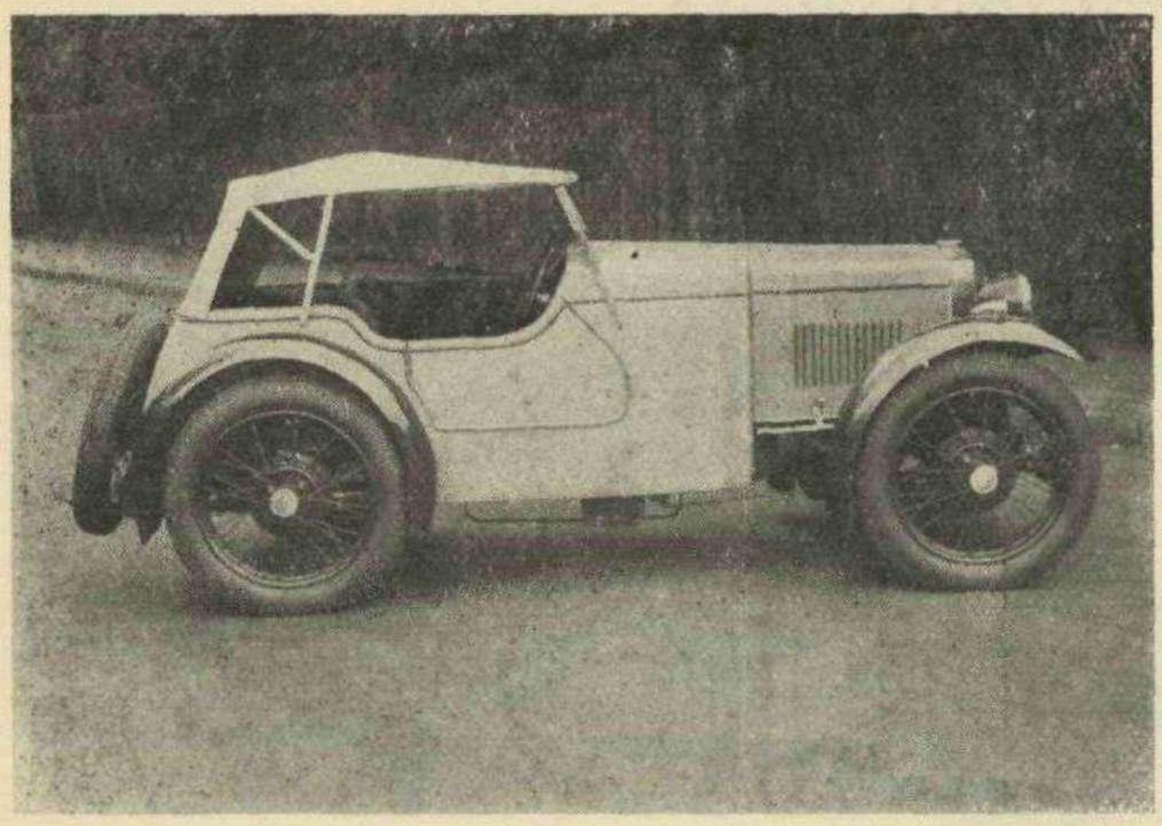
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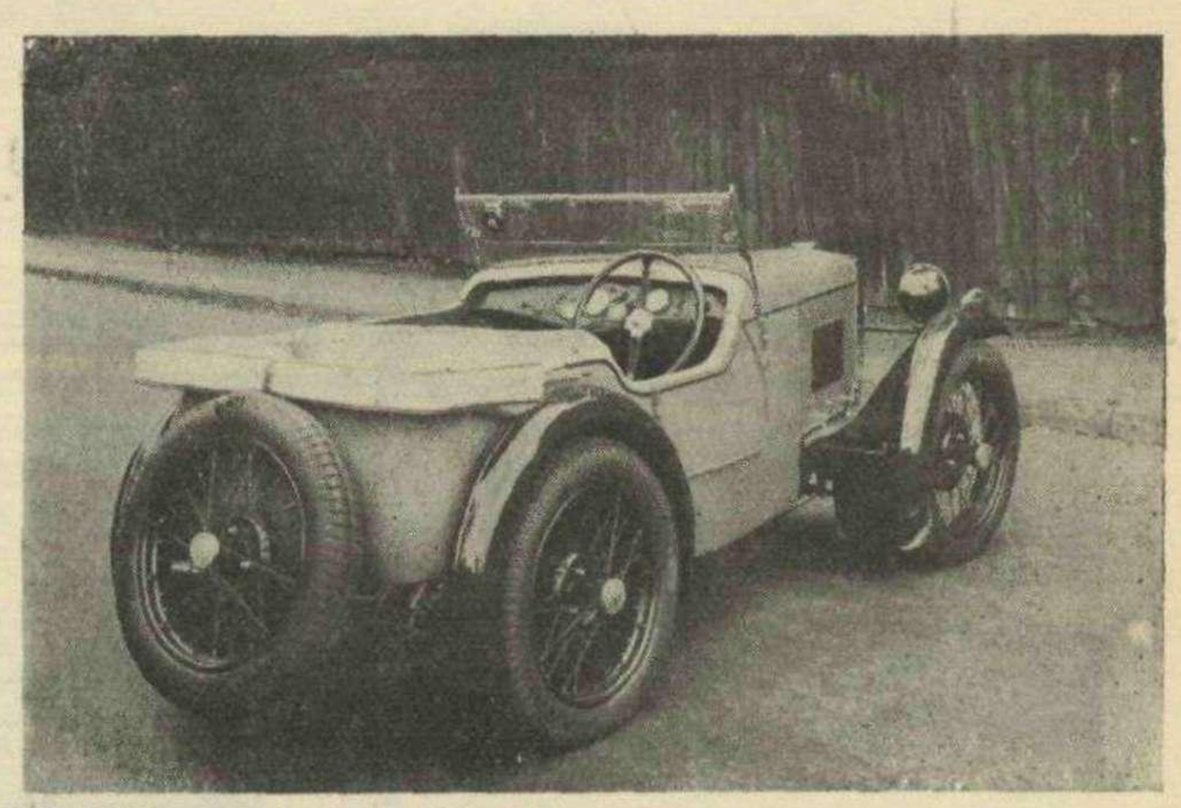


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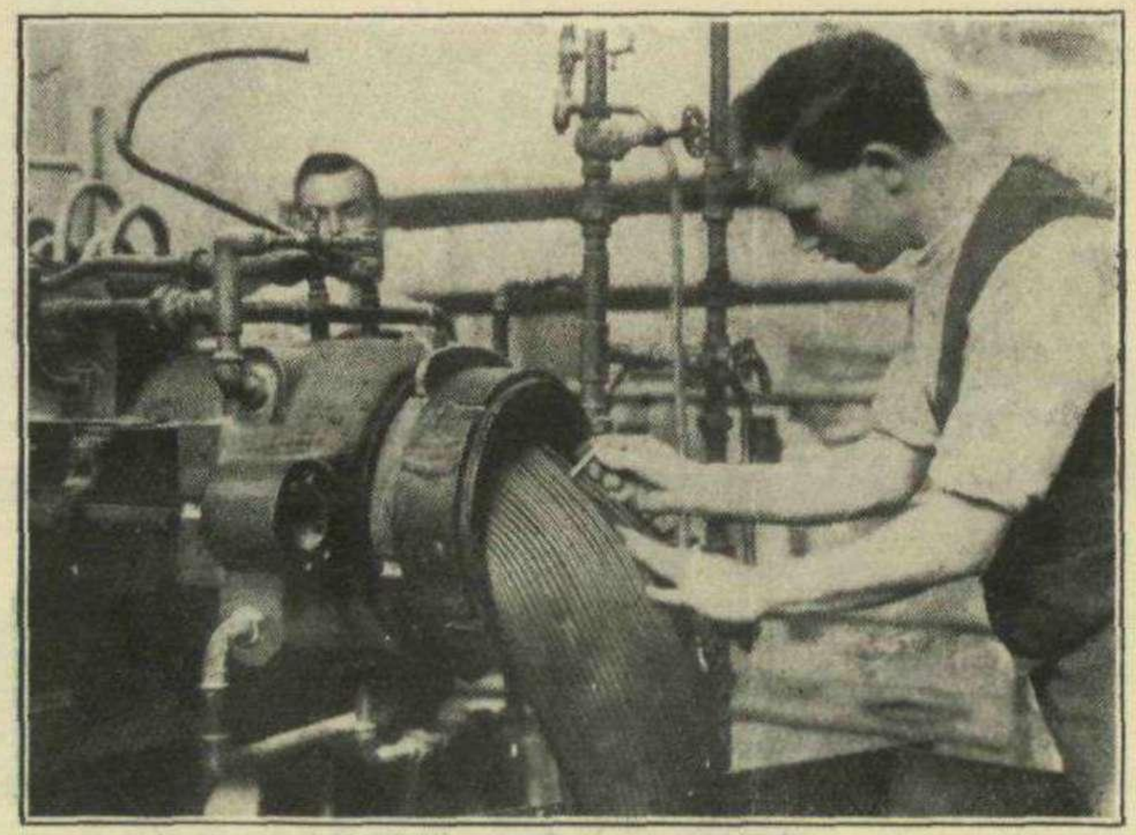
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INCORPORATING THE BROOKLANDS GAZETTE

JOINT EDITORS { *GRENVILLE G. O. MANTON.*
*W. S. BRAIDWOOD, B.A. (Mech. Sc.) Cantab.*

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39, VICTORIA STREET, LONDON, S.W.1
Telephone: Victoria 5218.

# The Way of Things

## The New Zealand Record Attempt.

AT the time of going to press, preparations have been completed for the attempt to break the world's land speed record on 90-mile Beach, New Zealand. The "Fred H. Stewart Special," as Mr. Norman Smith's car is designated, has now been completed, and an attempt on Sir Malcolm Campbell's record of 246.09 m.p.h. is to be made as soon as circumstances are favourable. The design of this machine is largely based on the famous "Golden Arrow" in which the late Sir Henry Segrave raised the record to over 231 m.p.h., and as the latest car is powered with the famous supercharged Schneider Trophy-type Napier engine, as used in 'Bluebird,' there seems every chance of a good speed being put up. Whether the attempt will be successful depends on so many factors that it would be rash to hazard an opinion, and we can only wish Mr. Smith and his hard-working supporters the best of luck, and freedom from untoward incidents.

## The Big Car Classes.

A perusal of the entry lists for the first classic of the season, the J.C.C. Double Twelve hour race, shows that the classes for large sports cars are distressingly void of competition. With the withdrawal of Bentleys from official participation in racing, the big class lost one of its chief supporters, and it seems as if newcomers to racing are shy to enter in this category. On the other hand the 750 c.c. class is now fuller than it has ever been. This seems to show a tendency for the fading out of the larger cars from the sports car world, but we cannot really believe that this is a true indication of the trend of affairs.

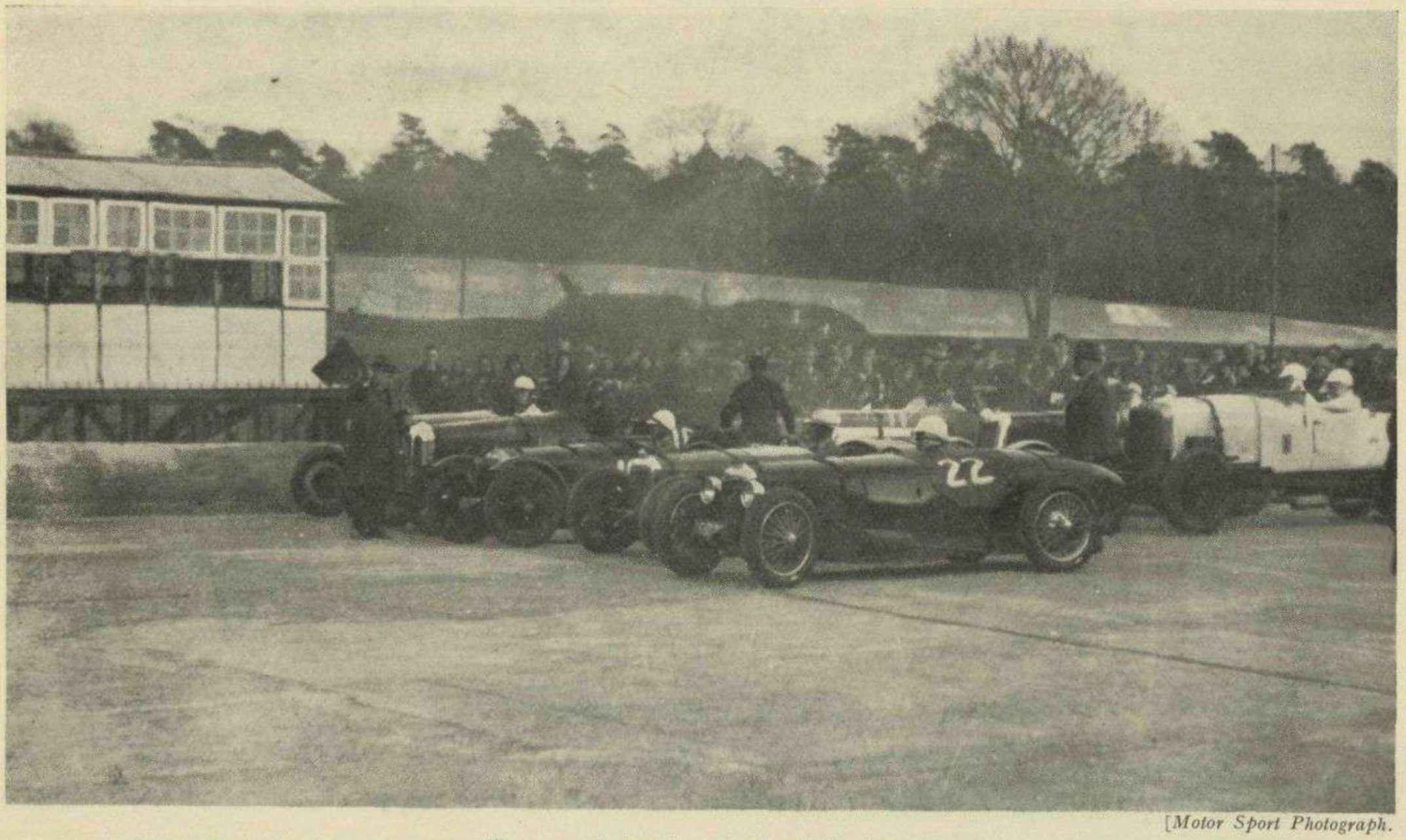
To the newcomer to racing the smaller classes are attractive from many points of view, especially when one considers the wonderful performances recently put up by small engines. To many the low cost of these cars will appeal, and it is obvious that the small classes will always be the greatest numerically. To the average owner, however, the medium sized car is always popular for general road work, while the man who has once experienced the feeling of unlimited power and speed which only the car of six to eight litres can give, will, whatever his means, maintain that life can hold no greater joy than a turn at the wheel of such a motor car. Therefore, though, entries in the main events may be short of giants, this class will never pass out of existence.

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# B.A.R.C. OPENING MEETING.

## OLD AND NEW HANDS AT FIRST EVENT.



[Motor Sport Photograph.

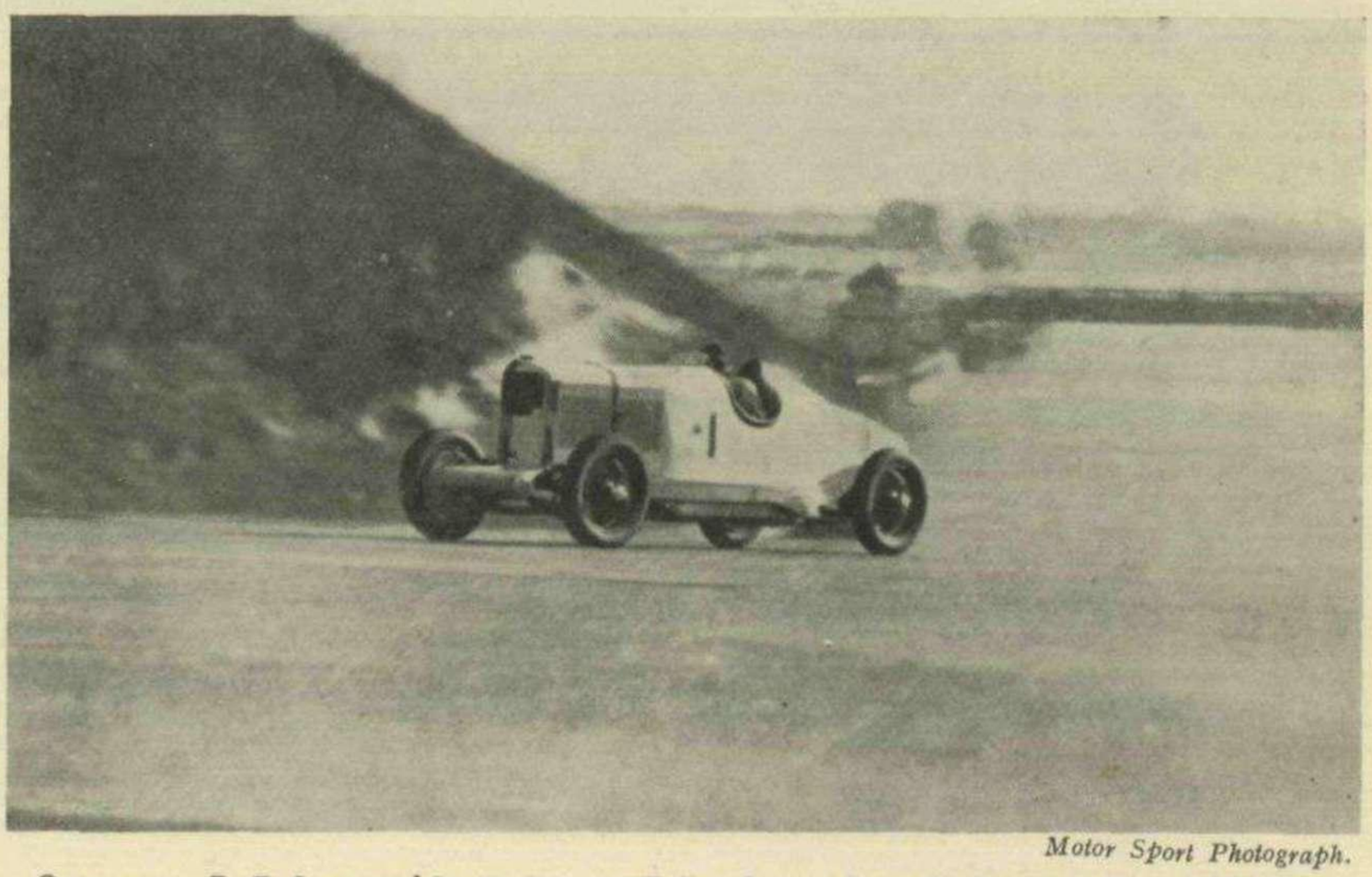
*The start of the Mountain Speed Handicap.*

THE B.A.R.C. are certainly lucky with their weather, and the Arctic conditions of a few days before gave place to a sunny week-end, and the attendance, although not very large in the public enclosure, was quite good for a first meeting. The racing was interesting to regular habitués, but owing to rather small entries, lacked some of the spectacular appeal of some of the bigger meetings. Also many of the new hands, and some of the old, were making use of the meeting to feel their feet as regards their handicap, so that performances were rather difficult to gauge correctly, and even the ever-vigilant and all-knowing "Ebby" was unable to stage as close results as usual.

New season innovations consisted chiefly of an influx of observers and marshals, who scattered themselves round the track to keep an eagle eye on drivers who might be tempted to depart momentarily from the rules of safety first. The resulting effect gave a somewhat similar atmosphere to the first few days of the new Road Act and its traffic police, but it apparently had the desired effect, and everyone behaved with due circumspection, and none fell foul of the watchers. It is, of course, an admirable scheme to impress drivers with the need for care, provided it is not carried to excess. We could not help feeling that the attitude of some of the old hands is getting just a shade patronising, which does not tend to encourage newcomers.

The day opened with a demonstration by A. F. Ashby that he had not been idle during the off season, and his very neat Riley got going well, ran past Twist's Amilcar and Horsman's Triumph to win fairly comfortably. Vernon Balls was on scratch with one of the latest "90" Talbots with a full four-seater touring body, and the car and crew presented a very neat turnout with their green colour scheme. It was certainly a great compliment to the car's capabililtes to occupy the position of honour, but at the same time it was one of those compliments which can be carried too far, and he really did very well to run into fourth place.

The Senior Short Handicap which followed let Selby and his 2-litre "Bug."



Motor Sport Photograph.

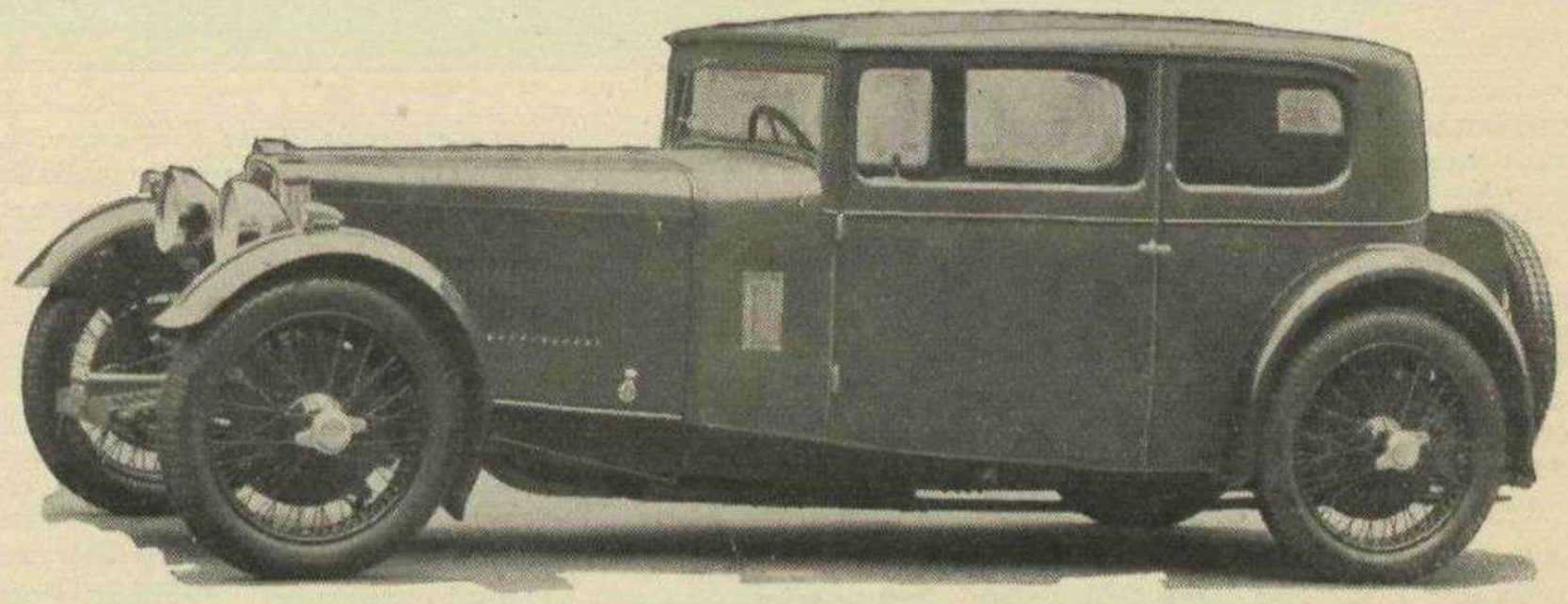
*Out again. B. E. Lewis and his single-seater Talbot flashing by in the Mountain Racing Handicap.*

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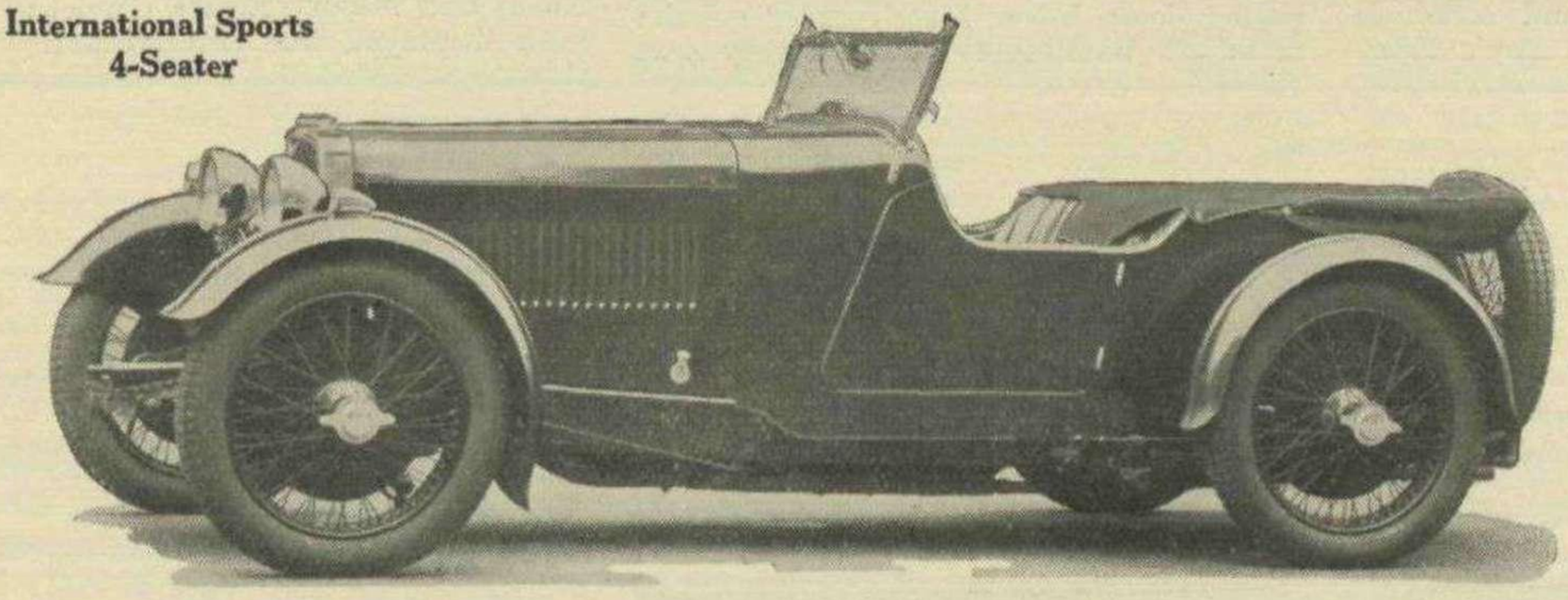
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*B.A.R.C. OPENING MEETING—continued.*

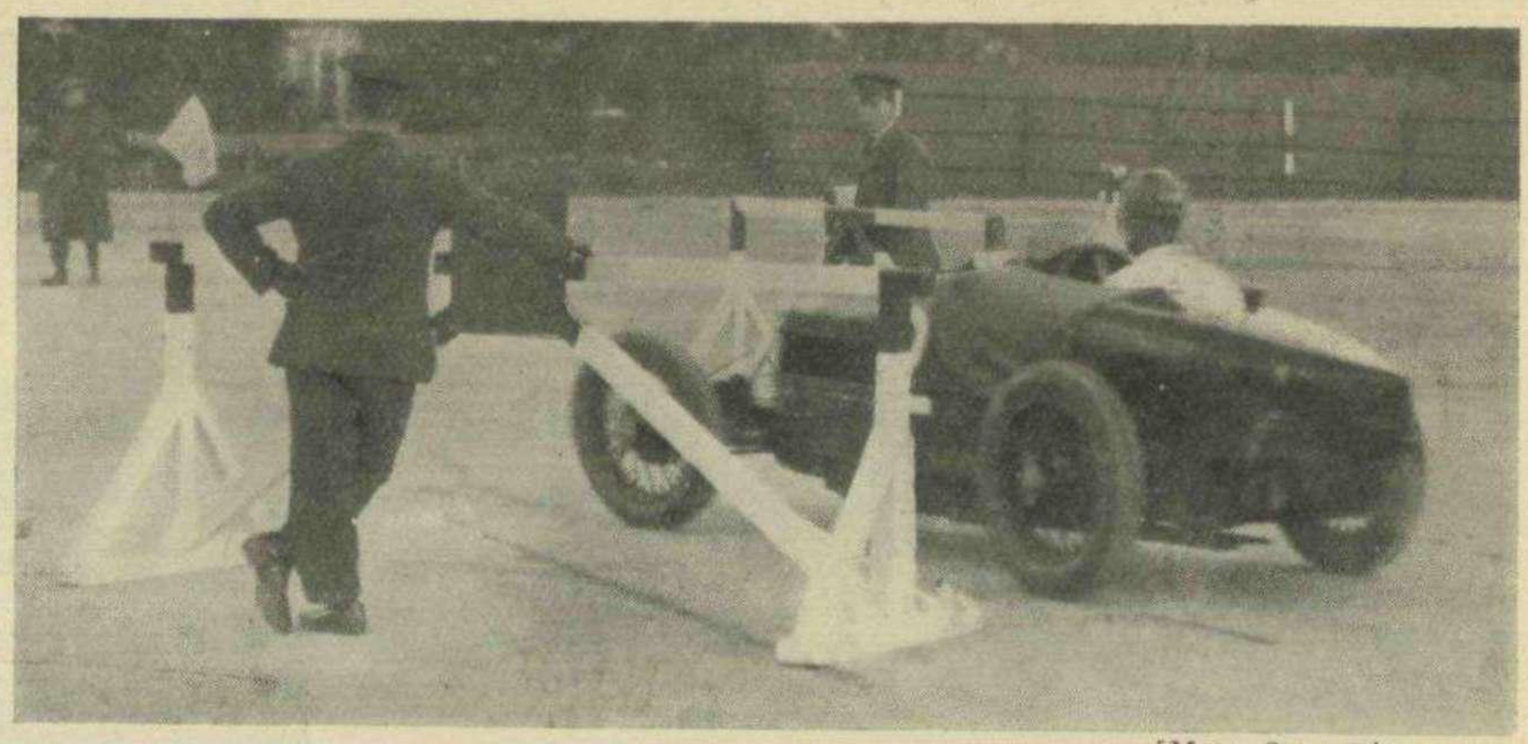
into an easy win by about a quarter of a mile. Two old 30-98 Vauxhalls were running in this race, and Munday brought one of them home second. The other, driven by Meeson, failed to get going, however, and third place went to L. P. Driscoll, whose Lea-Francis had a particularly venomous crackle.

The Lightning Short Handicap suffered from the loss of the Thomas Special, which had gear-box trouble, and J. F. Field's Talbot, which scratched, and interest centred on John Cobb with the big Delage. Bouts on the Sunbeam got away well, but never looked like holding his position, and Cobb came past and won easily at the best speed of the meeting, 111.37 m.p.h.

The fourth race was the Mountain Racing Handicap, which was dull except for a pretty exhibition of driving by B. E. Lewis, who brought the single-seater Talbot through from scratch to win comfortably. The Talbot ran silently and steadily and was very fast indeed, but the race, as such, was dull, although Lt. Clover did his best to liven things up by passing backwards through the barriers at the Fork hairpin, but continued with a slightly dented stern and increased caution.

The longer sprint races followed, and in the Junior Long Handicap Selby was rehandicapped after his previous win, but this did not deter him, and although Horsman's Triumph and Ashby's Riley held him off for two laps, he came past to win comfortably at 99.32 m.p.h.

The Senior Long provided an interesting race for second place between B. E. Lewis on the Talbot and Craig's 2-litre supercharged Bugatti. Starting from the same mark, the "Bug." got slightly ahead, but for the rest of the race there was nothing in it. Lewis caught up slightly, but could not actually make it, and the two cars came through the field together into second place a few yards apart, just failing to catch up Owen-Williams' 3-litre Bentley, which went very well and averaged 84.77 m.p.h.



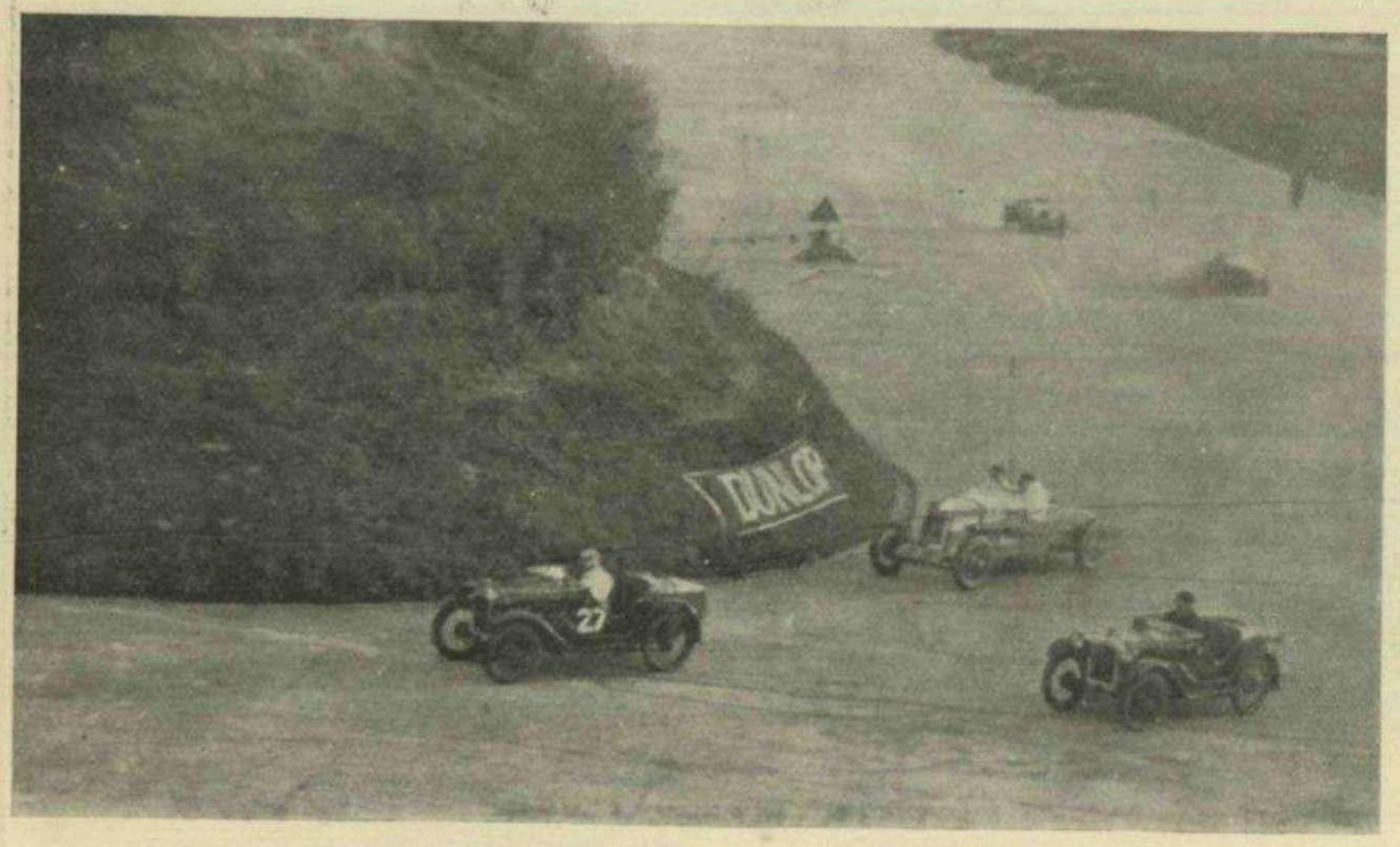
[*Motor Sport Photographs*

*After waltzing tail-first through the barriers at the Fork corner, Lieut. J. H. P. Clover (Bugatti), continues. The unperturbed attitude of the gentleman on the left indicates that the incident was not an alarming one. The flag wagger in the background is Earl Howe.*

The Lightning Long saw Cobb's Delage once more on the line, but rehandicapped because of his previous win. This gave Bouts (Sunbeam) a chance which he did not fail to grasp, and drawing quickly away from Carlson's Bentley won easily by about a quarter of a mile. Cobb made a fine effort to catch up, and coming up behind Grant's Bugatti on the last lap, pulled down below him, coming off the members' banking to snatch a very neat second.

In the final race of the meeting, the Mountain Speed Handicap, most of the regular exponents were in the reserves owing to excess of entries. The entry fee for this event was 2 guineas in place of the usual 5 guineas, and the result of this may, we hope, lead the authorities to consider reductions all round.

After a horde of M.G.'s and Austins had been turned loose into the fray, the larger stuff followed, and it soon became evident that W. G. Iliffe (Riley) was going very fast, and he took the lead at little over half distance and held it to the end. The chief interest of the race lay in the fine scrap between Delaney's Lea-Francis and A. F. Agabeg's Salmson, a representative of the Cambridge Auto Club, who looks like doing well this season. The two cars remained almost level for the full distance, but the Salmson just managed to get home in front. Other good performers were Benn-Hughes (Frazer-Nash) and Major Cairnes (Invicta), who both displayed fine acceleration. With this event ended the first meeting and a good opening for the new season.



*M. C. Lewns (Austin) leading two other competitors at the end of the finishing straight.*

## RESULTS.

**Lincoln Junior Short Handicap (6½ miles).**

| | | H'cap. |
|---|---|---|
| 1. | A. F. Ashby, Riley (1,083 c.c.) ..... | 0m. 26s. |
| 2. | B. P. W. Twist, Amilcar, S. (1,093 c.c. | 0m. 10s. |
| 3. | V. E. Horsman, Triumph (832 c.c.) | 1m. 6s. |

Won at 88.43 m.p.h.

**Lincoln Senior Short Handicap (6½ miles).**

| | | |
|---|---|---|
| 1. | T. V. G. Selby, Bugatti (1.990 c.c.) ... | 0m. 40s. |
| 2. | R J. Munday, Vauxhall (4,234 c.c.) | 0m. 28s. |
| 3. | L. P. Driscoll, Lea-Francis, S. (1,496 c.c.) ..... | 0m. 34s. |

Won at 94.82 m.p.h.

**Lincoln Lightning Short Handicap (6½ miles).**

| | | |
|---|---|---|
| 1. | J. R. Cobb, Delage (10,688 c.c.) ... | scr. |
| 2. | E. L. Bouts, Sunbeam (4,914 c.c.) ... | 0m. 35s. |
| 3. | J. V. Williams, Bentley (4,398 c.c.) | 0m. 35s. |

Won at 111.37 m.p.h.

**March Mountain Racing Handicap (12 miles).**

| | | |
|---|---|---|
| 1. | B. E. Lewis, Talbot (2,276 c.c.) ..... | scr. |
| 2. | D. G. Evans, Bugatti, S. (1,990 c.c.) | 0m. 25s. |
| 3. | "R. Ormonde," Austin, S. (749 c.c.) | 1m. 25s. |

Won at 61.92 m.p.h.

**Lincoln Junior Long Handicap (9 miles).**

| | | |
|---|---|---|
| 1. | T. G. V. Selby, Bugatti (1,990 c.c.) ... | owes 5s. |
| 2. | V. E. Horsman, Triumph (832 c.c.) | 1m. 30s. |
| 3. | A. F. Ashby, Riley (1,083 c.c.) ..... | 0m. 20s. |

Won at 99.32 m.p.h.

**Lincoln Senior Long Handicap (9 miles).**

| | | |
|---|---|---|
| 1. | R. Owen-Williams, Bentley (3,031 c.c.) | 1m. 6s. |
| 2. | W. Y. Craig, Bugatti, S. (1,496 c.c.) | 0m. 5s. |
| 3. | B. E. Lewis, Talbot (2,276 c.c.) ..... | 0m. 5s. |

Won at 84.77 m.p.h.

**Lincoln Lightning Long Handicap (9 miles).**

| | | |
|---|---|---|
| 1. | E. L. Bouts, Sunbeam (4,914 c.c.) ... | 0m. 47s. |
| 2. | J. R. Cobb, Delage (10,688 c.c.) ..... | owes 15s |
| 3. | Lt. C. R. A. Grant, R.N., Bugatti, S. (2,263 c.c.) ..... | 0m. 27s. |

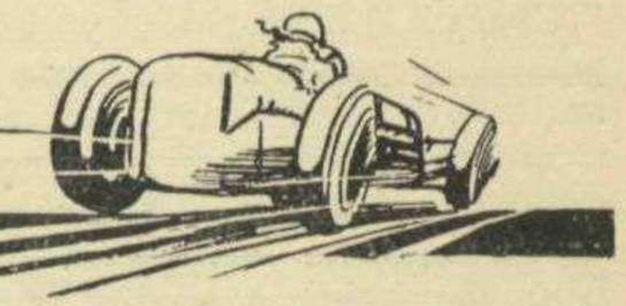
Won at 101.24 m.p.h.

**March Mountain Speed Handicap (12 miles).**

| | | |
|---|---|---|
| 1 | W. G. Iliffe, Riley (1,083 c.c.)..... | 1m. 43s. |
| 2. | A. F. P. Agabeg, Salmson, S. (1,090 c.c.) ..... | 1m. 0s. |
| 3. | C. T. Delaney, Lea-Francis, S. (1,496 c.c) ..... | 0m. 40s. |

# Rumblings

## BOANERGES



**Brooklands Again.**

WELL, Brooklands has opened once more, and everyone is hoping that this season will be one of the best ever. The first meeting was hardly particularly exciting, but the opening meeting very rarely is, and it was certainly interesting. A forecast of the probable trend of events this season was given by the large number of small cars in the Mountain race. The smaller entry fee of 2 guineas produced an entry far in excess of the 15 starters allowed, and a good many of the regular performers of last year had to stand down for this event. It is significant that whenever Brooklands prices are reduced, the number of people prepared to pay the increased price is encouragingly large. All of which points to the fact that the real way to make Brooklands popular is to reduce prices all round.

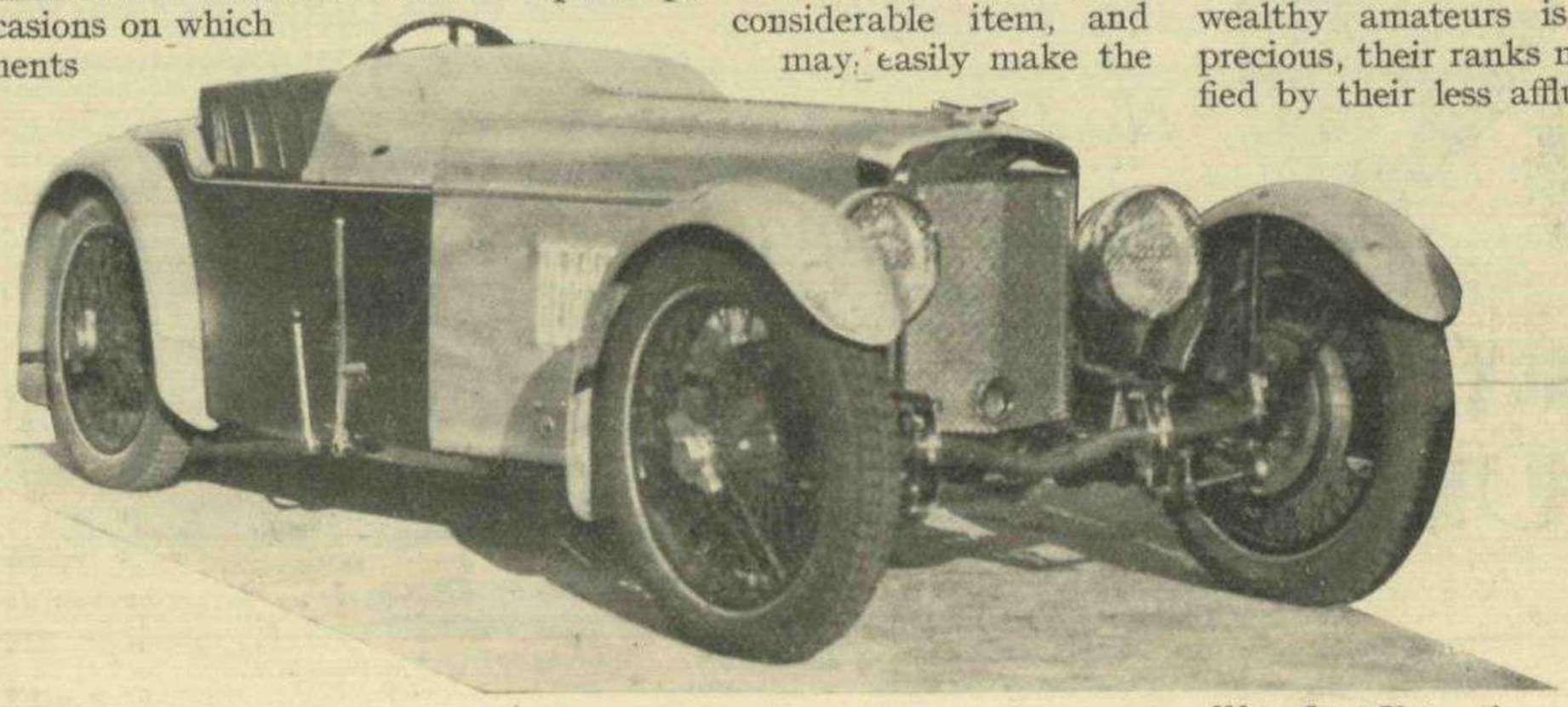
At one time the argument was used that if the price of admission, or of entry for races, was reduced, the revenue of the club would fall off. The occasions on which experiments were tried in this direction have shown that this is far from the case, and now that a sign has been given of entry fees being lowered, the impecunious amateur is beginning to sit up and take notice.

If motor racing is really going to spread, it must be made reasonably cheap. In the old days there were plenty of wealthy men of leisure, who spent all their time, and much of their money, on the sport, but these days have gone, and the future of the sport depends on the enthusiasm of amateurs. However, enthusiasm is no good alone when the actual cost is high, and the only thing to do is to encourage fresh entries by making them financially possible. To the wealthy minority who can who can pay a large sum for a car, and an even larger sum on having it prepared for races, an entry fee of 5 guineas for a race lasting only a few minutes, is nothing. To the man who does his own tuning, and who reckons to make a few pounds cover a large amount of work and special parts, the entry fee is a very considerable item, and may easily make the difference between being able and not being able to race.

The hill climbs and speed trials of the old days were the real happy hunting ground of the amateur, but these events faded out with the last unfortunate climb at Kop Hill, and we now have to depend on the generosity of owners of drives and parks. Forbes, the energetic and efficient secretary of the Cambridge Club, hopes to get one or two more events later in the season of this type, and he can rest assured of enthusiastic support for anything he manages to stage.

I may seem to be harping rather on this money business, but I cannot help feeling the whole future of motor racing depends on keeping it open to as large a field as possible. By this means we shall automatically get the best drivers in the various teams by the simple process of elimination.

All honour and thanks is due to those who have, by spending money freely, kept amateur drivers in the limelight, but as the supply of wealthy amateurs is limited and precious, their ranks must be amplified by their less affluent brethren.



*A Brooklands debutante. The new "Ulster" Frazer - Nash which was seen in the Paddock recently. As good as it looks, it created great attention and favourable comment.*

[*Motor Sport Photograph.*

*RUMBLINGS—continued.*

All this appears to be rather long winded, but as you have gathered by now what I mean is, " Let's have Brooklands cheaper all round, and it will be even more successful ! "

**A New Nash.**

Among interesting sights at the opening meeting was the new " Ulster " Frazer-Nash, which appeared in public for the first time, and was definitely guilty of " causing a crowd to collect." No wonder either, as it is one of the snappiest sports cars we have seen. Apart from the slightly V-shaped radiator, modifications have been made to the chassis. The frame is down swept behind the engine, and carried under the back axle, thus giving a very low driving position and getting the centre of gravity even lower than usual. The car will eventually be finished off in cream and scarlet, but the model at Brooklands has not been entirely completed yet. Quick action filler caps, a very neat dropping windscreen, and all the essential items that go to make the real competition car, are included in the specification, and I gather this car will be seen in the hands of H. J. Aldington in the " round the mountain " events in future meetings.

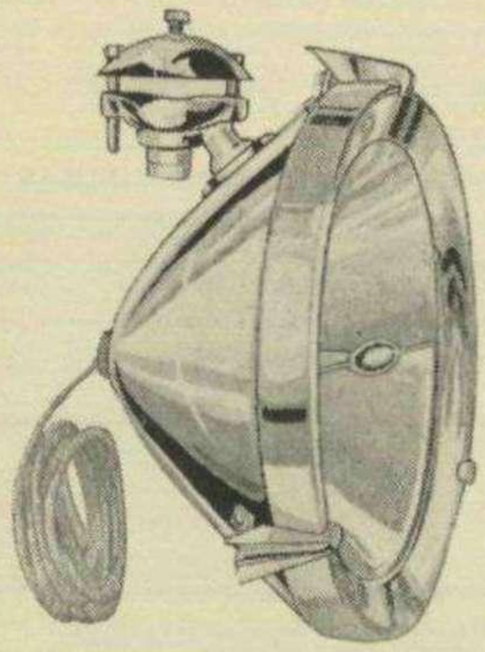
A development of great interest to the sports car community occurred recently, when H. J. Aldington took over the trade and retail sales of Aston-Martin cars. It would be hard to find a greater enthusiast for the pukka sports car than Aldington, and this latest arrangement should do much to increase the well deserved popularity of these two famous 1½-litres, each with slightly varying purposes and appeals, but both having a common ideal, that of a first-class motor car. The all-important 1½-litre class has too few representatives from this country, but those that it has are certainly well worthy of it. Both these makes will be represented in the J.C.C. Double-Twelve, as Aldington has entered 3 cars of each make. It will be remembered that last year Bertelli, the Aston-Martin designer, driving with M. Holder, finished fourth on one of his own cars, while the only two Frazer-Nashes entered both finished well and in perfect condition, which augurs well for this year's event.

**Racing Specialists.**

It is of course quite natural that a racing driver who also does his own work should eventually start tuning and overhauls for others in a less fortunate position. A. R. S. Birkin and W. M. Couper are both familiar names to Brooklands habitués, and they have now formed the company of Henry Birkin and Couper Ltd., with works at Welwyn Garden City.

Another Brooklands driver, D. G. Evans, who met with considerable success in the smaller meetings last year, and who is this year driving a Bugatti, has opened a very well equipped service station and works, named the Bellevue Garage, at Wandsworth Common. This firm are making a speciality of sports car service, and are very conveniently situated for Londoners.


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# Double-Twelve Entries.

The following is the first list of entries so far received for the British Double-Twelve Race which takes place at Brooklands on 8th and 9th of May next. They total fifty.

**CLASS H. (Up to 750 c.c.).**

| Entrant. | Car. | Cyls. | C.C. | Nationality. |
|---|---|---|---|---|
| Sir Herbert Austin | Austin (S) | 4 | 747 | British |
| ,, | Austin (S) | 4 | 747 | ,, |
| ,, | Austin (S) | 4 | 747 | ,, |
| G. H. R. Chaplin | Austin (S) | 4 | 747 | ,, |
| ,, | Austin | 4 | 747 | ,, |
| ,, | Austin | 4 | 747 | ,, |
| ,, | Austin | 4 | 747 | ,, |
| Miss V. Worsley | Austin | 4 | 747 | ,, |
| M. C. Lewns | Austin | 4 | 747 | ,, |
| V. S. Balls | Austin (S) | 4 | 747 | ,, |
| The Earl of March | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| C. J. Randall | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| A. T. G. Gardner | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| ,, | M.G. Midget | 4 | 746 | ,, |
| G. Bradstock | M.G. Midget | 4 | 746 | ,, |
| H. H. Stisted | M.G. Midget | 4 | 746 | ,, |
| J. H. P. Clover | M.G. Midget | 4 | 746 | ,, |
| Hon. Mrs. Chetwynd | M.G. Midget (S) | 4 | 746 | ,, |

(23 cars)

**CLASS G. (Over 750 c.c. and up to 1,100 c.c.).**

| | | | | |
|---|---|---|---|---|
| W. G. Iliffe | Riley | 4 | 1089 | British |
| R. S. Outlaw | Riley | 4 | 1089 | ,, |
| A. F. Ashby | Riley | 4 | 1089 | ,, |
| C. R. Whitcroft | Riley | 4 | 1089 | ,, |
| W. A. Cuthbert | Riley | 4 | 1089 | ,, |
| E. Martin | Riley | 4 | 1089 | ,, |
| B. L. Byrom | Amilcar (S) | 6 | 1097 | French |
| H. Widengren | Maserati (S) | 8 | 1078 | Italian |

(8 cars)

**CLASS F. (Over 1,100 c.c. and up to 1,500 c.c.).**

| Entrant. | Car. | Cyls. | C.C. | Nationality. |
|---|---|---|---|---|
| H. J. Aldington | Aston Martin | 4 | 1493 | British |
| ,, | Aston Martin | 4 | 1493 | ,, |
| ,, | Aston Martin | 4 | 1493 | ,, |
| ,, | Frazer Nash (S) | 4 | 1496 | ,, |
| ,, | Frazer Nash | 4 | 1496 | ,, |
| ,, | Frazer Nash | 4 | 1496 | ,, |
| G. C. Dugdale | Lea Francis (S) | 4 | 1496 | ,, |
| E. N. Oetzmann | Lea Francis (S) | 4 | 1496 | ,, |
| E. Farley | Alvis (S) | 4 | 1482 | ,, |
| A. Methley | Alfa Romeo (S) | 6 | 1487 | Italian |
| J. R. Jeffress | Alfa Romeo (S) | 6 | 1487 | ,, |

(11 cars)

**CLASS E. (Over 1,500 c.c. and up to 2,000 c.c.).**

No entries to date.

**CLASS D. (Over 2,000 c.c. and up to 3,000 c.c.).**

| | | | | |
|---|---|---|---|---|
| A. W. Fox | Talbot | 6 | 2970 | British |
| ,, | Talbot | 6 | 2970 | ,, |
| ,, | Talbot | 6 | 2970 | ,, |
| E. Burt | Talbot | 6 | 2276 | ,, |
| M. C. Morris | Maserati (S) | 8 | 2494 | Italian |
| ,, | Maserati (S) | 8 | 2494 | ,, |

6 cars)

**CLASS C. (Over 3,000 c.c. and up to 5,000 c.c.).**

| | | | | |
|---|---|---|---|---|
| F. H. Cairnes | Invicta | 6 | 4467 | British |

1 car))

**CLASS B. (Over 5,000 c.c. and up to 8,000 c.c.).**

| | | | | |
|---|---|---|---|---|
| The Earl Howe | Mercedes (S) | 6 | 7068 | German |

(1 car)

**CLASS A. (Over 8,000 c.c.).**

No entries to date.

# THE SWEDISH WINTER GRAND PRIX

## 210 Miles Over Ice-Bound Roads

ONE of the most sporting events which has taken place for a long time was undoubtedly the first Winter Grand Prix of the Automobile Club of Sweden, which was run off on 23rd February last. The race was run over the Raemshyltan circuit, which measures 50.2 kilometres, or rather over 30 miles round, and which consists in part of the frozen surface of Lake Ramen and in part of snow-bound roads. This circuit had to be covered seven times, making the total distance of the race approximately 210½ miles.

No fewer than twenty-five entries were received for this exciting event, and consisted of the following cars and drivers :— J. W. Anderson (Chrysler) ; Eric Bake (Buick) ; Clemens Bergstrom (Chrysler) ; E. Borgeson (B.N.) ; Rudolf Caracciola (Mercédès-Benz) ; Karl Ebb (Auburn) ; Olof Groukirst (Otin) ; K. Hansen (Bugatti) ; E. Hillern-Flinsch (Graham-Paige) ; Folke Hjelm (Chevrolet) ; Carl Jonssen (Chevrolet) ; Harry Larsson (Ford) ; N. Menomen (Mercédès) ; G. V. Nordenswan (Tracta) ; Per Nas (Chrysler) ; Nars (Special) ; Anders Olsson (Chrysler) ; Johan Ramsey (Chrysler) ; F. Rasmussen (Ford) ; H. Stenfeldt (Ford) ; K. G. Sunstedt (Oakland) ; Werner Swenson (Hudson) ; K. F. Thelander (Graham-Paige) ; Wiktor Widengren (Mercédès-Benz) ; Tore Wistedt (Chevrolet) ; J. Zanelli (Bugatti).

As soon as the start was given it was apparent that this was going to be a driver's race and that the winner was likely to be the man who had most experience of driving on ice and snow. The Finnish driver, Karl Ebb, took the lead from the outset, on his stripped Auburn two-seater, which looked much more like a European than an American car. Behind him came the Swede, Widengren, on his supercharged Mercédès-Benz, and then Anders Olsson's Chrysler, while the German champion, Rudolf Caracciola, also on a Mercédès-Benz, had to be content with fourth place.

Forty thousand spectators are estimated to have come to see the race, and at times caused considerable uneasiness to the drivers by crowding as close as possible to the course. The fastest stretch on the circuit was a part of the road section where there was a straightaway of about a dozen miles. Here high speeds could be indulged in, but the frozen and slippery corners had to be treated with considerable respect. All the cars used chains or specially studded rubber non-skid tyres, or a combination of both. The pits were located on the ice of the lake and presented at times an animated scene.

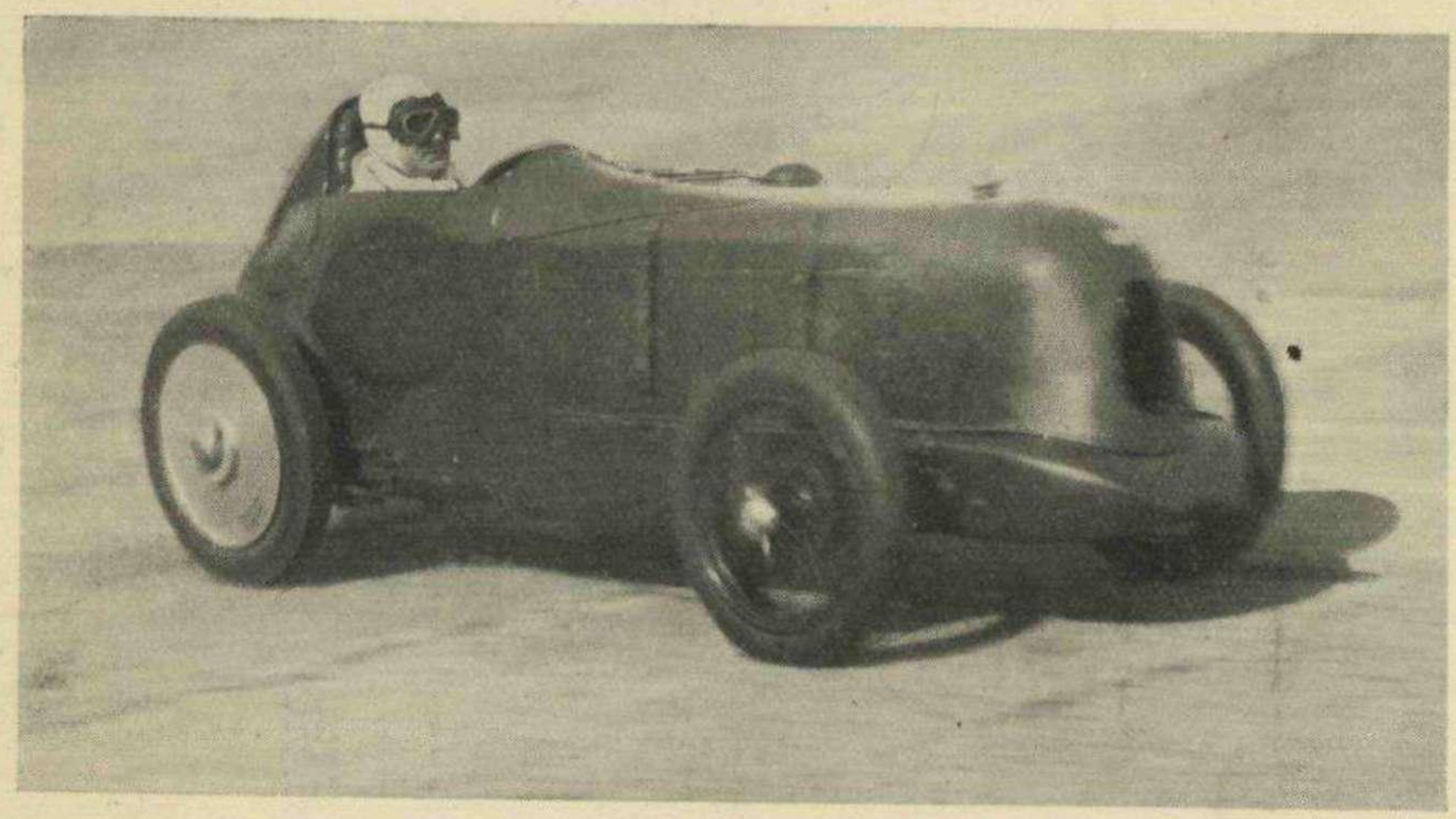
On the second lap Widengren on his big Mercédès-Benz passed Ebb on the Auburn to take the lead. He held it for some time at a tremendous speed until his car got into a bad skid in the snow at one of the corners, left the road and landed in the ditch, badly damaging its gear box. Caracciola in the meantime was being held back by trouble with his wheel-chains, and soon afterwards he fractured a petrol pipe and was put out of the race.

With both the German cars out of it it was obvious that Karl Ebb had the race well in hand, and he finally crossed the line a winner, averaging 43.8 m.p.h. for the full distance.

The final results were as follows :—

1. Karl Ebb (Auburn), 5h. 28m. 52s.
2. Johan Ramsey (Chrysler), 5h. 41m. 52s.
3. Clemens Bergstrom (Chrysler).
4. Harry Larsson (Ford).

# The 4-speed "750" M.G. Midget



THE enormous popularity of the standard M.G. Midget during last year naturally made enthusiastic owners of the same desirous of somehow competing in 750 c.c. events. It is to this class that such a car morally belongs from its type and size, and small car enthusiasts in general will be glad to learn that the new model will be in this class, and will have many other interesting features which will make it a definite 100% sports car, which should ensure a big demand for the new type.

Not only have all the main points of the standard M.G. been well tried out, but the new car, which has virtually been entirely redesigned, has been intensively developed by experiments in the hands of G. E. T. Eyston, until the final edition has proved capable of over 100 m.p.h. The engine has the same 57 mm. bore as the 850 c.c. but is fitted with a special crankshaft giving a stroke of 73 mm. The shaft is of large diameter and all webs are fully balanced. Steel connecting rods, with the metal poured in direct, and special aluminium alloy pistons are used.

Water circulation is by centrifugal pump mounted between the dumb irons, which location is also chosen for the Powerplus supercharger.

An unusual feature of the induction system is the double inlet pipe. The smaller pipe is used for starting and slow running, the large main pipe being closed. By means of interconnected controls, when the throttle is opened the main pipe is also opened to the main flow of gas. This somewhat unusual arrangement is fitted to ensure easy starting and flexibility which is a most important point in a sports car, as opposed to a purely racing machine.

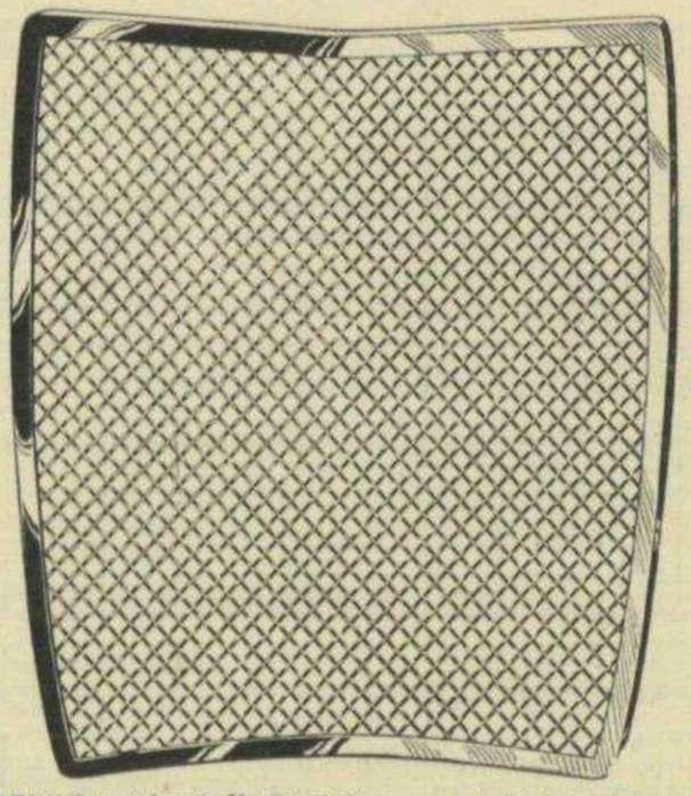
A useful point for long distance work is the provision of an auxiliary oil supply by means of a tank under the scuttle, which has an automatic feed to the sump by means of a float chamber arranged to keep a constant sump level. The increased power of the engine has been coped with by a redesigned clutch having two discs instead of the single disc used on the old model.

The new 4-speed gear box employs roller bearings throughout, and engagement of both top and third gears is by means of dog clutches. The brakes themselves are unaltered from those of the standard M.G. Midget, but the operation has been modified so that adjustment can be effected from the dash.

The roadholding and steadiness of the car (always a marked M.G. feature) has been further improved by lowering the chassis frame. This is downswept behind the front axle and passes under the rear axle. The front springs are carried below the axle which has necessitated a new axle beam. The control of the springing is effected by means of the latest type Hartford shock absorber, with control from the dash while running.

The whole car is designed especially for the competition enthusiast and is being introduced in addition to, and not in place of, the standard M.G. Midget. The price of the supercharged car is fixed at £345, while without supercharger it costs £295.


*The*
"BROOKLANDS"
*Radiator Guard*



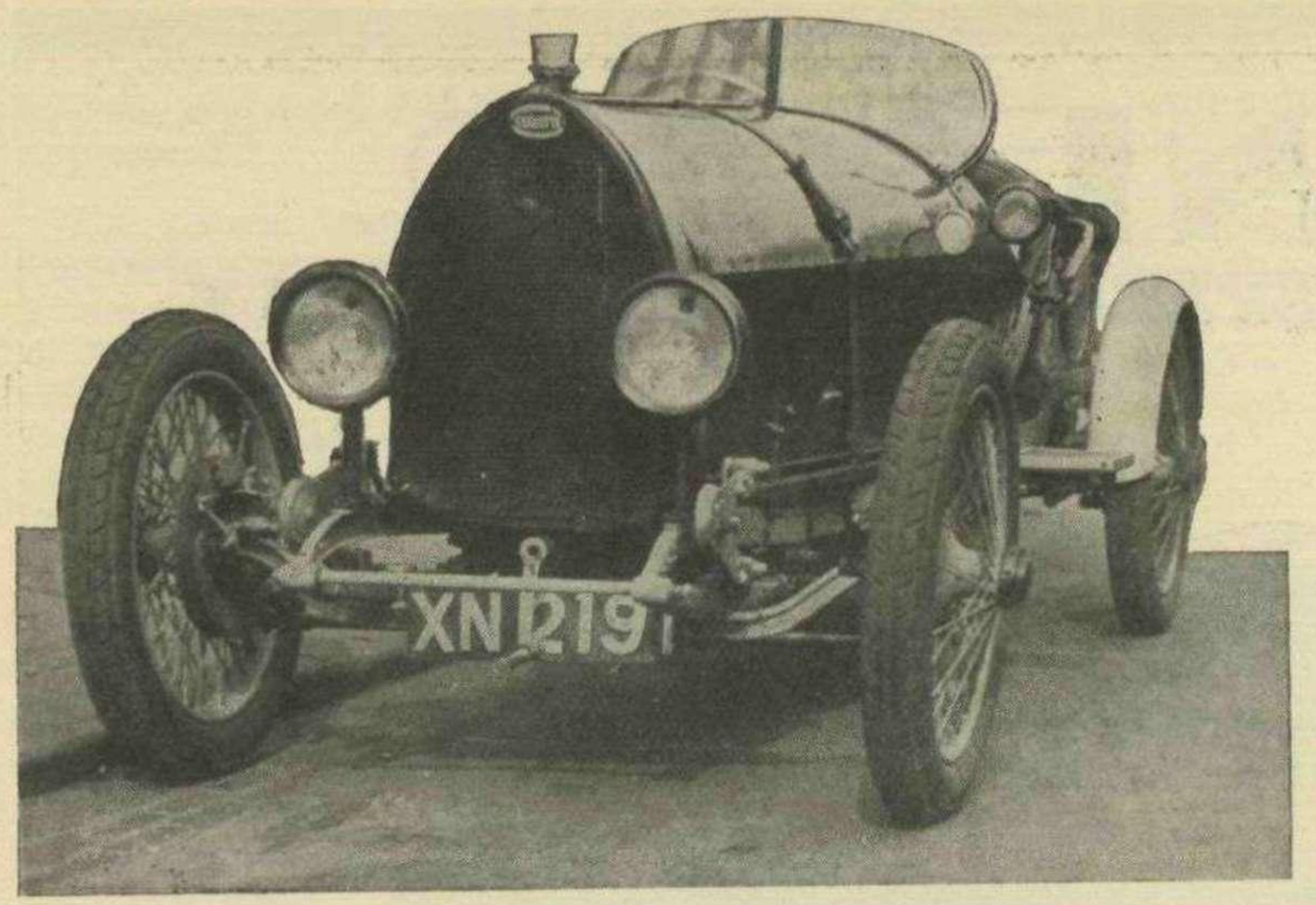
Riley
Austin
Triumph
Snipe
M.G. Midget

THE "Brooklands" Radiator Guard is constructed from solid brass throughout, all joints being electrically welded. The Diamond pattern brass mesh is welded into the frame and the whole Stoneguard including all fixing nuts, bolts and washers, is Chromium Plated. Easily fitted in a few minutes and accurately shaped to contour of radiator. Write for descriptive leaflet.

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# Veteran Types

## VI.—A TWICE VICTORIOUS BOULOGNE BUGATTI

THERE must be a great many Bugatti enthusiasts to whom the real " Bug." after their own hearts will always be typified by the old Brescia model. Than the " Blue Bug." of to-day no one could desire a finer motor ; but it was on the Brescia Bugatti that enthusiasts of all but very short standing learnt their first love of the marque. This model was in fact one of the first standardised racing cars, and when soon after the War replicas of the team which had carried all before it in the Italian race were placed on the market, enthusiasts had presented to them a sports 1,500 c.c. car of a type which was then something to marvel at.

However, the number of Brescia Bugattis still about is not very large and I was thus extremely interested when I heard of a once famous racer of this type and was told that it might be added to the " Veteran Types " series. The car of which I heard was in fact well-known enough in its day, although I had lost sight of it for a good many years, and it consisted actually of the machine with which B. S. Marshall won the Boulogne Grand Prix for light cars in 1923 and 1924.

### Special Front Axle.

The car was in fact something of a remarkable Bugatti when it first appeared in 1923. It was a full Brescia model and must have been among the very earliest of its type to have the redesigned radiator with only a very narrow shell visible from in front and just the Bugatti plaque to break the plain surface of the honeycomb. Moreover it was a charge often levelled against the Bugatti in those days that although it had proved often enough that it could *go*, it was not nearly so certain as to whether it would *stop*—an accusation which Monsieur Ettore Bugatti is always supposed to have met by remarking, shrugging his shoulders, " mais ça marche ! " ; while enthusiastic Frenchmen talked about "braking with the horn." However, this particular Bug, which immediately concerns us was remarkable in that it had a special front axle equipped with Perrot brakes.

It was this car then that B. S. Marshall took with him in August, 1923, to Boulogne and entered for the light car Grand Prix. Sunday, 31st August, the day of the race, dawned wet and windy, but little daunted, the Bugatti crew fitted the car with diminutive front wings and took their place on the starting line. Their most formidable competitor in the race was G. E. T. Eyston's Aston-Martin, and at the end of the first round, the Bugatti, Number 16, appeared in third place behind the English car and one of the French Antonys. At the end of the next lap the Bugatti was second, and soon afterwards the Aston-Martin ran off the road and retired, thus letting Number Sixteen up into first place, which was held unthreatened until the end. Marshall covered the 232½ miles of the race in 4 hours 16 minutes 12 seconds, and his average speed was thus 54.46 m.p.h.

Not content with this victory, however, Marshall and his Bugatti returned to the fray again in 1924 and on Sunday, 30th August, the veteran car, now Number Eleven, again took its place on the starting line for the Boulogne Grand Prix. This year the team's most dangerous rivals were the Frazer Nashes and for the first few laps Gallop's car of this marque led Number Eleven. On the third lap, however, the English car was delayed by plug trouble, and once more the Bugatti took the lead, not again to lose it, to the end of the race. This year the race was over a longer distance, 278½ miles, but Marshall's time was less than four minutes greater than on the previous occasion at 4 hours 20 minutes 5⅘ seconds, and his speed went up by nearly 10 m.p.h. to 64.28 m.p.h.

The next month the car started in the 200 Miles Race at Brooklands, but was put out of the running fairly early on with a broken valve spring ; and thereafter I think the motor retired into private life, and I saw no more of it until the other day.

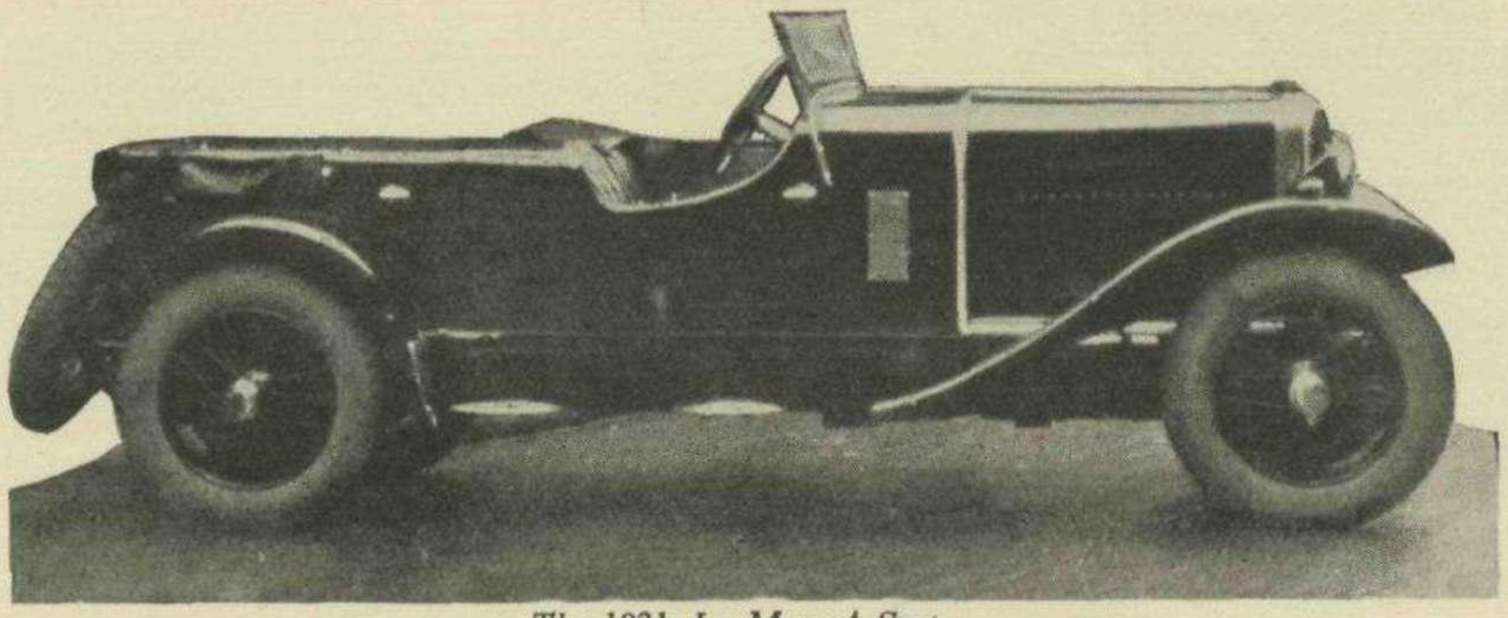
### In Mixed Company.

However, soon after I had discovered its whereabouts I determined to go and have another look at the veteran Bug. and got in touch with the owner who promised to give me a run in it. Accordingly one bright morning which made one feel that Spring had already arrived, I betook myself to the car's lair near the Embankment. I came across it in a big yard, a tiny black Bug. among an assorted collection of motor vehicles parked there, ranging from a 1910 Renault taxi to luxurious 1931

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Do you value your car's performance, its length of life, freedom from trouble and reduced running costs ?

Then use the *correct* upper-lubricant in your petrol. But it MUST be SPEEDOIL. This scientific product is recognised by Motor Manufacturers and technical people of several countries as the only real upper-lubricant.

All known kinds of ordinary mineral, vegetable or animal oils are useless for this purpose for various reasons, but chiefly because they are converted in the combustion chamber into damaging soot and carbon deposits.

Get some SPEEDOIL from your garage to-day and find out for yourself. It is sold in tins at 19/6 for 210 gallons of fuel ; 10/6 for 105 gallons ; 4/6 for 42 gallons, etc., etc.

For alcohol fuel use " Racing Speedoil " (price on application).

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*VETERAN TYPES—continued.*

saloons, and noted with approval its compact and wicked appearance.

The general specification of the Brescia Bugatti is known to almost everyone. The 4-cylinder engine has a bore and stroke of 69 x 100 mm. which give it a capacity of 1,496 c.c., and four overhead valves per cylinder operated by an overhead camshaft. Transmission is by a separate four-speed gear-box and an open propeller shaft, and the suspension is of course on the well-known Bugatti principle with half-elliptic springs in front and reversed quarter-elliptics at the rear.

The car which I had come to see has a pleasant long bonnet and scuttle, on which is a little V windscreen, the body is so narrow that it nowhere overhangs the chassis and terminates in a huge bolster petrol tank and vertically carried spare wheel. I found the owner pushing it out of its garage, and he greeted me by remarking that the engine had not been running for five months. Nevertheless the motor started at the second pull-up and we took our seats, I draping my arms elegantly round the back of the driver's seat and over the side. The Bug. roared encouragingly and we shot out of the yard.

The driver remarked that she was suffering from too small a jet for the cold weather, and the motor did spit a bit during spasms of extreme acceleration. This, however, seemed to have remarkably little effect on her going and the driver soon showed himself an expert at that flicking to and fro which one can do with the Bugatti gear-lever. I sat and watched the needle of the big rev-counter in front of me flutter up to about 3,500 r.p.m. before the note changed, what time the driver played skilfully with the mag. advance in the best Bugatti style.

**Extra Special.**

It was soon apparent before we even got out of the London traffic that this, so far from being a motor with an ordinary performance, was even no ordinary Brescia Bugatti. One of the chief contributing factors to B. S. Marshall's success in the Boulogne races was, I have always believed, the scientific way in which every part of his Bugatti was lightened to the utmost limit to which this process could safely be carried. In fact for the 1925 race he was determined to enter the car in the 500 kgs. category and certainly accomplished something of a feat by presenting the officials with a 1500 c.c. car which turned the scales at 465 kgs. or just over 9 cwt. At any rate the nett result of this treatment has been to give the car acceleration of a truly phenomenal nature, and the little Bug. was soon snapping joyously into openings in the traffic and picking its way around, between and ahead of more cumbersome vehicles. Full use of its acceleration and speed can also be made confidently in traffic as the front brakes really do stop the car in a manner which its light weight renders almost as striking as its getaway.

It would doubtless surprise many users of present-day utility vehicles to think of a car which in full possession of its faculties so to speak is incapable of getting into top gear during several miles of driving. Nevertheless while getting out of London to the South, although some part of our route was free from anything like heavy traffic, the driver only meshed the Bug.'s top speed for about fifteen yards—and then changed down again at once on finding that she would not pull it satisfactorily. Such is the result of a very high top gear which is delightful to use on a good long straightaway, and which may be compared in effect to the top speed geared up in the gear-box of the big pre-war sports car. However, the continual use of the indirect gears has by no means all the disadvantages which drivers whose experience is limited to the above-mentioned utility vehicles would be likely to expect. As each higher gear is snapped in there is a high-pitched scream from the gear-box—I mean the scream of meshed, not meshing, pinions—but the note soon rises till it entirely passes out of the audible scale and there remains nothing to indicate that an indirect gear is being used. Indeed anyone not familiar with the Bugatti gear-change might well be excused for thinking after seeing the lever snapped *back* into third, that top gear was actually in engagement.

**Unfavourable Test.**

It is a great difficulty when one has to start from the centre of London to take a car for a fairly short run to find a suitable place where a fast machine can be let out to show its actual speed capacities. In fact we were not able to gauge with any degree of accuracy the maximum speed of the Bugatti in view of the fact that there was no chance of running all out for long enough to make timing a satisfactory proceeding and the car has no speedometer. It was obvious, however, that it was by no means lacking in speed even for a car of its type in spite of its unfavourable carburettor setting, but the chief impression which the Bugatti leaves is of colossal acceleration for an unblown motor and of an uncanny handiness which is its chief attraction. The little black Bug. gives one the feeling that one is handling such a tiny car, which can thread its way among other vehicles like a minnow in a school of porpoises. Give it the gas on the right gear and it literally skips ahead only to be checked almost instantaneously by its really efficient brakes, while it has the most useful and all too rare attribute of being apparently quite unobtrusive in spite of the healthy roar of its exhaust. One has only to have a run on a good Bug. to see quite plainly why cars of this marque are so overwhelmingly popular with amateur drivers for racing purposes; only to experience something of the amazing handiness and road-holding qualities of these cars, which permit of their being forced round corners at a speed in defiance of centrifugal laws to understand just why during the five years after the first appearance of the particular motor in question, Bugattis won a succession of victories in the Targa Florio.

Incidentally the Boulogne Bugatti is, I believe, for sale, so someone is going to be lucky. I was asked for my impressions soon after I had been out in it by an enthusiastic "Bugattisto"; and the best description of it I could give was—"Oh, just like a Bug.—only more so."

—E.K.H.K.

THE SPORT ABROAD.

# Continental Notes and News.

*The Italian 1,000 Miles Race—The Italian G.P. and the Targa Florio—Le Mans and other Events.*

WITH the coming of April the motor racing season may be said to open in earnest, and the first really big event of the Continental season, the Italian 1,000 Miles Race, is due to take place on the 11th and 12th of the month. The Alfa-Romeo firm, which has won the race for the last three years, is, of course, again going to make a big effort, and rumour has it that more than fifty cars of the marque will start. The first real appearance of the new 2½-litre straight-eight Alfa will undoubtedly be watched with enormous interest, and it seems highly probable that the Milanese firm will pull off its fourth successive victory. Nuvolari, last year's winner, will again handle one of the cars, and the other chief drivers of the team will be Arcangeli, Borzacchini and Ghersi. Rudolf Caracciola now definitely seems to have got out of his contract (if it ever existed) with the firm, and there seems to be quite a good chance that he and von Stuck will drive together in a big Mercédès, which should have an excellent chance with two such drivers.

**Maserati in Force.**

Among the other Italian cars a big Maserati entry is also expected, and as these cars from Bologna are of almost exactly the same type as the new Alfa-Romeos, the competition between the two marques should be exceptionally interesting. Ramponi will drive one of these cars, possibly with Campari as his team-mate, and it may be noted that this combination proved victorious in 1928 and 1929. It is just possible, however, that his old contract with Alfa-Romeo will oblige Campari to drive one of these cars in the 1,000 Miles, although he is captain of the Maserati team for the coming season, but even if this proves to be the case, Maserati will still have Ernesto Maserati, the brother of the constructor, Fagioli and perhaps Réné Dreyfus and Count Maggi.

At any rate, in numbers, however, it is expected that Alfa-Romeo will be rivalled by Fiat. The premier Italian firm has, in fact, decided to return to racing with a vengeance, and for the 1,000 Miles Race has prepared special sports editions of its 4-litre 6-cylinder and 1,500 c.c. 4-cylinder models. The firm is apparently prepared to sell cars of the latter model at 2,200 lire (about £240) specially tuned for the race, to any enthusiast, and will provide all his pit organization and supplies free. In view of this special offer a huge Fiat entry is expected, but besides the amateurs, the firm's official team will consist of the great Felice Nazarro, Carlo Salamano and Pastore, and rumour has it that they will drive special supercharged editions of the 1,500 c.c. model.

One interesting effect of the concentration of Fiat on the two models is that the firm has refused to tune any privately owned Model 509 1,000 c.c. cars owned by amateurs for the race. In the meantime a team of Austin Sevens have been entered for the race by the Italian agent, and thus some British cars will run in this event for the first time. As the baby Fiats will probably be only capable of about 45 m.p.h. without the special attentions of the factory behind them, the Austins should have a good run for their money in the 1,100 c.c. class, although it is just possible that the new miniature Maseratis will be ready in time for the race. This new model is a 4-cylinder machine with front-wheel drive, and its performance will be watched with great interest.

**Strazza's Special Lancia.**

Returning to the bigger cars, Strazza the well known Lancia driver, has apparently succeeded in fitting a Dilambda engine into his old racing Lambda chassis, and the power-weight ratio of the resulting machine should make it a formidable competitor. He will probably drive with his old team-mate, Varallo, with whom he finished third in 1928, and a good many more Lancias are also expected. At the same time, Varzi is going to drive a Bugatti, probably one of the new 5-litre models with two overhead camshafts, and a full O.M. entry is expected, Bassi and Gazzabini, who finished fifth last year, having already sent in their names. In fact, it seems that the fifth 1,000 Miles Race will be an epic event well worthy of its predecessors.

While Italy is thus buzzing with excitement, anyhow, the Italian Club has suddenly thrown the continental racing world into consternation by the announcement that it has received permission from the International Sporting Committee to hold its Grand Prix at Monza on 24th May instead of the 6th September, the date which had been previously fixed and which was in accordance with the precedent of previous years. As will be remembered, the Grands Prix of France, Belgium, Spain and Italy are this year all to be 10-hour races for any type of car, and valuable cash prizes have been pooled by the four clubs and will go to the most successful driver in the four events. Now, however, intending competitors who thought that the French Grand Prix on 21st June was to be the first event of the series, and had planned the preparation of their cars accordingly, are suddenly faced with the necessity of getting ready for Monza by the 24th May. Moreover, the change of date has brought the Italian Grand Prix to within a fortnight of the Targa Florio, which is to be run on 10th May, and it is feared that entries for the latter event will be jeopardised. In fact, one is tempted to wonder what Cav. Vincenzo Florio is about, as it is hard to find any motive for the move, unless it is a desire to avoid running a rival show to the Schneider Cup at the beginning of September. Entries for the Targa Florio are, in fact, not numerous as yet, although Campari is down to drive a Maserati and Ghersi an Alfa Romeo.

In the meantime only a week after the 1,000 Miles Race, on the 19th April, comes that most exciting event, the Monaco Grand Prix, which is run through the streets of the town. The English entry for this race will include Lord Howe, who is going to drive one of the new 2,300 c.c. Bugattis with two overhead camshafts, and Penn-Hughes on another Bugatti, while Scott is hoping to run his 1½-litre Grand Prix Delage. Among the Continental drivers, Dreyfus (last year's winner) is going to drive a Bugatti again, more or less for the last time, as he is one of the official Maserati team for the later events, while cars of the same make have been entered by Williams, Etancelin, Lehoux and Michel Doré . As a matter of fact, the Club has decided that the course cannot do with more than about twenty cars racing round it, whereas it is understood that there are some fifty would-be entrants. However, even if a choice has to be made, the runners will probably include the official Alfa-Romeo team, which will most likely consist of Nuvolari, Borzacchini and Arcangeli ; the Maserati team of Ernesto Maserati, Campari and Fagioli ; and the official Bugattis, which will probably be driven by Chiron, Varzi and Divo. At the same time, the dashing Ivanowski is hoping to drive a big Mercédes, which will certainly be rather a formidable object in the narrow streets, and there is a possibility that a Peugeot will run.

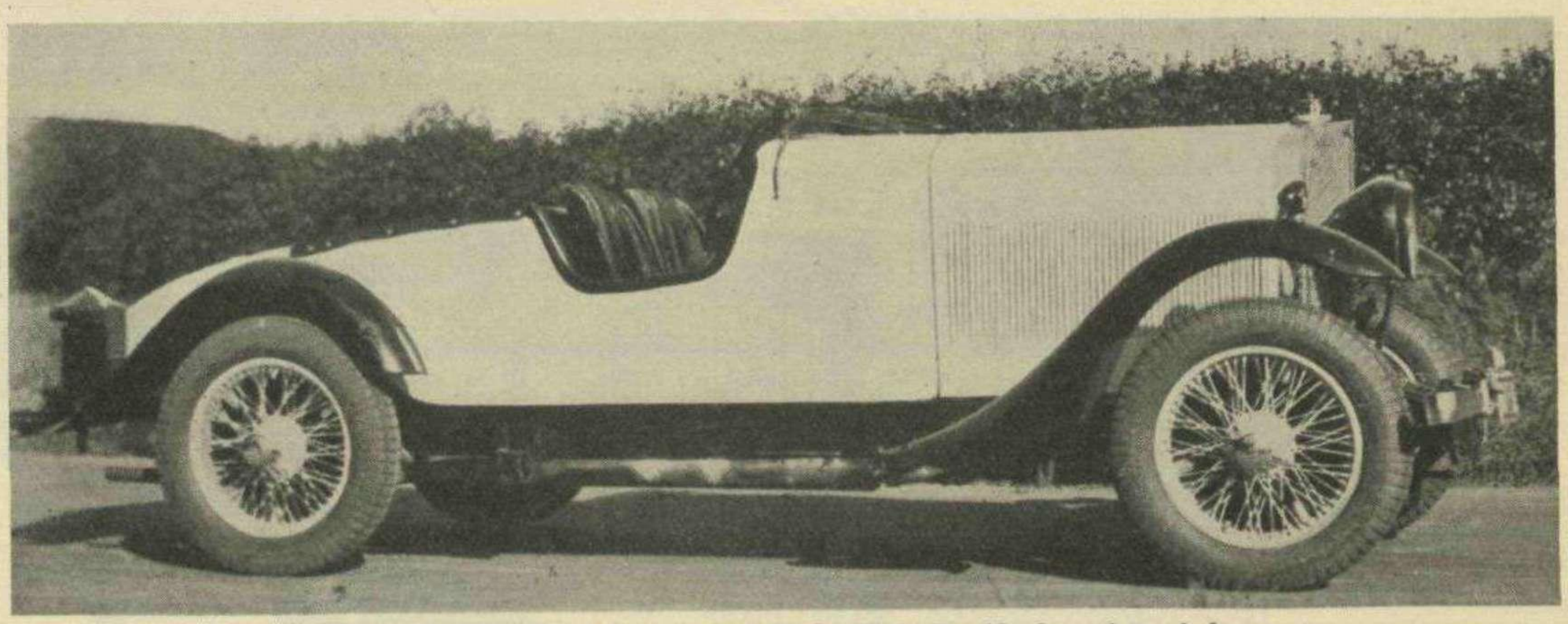
**The Casablanca Circuit.**

About a month after the Monaco race there will take place another event through the streets of a town. This consists of the Grand Prix of Casablanca, which is scheduled for 17th May. Hitherto it will be remembered the Moroccan Club has run its Grand Prix over a single lap of a circuit covering the whole of Southern Morocco and measuring about 450 miles round. It is intended to repeat this race in 1932, but in the meantime this year it has been decided to go to the other extreme and run the Grand Prix over a tiny circuit measuring 6 kms. 716 ms. in the streets of Casablanca itself, consisting of the Avenue de l'Hippodrome, the Boulevard Joffre and the Route de la Corniche The cars will be sent off in

[*Continued on page 294*].

# The Talbot "90"

## A HIGH-SPEED CAR with EXCEPTIONAL FLEXIBILITY and SILENCE.



*The car tested by Motor Sport. It is fitted with the Brooklands regulation body.*

THE days have definitely passed when a sports car was a fierce, noisy, intractable vehicle, which gained its speed and power by means of a rough engine. The modern counterpart of the old fire-eating monster is a smooth, well behaved car, with more speed and more acceleration than its forerunners ever dreamt of, but in spite of this, having wonderful qualities of flexibility and slow running, and, above all, silence. One of the outstanding examples of this type is the " 90 " Talbot, which in its racing debut in 1930 showed up as one of the most reliable racing cars ever built.

Everyone who watched any of the big races in which they took such an impressive part commented on their silence of running, and our first impressions of the car, which was put at our disposal by Warwick Wright Ltd., was this same quality.

The actual " 90 " which we tested had the regulation Brooklands body with which spectators of last year's events had become so familiar. This body is not, however, to our mind the most desirable type except for actual competition work, and the standard body supplied by the makers is the more likely selection of the man who wants a car for high speed touring and general use. This is extremely well designed, neat, roomy, and of good appearance, and the fact that the performance is not seriously interfered with by the less spartan bodywork is shown by the car which Vernon Balls was running at the opening B.A.R.C. meeting this season, which put in some laps of the track at 97 m.p.h. A photograph of this model is given in the interesting article on the history and manufacture of this *marque* appearing in another part of this issue.

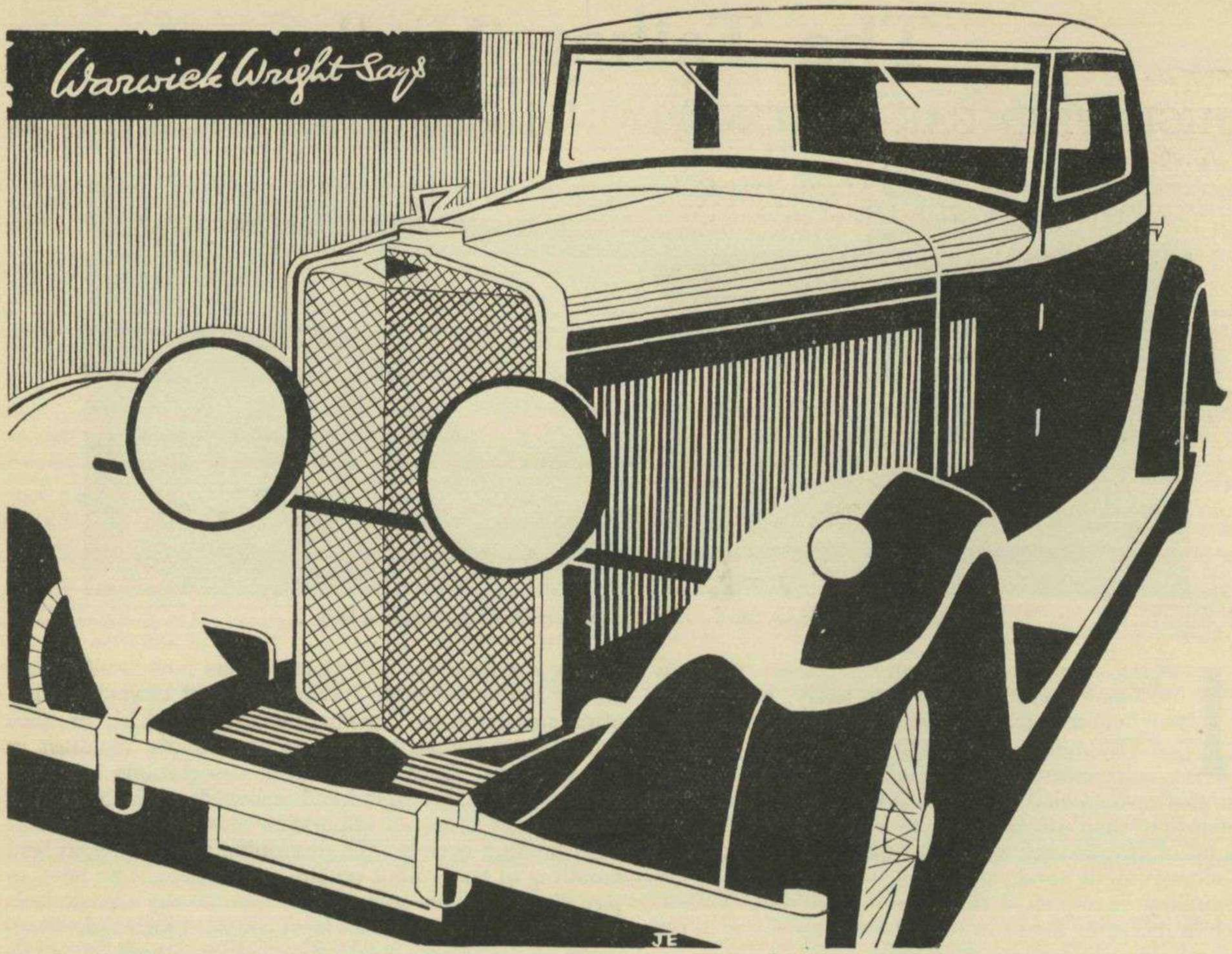
However, the test of the Brooklands type car was interesting in being similar to the successful racers of last year, of which the latest model of slightly larger capacity looks like being a worthy descendant in the forthcoming season.

It is a noticeable fact that various models of a particular make, although having different characteristics, often possess some indefinable " feel " which at once shows their ancestry. This is particularly manifest in the case of firms with racing associations, as they possess invaluable first hand knowledge which enables them to get those all important details of steering and road holding correct. In describing the behaviour and handling of the Talbot on the road it would be hard to pay it any greater compliment than to say that it feels like a Talbot. The chassis is, of course, a logical development of the famous 14-45 h.p. Talbot, which has come as a revelation to many as to what an engine of just over 1½-litres can do. Exactly why it does it could probably be answered only by Mr. Roesch, the designer of all these cars, but the chief fact is the result. The " 75 " and " 90 " engines are of 2,276 c.c., the " 90 " having a higher compression and other modifications to attain the increased performance.

In the engine itself can be found many reasons for the remarkable smoothness and life, the crankshaft being a particularly fine piece of work. This is carried in seven bearings, is machined from the solid billet, and finally balanced and counterweighted. A composite piston of cast-iron and aluminium is used ; owing to the ingenious construction it is very simple, and cannot suffer any of the troubles of the older forms of composite piston which have been tried in the past.

In merely looking at the external view of the engine it is indeed difficult to realise how such power is developed, as it is a very neat and simple design. But as soon as one gets on the open road one realises that the power is there in abundance, and in a particularly pleasant form. Acceleration is snappy without being harsh, giving an increase of 10 to 30 m.p.h. on second in 4⅘ seconds, which is a very good figure on a chassis of such large dimensions in proportion to the engine capacity.

[*Continued on page 269*]




# "THE STANDARD SPORTS WITH SUPER-HOTTED PERFORMANCE"

The Talbot "90" has created more sensations in racing circles than any car in recent motor history.

These standard models have stayed the course without a stop, when cars of international reputation and costing four times as much have had recourse to the pits several times.

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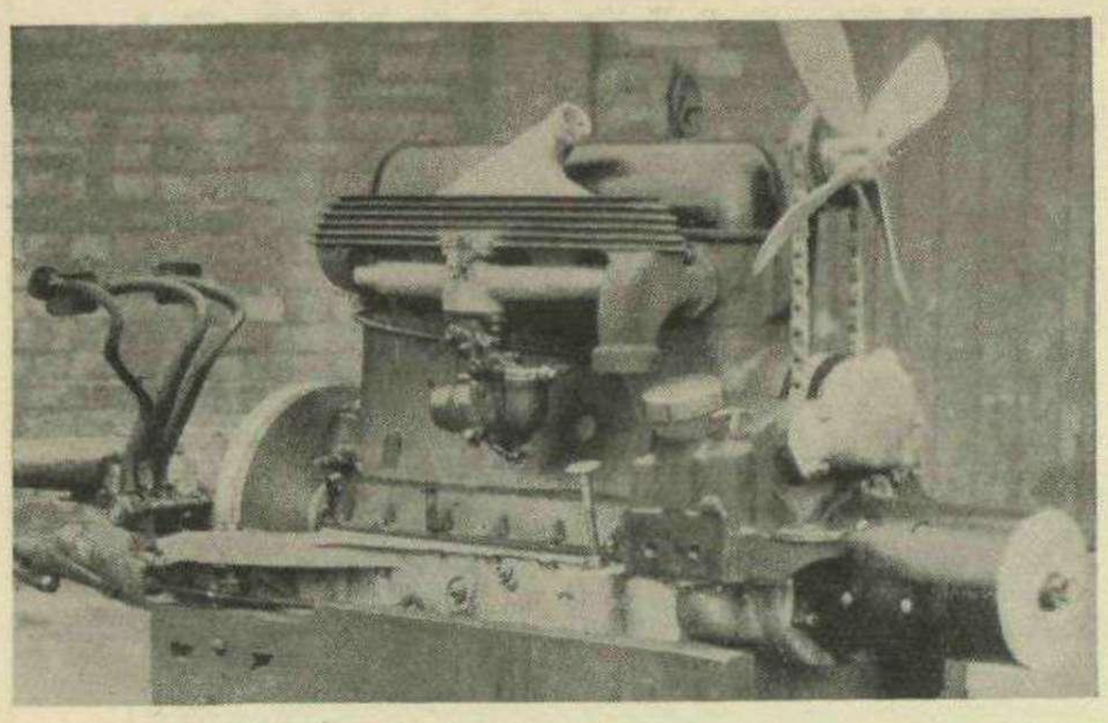
**TALBOT "90"**

*Warwick Wright Ltd.*

**150, NEW BOND ST., LONDON, W.1.** (Mayfair 2904.)

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*THE TALBOT "90"—continued.*



*This photograph of the Talbot engine gives an excellent idea of its compact and well-arranged exterior design.*

The gear change is easy and quick, enabling high speeds to be attained on very short stretches of road, and the brakes are more than able to cope with this. In these days of good brakes it is not often that one finds any particular make which stands out prominently in this respect, but the Talbot does so very definitely. The very great size of the brake drums accounts largely for their power, which pushes one forward off the seat if applied hard. There is more, however, in braking than sheer power, and it is in the smoothness and accuracy of operation that the braking system of this car is chiefly notable. A braking distance of 45ft. from 40 m.p.h. is possible on a dry road.

A maximum speed on the level of 86 m.p.h. seemed a fair representation of the capabilities of the standard production model, though it has been shown that this can easily be improved upon by tuning, once the car is fully run in. 45 m.p.h. and 65 m.p.h. on 2nd and 3rd gears can also be attained, while the gear-box is pleasantly silent apart from the quiet singing noise which is characteristic of this make at high speeds on the indirect ratios. It is, however, not at all an unpleasant sound, and tells of accuracy in manufacture and rigidity of the shafts.

Our only real criticism of the Brooklands model is the fact that the somewhat low seating position makes it difficult to see what is happening in traffic, but the standard 4-seater on this chassis does not suffer from this fault, and as most owners would prefer this model in any case, the point is hardly likely to arise.

Altogether a remarkable car, which for really fast road work or competitions would be very hard to beat at anywhere near the price.

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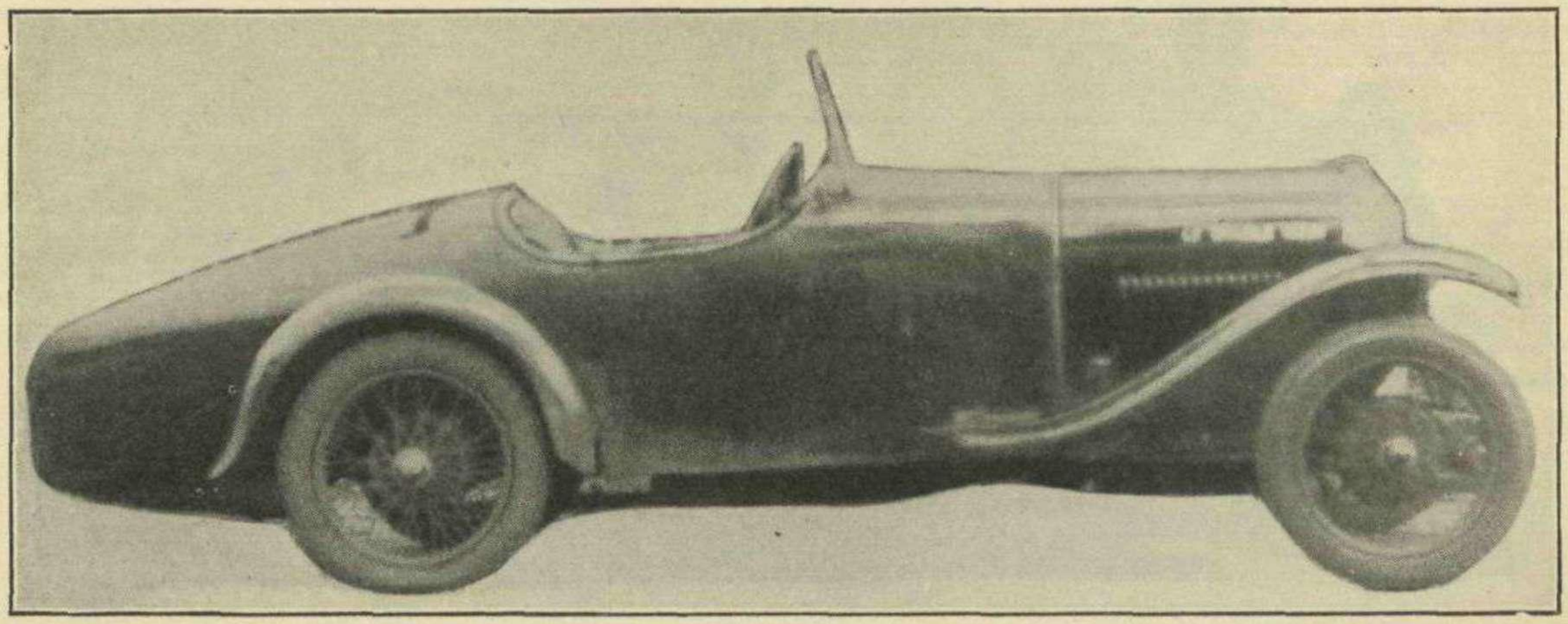
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# TRYING A "SECOND-HANDER."

## III.—A 1928 GRAND SPORTS SALMSON.



*Brief Specification.*

*Engine: 4-cylinder, 62 mm. × 90 mm. bore and stroke. 1086c.c. Two overhead camshafts. Magneto ignition.*

*Clutch: single plate.*

*Gears: 1st, 14 to 1; 2nd, 6¾ to 1; Top, 4 to 1.*

*Suspension: semi-elliptics in front, quarter-elliptics at rear.*

*Price: 79 gns.*

THERE is no doubt that the competition in the 1100 c.c. class has fallen off considerably in the last few years. There are to-day some fine examples of the performance which can be obtained from an engine of this size, but the fierce rivalry of earlier seasons has been transferred in the main to other classes. However, the fact that this existed was once more brought home to us, when we had the opportunity of trying a 1928 Sports Salmson on the road for a few days recently. Not only does racing improve the breed of cars in general, but a few seasons special competition in a particular class means that the class in question comes in for some very intensive development.

Most of us will remember following with the greatest interest the Salmson-Amilcar duels in the J.C.C. 200 Miles Races, and the way that these "1100s," in their efforts to break each up, began to give the larger cars in these races a good run for their money. Added to this was Goutte's hair-raising lap of Brooklands at 114 m.p.h. in a supercharged Salmson, a speed which still remains unbeaten on this track by a car of this size.

It was the reflection that these deeds were mainly responsible for the design of the car we were testing that gave the run an added interest, as we were able to take note of the way in which the mechanism had stood up to the power output which racing experience had made available. The car is a typical continental small sports car in which comfort has been considered less important than performance. By this we do not mean that it is uncomfortable to drive, but that some of the refinements which we have now learnt to take for granted such as ease of entry and exit, fullness of all weather equipment, and the collection of gadgets on the dashboard, has been confined more to the essential than the convenient.

It is in fact a real sports car, in that it is a vehicle for the enthusiast who prefers to travel quickly in fresh air and leather coat than to crawl dismally about the country in a closed-in but lifeless "box-on-wheels." The four cylinder double overhead camshaft engine was in good mechanical condition, and appeared to have an unlimited capacity for revs. Oil consumption was negligible in the 200-300 miles driving we put in on the car. The engine is silent for the type, with the exception of a certain amount of valve gear noise which is almost inseparable from these engines, but which is not noticeable when driving. The gear box is also quiet and in good condition, our chief criticism of this component lying in the fact that the actual lever is placed somewhat too close to the brake lever for comfort. There are three forward gears.

Acceleration was excellent, and 50 m.p.h. could be exceeded on second. The maximum speed, under fairly favourable conditions was 70 m.p.h. Steering and road-holding are good and bear evidence of the makers racing experience. There is no appreciable wear in the steering box or connections. The chassis is built somewhat higher from the ground than is usual in these days, but in spite of this, cornering was steady and safe. The clutch is a little on the harsh side, but positive and free from "tricks."

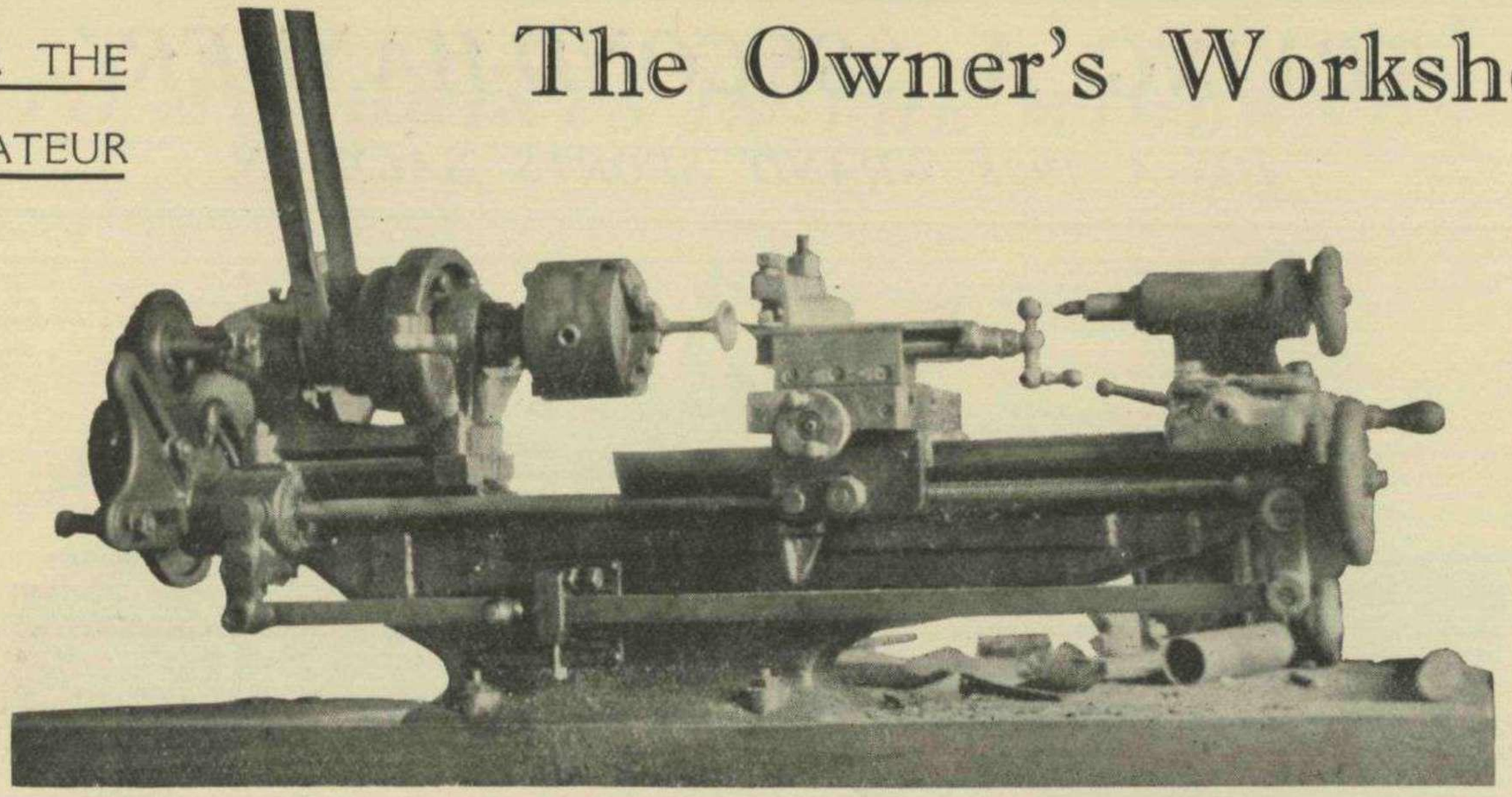
To those who want a lively performer without buying a new vehicle this car should provide plenty of fun for the money, and it has many thousands of miles of useful life to run.

The car in question was taken from the second-hand stock of Vadum Ltd., of 352, High Road, Willesden Green, N.W.10, who have a large number of used sports cars. The price asked is 79 guineas.

D

FOR THE AMATEUR

# The Owner's Workshop



## ENGINE OVERHAULS AND GENERAL TUNING.

EVERY owner of a sports car fancies himself to some extent as a mechanic and is desirous of turning what ability he has in this direction to good account. Previous articles of this series have dealt with some of the necessary but not very exciting tasks, which have to be carried out from time to time if a motor car is to remain safe and pleasant to handle.

When these have been attended to we come to the great question of how to get the best out of the engine, and I must crave the indulgence of our more technical readers if portions of these remarks appear terribly elementary. It often happens that, as Will Shakespeare so aptly puts it, "desire doth outrun performance," and there is always a certain proportion of owners whose enthusiasm is out of all proportion to their mechanical knowledge. Therefore I suggest that those for whom the internal combustion engine holds no mysteries should pass on to some other part of MOTOR SPORT.

The overhaul of a modern motorcar gives almost unique scope for starting the job at the wrong end, and most amateurs are quick to take advantage of this, and do all the wrong jobs first, and leave the important things undone.

In most cases tuning is started on a vehicle which has a fair mileage to its credit, as when an engine has been really fully run in the best results can be obtained. Also in the case of the less wealthy owner, the tuning is usually combined with the normal overhaul necessary to get the vehicle in sound condition for a season's running.

### Don't Tinker.

It is not proposed to deal at present with what is generally referred to as "super-tuning," or, getting just as much power as an engine will give without going up in smoke, but rather with getting a reliably quick performance from a normal sports engine. What is necessary, however, is to dispel the popular fallacy that ordinary tuning is a matter of waving a magic wand. One still comes across the pest who offers to infuse "pep" into the engine by playing with the carburettor or ignition timing, regardless of whether that is the trouble, and usually with very poor results. Carburation and ignition come among the finer points of tuning, and must be left to the end.

The first essential is to get the engine in perfectly sound mechanical condition, and it is in this process that various refinements can be added to the normal routine, such as balancing. The extent to which these refinements can be indulged in will depend chiefly on the depth of the owner's pocket, and will have to be left undone in inverse proportion to this important dimension. In the actual matter of fitting, assembling, etc., there can be no question of leaving things undone, however. It is this capacity for taking time and trouble over seemingly minor details, that distinguishes the good fitter and tuner from his more slapdash, and consequently unsuccessful brethren.

It is obviously impossible to give detailed information for the treatment of every make of engine, and the actual details peculiar to any particular make must be filled in from the owner's experience or inspection of the machine concerned. We can imagine the engine to be of the normal four or six cylinder type with valves operated from a camshaft in the crankcase. The procedure with an overhead camshaft engine must be dictated by the intelligence and observation of the operator. We will assume that the engine, after being run in with reasonable care, has had a considerable amount of hard work, and it is now intended to get it in thoroughly good fettle for fast road work and competitions.

Although the usual routine top overhauls are always done with the engine in the chassis, for a complete overhaul the engine should, with few exceptions, be removed from the chassis. It may seem that this means a lot of work, but it will be found that in the end time will be saved and the job will be done better. In the case of fairly small engines—round about the 1½-litre class—it is not difficult to get the engine out and onto some sort of improved stand, such as a strong wooden case. As the majority of home-tuned engines are in the smaller classes, it is these that have to be considered. The actual process of disconnecting gear-box, transmission, pipes, leads, etc., will naturally vary for every car, but is as a rule fairly obvious. The radiator will have to come off, and special care should be taken to see that any packing, such as rubber, used in the mounting of it, is preserved in good order or replaced with new if necessary. If care is not taken in refixing the radiator, the owner will be to blame if any leaks develop.

### Engine Removal.

In the actual removal of the engine a lifting tackle as described in MOTOR SPORT for last February is extremely useful, especially if help is not easily available in the actual lifting. However, the lack of tackle should not deter anyone from removing the engine, and many people scorn the assistance of anything but their own strength on such jobs. The task is made considerably easier if the engine has a detachable cylinder block, as well as the head. In this case the head and block can be removed first with the engine *in situ*, and the remainder of the engine can then be lifted out much more easily than the complete outfit.

Care is needed in actually lifting off the block to avoid the pistons falling against something hard and getting damaged. This is most liable to happen when standing on the chassis and lifting the block vertically. If this procedure is adopted it is advisable to have a friend standing by to catch the pieces! On a fairly light

*THE OWNER'S WORKSHOP—continued.*

engine the block can be drawn off on one side so as to leave the rods all leaning against the side of the case. A great many engines nowadays are made with the cylinders and crankcase cast together, in which case the best procedure is to remove the engine complete, take off the sump, and place the engine upside down on the engine stand. If the valves have been previously removed it will then be unnecessary to move the engine again until the overhaul is completed, as all main bearing fittings, etc., can be done in this position.

The extent of the dismantling of the lower part of the engine will depend on the owner's desires in the way of performance, but assuming that he is going to make a job of it, the next consideration will be the balancing of the crankshaft, flywheel, rods and pistons. Getting the best out of an engine is mainly a question of patience and hard work, and this balancing and refitting business cannot be rushed.

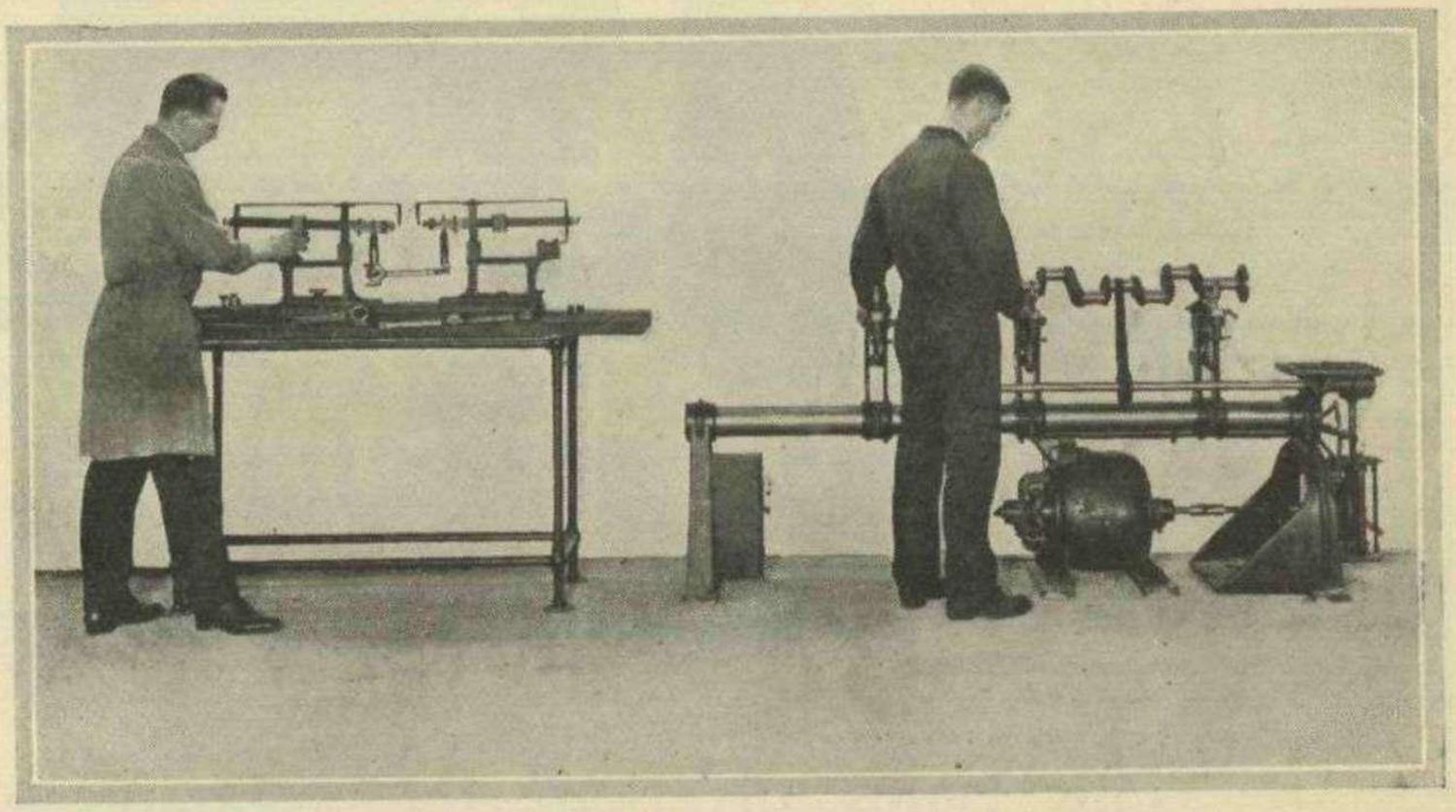
One of the most important things to look out for in this class of work is to have some good system about storing the dismantled parts. Have a good supply of boxes for the parts, and avoid getting them mixed up. Anyone who is really neat in this department is likely to be a fairly good mechanic, and he will certainly save himself a lot of time. A set of number punches is a very useful accessory, and all parts such as con-rods, valves, pistons, etc., should be numbered immediately on removal from the engine if they are not already marked. They should also be marked in a uniform manner so that everything will be put back the right way round.

**Timing Marks.**

Before removing the crankshaft it is as well to see if the timing wheel teeth are marked in any way, and if not, to mark two adjacent teeth. A dab of white paint is a most effective method of doing this, as punch marks do not do the teeth any good. If the drive is by chain some other method will have to be thought of, such as marking the sprocket teeth opposite to each other.

The main and big end bearings should be examined for wear, and the crankshaft journals should be checked for ovality. This is most liable to occur on the crankpin journals, and a micrometer should be acquired or borrowed to check this. A micrometer is not an instrument which is in constant use, but it is nevertheless something that every mechanic should understand and be able to use. If the journals are .002" or less oval they can well be left and the bearings refitted on them. If they are badly oval, however, it is impossible to make a safe job of the bearings and the shaft should be sent to be reground by some firm who specialise in this work.

Now that the shaft has been removed it is worth having it checked for balance, and the flywheel should be balanced independently at the same time. This is well worth doing as it will be done once for all (unless the crankshaft breaks!) and the improvement in smooth running and increased r.p.m. will be well worth the cost. It is not a job which can be done at home, however, as to get the shaft statically balanced is not enough. It must be set up in a dynamic balancer and tested for vibration at various speeds. This requires special apparatus and skilled operators.



*Working to fine limits. Two highly-sensitive machines for balancing engine parts. On the left a con-rod is being checked over while a crankshaft is being revolved on a special testing machine on the right.*

When the shaft and flywheel are returned for reassembling the question of bearing fitting comes up. The first thing is to make sure the main bearings are O.K. In the case of a 3 or more bearing shaft, perfect alignment is of course essential, and this means that all the bearings have got to be fitted together. It is no good scraping in, say, the front bearing and completely fitting it, and then going on to the others in turn. This is liable to cause binding through bending of the shaft, when the actual clearance on individual bearings is sufficient.

Therefore, the correct procedure is to bed the shaft into the top half of all bearings in the crankcase, until it lies in perfect contact with all of them, and then fit the bearing caps without again touching the other halves—except of course to wash them clean before bolting up.

None of these remarks apply to ball or roller bearing shafts of course, but as these are in the minority a few remarks on the actual procedure of scraping in a white-metal or bronze bearing may not be out of place. Some bearings consist of white metal poured direct into the bearing and then bored and split. In others the "brasses" consist of die cast white metal liners, the halves of which are fitted into the bearing caps, while the commonest variety consists of bronze machined shells into which white metal has been run, and these are fitted into the bearing caps.

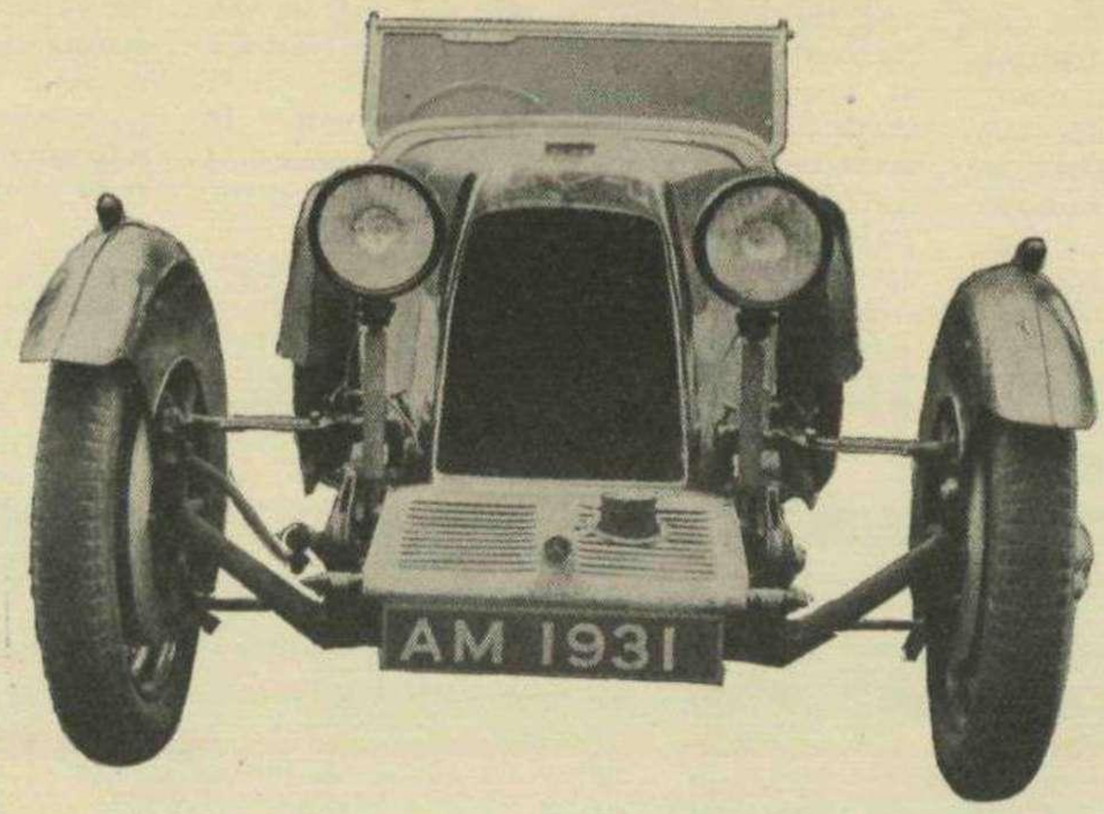
The first mentioned type is the best in theory as almost perfect contact between the metal and the connecting rod or bearing housing is made, and this helps the heat flow away from the bearing under heavy loads, and so reduces risk of failure. The last type is extremely convenient for replacement purposes, is mechanically strong, and much in use. The other type is weak and liable to break up, has very poor contact for getting heat away, and has nothing to recommend it except that it is cheap to make.

The bronze white-metal type of bearing requires a little more trouble in fitting than the others but the method is similar in all cases, and it will be obvious which steps can be omitted with different types.

The first thing is to get the brasses to fit correctly in their housings. This may occasionally require a little attention with a file or scraper, though on most makes the spare parts fit fairly accurately these days. The chief points to be looked for are to get the edges of the brasses perfectly flush with the edges of the housing, so that when the halves are bolted up there will be no gaps. The brasses are sometimes too long for the journals, and if so, will require filing at the ends to obviate this. Files have to be used extensively in fitting work, and nothing but practice will help to make the operator good at their use. Filing "square" is difficult and requires skill and patience. The great thing to remember about filing is that it is a cutting, not a rubbing process. Therefore slow steady strokes in a forward direction only must be used, with enough weight on the file to make sure it is cutting. The work should be as nearly as possible at elbow level as this makes it easier to achieve a flat surface.

Having fitted the halves of the bearing correctly into the housings the scraping in process must be started. This is necessary as bearings are always finished off too small for the journal to allow for fitting. In building a new engine it is possible to machine the bearings to the correct size and fit without scraping, but for supplying as spare parts such a proceeding has considerable drawbacks owing to the fact that the journal may be worn, or may have been reground. There is a prevalent idea that hand fitting of a bearing is the best method. It is not, but it is the only

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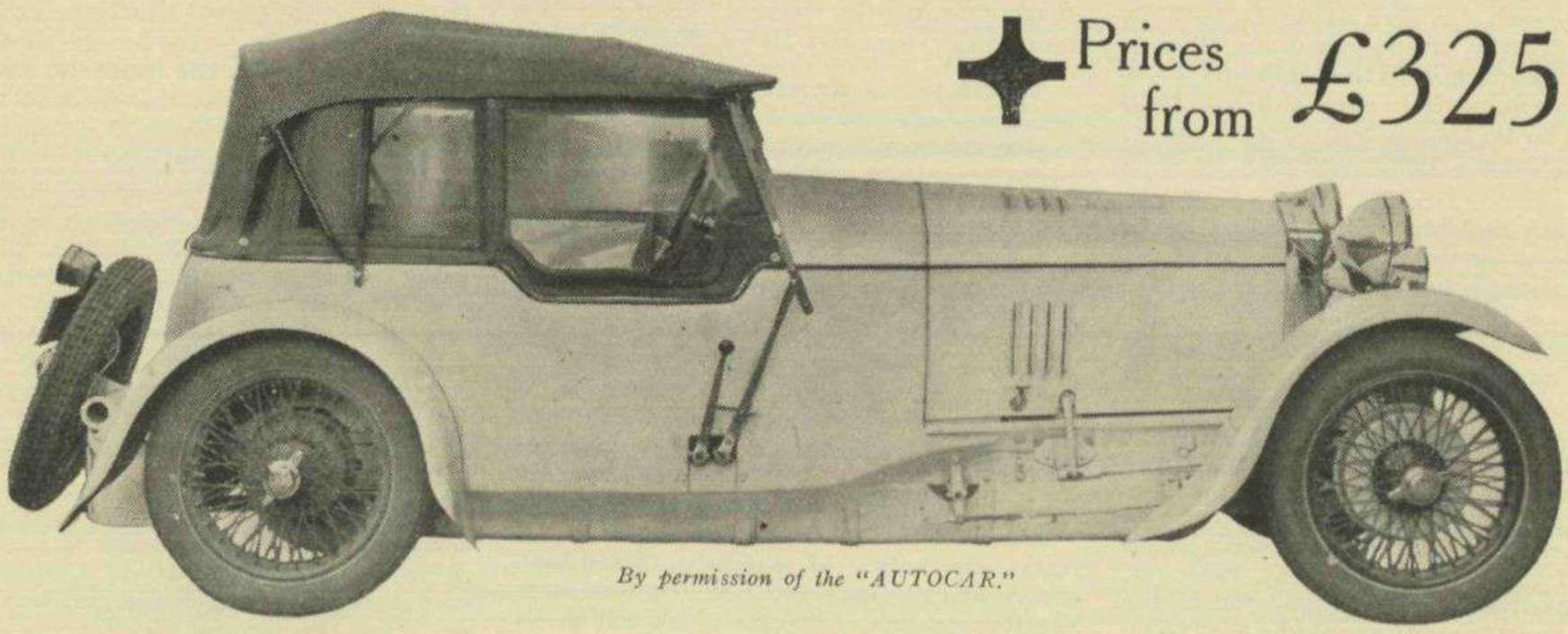

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*THE OWNER'S WORKSHOP—continued.*

method possible in replacement work, and therefore it must be practised until it can be carried out as nearly perfectly as possible. A hand scraped surface will not be as accurate as a machined surface and the ideal bearing (of the plain variety) would be one which is machined to exactly the correct size, i.e., a clearance of say .001" for oil on a normal 1500 c.c. crankshaft and fitted without further touching of the surface.

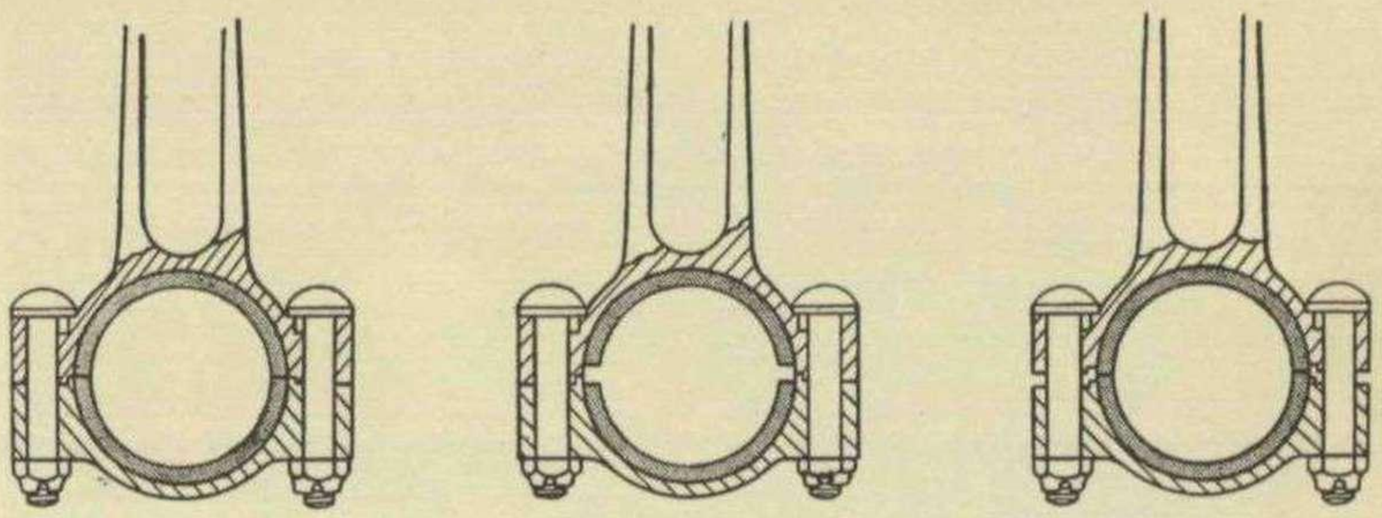
However, this being outside present possibilities for replacement work, the only course is to hand fit the bearings. This consists of " offering up " the parts, finding where the metal touches the shaft, and removing metal with the scraper until it is touching all over. At first the bearing will bind at the edges of each half, and, as these are scraped will settle down to a good fit. Red lead is the normal compound used for seeing where the bearing is making contact.

This should be smeared *very thinly* on the journal before trying it each time, and after it has been assembled and bolted up just tight enough to make the shaft stiff to turn, the marks will be clearly left on the bearing, showing where the metal must be scraped away.

It is impossible to get universal contact by hand fitting, but it will soon be seen when contact is being made at the different parts of the bearing, and to what extent, so that as the process is continued the contact surface will develop from the mere " pinching " at a few spots, to fairly general contact. Local " high spots " can be detected by the appearance of the marking as it will be blackish and polished, instead of merely showing the transference of red lead from journal to bearing. The process of marking the shaft, fitting, bolting up, turning, unbolting and scraping the bearing where indicated, has to be oft repeated before the desired result is obtained, and considerable patience is required.

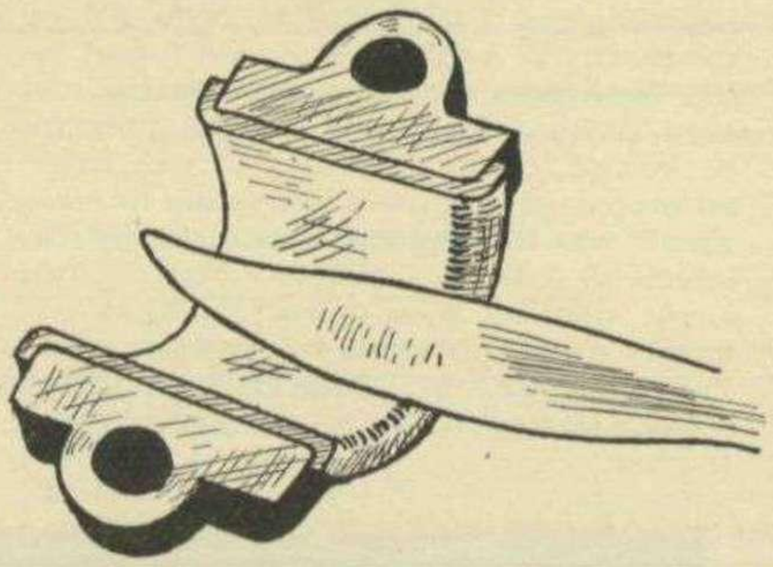
The actual bedding down of the main bearings is the most tedious part, especially in a 3 or more bearing job, but in the first stages of this it is not necessary to bolt up each time, as the merely laying on of the shaft and turning will mark the halves of the bearing until fitting is nearly finished. When these upper halves make good contact on all bearings the other caps can be applied. When good bearing surface has been achieved on both halves the bearings are ready for final assembly, but it will now most probably be found that the tightening down of the bolts will lock the shaft up too tight in the bearings.

It is here that provision must be made for taking up wear in the future, and shims must be fitted between the bearing halves to give the necessary clearance. It is, of course, absolutely essential that all bearing bolts should be done up dead tight, and any attempt to adjust the tightness of a bearing by slacking the nuts even a fraction of a turn will be disastrous. If when the nuts are tightened down the bearings are still too tight, another shim on each side must be inserted.



*Three examples of big end fitting. On the left is a correctly fitted bearing ; centre shows a bad effort where a gap exists between the halves of the shell. This loosens the white metal, and causes the journal to wear oval. On the right is depicted another incorrect fitting. The gap between the strap and the con rod shell puts excessive stresses on the bolts and causes distortion.*

These can be bought cheaply for the better known makes of cars, but in any case they can be easily cut out of brass foil with a pair of scissors. A few small sheets of foil of varying thicknesses should always be kept handy, the thinnest being about .002" thick. This can be used for final adjustment.



*In scraping a bearing it is essential to keep the instrument really sharp in order to avoid " chatter."*

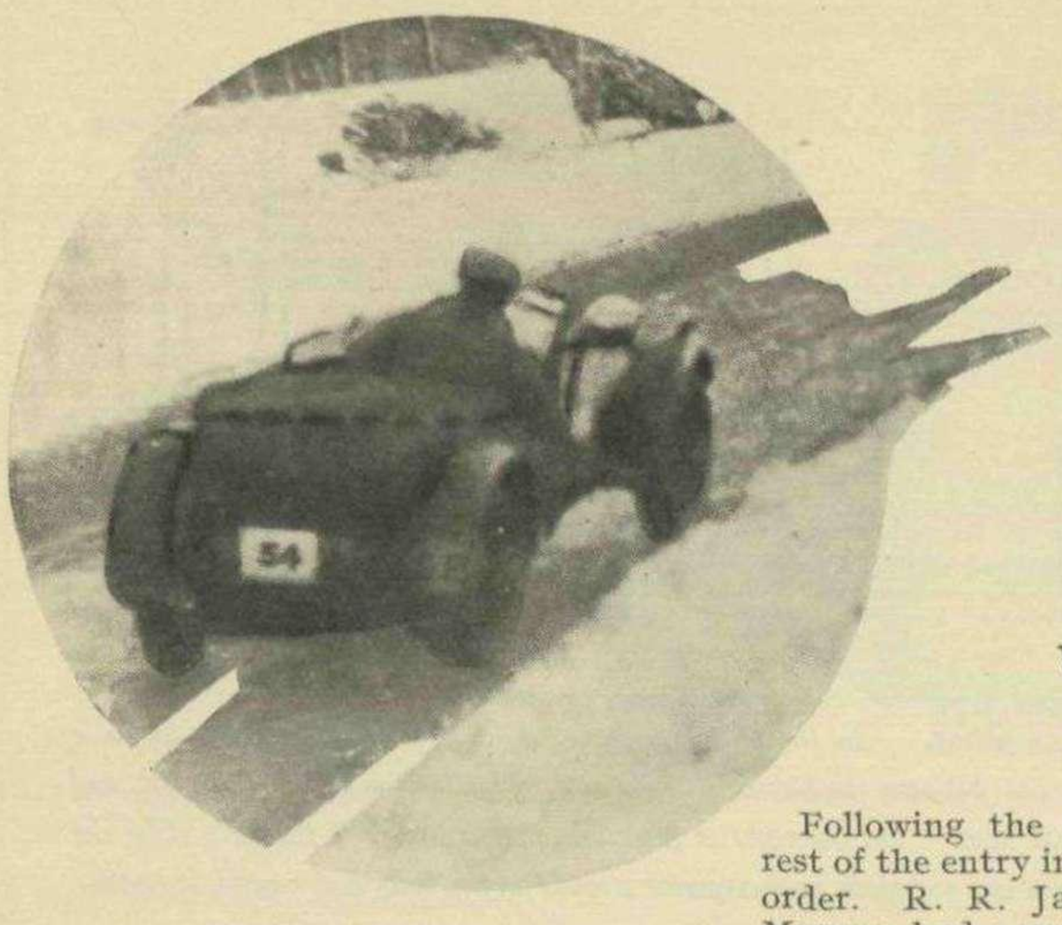
It has been assumed so far that new bearings are being fitted throughout, as this is the biggest job. If, however, the old bearings are in good condition and free from cracks or bad scores, they can be taken up by removing some shims, and scraping in the same manner as described above. When no shims are used, and it is required to take up the bearing it will be necessary to take each surface down with a fine file or emery cloth on a file. This requires very great care to keep the halves square with each other, and unless you are really skilful with these implements it is better to leave well alone, and fit new bearings and shims.

There is a lot of argument about how tight white metal bearings should be fitted, but it really depends on how accurately the scraping has been done. If the bearing is touching over its whole surface, it can be fitted so that it is free at the start, and will not get any looser in settling down. If, however, contact is only made at a few points, these will soon get crushed flat or rubbed away, and the bearing will soon be loose even if it felt tight when put up. No scraped bearing gives perfect contact, but if well fitted need not be put up very tight. In the case of big end bearings a rough test may be made by seeing if the rod, without piston, will just " stay put " when swung out to a horizontal position when the bearing is bolted up dry. From the feel of this stiffness, the correct fitting for the crankshaft can be gauged from the number of bearings and the feel of it.

In fitting the big ends with the crankshaft out, one end of the shaft can be supported in the vice, while the other can rest in a V-notch in the end of a board whose other end rests on the floor. The whole business of fitting bearings requires time and patience, but if the fitter gets tired of fitting a 3-bearing shaft, let him try fitting a complete new set of bearings to a six-cylinder seven bearing crankshaft!

Having got the main and big end bearings ready they can be finally assembled with oil. It will be simplest to fit the pistons at the same time, even if the cylinder block is separate from the case, as it is easier to do these individually than to lower the block on to the whole set at once. If, however, the total weight will then be too much for easy refitting of the engine the block will have to be left off till later. Naturally there will be a lot of work to be done to the upper parts of the engine, and in the next article of this series the treatment of these parts, also valves, etc., will be discussed.

—W.S.B.



# THE VARSITIES AT EWELME

## CHEERY EVENT IN CHILLY WEATHER

THE Intervarsity Hill Climb, run at Ewelme Downs on February 28th, showed that it takes more than beastly weather to damp the enthusiasm of competitors in one of these all-too-rare events. Some sunshine but more snow, coupled with a biting wind, made conditions most unpleasant for drivers and spectators alike. The latter found it distinctly trying standing on the exposed slopes of the hill, what time chilly and blasphemous drivers worked on their vehicles with numb fingers.

In spite of these troubles, however, the whole event was a great success, and thoroughly enjoyed by all present. We must confess to having seen snappier organisation, but after all such an event is run primarily for the competitors, and if the spectators have to wait on occasion, it is merely part of the day's work! The very large entry rather complicated the efforts of the organisers. This large entry was due chiefly to the inclusion of touring car classes, which with very few exceptions produced some remarkably dull motoring.

The actual performances in this category were meritorious considering the type of cars, but all the same we cannot help feeling that they are rather outside the natural scope of a speed event. Rose on an old 8-18 Talbot was good, and in the larger classes W. M. B. May's old 4-seater Aston Martin showed that there is something in a name after all, and though the car was touring, its ancestors were anything but!

The event started with the motorcycle classes, and these were enlivened by the presence of a very fast Rudge in the hands of F. French, who though not actually competing, was there to give a demonstration. This he most certainly did, and till Muir and his Velocette made a special effort towards the close of the proceedings, was leading the field with a time of 34.72 sec. Muir, and Mavrogordato on his Scott, were both very impressive, but although Mavro rode beautifully he was not quite fast enough to beat Muir, whose Velocette was going great guns, and Muir, in a last desperate ascent, reduced the time for the hill to 33.89 secs., which now stands as the present record.

Following the motorcycles, came the rest of the entry in a somewhat haphazard order. R. R. Jackson in his very low Morgan, had a walk-over in the 3-wheeler classes. His time, however, was 41.7 secs. which was really fast. When the sports cars started things began to wake up and the top bend in particular, which was getting wet and loose, proved interesting and exciting. The road being heavily cambered, and the outside of the bend being intersected with gullies, it became advisable to keep close in, but in some cases the desire to do this did overcome centrifugal force.

Falkner's M.G. Midget was good and steady though the outstanding effort in the small cars was that of G. Hartwell on a supercharged Ulster Austin, who got off the mark like a rocket, and shot round the top bend in a steady slide with his foot hard down,—41.18 secs.! The previous car record for the hill being 42 secs. interest increased in spite of the young blizzard which was in progress. Incidentally the latest B.A.R.C. "Safety First" rule anent wearing goggles for racing would hardly seem applicable to racing in snow. Personally we found some kind spectator's "Gor' blimey" the most effective protection.

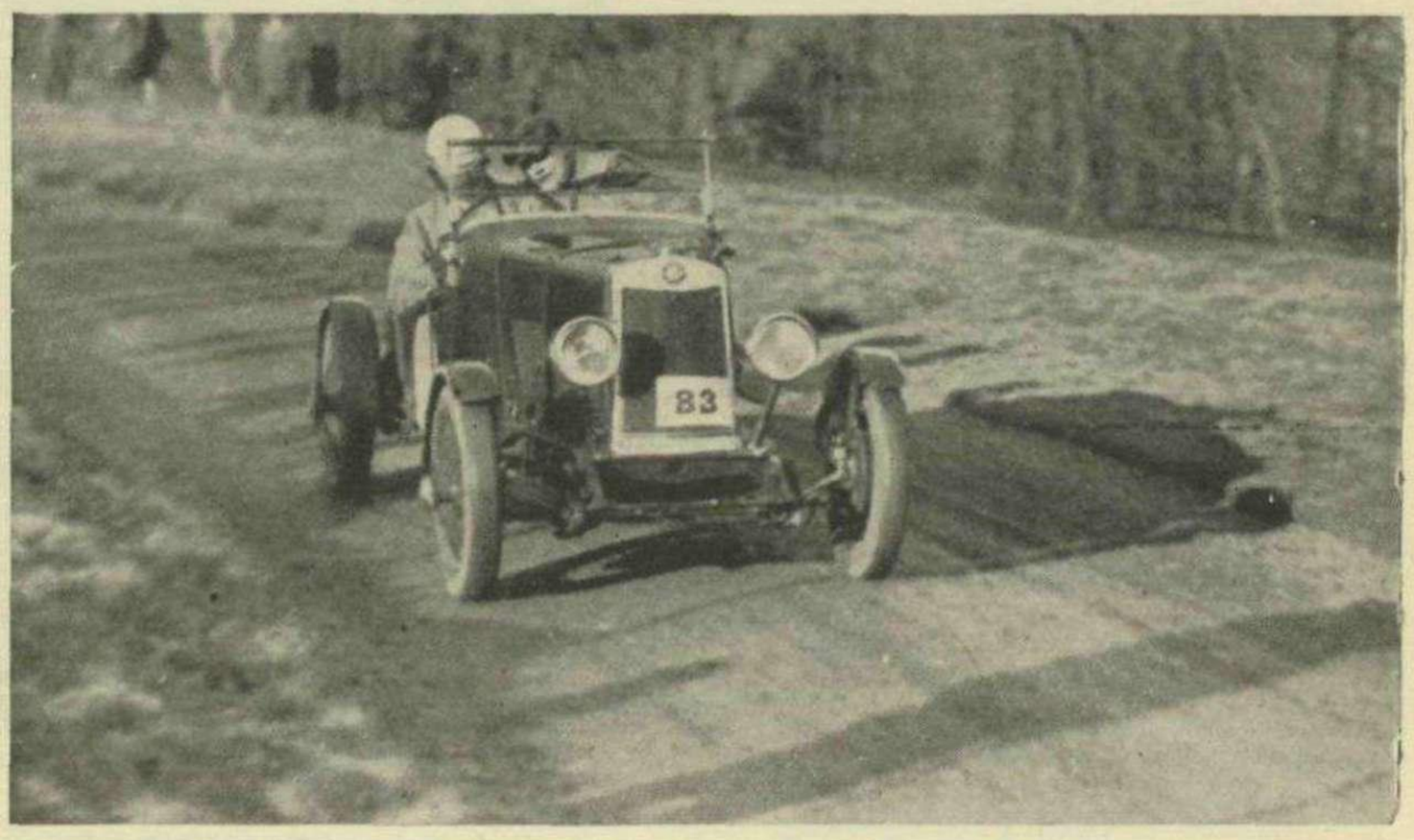
The record then fell to various people, including a very fast supercharged Salmson in the hands of A. Aiken. Demonstration climbs were made by a big Mercéd.s saloon in 40.21 secs., and a stripped Invicta chassis which streaked up in the remarkable time of 39.01.

J. Robinson, on his Brescia Bugatti was not to be outdone, and put up 39.39 secs. On his last run, however, he rather overdid the enthusiastic business, and the car screamed up the hill, entered the last bend at terrific speed, got into a broadside skid and shot over the finishing line. Still with his foot hard down, the car hit a gully on the outside of the bend with the rear wheel, broke the axle shaft clean off, and after springing into the air rolled across the grass into the undergrowth, having deposited Mr. Robinson, somewhat jarred up but not seriously damaged, on the said grass.

Spottiswoode on his 2-litre G.P. "Bug," unfortunately failed to cross the finishing line at all. Getting off the mark with his usual *verve* he took the first right-hand bend travelling almost sideways, shot up the slope of the hill at an altogether improper velocity, entered the final bend in a rousing slide, hit the inside bank and inverted the motor in the fairway. Result—wanted, one new pair of flannels, also repairs to upperwork of Bugatti.

The unlimited sports car class fell to Bertram's 30-98 Vauxhall, closely followed by Kehoe on a low 4½ Invicta. The Invicta showed fine acceleration and speed on the lower slopes, but excessive caution in cornering rather spoilt an otherwise good performance.

The 1500 c.c. sports car class produced a bevy of Frazer-Nashs of various dates but all with plenty of pep. The first six places in this class fell to this make.

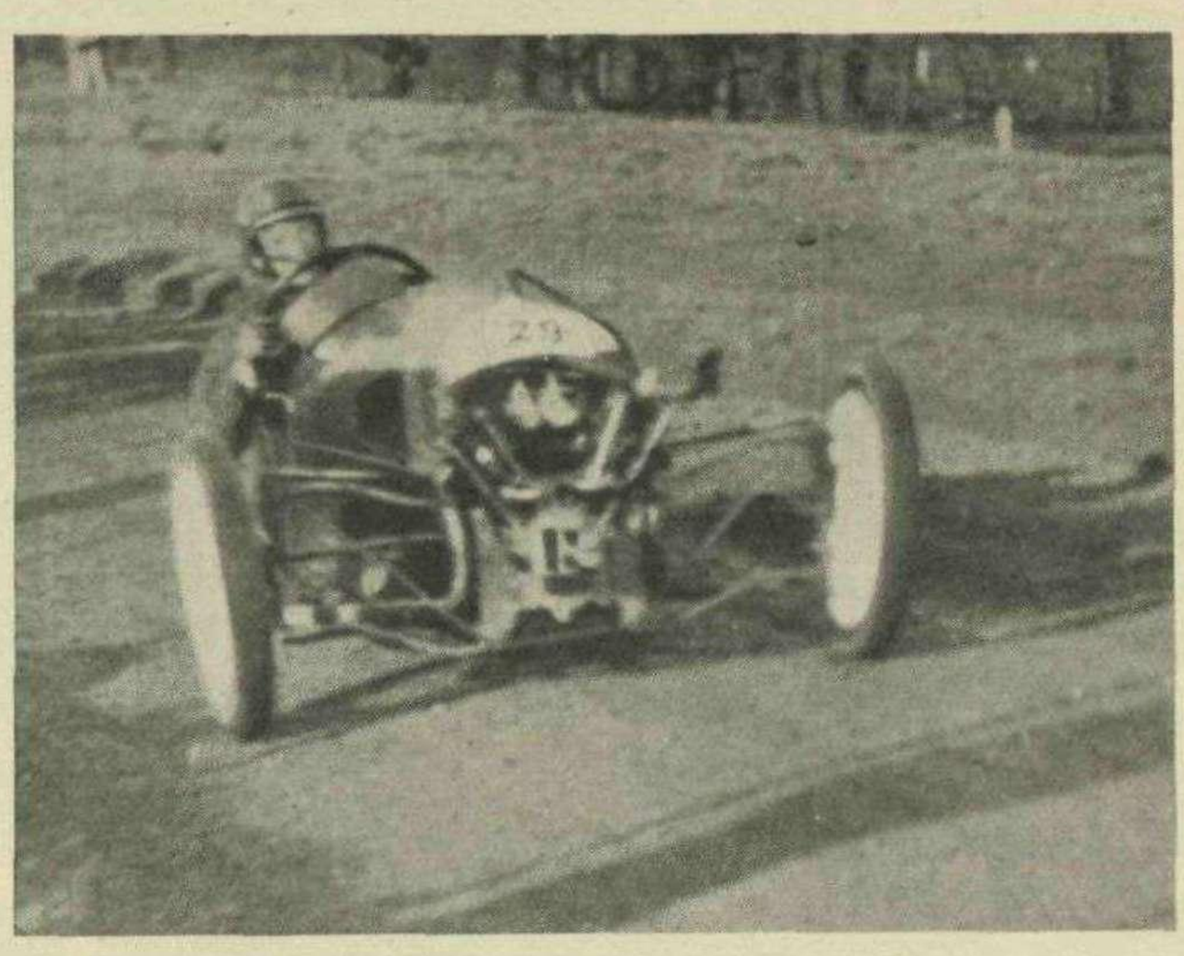



[*Motor Sport photographs*]

*The Hon. A. Chetwynd (Lea Francis) making a neat climb. Above is shown W. S. Braidwood (Frazer-Nash) who won the "Best Veteran's" award.*

*THE VARSITIES AT EWELME—continued.*

The course and grounds were kindly lent for the occasion by Mrs. Harwood-Murray to whom our best thanks are due for an interesting if chilly day's sport. The organisation, if a trifle hazy on occasions was cheerful and thoroughly sporting, while we can personally testify to the excellence of the veterans' award, as an aid to strength this bleak weather. When it first arrived we could hardly move it, but in a few days could lift it quite easily!—W. S. B.



*R. R. Jackson's Morgan streaking by, to clock 41.70 seconds.*

RESULTS.

TOURING CARS UP TO 1100 C.C.

| | Time (secs.) | Oxf. Cam. |
|---|---|---|
| I. Rose, Talbot ..... | 62.71 | 2 |
| A Fairtlough, Austin | 65.78 | 1 |
| P. Sen, Riley ..... | 71.39 | 0 |

TOURING CARS UP TO 1500 C.C.

| | | |
|---|---|---|
| M. May, Aston-Martin | 54.21 | Veteran |
| L. Lutman, Wolseley | 62.70 | 2 |
| I. Rose, Talbot ..... | 62.71 | 1 |

TOURING CARS UNLIMITED.

| | | |
|---|---|---|
| M. May, Aston-Martin | 54.21 | Veteran |
| E. Sexton, Ford ..... | 54.62 | 1 |
| E. Higham, Delage ... | 56.28 | 0 |

SOLO MOTOR CYCLES UP TO 350 C.C.

| | | |
|---|---|---|
| J. Muir, Velocette KSS | 36.00 | 3 |
| H. Sikes, Velocette ... | 40.03 | 2 |
| G. Walmisley-Dresser Wobble ..... | 41.60 | 1 |

SOLO MOTOR CYCLES UP TO 500 C.C.

| | | |
|---|---|---|
| J. Muir, Velocette K.T.T. | 33.89 | 6 |
| M. Mavrogordato, Scott | 35.65 | Veteran |
| C. Cockerell, Velocette | 39.02 | 5 |

THREE WHEELERS.

| | |
|---|---|
| R. R. Jackson, Morgan | 41.70 Veteran |
| A. L. Jones, Triumph | Failed |
| B. Thomson, Royal Enfield ..... | Non-starter |

SPORTS CARS UP TO 1100 C.C.

| | | |
|---|---|---|
| M. Falkner, M.G.Midget | 50.60 | 1 |
| — Harwood-Yarrod, Riley ..... | 53.36 | Veteran |
| J. M. Sugg, Morris Minor ..... | 59.60 | 0 |

SPORTS CARS UP TO 1500 C.C.

| | Time (secs.) | Oxf. Cam. |
|---|---|---|
| C. Winslow-Taylor, Frazer-Nash ..... | 47.47 | 3 |
| E. Bass, Ditto ..... | 48.39 | 2 |
| D. Hopkins, Ditto ... | 49.86 | Veteran |

SPORTS CARS UP TO 3000 C.C.

| | | |
|---|---|---|
| L. Berry, Austro-Daimler ..... | 46.88 | 3 |
| R. Mere, M.G. Six ... | 50.92 | Veteran |
| L. W. Spratt, Bentley | 50.71 | Veteran |

SPORTS CARS UNLIMITED.

| | | |
|---|---|---|
| O. Bertram, Vauxhall | 44.00 | 3 |
| E. Kehoe, Invicta ... | 45.00 | Veteran |
| H. Stafford, Invicta | 45.08 | 2 |

SUPER-SPORTS CARS UP TO 850 C.C.

| | | |
|---|---|---|
| G. Hartwell, Austin 7 | 41.18 | Veteran |
| G. Willis, B.C. Austin | 43.61 | Ditto |
| Viscount Curzon, M.G. Midget ..... | 49.60 | 1 |

SUPER-SPORTS CARS UP TO 1100 C.C.

| | Time (secs.) | Oxf. Cam. |
|---|---|---|
| A. Aiken, Salmson ... | 40.02 | 1 |
| G. Hartwell, Austin 7 | 41.18 | Veteran |
| J. Wood, Riley ..... | 41.77 | 0 |
| J. Robinson, Bugatti | 39.39 | 2 |
| A. Aiken, Salmson ... | 40.02 | 1 |
| W. Braidwood, Frazer-Nash ..... | 40.81 | Veteran |

SUPER-SPORTS CARS UP TO 3000 C.C.

| | | |
|---|---|---|
| J. Robinson, Bugatti | 39.39 | 1 |
| A. Aiken, Salmson ... | 40.02 | 0 |
| W. Braidwood Frazer-Nash ..... | 40.81 | Veteran |

SUPER-SPORTS CARS UNLIMITED.

| | | |
|---|---|---|
| J. Robinson, Bugatti | 39.39 | 2 |
| A. Aiken, Salmson ... | 40.02 | 1 |
| W. Braidwood, Frazer-Nash ..... | 40.81 | Veteran |

Total Marks—CAMBRIDGE 40; OXFORD 22.

Best Veteran—W. BRAIDWOOD.

Fastest Time—Cars: W. LACE, Invicta, 39.01 secs. (demonstration). Motor Cycles: J. MUIR, 33.89 secs.

## BETTER STREET LIGHTING

THE steady increase in night traffic emphasises the necessity for adequate and efficient illumination of roads and streets.

The Automobile Association has recently closely investigated street lighting conditions in Greater London.

The types of lighting employed include electricity, incandescent gas, high pressure gas (which is practically super-charged incandescent gas) and carbon-arc lighting. All these systems are used in a variety of ways, and the strength of illumination varies according to candle power, voltage, etc. Different methods of diffusion of light are used; while some lamps are fixed on standards, others are hung across the roadways.

In cases where lamp posts are staggered, instead of being erected in line on the kerb, the road surface is better lighted, especially in residential streets or roads across commons and open spaces. One London park is lighted by two Authorities. One Authority provides generous illumination, the other does not.

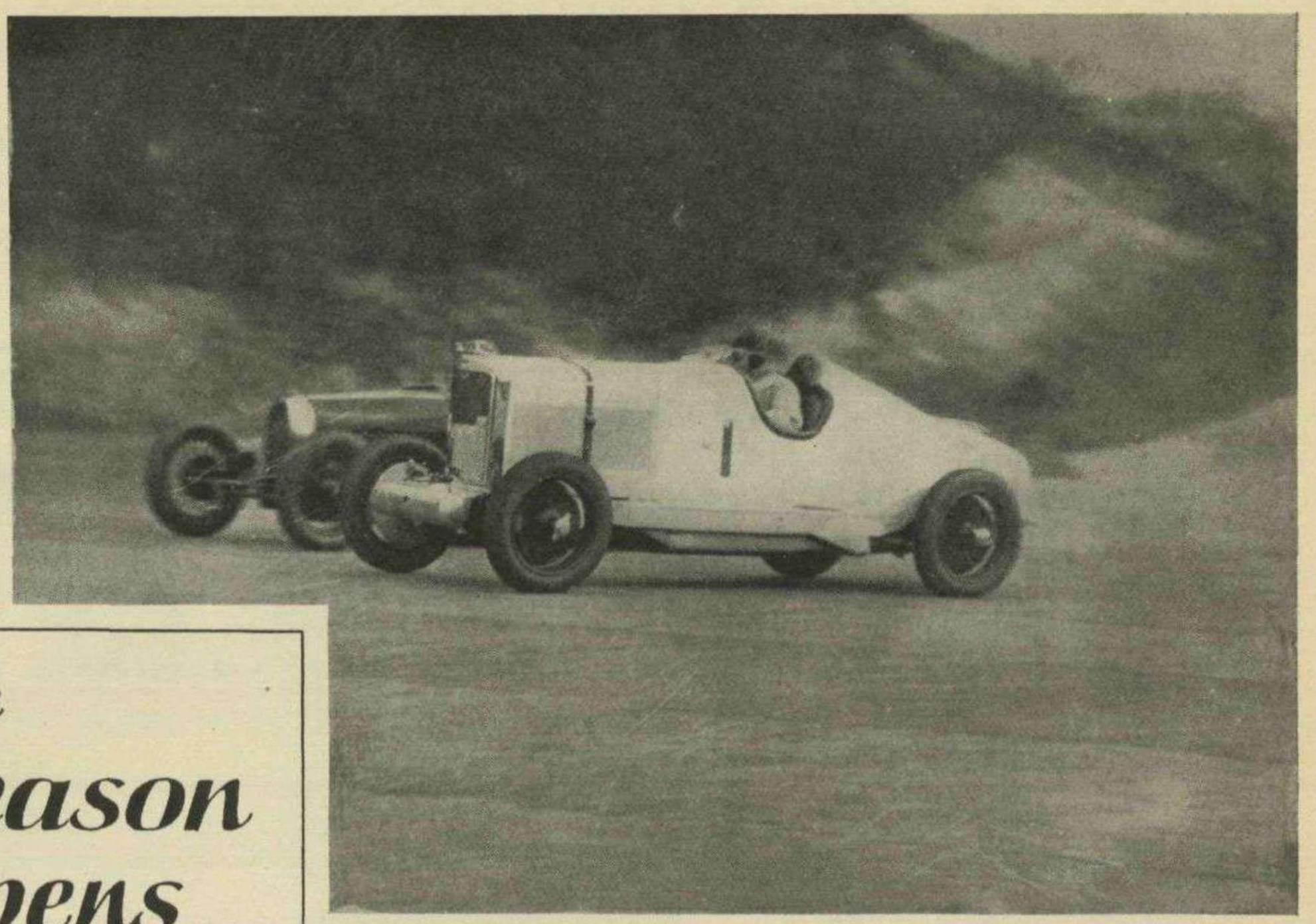
Standardisation of street lighting (and possibly re-arrangement of lighting Authorities' boundaries) is the obvious remedy, and one which has recently received the close study of the Illumination Bodies of the British Engineering Standards Association.

The A.A., in the interests of road users is always pressing for general improvement in street lighting, and information from members concerning any roads or streets which are adequately illuminated, thereby rendering unnecessary the use of headlamps, will be welcomed by the Association.

*The upper photographs of B.A.R.C. Opening Meeting show (from left to right) D. G. Evans (Bugatti) at the Fork Hairpin in the Mou Clovers (Bugatti) to win the Mountain Racing Handicap. The centre picture shows L. T. Delaney (Lea-Francis) about to pass Torry' Nash), and M. Mavrogadato (Scott), on the final be*

*(Motor Sport Pho*







# The Season Opens on Road and Track



*ntain Racing Handicap; J. R. Cobb (Delage) winning the Lightning Short Handicap; and B. E. Lewis (Talbot) passing Lt. J. H. Austin in the Mountain Speed Handicap. The lower photographs (left to right) show Hartwell (Austin), Johnson-Ferguson (Frazer-nd of Ewelme Down in the Inter-varsity Hill Climb.*

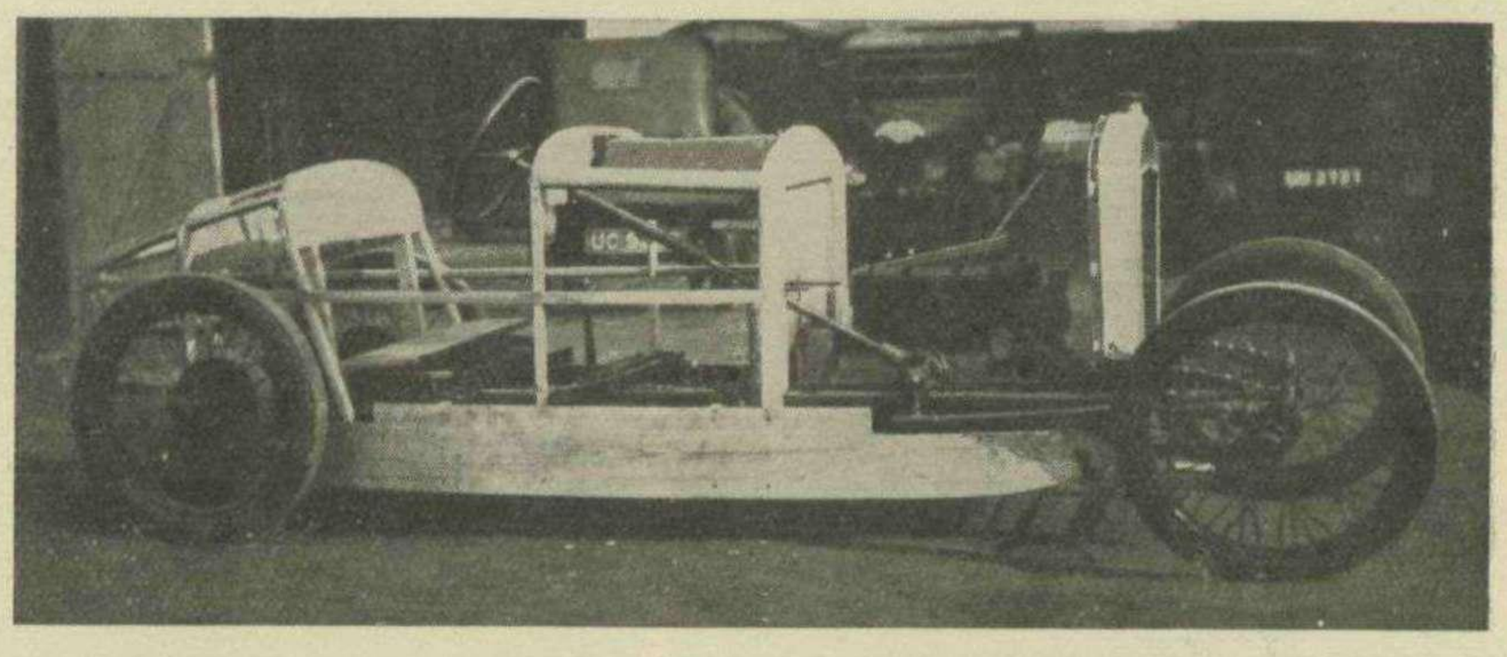
*otographs.)*

# A CUNNING CONVERSION

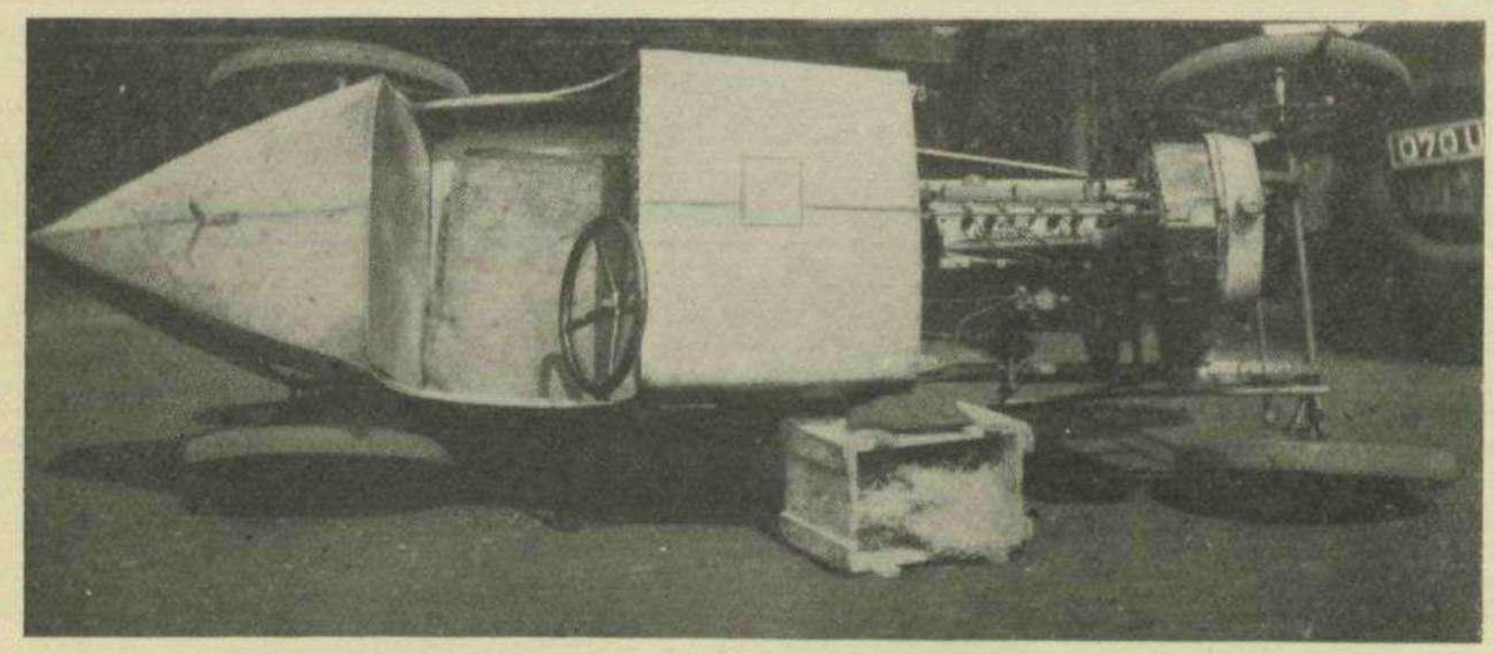
## *How an old G.N. was Powered with a Morris Engine with Excellent Results.*

HOWEVER much motorcars may progress and become standardised, there will always be a certain class of enthusiasts who want to build something of their own. I am not thinking at the moment of the idealists who wish to design unique and wonderful vehicles in the style they think will be the fashion twenty years hence, but of the more practical and usually rather hard up motorists who want to have the greatest possible amusement at the least possible cost, and do not mind doing some work to get it.

Such a one was the constructor of the vehicle about to be described. The number of G.N. enthusiasts is still large, in spite of the fairly long time since they were last made, and being one of them, it seemed natural to use a G.N. chassis as the basis of the proposed car, especially as he happened to have one at the time. The power unit was a Morris Cowley engine of fairly ancient vintage, but considerable power, and as the result is still in action a description may be of interest to some of our readers.



*The G.N. hybrid in half-completed state.*



*A plan view showing the compact manner in which the engine is installed, and the lines of the tail.*

The good roadholding and handling of the G.N. chassis and the reliability of the Morris engine are well known, and the pair makes a lively and amusing vehicle, and the fact that the engine bearers are just the correct width for the chassis is a great initial advantage.

The first thing to do is to remove the body complete, and forget it. For the job to be satisfactory a new body is essential. This is not as bad as it sounds. If the engine has been acquired *avec* gearbox, as is most likely, remove this and forget it too!

As old Cowley engines can often be picked up for a very small sum this should not cause any heartburning. Better still, sell it if you can!

Remove the flywheel (don't forget this, however), take out the three pins which drive the Morris clutch, and turn the rear flange of the flywheel down flush to give a flat disc. Take the four pins out of the G.N. flywheel and fit them in the Morris flywheel in exactly the same relative positions. Those not in a position to do this work themselves will not find it expensive to get it done locally. The flywheel naturally requires a big lathe to handle it well, but all the other work of this conversion can be managed easily on a $3\frac{1}{2}$ inch Drummond. If the engine is the older type it will have a dry clutch. If later it will have an oil feed to the clutch department which must be stopped up. Refit the flywheel and wire the retaining bolts.

The G.N. clutch will now fit straight on to the engine. The fibre brushes which take the drive from the pins will probably require renewing. The fibre blocks used on a Morgan clutch withdrawal do well for this. They are thicker and wear longer. Longer iron rivets will of course, be required.

Drop the engine on to the chassis, when all cross shafts, etc., have been removed. In actual practice it is simpler to take the chassis, less front axle, and thread it over the engine; then lift the lot on to suitable blocks. The sump should be removed, and the engine position settled so that the starting handle boss comes close to the front chassis number. In the centre of this drill a hole large enough for the starting handle shaft. Cut this shaft off to such a length that when the handle is refitted it will clear the track rod. It must be made detachable for sump removal, by means of a set screw or similar device. At least a 5/16 inch bolt, preferably larger, should be used, or starting will shear it. See that

*A CUNNING CONVERSION—continued.*

the handle is fitted in correct relative position to the compression strokes, or swinging will be difficult.

Having settled the position of the engine and centred it in the chassis, the holes can be marked and drilled ½ inch. The bolts should pass right through the chassis, and through hard wood blocks made a tight fit in the channel. The steering box will now lie between the front and rear engine bearers. The column can be raked further by a suitable wedge between the box and chassis.

The front axle can then be reapplied to the chassis. Stronger front springs are advisable. This is most cheaply managed by fitting an extra leaf between each of the existing leaves, the length being the mean of the leaves above and below in each case. The resulting seven-leaf spring is adequate for the additional load, but check leaves can be fitted above them if desired.

In any case new U-bolts or plain bolts and straps will be needed. Suitable hard wood or aluminium wedges under front and rear springs will drop the chassis to axle level and improve stability and appearance. The front axle radius arms must be strengthened, either by substituting a tube or channel for the existing flat strip, or by fitting the Hartfords used on present-day Frazer-Nash cars. The latter is the better method, but also the more expensive.

To return to the transmission—the propellor shaft must be shortened. This was done by removing the required amount from the centre of the shaft (which is a tube) and inserting a solid piece which was bolted through with two ⅜ inch bolts in each section. Many other ways of doing the job will occur to readers, but it was not wished to disturb the ends.

The bush in the front of the propellor shaft must be withdrawn and a solid spigot turned up and fitted in its place. A good pressed-in fit is sufficient. The spigot itself should be a fairly easy fit in the spigot bearing of the Morris engine.

The body is the next item, and the one fitted is somewhat unorthodox in design but very effective in results. The construction of the framework and the final appearance can be fairly easily seen from the photographs.

Two ash cross members 4 inches deep and 1 inch thick are fixed by long coach bolts under the chassis; one bolt just forward of the bevel-box and the other just in rear of the clutch. Their length decides the width of the body which in this case was 2ft. 8ins. To the ends of these members were screwed vertical pieces of ash, 1 inch square and 9 ins. long. These carried the main lower frame of the body consisting of two 9 inch by ½ inch deal planks. At the front these fit inside the under shield support, and are cut away to clear the rear axle and meet, boat fashion, in a stern post.

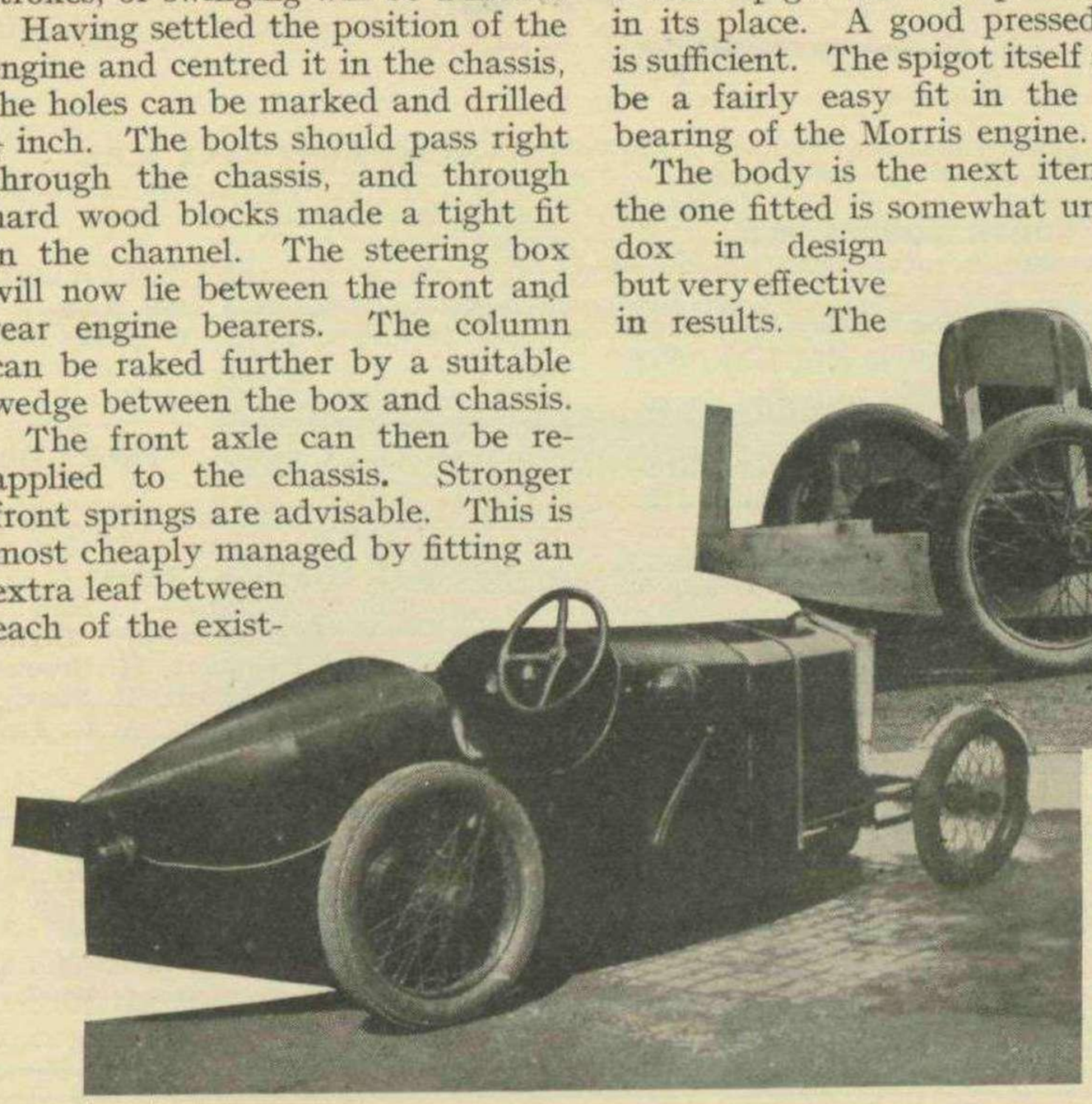
This frame carries all the uprights of the body except the dash itself, which is supported by brackets to the chassis and also by being bolted to the rear of the engine; and except the seat which is mounted direct on the chassis, and forms the main support for the tail. This is absolutely rigid and will support the weight of as many people as can sit on it.

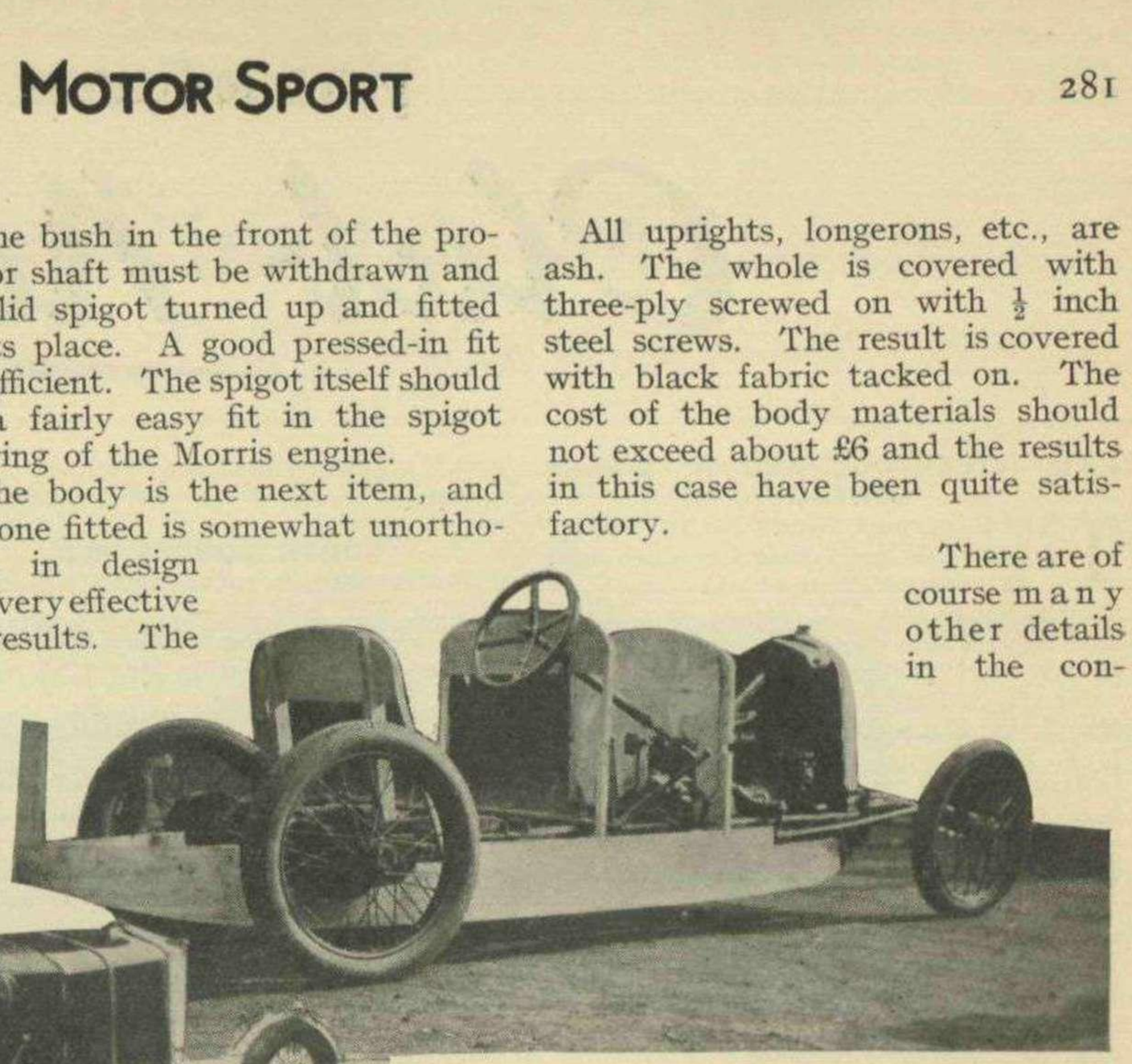
All uprights, longerons, etc., are ash. The whole is covered with three-ply screwed on with ½ inch steel screws. The result is covered with black fabric tacked on. The cost of the body materials should not exceed about £6 and the results in this case have been quite satisfactory.

There are of course many other details in the construction which might be explained, but will be fairly obvious to anyone with a mechanical turn of mind. The controls will, of course, have to be revised considerably and the seating on the finished job will be much further back. If the owner is tall an additional six inches let into the steering column will improve the driving position. Other modifications to the chassis will depend chiefly on the amount of money available, and on the ingenuity of the constructor. The gear ratio will stand raising considerably as the Morris has plenty of power at low speeds, and the whole car is so light that a 3.5 top gear is not too high for a nice cruising speed.

If the G.N. chassis is the old type with spring steel brake shoes, the newer type of cast iron shoes with Ferodo lining should be substituted.

No claim is made that the resulting body is the best design for the chassis, but it can easily be modified, and the method of construction makes it light and strong. The number of conversions possible, with the G.N. chassis as a basis, is very large, and variations of the above theme should be capable of providing the impecunious owner with an interesting vehicle and plenty of practice in the use of workshop equipment. —W.S.B.





*Here is seen the car as it appeared when finished, and above, in an early stage of being rebuilt.*

# Club News

### J.C.C. (LIVERPOOL AND N. WALES CENTRE).

THE Liverpool and North Wales Centre of the Junior Car Club held its annual dinner and dance at the Exchange Hotel, Liverpool, some little time ago, when about 130 members and friends were present.

Mr. H. S. Phillips was in the chair and Mr. J. F. Simpson acted as M.C. Mr. L. F. Dyer, general secretary, responded to the toast of "The Club" and recalled that the Club was proud of two of its members, Sir Malcolm Campbell and the Hon. Mrs. Victor Bruce.

Mrs. Lister proposed "The Visitors," to which Major Harvey Kelly, chairman of the Southport M.C. replied.

### KENT AND SUSSEX L.C.C.

Speed trials will be held at the Race Hill, Lewes, on the following dates:—May 2nd, June 27th and September 19th.

The hon. secretary of the Kent and Sussex Light Car Club is Mr. A. V. Warren, 51, Ringwood Road, Eastbourne.

### NEW STOCKPORT AND DISTRICT M.C. AND L.C.C.

The next important event of this club will be the Holden Cup Trial on April 12th.

The hon. secretary of the club is Mr. G. S. Jones, "Garmston," Ashton Road, Bredbury.

### NORTH LONDON M.C.

Forthcoming events recently announced include the Schoolboys' Trial on April 11th, a treasure hunt on May 2nd and the Home Counties Trial on May 17th.

### NORTH WILTS M.C. AND L.C.C.

At the annual general meeting the following officers were elected for 1931:—President, Major F. G. Wright, J.P.; captain, Mr. E. J. Edmonds; vice-captain, Mr. D. R. Winslow; hon. treasurer, Mr. T. Horton; hon. secretary, Mr. L. C. Newman; financial secretary, Mr. J. T. Cave; trials secretary, Mr. A. K. Colborne; auditor, Mr. J. M. Johnson; committee, Messrs. D. Penney, G. Plaister, G. Morris, C. A. Gray, S. Ellett, E. R. Huband, H. R. Kemble.

Further particulars of the club can be obtained from Mr. L. C. Newman, The Borough Press, Eastcott Hill, Swindon.

### BENTLEY SERVICE M.C.C.

Reliability Trial result:—

GILES PLAQUE.—R. A. Hevard.
VISITORS' CUP.—J. J. Allen.
SILVER MEDAL.—F. Webb.
BRONZE MEDAL.—W. Payne.

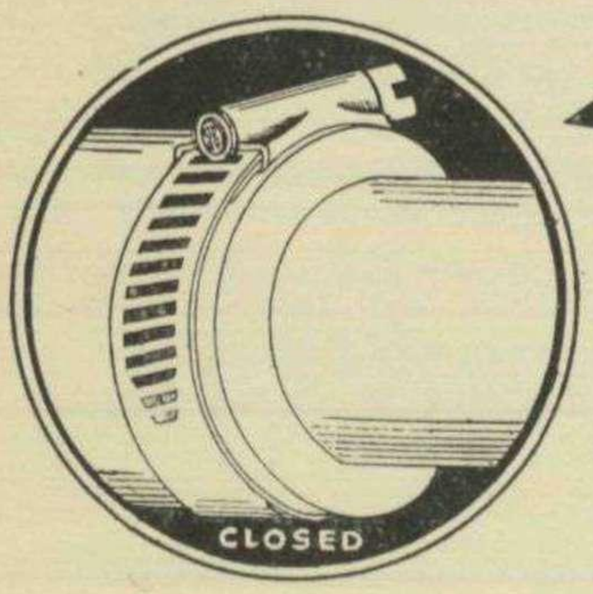
### BLACKMORE VALE M.C.C.

Grosvenor Cup trial provisional result:

GROSVENOR CUP.—H. Flook (498 A.J.S.).
ACE CUP.—L. Sweetman (249 Velocette
GROVE CUP.—L. May (499 Rudge).
DON YOUNG CUP.—E. C. Jukes (770 B.S.A. sc.).
BELMONT CUP.—B. Heard (493 B.S.A. sc.).
BLACKMORE CUP.—H. Flook (498 A.J.S.).
A.B.C. CUP.—G. E. Bull (248 Ariel).
TEAM CUP.—Blackmore Vale M.C.C. (E. Britten, J. Hale, E. C. Jukes).
SECOND CLASS AWARDS.—J. Hale.
THIRD CLASS AWARDS.—J. Dight, G. Money, R. D. Plucknett, H. Brooks, P. W. Hoad, R. W. Corbett, R. Strong, C. W. Bond, C. R. Jenkins, A. G. Delbridge.

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


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# Speed Trials in Isle of Man

*Island Enthusiasts Set the Ball Rolling*



*The magnificent Ballamoda straight which formed the course.* *The rider approaching at high velocity is Shimmin (Norton).*

MOTOR Club secretaries in the Isle of Man have one great advantage over their fellows on the Mainland when it comes to arranging speed trials, namely, that the laws in force in the Island permit the use of public roads for racing purposes. A very successful meeting was held last month on the Ballamoda straight, between Ballacraine and Castletown, and some excellent speeds were put up. Unfortunately, the Manx Automobile Club were unable to co-operate with the Southern District and the Peveril M.C.C.'s, who organised the event, so that the cars which ran were merely the unofficial entries of the two clubs mentioned.

The Ballamoda road is a magnificent stretch some three miles in length, and the course marked out embodied a quarter mile flying start, followed by a quarter mile timed section, with a gradient of 1 in 25. There were some 50 entries, and the motor-cycle entry was notable for the duel between Shimmin (Norton) and T. M. Sheard (Sunbeam), the former T.T. winner. They clocked equal times on their first run, and on a second attempt Sheard increased his speed to 75 m.p.h.; Shimmin was able to lower his time by 1/10th second, and thus secured fastest time of the day.

Fastest time in the car class was made by T. G. Moore (4½-litre Bentley), and D. M. Brown on a venerable 30-98 was little slower. The head wind and the short run did not allow the cars to compare favourably with the motor-cycles, but the keenness shown by the drivers gives hope of a good show if some more entrants can be recruited for the Hillberry run, which takes place in April.



[*Motor Sport Photographs.*

*One of the car entrants—P. Kissach (Bentley) about to start.*

RESULTS.

Motorcycles—

| | | |
|---|---|---|
| | G. Shimmin (Norton) | 73.84 and 75.78 m.p.h. |
| | T. M. Sheard (Sunbeam) | 73.84 and 75 |
| | L. Gerrard (Ariel) | 71.64 |
| | E. Christian (Velocette) | 70.93 |
| | G. A. Harding (A.J.S.) | 69.99 |
| Fastest 500 c.c. | G. Shimmin | 75.78 |
| 350 c.c. | E. Christian | 70.93 |

| | | |
|---|---|---|
| Cars. | T. G. Moore (4½-litre Bentley) | 62.33 m.p.h. |
| | D. M. Brown (Vauxhall) | 58.3 |
| | P. Kissach (3-litre Bentley) | 50.35 |
| | L. Dawson (Morgan) | 60 m.p.h. |

In view of the facilities for holding speed trials in the Isle of Man, it has been suggested that a combined meeting of the Island clubs and a Mainland club might be held in July. Anyone interested in this scheme is invited to communicate with T. A. Kelly, c/o Highway Board, Douglas, who will forward the application to the right quarters.—T.M.

# ITEMS OF INTEREST

## *FROM VARIOUS SOURCES*

**New Brooklands Rules.**

A REVISED edition of the Racing Rules and Regulations has been prepared by the Brooklands Automobile Club and approved by the Royal Automobile Club. All races at Brooklands during 1931 will be subject to the new conditions.

The majority of the old racing rules have been incorporated in the new series and the following are among the additions :—

*Cars Ineligible.*—Cars manufactured more than ten years ago are not eligible for Brooklands Open Meetings unless the race regulations for a particular meeting make special arrangements to the contrary.

*Medical Certificates.*—The authorities reserve the right to require a driver to submit to an examination by the Track Medical Officer before participating in a race.

*Smoking.*—Smoking whilst racing or practising is not permitted. An offence under this rule would, of course be extremely rare, but there have been instances in the past of a driver commencing a lap at speed without noticing that he was smoking a cigarette at the start.

*Eye Protection.*—The wearing of goggles or some other form of protection for the eyes is now a compulsory measure.

*Safety Lines and Flag Signals.*—The necessity for driving within the allotted " safety " lines at the Fork is the subject of a new regulation, but this is not a departure from the supplementary instructions which were issued at some of the 1930 meetings.

Drivers must be acquainted with the meaning of the various flag signals as laid down in the International Sporting Code.

The drafting and final approval of the new Supplementary Regulations is the result of careful observations by the Track authorities and the Stewards during 1930. The increasing popularity of the Brooklands Motor Course has brought into being circumstances which were not apparent when the original rules were made or when amendments were incorporated in the past.

**Lord Wakefield and Ulster T.T.**

FEW men have done more to encourage speed contests in this country than Lord Wakefield of Hythe, whose donation of £1,500 to provide the prizes for the R.A.C. Ulster T.T. races has been recently announced.

He co-operated in Sir Alan Cobham's flights to Australia and round Africa. The Wakefield Gold Trophy for maximum speed of motoring now held by Sir Malcolm Campbell was donated by him, of course, and " Miss England II," has cost him £40,000.

Lord Wakefield has done all this ungrudgingly because he believes that the winning of the speed records in air, on land and in the water has national value to Britain in increasing our prestige in the eyes of the world.

For example, Lord Wakefield demonstrated his faith in the value of speed victories by his purchase of the Golden Arrow, Segrave's famous car, which he sent on tour round the world. The car created tremendous interest and the result was an increase for the sales of British cars wherever it went. Lord Wakefield has now sent the Golden Arrow to Buenos Aires, where it will carry on its good work as silent salesman for Great Britain.

For twenty years Lord Wakefield has been encouraging aviation. He has presented aeroplanes to many clubs in England and in Canada, Africa, India, Australia and New Zealand, and has given ten thousand free flights to children in this country.

**Austin for Italian 1,000 Miles Race.**

FOR the first time in the history of the world's greatest road event—the Italian 1,000 Mile Race—a British " baby " car—an Austin Seven—will battle for the honours against the world's fastest racing cars.

The Race commences on April 11th and is from Brescia, Northern Italy to Rome, and back to Brescia by an alternative route—a distance of approximately 1,018 miles.

The course is over the ordinary roads and a terrifically high average speed is maintained in spite of the fact that the roads are not closed to the public.

Last year's winner—Nuvolari—averaged 62.41 m.p.h., including stops.

The Austin Seven which is competing is a standard supercharged sports model, and has been entered by the Austin Agents in Milan—Messrs. Nicholls Bros.

**Service on the Continent.**

MOTOR trips abroad are growing in popularity. Custom and other formalities have during the last few years been so simplified that a tour in France is now very little more troublesome or costly than a tour, say, in the Highlands.

Till quite recently the lack of adequate service facilities discouraged many from venturing abroad ; but nowadays most of the more important concerns maintain well equipped service stations or agencies in the more popular touring centres.

Rolls-Royce, for example, have established no fewer than five stations in France and Spain. Those in Paris and Madrid are open throughout the year. At Nice, Biarritz and San Sebastian, stations operate during the respective " seasons." Service is available at Nice from November until April and at Biarritz and San Sebastian from July to October. There is, in addition, a well-equipped sub-agency in Barcelona.

In Paris, Madrid, Nice and Biarritz the depots have been specially designed to handle Rolls-Royce cars and all repairs are supervised by engineers trained at the company's works in Derby. Each station carries a large stock of spare parts and can immediately undertake almost any kind of repair. New and larger premises have been opened in Nice to give still better facilities to Rolls-Royce owners wintering on the Riviera.

**Activities at Cricklewood.**

IT may not be generally known that within about the last twelve months very considerable extensions have been made at the Bentley Works at Cricklewood. These include a large machine shop, which at the present time is working night and day upon the new eight-litre chassis.

Formerly the chief components of Bentley cars were made, to the very closest limits, by specialist contractors. For this reason they were sometimes referred as an " assembled " cars. Now to a very big extent *all* cars are " assembled," and in this there is nothing whatever open to criticism.

Bentley Motors Ltd., felt, however, that in so highly developed a chassis as the eight-litre it would be desirable, if only in the interests of economical production, to have every process under their own immediate control. They have accordingly installed a machining department which in every respect is the last word in modernity. In these days of industrial depression it is pleasant to know that it is kept 100 per cent. busy.

**Reducing Wear and Tear.**

MORE motorcycles are damaged as the result of inefficient lubrication than are smashed in road accidents. Replacements may cost as much as, or more than repairs arising out of an accident—and every penny of the cost must come out of the owner's pockets. One cannot insure against wear and tear.

Many a raw beginner ill-treats his machine through sheer ignorance of the vital importance of keeping it well supplied with oil. Many a seasoned driver, on the other hand, ill-treats his machine just as badly through mistaken " economy." He buys an unbranded lubricating oil instead of a guaranteed proprietary article on which one of the national concerns has staked its reputation. He may save a few pence per gallon on oil but inevitably he will have to spend several pounds in repairs and renewals.

Beginners and old hands alike will pick up many useful tips in a handy little booklet, " Motorcycle Lubrication Simply Explained," issued free by C. C. Wakefield & Co. The author is Mr. B. H. Davies, the well-known writer on motorcycle topics.

With the aid of numerous diagrams, he discusses the various lubricating systems now in use, and then goes on to explain the working of each component, the engine, the transmission and so forth, with hints on how to ensure maximum efficiency.

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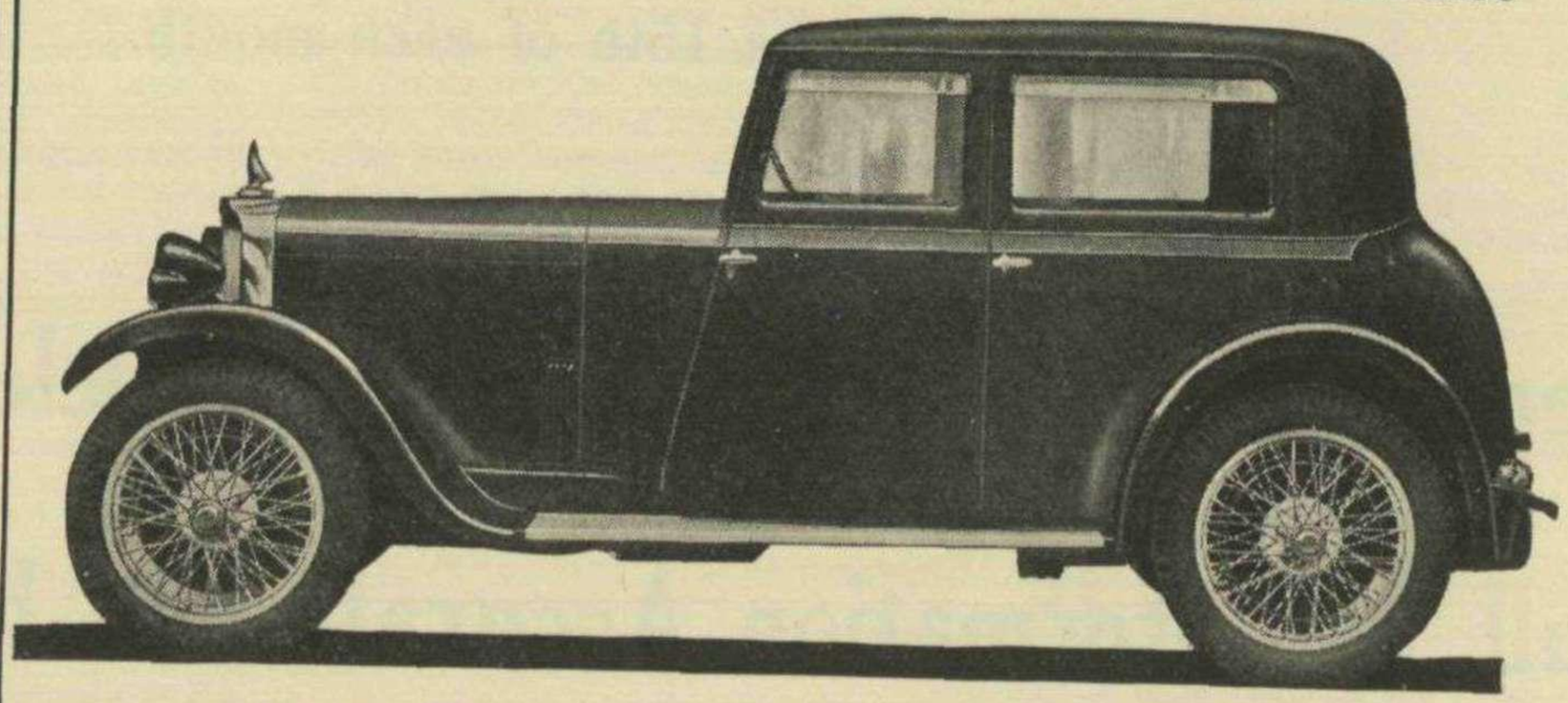
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## TALBOT—the ONLY CARS

to run through the searching mechanical tests of Le Mans, the Irish Grand Prix and the Ulster Tourist Trophy *without a stop for mechanical trouble of any kind.*

A Talbot was the only car to achieve the unprecedented distinction of completing the 500 Miles Race at Brooklands *without a single stop for anything.*

MODEL ILLUSTRATED

**14·45 h.p. Light Six "SCOUT" Model**

**4-door coach-built Saloon**

**£395 complete.**

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*Please send me the Talbot Catalogue.*

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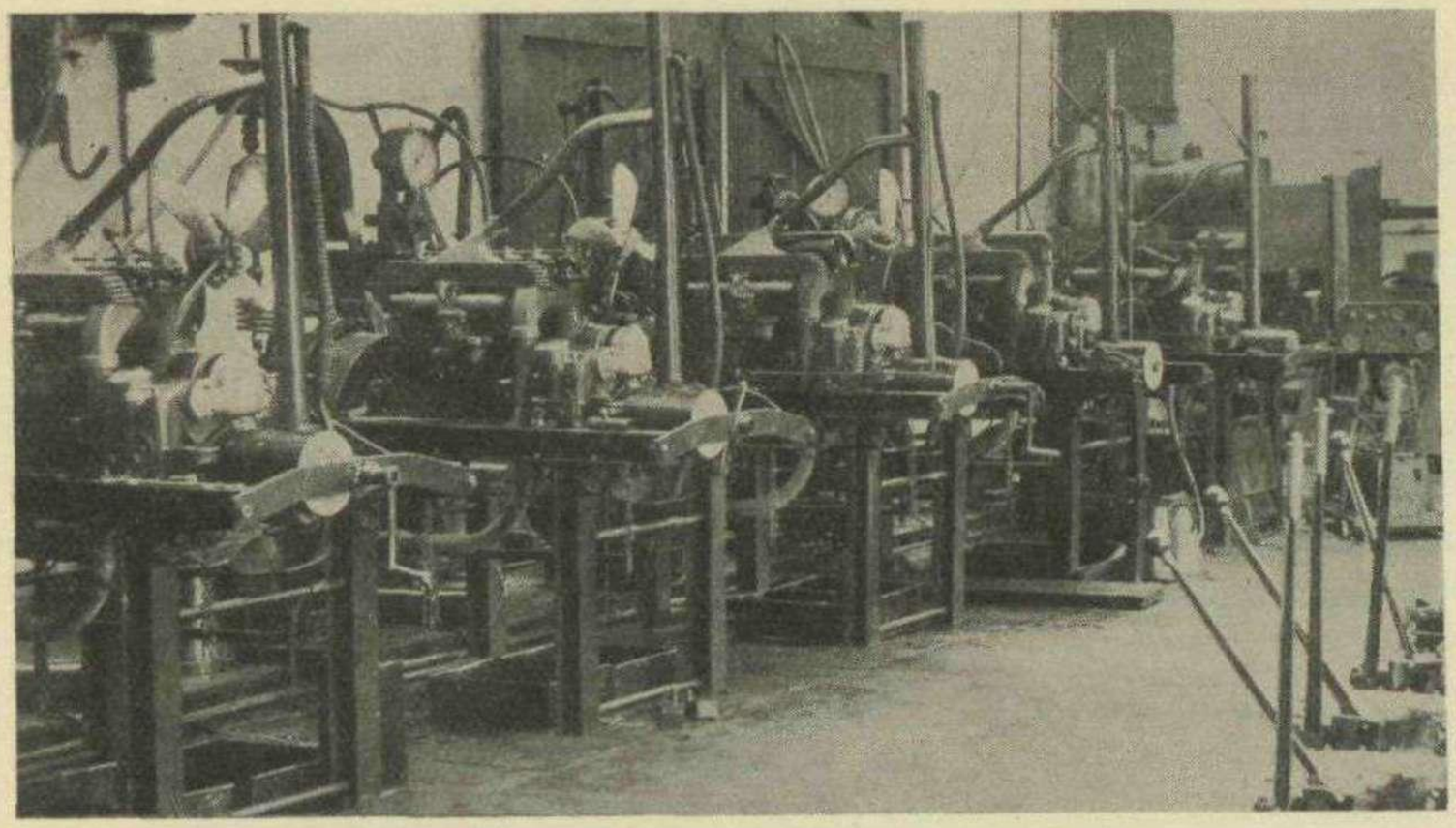
.....

THE MOTOR.

***Spare Parts Depot for Scotland: The Scottish Cars Service & Garage, Ltd., Titwood Road, Crossmyloof, Glasgow.***

# A FIRM WITH A HISTORY

## A TOUR OF THE WORKS OF CLEMENT-TALBOT LTD.



*A row of power units on the brake in the bench-test department at the Talbot factory.*
[*Motor Sport photographs*]

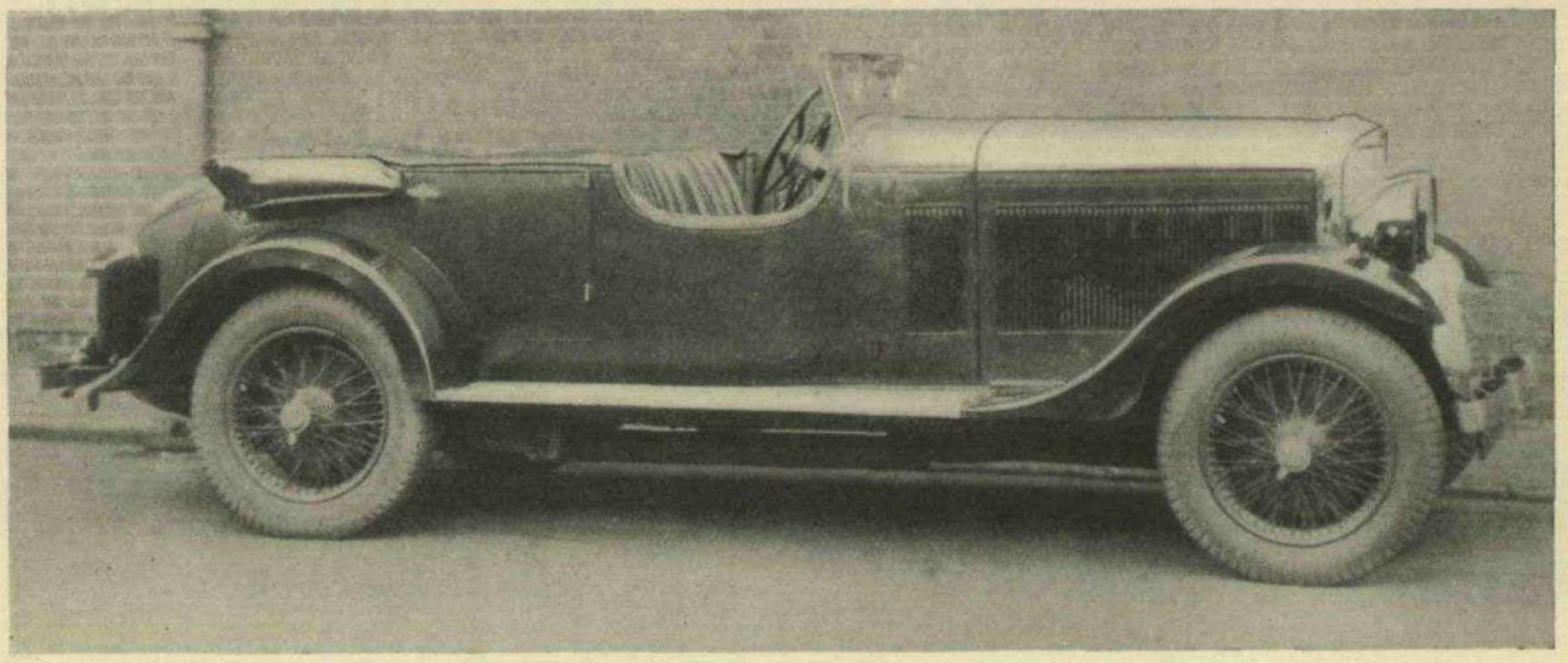
THE history of the motor industry contains many records of makes which have failed to stay the pace in the pioneer years, and given way to others who have grown up in the later stages of development. There are, however, some firms who have held on from the very beginning, and proving their products in open competition in the early days, have increased in experience and efficiency to hold a place to-day which enforces the respect and admiration of their competitors.

The firm of Clement-Talbot Ltd. started building cars in the last years of last century, and their present product has provided one of the surprises of the modern competition world. The wonderful team of white, silent cars which was such an outstanding feature of last season's racing were, in spite of their wonderful performance, remarkably normal vehicles. They were, in point of fact, the logical development of the extraordinarily efficient "14-45," which is the first car for which Mr. Roesch, many years designer for Talbots, was given an entirely free hand. And he has every reason to be pleased with his handiwork.

The concern has a fine record of originality and quality of design and construction, and it is this feature of always being ahead and never copying others that marked out Talbot cars from the early days. They always pass over their previous successful history as being of very minor importance compared with the all-important task of preparing for the future. But there are some things which will never be forgotten. These go a long way towards building up a tradition which makes the employees of a firm keen to make the car as well as it can possibly be done.

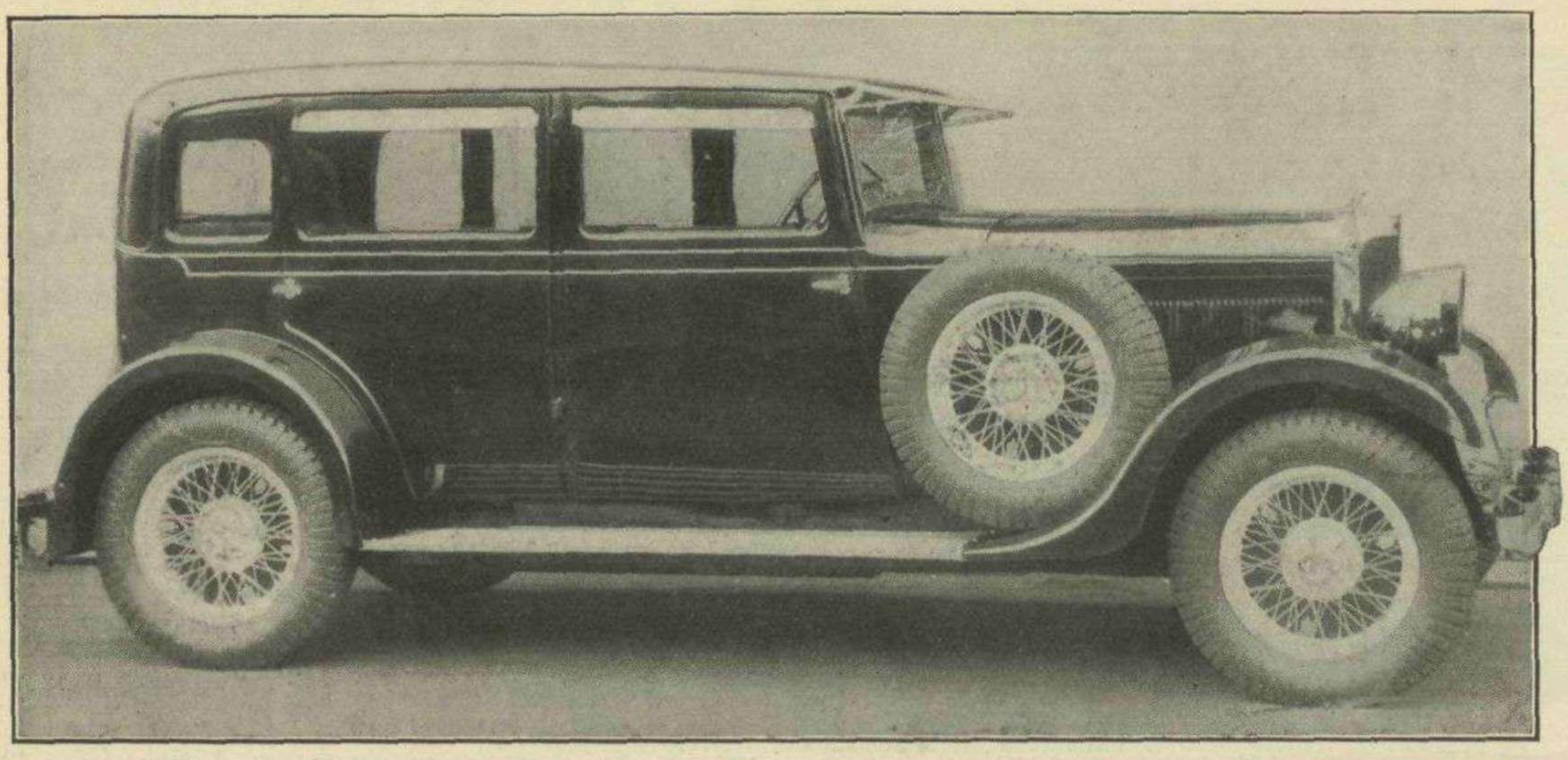
No mention of the name of Talbot can be made without some thought of the achievement of the late Percy Lambert, who set up one of the milestones of motor racing when, on February 15th, 1913, he covered over 100 miles in the hour for the first time in history.

[*Continued overleaf*]



*The finished product. The "90" model Talbot which though capable of performing as a sports model should, nevertheless has all the attributes of the unobtrusive "town carriage."*

*A FIRM WITH A HISTORY—continued.*



[*Motor Short photograph*]

*The "75" as a saloon. The lessons learned in racing are utilised to the full in the production of all Talbot models, so that both tourers and closed types are practically identical in chassis form with the racing cars.*

The car was one of the famous 25 h.p. Talbots, of which there are still plenty of specimens giving good service on the roads to-day.

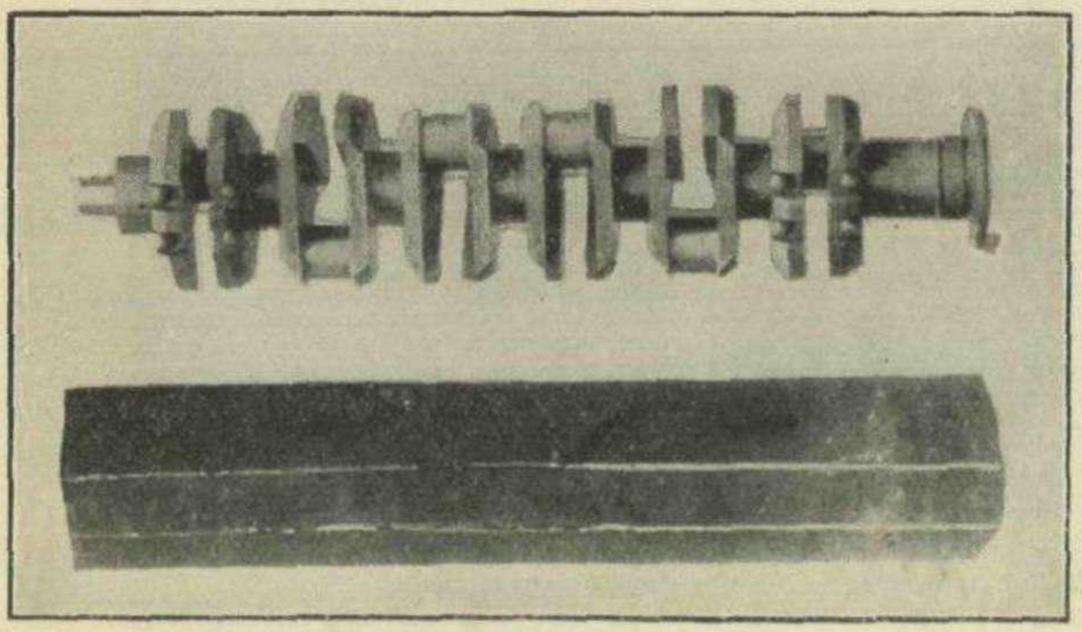
The actual speed of the hour record on this occasion was put up to 103.84 m.p.h., and it will always stand as one of the greatest motoring performances of all time.

In pre-War days there were many other notable Talbot successes in hill climbs and races, but this pioneer firm have now no time to sit back and consider what they once did, as under the able guidance of Mr. Roesch and his colleagues they are far too busy turning out cars for the public of to-day and to-morrow.

Experience and past records are only valuable when they are coupled with enterprise and new ideas, and although the firm are old in deeds and successes, they are essentially young and enthusiastic in their policy.

It is always a pleasure to meet people who are really keen on their product, and who are anxious for one to see and try it, and so enable one to judge for oneself of its merit.

On a recent visit to the works we were able to go round and inspect every detail of the manufacture and realise once again the myriad details which go to make the difference between a good and a mediocre car. Many of these are unseen, and the ordinary owner is never aware of their existence, but they are none the less



[*Motor Sport photograph*]

*The Talbot crankshaft as it appears when completed, and below, the triangular billet from which it is made.*

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PISTON RINGS
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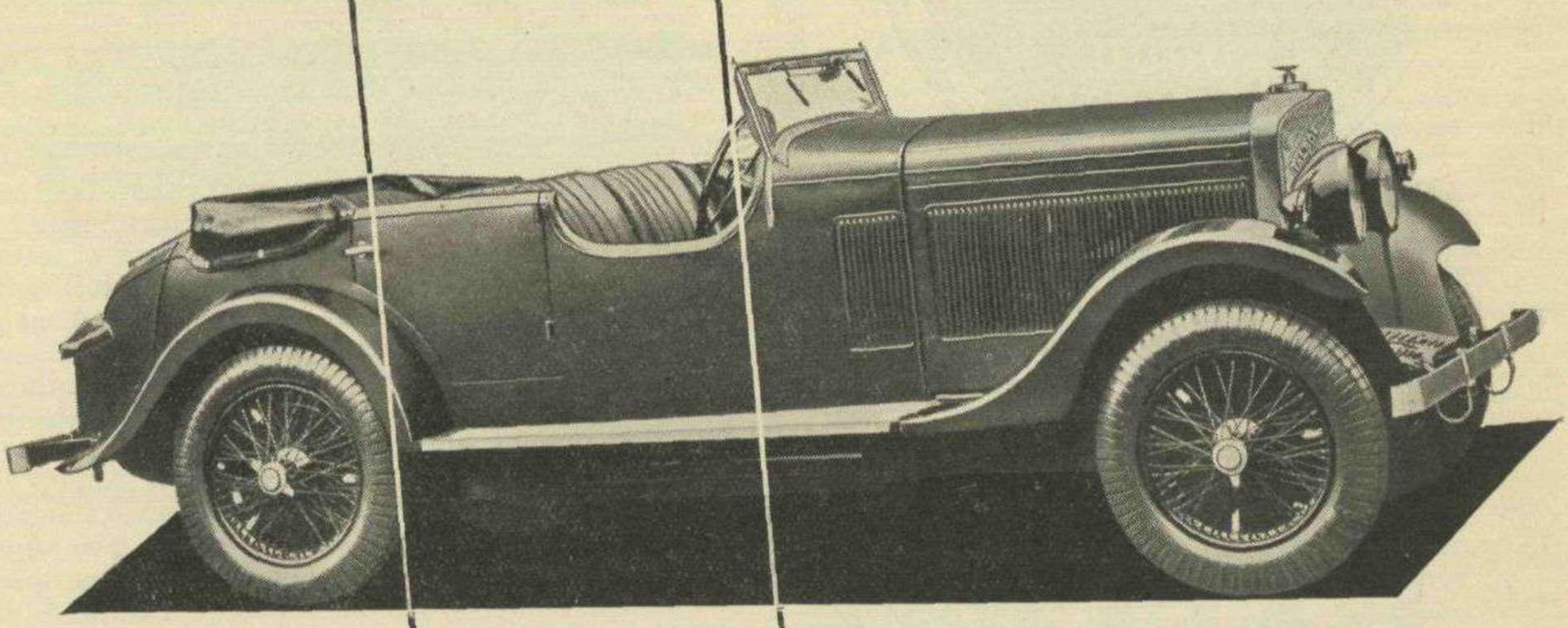
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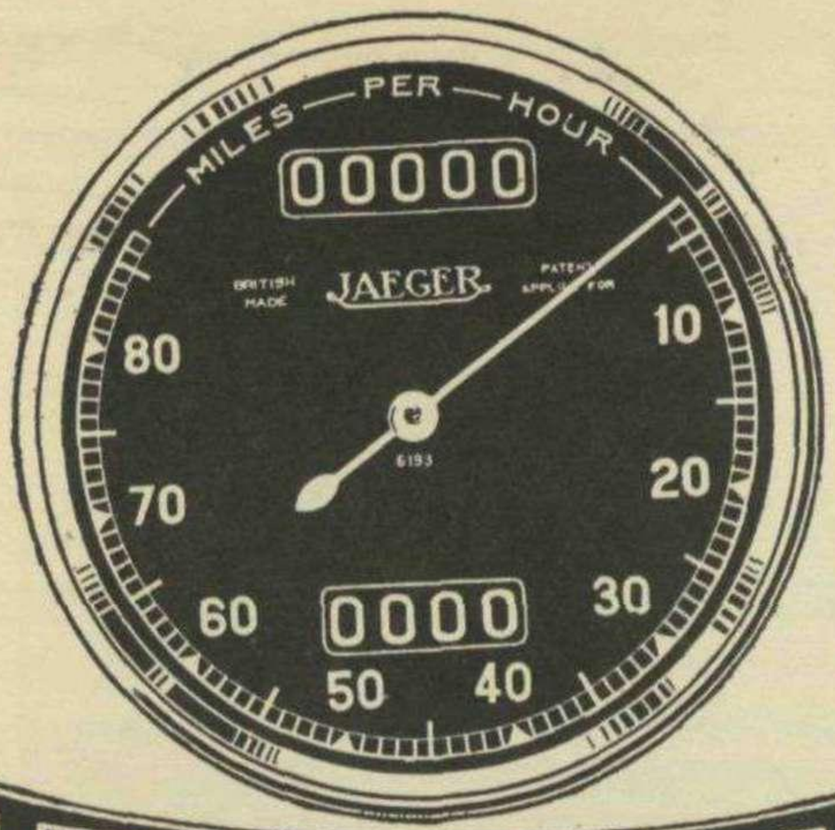
# MOTORINE OIL



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For your Talbot, Motorine 'B' de Luxe in summer; Motorine 'C' de Luxe in the Winter. **Motorine de Luxe, either 'B' or 'C' grade is officially approved for the Bentley, Lagonda, Invicta, M.G., and Delage**




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*A FIRM WITH A HISTORY—continued.*

important, as he will be very soon aware if they are lacking in the tout ensemble.

The machinery used in the works at Barlby Road, Kensington, is, of course, of the latest pattern, but it is the details and the finish that are of the greatest interest, as being distinct from the general run of manufacturing methods. The engine is of particular interest to the motorist who is concerned in performance, as it represents one of the few examples where full tuning operations are carried out as a part of the manufacture.

The crankshaft is turned from a solid billet and is carried on seven bearings in the crankcase. It is carefully tested on a dynamic balancer, and then the counterweights are fitted and the whole is finally balanced once more. One has only to inspect the "90" crankshaft and its mounting to realise to a great extent the reason for the silken sweetness of running of this engine.

The same care in detail covers a multitude of features that space prevents us from dealing with, but it is worthy of note that after the cylinder barrels are bored out and ground, they are then lapped on a special machine to ensure a really good working surface. The gearbox is also full of clever ideas which explain the easy changing and quiet running which we noticed in a test of the car.

Anyone who has tried one of the new Talbots will have noted the quality of the brakes, and an examination of the front axle assembly is well repaid. The adjustment of the brake shoes is extremely simple and quick, and in the latest models the whole lubrication of the track rod and swivel pins is automatic.

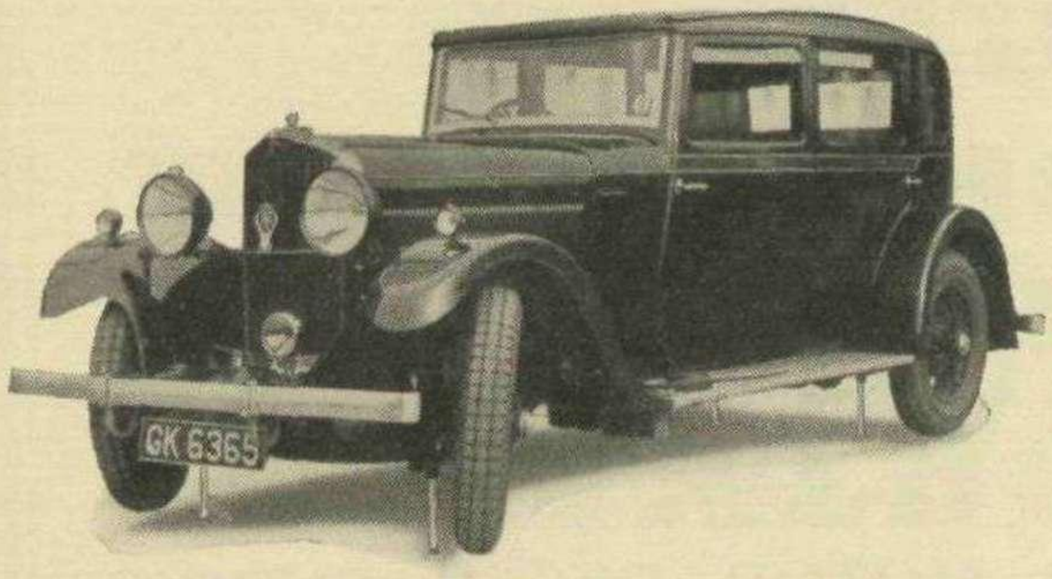
The thermostatically controlled radiator shutters, to which the average owner would never give a moment's thought, form a particularly ingenious example of design. As the shutters themselves, consisting of vertical metal slats, are rotated to the closed or open position as required by the thermostat, to be satisfactory, they must be free from any possibility of sticking. To ensure this, stainless steel pins are used at the top and bottom, and these have their bearings in a special aluminium casting bolted to the radiator.

The radiator itself is mounted in an unusual manner, as instead of having flexible connections to the cylinder block and being carried on the frame, it is mounted on the engine itself and is absolutely rigid with it. The connections are by steel pipes, and by this means the delicate structure of the radiator itself is entirely insulated from any strains due to slight distortion.

To whatever part of the car one turns one's attention, quality and care in conception and manufacture at once become evident.

Some manufacturers, it must be admitted, are guilty of spoiling their ship for a ha'porth of tar—they make a good chassis, but equip it with accessories and auxiliaries of inferior quality. Clement Talbot Ltd. most certainly do not come into this category, and before standardising any component or fitting even of seemingly insignificant importance, they subject it to a scrutiny and test which rules out all the "just-as-goods." We were, therefore, not surprised to find that the engine is fitted with Wellworthy piston rings (long known to racing men as a "good thing"), while Zenith, Jaeger, Smith and Sons, Luvax, Price's, C. C. Wakefield, and other famous names figure amongst the list of suppliers, whose products assist in making the Talbot a first-rate motor car.

# A wonderful car made even better!




"JACKALL" RAISES ANY ONE WHEEL IN 20 SECONDS OR ALL FOUR IN 60 SECONDS

**—a Talbot fitted with "Jackall" 4-Wheel Jacks. A car of verve, speed, silence, and elegance fitted with a jacking system compatible with its modernity.**

As you know, the ordinary Jack is the very worst feature of the modern car, and Talbot owners, who are undoubtedly discriminating motorists, should no longer tolerate such a Jack, but fit a "Jackall" Set and enjoy the security and convenience it gives.

"Jackall" consists of four hydraulic jacks fitted to the axles. These are connected to a control box neatly sunk into the running board. Snick the lever into position and give a few strokes. This raises any desired wheel in 20 seconds. Snap the switch, give a few more strokes, and up go all four wheels—sooner than an ordinary jack can be got out of the tool box!

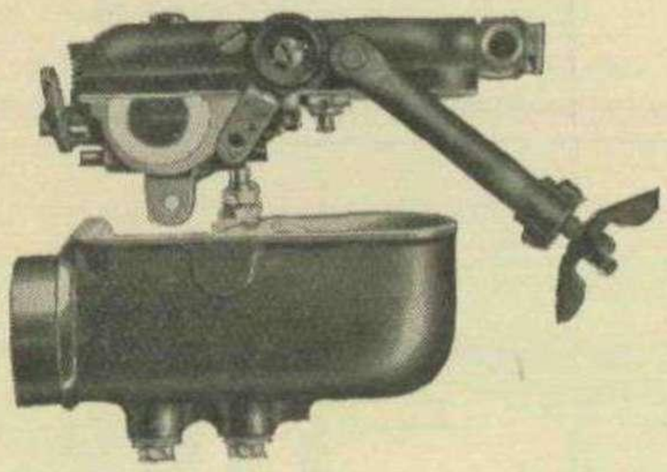
Greasing, washing, brake adjusting and wheel changing, can all be done in a fraction of the time.

Please write for full particulars, or better still, come and see "Jackall" demonstrated.

**S. SMITH & SONS (Motor Accessories) Ltd.**
**CRICKLEWOOD, LONDON, N.W.2**

**JACKALL**
**FOUR WHEEL JACKS**

# 'U' Type ZENITH Carburetters are fitted standard to .. .. .. Talbot Cars



A car with the sporting reputation of the Talbot must standardise a carburetter that will do justice to its engine. In last year's great road race for the Grand Prix D'endurance at Le Mans the two Talbots, which put up such a brilliant performance, beating all but the 6½ litre cars, were fitted with "U" type Zenith carburetters. It is a striking tribute to the unfailing reliability and flashing acceleration of the "U" type Zenith, that it is now standard on Talbot cars.

*Try it on YOUR car—free for a month. Write us for details.*

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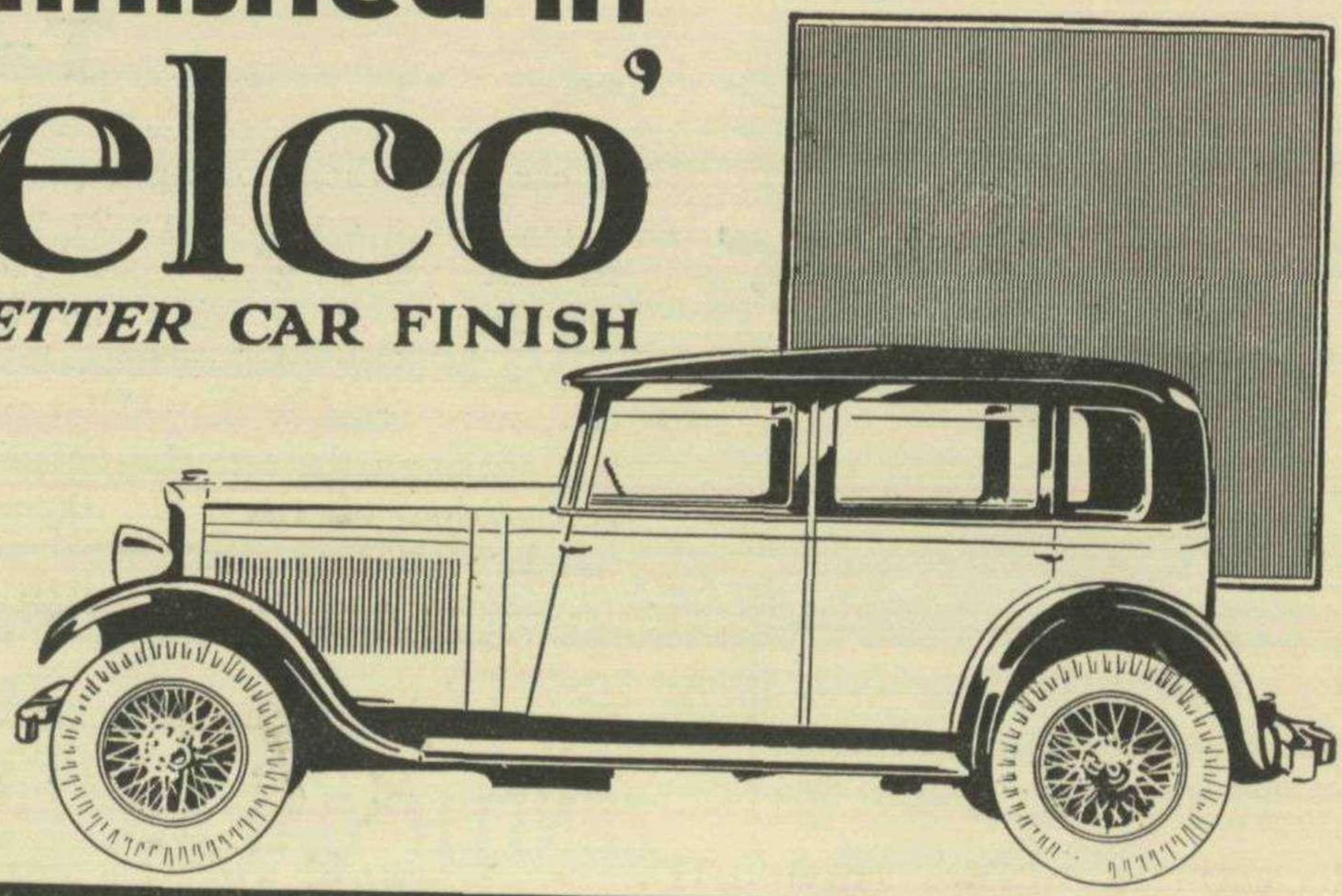
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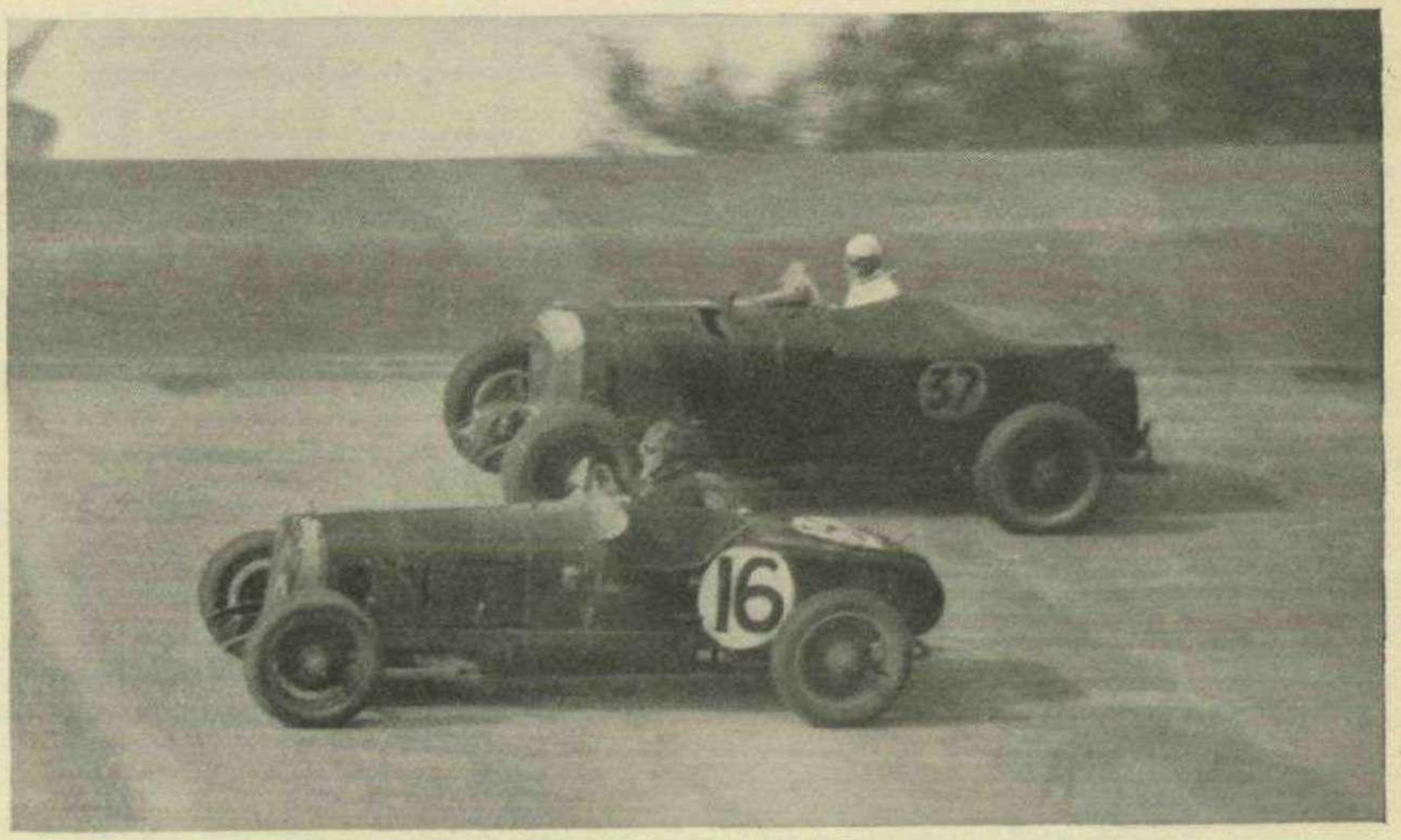
# MOTOR SPORT PHOTOGRAPHS

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500 MILES RACE AT BROOKLANDS, 1930




*Harcourt-Wood (Bentley) passing Jeffress (Alpha-Romeo) at the end of the members' banking.*

**MOTOR SPORT (1929) LTD., - - - 39, Victoria Street, London, S.W.1**

*CONTINENTAL NOTES AND NEWS—continued from page 266.*

two groups, up to 1,500 c.c. and over that limit, and will have to cover the course 55 times, making a total distance of just over 230 miles. It is expected that this event will prove extremely popular, and it seems fairly certain that Lehoux, Etancelin, Tiercourt, Michel Doré, Madame Rose Itier, Meyer, Bénitah, Max Fourney and Liocourt will be among the starters. At one time it was hoped that a team of Maseratis would also be secured, but in view of the trouble already existing over the proximity of the Targa Florio and the Italian Grand Prix, this now seems improbable. However, Etancelin should have his new Alfa-Romeo by then, and its performance against the Bugattis will add interest to the race.

* * *

Turning to the later races, the list of entries for le Mans has now been increased by the addition of two Cabans, this entry bringing the total number up to twenty. The Cabans will presumably be of the new 1,500 c.c. type with which Giraud-Cabantons, their manufacturer, recently made fastest time in the Chanteloup hill climb. This young firm has some experience of 24-hour races, for it will be remembered that it was successful in winning the Bol d'Or race with the 1,100 c.c. model last year. At le Mans the cars will probably be driven by Giraud-Cabantons himself, Balard, Trébor and Labric.

**A Schneider Snag.**

It is extraordinary, however, how there always seems to be some snag about everything and our elation at the prospects of a successful Schneider Cup race cannot but be somewhat damped by the possibility that this event may not only interfere with the Targa Florio as mentioned above, but also may jeopardise the appearance of the eagerly-awaited Lorraine-Dietrichs at le Mans. It appears, in fact, that M. Barberon, the head of the firm, is finding his hands so full with preparing possible engines for the French Schneider Cup team, that it may be impossible for the new cars to run at le Mans. This is particularly unfortunate, as the new model is of exceptional interest, having a 12-cylinder engine of 72 x 102 mm. bore and stroke (4,984 c.c.) with overhead camshaft driven from the front of the engine. The crankshaft, big ends and even the gudgeon pins run on roller bearings, there is dual ignition with two plugs per cylinder, and part of the radiator is used for cooling the oil. The chassis is very little altered from the successful model which proved victorious at le Mans in 1925 and 1926, and the power weight ratio is thus very high.

On the other hand, although no official entries have yet been received, Alfa-Romeo has definitely announced its intention of taking part in the le Mans race, as well as the Belgian 24-hour race and the Tourist Trophy. The new 2½-litre model will also run in the Italian Grand Prix, unless the change of date has caused too much necessity for changing plans, and in the other real Grands Prix in France, Spain and Belgium. The Belgian Club is, in fact, making a great effort to ensure the success of the Grand Prix for racing cars on the Spa circuit, and as well as the Alfa-Romeos, it has been promised teams by Bugatti, Maserati and Imperia. A 10 hour event for unrestricted cars over the difficult Spa circuit should at least be a most interesting race.

**New Big German Trial.**

Competitors in the Monte Carlo Rally and others who have acquired a taste for long-distance Continental trials will find plenty of scope for their activities in the coming season. In the first place, the German Automobile Club intends to bring to fruition this year an ambitious scheme for a 10,000 kilometre trial which was originally planned for 1930. The route runs from Berlin to Lisbon and back and the Trial, which will last from 22nd May to 7th June, will be run in eleven stages, as follows :—1, Berlin to Geneva (702 miles) ; 2, Geneva to San Sebastian (587 miles) ; 3, San Sebastian to Lisbon (675 miles) ; 4, Lisbon to Madrid (437 miles) ; 5, Madrid to Barcelona (400 miles) ; 6, Barcelona to Milan (663 miles) ; 7, Milan to Rome (435 miles) ; 8, Rome to Munich (606 miles) ; 9, Munich by Trieste to Ragusa (751 miles) ; 10, Ragusa by Zagreb to Buda-Pest (660 miles) ; and 11, Buda-Pest to Berlin (582 miles).

The route thus passes through Germany, Switzerland, France, Spain, Portugal, Italy, Austria, Yugo-Slavia, Hungary and Czecho-Slovakia, or ten countries in all. Competitors will be divided into two classes, up to 2-litres and over that limit, the smaller cars having to average 30 k.p.h. (18 m.p.h.), and the larger ones 40 k.p.h. (25 m.p.h.), Secret checks will be used, and competitors will be penalised for being late in controls, while the most important components of the chassis will be sealed. In view of the long stages which will have to be covered, two drivers per car will be allowed. The entry fee for this most interesting event is 100 Marks (£5) per car.

Later on in the season, during the first week in August, the Automobile Clubs of Germany, France, Italy, Austria and Switzerland are combining to organise the great international Alpine Trial. This trial will take competitors over all the best known and most difficult passes in the Alps, the daily stages being as follows : 1st day, Munich to Innsbruck ; 2nd day, Innsbruck to St. Moritz ; 3rd day, St. Moritz to Turin ; 4th day, Turin to Nice ; 5th day, Nice to Geneva ; 6th day, Geneva to Berne.

The trophies in connection with this contest are the Alpine Cup, which is to be competed for by teams of cars entered by their manufacturers or others ; and the Glacier Cup, which is open to private entrants. The event is confined to standard touring cars, and in order to remove any suggestion that the affair is a race, the organiser will operate three checks on each daily stage, and will penalise competitors for being too early, as well as late. The important components of the chassis will also be sealed, and competitors will lose marks if any of these components have to be changed.

## FRENCH GRAND PRIX ANNIVERSARY.

THE first Grand Prix of the Automobile Club de France was run on the 26th and 27th June, 1906, and the present year is, therefore, the twenty-fifth anniversary of the first of the long series of this famous event. The first race was run at le Mans, and it was in connection with the organisation of the event that there was formed the Automobile Club de l'Onest, which has since become easily the most famous of the provincial French clubs. It seems obvious that the double jubilee must be fittingly celebrated, and M. Charles Faroux, the well known French journalist, suggests that no better way of doing so could be found than by organising a reunion of all the surviving drivers in the historic contest on the occasion of the forthcoming Grand Prix d'Endurance at le Mans. The idea is certainly an excellent one, and it is to be hoped that it will be put into practice.

Of the thirty-two drivers who started in the first Grand Prix many, of course, are no longer surviving. The winner, Louis Szisz, however, who drove a 105 h.p. Renault in the race, is still with us, and nowadays manages the huge garage at Neuilly, on the outskirts of Paris. Of his team-mates, Edmond is dead, but Richez is still a member of the Renault firm. Of the next most successful team, two of the Fiat drivers are both going strongly ; one of them, Felice Nazzaro, is intending to take part in the forthcoming Italian 1,000 Miles Race, and is still the head of the Fiat racing department, while the other, Lancia, is still actively directing the construction of the cars which have made his name famous the world over, but Weilschott, the third member of the team, is dead. Of the other Italians, Cav. Vincenzo Floria, who drove an Itala in the Grand Prix, is, of course, still an active influence in motoring sport, organising the Sicilian races and Monza track and generally about the most important person in the Italian automobile world ; and his team-mate, Cagno, is now, I think, attached to Fiat and has appeared in races not so long since.

The only Englishman in the race was

*FRENCH GRAND PRIX ANNIVERSARY—continued.*

Mr. Heath, of Birmingham, who drove a Panhard et Levassor and had as his team-mates, Teste, who is still attached to the same firm, and Tart, who is also still in the industry. The whole of the Lorraine-Dietrich team is, I think, surviving. Gabriel is still with us, and ha driven in the le Mans 24-hour race within the last year or two. Henri Rougier has driven in the post-war Grands Prix, and Arthur Duray still drives his 1,100 c.c. Aries with all his old enthusiasm, and took part in the Grand Prix last year. Of the Darracq team in the 1906 race, Hanriot has died, but Victor Hémery has been racing in quite recent years, and now keeps a garage at le Mans, and is a prominent member of the A.C.O.; while Louis Wagner is a familiar figure to quite modern followers of motor racing. On the other hand, no member of the Bayard-Clément team is still surviving. Albert Clément himself, who was third in the 1906 race, was killed while racing at Dieppe, and the same fate overtook his team-mate Villemain in the terrible catastrophe in the "Coupe de la Presse" race in 1907. The third member of the team, de la Touloubre, died a natural death; it is interesting to note that in a "general knowledge paper" recently set by a correspondent to our contemporary "The Autocar," practically none of the candidates seemed to have heard of this once well known driver. Sic transit . . . !

Of the others, the great Camille Jenatzy, the first man of the Mercédès team, is dead, but Rigolly, who drove the lone Gobron-Brillié in the 1906 race, is still with us and is manager of an important garage at Châttillon-sur-Seine. Le Blon, who drove a Hotchkiss in the race, was killed in a flying accident at San Sebastian, and his team-mate, Salleron, died a natural death; but Baras and Barillier, who drove Brasiers, are still alive.

In all it seems that it might be possible to collect nearly twenty of the drivers in the first Grand Prix at le Mans this June, and it is sincerely to be hoped that the idea will be carried out. The only improvement to the scheme which one might suggest, and which I have not yet seen proposed, is that as many of the drivers as possible should bring their original racers to the meet. I do not know whether this would prove at all possible, although I believe the winning Renault, which has had a varied history in the meantime, is still running in the neighbourhood of Paris. Whether any of the other veterans still exist, I do not know; it would be exceptionally interesting to find out.

—K.

# Letters from Readers.

### Invicta Driving Methods.

SIR,

I would like to make a few comments in regard to a statement on page 202 of the March issue of "MOTOR SPORT," in reference to the 1931 Sports Invicta at the Cambridge Speed Trials at Branches Park.

You state that "this car can do more than 10 m.p.h. on 1st before changing up." I would like to say that Mr. H. E. Symons, of the "Motor," informed me that Mr. Healey, of Monte Carlo fame, had practised extensively for acceleration figures on a similar car, and that he proved that the best possible figures were obtained by just getting the car moving in bottom gear, before changing into second; this avoids the possibility of extensive wheel spin.

I quite agree that the car was almost new, but might I point out that this car, in its new state and fully equipped, beat the completely stripped 30/98 Vauxhall driven by a very experienced driver. Also, as a matter of interest, the Invicta competing at the hill climb at Oxford against a 36/220 Mercédes, super-charged Amilcars and other hot things, put up the fastest time of the day, the car starting in second and not using bottom at all.

E. J. KEHOE,
Racing Manager, Motor Showrooms, Ltd.

To save our readers the trouble of referring to the issue of "MOTOR SPORT" in question, we will quote the paragraph referred to in full:—

> "A very neat-looking '4.' Invicta was entered by Kehoe, but as its driver appeared to regard the event either as a concours d'elegance or a running-in track, the car never had a chance to show its paces. Alter all, this car can do more than 10 m.p.h. in low before changing up."

It would appear from Mr. Kehoe's letter that he considers that we are disparaging the 'Invicta.' To anyone who reads the above paragraph it will be obvious that nothing is further from the truth. We are fully aware of the magnificent achievements of this *marque*, and the road test of Mr. Healey's car in our March issue shows how much we appreciate the qualities of this particular model. The performance of other Invictas in other hands, to which Mr. Kehoe refers, is hardly relevant, as it was his own performance to which we were referring. We do not wish to dispute the methods of driving which he advocates, but we only regret that he was not more successful in their employment.

To beat a sports car of similar capacity, of which the design originated nearly twenty years ago, hardly strikes us as a wonderful feat, and we might mention that at the Ewelme Downs hill climb the following week (referred to by Mr. Kehoe) the same car turned the tables on him once more. We can hardly believe that he is attributing the other car's performance to it driver's experience, as we had always imagined that Mr. Kehoe, from his official designation, was himself an experienced driver. The moral of the whole affair seems to come to this—if you are not prepared to go all out in an event of this nature, it is fairer to the car concerned not to run at all.—ED.

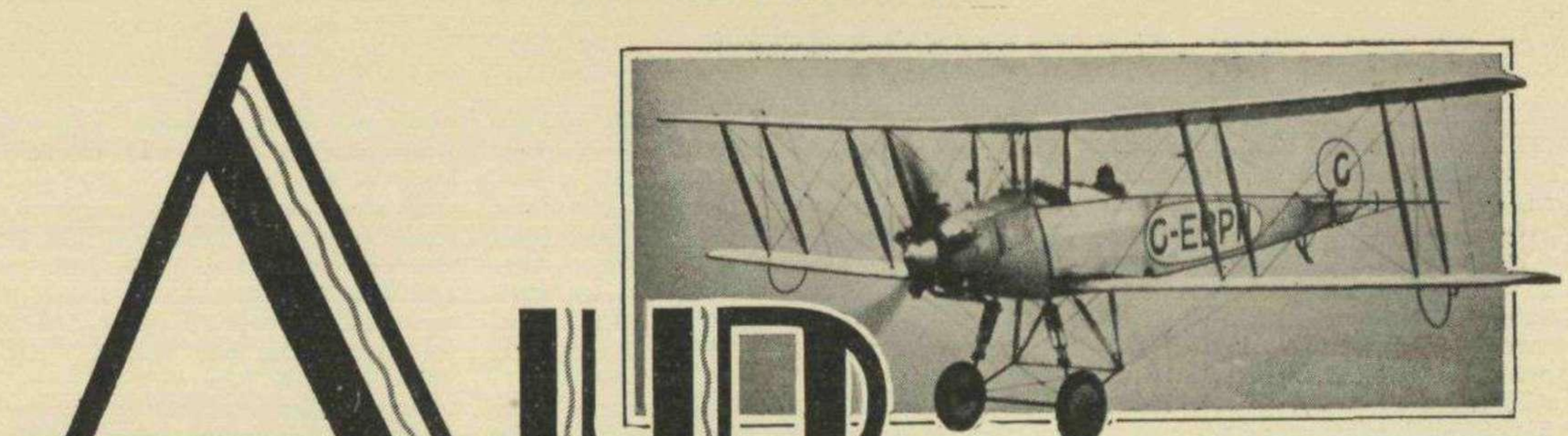
*Letters on any subject of interest to readers of "Motor Sport" are always welcome, but correspondents are asked to be as brief as possible. Personalities and recapitulation must be avoided, and it must be understood that the Editor is not responsible for the views expressed.*

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MANY and various are the uses to which motorcycles are put, but up to date no one has set out on one to seek a fortune. This, however, is what has just been done by two young Australians who have left Perth with an old Triumph sidecar outfit and have joined in the 1931 Gold Rush.

They have made very thorough arrangements for their prospecting tour. In place of the usual type sidecar, they have fitted a special box which comfortably houses their gear and petrol and oil requirements. Tent, shovel, tools, food supplies, spare tyre and sufficient fuel to last them for a trip of 400 miles are carried. An ingeniously fitted oil drum carries over 20 gallons of water. Their store of supplies weighs 3 cwt., and the whole outfit turns the scale at well over half a ton. The sidecar is packed to overflowing, so the passenger rides on the pillion.

Reports so far received do not indicate that the two adventurers have as yet struck any gold, but they state they are finding their machine extremely useful for touring the country prospecting. It is taking them over surfaces where cars get stuck and, moreover, is doing so with a high degree of economy. An interesting point about the machine is that a year or so ago it was in use as a dirt track racer; not many motorcycles can claim so varied an existence!




LIGHT 'PLANE TYPES.

# The American Aeronca.

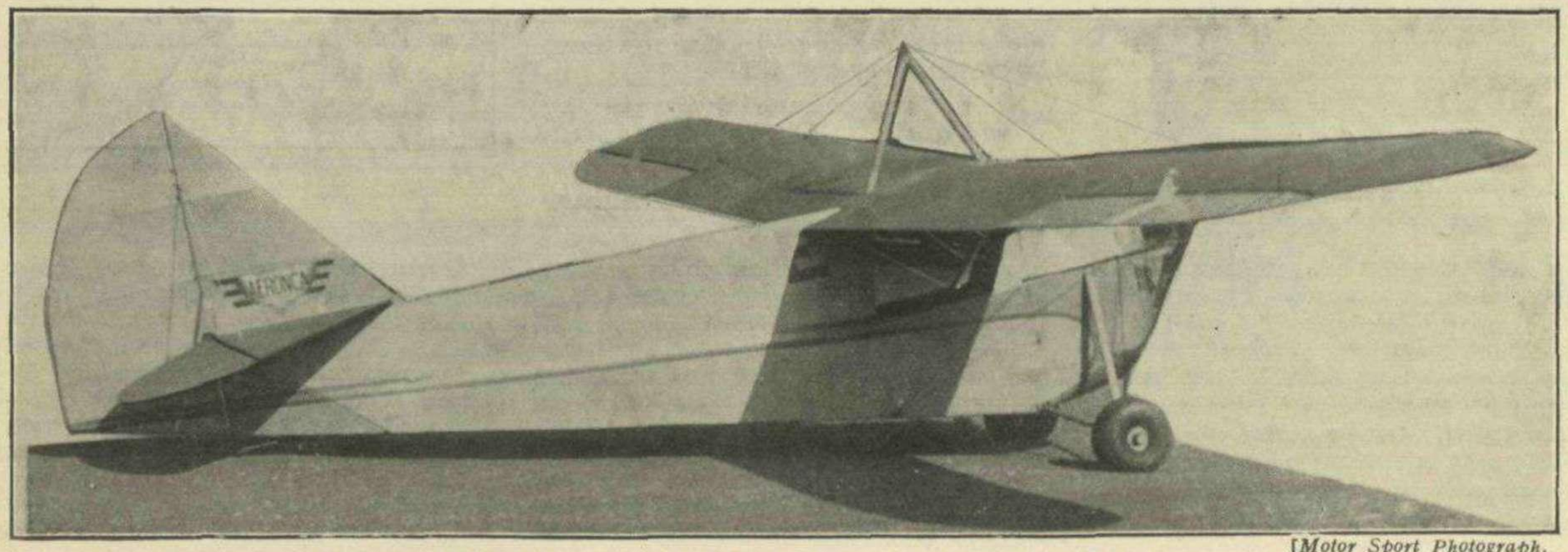
## *An Interesting Low-Powered Single-Seater.*

WITH the advent of the medium-powered two-seater machine, the small-engined ultra-light, single-seater aeroplane, of which so much was expected at the time of its inception in 1923, fell out of favour in this country. The reason for this is not far to seek; at the time of its introduction, in an experimental form, the number of people likely to require the "pip-squeak" machine was limited to a few who were already able to fly, and the fact that it was a single-seater obviously precluded any instruction being given on it to others who were not pilots. The small demand, therefore, did not justify its development and production on commercial lines. So English manufacturers concentrated on the more practical two-seater type which has led up to the 100 h.p. high performance, go-anywhere craft which we know so well to-day, and which is rather misnamed "light aeroplane."

In America, however, the latter type of machine by no means holds the monopoly of popular favour in the private flying movement. Single-seaters of low-engine power are made and used in not insignificant numbers, and since some firms have been marketing them for some years now, it appears that in the U.S.A. there must be a definite market for them. One machine of note is the little Aeronca, a monoplane of 26 h.p. This is made by the Aeronautical Corporation of America, and a "sample" machine is now in this country, having been acquired by Lieut.-Colonel M. O. Darby, of the A.D.C. concern.

Both airframe and engine are made by the same firm, and throughout the whole machine considerable ingenuity has been displayed to make it simple, yet practical. The most interesting feature of the Aeronca is the fuselage. This is of welded steel tube, and is triangular in section. One longeron runs along the top to form the backbone which carries the tail unit, and to which are attached the roots of the main planes. The whole is devoid of any wire bracing, and the design appeals to one as being easy and cheap to make in quantities.

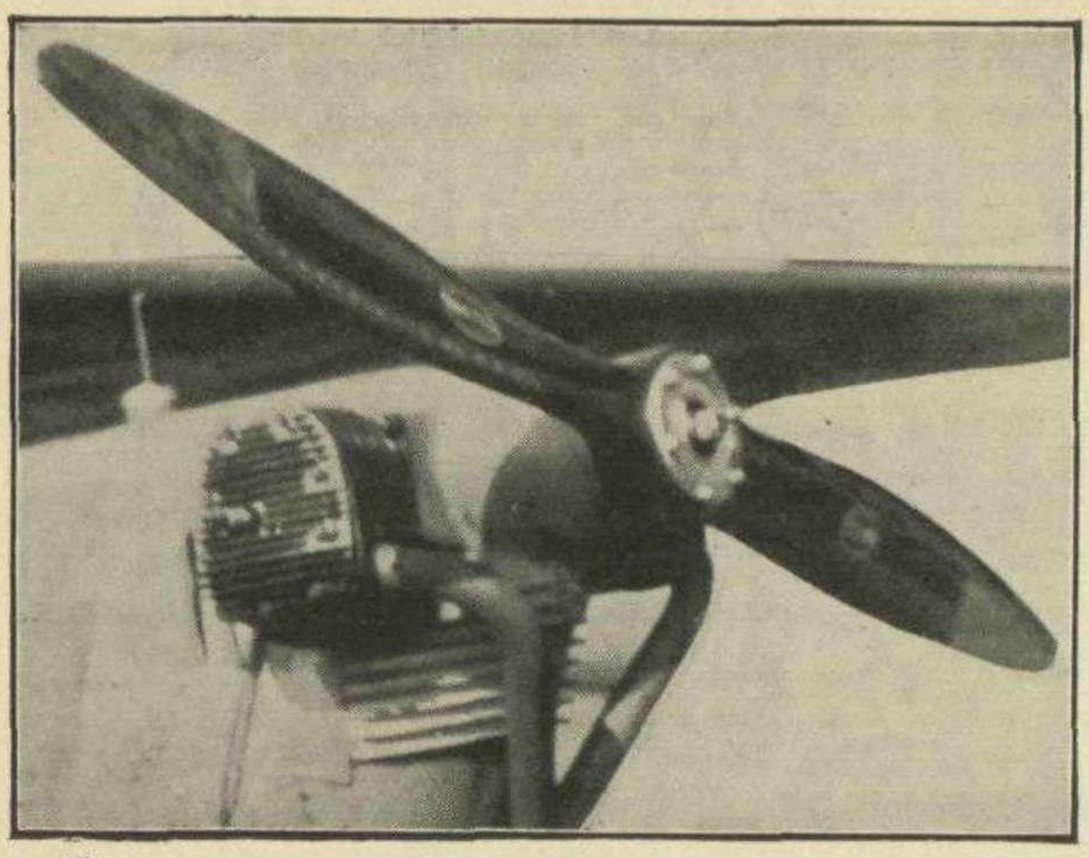
The main planes are of orthodox construction, comprising spruce box spars, with spruce compression and form ribs with wire cross bracing; as with the fuselage, the covering is of fabric. The ailerons differ from usual practice in being of metal, the covering being of light gauge aluminium sheet. The wing root attachment is of simple pattern, consisting of a sheet metal fitting which registers with a lug on the top longeron. Substantial bolts, suitably pinned, secure the whole, while




[*Motor Sport Photograph.*

*The Aeronca monoplane which is now to be seen at Croydon.*

*THE AMERICAN AERONCA—continuued.*



[*Motor Sport Photograph.*

*Power unit of the Aeronca. Note the ribbed sump, and clean crankcase "nose."*

flying loads are taken by four streamline wires, and landing wires brace the wings to a simple " V " cabane placed above.

The empennage is made on normal lines, being a metal framework covered with fabric. The fin and tailplane are braced with Rafwires. All controlling surfaces are operated by cables.

The cockpit is placed immediately below the wings, and owing to the triangular section of the fuselage and the low sides, the view is surprisingly good. This is increased by a window set in the planes at their roots.

The undercarriage of the Aeronca is of the simplest possible design. All landing shocks are taken by the two Goodyear airwheels, and there is no other medium of absorption whatever. The wheels run on spindles which are anchored to three simple steel tubes, bolted to the forward part of the fuselage, just in front of the cockpit.

Turning to the engine, one finds, as elsewhere in the machine, that simplicity is the keynote. Of the horizontally opposed two-cylinder type, it has side-by-side valves and detachable aluminium heads. The plugs are placed in the head in such a position as to be subjected to the maximum amount of air flow. A ribbed sump in the crankcase base carries 3 gallons of oil. A noticeable point of the power unit is the manner in which the crankcase is made to give a streamline form which blends into the fairing. The petrol tank (carrying 8 gallons of fuel) is positioned just behind the engine ; feed to the carburetter is by gravity.

The makers state that the power output is 26 h.p. at 2,500 r.p.m.

Once in the air the motor can be throttled down to 2,000 r.p.m., at which speed the machine will cruise comfortably without loss of height.

In the air the machine handles in a quite normal way, and has a top speed of approximately 80 m.p.h., and a cruising speed of 60 m.p.h. It lands at 27 m.p.h. According to Mr. A. S. Thorn, who is at the present time demonstrating the Aeronca, the take off run is about 75 feet, and its rate of climb 700 feet per minute. Its range under normal conditions amounts to 240 miles.

It is understood that the Aeronca may possibly be marketed in this country in the near future (after it has been passed by the Air Ministry), and that its price will be low.

There is certainly a market now awaiting a machine of this type, which would provide an opportunity for a large number of qualified pilots to put in flying time at low cost. Moreover, although many people demand a machine of high performance with which aerobatics and long-distance flights may be carried out, there are plenty of others who wish to indulge only in sedate aviation, and who would welcome the return of the low-powered craft for this purpose.

The specification is as follows :—Span, 36 feet ; chord, 4ft. 2ins. ; overall length, 20ft. ; height, 7ft. 6ins. ; area of wings, 142 square feet ; weight (empty), 398 lbs. ; useful load, 274 lbs. ; wing loading, 4.73 lbs. per square foot ; power loading, 25.8 lbs. per h.p.

## BRITISH 'PLANES AT BUENOS AIRES.

WITHIN a few hours of the public being admitted to the Government Pavilion at the British Empire Trades Exhibition at Buenos Aires three sales, nearly £3,000 in value, had been concluded at the de Havilland stand. Two actual show machines were sold, a Gipsy Moth and a Puss Moth, the purchasers being willing to wait for delivery until the Exhibition closes this month. The third sale was of a Gipsy Moth to Bieckert's Brewery, Buenos Aires, which already owns two similar machines.

Immediately after the official opening of the Exhibition by H.R.H. the Prince of Wales, he and Prince George set off on a four days' flying tour through Rosario and Cordova. The Prince of Wales used his own Puss Moth, while Prince George obtained the loan of a Puss Moth from the de Havilland Aircraft Company.



# SLIPSTREAMS

**Ground Training.**

ALTHOUGH solo flying with a subsidised-club machine is not a frightfully expensive business nowadays, there is no getting away from the fact that learning to fly,—especially if one is not a very brilliant pupil—can run away with a lot of money. It can generally be reckoned that the first hour or two of dual is taken up with merely getting the beginner used to the air, to the sensation of flying, and, in a small measure, to acquiring the " feel " of the controls. If he is a real tyro he doesn't learn very much about piloting during this period. But, of course, he has to pay at the same rate as he does later, when he can take off, turn and land with a fair degree of success.

The idea that tuition in the elementary handling of an aeroplane might be carried out on the ground (and therefore be done at small expense) is a very early one ; in fact, most flying schools of pre-War and early War-time days put one through a course of " rolling practice." And I think this method was quite sound.

Just lately, an elaboration of this old idea has been developed in an attempt at reducing the cost of training. This comprises a machine, which in effect is a power-driven miniature 'plane, mounted on a vertical pivot, attached to a horizontal arm which is free to rotate round another pivot on the floor. The pupil sits in the cockpit, which has the usual stick and rudder-bar controls, and on the engine being started up he can steer the machine with the rudder and elevator, when the slipstream takes effect, and so to some extent get the feel and sensation of actual flying. The general arrangement is quite ingenious, although there are features which could be improved upon. There are no ailerons, for example, and the engine switch is on contact when *down*. Suitably modified, the machine might prove quite useful as an auxiliary outfit at flying schools, and it is conceivable that it might reduce the number of hours required in preparing a pupil for the solo stage.

**An Innovation.**

A step forward has been taken by Air Hire Company, with registered offices at 50, Fairfield Crescent, Edgware to provide solo flying facilities for those who are not owner-pilots and yet do not wish to be bound by the somewhat strict rules of the various clubs. This company has inaugurated what is believed to be the first " Hire and Fly Yourself " service to be run on commercial lines. For an inclusive charge of £6 per day you may hire a latest model 1931 Gipsy Moth, complete with balloon tyres and safety slots. The tank will be filled for you, which gives you three or four hours flying for no extra charge, and you can fly it where you like, in or out of England. If you want a week-end's flying, there are special rates—twelve guineas inclusive from Friday night to Monday morning ; in this time it is possible to make a modest continental tour, and carry a passenger as well as your luggage, if you wish to do so.

Air Hire Co. have opened the most modern of show-rooms at 18-22, Dering Street, New Bond Street, W., where a replica of their hire machines is on show. Anyone interested in learning to fly, hiring an aeroplane, purchasing a Moth, or merely discussing what can be done with the economical modern light aeroplane, will be a welcome caller.

**Low-Power Popularity.**

It is a curious fact that while the light plane in this country is steadily gaining in weight and horse-power, so that a two-seater of 60 h.p. is now regarded as being definitely underpowered, the real light plane is obviously progressing in favour in America. Many of these craft are home-made, for there are a very few restrictive regulations to hamper either the professional or amateur constructor over there. A friend has recently sent me details and photographs of one of the latest factory-built jobs which comes into the ultra-light class. This is the little Curtiss-Wright " Junior," a machine of distinctly novel layout. It is a high wing monoplane with steel-tube welded fuselage, in which the pilot sits directly below the wing, and the passenger in the streamlined nose. The power unit is a three-cylinder radial Szekeley of 40 h.p., and this is mounted pusher-wise on the centre-section. Other details are :—Span, 39 feet ; length, 20 feet 10 inches ; height, 6 feet, 4 inches ; power-loading, 22.5 lbs. per h.p. ; wing-loading, 5 lbs. per square foot.

It is said to have a speed range of 28-80 m.p.h., and—what is most intriguing—it costs only £300 !

**2,500 Miles by Autogiro.**

Further to my remarks last month about the Autogiro, it is interesting to hear that a record flight with one of these machines has recently been carried out in the U.S.A. The pilot was Mr. James G. Ray, vice-president of the Autogiro Co., of America. He flew from Philadelphia to Miami and back, to attend the All-American Air Races, and the mileage totalled 2,500. Most of the trip was done in very foul weather, and often visibility was so bad that Ray was compelled to fly at about only 100 feet for many miles. The last leg of his homeward journey of 400 miles was covered in 4 hours, 10 minutes—a very respectable performance.

" RUDDERBAR."

# Gliding Gossip and News

MEMBERS of the London Gliding Club continue to set an example to other less progressive clubs, not only by the manner in which they turn out in fair weather and foul at week-ends, but also by the way they work. The L.G.C. now has a hangar for housing all their machines, and this was erected in two days by a band of indefatigable members. Of really hefty construction, it measures 50 feet by 30 feet, and it has a full width opening so that machines can be brought in and out without any difficulty. A substantial bench has been set up at the rear of the building, and full workshop equipment, tools, etc., will shortly be installed. It is even rumoured that an ante room may be added in the near future.

Needham, whose " Albatross " has not been seen for some time now, has now brought this machine up to Tottenhoe, and he hopes, in the near future, to put it through its paces. The spring-like weather that has been enjoyed lately has resulted in the Club's site being visited by big crowds of week-end motorists whose interest appears particularly keen.

THE Isle of Wight Gliding Club, during the past few weeks, has been engaged mostly on constructional and reconditioning work, but with the various jobs completed they are now carrying on instruction. This club will shortly possess a novel craft when the erection of an all-metal two-seater glider is finished. It has been designed by Mr. J. A. Thompson.

THE British Gliding Association announce that a very substantial donation has been received by them from the de Havilland Aircraft Co. In view of certain opinions expressed in powered-aircraft circles, this action is particularly gratifying, as it indicates that aircraft manufacturers in this country have confidence in the future usefulness of engineless flight, and do not regard gliding as a mere passing phase.


# The AUTOGIRO



*The C 19 Machine*

Practically every flying accident is attributable to difficulty in the negotiation of the landing or the take off. The most difficult part of flying tuition concerns the take off, the approach to the aerodrome, and the actual landing.

An unlimited choice of angles of descent and climb, inability to stall, and an ability to land at any forward speed, however low, makes the landing of an Autogiro aircraft foolproof and instinctive.

| | | |
|---|---|---|
| **Top Speed** ... | ... | **100 m.p.h.** |
| **Rate of Climb** | ... | **750 ft. p m.** |
| **Landing Speed** | ... | **None.** |
| **Take-off Run** | ... | **30 yards.** |
| **Landing Run** | ... | **None.** |

THE
**CIERVA AUTOGIRO CO., LTD.**
BUSH HOUSE, LONDON, W.C.2
*Telephone : TEMPLE BAR 2501*

# THE SPORT AFLOAT



MR. GAR WOOD resembles Capt. Sir Malcolm Campbell in that he is never too old to have another cut at a coveted record.

Thus, on Friday, March 20th, at Indian Creek, Miami, Gar Wood regained for America the world's motor boat speed record with a mean speed over two runs of 102.156 m.p.h., and thus beat the record which the late Sir Henry Segrave set up in tragic circumstances, last June. The same boat, Miss America IX, was used in Gar Wood's successful attempt as had been used when he established a world's record previous to that of Segrave's, but the engines (two Packards) have since then been supercharged.

Great Britain's defender, Mr. Kaye Don, is due to make his attempt in a day or two (at the time of writing), but it is reported that the Rio Parana is rather full of driftwood and although extensive clearing operations are in progress, is will make Don's attempt more hazardous. We can, however, wish him the best of luck, while Kaye Don himself is confident that he can exceed the speed put up by Gar Wood, whose record he regards as lending more spice to his own attempts.

**Straight from the " Sea-Horses " Mouth.**

News has just come to hand that there are to be some material changes in Johnson outboard motors for the coming year. The particular engines of the Johnson range that have received attention are not indicated, but from the changes enumerated below, it would appear that the racing models are the ones in question, and if this is so we can confidently look forward to a general revival in the sport, when the largest individual manufacturers of outboards perpare something new.

Alterations are being made in the compression ratios which are being raised, while both pistons and cylinder heads have been redesigned. Those motors that last year had carburettors working on the venturi principle are to have the more common float feed type of instrument for 1931. The most important modification of all, and one which definitely ranks the Johnson as something different, is the adoption of force feed lubrication by mechanical pump.

**Points for Mechanical Oiling.**

If, as I hope, the lubrication of the 1931 Sea Horses is solely by pump, then Johnson's will have established a precedent as regards the two-strokes, which are, at present, supreme in the outboard world. Why the idea should have taken so long to catch on is a mystery, for it is not new, and in the only other sphere where the two-stroke is at all prominent, that of motor cycling, petroil lubrication is the exception rather than the rule nowadays. With an engine designed for petroil lubrication, it is obvious that where the oil goes, so may the petrol also, with detrimental results. Further, the lubricant has to find its way into a bearing from the outside and as it is much easier for the oil to travel up the transfer port, an excess is needed in the crankcase to ensure that an adequate supply goes the way intended. Again, it will be obvious that the thickest of blue smokes behind the motor is no guarantee that each bearing is securing a requisite amount of oil. The excess of oil, however, contaminates the charge, with consequent loss of power and renders it impossible for the plugs to last long, and thus the reliability factor is reduced. The ratio of oil to petrol is not constant and the fact that the high revving, large capacity motors use more gallons per b.h.p. does not alter the necessity of increasing the proportion of oil in the petrol. A point which has, no

*THE SPORT AFLOAT—continued.*

doubt, prevented many a prospective purchaser from buying, is the messiness of outboard motor boats : this mess is of oil left by the petrol evaporating from the overflow of petroil mixture when the carburettor is flooded, or from the blow-back through the air intake.

With forced feed lubrication all these disadvantages are remedied. The lubricant reaches the bearings through drilled oilways and only the slight oozing of oil from these bearings reaches the crankcase, enabling a very pure charge to be induced each revolution, and giving the plugs a much happier time than is their lot with petroil. Of course, the mess of petroil lubrication is absolutely eliminated because only clean petrol which soon evaporates drips from the flooded carburettor. How much the absence of that oily bilge washing about the bottom of the boat would be appreciated ! 1931 Johnson owners will not be seen carefully measuring out a quantity of oil, tediously pouring it into a petrol tin, and then shaking furiously, a proceeding which is too common to be humorous any longer.—F.M.

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# PREPARING YOUR OUTBOARD.

## II.—ATTENTION TO THE MOTOR.

AS the rules stand at present only standard engines are permitted for the majority of events, and therefore tuning from a racing motorist's point of view may be only partially indulged in. The rules state that no alterations may be made except as regards controls (steering and throttle) silencer, and fuel tanks. Anyone who tinkers with compression ratios, mags. or the miniature gas works which replaces a carburettor on many motors, is to be considered quite " de trop " and is only allowed one important run of the season, namely the Bomford Trophy.

Nevertheless, there is plenty of scope for the more subtle kind of tuning, this being especially necessary when it is remembered that many other competitors in a particular race will have an exactly similar engine. It is not permissible to cram more gas in the combustion space by experiments on the depth of the ports and length of piston skirt in the case of a two-stroke, or cam contour and stronger valve springs with a four-stroke, but it is possible and permissible to induce a greater charge each cycle by reducing the skin friction between the gas and the walls of the gas passages. This, then, is first method of increasing an engine's efficiency. There are, however, three other objects that the tuner should bear in mind : in order they are, (a) to retain all the charge when induced, (b) to afford the gases formed by the explosion, the easiest means of exit, and (c) to reduce the frictional losses of every moving part.

Personally, I favour stripping the motor down the moment it is received whether new or second-hand. When dismantling a multi-cylinder engine, care should be taken to keep the pistons to their respective cylinder, and should it also be a four-stroke, the pistons should bear an additional mark so that they may be replaced the same way round as originally. For those for whom only the best is good enough, the crankshaft should be tested for truth, for which work is necessary a lathe, a dial indicator, and the ability of a skilled mechanic. Details of work of this kind I do not think come within the scope of these notes, but it should be mentioned that there are firms such as Laystalls, who specialise in work of this kind, and anyone not confident to undertake the truing of a crankshaft should it prove out of alignment, will, I think, be amply repaid by having matters put right by a specialist firm.

The next business is to start polishing ; con rods, flyweight, inside of the crankcase and undersides of the piston should all receive attention, and as these are not bearing surfaces, emery cloth may be used for the purpose. If the mainshaft bearings are of the long plain variety, any high spots on the bearing should be removed with a bearing, scraper for not only is a perfect bearing necessary for reduced frictional losses but these bearings are the means by which the crankcase pressure is retained and any break in the film of oil in the bearing will permit air to enter and gas to escape. If the engine has never been run the main shaft bearings should be scraped in by using a fitter's " blue."

The " blue " is a dye which is painted over the bearing surfaces, and when the bearing is assembled and then again split, the spots which have the dye rubbed off require easing down. Should the mainshaft bearings be ball journals they may be assumed correct, but with these the pressure retaining device should receive attention. A fresh set of paper-washers should be made from cartridge-paper for all joints and the jointing compound should be applied thinly, care being taken that no specks of grit get between the joining surfaces, or air leaks will result. Following up the idea of retaining a good compression in both cylinder head and crankcase, a new set of rings should be lapped in, with, of course, an old or spare piston, for each respective cylinder, the medium being jeweller's rouge. If the motor has not been run the pistons must not be touched, but they should have the high spots carefully removed with a jeweller's file after the running-in period. And now comes the most tedious work of all, that is polishing the ports. A set of riflers are useful for getting in the awkward corners but the final polish has usually to be put on by means of a piece of emery on one's finger tip unless you are fortunate in being able to get hold of a dentist's drill which simplifies the work In this connection it must be remembered that very little metal may be removed and only a polish is permissible. Very often the vertical load on the crankshaft is taken on the bottom bevel and thus the prop-shaft bearings must be perfect, a point which is often neglected, and here it might be mentioned that it is often advisable to fill the gear housing with a thinner oil than is customary if the race is only a short one, for the loss of power through oil drag in the gear housing is always considerable.—M.

# HERE and THERE

## By "Camshaft"

**Riley's Racing Plans.**

AT a time when certain well known firms have decided to refrain from motorcar racing during 1931, it is refreshing to learn that a company whose name has always been connected with speed has expressed its determination to support motor racing wholeheartedly. This is the Riley concern.

Last year the Riley Company was represented in races by private entrants only, and one of these, Victor Gillow, it will be remembered, won the first day's race of the Irish Grand Prix at Phoenix Park. For 1931, however, the company will itself be entering an official team for the leading British races and for certain overseas events.

The team will be headed by Victor Gillow, and the second member will be C. R. Whitcroft; the name of the third man has not as yet been disclosed. Entries will be made in the "Double-Twelve," the Irish Grand Prix and the Tourist Trophy race. It is possible, also, that the Belgian 24 hour race at Spa will be supported. The cars will be standard editions of the Riley "Nine" Brooklands model and will not be supercharged. It is probable that in the 1100 c.c. classes of the events named above there will be no other British cars competing; the honour of upholding the country's prestige will, therefore, fall to the Riley team.

In addition to racing, the Company will be represented in certain trials by Donald Healey. He will be driving a 9 h.p. car in the Paris-Nice trial, the Buda Peste Rally and other events.

**Rolls-Royce at Buenos Aires.**

So completely does British engineering cover every phase of modern transport that a single concern at the British Empire Trade Exhibition is represented on land, in the air and on water. This is the Rolls-Royce Company.

They are showing a car and a sectioned model of one of their latest aero engines. This is fitted to two of the fastest fighter seaplanes in the world, the "Nimrod" and the "Osprey." Lord Wakefield's speed-boat, "Miss England II," is also, of course, equipped with two Rolls-Royce R-Type racing aero engines, each of 2,000 b.h.p., and similar to that fitted to the "S.6."

The car representing the Rolls-Royce range is a 40/50 h.p. "Phantom II," with a handsome sedanca de ville body, finished in black cellulose and relieved by a blue line. Triplex glass is fitted throughout. Polished radiator shutters are fitted and all exterior bright parts are of untarnishable steel.

**Saving the Shavings.**

It is difficult to find a "waste" product which has not some use these days, and eliminating waste is one of the most important duties of the production engineer—an individual to be found in most modern motorcar factories.

At the Rover car works they even turn sawdust into profit. Large suction pipes draw the shavings off the floors of the body-building shops and convey them through conduits to a hopper, where they serve as fuel for the factory's central heating system.

**Aluminium Welding Folder.**

A folder entitled "The Barimar Metallurgical Process of Repairing Aluminium," just issued by Barimar, Ltd., deals interestingly with a highly-technical subject in simple language. It shows how common fractures in gearboxes and crankcases due to weaknesses in design can be welded and strengthened by the Barimar process. Readers of MOTOR SPORT can obtain a copy of the folder on application to Barimar, Ltd., 14/18, Lamb's Conduit Street, London, W.C.1.

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### ALVIS.

£60 ALVIS, 12-50 super sports 2-seater, refinished in black and ivory, completely overhauled and in perfect condition throughout, 75 m.p.h., outside exhaust. Greenwood's, 30a, Highgate Road, N.W.5. Mountview 4223.

### ASTON-MARTIN.

1931 ASTON-MARTIN 4-seater international sports, just registered, fully guaranteed, price £535. Taylor and Askew, 13 Weymouth Mews, Harley Street, W.1. Langham 3929.

1925 ASTON-MARTIN 3-seater sports, f.w.b., finished in green, with cream wheels, chromium-plated fittings, very smart appearance and a really hot lot, taxed for the year, bargain, £145, hire-purchase to suit you. The Motor Combine, 349 Euston Road, W. Museum 2705.

## USED SPORTS CARS FOR SALE (*continued*).

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# Motor Sport Classified Advertisement Section—*continued.*

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*(continued)*

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