) ...	68.63	D.K.W. (von Fuchsenfeld and Meyer)	,,
500 ,, (s.) ...	68.30	Standard (von Fuchsenfeld and Meyer)	,,
1,000 ,, (s.) ...	63.95	D.K.W. (von Fuchsenfeld and Meyer)	,,
2,000 ,, (s.) ...	61.08	,, ,, ,, ...	,,
50 miles (s.) ...	80.27	Standard (von Fuchsenfeld and Meyer)	,,
100 ,, (s.) ...	68.56	D.K.W. (von Fuchsenfeld and Meyer)	,,
200 ,, (s.) ...	66.84	,, ,, ,,	,,
500 ,, (s.) ...	64.57	,, ,, ,, ...	,,
1,000 ,, (s.) ...	62.56	,, ,, ,, ...	,,
mls. yds.			
1 hr. (s.) 74 700	74.44	De Rovin (De Rovin) ...	,,
3 hrs. (s.) 200 923	66.84	D.K.W. (von Fuchsenfeld and Meyer)	,,
6 hrs. (s.) 406 339	67.70	Standard (von Fuchsenfeld and Meyer)	,,
12 hrs. (s.) 764 1,429	63.65	D.K.W. (von Fuchsenfeld and Meyer)	,,
24 hrs. (s.) 1,364 1,065	56.85	,, ,, ,, ...	,,

INTERNATIONAL CLASS J—Up to 350 c.c.

1 km. (s.) ...	52.92	Jappic (Walters)	Brooklands
1 ,, (f.) ...	77.52	Vitesse (Gush)	,,
1 mile (s.) ...	58.12	Jappic (Walters)	,,
1 ,, (f.) ...	77.52	Vitesse (Gush)	,,
5 kms. (f.) ...	77.48	,, ,, ...	,,
5 miles (f.) ...	77.42	,, ,, ...	,,
10 kms. (f.) ...	77.36	,, ,, ...	,,
10 miles (f.) ...	77.23	,, ,, ...	,,
50 kms. (s.) ...	73.44	,, ,, ...	,,
100 ,, (s.) ...	73.13	,, ,, ...	,,
200 ,, (s.) ...	62.93	Voran (von Koenig-Fuchsenfeld)	Montlhery
500 ,, (s.) ...	51.66	Vitesse (Richards, Selby and le Croisette)	Brooklands
50 miles (s.) ...	73.32	Vitesse (Gush)	,,
100 ,, (s.) ...	70.95	H.S. (Mrs. Stewart)	Montlhery
200 ,, (s.) ...	51.37	Vitesse (Gush and Greenhough)	Brooklands
500 ,, (s.) ...	48.26	,, (Richards, Selby and le Croisette) ...	,,
mls. yds.			
1 hr. (s.) 73 67	73.04	,, (Gush)	,,
3 hrs. (s.) 155 546	51.77	,, (Richards and Selby)	
6 hrs. (s.) 309 1,542	51.65	,, (Richards, Selby and le Croisette) ...	,,
12 hrs. (s.) 514 1,124	42.89	,, ,, ,, ...	,,
24 hrs. (s.) 514 1,124	21.44	,, ,, ,, ...	,,

BROOKLANDS RECORDS

Main Outer Circuit Lap Record

	m.p.h.
Napier-Railton (Cobb)	143.44

MOUNTAIN CIRCUIT LAP RECORD

	m.p.h.
Alfa-Romeo (Shuttleworth)	82.06

1936 *RECORDS—continued*

CLASS RECORDS

Main Outer Circuit

			m.p.h.
Class A.	Napier-Railton (Cobb)		143.44
„ B.	Barnato-Hassan (Bertram)		142.60
„ C.	Duesenberg (Straight)		138.15
„ D.	Bugatti (Earl Howe)		129.80
„ E.	Sunbeam (Don)		126.73
„ F.	Delage (Earl Howe)		127.05
„ G.	M.G. (Major Gardner)		124.40
„ H.	Austin (Dodson)		121.2

Mountain Circuit

			m.p.h.
Class B.	Mercedes-Benz (Sir M. Campbell) ...		73.98
„ C.	Sunbeam (Sir M. Campbell)		76.31
„ D.	Maserati (Straight)		81.00
„ E.	E.R.A. (Mays)		81.28
„ F.	E.R.A.(S) (R. Mays)		84.31
„ G.	Appleton-Riley (Appleton)		76.1
„ H.	Austin (Dodson)		77.02

DONINGTON

750 c.c. CLASS

1 Lap	Austin	744 c.c.	C. J. P. Dodson	67.84 m.p.h.
10 Laps	„	„	L. P. Driscoll	65.06 „

1,500 c.c. CLASS

*1 Lap	E.R.A.	1,486 c.c.	P. G. Fairfield	72.45 m.p.h.
20 Laps	„	„	Earl Howe	68.67 „
30 Laps	„	„	„	69.22 „
40 Laps	„	„	„	69.43 „
50 Laps	„	„	„	69.51 „
60 Laps	Delage	1,484 c.c.	R. J. B. Seaman	69.56 „
70 Laps	„	„	„	69.49 „
80 Laps	E.R.A.	1,488 c.c.	P. Walker	67.75 „
90 Laps	„	„	„	67.60 „
100 Laps	„	„	„	67.75 „
110 Laps	„	„	„	67.61 „
120 Laps	„	„	„	67.66 „

Unlimited Class

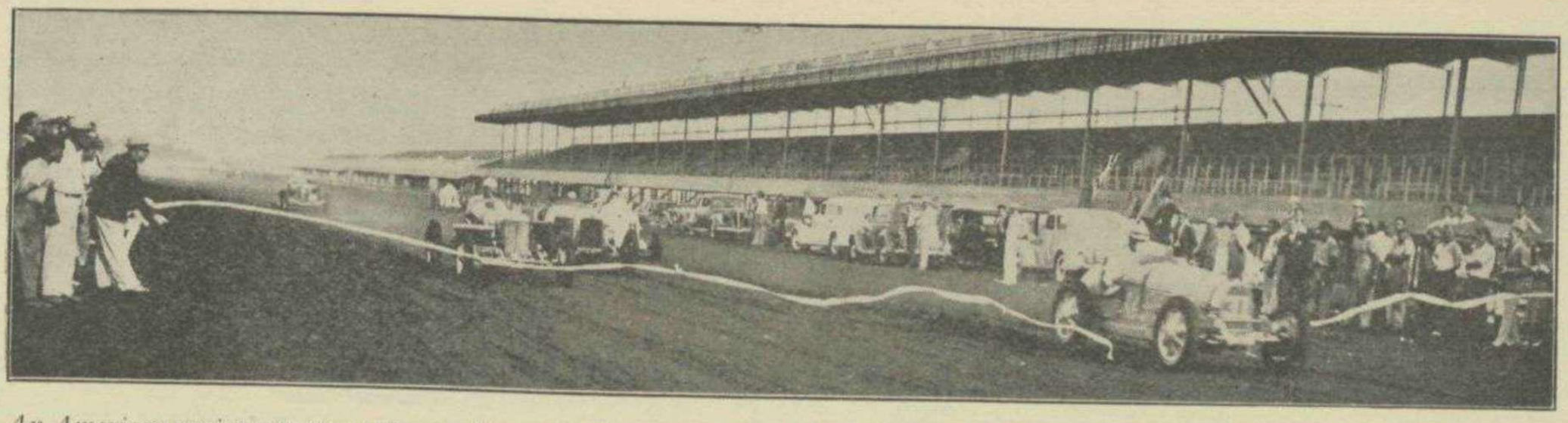
1 Lap	Alfa-Romeo	3,800 c.c.	R. J. B. Seaman and Hans Ruesch	73.49 m.p.h.
10 Laps	„	„	„	69.96 „
20 Laps	„	„	„	70.55 „
30 Laps	„	„	„	70.82 „
40 Laps	„	„	„	70.93 „
50 Laps	„	„	„	70.33 „
60 Laps	„	„	„	70.10 „
70 Laps	„	„	„	69.56 „
80 Laps	„	„	„	69.64 „
90 Laps	„	„	„	69.67 „
100 Laps	„	„	„	69.64 „
110 Laps	„	„	„	69.41 „
120 Laps	„	„	„	69.23 „

THE 1937 MONTE CARLO RALLY

A last-minute rush has put the entries for this year's Monte Carlo Rally up to 128, or eighteen more than last year, with the prospect of even a few more after we close for press. There are, to date, thirty-five British competitors, an increase of three over last year. Prominent British representatives are Alan P. Good with a 4½-litre Lagonda, Donald Healey (Triumph), D. H. Murray, well-known trials driver, with a Frazer-Nash-B.M.W., F. S. Barnes and his Singer, Mrs. M. L. Vaughan, the famous lady doctor, partnered by Miss Taylor, in a Standard, Sir Ronald Gunter (Hotchkiss), Miss V. M. Wilby, who is forsaking her G.N. for an Armstrong-Siddeley, wisely we feel, Major Douglas-Morris (Hillman), J. W. Whalley, experienced exponent of the Winter Adventure, with a Ford, and Capt. Howey, who drove a Leyland-Thomas at Brooklands, 1924-26, and who is returning to the sport with a Bentley, S. C. H. Davis (Wolseley), Miss Patten (British-Salmson), and A. C. Scott (H.R.G.), the last few all experienced Rally drivers.

The list as it stands at the beginning of January is as follows. The competitors arrive at Monte Carlo on January 30th.

1. P. G. Cristea (Ford).
2. J. Hofmans (Ford).
3. Foch-Labourelle (Citroen).
4. J. F. C. Westermann (Ford).
5. **S. C. H. Davis (Wolseley).**
6. J. Nowak (Ford).
7. L. Borowik (Tatra).
8. J. Paul and J. Daniell (Delahaye).
9. I. Zamfirescou (Hotchkiss).
10. R. Le Begue and J. Quinlin (Delahaye).
11. **Miss D. Patten (British Salmson).**
12. **J. E. P. Howey (Bentley).**
13. Mme. Rouault (Delahaye).
14. R. Mare (Packard).
15. M. Worms (Hotchkiss).
16. E. A. C. Cornelius (D.K.W.).
17. **A. C. Scott (H. R. G.).**
18. **T. G. W. Appleby (Talbot).**
19. **W. E. P. Miller (Ford).**
20. **B. N. Willmott (Rover).**
21. **E. A. Denny and E. N. R. Hewitt (Riley).**
22. A. Buyze and H. J. Stemerdinck (D.K.W.).
23. **D. E. Harris and C. Morgan (M.G.).**
24. Baron F. J. J. van Heemstra (Fiat).
25. V. Formanek and P. Steinberg (Aero).
26. C. Burba (Ford).
27. H. P. Verkamman and G. Sillevis (Opel).
28. R. Le Begue and J. Quillan (Delahaye).
29. J. Nowak (Ford).
30. **Sir Windham Carmichael-Anstruther (Ford).**
31. L. Lauritzen (Hudson Terraplane).
32. **T. S. Grimshaw (Crossley).**
33. A. Gordini and A. Alin (500 Simca-Fiat).
34. A. Molinari and Dory (Simca Fiat).
35. C. Lahaye and R. Quatresous (Renault).
36. L. Villoresi (Fiat).
37. Dr. L. Billon and V. Jouillie Duclos (Renault).
38. A. Erlanger (Citroen).
39. C. A. Brugma (Ford).
40. **Miss E. E. Parnell (Hillman).**
41. **R. G. J. Kingsmill (Ford).**
42. V. Vojtechovsky (Aero).
43. **O. L. Ormrod (Pontiac).**
44. **H. C. Hunter (Bentley).**
45. **Major D. E. M. Douglas Morris (Hillman).**
46. **J. Harrop (SS).**
47. J. E. Ruteau (Pontiac).
48. E. Bellen ("X").
49. R. G. Knutson and T. Aas (Ford).
50. E. Hertzberger and S. M. Hymans (Graham).
51. **Mrs. Grahame-Booth and Miss Peter (SS).**
52. Jonkyrouwe and A. van Vredenbruch (Ford).
53. G. Bakker Schut (Ford).
54. F. Habnit (Ford).
55. J. A. Van Beeck Calkoen (Ford).
56. A. P. Van Strien (Ford).
57. T. Marek and J. Jakubowski (Polski Fiat).
58. **W. L. Innes (Riley).**
59. J. Treider (Renault).
60. F. Cheverton and T. Mercier (Renault).
61. A. Wilheim and E. Boszormenyi (Fiat).
62. **J. W. Whalley (Ford).**
63. **A. J. E. Howey (SS).**
64. **S. Smith and M. Sandground (Hudson).**
65. **W. A. McKenzie (Daimler).**
66. M. Lesurque and L. Grandvarlet (Bugatti).
67. P. Depresle (Simca Fiat).
68. St. Swiadek (Polski Fiat).
69. S. Zagorna and A. Mazurek (Chevrolet).
70. Max Klinke (B.M.W.).
71. L. Vicens and M. Rousseau (Matford).
72. **Miss V. M. Wilby (Armstrong-Siddeley).**
73. E. V. Hansson (Ford).
74. **R. Brooke** and Cellier de Buriane **(Singer).**
75. M. Levy (Simca Fiat).
76. R. Girier and Mazalon (Matford).
77. W. Van der Weerd (Bedford).
78. **Sir Ronald Gunter** (Hotchkiss).
79. H. Imbert and J. Franqueville (Delage).
80. **J. Smith (Railton).**
81. S. Aage Nielsen and B. de Neergaard **(Morris).**
82. J. F. Lofgren (Buick).
83. F. Wiesengrund and E. Kovats (D.K.W.).
84. **Mrs. M. L. Vaughan and Miss Taylor (Standard).**
85. Mme. R. Richer Delavau and M. C. Richer Delavau (Delage).
86. P. de Massa and Norbert Mahe (Talbot).
87. **F. S. Barnes (Singer).**
88. L. Schell and R. Dreyfus (Delahaye).
89. Mmes. Y. Simons and O. Thibault (Ford).
90. L. Rouxel (Peugeot).
91. C. Hansberger (Matford).
92. M. Gauthier (Simca Fiat).
93. J. E. Vernet and P. Prat (Simca Fiat).
94. H. Stoeffel (Chrysler).
95. G. Baehr and F. Lecot (Citroen).
96. S. Grigorescu (B.M.W.).
97. Miss C. Brusell and Countess E. von Blixen Finecke (Ford).
98. Dr. J. J. Sprenger van Eijk (Lincoln).
99. J. G. Beurs (Mercedes-Benz).
100. C. Schaae (Ford).
101. J. C. S. Nyenbandring and de Boer (Lincoln).
102. **A. B. Grant Jnr. and D. M. Wilson (Triumph).**
103. M. Jacobs and T. de Boer (Buick).
104. W. Oosten **(M.G.).**
105. J. W. A. Barchman Wuytiers (Packard).
106. G. Zeehuisen and J. der Kinderen (B.M.W.).
107. K. L. Koopman (Fiat).
108. L. Buiskoel (Lincoln).
109. B. J. T. van der Hoek (Packard).
110. G. and P. Vanoulatos (Fiat).
111. R. Torres (Chrysler).
112. Mlle. L. Pappos (Ford).
113. No entry.
114. M. Gatsonides and **C. L. Sanders (Hillman).**
115. **D. H. Murray (Frazer-Nash-B.M.W.).**
116. **D. M. Healey (Triumph).**
117. **Capt. F. E. Nord** (Mercedes-Benz).
118. A. Mahr and Lieut. I. Hodac (Fiat).
119. K. Siitan (Nash).
120. Z. Pohl (Skoda).
121. L. Nemes (Fiat).
122. **J. F. C. Wellings (SS).**
123. Mrs. Greta Molander (Chrysler-Plymouth).
124. **Alan P. Good (Lagonda).**
125. Ed. Lantai (Bugatti).
126. N. K. F. Falkenberg (Oldsmobile).
127. R. Carriere (Matford).
128. C. Cordier (Buick).



An American racing-car opens the new Roosevelt Auto Raceway on September of last year, by means of driving into a white band of ribbon, stretched across the track.

DIRT TRACK RACING IN AMERICA

Writing about American racing-cars for a British public is at best a considerable assignment, for in order to make the subject at all intelligible to all the readers, it becomes highly necessary to cover much ground already well known to many. However, as I have seldom seen in English motoring papers articles which would give a picture of what American racing practice really is, I shall prepare to dodge brickbats and knock-on hammers, and begin at the beginning.

Practically all present-day racing in America is done on half-mile dirt ovals. The very best of these are usually none too good, while surfaces on the worst of them might be compared with some of your trials courses. Racing on these tracks has been going on for long enough so that a definite type of car and method of driving have been evolved to produce best results. At any rate, any radical departure from them has not, up to now, met with much success.

Cornering, roughly speaking, consists in braking good and hard for a fraction of a second when beginning to enter the turn, steering into the inside rail just long enough to get the car pointed at the infield, then putting the wheel hard over the other way, stamping on the throttle, and going around the turn in one long skid. While in the turn, the car is headed towards the infield, and moving in a direction perhaps forty-five degrees to its own centre-line. Position is controlled more or less by the throttle ; should the car get too near the outside rail, more throttle (if you haven't used it all up !) will usually move it in, while should it get too near the inside rail, less throttle will certainly let it drift out. It is really a case of centrifugal force versus wheelspin, and is not as easy as it sounds.

It will be readily understood that a primary requirement for these conditions is much and instant horsepower. This has been met by the use of four-cylinder engines of between 3½ and 4½-litre capacity. Incidentally, although there is no such thing as handicap racing, and 6-litre engines are allowed by the rules, few drivers have found it profitable to go that high, probably because of the small size of the tracks. Chassis requirements are, obviously, short wheelbase, with the average being about ninety-five inches, and great stiffness. The chassis problem is further complicated by the not surprising fact that competition tyres, or "rough" rubber," at the end of all this torque can dig great big holes in the turns in no time at all. After several races the surface is usually such that the cars actually leap from hole to hole, which is why some people call them "goats." Since, despite all this, the fast cars lap in between twenty-six and thirty seconds on a half-mile track, it will be easily understood that the modern dirt-track car is nothing if not durable.

I hope it will be distinctly understood that these cars have been developed solely for this type of racing, and can no more be compared with road-racing cars than polo ponies can be compared with racehorses.

It may be a surprise to some to learn that while there are, in this country, certain recognised builders of racing-cars, their shops can in no way be compared to the factories whence spring cars like Bugattis, Alfas, Nashes, or Astons. Production is on order only, and limited in each case to a very few cars a year. The result is that most of the boys build their own. On the other hand the usual standard of workmanship is such that it is hard to distinguish whether a car has been built by a car builder or by a mechanic in his own shop.

The motor situation may be summed up briefly at this time by saying that two types of motors are most widely used, Millers and Ford conversions.

The Miller designation has come these days to mean Miller type. Harry Miller himself has built very few motors in the past few years, but Fred Offenhauser, who was formerly associated with him, has continued to produce motors which, with a few changes, are the same as the old Millers. The oldest Millers now in top-line competition are the erstwhile 151 cu. in. (2.5-litre) Marine Fours. They all have bigger blocks now, giving a displacement of about 222 cu. in. (3.6-litre). Very similar are the later motors which were built as 220s, except that, designed for the increased displacement, they are generally more satisfactory. The latest motors are the 255 cu. in. Fours, (4.25-litre), which are slightly enlarged editions of the 220s. Most of the latter have been built by Offenhauser. All three types have two overhead cams, driven by a gear tower at the front of the motor. The majority are eight-valve motors.

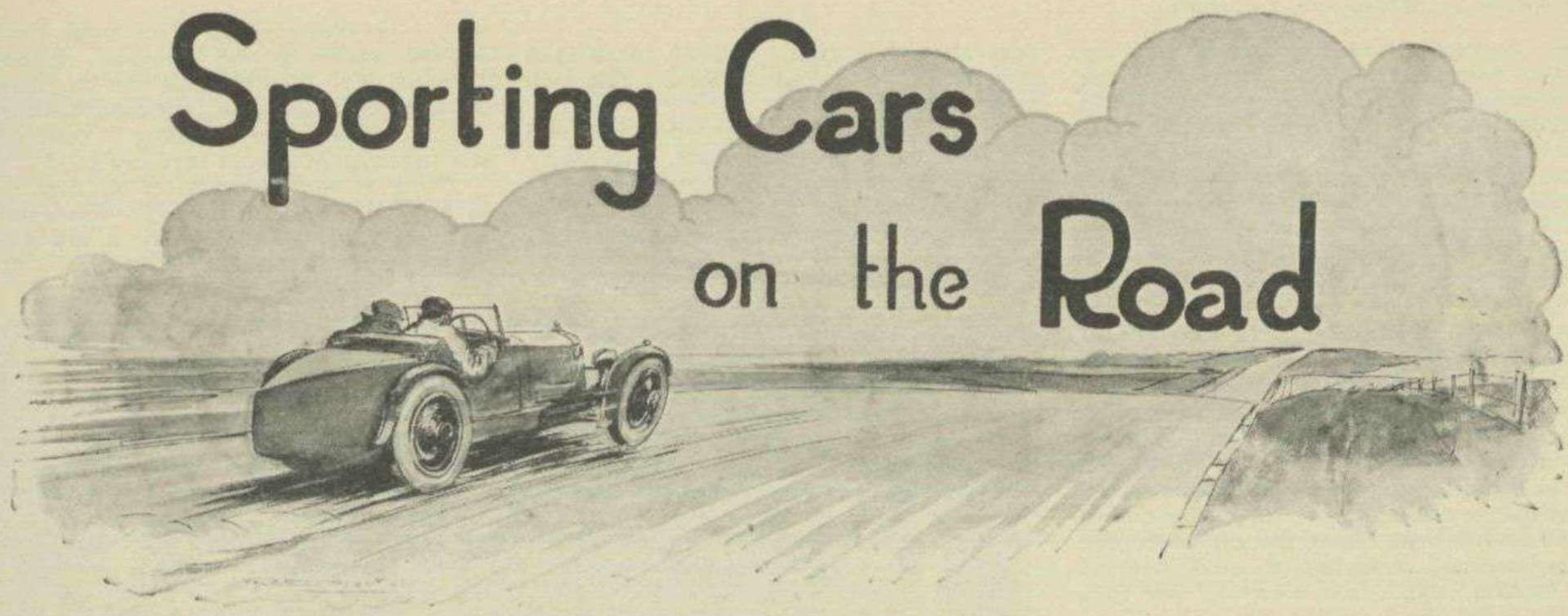
Nearly all the Ford conversions are built round the Model A or B four-cylinder block. As yet, the V8 motor has received little attention on the dirt tracks, though some of them have run at Indianapolis. The modifications, for the four-cylinder motor, consist of a new head of one of four types, depending on valve action : side valve (called flat heads), rocker arm O.H. valves, single o.h. cam and double o.h. cam. The flat heads are mostly Winfield ; rocker arm heads may be Riley, Cragar, or MacDowell ; single o.h. cam heads, usually chain driven, include Hal, Rutherford, and MacDowell ; and double o.h. cam heads include Cragar, MacDowell, Vance, Green, and Hal. There are many others also available, so it will be seen that the choice of head, given a Ford block, is very wide. In addition to the change in head, carburetters, manifolds, camshafts, lubricating systems, and ignition are usually changed as well, so that quite often the only Ford parts left are the block, shaft, and connecting rods.

Suspension started with the usual four semi-elliptic springs. Presently the trend changed to semi-elliptics in front and a transverse spring in the rear, which, nearly everyone agreed, made the cars handle better.

First thing, of course, would be to get a suitable frame. Most of the newer ones are of the "round-nose" type, made in the form of a very deep letter U. The rounded part forms the front, and clips directly to the centre of the transverse spring. The sides are perfectly straight in plan, except in a few cases where the last foot or so is bent in to follow the contour of the tail. In profile, the frame runs along straight to within about a foot of the rear axle, where a conventional kick-up begins, which carries it over that member. Immediately over the rear axle, a cross member is fitted, which fits over the topmost portion of the rear transverse spring. The side rails continue past this for a foot or so, and carry the tail only. The frame may be obtained in one of three ways. It may be obtained from a builder, such as Dreyer, who makes them in comparative quantity.

Axles come next. Here preference seems about divided between Chrysler front axles, vintage of about 1930, and Ford axles. The Chryslers, you may remember, are tubular, and quite generally resemble the Miller axles except that they are slightly curved. With the transverse spring, Ford spring perches are most convenient to use, and the Chrysler

Continued on page 68



THE M.G. MIDGET (T Series)

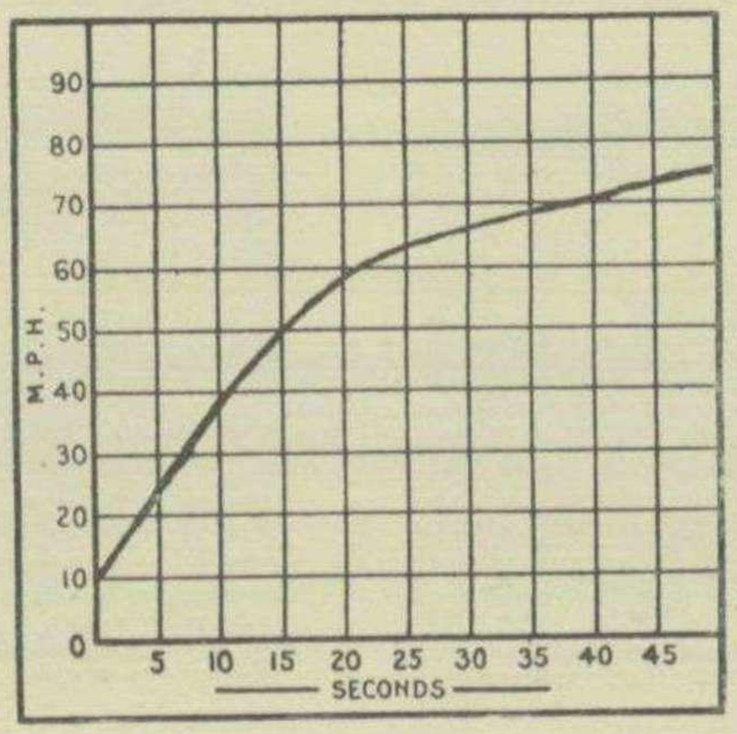
The M.G. is deservedly the most popular small English sports-car, and we confess to a weakness for the marque, which, produced on semi-mass-production methods, offers exceptional value for money, yet is full of " life " and possessed of those thoroughbred qualities that the enthusiastic sportsman deems essential in his personal motor-car. Consequently it was with a feeling of elation that we collected a Series " T " M.G. from Abingdon last month, with the request that we were to keep it for three days and do anything that we liked with it by way of thorough testing. Our test, as is usual when MOTOR SPORT investigates a maker's claims, was distinctly varied, and a total mileage of 672 was completed with this Midget.

It is now generally known that the new " T " model has a 1,292 c.c. push-rod o.h.v. engine in a frame that can be little heavier than that of the old 850 c.c. cars, and consequently we anticipated a brisk performance of the kind that in earlier models would be associated with supercharging and its attendant shortcomings. Far from being disappointed, we were distinctly surprised with the manner of going of Abingdon's latest baby, which possesses performance capabilities and liveliness unlooked for in a normally designed quantity production job selling at a very attractive figure.

When we left Abingdon in heavy rain we glanced at once at the trip reading of the speedometer and set off over not very familiar roads towards London, where we had an appointment to keep. First impressions were the "life" of the car so that from the very commencement one experienced the fascination of being behind the wheel of a real sports-car, the very good gear-change, and the willing manner in which the smooth and silent engine picked up on the higher ratios when the derestriction signs greeted the driver. In spite of being unfamiliar with the car thirty-eight miles were comfortably disposed of during our first hour in the driving-seat. In the worst of London's traffic we felt completely happy in the M.G., because one can see both front wings, the engine, in town, becomes just a docile touring unit, running down to low speeds in top or third gears and accelerating smoothly, while the hand-brake lever is excellently placed and the new wet-plate clutch, with a little practice, takes up the drive very smoothly. Yet this same motor had been held at 70 m.p.h. on the run down with no effort, the engine emitting a pleasant power-hum which vanishes entirely at below 30 m.p.h. There is no carburetter noise. A 30 m.p.h. warning light is an interesting fitment, but as positioned at present it shines into the driver's eyes, and is better extinguished. In any case, the Jaeger speedometer on the far side of the facia board is easily read, if one cannot memorise the corresponding r.p.m. reading.

BRIEF SPECIFICATION

Engine : 4-cylinders, bore 63.5 mm., stroke 102 mm., capacity 1,292 c.c. R.A.C. rating 10 h.p. Tax £7 10s. Push-rod o.h.v. Twin S.U. carburetters. Coil ignition.
Gearbox : Four speeds and reverse. Synchromesh on third and top gears. Ratios : 4.875, 6.46, 9.85 and 16.4 to 1. Reverse 23.26 to 1. Central, remote control.
Suspension : Half-elliptic springs, underslung frame at rear. Luvax hydraulic shock-absorbers.
Brakes : Lockheed hydraulic. Cable hand brake.
Dimensions : Wheelbase 7 ft. 10 in.
Track 3 ft. 9 in.
Price : Sports two-seater : **£222.**



The acceleration chart of the " T " type M.G. Midget.

On the following day we tried the model " T " over a trials course in Surrey and were very favourably impressed. Tackling Begley Farm with care, a slippery patch stopped us just short of the summit, but with a little manœuvring the M.G. got away without help. Cosford was merely an easy ascent in bottom gear, without exceeding 3,000 r.p.m. Blind Lane was in nasty condition and we got stuck in a slimy patch, but have every confidence that with competition rear covers, or by rushing the gradient regardless of damaging the wings, we could have made a very good showing. In the afternoon, incidentally, taking a chance reading, we again put thirty-eight miles into the hour, passing through Farnham and Guildford included, and with much traffic on the roads. This was bettered on the Sunday morning, when we recorded fifty-one miles in the sixty minutes, along the Great North Road, without exceptionally favourable conditions, and observing the 30 m.p.h. limits.

From 20 m.p.h. in top gear, or 15 m.p.h. in third, the engine of this new Midget really begins to " bite," which speeds correspond to 1,000 r.p.m. in each instance.

On bottom a comfortable speed at which to change into second is 15 m.p.h. (2,500 r.p.m.), and reaching the same crankshaft speed on second gear equals 22 m.p.h., when it is convenient to go into third. The acceleration on third is truly brisk and when rapid passing is the order of the day 55 m.p.h. is not

THE M.G. MIDGET—continued

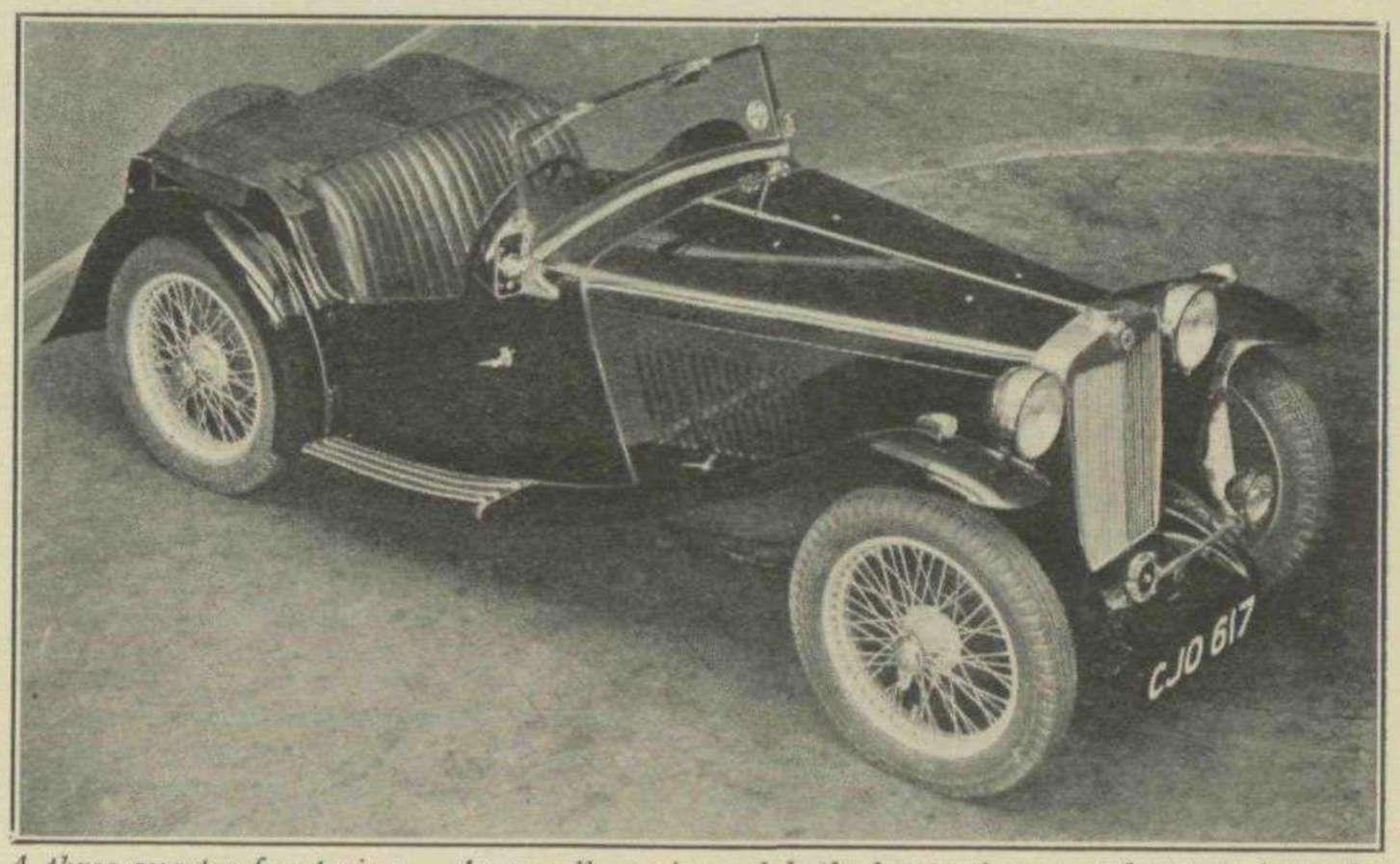
an uncomfortable maximum on this ratio, though in more leisurely driving we changed into top at about 43 m.p.h. (3,200 r.p.m.). So far as cruising speed is concerned, sixty is a very merry gait, the engine humming round without anxiety and a pleasant low whine mingling with a subdued power-roar. On the other hand, when in a hurry, or feeling more than usually pleased with existence, 4,000 r.p.m. (70 m.p.h.) was held without anxiety, with 4,900 r.p.m. (80-82 m.p.h.) maintained without respite on any safe stretch. At the opposite end of the scale it is possible to run down to 400-500 r.p.m. (10-11 m.p.h.) in top, and to a crawl on third. At the higher cruising speed the M.G. gives a thoroughly satisfactory feeling of "life," the bumps and undulations lifting the car freely and the steering requiring a good deal of attention, which is a source of joy to a keen driver.

But it must not be thought that the M.G. is in any way uncomfortable or unstable. The suspension gives the old-school taut feeling at low speeds, characteristic of the genuine sports-car, but it smooths out at higher speeds, and pitching is only pronounced on really severe surfaces.

There is no tendency to float on corners, the road-holding is of a high order, even when the car momentarily leaves the road over bad surfaces on fast bends, and it was well nigh impossible to provoke a skid or tail slide, while only excessively rapid cornering resulted in tyre squeals. The wider track and longer wheelbase of the latest chassis must materially assist in this direction. It seems probable that the front shock-absorbers on the car tested were on the slack side, giving the driver a good deal of work to do at really high speeds on rough going, but this M.G. felt as safe as any car we have driven, and could be steered down into the gutter at speed with no heart-stopping or misgiving.

The steering is really high-geared, is light to handle except at a crawl on full lock, and possesses adequate castor action. It is essentially accurate, and no return action is felt through the wheel, though on bad roads the column vibrates to a considerable extent, which, personally, we rather enjoyed, as adding to the general *joie de vive* of this model "T." The wheel rake is adjustable, and as set was absolutely right, and 1¼ turns take the wheels from lock to lock. The lock is moderate.

The clutch is light, very positive, and smooth with a little care, necessary because there was some lost motion in the pedal range. Racing starts and restarts on trials gradients brought out no trace of slips.

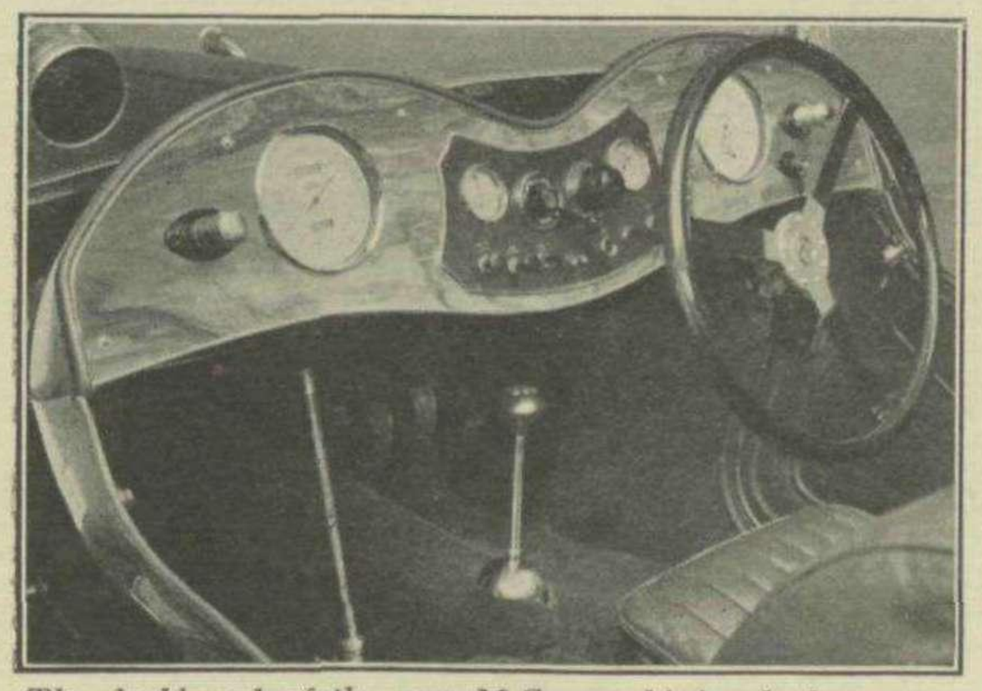


A three-quarter front view. An excellent view of both front wings can be seen from the driving position.

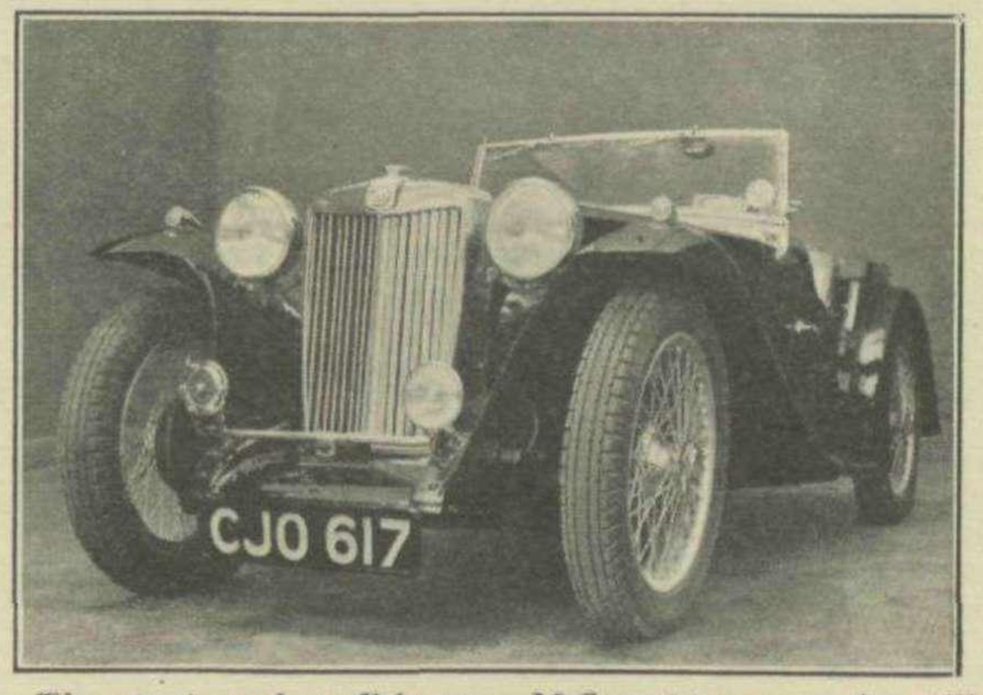
The gearbox is entirely in keeping with the car. The rigid remote lever is well placed, and has the gear positions, which are conventional, marked on the knob. First to second is a fast change with double-declutching to obviate crunching, and an equally fast change is possible into third without double movement of the clutch pedal. Third into top can be quick either making use of the synchro-mesh or not, and this aid to easy manipulation is a very good example of its kind, so that rapid changes from top into third are possible without double-declutching if the driver is so disposed. The other downward changes are straightforward, and aided by the responsiveness of the engine. When coasting slowly in neutral the mere raising of the clutch would enable a silent engagement of the lowest ratio to be effected without revving up. The changes can be classed as satisfactorily rapid, without, perhaps, reaching quite the "racing" standard, and the synchro-mesh is really good.

There is some gear-noise on first and second that is in no way unpleasant and on third there is only a low-pitch whine or hum on the overrun. The transmission generally is satisfactorily taut and the axle silent.

The hand-brake lever, though appearing to be set rather far to the left, is actually in an excellent position. It is of the usual M.G. rod-pattern, absolutely rigid and having the racing catch which operates only when pressed down. The lever releases by merely pulling it back and always does so easily, though without jumping forward vigorously. The foot brakes, as one expects of the Lockheed hydraulic system, are of a very high standard. They are really powerful, absolutely even in action, dead silent and light to apply. From high speed the pedal action *felt* a trifle "dead," but nevertheless the retardation is truly progressive. A fast week-end's motoring failed to weaken the stopping power noticeably.



The dashboard of the new M.G., combining both neatness and practicability.



The neat and well-known M.G. appearance is still maintained.

THE M.G. MIDGET—continued

The driving position is excellent and the pedals are closely spaced, yet in exactly the desired manner. The small right-hand accelerator was prone to excessive judder, when the engine was idling, a minor shortcoming of no material consequence. There was no room to rest the clutch-foot, but, probably due to the angle of the ramp, we contrived to keep it away from the pedal without suffering from cramp or fatigue after long spells at the wheel. The door might interfere with certain drivers' elbows to a small extent. No direction indicators are fitted, but the side-curtains have button-down signalling flaps, and we never felt the need for mechanical aid. Reverse gear has no safety catch, nor did we deem this necessary. Incidentally, all the gears engaged easily.

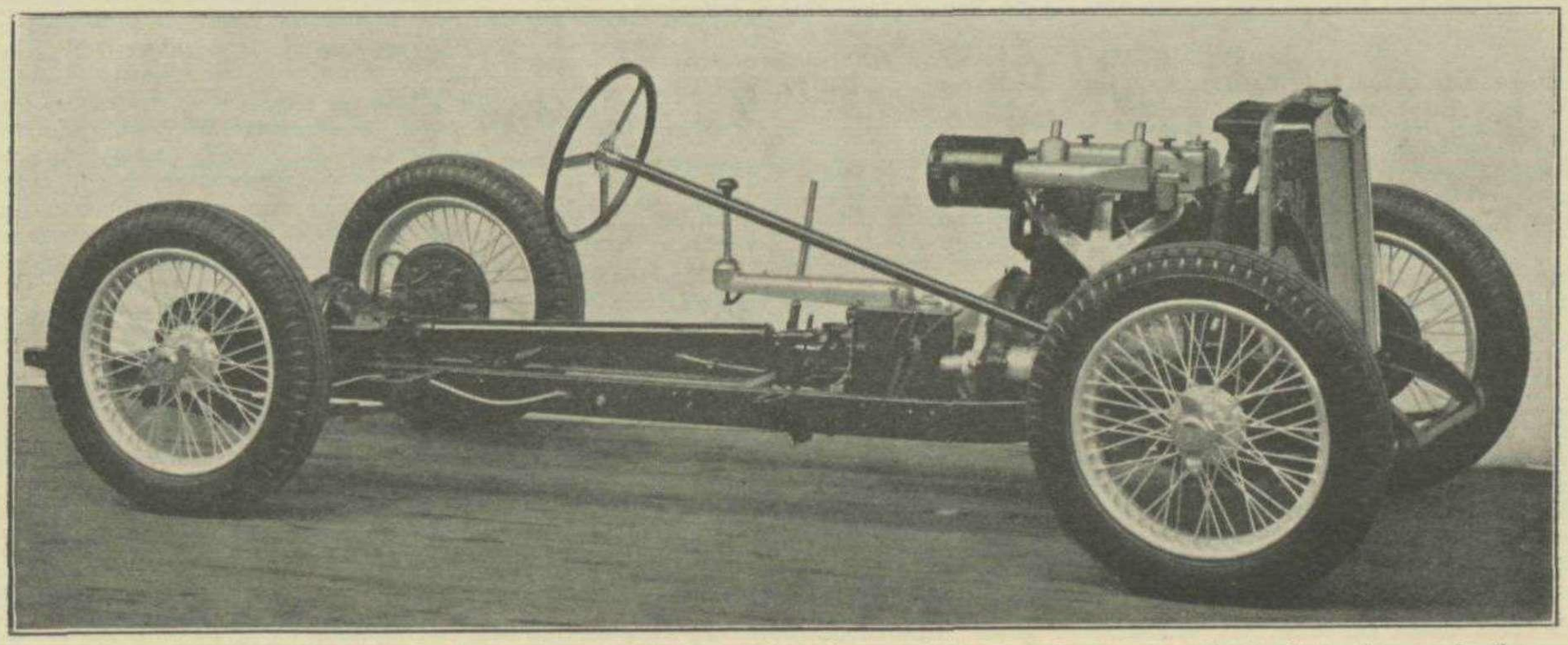
At first we were troubled by repeated stalling in traffic, but this was completely cured by adjustment of the slow-running control, so that the engine idled at 800-900 r.p.m. The bodywork feels reasonably taut and gave forth only minor rattles and squeaks. With hood and all side pieces erect the interior is really snug, without being stuffy, and completely waterproof. The hood will stow away invisibly and the screen folds flat. The main side screens are of a special type, metal edged, which plug in and are also held by wing-clamps. They are absurdly easy to erect or detach. The front-seat cushions adjust, but the wide squab remains set and it might be a trifle more upright. Both doors possess ample pockets, and the upholstery is in leather. Although there are no cubby holes in the facia the top of the scuttle behind the screen and between the "humps" constitutes a useful "platform." The door-locks are of Silent Travel pattern and the pedals have fume-excluding gaiters. With the exception of the steering-wheel spoke tending to mask the oil gauge, all the instruments are nicely placed. Reading from left to right the facia appointments are as follows:—Jaeger 100 m.p.h. speedometer; dash-lamp; starter switch; ammeter; mixture control below it; switches; fog-lamp switch below; plug for route-card or interior lamp; horn push and incorporated dimmer switch; dynamo "window" light below; panel lighting switch; oil gauge; slow-running control below; 30 m.p.h. lamp; rev-counter to match speedometer, with inset clock; reserve fuel control. The instruments are indirectly lit, very effectively. The radiator cap tended to stick due to a rubber washer, but the fuel tank filler-cap has a simple and effective quick-action. The horn push and lamp dimmer switch are easily reached with the right thumb, with one's hand on the wheel. The licence-holder is obscured if the screen is lowered, but this is a universal failing, of course. Behind the seats, which give ample leg-room, is a very roomy luggage compartment, under cover of the hood. Entry and exit is a matter of some care, as is usual in small sporting cars, but once installed both driver and passenger are thoroughly comfortable. The tools are accommodated in a sorbo-lined tray beneath the bonnet.

Reverting to performance, on bad going the scuttle is subject to some float and vibration, but the "frontworks" stay very steady, excepting a very slight tendency to radiator movement.

As is our usual practice we took the M.G. to Brooklands Track on the last day of the test. Owing to the presence of workmen and very hard-looking rock spread about in haphazard piles, we reluctantly decided to make no timed speed tests, having ascertained several times on the road that the model "T" does a genuine 80 m.p.h. with screen and hood erect, which in some ways is a more valuable guide. The acceleration figures were taken in this guise, with two persons in the car, and they are shown in graph form. A standing start to 50 m.p.h. occupies 16 secs., against a stiff breeze, incidentally. 10 to 60 m.p.h. took 22⅘ secs. The engine has no trace of a flat-spot from the twin S.U. carburetters. On first gear we recorded a maximum of 30 m.p.h., equivalent to 6,000 r.p.m., which shows that the new push-rod unit is a very willing motor. On second we reached 5,850 r.p.m. (49 m.p.h.). On third the maximum was 4,900 to 5,000 r.p.m. (65 m.p.h.). Naturally the engine sounds stressed beyond its normal maximum speed of 5,000 r.p.m. First gear is intentionally low to cope with trials conditions, but not so low as previously, and therefore it is not necessary to go into second immediately in traffic, as was desirable with the "P" type.

The speedometer read accurately at 60 m.p.h. The oil-pressure varies with engine speed, but remains at 45 to 50 lb. per square inch at cruising speeds, and was unaffected by Brooklands. No thermometer is fitted, but the pump cooling with fan assistance seems to have the temperature well in hand. We boiled only on the trials hills, and added very little water. No oil was added in the duration of the test. On Benzole or Ethyl fuel the engine picks up from a crawl without pinking. The fuel consumption worked out at a shade better than 27 m.p.g., throughout, which is very good indeed, and is proof that 30 m.p.g. or more would be the normal figure in main-road motoring. The range is approximately 450 miles, as the big rear tank holds fifteen gallons, of which three can be trapped in reserve. The engine started easily at all times, and hardly required the rich mixture, and a couple of minutes' warming up at 2,000 r.p.m. was all it asked before idling normally. The dynamo balanced the charge with all lights in use at 45 to 50 m.p.h.

The "T" Midget has the wide sweeping wings that give good protection. A badge-bar is provided. The chromium plating on lamps and radiator, etc., is of excellent quality and polishing could not be easier. The screen-wipers were entirely satisfactory, though to "park" called for strong fingers, as on nearly every car we have tried. (Accessory folk, please note!) The head-lamps were entirely adequate and the dimming arrangements commanded respect from other travellers by night. The side and rear lamps were likewise very effective, and the horn note penetrating without being objectionable. The car generally



The chassis of the new M.G. with its 10 h.p. engine. The "T" model is a bigger car than previously, having a larger wheelbase, wider track and larger engine.

THE M.G. MIDGET—continued

kept very clean, but in trials work the front number plate is likely to suffer.

Turning to matters mechanical, the new engine is a four-cylinder push-rod o.h.v. unit of 63.5 x 102 mm., giving a capacity of 1,292 c.c., a rating of 10 h.p., and a tax of £7 10s. The crankshaft runs in three bearings. The connecting-rods are H-section steel and aluminium alloy pistons are used. Coil ignition is employed, with 14 mm. plugs and automatic advance. A Tecalemit filler is embodied in the lubrication system and the ribbed aluminium sump holds approximately 1½ gallons of oil. The filler is accessibly placed overhead and there is a neat valve cover held down by two large thumb nuts. Oil feed is from a floating suction pump. The camshaft is driven by Duplex roller-chain.

Two semi-downdraught S.U. carburetters are located on the off side, and they have a drum-type air cleaner attached to a common feed-pipe. Pump cooling is fan assisted, the drive being by belt combined with that for the dynamo, which is located on the near side, and from which is taken the drive for the rev. counter. A thermostat is located in the top water connection. The radiator has dummy shutters. Transmission is via a single-plate clutch running in oil, with cork insets. The four-speed gearbox has remote control and synchro-mesh on third and top gears. Final drive is by a balanced Hardy-Spicer propeller-shaft to a semi-floating rear axle. The chassis frame has box-section side members and tubular cross members and the dash and other sections are metal pressings. Suspension is by half-elliptic springs controlled by Luvax hydraulic shock-absorbers. The springs are mounted on swivel pins at the forward ends and sliding trunnion bearings at the rear, the rear springs have Silent bloc forward mountings. The frame members are mainly straight, passing below the rear axle, but sweeping up over the front axle. Chassis lubrication is looked after by the Tecalemit nipple and gun layout. The silencer is a straight-through perforated tube Burgess.

The brakes are Ferodo lined Lockheed, with cable actuation of the lever system. The Dunlop "knock-off" centre-lock wire wheels carry 19" x 4.50" Dunlop covers. The steering-wheel is of spring type and the reduction is of cam pattern. The electrical equipment is 12-volt, the two 6-volt batteries now being mounted ahead of the rear axle, where they are well protected and with their weight in the right place. C.P. lamps and a Lucas Altette horn are standard equipment and all circuits are wired and fused separately. The dimensions are: Track 3 ft. 9 in.; wheelbase 7 ft. 10 in. The exhaust system is of the three branch type, on the off side. An external driving mirror is fitted, quite well positioned, if of rather limited vision and apt to dazzle at night or in sun. The following finishes are available: Saxe blue, racing green or carmine red with leather upholstery to tone; cream with red upholstery; or black with blue, green, biscuit or red upholstery; silver wheels. Triplex glass is fitted. The series "T" is offered in two-seater form only and the price is £222. By the way, the rather overdone "hexagon motif" which was found on early M.G.s is no longer in evidence in the "T."

In conclusion, we thoroughly enjoyed trying this new Midget and at the end of the test felt that a place should be made for it in the home garage, which is a sentiment experienced only occasionally in the course of trying many modern cars. The larger engine has given the "T" model a performance that renders it superior to most of its rivals, and it has made it a docile, silent and extremely simple car to handle in town traffic But it must not be imagined that the whole performance range has been rendered "woolly" and devoid of punch. Looking back on our test week-end we have pleasant memories of devouring long straight roads at 70 to 80 m.p.h., when the engine was really turning over and emitting a truly intriguing roar. And with these memories in mind we find it truly difficult to appreciate that the latest Midget sells at £222 and has beneath its lengthy bonnet quite an ordinary push-rod engine, easy to maintain, for which spares are readily procurable and which gives over 30 m.p.g. on normal fast runs. The reason for the appeal of the "T" type is largely bound up with the lessons handed on to Abingdon from racing and trials participation and to the patient development of the Midget, since the introduction of the original model "M" eight years ago.

The M.G. Midget has long been possessed of those characteristics that distinguished the genuine sports-car and the latest example is every bit as much typical of the Abingdon marque as previous Midgets, while its more generous allowance of swept-volume has placed it in an unassailable position so far as measurable performance is concerned, without resort to forced-induction or drastic modifications that would have been necessary to obtain like results from a "P" or a "PB." We hope that we have made it clear that the "T" is not just a polite and gentlemanly edition of former Midgets. In any case, a brief run will completely dispel any such suggestion, and the series "T," together with the 1½-litre and 2-litre models, will certainly ensure the continued popularity of the M.G. marque. And Abingdon is full ready to cope with the present and anticipated demand.

DIRT TRACK RACING IN AMERICA—*continued from page* 64

axle is drilled to receive them. It has also been found a goodish wheeze to strengthen the ends of the tubular axle by inserting short tubes in the end, the tubes, of course, being machined to a shrink fit. The perches, incidentally, are now carried as near the ends of the axle as possible, using a long spring.

Rear axles are generally Ford, with Chevrolet axles as a possible second choice. The Ford rear has proved light, strong, and admirably suitable, with the exception that the stronger driving axles from the truck rear end are usually fitted, as with this type of rear end a broken axle means a lost wheel. The differential is usually solid or "locked," as an "open rear," as the usual type is called, resulting in snaking during acceleration down the short straights. The locked rear also has the advantage of enabling the car to run on three wheels (with two in front, that is). This may seem a bit on the useless side, but every so often somebody runs the last few laps to finish that way.

Wheels must be wire, by AAA regulation. Rudge wheels are preferred, though there seems to be little to choose between them and the American Dayton wheel. A recent AAA ruling permits the use of the welded-type wire wheel, as used on some stock cars, but though laboratory tests prove otherwise, they have not proved to be quite strong enough. Lots of them are used anyway, though, because they only cost about $5 apiece. It is almost universal practice on the dirt tracks to use small section tyres in front and large section ones in back. The average size for the former is 18 x 4.50 and for the latter 18 x 6.50. This makes the frame slope downward in front, which seems to contribute to better steering. The front tyres have a normal tread, while different types of rear tyres are used, depending on the track surface.

The steering gears are usually taken from stock cars, but modified in various ways to give a central position for the steering column. The AAA requires that the steering wheel be built around a steel frame, which is cut out, in most cases, from a blank of spring steel. This does not result in anything like a spring spoke wheel, however, as the metal employed is about $\frac{5}{32}$ in. thick. Real spring spoke wheels, of the Ashby or Blumel variety, are rarely seen.

The body, sometimes made of aluminium but more often of steel, is in three sections, cowl, tail, and underpan. All three are quickly removable, as they are provided with flanges which rest directly on the top (in the case of the underpan, the bottom) of the frame, and are held by acorn nuts or studs which project from the frame through holes in the flanges.

As the races are for the most part fifteen or twenty miles, a large gasoline capacity is unnecessary. About five U.S. gallons are carried in a tank which fits inside the tail.

Instruments comprise in most cases a rev-counter, known as the "tach," oil pressure and air pressure gauges, and, in a very few cases, water and oil thermometers. Windscreens are never of the Aero type, as on road racing-cars, but usually made of about ⅛ inch celluloid, bent around the cowl and held to it by small bolts. Occasionally wire screens are used, to repel the rocks, which really do fly all over Cracked goggles are normally expected.

THE TWENTY-SIXTH "GLOUCESTER"

M.G. MIDGET AND FRAZER-NASH-B.M.W. VANQUISH ALL RIVALS

The London - Gloucester Trial of the N.W. London M.C., of which the twenty-sixth of the series was held last month, is one of the big trials "classics."

Extra fun and games were intended to intrude this year, by reason of a ruling that required each competitor to undertake to sell his car at list price, if new, or at marketable value, if second-hand, plus an allowance of 33⅓ per cent. to cover extras and improvements, while his or her signature was required specifying to ownership of the car driven. This is the famous "selling-plate" rule which has been widely criticised, mostly adversely.

The aim, which is that of eliminating non-standard and works-maintained motors, has our full approval, but it is difficult to see how the signed declaration is going to achieve the desired result and surely the allowance of 33⅓ per cent. is directly opposed to the object in mind, even though enticing to the few people who spend that amount on adorning otherwise standard trials cars with additional lamps, ash-trays and mascots, etc. Another unusual ruling applied to the twenty-sixth "Gloucester" was that bonnets and fuel tanks had to be sealed for driving between checks, which was not likely to bother many present-day cars, though it did stump one of our representatives who contrived to run his tank dry in the wee sma' hours, as competitors had in a body left behind the usually inevitable spare supplies of fuel.

The only competitors to get through without loss of marks were Miss Phyllis Goodban, driving a Type 55 Frazer-Nash-B.M.W., and C. A. N. May, motoring behind the wheel of a blown PB M.G. Midget. To them hearty congratulations, and the hope that should either of them wish to sell the motor, the N.W. London M.C. will demand to purchase the machines at the prices promised—which is most unlikely, both ways! The B.M.W. we should class as the standard, and therefore less "saleable" motor.

The entry of eighty-eight showed a decrease on the 1935 figure, and nineteen people failed to start, which was regrettable, because the route generally was well chosen. Some persons saw fit to drive motors not originally specified, and at the expense of staleness we feel inclined to ask if they were hoping to dispose of these cars in due course.

The Spider's Web road-house on the Watford By-Pass, at just after 12 o'clock onwards, was the scene of the start, and this event is of sufficient importance to justify police assistance (in the best sense of the term) for which due appreciation should be accorded.

Breakfast was taken at Cheltenham, after a good night's motoring. In the early hours, in the dark, Kineton had to be tackled; a long hill up muddy grass-grown lanes beside fields, which failed only a few cars and, much later, the MOTOR SPORT conveyance.

The special test on Bismore was postponed until a reasonable supply of daylight arrived, so that ultimately the whole trial ran very late. It was in this test that the tie between Miss Goodban and C. A. N. May was settled. The average time for the 2-litre class was 70.64 secs. and the B.M.W. took 70.4 secs. The average for the 1,100 c.c. category was 69.84 secs., and the blown PB M.G. asked 66.2 secs. Consequently, May won the Gloucester Cup, while Miss Goodban was awarded the N.W. London Cup and a Gloucester Goblet for her achievement in gaining her third consecutive first-class award in this trial. She carried "No. 2," and drove with screen folded, wearing a beret.

Five cars came to rest on Quarhouse, and Ham Mill, of rough, curving and extended aspect, caused some bother, Wooding's Talbot Ten stopping and Cole's Singer nearly emulating his misfortune. The Frazer-Nash-B.M.W.s of Miss Goodban and Dargue were excellent, hosts of M.G.s showed how to do it, and R. C. Morris showed real skill in the handling of his Alvis, while Warburton's 30/98 Vauxhall, with folded screen, sketchy wings and a dumb-iron apron, was never in doubt.

Only seven cars got up Middle Drag, the honours being divided amongst Miss Goodban's B.M.W., H. G. Symmons's B.M.W., the M.G.s of C. A. N. May, D. E. Harris, H. K. Crawford, and A. G. Imhof ("T" model), and S. H. Allard's L.M.B. suspended Ford V8 Special. Allard was by far the most rapid. Goodenough's M.G. Midget thought it good enough to get almost to the top, and the others did not get that far. It was here that Macdermid overturned his M.G. through reversing at speed downhill after failing, and though he was unhurt and the car only slightly damaged, the episode enabled a wag to remark that the club would not buy the motor now.

Horses were on duty at Middle Drag, which was as well, because rain had played havoc with the leaf-mould surface. Dargue and Miss Goodban nevertheless showed how Frazer-Nash-B.M.W.s can perform, and Ebdon (M.G.), skilfully chose his path, while May's M.G. was undismayed by wheelspin.

Juniper seemed rather too much of a good thing, as several competitors could not reach the starting-line, and a long string of failures occurred. The only cars to vanquish the altogether exceptional conditions were one Frazer-Nash-B.M.W., May's M.G., Macdermid's M.G. Midget and P. S. Flower's M.G. Midget. After this Ferriscourt was the scene of the other special test and Station Lane, in two sections, troubled many people, but gave the Frazer-Nash-B.M.W.s an opportunity to still further improve their reputation.

Miss Milne retired with a stripped half-shaft on her Singer coupé. Finally, Nailsworth Ladder failed only eight competitors, including Mrs. Vaughan's Standard saloon that was shod with ordinary covers. Elgood had a nasty moment, but his 3-litre Bentley condescended not to let him down.

The trial ended at the popular Bear Inn on Rodborough Common. The results follow, and it will be seen that no first-class awards were lifted. We are unable to devote more space to this important event, but for those who seek the full and complete story the N.W. London M.C. has published a very excellent tabulated list of the happenings.

RESULTS

President's Trophy (850 c.c.): P. S. Flower (M.G. Midget).

Committee Cup (1,500 c.c.): A. G. Imhof (M.G. Series T).

North-West London Cup (2,000 c.c.): Miss P. Goodban (Frazer-Nash-B.M.W.).

Thomas Challenge Cup (unlimited): S. H. Allard (Ford V8).

Ladies' Cup: Miss B. M. C. Marshall (Anzani-G.N.).

Novices' Cup: N. J. Ebdon (M.G. Midget).

Team Award: "Sunbac" team: Drivers, C. A. N. May (M.G. Midget, S.), H. K. Crawford (M.G. Magnette), C. D. Buckley (Austin, S.).

Runners-up: Frazer-Nash-B.M.W. team: Drivers, N. V. Terry, C. G. Fitt, H. G. Symmons (Frazer-Nash-B.M.W.s).

Silver Medals: R. A. Macdermid (M.G. Midget), D. E. Harris (M.G. Magnette), H. K. Crawford (M.G. Magnette), H. G. Symmons (Frazer-Nash-B.M.W.).

Bronze Medals: E. H. Goodenough (M.G. Midget), G. T. I. Taylor (Singer), C. M. Anthony (Aston-Martin), N. Terry (Frazer-Nash-B.M.W.), C. G. Fitt (Frazer-Nash-B.M.W.), A. Eadon (Singer), R. Lloyd (M.G. Midget), M. H. Lawson (Singer), L. E. C. Hall (Singer).

TO OUR READERS . . .

Regular readers of "Motor Sport" will be glad to hear that in future this paper will be published on the twelfth of each month. We take this opportunity of apologising for its late appearance during recent months, and wish to thank the many readers, both at home and abroad, who have written to us to enquire of its welfare and to whom we have been unable to reply individually.

THE SPRINT EXPONENTS OF 1936

The December issue of MOTOR SPORT contained a résumé of the important British and Continental races contested during 1936. Elsewhere in this issue the records situation is reviewed and the list of those records now standing is given, while in the Club News section of the paper is a list of the principal trials victors of last season. To make these references complete we give below a summary of the 1936 sprint meetings—the growing interest in which is very evident.

HILL CLIMBS

ORGANISERS	VENUE	DRIVER	CAR	TIME IN SECONDS
Midland A.C.	Shelsley Walsh	R Mays	E.R.A.	41.6
Ulster A.C.	Craigantlet	H. L. Hadley	Austin 7	1m. 22⅕s.
Berkhamsted & D. M.C. & C.C.	Dancer's End	R. J. W. Appleton	Appleton-Special	26.5
Dublin University M.C.	Kilternan	R. J. Gallagher	U.S.R.	43.0
Midland A.C.	Shelsley Walsh	R. Mays	E.R.A.	43.31
Bristol M.C. & L.C.C.	Backwell House	J. Bolster	Bolster-Special	27.2
Scottish S.C.C.	Bo'ness	I. O. K. Stuart	Squire	35.5

SPEED TRIALS

ORGANISERS	VENUE	DRIVER	CAR	TIME IN SECONDS
Inter-Varsity	Syston Park (½ mile)	R. E. Tongue	R-type M.G.	27.2
Kent & Sussex L.C.C.	Lewes (⅛ mile)	R. G. J. Nash	Frazer-Nash-Union Special	19.06
Vintage S.C.C.	Howard Park	A. F. P. Fane	Frazer-Nash	16.7
Riley M.C.	Lullingstone Park	D. H. Scribbans	E.R.A.	24.1
Vintage S.C.C.	Hartley Wintney (¼ mile)	N. S. Brockelbank	Bugatti	20.0
Yorkshire S.C.C.	Weatherby Grange	P. N. Whitehead / S. E. Cummings	Alta / Vauxhall-Villiers	30.6
United Hospitals M.C.	Howard Park (¾ mile)	F. R. G. Spikins	Singer-Bantam	18.53
Scottish S.C.C.	Bo'ness	S. Weston	M.G.-PB	45.0
Midland A.C.	Madresfield Court (½ mile)	J. P. Wakefield	Alta	31.0
Berkhamsted & D. M.C. & C.C.	Howard Park (¼ mile)	B. Rogers	M.G.	16.5
Kent & Sussex L.C.C.	Lewes (⅜ mile)	G. Taylor	Alta	19.81
West Hants L.C.C.	Poole Park (600 yards)	G. R. Hartwell	M.G.	22.82
Bugatti O.C.	Lewes (⅜ mile)	A. G. Bainton	Bugatti	20.7
Southsea M.C.	Southsea (½ mile)	S. E. Cummings	Vauxhall-Villiers	17.6
Berwick & D. M.C.	Haggerston Castle	S. Weston	M.G.-P Type	1m. 19s.
Yorkshire S.C.C.	Weatherby Grange	S. E. Cummings	Vauxhall-Villiers	30.2
Vintage S.C.C.	Littlestone-on-Sea (¼ mile)	J. Lemon Burton	Bugatti	23.4
Brighton & Hove M.C.	Madiera Drive, Brighton (¼ mile)	S. E. Cummings	Vauxhall-Villiers	22.89
Berkhamsted & D. M.C. & C.C.	Howard Park	J. Bolster	Bolster-Special	17.2
Liverpool University M.C.	Liverpool (¼ mile)	Rolt	Triumph-Dolomite	—
Dublin University M.C.	Dublin	D. Yule	Austin 7	—
W.A.S.A.		F. R. G. Spikins	Hudson-Special	16.02

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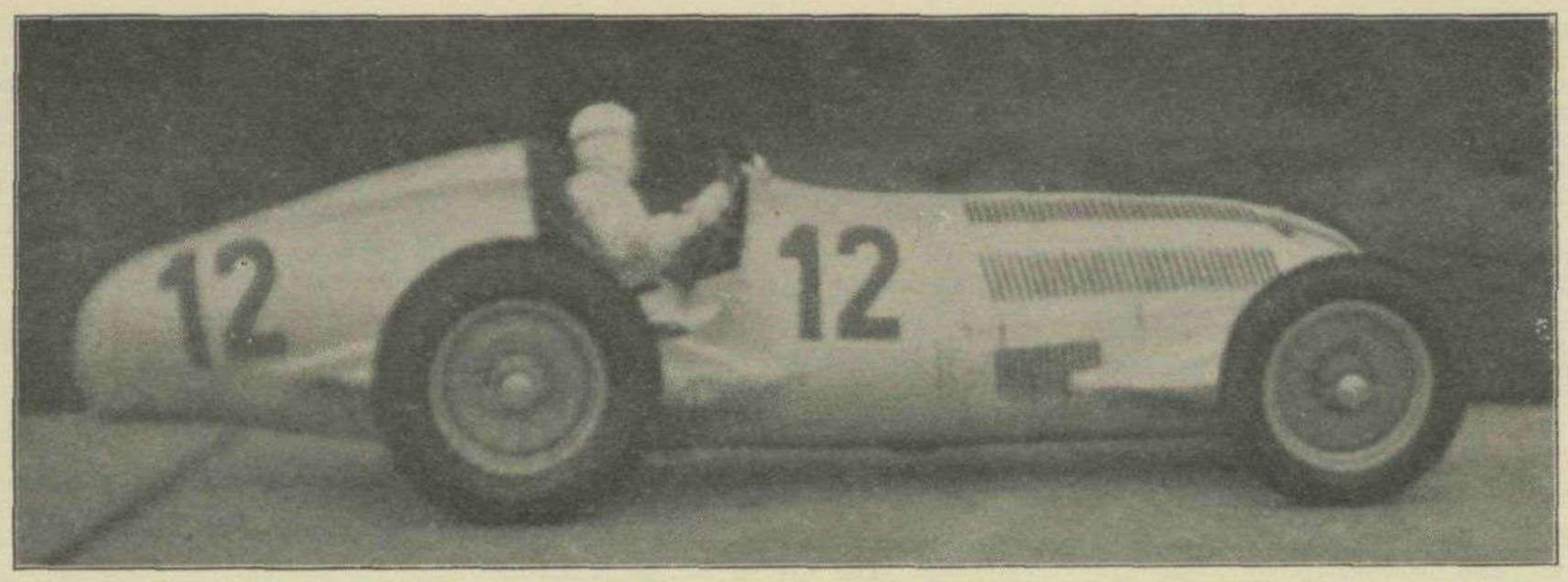
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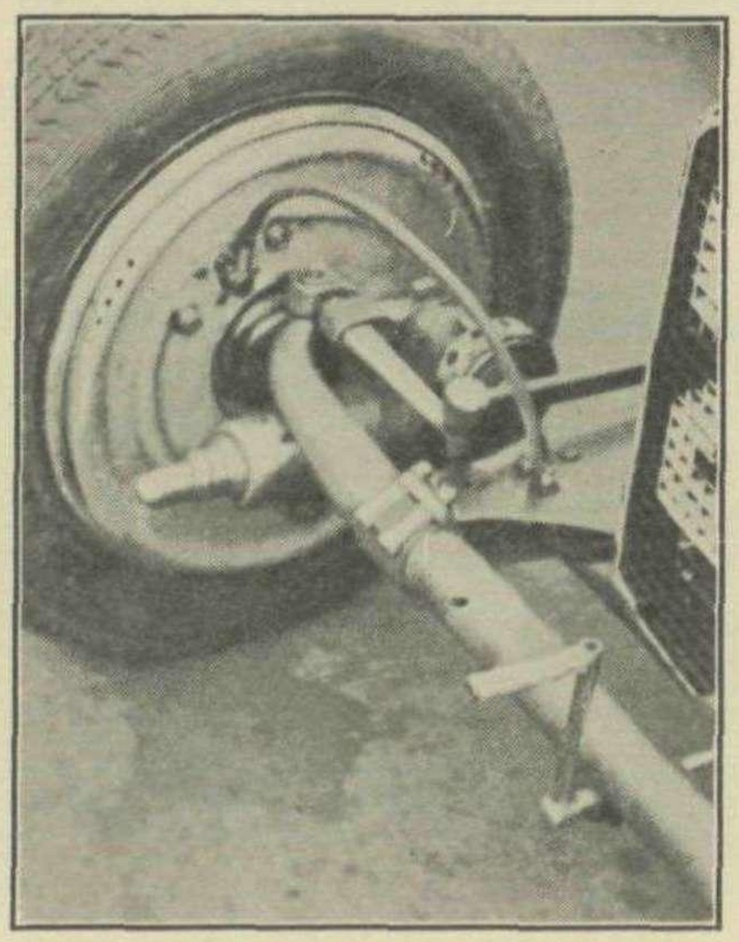
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ON THE TREND of RACING-CAR DESIGN

As the racing-car of to-day becomes the sporting-car of the not far distant future, and as we observed last month that not only is the sports-car now widely used for fast everyday travel under quite ordinary conditions but that additionally, its design exerts a beneficial influence upon the merely utility car, there seems sufficient excuse for dwelling for a few thousand words on design tendencies. It is, at once, a simple and a difficult task; simple because the field to be covered is relatively small, difficult because, though racing-cars are no longer stored within moated monasteries guarded by men of arms, or bred in heavily-padlocked works, certainly full details of their specifications, and the changes that are made therein in the course of a single year, are extremely difficult to access.

It is a source of great pleasure to be able to record that, more than ever before, the racing-car remains a highly specialised piece of machinery, which could not normally be evolved by the utility car-designer and certainly could not be maintained in efficient order by even very capable, very knowledgeable mechanics from production-car factories. This advanced engineering practice, moreover, if it is usually the expression of an artist-craftsman, has a far greater mission to fulfil than the mere satisfaction it gives to a man in control of the finished product, the thrill it provides to hundreds of persons who watch the car in action or follow its fortunes through the medium of the motor papers; a mission, indeed, greater than the spur it may provide to the Advertising Manager of the firm responsible. For the old proverb that the racing-car of to-day is the touring car of to-morrow, if due for reconstruction, is fundamentally as sound as ever it was. This rather prosy opening must be excused on the score that the writer was once severely frowned upon for daring to hope that motor-racing would not become purely the National Sport. By that he had no wish to imply that he did not want to see gate-records broken at new road-racing meetings, or that he had an aversion to public backing of an English Grand Prix car. But what was in his mind was that racing would for most of us suffer a severe blow if it were ever reduced to a series of spectacular contests with starting, prize and gate-money the be-all and end-all in the minds of car-designers, entrants and drivers, with standardised cars running in innumerable events at more or less predetermined average speeds. I believe that it is a fact that racing motor-cycle engines are punished far harder on the cinders than they are round Brooklands or over the I.O.M. course, but because the dirt-track engine is built for artificial functions, from which no lessons of value are likely to be handed on to motor-cyclists as a whole, our more eminent designers, engineers and scientists are not greatly interested in them, or are interested only because of commercial obligations. Similarly, racing in America seems to lose value because even the more serious cars which run at Indianapolis bear fancy names and appear to be largely standardised designs, run as an advertisement for some firm or individual. Consequently, it is indeed good to reflect that the racing-cars which compete in the International Grand Prix races are more than ever



[*How Alfas do it. Dubonnet's contribution to the suspension problem.*

before extremely specialised, very costly productions, involving the highest technique of the engineer, metallurgist, chemist and mathematician—and, let us add, demanding the highest skill in their effective driving under contest conditions. As a bearing on this statement, the G.P. Mercédès-Benz costs around £8,000. In the same way, the cars that run in our own races at Donington, Brooklands, in Ireland, at Ulster, and in the I.O.M. are real engineering productions that tend to become ever more the care of specialists. Which is good! I do not foresee car cinder-track racing influencing this happy state of affairs to the slightest extent, however rosy its own future may be. There is a possibility that some of the proposed new road-circuits, if they materialise, may be productive of low average speeds and that if sufficient starting money is forthcoming certain young men, whose primary association with motor-racing is that of dicing into the limelight with no great personal danger, may forsake the dirt and co-operate in stunt events over such circuits with any kind of cars. But if this happens, and if huge flocks of people attend regularly to the detriment of the local cinema, I feel sure that ever greater numbers of true enthusiasts will journey to those venues where thoroughbred racing-cars compete seriously. One has only to contemplate the atmosphere of the club hill climb or speed trial, where competing cars are, one and all, honest efforts to hot-up standard motors, to demonstrate absolutely standard motors, or to evolve suitable special cars, to appreciate that the foregoing is no fantastic picture, and that in this country we do take our racing very seriously, and as a technical study. And over and above everything the eminent automobile designers of the world, who are not engaged on a full-time job in breeding utility vehicles, will continue to grapple with the problems of racing-car evolution, that the world's motorists may ultimately reap the benefit.

The most remarkable feature of the 750 k.g. maximum weight limit has been the manner in which light alloy construction and extreme weight conservation has permitted the use of power-units of great size, with resultant maximum speeds that a few seasons ago were entirely

ON THE TREND OF RACING-CAR DESIGN—continued

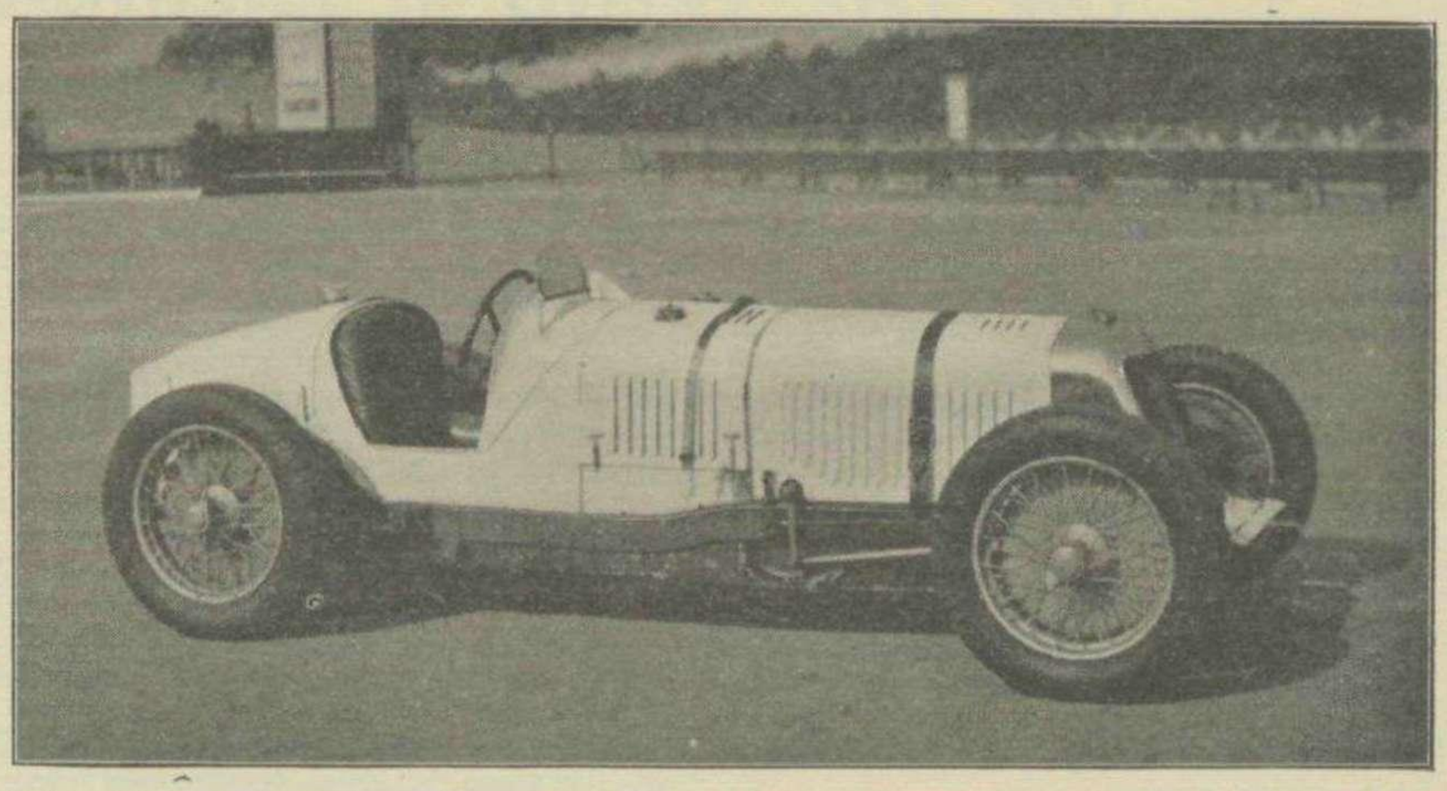
unassociated with road-racing cars. When the new formula was introduced most engineers pictured a capacity of 3 to 4-litres as the maximum practical under the circumstances.

Yet we have seen Alfa-Romeo increase their engine size from 2.9-litres to 3.2-litres, 3.8-litres and finally to 4.2-litres. Bugatti, mainly employing a 3.3-litre unit, has produced a 3.8 and toyed with a 4.7-litre. Mercédès-Benz has increased from 2.9-litres to 4.1, 4.5 and then to 4.9-litres, and now has a new 5.6-litre engine on the stocks, though this is believed to be over the weight limit. The Auto-Union started as a 3.1-litre and was progressively stepped up to 4-litres, 5.3-litres and 5.8-litres, and Maserati has contrived to use 4.4-litres of motor and get within formula impositions. So that the engines used in these extremely light Grand Prix cars are actually larger than the engines commonly in use for track and sprint work. In this connection it should be borne in mind that the new formula which comes into force in 1938 limits the capacity to 3½-litres, so that the recent trend towards larger engines is misleading as a prophecy of future development, and the reader is referred to an informative article published in MOTOR SPORT last August, in which likely developments arising from the new formula were discussed at some length.

The multi-cylinder engine is universal for G.P. cars, Bugatti and Maserati employing eight-cylinder units, the former in line, the latter a V8 in its latest form, Mercédès-Benz has recently forsaken the in-line-eight for a V12, Alfa-Romeo changed from in-line-eight to V12 at Tripoli last season, after experimenting with the "bimotore," and Auto-Union has used a V16 cylinder engine ever since passing beyond the experimental stage. On the other hand the engine of fewer "pots" is not defunct in racing circles, for our own E.R.A., Riley and M.G. Magnettes are six-cylinder cars, and Maserati is concentrating on this type of unit for limited capacity racing, after having built larger racing engines with this number of cylinders. And the 750 c.c. Austins, and M.G.s and the 1,100 c.c. 1½-litre and 2-litre Altas have four-cylinder units, while Riley last season used this class of engine in 1½-litre form.

In spite of the turbulence debate that occupies scientific delvers into combustion-chamber happenings, the inclined valve, hemispherical cylinder-head is in general use, and quite apart from flame flow considerations, this form of head allows for adequate port areas, the maximum employment of gas velocities for filling and scavenging, the best arrangement of water-jacketing, and valve cooling, and the smallest surface/volume ratio. Apart from Alfa-Romeo, Bugatti, Maserati, and Mercédès-Benz, the little Austin Seven appeared last year with a twin camshaft head. Alta has always used this layout, Riley and E.R.A. have inclined valves, albeit operated by push-rods, and if the majority of M.G.s have single-camshaft pent-roof heads, it is a significant fact that early last year Laurence Pomeroy, Junr., and the Bellevue Garage, in combination, turned out three R-type M.G.s with twin-cam heads, to defeat previous retirements through cracked heads, and with extreme supercharging in view. The Auto-Union is a notable exception, having a central camshaft and short vertical push-rods operating valves inclined in one plane.

Although advocates of simplicity point out that push-rod actuation is satisfactory up to extremely high rates of revolution, the need for heavy valve-spring pressures to overcome valve-gear inertia is liable to impose unwelcome stresses not only on the valves themselves, but upon the operating mechanism, apart from the possibility of distortion in large light-alloy construction engines adversely affecting a form of valve actuation embracing sixteen or twenty-four separate push-rods. The use of 90° valve inclination also points to double o.h. camshaft operation, and camshaft drive is nearly



Before the monoposto era: illustrative of how rapidly racing-car design has changed. A successful Maserati of a few years ago.

always by shaft or gear-train for racing purposes, Alfa-Romeo deeming it desirable to take the drive from the crankshaft centre. Four valves per cylinder, handed on from war-time aeronautical practice to the racing-car engine, would have died a natural death at the hand of the supercharger, had not increased crankshaft speeds developed by limited capacity racing shown that volumetric efficiency is impaired by excessive gas induction velocities and variations.

Naturally supercharging is almost universal in present-day racing, though it is doubtful if extreme pressures are employed to the same extent as in the days of the limited capacity ruling, in spite of improved fuels and the advancement of forced-induction technique. Probably the reliability factor is the reason, because the present state of things under the maximum weight ruling should certainly not of itself tone down blower boosts. Accurate figures are hard to come by for the G.P. cars. Amongst British racing-cars the new Austins are blown at 20 lb. per sq. in., the "R"-type M.G. at 22-28 lb., while the Appleton-Riley is given 25 lb. The first E.R.A. was blown at 15 lb., while compression ratios are generally kept in the region of 6 to 1 with supercharged units. It is not easy to access the position with the G.P. cars, but the Auto-Union and Mercédès-Benz are said to employ moderate pressures and in 1934 the Alfas were supercharged to 8½ lb. and the 3-litre Maserati to 11½ lb., and the 1,500 c.c. Maserati to approximately 11 lb. Mercédès-Benz blow air through the carburetter, which is believed to be productive of better pick-up and which facilitates charge cooling. For racing the Roots-pattern blower is almost universal, though the "R"-M.G.s have Zoller-vane compressors, as has Appleton's special Riley, and at the end of last season Raymond Mays was experimenting with an outsize in this make of vane compressor on the 1½-litre E.R.A. It will be recalled that M.G. reverted to the Roots blower—of Marshall make—for its road-racing cars, presumably on account of oiling-up difficulties. The supercharger is, generally speaking, easier to apply to the racing than to the utility engine, which may to some extent explain its lack of headway in the latter field. Ribbing is largely made use of to dissipate heat and there is every reason to believe that in spite of forced induction great attention is paid to intake arrangements. Alfa-Romeo used to take great pains over the efficient delivery of the mixture from the double Roots blowers, and Mercédès-Benz used four blow-off valves on a manifold of complicated formation.

Amongst unsupercharged racing-cars the Riley deserves special mention, the works entries and the examples driven by those eminent free-lancers, F. W. Dixon and H. G. Dobbs, having performed extremely creditably, largely on account of Riley's high volumetric efficiency, aided by their adaptability to multi-carburetter layouts and their good combustion chamber formation. Dixon's 132 m.p.h. lap speed from an unblown 2-litre of conservative streamline form and proven reliability is a measure of Riley efficiency. Incidentally, the marque has occasionally run in blown form.

To-day plain main and big-end bearings are common for racing-engines, though Seaman's Delage, as a representative of the old school, has rollers throughout. The E.R.A.'s central main bearing is of roller-type, and the in-line Maserati

ON THE TREND OF RACING-CAR DESIGN—continued

eights had roller, ball and plain bearings supporting the crankshaft.

Lubrication systems of the true dry sump type are popular, as are external oil-coolers, which began to be a general trend in 1925. E.R.A. and Austin have used large cylindrical type coolers, and the Austin has a triple and the E.R.A. a double oil-pump. The ability of present-day racing-cars to run through a race non-stop gives no opportunity for sump replenishment, and alloy construction sorely tries sump-storage systems. Ignition is mainly by magnetos of the older pattern, and the 14 m.m. plug plays its part.

Light alloy construction is an interesting study. The latest racing Austin Seven has wet cylinder liners in a block of R.R. alloy, with a detachable head and the upper portion of the liners finned and in direct contact with the cooling water. The older M.G.s have cast-iron blocks and detachable heads, and E.R.A. uses a steel block in unit with the upper half of the crankcase, and an aluminium head. Alta uses separate cast-iron wet liners in a light alloy crankcase and water-jacket, with a detachable alloy head having screwed in aluminium-bronze valve seats. The old 1½-litre Delage and the Bugattis have fixed heads.

Mercédès-Benz favour a light alloy sump, and steel cylinders in very thin welded-steel water-jackets, which they believe to be a better method of weight conservation than the use of liners in an alloy block. Alfa-Romeo employ a light alloy sump and block, with steel cylinder liners, while Auto-Union and Maserati are believed to use wet liners in alloy blocks. Water cooling is nearly always pump assisted, and Alta extends water-cooling to the main bearings, while E.R.A. has salt-filled exhaust valves.

Engine speeds seem to centre around 5,000 to 6,000 r.p.m., and although the 1½-litre E.R.A. peaks at about 7,500 r.p.m. this is no advance on the 7,000-8,000 or higher r.p.m. of the better 1½-litre cars of a decade earlier. On the other hand the new Austin of 750 c.c. is built for sustained engine speeds up to 12,000 r.p.m. The present G.P. engines are remarkable in their ability to tick over at about 500 r.p.m. without oiling up their racing plugs and to pick up cleanly at all times.

The h.p. per litre of the modern G.P. cars ranges from about ninety to one hundred, giving a maximum b.h.p. of upwards of 400 in some instances, in cars weighing under 14¾ cwt., which, with the low interference drag of monoposto bodywork, results in road speeds of upwards of 200 m.p.h.

Turning to the chassis, last season proved the practicability of the unconventional tubular-frame rear-engined Auto-Union which is a Dr. Porsche design of true genius. Weight is saved by light alloy construction and extensive drilling of chassis members and components, which method is adopted also by Mercédès-Benz.

Where speeds of 200 m.p.h. and more are realised in road contests, with one car passing another at only slightly diminished paces, independent suspension is a vital necessity, from the viewpoint of accurate steering and absolute control, apart from the need to obtain maximum wheel adhesion for acceleration and braking and to diminish tyre stresses. Mercédès-Benz adopted coil-spring independent suspension, all round at first, and now at the front only.

Auto-Union uses swinging links, controlled at the front by torsion bars and at the rear by a single transverse leaf spring. Bugatti has remained faithful to normal suspension, retaining, of course, his famous reversed quarter-elliptics at the back, but I understand he has independent layouts in hand.

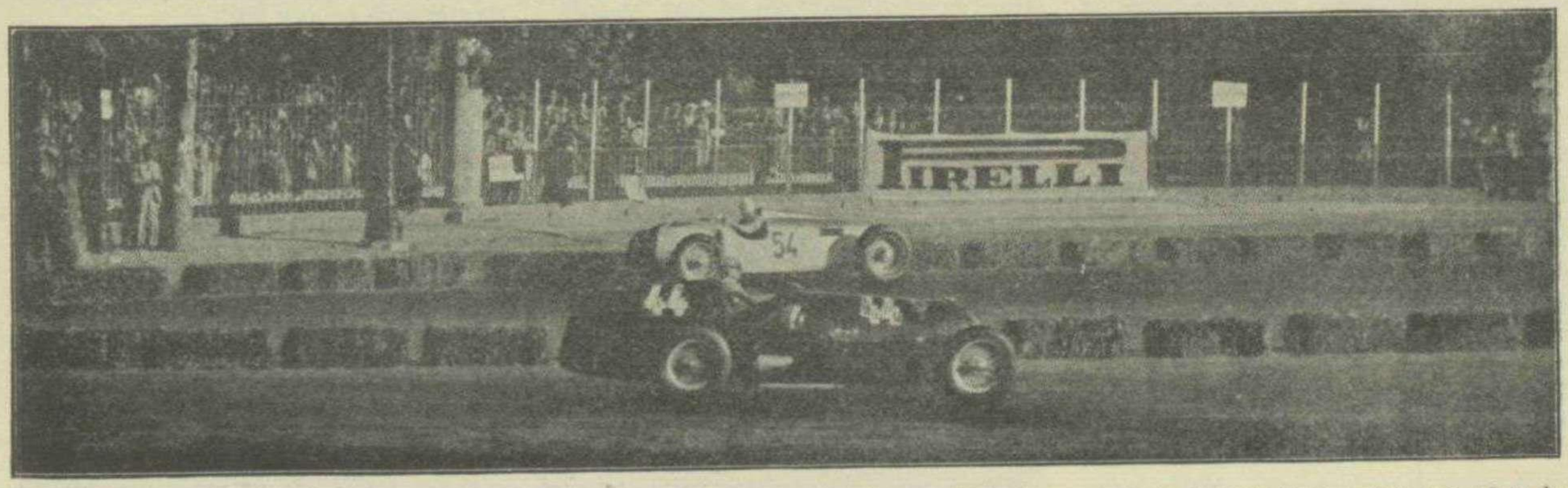
Alfa-Romeo adopted the coil-spring and fluid-damped Dubonnet independent layout at the front, with reversed quarter-elliptics at the back after experimentation with independent rear systems, finally employing an independent arrangement all round for the V12. Maserati has employed chassis with torsion bar front and freely shackled half-elliptic rear independent suspension. In this country only M.G. has produced a fully independently sprung racing chassis, but Riley has used it for the front wheels, and Alta and E.R.A. may have similar developments for 1937. I feel that independent rear spring for racing-cars must come, if only to reduce unsprung weight.

Racing technique has of recent years undergone a complete change, and the gearbox is not nearly so frequently used as formerly in road contests. Most of the Alfa-Romeos have three-speed in place of the former four-speed boxes, and Auto-Union, starting with five speeds, now uses four. For the smaller cars the Wilson self-change box is popular though it would be interesting to know how much attention is needed between races. Seaman had five speeds on the Delage, for which a Wilson box was formerly used. Alfa-Romeo and Mercédès-Benz combine the gearbox with the back axle, which is interesting in view of the fact that the latter now has a rigid axle suspended on transverse quarter-elliptic springs. It is interesting that Austin favour synchro-mesh for sprint work.

Bugatti excepted, all the modern G.P. cars have hydraulic brake actuation, as has Seaman's Delage, and the problem of making brake shoes stand up to the extremely arduous conditions now prevailing has been satisfactorily solved. Our leading racing men pin their faith to Ferodo linings. Provision is made for taking up wear while in motion, which is often necessary three of four times during a race, and Alfa-Romeo use a tap-control to alter the braking-power between front and rear wheels. E.R.A. use Girling actuation.

Amongst the smaller cars large fuel tanks add avoirdupois that kills performance and a pretty problem arises, particularly as it is no easy matter to make a big lightweight tank withstand the stresses involved. It will be recalled that Seaman's veteran Delage scored over the E.R.A.s last season in certain races, largely because it did not require to visit the pits to refuel. Incidentally, the amazing performances of this car, which beat all comers in the 200-Mile Race emphasises the measure of progress made since 1925, for the Delage is not radically modified, albeit modern fuels and a reduction of weight are important factors in this connection. The 1½-litre E.R.A. has made most creditable progress.

Steering is now far lower geared than in former times. The monoposto road-racing body seems well adapted to road-racing, provided vision and driving-room is studied, and a return to two-seater types is unthinkable. Sitting above the transmission provides an excellent driving position and appears to keep the occupant immune from the ill-effects of exhaust heat and fumes. This form is becoming



Front versus rear engine position? The 12-cylinder Alfa-Romeo running against the rear-engined Auto-Union that proved to be the most successful car of 1936.

ON THE TREND OF RACING-CAR DESIGN—continued

widely used for lesser road events, track and sprint work. Its streamlining reaches a high standard, as is evident by the 228 m.p.h. record of the 6-litre Mercédès-Benz, with a coupé top addition. In this particular instance part of the weight of the car was lifted from the tyres by the wind pressure, which I should say is a very modern development, with distinct possibilities. Tail-fins for directional stability appear to have made little headway, probably because their advocates have now been forced to realise that a racing-car, unlike an aeroplane, is subject to the action of severe cross-currents of air. With modern G.P. bodywork formation it seems likely that losses due to parasite and interference drag are now not much higher than those for which skin-friction is alone responsible. It is unfortunate that even aeronautical engineers know very little of the latter problem. The importance of correct streamlining in modern road-racing is shown up by the 8 to 10 m.p.h. speed increase obtained by Mercédès-Benz when they incorporated a slightly lower bonnet in the new, lower, short-wheelbase car.

So far as the ultimate speed record is concerned, it is significant that 300 m.p.h. has been surpassed with an open cockpit and 2,600 h.p. transmitted through a single pair of wheels. It may yet be that the fastest car-speed record will exceed that of the fastest air-speed record. Huge powers are likely to be employed for forthcoming attempts, but Fred Dixon is known to be toying with the idea of attacking Campbell's figure with a 10-litre motor, and although the recent, certainly astonishing, Auto-Union and Mercédès-Benz records must not be taken as indicative that such a task is now fairly certain of accomplishment, it would seem that 250 m.p.h. with this capacity may be realised quite soon. The late Frank Lockhart exceeded 200 m.p.h. on 3-litres of Stutz Special nine years ago.

Unconventional racing designs are not much in prominence, but Count Trossi's radial nine-cylinder two-stroke front-drive car must not be overlooked, and George Eyston deserves every credit for using front drive and independent front suspension for long-distance records at Utah at very high speeds with a minimum of teething troubles.

New material in the field of amateur-built special cars is regrettably sparse, but the Appleton-Riley is an ambitious effort with which good results have been obtained; and in sprint events R. A. Waddy's twin-engined four-wheel drive Fuzzi Nine is a meritorious creation.

Diesel records have been mainly confined to Eyston's high-speed exploits with the big 'bus-type A.E.C. unit and one would like to see a growing interest in class records for this type of power-unit and more attention given to developing racing editions of small capacity production types, as when R. Munday demonstrated the Perkins engine in the old "flat-iron" Thomas-Special at Brooklands.

In sprint events, which are growing in popularity and importance, road-racing cars have mainly predominated, though the veteran Vauxhill-Villiers has been a match. The racing cycle-car of G.N. foundation has by no means disappeared, possibly because the Akela V-twin engine of this make gives a b.h.p. equivalent to that of the earlier blown racing Austin Seven units, with only mild tuning and without the weight which water-cooling and supercharging involves. I am not convinced that the road-racing type need have things all its own way in this class of competition, and increased "purses" for these events may result in striking developments, though along what lines I certainly do not pretend to foresee. Incidentaliy, Instone and Sumner have applied their hands to supercharging the V-twin, in which sphere of research I believe H. B. Showell pioneered. Brooklands racing has developed mainly into a parade of road-racing and modified sports-cars, with the true track car almost defunct, though the new Austin Seven, the unblown Rileys and the monoposto Shelsley Frazer-Nash have proved useful outer-circuit cars. The 140 m.p.h. Barnato-Hassan with 8-litre six-cylinder twenty-four-valve Bentley engine in a very slim frame, with ultra faired body, and the 4½-litre Bentley-engined Pacey-Hassan-Special are almost the only modern representatives of the true Brooklands car, but the 4½-litre Lagonda's run in the 500-Mile Race may draw attention to the possibilities of the modern sports chassis for this class of high-speed motoring.

A recent development has been the employment of aeroplane motors in modern chassis for attacks on long-distance class records, with no eye to raising the ultimate land-speed figure—G. E. T. Eyston's Schneider Rolls-Royce engined car and the Napier-Railton being the cars in mind.

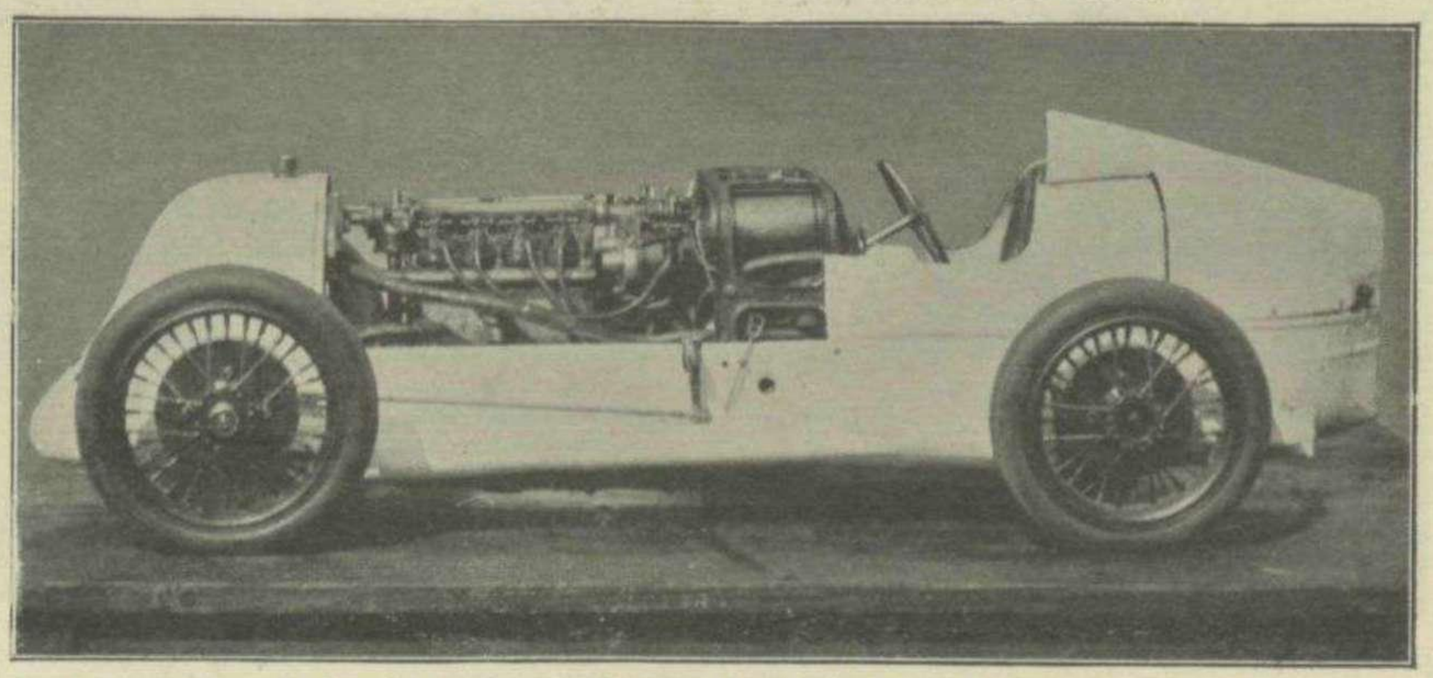
Tyres are something of a problem in modern G.P. racing, but evidence that rapid progress is still being made is to be had by comparing the tyre changes in the 1935 500-Mile Race with those made during the same race of 1936. It is difficult to foresee the outcome of the 1938 formula, but smaller engines may be more highly supercharged and run faster, which in turn might result in geared-together crankshafts—as in the last racing Fiats—to ease bearing loadings and big-end stresses on multi-cylinder units. Certainly the 1½-litre engine size will be extremely evident this year, E.R.A., Riley, Alta, Maserati, Delage, Auto-Union, Mercédès and Ferrari being likely followers of limited capacity racing, and horse-powers of around 200 are to be expected from engines of this capacity. Wheel-spin is a source of worry in spite of the adoption of cam-type differentials, and with weight-conservation of less moment four-wheel drive might well figure on G.P. cars. Sports-car racing will benefit from recently introduced rulings to obviate the entry of G.P. cars lightly disguised and buying prosperity renders the T.T. and Le Mans especially important.

Motor scribes, like the racing motorist, are apt to be defeated by time and space, on which note I will end this article. With the doodle-bug I am not concerned.

A MODEL MERCEDES-BENZ

A remarkably interesting model has just been completed by an Austrian garage proprietor in Baden-Baden, South Germany. Although the wheelbase of the car measures barely two feet and the entire machine can be lifted in one hand, it is a perfect mechanical miniature of a highly tuned racing-car; it was built by the owner in his spare time, taking nearly three years to complete, most of the parts having to be made by hand, with the exception of the plugs which were supplied by Bosche.

The engine is of overhead camshaft design (this camshaft and tiny valves with double valve springs are of the neatest workmanship imaginable), the capacity is 35 c.c., and the maximum revs somewhere in the region of 8,000. The ignition is, of course, by battery and coil. The body-work is built on the lines of the racing Mercédès-Benz. With its designer in tow, a road speed of 35 kilometres per hour can be obtained. The driver travels on the car with the aid of a motor-cycle saddle on two wheels which can be hooked on to the tail and two foot-rests screwed into the sides of the chassis; he steers the car with the thumb and finger of one hand on the spring steering wheel, while the other hand manipulates the throttle on the dash.



A wonderful piece of model construction that can pull about 12 cwt at 20 m.p.h.

Letters from Readers

APPRECIATION

Sir,

I received my copy of MOTOR SPORT for December to-day, and was very pleased to see, on page 30, about your new date of publication.

I always look forward to the paper and should have been extremely sorry if anything had happened to prevent its further publication.

Wishing you all success,

I am, yours etc.,

Co. Down. W. S. Orr.

12.36.

* * *

Sir,

Having read the article "On the Trend of Sports-Car Design" I am interested in the book referred to ("Economics of Carburetting and Manifolding"). Is it still obtainable?

May I take this chance of congratulating you upon the "make-up" of MOTOR SPORT and also the new date of publication.

Could you in the future give some hints on tuning the Hornet Special, in particular the 1934 model?

I am, yours etc.,

Derby. NORMAN B. SCOTT.

* * *

"THE TREND OF SPORTS-CAR DESIGN"

Sirs,

Having read the article on "The Trend of Sports-Car Design" we feel that although this article contains a favourable comment re Centric Superchargers, there are one or two points made in the article which we consider rather misleading to the general public and which we should very much like to see straightened out. Perhaps you will permit us to respectfully point these out.

In that portion of the article where the writer discusses superchargers, he makes the remark that "we have only the racing high pressure system to boost up power at peak crankshaft speeds and proprietary systems operating inefficiently at pressures of a few pounds per square inch." Now this is hardly the case; the supercharger installations carried out by this firm are most efficient in operation, and although in most cases we arrange for the maximum pressure not to exceed 5 to 7 pounds per square inch, this boost pressure gives an increase in B.H.P. of approximately 36 to 40 per cent., from which it will be seen that, far from being inefficient, this system in conjunction with a Centric supercharger is *most* efficient.

Mention is made in the article of the twin Centric supercharged Frazer-Nash and the supercharged Rapier. Whilst Frazer-Nash use fairly high pressure, in the case of the Rapier, a Centric supercharger is used operating at a pressure of approximately 7 pounds per square inch, and the remarkable performance of this car again proves the efficiency of the system.

With reference to the Brough Superior we should like to point out that this car, contrary to the description given in the article, does not use a centrifugal type supercharger, but is fitted with a Centric supercharger operating between the carburetter and the engine.

You will see from the enclosed curves of a well-known proprietary engine used in a popular make of car the improvement gained by supercharging, and the fuel consumption curves are indicative of the high efficiency obtained.

We are, yours etc.,

CENTRIC SUPERCHARGERS LTD.

* * *

Bow Lane,
Fishergate Hill,
Preston, Lancs.

NOTE.—We agree that certain proprietary layouts have been produced which give quite high manifold pressures, but it is still possible that when such pressures are applied to the average production engine it is desirable to modify valves, pistons, and gaskets to ensure absolute reliability, which increases the cost of conversion.

Our contributor paid tribute to the 30 m.p.g. fuel consumption obtained from an M.G. Midget effectively supercharged with a Centric installation. We apologise for the error in connection with the type of supercharger used in the Brough-Superior, which is a Centric compressor driven by triple belts.

The author informs us that the fourth centrifugal-booster exponent that he had in mind was, in fact, Duesenberg—Ed.

* * *

A SUNBEAM ENTHUSIAST

Sirs,

Having read your article "Testing a Second-Hander" in the December issue of MOTOR SPORT and your constant references to the inexhaustible qualities and charms of those three noble old makes, the 3-litre Bentley, the 30/98 O.E. Vauxhall and the 3-litre Sunbeam, I feel I cannot let the occasion pass without some comment and further compliments to these old cars.

As an owner of a 3-litre Sunbeam, and in the past, an Invicta, both being purchased under three figures I consider myself entitled to write a few words.

The Sunbeam is a 1926 model. It has admittedly only 24,870 miles to its credit, having once been the property of a wealthy gentleman whose stable included four other cars. For some reason it lay in its garage for six and a half years with every plated part heavily coated with vaseline.

When I purchased it I had fears that I should never start it in the winter months as it is practically impossible to pull the engine over compression when cold and even worse when hot. Since then I have had reason to dispel all doubts about such fears. Even when left a week in a dampish extremely airy garage it will fire upon the first depression of the starter. The same happens even under ice-cold weather. Its top speed is about eighty and will clock sixty-five in third, whilst its acceleration is well in excess of many modern so-called sports-cars of equal or more horse-power.

On a long journey the petrol consumption works out as far as I am able to judge by gauge readings and trip measurements at just 24 m.p.g. Oil is about 12-1500 but this is only a rough figure.

And now about maintenance. Every vital part is thoroughly accessible and being an impoverished owner I do all minor adjustments myself. Up till now I have only had greasing to do because the engine seems to run without attention, not even a plug has given trouble.

And so was the Invicta. Always started instantly; consumed one gallon of petrol for each twenty miles and required merely one de-coke during the twelve months I owned it. That was a 1927 model.

The same too with an Alvista model Alvis. This was a 1927 model. Regarded by the trade as a sticky model. Yet it merely cost 10/- for repairs in nine or ten months, one being valve adjustment, the other a steering adjustment.

In the summer of 1935 I was invited to try an O.E. 30/98, and it was only the contemplation of an expensive cruise which changed my mind about buying it. In a trial run this car clocked 90 m.p.h. This was I believe a 1924 or 1925 model, and when I tried it it was as tight as a drum with tremendous life. All the transmission points, engine and gearbox, were externally dry, yet this car had, even the vendor admitted, 82,000 miles to its life. I fear that I missed a lot of real motoring when I refused a not altogether disappointed owner the chance to buy this fine old car.

I have discoursed at great length and conveyed nothing much more than I very much admire the old classical type of slow-revving car and advise the purchase of one of these type in preference to these little buzz-boxes which seem to be rusting themselves to an early extinction.

In conclusion I wish MOTOR SPORT every success in the New Year.

I am, yours etc.,

L. F. S.

Horsham,
Sussex.

HERE and THERE

By "Camshaft"

High-Speed "Black Out"

Mention of Avus reminds me of a pretty problem which might conceivably occur in future on the Berlin circuit. As you probably know, the two loops which link the parallel six-mile straights have now been given a steep banking, about the same as Montlhèry. With independent springing, the G.P. cars ought to be able to enter these curves (remember that they reach 200 m.p.h. on the straights) without much slackening of speed. The question is, will this speed be high enough, and the sudden change of direction abrupt enough, to cause the drivers to experience a momentary "black-out," as do the pilots of modern fighter aeroplanes, unless they are in perfect physical condition?

Anyway, Avus ought to be absolutely terrific next year, with tyres as the limiting factor.

Montlhery in Trouble

The finances of Montlhèry have never been particularly stable, and now they have apparently reached a crisis. Without a bumper French Grand Prix attendance to carry them through the year, the authorities are beginning to feel the rigours of an economic blizzard. Record-breaking, too, has been very slack just lately.

It is difficult to restrain oneself from saying "Serves you right!" when one thinks of the folly of converting that time-honoured French Grand Prix into a race for sports-cars. The organisers were determined that the public would like it—and they didn't. The argument that the French people are not interested in a Grand Prix in which the French cars are outclassed does not hold water. Listen to the comments of a typical French motor-racing crowd and you will find that their favourites are Nuvolari and Chiron (on whatever car he happens to be driving).

Two plans are suggested to save Montlhèry from the auctioneer's hammer. One is for the Government to take over the whole place, lock, stock *and* barrel, and the other is for the Government to subsidise the owners.

Italian Snippets

Biondetti has given up his plans of building his own G.P. racer on Auto-Union lines and will probably drive for the Scuderia Ferrari next year.

Villoresi and Cortese are teaming up with another driver as yet unnamed to form a scuderia of their own. Maseratis of 1,500 c.c. and 1,100 c.c. will be their vehicles.

A boom in independently-sprung 1,500 c.c. Maseratis is reported from Bologna. People don't forget the astonishing ease with which Trossi out-distanced the E.R.A.s on the Nurburg Ring at the Eifel meeting. That car went round the corners like an eel.

Odd Spots

All the R-type M.G. Midget racing-cars with the McEvoy-Pomeroy double overhead camshaft cylinder heads have changed hands. The one raced by K. D. Evans is now owned by Aian Bainton.

The Zoller-supercharged 1½-litre E.R.A. is said to develop more power than the 2-litre jobs, in spite of the compressor absorbing some 45 b.h.p.

Work is proceeding at the Delage works, under M. Lory, on two new chassis with independent front suspension and De Ram shock-absorbers, ordering by "B. Bira." Into these chassis will be installed the 1½-litre Delage engines, out of the ex-Seaman car and the spare one retained by Seaman, respectively.

The engine out of Capt. J. C. Davis's Delage will be used as a reserve unit.

Laurence Pomeroy, Junr., is busy in Germany with development work on the new Velox variable delivery supercharger, which will be tested on the Nurburg Ring, in a 1.7-litre Mercédès-Benz.

M.G. Racing Successes for 1936

Privately owned M.G. cars have won twenty-four races in various parts of the world during the past season. Fifteen wins have been scored in this country, two each in Ireland, Czechoslovakia and Austria and one each in Belgium, France and South Africa.

M.G. cars won 25 per cent. of the races which took place at Brooklands during the year. With a total of eleven wins at the track, M.G. may be considered as one of the most successful cars at Brooklands for 1936.

The following are some of the successes of major importance scored during the season.

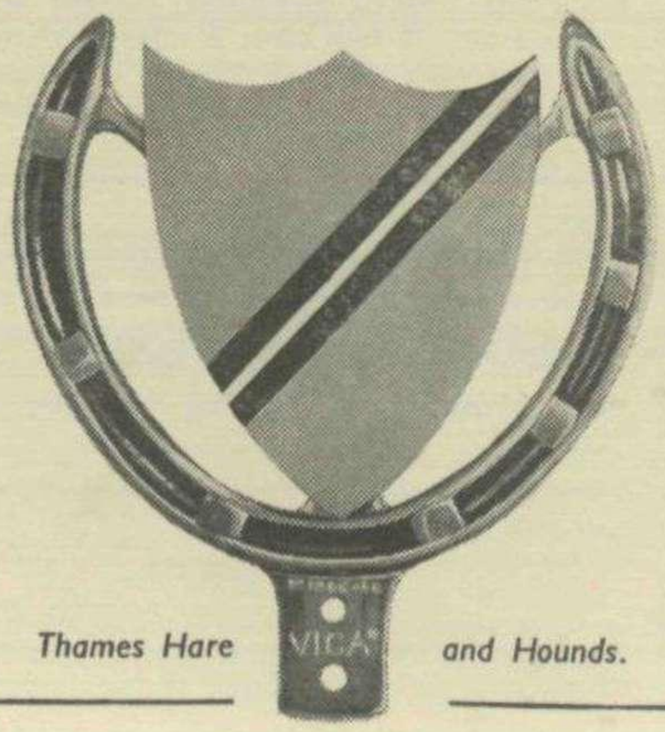
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HAS RACING CEASED TO BENEFIT THE UTILITY MOTORIST?

IS THE RACING-CAR OF TO-DAY STILL THE TOURING CAR OF TO-MORROW?

Sooner or later any one who is interested in the sporting side of motoring asks himself to what extent racing has been of benefit to the evolution of the utility car. How much does the normal car user really owe to racing? In the first post-war motor-racing classic, "The Lure of Speed," the late Major Sir Henry Segrave devoted a chapter to answering this question. Segrave pointed out the efficiency of touring engines of 8 to 12 h.p., the general adoption of aluminium pistons for ordinary power-units, the reliability and quietness of overhead valve operation, the perfection of four-wheel braking, the universal use of detachable wheels, the long life of valves and valve seats and the lowering of the centre of gravity of touring chassis as valuable factors owing their origin or rapid development directly to racing. If any further proof is needed of the benefits conferred on the every-day car-user as a result of racing we have only to consider the truly remarkable and extremely valuable progress made in tyre construction. The accident at Fanoe in 1924, when a tyre, thrown from Malcolm Campbell's 350 h.p. Sunbeam when that car was travelling at over 140 m.p.h., struck and killed a boy spectator, was largely responsible for the Dunlop Rubber Tyre Co. Ltd. commencing a serious investigation into the whole tyre problem.

To-day punctures and bursts are an extremely rare occurrence, even in racing, and you and I are able to tour 20,000 miles or more on a single set of covers. Racing has also been responsible for many other valuable lessons, from direct knowledge relating to individual power-units and chassis, to more abstract applications concerning metallurgy, detail technicalities, streamline formation, lightweight construction, and so on. Furthermore, every time a car is prepared for competition it is reasonable to suppose that more than one workman is encouraged to give of his best, and even if no fresh knowledge is acquired, the result cannot fail to be of value. Clearly, racing has, in the past, contributed very materially to the evolution and perfection of the ordinary chassis. Indeed, it is difficult to know what sort of motoring we should be enjoying to-day had there been no racing contests to stimulate and teach the world's designers and technicians.

But has racing continued to contribute these vital lessons during the past few seasons? Or is the value of racing declining? I have quoted from "The Lure of Speed" in defence of racing. However, going more deeply into the matter reveals that Segrave mentioned other factors in his book, which he regarded as about to be widely enjoyed by ordinary drivers thanks to the lessons of racing-car construction. These features of design were: the straight-eight engine; large diameter o.h. valves and central sparking plug in a hemispherical combustion chamber; and supercharging. Segrave emphasised that the first two features were already coming into the utility car field, and that, while supercharging, except in one conspicuous instance, was restricted to racing vehicles, "it is quite certain that this will not always be the case." That was nearly nine years ago. To-day there is certainly some revival of interest in multi-cylinder power-units, but "V" construction seems likely to be of greater use in the immediate future than the in-line layout, and in general the four-cylinder engine has of recent years more than held its own against the "six." For racing the eight, twelve, and sixteen cylinder engine provides designers with a means of keeping combustion chambers compact and reciprocating parts light. Problems of balance, distribution and space are easily combated. For utility purposes these problems cannot be banished so easily and they militate against the widespread adoption of multi-cylinder in-line engines for their qualities of even torque and rapid acceleration.

The single or twin o.h. camshaft operation of valves in hemispherical combustion chambers to-day figures in not more than six British-built production engines. On the Continent the arrangement is scarcely more popular. Yet cam-noise is no longer the objection, as the latest Bugatti testifies. Maximum power output for a given cubic capacity is not the sole requirement of a touring engine, in which first cost and ease of maintenance are of considerable importance. For racing purposes it is desirable to use the highest possible compression ratio, assisted by "dope" fuels, to burn the charge as efficiently as possible, to conduct away surplus heat from internal parts and to reduce valve-gear inertia to a minimum. Consequently, the true form of hemispherical combustion chamber and twin o.h. camshaft valve actuation, that were featured in the Bugatti, Sunbeam, Fiat and Darracq racing-cars of Segrave's day, still figures in the specifications of the Alfa-Romeo, Bugatti, Mercédès-Benz, and Maserati Grand Prix cars of 1936.

So far as supercharging is concerned, eminent engineers had predicted the widespread adoption of this essentially racing development to touring engines long before Segrave wrote his book, and at frequent intervals since they have continued to stress the various ways in which every-day motoring must benefit from the correct application of forced induction. The fact remains that on the British market to-day there are only nine makes of car offered in supercharged form. This number includes three cars with essentially American-pattern low-pressure boosters and the Mercédès-Benz, which Segrave referred to in 1928 as the one conspicuous instance of supercharging applied to the standard car; which marque originally had appeared in this form before using the supercharger for its racing models. Certainly quite a number of existing engines have been fitted with proprietary superchargers to individual requirements, but this has resulted from interest stimulated by racing designs, and not from knowledge handed on from racing, which was expected to hasten the adoption of engines built for forced-induction conditions and bringing out all its advantages to the ordinary driver.

The important aspect is that of the relation between features developed by racing and the extent to which the motoring public benefits from such features. Clearly, items such as four-wheel brakes, reliable tyres and tubes, aluminium pistons, detachable wheels, overhead valves and low chassis frames have come into general use and contribute to the motoring pleasure of a very large number of car users. Whereas the eight-in-line engine, the hemispherical head and the supercharger are features of design employed by only a few designers and, moreover, they figure chiefly on cars which sell in relatively small quantities.

Those items of specification that have passed into general use may be said to owe their rapid development to pre-war and early post-war racing. On the other hand, those items which are still regarded as very advanced practice came into being as a result of building racing-cars for contests held under the limited cylinder capacity ruling, which finally specified an engine size not exceeding 1½-litres. This condition put a premium on extremely high crankshaft speeds and a high degree of volumetric efficiency and developed features that found no place in the sphere of utility car design. Apart from the items already discussed, oil radiators, ball and roller bearings, separate cylinders, ultra light con-rods and other features introduced during the period have shown no sign of being handed on to the every-day motorist.

To be continued in the February issue.

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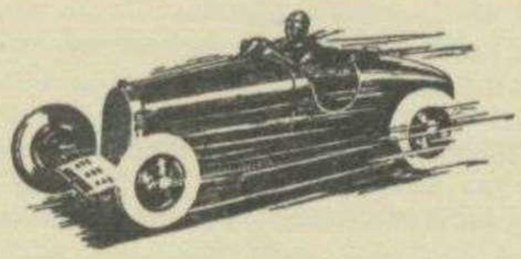
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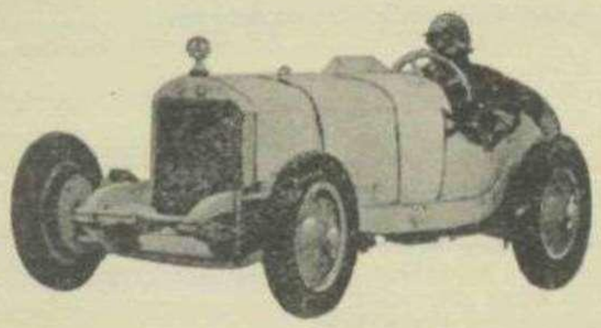
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