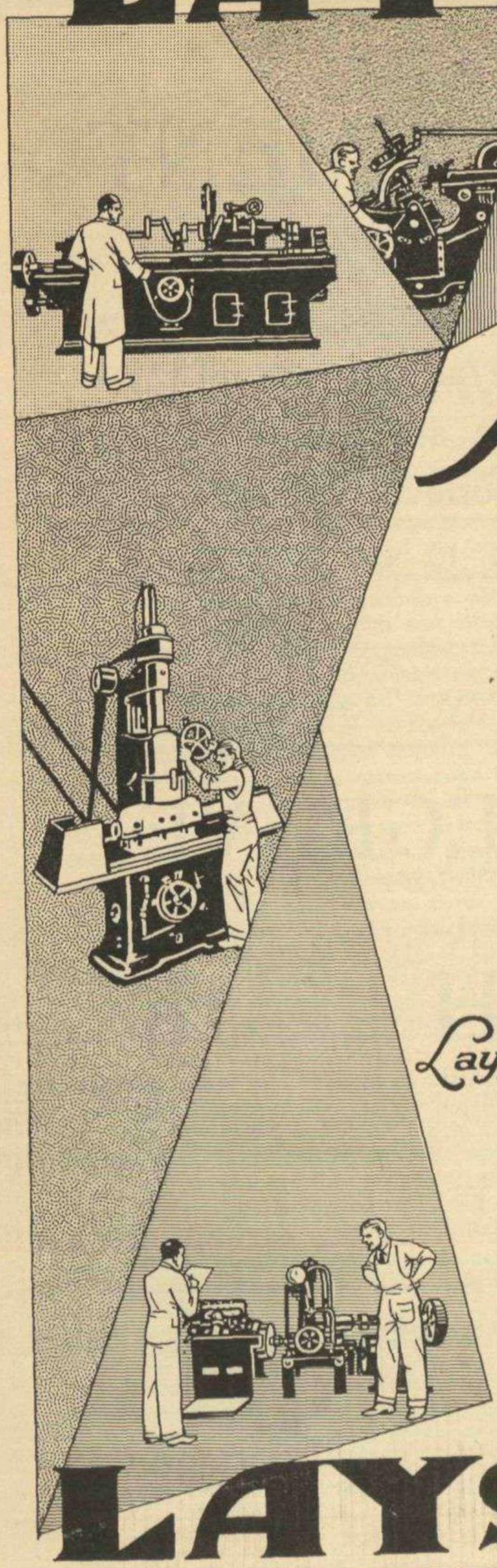
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The Way of Things

The Wrong Spirit.

IT is amazing to find, in the present state of motoring development, so many otherwise intelligent beings who, while displaying a great eagerness to discourse on the subject of motoring in general and speed in particular, display such a complete lack of knowledge of their subject. Not long ago we listened to a debate on the subject of the speed limit, which was broadcast, and which made one feel that the greatest failing of the wonderful invention of radio broadcasting is that there is no means of answering it back. One of the speakers on this occasion was Mr. A. P. Herbert, who has now entirely abandoned his sense of humour to become a Very Serious Person, in fact a sort of Lord High Pedestrian. In the above mentioned debate he stood in favour of a speed limit on the grounds that it would decrease accidents. This of course is a most desirable end and one which every thinking person will wish to help to attain. But what seemed to us to make the whole argument appear ridiculous was, firstly, that the gentleman who took the other side of the discussion appeared to have extremely little idea of what he was discussing, while Mr. Herbert's remarks about motorists revealed only too plainly that he belongs to the days before the repeal of the Red Flag Act. To say that his remarks were prejudiced is about as adequate as saying that the Eiffel Tower is higher than a pillar box. He started with the mistake of referring to motorists and pedestrians as if they were too entirely separate breeds, the one pursued remorselessly by the other. He seems to forget, as do many people when taking sides in such an argument, that such a division is a complete fallacy. All motorists walk on occasion, and the pedestrian who never travels in a car or at least in some form of road vehicle must be rare indeed.

Therefore references to motor cars as being loaded weapons, and a source of danger and death which ought to be suppressed, as far as we could understand Mr. Herbert, by a form of martial law, seem rather uncalled for. Surely there is sufficient proof of prejudice in his absurd content on that there was no reason why a man on foot should take as much precaution against accident as the man on wheels. What is required to reduce road casualties is not such a vindictive spirit, but an effort at co-operation for the common safety.

It is gratifying to see that the Daily Press have now started a campaign to remind people not to walk dangerously, and we feel sure that if the average man were as careful on foot as he is when driving a car the casualties would be very substantially reduced.

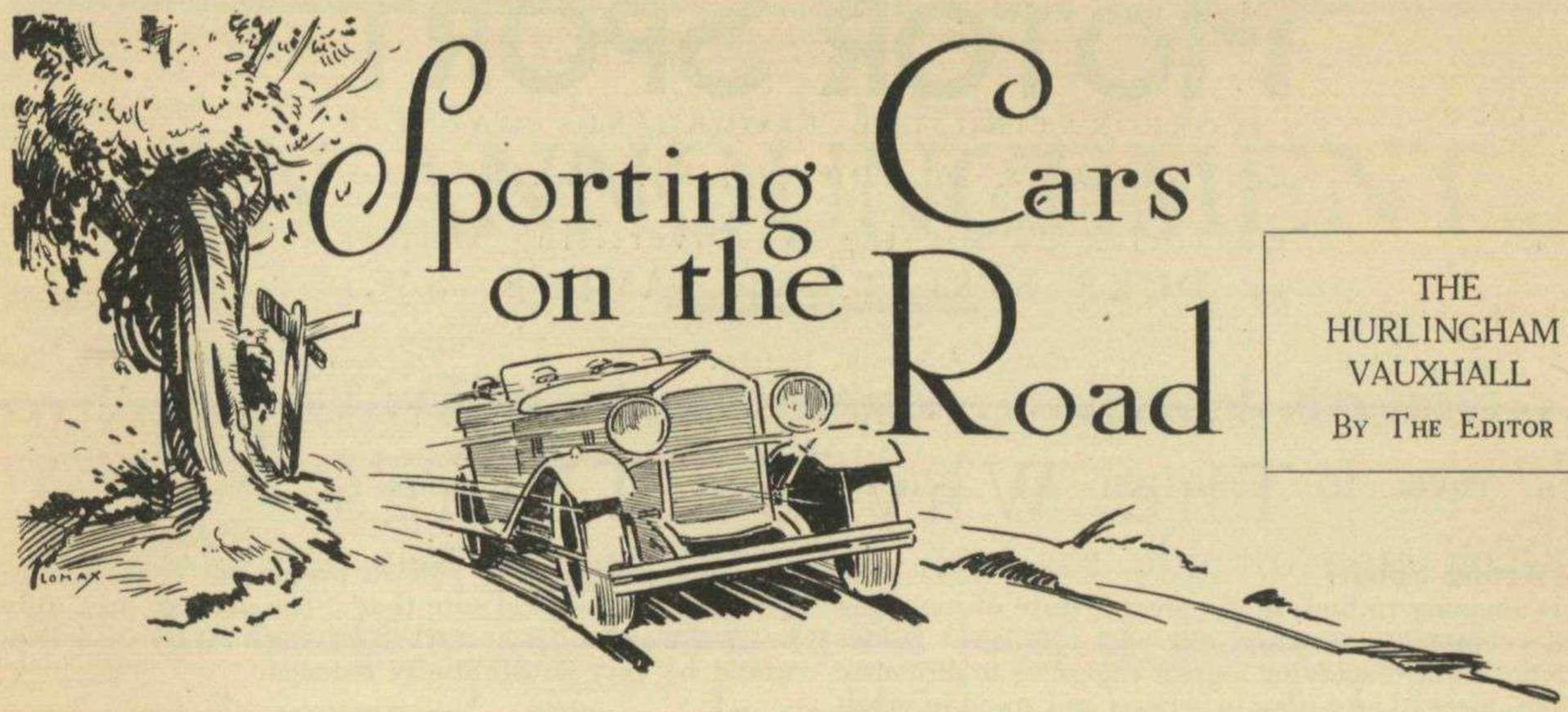
Ourselves and Flying.

If we are to believe some of our critics, we as a nation are sadly lacking in air-mindedness. This contention is based mainly on the fact that while the numbers of privately owned planes in other countries are steadily increasing, those in England remain well below the two hundred mark. But does statistical comparison of this sort have any real bearing on the implication? The conditions in this country are so vastly different to, say, America for the development of civil aviation and especially private flying. People are apt to overlook the very large number of private citizens who hold pilot's certificates. They cannot all own machines, as quite apart from the cost of the machine, there is in the majority of cases a lack of facility for landing and housing, and therefore many enthusiasts prefer to do their flying on a club machine from the nearest areodrome.

Although areodromes will increase in number the natural characteristics of the country will always prevent quite the number of machines being in use in proportion to the population, that one finds in countries like America, and some of our Dominions. But this is no reason to show pessimism about our air ability. Nearly all the greatest achievements in air history have been accomplished by us, sometimes comparatively unnoticed. Alcock and Brown flew the Atlantic eleven years ago, and the interval before it was crossed again by a plane was so great that many people seemed to have forgotten that it had ever been done before—in a way a demonstration of how far ahead of its time the first conquest was made.

The De Havilland Aircraft Company have their machines being made under license in most of the chief countries in the world, surely again sufficient proof that we are recognised as being well up to date.

We do not wish to boast of our successes or rest on our laurels, such as the Schneider Trophy and the world's speed record, but surely a country which can produce machines and men whose names stand high the world over in the annals of aviation cannot be charged with taking unkindly to the air.



Sporting Cars on the Road

THE HURLINGHAM VAUXHALL

BY THE EDITOR

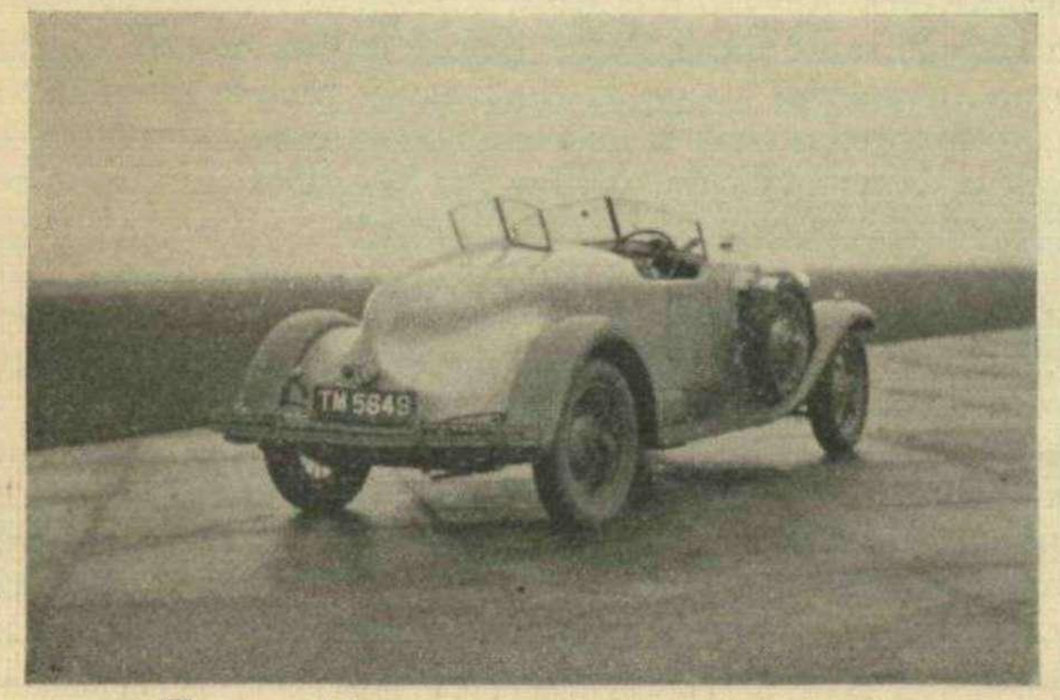
SINCE the days of the old 30-98 Vauxhall this marque has passed through various phases, and anyone who took out one of the latest models after being used to its prototype would have considerable difficulty in reconciling himself to the fact that both models came from the same factory at Luton. There were many who, when the control and policy of this firm passed into the hands of the General Motors Corporation, deplored the change, but a run in the latest type would soon dispel any fears that they may have had on this score.

The influence of the American design is evident as soon as one takes the wheel, and though as a general rule, the building of a sports car is not considered the strong point of the American manufacturer, this at least is a case where some of these features make a great improvement.

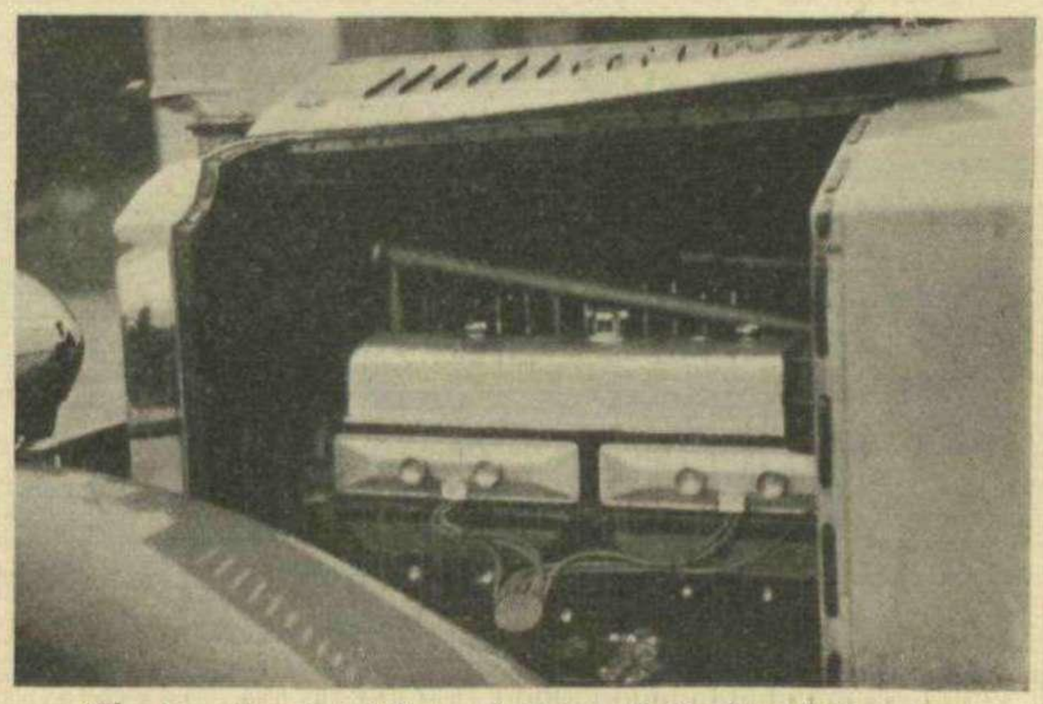
The old Vauxhall certainly went, but it was a rough machine, and though roughness in a sports car was excusable at one time, the need for it has now been shown to be a fallacy, and in the Hurlingham model Vauxhall which we recently had the opportunity of putting through its paces, we found an excellent example of a machine which combines good performance with thoroughly gentlemanly behaviour.

One point at least in which it retains one of the characteristics of its predecessers, and which is regarded now as essential on any sports car, is that it has a 4-speed gear box, and one with very useful ratios. The speeds on the indirect gears we found to be 22 m.p.h. on first gear, 35 m.p.h. on second, and 53 m.p.h. on third. Third gear enables an excellent average to be put up as it gives remarkably good acceleration, and one gets in the habit of spending a great deal of time in this gear on anything like a twisty road. The gear change is very light and easy to the point of making one almost careless in engaging the various ratios, and certainly contributes to the fact that driving this car is a very restful proceeding.

The steering is very light and centres itself in a very pleasing manner after taking a bend ; however we found it geared rather low for our liking, and although extremely pleasant for ordinary motoring was not quite quick enough on the uptake for really " snappy " corner

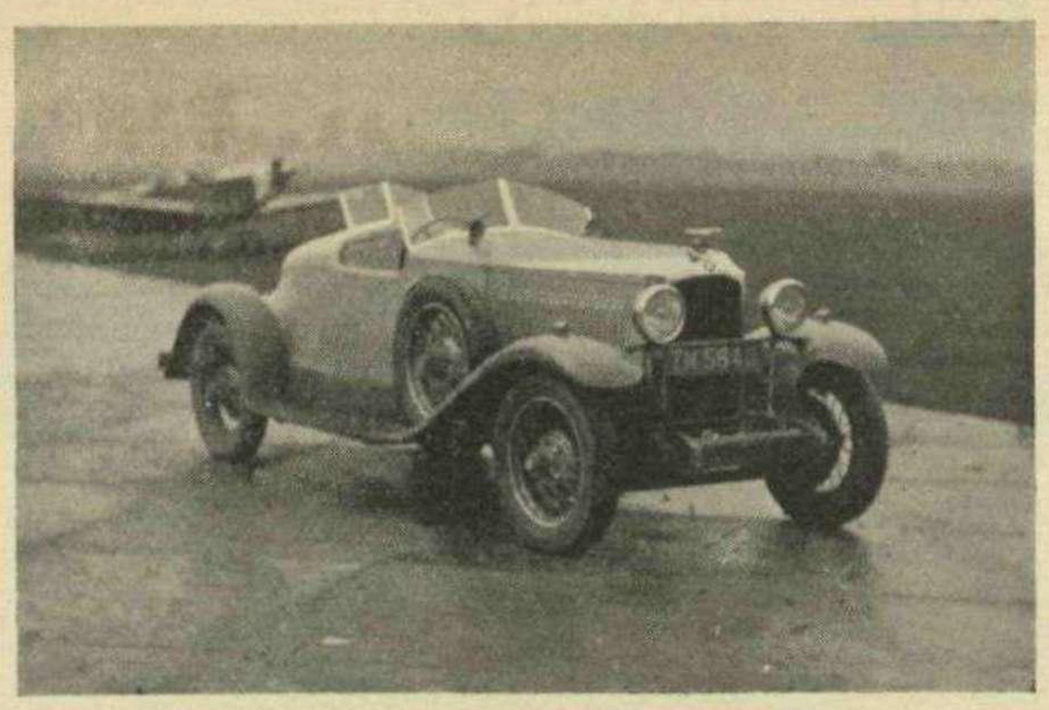


The rear of the car is a fine piece of coachwork.



Showing the straightforward design of the Vauxhall engine.

THE HURLINGHAM VAUXHALL—continued.



work. This of course is largely a matter of personal preference, and many favour the low gearing to the "heavier" feel of a higher gear, but we do not.

The outstanding feature of the Vauxhall is undoubtedly the braking system, and in this the makers are to be heartily congratulated. It is a very difficult matter to hit the perfect balance in a servo system between heavy operation and the over-sensitive type which makes braking a fierce business. Only a light pressure on the pedal is required, but at the same time there is none of that tendency to "stand on its nose" which is apparent in some systems where the pedal pressure required is low. Firm pressure on the pedal produces the most astonishing braking power, without the slightest pull on the steering or tendency to lock the wheels, and yet without any special delicacy in application it is possible to pull up as gradually as a train.

Unfortunately it was not possible to find a suitable piece of dry suface on which to test the actual braking distance, and it was therefore necessary to carry out our tests on wet concrete. The fact that the car came to rest from a speed of 40 m.p.h. in 65 ft. on this surface, makes one wish that it had been possible to find the figure on a dry surface.

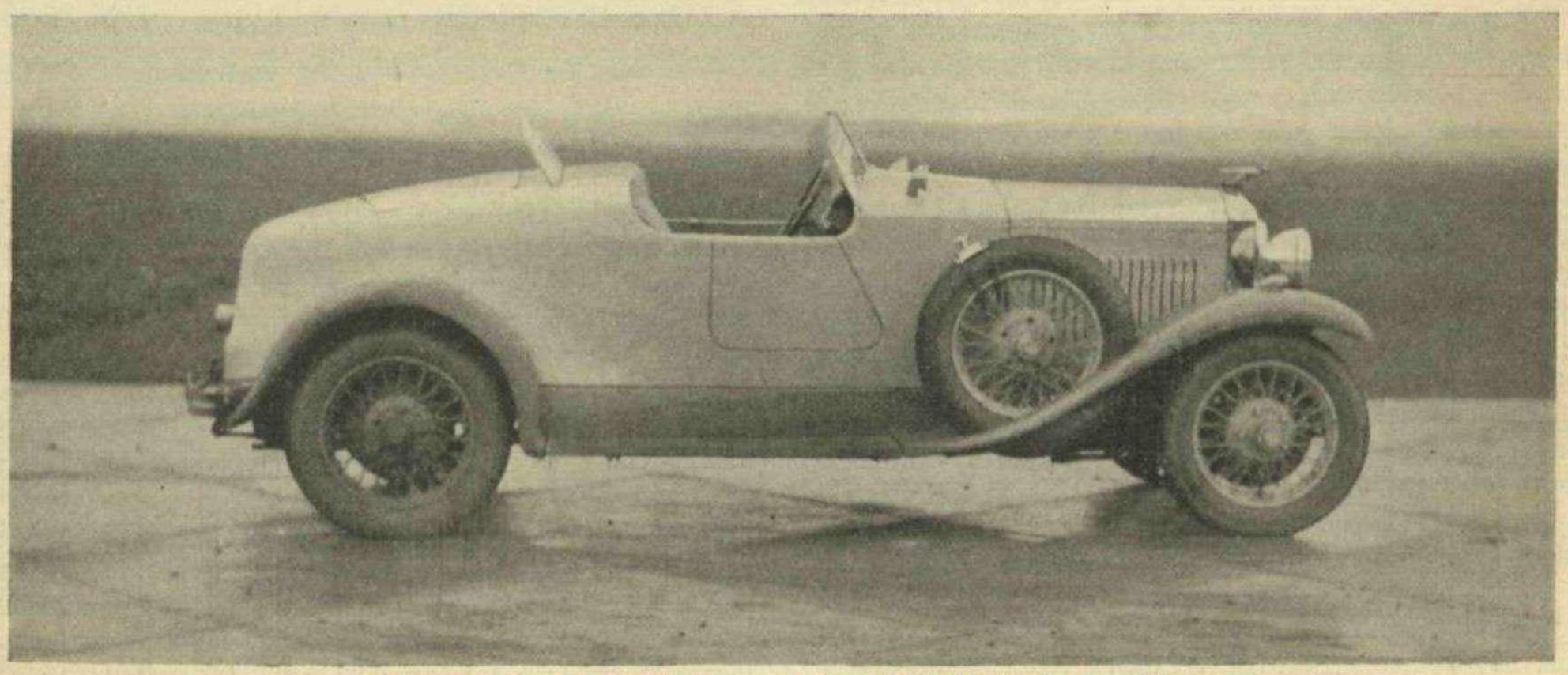
A criticism might be levelled by some that this model is not as low on the ground as most sports models, but the real proof of this is in the behaviour on corners, and the absolute freedom from rolling in this car shows that whatever may appear to be the case superficially, the weight is actually in the right place, and the body is not only an extremely handsome piece of work, but is very comfortable, the high back of the seat giving ample support to the shoulders.

The flexibility of the engine is remarkable though in common with most high compression units a certain amount of attention to the ignition control at low speeds is required if occasional pinking is to be avoided.

Owing to the rather evil weather conditions prevailing on the occasion of our test we were unable to get a really accurate idea of the maximum speed of the car, the most we actually reached being 70 m.p.h. The car we tested had not had any attention paid to the engine for some thousands of miles, and there is no doubt that a speed of 75 m.p.h. could be attained in reasonable circumstances, while an actual test of one of the earlier models with a closed body gave a lap speed of 72 m.p.h. on Brooklands and a maximum speed of 79 m.p.h. which is remarkably good for an engine which comes into the 3 litre class.

The Vauxhall has a fairly heavy chassis and is capable of providing accommodation equal to many cars with considerably larger engines. It has obviously been the makers' policy to produce, not a semi-racing type of vehicle, but one suitable for almost any purpose for which an automobile may be required, coupled with a performance and general behaviour at high speeds which places it high up in the sports car class, and they have succeeded admirably. The springing is perfectly comfortable at low speeds which is not always the case with a fast model.

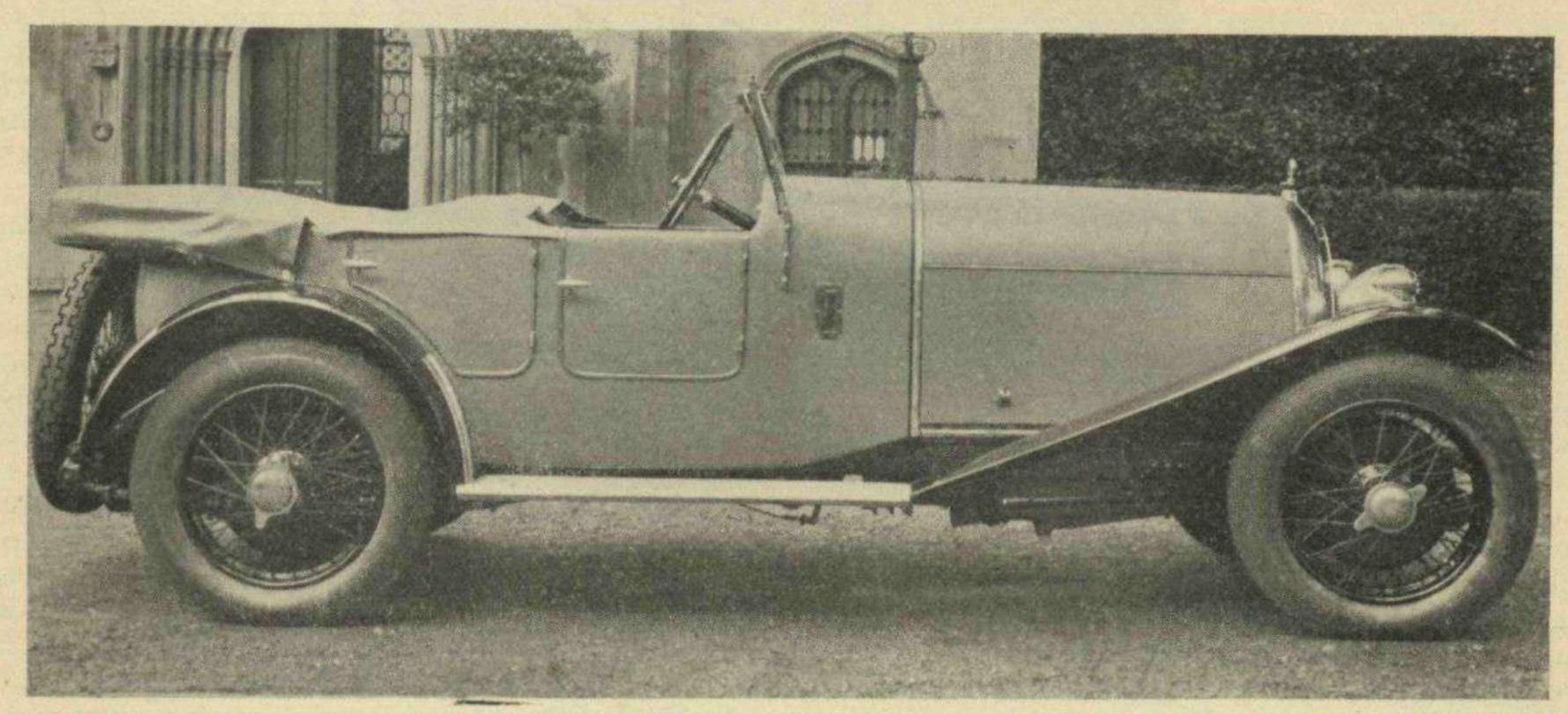
The result is a car which does not require any more attention in service than an ordinary touring car, and one of the most pleasing features in the eyes of a prospective buyer is that fact that it only costs £650.



These two views show the graceful lines of the Hurlingham model.

THE 16-60 H.P. H.E.

on Test.



ONE of the greatest advances in car design of recent years has been the fact that manufacturers have contrived to get a steadily increasing performance from their models, and at the same time have avoided any tendency to produce a harsh and intractable engine.

There is now a growing demand for a type of vehicle which a few years ago was non-existent except in the very expensive big engined type of car.

There are two quite easy ways of getting increased performance—one is to fit bigger power units and so produce a machine expensive to run and not very efficient in operation, and the other is to "hot up" an existing size of engine. The method of this is to bump up the compression, increase valve lifts, etc., and so destroy the smooth running and flexibility so desirable for anything except actual racing. This gives economy of running as regards fuel and tax, but gives increased wear and tear on the more highly stressed working parts.

The most desirable state of affairs, and one which requires real skill and care in design and manufacture, is to get a lively performance from a small engine without sacrificing sweetness of running or silence, and in the 16-60 h.p. H.E. which was recently placed at our disposal by the London distributors of 138 Long Acre, this end has been very successfully achieved.

The engine is a six cylinder unit of 2,290 c.c. and in view of the size and comfort of the body the performance with such a comparatively small engine is really excellent. The smoothness of the engine is such that speed is very deceptive, and a cruising speed of 60 m.p.h. seems to call for no effort, and as this speed may be comfortably exceeded on third gear (5.96 to 1) the performance on hills is very pleasing, and a maximum speed of 75 m.p.h. can be attained without having to choose favourable circumstances and it would therefore not be difficult to get 80 m.p.h. on ocasion.

Although the engine is very pleasant to drive, the greatest charm of the H.E. is in the clutch and gearbox, the manipulation of the gear change being as good as any we have known. The clutch is so astonishingly light, that at first it is really quite hard to notice any resistance when withdrawing it. We know of many cars in which the pressure required to depress the accelerator pedal is considerably greater than that required to operate the H.E. clutch and on a long run the benefit of this feature has to be experienced to be fully appreciated.

The change is correspondingly light, and upward changes require only a short pause, the lever seeming to fall into place almost of its own accord at the right moment, and there is certainly no excuse for any owner of one of these models making a noisy change either up or down.

The gear ratios are 16.9, 8.75, 5.96 and 4.7 to 1.

The Marles steering is light and with ample centering action, and the road holding at speed and on corners leaves nothing to be desired, the slight feeling of "tail-heaviness" apparent in some 4-seater cars being entirely eliminated. In fact a general lightness of control is the main feature of the H.E., the only point in which this had not been carried out on the actual car we tried was the braking system, this being direct operating and rather heavy. As however all models are being fitted with a vacuum servo system, this control will come up to the very high standard set by the others. The brakes themselves work well giving full retardation without unevenness or affecting the steering, and it was only the heavy pressure required which prevented better braking figures being attained. Even so a stopping distance of 80ft. from 40 m.p.h. is well up to the average and the actual model available to the public in future should have very safe braking indeed.

16.60 *h.p. H.E.—continued*

The H.E. certainly gives one the impression of being a "long distance car." The position is such as to ensure comfort combined with good control and the whole finish of the body work is first class.

Pneumatic upholstery is fitted throughout and the comfort of the rear passengers has not been sacrificed in producing good lines, as sufficient room has been left on the chassis to provide length without overhanging, the rear axle, but the weight distribution is arranged to avoid it seeming a long chassis when driving. An 18 gallon petrol tank is another very useful fitting when the car is used for long trips. The price with open 4-seater body is £695.



E. H. M'Crystal and the Austin Seven mentioned in the accompanying paragraph.

SOUTH AFRICAN RECORDS—AUSTIN MAKES A "BAG."

The "Baby" Austin has added a page to the history of light car racing in South Africa by establishing an amazing series of records at the Clairwood Speedway, Durban. Driven by E. H. M'Crystal, the tiny car purred contentedly round the flat unbanked speedway mile after mile, piling up a mileage little short of amazing for so small a vehicle. When the gun went at the end of the hour the car had actually covered 47 miles, 1,289 yards, which is a South African record for classes 750 and 1,000 c.c. The fastest time was recorded on the 27th lap, when the circuit was completed in 1 min. 12 3-5 sec.—another record for the little car. The first five miles were covered in 6 min. 16 4-5 sec., completing the bag of records for the day. The record run was observed by officials of the Motor Cycle Union of South Africa. The car was a standard model in every respect with only hood and wings removed.

Those who are accustomed to study Brooklands figures, where fast times are recorded by racing cars on a banked track, may think the above times somewhat unexciting, but motorists who know anything about high speed work on gravel, and the difficulties associated with the small flat circuit, will recognise that Mr. M'Crystal's latest performance marks him out as a driver of more than ordinary skill.

It is not very long since the same enthusiast knocked thirty-two minutes off the Durban-Johannesburg record with an Austin Seven.

TWO RALLIES IN SUCCESSION.

For most drivers an event such as the Monte Carlo Rally is strenuous enough in itself, but D. M. Healey, the well-known Triumph exponent, is not satisfied with the "Monte Carlo" alone.

His starting point for this event is to be Tallin, 450 kilometres from Riga, and he is therefore first competing in the Riga Rally. When this is finished he will at once drive to Tallin and will set off for Monte Carlo.

The Super Seven which he will be driving in the Riga and Monte Carlo events has already done over 10,000 miles, being the car that he used in the Barcelona Rally. It is standard in every respect except that special attention has been paid to the lighting system. Healey leaves Birmingham for Riga on 18th January.

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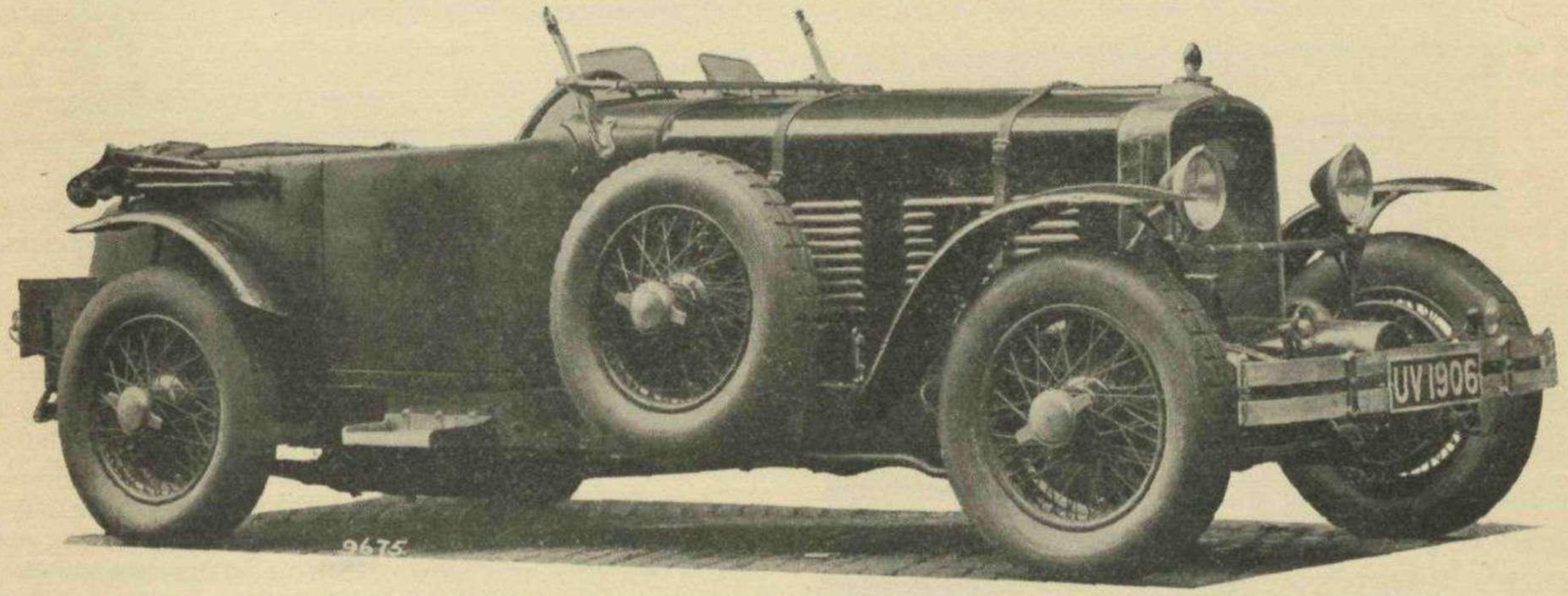
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GREAT RACING MARQUES

THE DARRACQ—*continued.*

By E. K. H. KARSLAKE.

This conclusion of the article in our last issue deals with the post-war activities of the Darracq when it merged with the Talbot, and in racing became known as such.

WHEN the war came to an end, it was some time since Darracqs had figured in the great races; soon after the close of hostilities, however, a fusion was made between the Sunbeam, Talbot and Darracq firms, and the French car, which bore the name of Talbot-Darracq, had the advantage of the engineering genius of M. Louis Coatalen. For the first post-war Grand Prix, which was for 3-litre cars and which was run at le Mans in July, 1921, cars were built in each of the firm s three factories, at Wolverhampton, London and Suresnes. At this time the vogue of the straight-eight was almost as universal as it is now by reason of its successful adoption, following war experience by Ballot in Europe and Duesenberg in America. The Grand Prix Talbot-Darracq, therefore, had this number of cylinders, with two overhead camshafts. Two cars were entered and had as their drivers André Boil'ot, who had already earned for himself a reputation for daring, and the wily Réné Thomas. They had only been completed just in time for the race, but, although Thomas was early in trouble, Boillot rapidly got into fourth place. He was destined, however, to be betrayed by tyres, for the cars were fitted with a totally unsuitable type of which the tread wore away in an amazingly short time. The S.T.D. pits soon presented an extraordinary spectacle due to the heaps of discarded tyres; and after Boillot had changed tyres nine times, his pit personnel succeeded in borrowing some of another make from one of the other competitors. As a result of this Boillot, who had dropped to eighth, improved his position and finally finished fifth. In the meantime, however, a flying stone had punctured the oil tank on Thomas' car and he was forced to retire.

While these cars were suffering the reverses of fortune, however, some other racers were under construction in the Darracq factory, which were destined to race for five consecutive racing seasons and never to suffer defeat. These of course were the famous 1,500 c.c. Talbot-Darracqs, which entirely dominated the light car world during these years. The cars had 4-cylinder engines with a bore and stroke of 65 × 112 mms. (1,486 c.c.), with four overhead valves per cylinder operated by two overhead camshafts, the engines being in fact half the three litre power units. They were entered for the Grand Prix des Voiturettes of 1921, which was run on the same course as the Grand Prix at le Mans, and had Réné Thomas, K. Lee Guinness and H. O. D. Segrave as their drivers. From the outset of the race it was evident that these new racers would sweep all before them, and they rapidly captured the three first places, which positions they retained until the end of the race. The winner, Thomas, averaged 72.1 m.p.h. for the 279 miles of the race, and thus set up a light car road-racing record, which compared well with the average of 78.1 m.p.h. by the Grand Prix winner's 3-litre car on the same course. A career of victory was fittingly inaugurated.

The speed of the little cars—as they were then regarded—was soon to be amply proved; for the team were entered for the first 200 Miles Race which took place that year at Brooklands. Once more the Talbot-Darracqs walked away from all their adversaries and came home in the first three places; while the winner, Segrave, averaged 88.82 m.p.h.

The next year witnessed the revival in the Isle of Man of the R.A.C. Tourist Trophy races for 3-litre and 1,500 c.c. cars; and the three Talbot-Darracqs were entered in the latter division. Their drivers were now Sir Algernon Lee Guinness, Albert Divo and Jean Moriceau, and their first meeting in a road race with the official Bugatti team was awaited with much excitement. On the first lap, however, Moriceau burst a tyre and overturned, and the Talbot-Darracq team was reduced to two. The survivors, however, rapidly gained the lead, and lived up to their reputation by finishing in the first two places, Guinness, the winner, averaging 53.3 m.p.h. over 226 miles of the Manx course.

The Second Two-Hundred.

The next big light car event of the year was the second 200 Miles Race, and again the Talbot-Darracqs were among the starters. In this race the three cars were driven by K. Lee Guinness, Segrave and Chassagne; but although their habitual victory awaited them they were not to achieve their usual grand slam. Chassagne experienced ignition trouble at the outset, and having remedied this defect, set out to catch up his team-mates. On the railway straight, however, he burst a tyre and went over the top of the banking, and although fortunately neither he nor his mechanic were injured, one of the team was out of it. Guinness, however, upheld the reputation for invincibility by winning at 88.06 m.p.h., while Segrave, who had not been without his share of trouble, finished third.

From Brooklands, the scene of activity was moved to le Mans, where the Talbot-Darracqs made their second attack on the Grand Prix des Voiturettes. It is a significant fact that in 1921, when they first appeared, there were seventeen starters in this race: now there were five; so great was the prestige which they had won. The cars had as their drivers K. Lee Guinness, Segrave and Divo, and in view of the lack of competition the

GREAT RACING MARQUES—continued.

race was something of a foregone conclusion, the three Talbot-Darracqs finishing in the first three places. Guinness, the winner, averaged 72.1 m.p.h. for 375 miles, his speed being exactly equal to that of Thomas over a shorter distance in the same race the year before.

In the Autumn of 1922 the Spanish Club of the Penya Rhin held a race for 1,500 c.c. cars near Barcelona, and for this event the three Talbot-Darracqs were entered. The cars were taken to Barcelona on Sir A. Lee Guinness' yacht, "Ocean Rover," and ran in the race with K. Lee Guinness, Segrave and Jean Chassagne as their drivers. Chassagne was put out of the contest with valve trouble, but Guinness, fresh from his victories in the 200 Miles Race and the Grand Prix des Voiturettes, again proved the victor, covering the 331 miles of the difficult road circuit at 65.5 m.p.h., while Segrave finished fourth.

Two Seasons of Success.

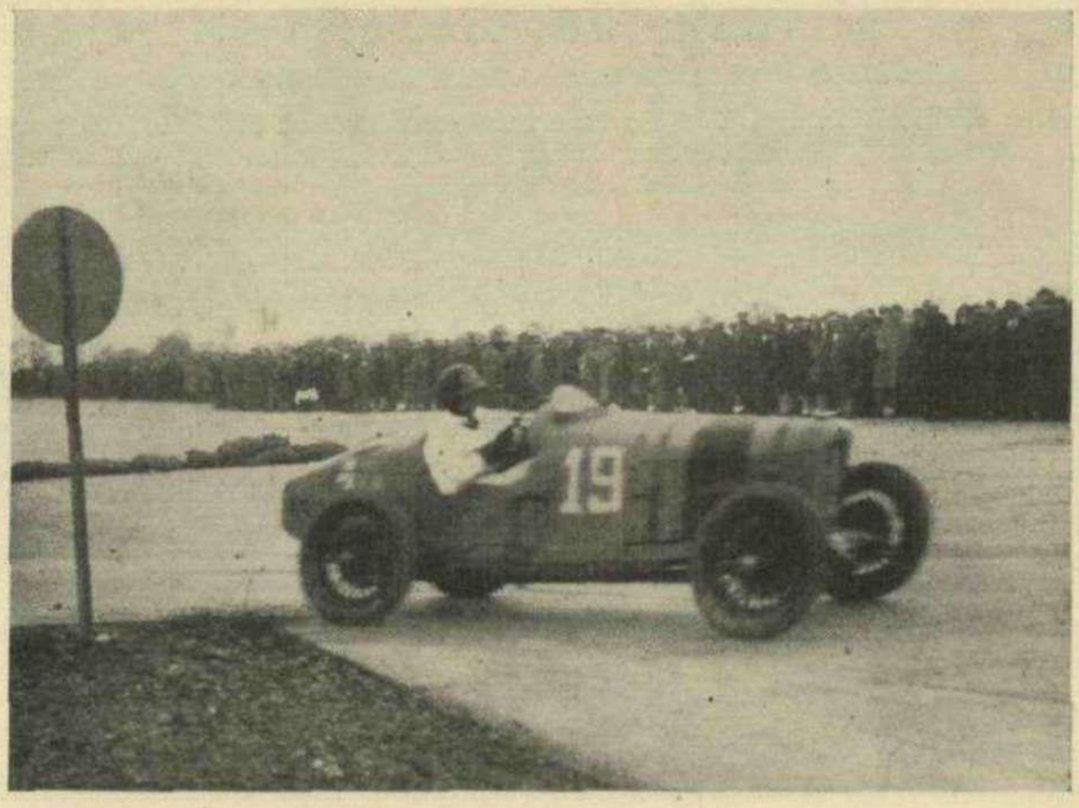
The Talbot-Darracqs had thus completed two racing seasons without ever being beaten in any race for which they had been entered; and during this time they had received no important modifications. For the 1923 season, however, it was decided to rebuild the old chassis and fit them with new engines so as to bring the cars up to date. The new power unit had four cylinders with a bore and stroke of 67 × 105 mms. (1,481 c.c.), with two valves per cylinder instead of four, operated by two overhead camshafts. The new engines attained well over 5,000 r.p.m., as against 4,000 r.p.m. attained by the old ones, and developed over 70 b.h.p.

The new cars, which were now known as Talbots in France and Darracqs in England, though for the sake of simplicity is best to call them by the latter name, made their initial appearance at the 1923 light car race at Boulogne. They were handled by Guinness, Segrave and Divo, and at once set out to prove that although fresh from the factory, they were as invincible as they had been before their metamorphosis. On the first lap, however, Guinness went out while in the lead with a broken ball race in the back axle, and left Divo and Segrave to lead the field. The former, however, was put out by engine trouble, but Segrave, having set up a record lap for the Boulogne circuit at 72 m.p.h., went on to win easily, averaging 67.3 m.p.h. for 279 miles

The next important event of the year for 1,500 c.c. cars was the Grand Prix des Voiturettes at le Mans, and for this the Darracqs were again entered. In 1922 only two other competitors had thought fit to challenge the redoubtable team, but this year only one hardy individual in the form of Colomb could be found to compete with them. The Darracqs were driven by Albert Divo, Jean Moriceau and Edmond Bourlier, and a triple win looked certain until a fire on Bourlier's car put him out of the race. The other two went on, however, to win the first two places, Divo averaging 71.5 m.p.h. for the 257 miles. This speed was less than that of either of the two former years, due to the entire lack of competition, but just to show what could be done, Divo set up a lap record for the course at 80.5 m.p.h. By these three consecutive victories in the Grand Prix des Voiturettes, the Talbot Company secured permanent possession of the light car cup.

Much to the disappointment of English enthusiasts, who looked forward to a thrilling duel between them and the supercharged Fiats, the Darracqs did not appear in the 1923 200 Miles Race. Instead, an expedition was made to Spain as in the previous year, and the cars were entered for the Penya Rhin Grand Prix, with Divo, Moriceau and Dario Resta as their drivers. A part for Moriceau's car, however, could not be obtained from the factory in time for the race, and thus only two cars were left in the contest. These two, however, set off at high speed and Divo proceeded to set up a lap record at 72 m.p.h. and win at 67.2 m.p.h., thus breaking the record for the race set up by Guinness the year before. Resta, in the meantime, having been first in the lead and then second, had to work on his engine towards the end of the race and finished third. The Penya Rhin Grand Prix was followed by the opening race on the new Spanish track at Sitges, near Barcelona, in which the two Darracqs started and succeeded in gaining the first two places, Resta winning by ten seconds from his companion and averaging 85.1 m.p.h. for 373 miles.

The 1924 season opened with the Swiss Grand Prix for cars up to 1,500 c.c., which was run on the Meyrin circuit near Geneva in June. Two of the Darracqs were entered for this event, with K. Lee Guinness and Dario Resta as their drivers. From the start they drew right away from their rivals, and having held their lead from beginning to end, Guinness finally won at an average speed of 70 m.p.h., having covered a lap at 76.9 m.p.h., with Resta second.



Sir Henry Segrave in one of the famous 4 cylinder Talbots winning the 1926 Grand Prix de Provence at Miramas.

For the 200 Miles Race of that year, however, it was decided that the cars should be brought thoroughly up to date by fitting a Rootes type supercharger, and with this addition 100 b.h.p. was developed by the engine. As well as this, the chassis was lengthened slightly so as to give better track holding, and it was evident that the trio would be more formidable than ever. The race was to prove perhaps the greatest triumph of their whole career. The cars were driven by K. Lee Guinness, George



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GREAT RACING MARQUES—continued.

Duller and H. O. D. Segrave, and they made it apparent from the outset that the race was going to be nothing else than a procession. In pre-arranged order they simply swept round the track at about 200 yards distance from each other, and when finally they completed the 200 miles, Guinness, the winner, had averaged 102.27 m.p.h., while the third man, Segrave, was six laps ahead of their nearest competitor. By this performance Guinness, with a car running in a race and carrying two people, beat the 1,500 c.c. record for one hour, the most coveted record in the class ; and also succeeded in what had long been attempted—covering 200 miles in two hours. The race was indeed one of the greatest of the many Darracq triumphs.

The three racing Darracqs appeared once more in October in the first 1,500 c.c. race on the new Montlhery track. The cars were handled by J. E. Scales, H. O. D. Segrave and Edmond Bourlier, and at once demonstrated that they would repeat their performance in the 200 Miles Race. The three cars led for the whole 186 miles of the race, and finally finished in close formation, Scales, the winner, averaging 100.3 m.p.h.

At Miramas.

The race which marked the first appearance of the Darracqs in 1925 was the Grand Prix de Provence for the Hartford cup, which was run at the Miramas track in March. The race was supposed to be for standard cars, and as a concession to this rule the cars were run without superchargers, their drivers being Count Conelli, H. O. D. Segrave and George Duller. The race was for cars up to 4,000 c.c., but in spite of this the three Darracqs soon took the lead of the whole field and looked like making another grand slam of it. Just before the end, however, two of the high-tension leads on Duller's car jumped off their plugs and he finished the race on two cylinders, being passed by Vidal on a 2-litre Bugatti in the process. Segrave, however, captured first place, averaging 78.8 m.p.h. for the 313 miles, with Conelli second and Duller fourth, while they occupied the first three places in the 1,500 c.c. class.

The same trio of cars and drivers made their next appearance in the Grand Prix de l'Ouverture at Montlhery, which was for 1,500 c.c. cars. Competition was keen, but finally the Darracqs got the lead and held it. At the finish, however, an incident occurred which very nearly proved a tragedy. Conelli, who was lying second, tried to pass Duller just as they approached the finishing line, but the track being wet, he skidded and turned over, both he and the car rolling over the line. Duller, however, won first place, having averaged 97.2 m.p.h. for 312 miles, while Conelli, although finishing on his head, fortunately without serious injuries, was second, and Segrave third.

In the meantime, however, in France it was being demonstrated that the standard Darracq products had not failed to benefit by all this racing experience. The Circuit des Routes Pavées is certainly one of the hardest touring car races of the whole season, and for this event in 1924 two Darracq 1,500 c.c. sporting models were entered with J. E. Scales and George Heath as their drivers. The latter turned over during the race and his car was placed hors de combat ; but J. E. Scales went on not only to win the 1,500 c.c. class, but to gain second place in the unlimited division having averaged 51.7 m.p.h. for 178 miles of the worst pavé which can be found in France.

It was in July of that year that occurred the event which necessitated a qualification in the invincible description of the famous Darracqs. From the day when they first appeared in the Grand Prix des Voiturettes of 1921 to that on which they were sold in 1926 these cars were never beaten in a race in which they ran in racing trim. But in 1925 they were entered for the Touring Grand Prix of the A.C.F., and in order to comply with the rules of the race, and also because fuel consumption was limited, their superchargers were replaced with dynamos, and the cars were fitted with hoods, wings and windscreens. The three cars were driven by Chassagne, Bourlier and Ledu, and Bourlier soon took the lead in the 1,500 c.c. class, until he was put out of the race by a defective steering gear. The other two drivers, however, were held back by trouble with their cars' novel experiment in the hood and windscreen line, and finally both of them ran out of petrol before the end of the race. Ledu, however, being only about three-quarters of a mile from the finish, pushed his car over the line and so gained fourth place in the 1,500 c.c. class.

The defeat, however, did not have to wait long to be avenged. The three cars, rehabilitated as proper racing machines, were entered for the 200 Miles Race, which this year, for the first time, included artificial bends in the course. The drivers of the cars were the two Italian Counts, Conelli and Masetti, and H. O. D. Segrave ; but at the start it looked as if the Darracq luck had really broken with the Touring Grand Prix. Count Conelli made rather too vigorous a start with his car, pulled a tooth out of the back axle bevel and retired at the end of the first lap. But the other two cars lived up to their reputation, rapidly gained the lead and finished first and second, Segrave, the winner, averaging 78.8 m.p.h. Once more the Darracqs had triumphed.

A Grand Finale.

In 1926 the limit for the international Grands Prix was reduced from two litres to 1,500 c.c., and the Darracq company therefore decided to build new racers for the big events. The famous old invincibles, however, made one last appearance before finally retiring upon their well-earned laurels. For the second time the Grand Prix de Provence was run at Miramas in March, 1926, and in it three Darracqs started. Two of them, driven by Segrave and Bourlier, were members of the veteran team, while the third, which had Moriceau at the wheel, had a similar engine mounted in a special English Talbot chassis without front-wheel brakes. As two turns had been introduced in the course, Moriceau was somewhat at a disadvantage. Bourlier dropped out towards the end of the race, but Segrave went on to win at 81.8 m.p.h. for 156 miles, with Moriceau on the Clement-Talbot second. By these two consecutive wins in the Grand Prix de Provence, Segrave secured permanent possession of the Hartford Cup.

GREAT RACING MARQUES—continued.

In the meantime, however, the new racers were being built in the factory at Suresnes. These cars, in accordance with the most modern practice, had straight-eight engines of 56 × 75.5 mms. bore and stroke (1,485 c.c.), with two valves per cylinder operated by two overhead camshafts, and, of course, a supercharger; they also differed from the old 4-cylinder machines in having the propeller shaft enclosed in a torque tube.

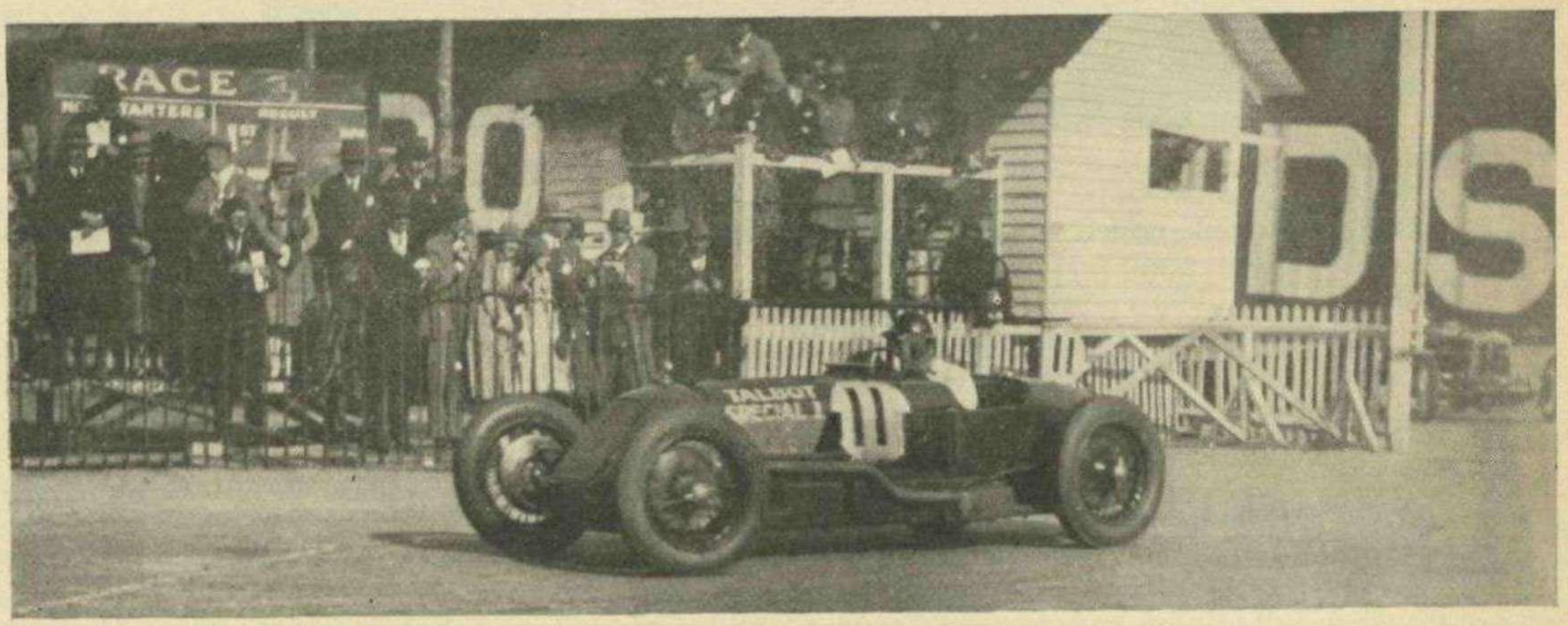
The cars were not ready in time for the French Grand Prix, and their first appearance was in the first British Grand Prix at Brooklands. The three cars were driven by Segrave, Divo and Moriceau, and everyone was eager to see if they were going to repeat the performance of their predecessors. At first it looked like it, for with the start of the race the three cars got away from the field, and at the end of the first lap were in the lead. Then, however, the front axle on Moriceau's car gave way and he was put out of the running. For the first part of the race, however, first Divo, then Segrave held the lead, until both were delayed with minor troubles and finally had to retire.

During the race however, the Darracqs had shown, that they were actually faster than any of their rivals, and it was not long before they tasted the sweets of victory. The three cars with the same three drivers were entered for the 200 Miles Race of that year and took the lead from the very outset. For half of the race they maintained their position, and then, while taking one of the bends, Moriceau's car skidded and buried its tail in the sandbank. Unaided Moriceau set to work and dug it out, but by the time he had done so he had dropped from third to twenty-third place; and although he made frantic efforts to make up for lost time, he could only finish fourteenth. In the meantime, however, Segrave and Divo were never headed, and finally finished first and second, the latter being nine laps ahead of their nearest rival, while Segrave averaged 75.56 m.p.h. Thus it was shown what the new Darracqs could do, while the firm had won its fifth 200 Miles Race.

Before the year was out, however, the three cars and drivers appeared once more, this time in the Grand Prix du Salon on the Montlhery road circuit. As at Brooklands, the three cars dominated the race throughout, and this time no untoward incident occurred to mar their performance, with the result that they finished in the first three places, Divo, the winner, averaging 62.6 m.p.h.

In the meantime, also, Albert Divo had been engaged in showing the actual maximum speed of the new Darracq by attacking the short distance records in the 1,500 c.c. class. On the specially prepared road at Arpajon, he succeeded in covering the flying kilometre at 130.51 m.p.h., and the flying mile at 128.78 m.p.h., and thus set up a record which surprised even the connoisseurs of 1,500 c.c. racing cars.

The 1927 French Grand Prix was held at Montlhery, and it was soon evident that the event was going to develop into a duel between Darracq and Delage, the only outside competitor being Eyston on the Halford Special. The Darracq team had three excellent drivers in Williams, Divo and Wagner, and the cars were modified versions of those which had shown such promise the year before.



The 8-cylinder Talbot driven by Sir Henry Segrave which won the 1926 J.C.C. 200 miles race.

Fortune, however, did not favour them in this race. Divo took the lead at the outset, but was forced to retire at half distance, while Wagner's car developed trouble which caused it to overheat, and he too dropped out of the race. Only Williams remained, and he was dogged by plug trouble, finally, however, succeeding in finishing fourth behind the victorious Delages.

At the same meeting, however, there was run a free-for-all race in which Divo started on one of the Darracqs, and, taking the lead at the outset, never left it until he had won the race at an average speed of 75 m.p.h.

This was the last event in which the Darracqs appeared officially, and since that time the Darracq Company has somewhat retired from racing, though the 1,500 c.c. racers have appeared from time to time in the hands of amateurs: certainly the Darracq is one of the cars we should have liked to have seen representing France at le Mans in June, and perhaps one day the famous name may again figure on the entry lists of the classic races.

THE TREND OF TRIALS

BY A COMPETITOR.



THE organisation of trials has always been a favourite object of criticism, and latterly the whole principle on which awards are granted has been questioned. There are really two separate issues on which a final solution has yet to be reached. One is the problem of finding the fairest eliminating test with which to pick winners, both of "premiers" and of graded awards. The other is the question whether awards should be granted for a set standard of performance, or an order of merit arrived at, and a percentage of awards issued.

In the old days, timekeeping was invariably the method, but now it is almost universally accepted that split-second reading of expensive watches has no place in a motor-cycling trial. This is the natural outcome of the improvement in machines; 20 m.p.h. timekeeping presents comparatively little difficulty on any ordinary course to-day.

Hills, too, are not the obstacles they were, and consequently all manner of tests have been devised: acceleration, acceleration and brake combined, brake only, stop and restart, slow hill-climbs and descents, sudden stop, and starting tests.

These serve their purpose, and are generally conceded to be necessary for eliminating purposes, but they are all somewhat artificial and therefore unfair. Anything in the nature of acceleration tests make the "pots" a gift for factory-backed men, with tuned engines. The amateur may have equal riding ability, but he stands no chance of a "premier." And if these tests are used to decide ordinary first-class awards, they become definitely unfair. It is not reasonable that a competitor, having climbed all the hills clean, should lose his award because he cannot afford to have his engine tuned.

A very good method of marking, not often employed, is to have long (i.e., 30-40 miles) non-stop sections, including of course some hills and rough stuff, and to deduct marks for stops as well as footing. This tests reliability, which after all, is the avowed object of the "race." Time checks have their uses too, at each end of a really juicy long colonial section, for it is in blinding over rough stuff that the rabbits will show up.

It is well to remember that a trial should be, first and foremost, a test of riding ability on hills and rough stuff. The over-lavish inclusion of mud and watersplashes tends to encourage a class of circus riders, accustomed by long practice to perform intricate balancing feats. In the same way, the Alms, Beechy Lees, Old Chalky type of hill, smooth, almost straight, and only difficult when wet, is a stupid sort of hill to include in a trial. By contrast, the Devon and Somerset type of hill is generally fair to everyone, wet or fine, and with hairpins and rough stuff is a fine test of riding ability.

There appears to be some dissatisfaction with the usual system, under which awards are allotted according to various pre-determined standards of marking. The one weakness of this system lies in the uncertainty of we ther conditions, which may mean 60% in the first class or only 10%.

Accordingly, the modern idea is to award 25% first class awards, whatever the state of the course. This safeguards competitors in the event of bad weather, and the club in the event of fine, and may enhance the value of an award, but it is open to a serious disadvantage. In pitting all classes against each other, some may be, and in fact generally are, penalised by the state of the course. Thus there may be a hill which is fair enough for solos, but well-nigh unclimable for "chairs." In timekeeping, the latter have the advantage.

The Sunbeam M.C.C. have devised a scheme to obviate the trouble, by allotting 25% first class awards *in each class*. But still we do not get fairness, because the standard of riding for a first class award will vary in each class: that is to say, it may be easier to win a first in the 250 c.c. class than in the 500 c.c. A mediocre man in company with a lot of r bbits may lift a class premier, while 5 or 6 good men, reaching a higher standard in another class, may have to be content with first class awards. Moreover, when entries for any particular class amount to 4 or 5, as is often the case, the position becomes absurd, and unfair to the competitor.

There is nothing really wrong with the old system of marking; it is really the inability of the organisers to plan a course that is fair to everyone that has caused dissatisfaction. That it is possible to pick a course that will sort out the sheep from the goats by hill-climbing

THE TREND OF TRIALS—continued.

alone, even in dry weather, is proved by the Sunbeam M.C.C.'s 200 Mile Trial, and Solo Championship Trial.

Such trials are the most enjoyable from the competitors' point of view, and give the truest results. It is obviously impossible, in a reliability trial of motor cycles, to arrive at an exact order of merit like the result of a race. The utmost that can be done is to say that everyone who reaches a certain standard deserves a certain award. This the 25% system does not attempt to accomplish. The supporters of the system make much of the fact that under it competitors are competing against each other, and not against a fixed standard which depends on the weather. But they gloss over the fact that competitors are not competing on an equal footing.

After so much destructive criticism, some constructive criticism is called for. Very well then, having planned a suitable course, let tests be included solely for the purpose of distributing "premiers," and let riding ability on hills decide the rest. There is no need for the organisers to say definitely in the prospectus that one "footing" in 8 observed sections will be allowed. According to the state of each hill, let the marshal in charge use his judgment, and indicate this by "feet-up" cards at the bottom. In bad weather much laxity can be allowed, and perhaps the route altered, the "chairs" being by-passed. (This was done in last year's Malvern Trial.) In fine weather every hill will be "feet-up," and provided the course has been properly chosen, this should be enough of a test. To be on the safe side, however, timed non-stop colonial sections may be included, and presumably the trade-beloved acceleration tests to ensure the "pots" going to the fastest engine and not the best rider. Finally, the organisers should guarantee at least 25% first class awards in case of bad weather, as the Wessex Centre did for its Scramble.

THE SOUTH AFRICAN T.T.

The "close" season for motorcycle racing is naturally short for while it is winter in Great Britain other countries are enjoying their best weather. The racing motorcyclists International Calendar, therefore, begins early in January, the first event of importance being the South African T.T. This consists of twelve laps of a 20 mile course, of which the surface is none too good.

Last year the race was won by Joe Sarkis (Rudge-Whitworth), who also broke the lap record at a speed of just over 70 m.p.h. In the 1930 event, which was run off on 2nd January, Sarkis repeated his success on a similar machine. He raised the speed, however, by an enormous margin, his average being 74 m.p.h. and his fastest lap 78.6 m.p.h.

Sarkis is one of the few South Africans who have competed in the Isle of Man T.T. races. Last year was his first experience of the course, but he finished fourth in the Lightweight event.

"All Bright Parts Chromium Plated."

MOST motorists who read this almost hackneyed phrase in manufacturers' catalogues have little or no idea of the very intricate process of chromium plating. They think that it takes the place of ordinary nickel plating and is similar to it except that it does not tarnish; whilst this is true of the cheapest possible methods, which are liable to rapid deterioration and, in many cases, are not rust-proof, the highest class chromium plating is *additional* to nickel plating. Furthermore, the nickel must be of special quality and finish if high-class chromium plating is desired.

The number of parts of a car or motorcycle which are chromium plated is much larger than most would imagine. A guess at the quantities which pass through a chromium shop in a week, say, would probably be incorrect by many thousands. An example may be found in the case of the Triumph Company where well over a quarter of a million pieces—varying in size from nuts to radiator shells and motorcycle tanks—are chromium plated *each week.*

The actual process is as follows: Fitments in their bare metal state are first polished and scoured so that all grease may be removed. They are next heavily nickel-plated and then super polished. The reason for this is that it is impossible to obtain a finer finish on the chromium than is obtained on the polished article prior to chromium plating; as a matter of fact, any blemish becomes very much more obvious. It is necessary, therefore, for the amount of nickel to be greater, and for the finish to be better, than would be required if the surfaces were to be left in the nickel plated state.

During deposition of the chromium each part must be separate from the next and some distance from it. Every single piece, therefore, has to be wired or attached to a frame so that it gives good electrical contact. The labour involved in this work alone can well be imagined when 250,000 pieces are handled weekly!

The various components are then immersed in the chromium vats and are left there for a predetermined period according to their size and shape. They are next washed in hot water, before being placed in a hot soda solution; they are then washed in hot water once more and are smothered in hot saw-dust for drying purposes. Finally they are examined and, although very bright when taken from the vats, the more important pieces are given a burnishing operation.

If the least imperfection is discovered, they are rejected and returned to the "stripping" shop where caustic soda and sulphuric acid baths, both subjected to electrical current, remove the chromium and nickel plating. The whole work then starts over again.

Numerous and complicated as the processes may sound they are essential for a first-class, lasting finish. The problems, however, are the manufacturer's alone and, provided that the process has been properly applied the purchaser may enjoy the advantages of chromium plate without any doubts whatever.

This brief description of the system employed at the Triumph Works show that there is more behind the sentence "All Bright Parts Chromium Plated" than would appear at first sight.

"EXETER" REFLECTIONS.

Severe Conditions cause Many Retirements.

THERE has been a lot of talk and some quite fierce argument about the change of policy in running this classic as a real trial instead of the usual easy run. On the whole the M.C.C. has won approval by the latest Exeter and such complaints as have arisen have been on matters of detail rather than on general grounds. As far as the motorcycle portion of the trial is concerned the conditions were perfectly suitable and well up to the standards demanded by trials in these days. It was when cars were required to traverse the same narrow lanes that some trouble occurred and time-keeping became impossible. However those who competed all seem agreed that it was a very good show, and that the new style is an improvement. The severity of the course is reflected in the results and some makes came off very badly. This, however, is not really to the discredit of the makes concerned and may be put down in many cases to the unexpected conditions. Many people were not prepared for what they were in for, and of course the fact that they entered in some cases on motor cars which were not very suitable for such colonial going is hardly the fault of the cars themselves, and extra credit is due to those who got away with it in spite of this. Among the star performers some mention ought to be made of the Fords. All five of them gained awards and these included three "golds." The hills were not really severe once they were reached but some arrangments will have to be made in future to avoid the congestion on the approaches to the hills. Of the tests, the restart on Batcombe caused the greatest number of casualties, this being the cause of the large number of "silvers."

CAR RESULTS.

A.C.
W. E. Kendrick ..... *Gold*
A. J. Mollart ..... *Silver*
C. J. Fryer ..... *Silver*
F. C. Robinson ..... *Silver*
J. A. Joyce ..... *Bronze*

ALFA ROMEO
C. L. Clayton ..... *Silver*
J. R. Jeffress ..... *Retired*

ALVIS
R. Lester-Williams ..... *Silver*
A. G. Gripper ..... *Silver*
W. A. Ponting ..... *Silver*
F. T. Williams ..... *Bronze*
J. W. Dixon ..... *Bronze*
E. H. Grimsdell ..... *No Award*
W. d'A. Tremlett ..... *Retired*

AMILCAR
K. J. M. Graham ..... *Silver*

ARMSTRONG SIDDELEY
A. L. Schlesinger ..... *Bronze*

AUSTIN
A. P. McGowran ..... *Gold*
H. C. Jacobs ..... *Silver*
G. H. Strong ..... *Silver*
W. L. Watson ..... *Silver*
J. O'Donnell ..... *Silver*
N. S. Eames ..... *Silver*
H. J. O. Ripley ..... *Silver*
J. K. Wilson ..... *Bronze*
A. F. Jackson ..... *Bronze*
J. M. Toulmin ..... *Bronze*
H. C. Hunter ..... *Bronze*
C. B. Moss-Blundell ..... *Bronze*
G. H. R. Chaplin ..... *Bronze*
K. C. Estall-Cole ..... *No Award*
E. O. Hector ..... *Retired*
D. A. Finch ..... *Retired*
L. W. Bunn ..... *Retired*
W. E. T. Stephens ..... *Retired*
E. W. Carter ..... *Retired*
R. F. Galbraith ..... *Retired*
F. C. Matthews ..... *Retired*
L. J. Barnett ..... *Retired*

AUSTRO DAIMLER
R. C. Rowland ..... *Retired*

BAYLISS-THOMAS
A. Stafford ..... *Retired*
W. J. Haward ..... *Retired*

BEAN
D. E. Krauss ..... *Retired*

BUGATTI
G. M. Giles ..... *Gold*
A. L. Baker ..... *Silver*
H. W. Blaw ..... *Bronze*
K. W. Bear ..... *Retired*

BUICK
D. E. M. Douglas-Morris ... *Gold*

CEIRANO
M. W. B. May ..... *Silver*

CHRYSLER
J. A. Daniell ..... *Gold*
A. J. Berry ..... *Silver*
C. G. Fitt ..... *Silver*

CITROËN
H. S. Linfield ..... *Silver*

DELAGE
J. S. Steele ..... *Bronze*

FIAT
A. M. Milne ..... *Gold*

FORD
E. A. L. Midgley ..... *Gold*
J. W. Austin ..... *Gold*
J. Harrison ..... *Gold*
T. M. Robinson ..... *Silver*
G. S. Lambert ..... *Bronze*

FRAZER NASH
T. H. Wisdom ..... *Gold*
D. Duncan Smith ..... *Silver*
N. A. Berry ..... *Silver*
C. Penn-Hughes ..... *Retired*
H. J. Aldington ..... *Retired*
S. H. H. Cundey ..... *Retired*
H. W. Inderwick ..... *Retired*

G.H.
G. F. M. Wright ..... *Retired*

H.E.
J. F. Cameron ..... *Retired*

HILLMAN
H. Dry ..... *Silver*

HUMBER
H. Bridgeman-Williams ... *Bronze*

JOWETT
A. H. Garland ..... *Silver*
J. F. Cooknell ..... *Retired*

LAGONDA
R. S. Latham-Boote ..... *Gold*
Lord de Clifford ..... *Gold*
S. C. H. Davis ..... *Silver*
J. A. C. Patterson ..... *Silver*
J. S. Hathaway ..... *Silver*
W. M. Couper ..... *Silver*
P. W. White ..... *Silver*
H. R. Attwood ..... *Retired*

LEA-FRANCIS
L. Maxwell ..... *Gold*
G. J. Tait ..... *Gold*
G. O. T. Gamble ..... *Silver*
A. A. Mauleverer ..... *Silver*
A. D. Chetwynd ..... *Silver*
R. H. Hay-Will ..... *Silver*
H. W. Burman ..... *Silver*
F. W. Wilder ..... *Bronze*
A. U. Kipling ..... *Retired*
C. J. Johansson ..... *Retired*

MATHIS
H. Gowing ..... *Gold*
J. A. Leyland ..... *Retired*

M.G. MIDGET
C. F. Dobson ..... *Silver*
H. E. Gormly ..... *Silver*
D. C. Baird ..... *Silver*
J. V. Hay ..... *Silver*
F. C. Bull ..... *Silver*
V. L. Brooks ..... *Silver*
C. A. Shelbourne ..... *Bronze*
C. I. Robinson ..... *Bronze*
D. C. Buckingham ..... *Retired*

M.G.
C. R. B. Chiesman ..... *Silver*
A. B. Gilbert ..... *Silver*
W. P. Uglow ..... *Silver*
A. H. Bartley ..... *Bronze*
J. F. Kemp ..... *Retired*

MORRIS
R. H. Massey ..... *Silver*
A. A. Attwood ..... *Silver*
R. J. Barker ..... *Silver*
L. R. Woods ..... *Silver*
A. G. Murdoch ..... *Silver*
L. P. Harte ..... *Silver*
C. A. E. Paget ..... *Bronze*
E. Hillary ..... *Bronze*
G. H. Collier ..... *Bronze*
R. B. F. Gibson ..... *Bronze*
E. Russell ..... *Retired*
R. N. Urquhart ..... *Retired*

NASH
A. Atherton ..... *Gold*

O.M.
P. D. Walker ..... *Bronze*

RILEY
S. H. Roe ..... *Gold*
L. E. Fillmore ..... *Gold*
S. H. R. Clarke ..... *Gold*
G. E. Taylor ..... *Gold*
D. M. Eastick ..... *Gold*
G. L. Jackson ..... *Silver*
D. S. Glover ..... *Silver*
S. F. Seyfried ..... *Silver*
F. N. Foster ..... *Silver*
K. C. Jarvis ..... *Silver*
C. S. Montague-Johnstone *Silver*
E. C. Porter ..... *Silver*
C. H. Lawford ..... *Silver*
F. J. Brymor ..... *Silver*
C. E. Moretti ..... *Silver*
H. H. S. Keogh ..... *Silver*
F. Broomfield ..... *Bronze*
R. Franey ..... *Bronze*
J. G. C. Low ..... *Bronze*
E. J. Boyd ..... *Bronze*
H. L. Norman ..... *Bronze*
D. S. C. Macaskie ..... *Bronze*
D. B. Payne ..... *Retired*
M. E. H. Gibson ..... *Retired*

SALMSON
R. A. Emmett ..... *Silver*
N. W. Rae ..... *Silver*
P. L. Farquharson ..... *No Award*
C. C. Brookes ..... *Retired*
C. L. Simon ..... *Retired*
I. J. Higgs ..... *Retired*

SINGER
J. F. Smeaton ..... *No Award*

STANDARD
J. Templeman ..... *Silver*
W. H. Julian ..... *Silver*
G. W. Olive ..... *Silver*
D. H. G. Martin ..... *Bronze*
J. Torromé ..... *Bronze*

SWIFT
L. W. Fillmore ..... *Silver*
E. Wood ..... *Silver*

TALBOT
J. R. Cox ..... *Silver*
G. E. Templer ..... *Retired*

TRACTA
S. D. Marr ..... *Retired*

TRIUMPH
B. A. Roy ..... *Gold*
H. W. Wells ..... *Silver*
K. G. Marsh ..... *Bronze*
E. H. Williams ..... *Bronze*

VAUXHALL
P. J. Urlwin-Smith ..... *Gold*
S. R. Mitchell ..... *Silver*

WOLSELEY
H. J. Stroud ..... *Retired*

"EXETER" REFLECTIONS—continued.

MOTOR CYCLE RESULTS.

A.J.S.
A. D. Carnes (349) .....*Gold*
C. W. Gibson (498) .....*Retired*
W. Clements (498 s.c.) .....*Retired*

A.J.W.
A. J. Pouncey (172) .....*Retired*
A. J. Wheaton (980 s.c.) .....*Bronze*
J. W. Beare (498 s.c) .....*Retired*

A.K.D.
G. J. White

ALMACK-SPECIAL.
J. P. Almack (495 s.c.).....*Bronze*

ARIEL.
P. R. Collins (248).....*Retired*
R. A. Broome (550).....*Silver*
D. R. Morris (557).....*Silver*
G. A. D. Gordon (497).....*Silver*
E. C. Lunniss (497 s.c.).....*Gold*
L. Heath (497 s.c.)
G. R. Writer (497 s.c.).....*Retired*
R. O. Wiltshire (497 s.c.).....*Retired*

BROUGH-SUPERIOR
G. Brough (988).....*Silver*
E. N. Adlington (998).....*Silver*
C. M. King (988).....*Bronze*
F. W. Stevenson (980).....*Bronze*
R. E. Stokes (988 s.c.)
J. W. Starkey (980 s.c)
H. W. Jones (988 s.c.).....*Retired*

B.S.A.
F. Holt (493).....*Silver*
A. T. K. Debenham (493)...*Bronze*
F. B. Turpin (493).....*Retired*
E. C. Tagg (493).....*Retired*
R. E. Spokes (249 s.c.).....*Retired*
W. F. Gowlett (493 s.c.).....*Silver*
W. J. Cullington (770 s.c.)...*Retired*
P. C. Spokes (493 s.c.).....*Bronze*
H. G. Uzzell (986 s.c.).....*Bronze*

CALTHORPE
F. E. G. Vigers (348).....*Silver*
D. Goldstein (348).....*Bronze*
J. G. Pigé-Leschallas (348)...*Retired*

COVENTRY-EAGLE
B. Bragg (346).....*Gold*
R. L. Matterson (346).....*Gold*
C. Browne (346).....*Silver*
G. K. E. Rae (980 s.c.).....*Silver*
E. W. Parle (596 s.c.).....*Silver*
G. A. Norchi (596 s.c.).....*Silver*
B. F. Palmer (500 s.c.).....*Retired*

DOUGLAS
J. Stagg (348).....*Gold*

EXCELSIOR
R. J. Martin (344 s.c.).....*Silver*

FRANCIS-BARNETT
D. F. Welch (172).....*Gold*
V. Belfield (172).....*Silver*
G. E. Monckton (172).....*Silver*
J. N. Goodwyn (172).....*Bronze*
A. Quilton (172).....*Retired*

GILLET
R. B. Clark (498).....*Silver*

HENDERSON
L. P. Lawrence (1,301).....*Bronze*

HENLEY-BRYN
D. F. Gadsdon (247)

INDIAN SCOUT SPECIAL.
A. L. S. Denyer (606.....*Silver*

JAMES
R. D. Plucknett (495).....*Silver*
J. C. New (498)
H. J. Finden (499 s.c.).....*Silver*

LEVIS
B. R. Faunthorpe (346).....*Silver*

L.G.C.
J. R. Watkins (346).....*Gold*

MATCHLESS
B. W. Sanders (347).....*Bronze*
J. J. Boyd-Harvey (495).....*Gold*
T. F. Hall (400).....*Silver*
K. C. Mackenzie (990).....*Bronze*
R. P. Franklin (990)
V. L. Freeman (495 s.c.).....*Gold*
S. R. Shepherd (495 s.c.).....*Silver*
W. F. Guiver (990 s.c.).....*Silver*
J. F. Kelleher (495 s.c.).....*Silver*
T. G. Meeten (495 s.c.) .....*Bronze*

MORGAN
G. E. Swift (1,096).....*Silver*
C. J. Turner (1,096).....*Silver*
G. C. Harris (1,096).....*Silver*
G. H. Marshall (1,096).....*Bronze*
H. E. K. Sawtell (1,075).....*Bronze*
H. E. M. Kingdon (1,096).....*Bronze*
C. N. Belbin (1,075).....*Bronze*
T. E. A. Johnson (1,096).....*Retired*
C. T. Senior (980).....*Retired*
E. D. Smith (1,075).....*Retired*

NEW IMPERIAL
S. H. Goddard (348 s.c.)
D. P. Wilson (346 s.c.).....*Retired*

NORTON
R. A. Littlewood (490).....*Silver*
L. E. Peppercorne (490).....*Silver*
C. F. Harris (490).....*Bronze*
F. W. Tillion (490 s.c.).....*Silver*
G. Slade (490 s.c.).....*Bronze*
W. Tucker (490 s.c.).....*Retired*
K. C. McGuffie (490 s.c.).....*Retired*
W. E. Butcher (490 s.c.).....*Retired*
C. H. Martin (490 s.c.).....*Rdtired*

O.E.C.
F. P. Barker (247 s.c.) .....*Retired*

P. AND M.
P. C. Bunyan (250).....*Retired*

P. AND P.
J. A. Hitchcock (348).....*Retired*

RALEIGH
L. E. Gibbs (348).....*Gold*
R. H. Ferguson (498 s.c.).....*Retired*

REX-BLACKBURNE
H. W. Littleton (348).....*Silver*

ROYAL ENFIELD
L. Bates (346).....*Gold*
L. A. Welch (488).....*Gold*
A. G. Briginshaw (488).....*Bronze*
R. Williams (976 s.c.).....*Silver*
L. W. Turner (976 s.c.).....*Silver*

RUDGE-WHITWORTH
C. R. Harper (340)
R. A. Macdermid (499)
G. H. Crabb (499 s.c.).....*Gold*
A. H. Nelson (499 s.c.).....*Silver*
E. Travers (499 s.c.).....*Bronze*
L. J. Wallbridge (490 s.c.).....*Bronze*
P. L. B. Wills (499 s.c.).....*Retired*
G. P. Wills (499 s.c.).....*Retired*

SCOTT
D. G. Jeffrey (596 s.c.).....*Bronze*

SUNBEAM
J. H. Leedale (493).....*Gold*
A. Fox (492).....*Silver*
K. R. Bott (493).....*Silver*
H. J. Bacon (493)
C. W. Smith (493)
R. E. Schmidt (493).....*Retired*

TRIUMPH
H. M. Newbery (348).....*Silver*
G. M. Denton (348).....*Silver*
J. T. Sleightholme (499).....*Gold*
J. F. Fowler-Dixon (498)
P. E. Selley (494).....*Retired*
C. G. Williams (498 s.c.).....*Silver*

VELOCETTE
R. D. Pryor (249).....*Silver*
H. L. S. Sikes (348).....*Gold*
J. M. Barnicot (348).....*Silver*
E. Farley (348).....*Silver*
O. E. Sykes (348).....*Silver*
N. E. Hollis (348).....*Silver*
W. B. Robbins (348 s.c.).....*Retired*

VINCENT-H.R.D.
W. Clarke (498).....*Bronze*
L. O. Bellamy (498).....*Bronze*
H. Spottiswoode (596).....*Retired*

SILENCE PRIZES.

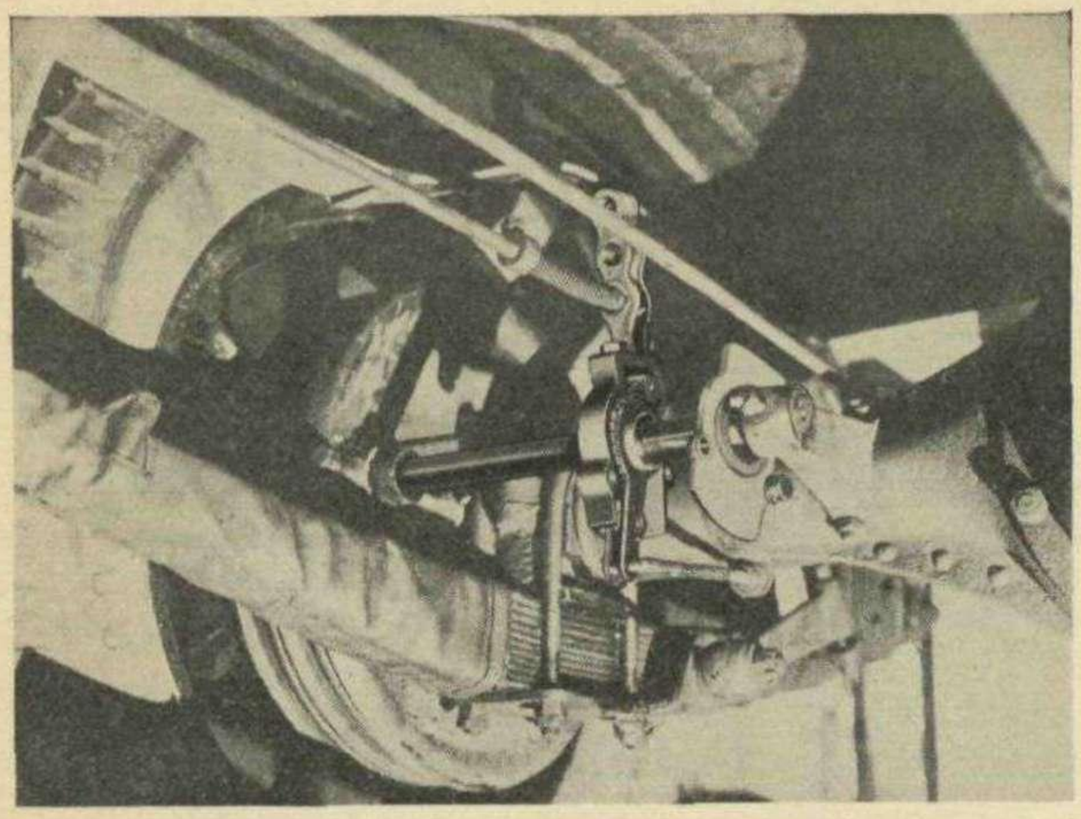
Solo.—1st, T. F. Hall (400 Matchless).
2nd, A. T. H. Debenham (493 B.S.A.)

Sidecar.—1st, C. G. Williams, (498 Triumph).
2nd, W. F. Guiver (990 Matchless).



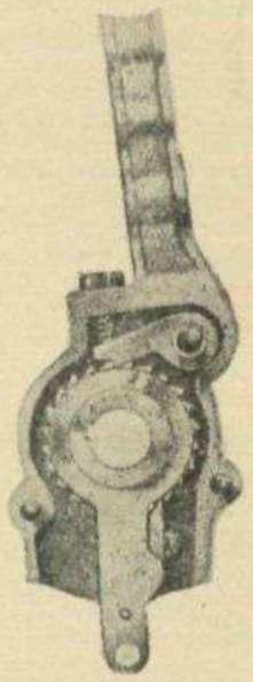
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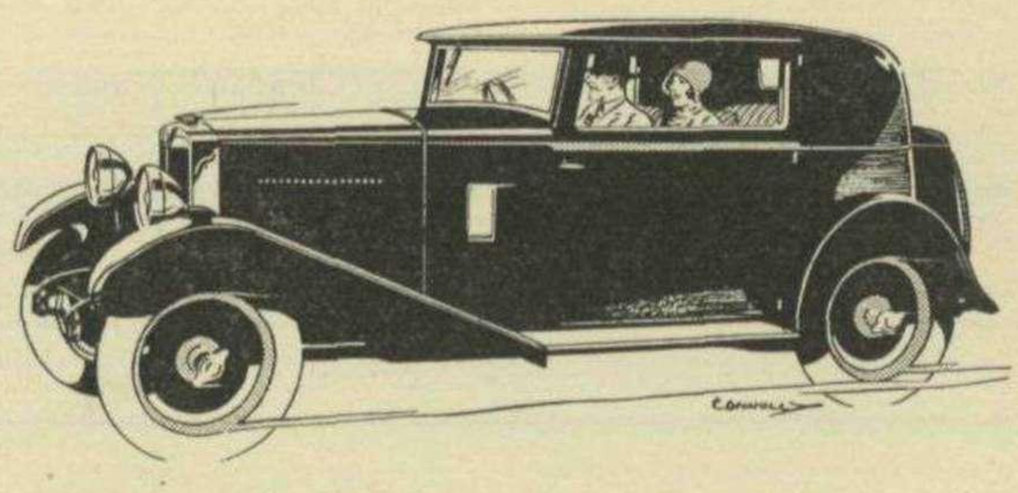
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THE AMATEUR ROAD RACE AND THE A.C.U.

Many views have already been expressed about this, but here is another side of the question. Our contributor gives the point of view of the Isle of Man, and so throws some further light on the question.

IN view of the decision of the A.C.U. not to permit the running, in 1930, of the Amateur Race, an article tracing its origin and development will be of interest to many readers of MOTOR SPORT. The writer has been in touch with the organisers of the race, and also with other persons in the Island in no way connected with the event, and it appears that there are a number of facts which have not been mentioned in the lay Press, but which should be known before passing judgment on the decision.

The T.T. races had been successfully run in the Isle of Man for many years, and the organisers were given exceptional facilities in the way of road improvements and closing. In 1923, however, the A.C.U. received a tempting offer to hold the races in Belgium, and forgetting what they owed to their hosts of former years, were preparing to do so. Strenuous efforts were made to oppose this move, and Mr. George Brown, at that time A.C.U. Consul in the Isle of Man, had the satisfaction of seeing the success of his endeavours.

After one incident of this sort, motor cyclists in the Island were afraid that the same thing might happen again, and to guard against the chance of the loss of their races, sought about for another event which could take the place of the T.T. For some years there had been a demand for a race in which private owners could take part without having to compete with the highly organised teams of trade entrants; the Manx Motor Cycle Club therefore decided to hold an Amateur Road Race Championship. There is no need to give details of the success of this event; it is enough to say that in 1928 the number of entries made it necessary to run a Junior and a Senior Race.

The popularity of the Amateur Race was such that the A.C.U. soon tried to gain control. At one time the body tried to get the organising transferred to themselves, and last year an effort was made to get one of their committee appointed a Steward. Obstacles were placed in the way of the organisers, notably over the question of insurance, and again over the number of entrants being too great for one race; the Club replied by organising two races.

Of late years, manufacturers have been complaining of the high cost of sending teams to the Island, especially when they saw how much publicity was gained by the makers of the winning machines in the Amateur events. It seemed as though the life of the T.T. races were limited, and the parent body became extremely alarmed at the chance of losing their most important event.

In the 1929 Amateur Races, manufacturers were asked if they had given bonuses, and it was found that some of the riders had been given oil. The Stewards asked the A-C.U. if oil was an accessory, and being told that it was not, permitted these riders to take part in the Races. Whether the riders had acted in contravention of the spirit of the rules is a debatable point, but it is certain that the Stewards had a perfect right to permit them to ride if they thought that no infringement of the rules had taken place. The A.C.U. then laid down that riders who had taken oil were suspended irrespective of any defence they might be able to bring forward, and also censured the Club Stewards without hearing their side of the question.

The latest development is the refusal of the A-C.U. to permit the holding of Amateur races, since they allege that a true definition of an " amateur " cannot be found. The more general opinion in the Isle of Man is that the A.C.U. is afraid that the manufacturers will cease to support the expensive T.T. races, and will rely on the advertisement given to their machines by the wins made by amateur riders. If the parent body persists in this attitude, the Manx Clubs will then have to form a Union of their own, under the F.I.C.M., as was suggested by a writer in the Isle of Man Times.

The loss of the T.T. races would be very unfortunate for all parties concerned. The British motorcycle industry would lose a great testing ground for their machines, for designs not available to the general public may not be ridden in the Amateur races. The Island would lose a great deal of publicity, apart from the actual monetary gain. Lastly, the A.C.U. would lose the revenue now accruing from the organising of the races.

The Union cannot compel the Trade to enter against their will, but they would be well advised to remain on good terms with the Island, and not to interfere too much in a most interesting race even though one not run by their own officials. The grant of £5,000 by the Insular Government, £1,500 of which is to be devoted to the encouragement of foreign riders, and the remaining £3,500 to prizes shows that the people of the Isle of Man realise the importance of motorcycle racing. If they decide to apply for separate membership of the F.I.C.M., there seems little doubt that a T.T. as well as an Amateur Race could be run by a Manx Union, so that the Island would not suffer any loss by the transfer of power to its own hand.

BROOKLANDS

At the request of some of our readers overseas and elsewhere to whom Brooklands is but a name, we are including this article so that they can, we hope, get a better idea of it. Those who already know it should turn to another page—Ed.



THE man who is visiting Brooklands for the first time is usually surprised at its size. He has often read in the daily press how the "speed kings" hurtle round the "concrete saucer" and some people are quite sure that if they saw a race at Brooklands it would make them giddy.

The track measures $2\frac{3}{4}$ miles, the curve of the Members banking has a radius of 1,000 feet, that of the Byfleet banking being 1,500 feet, so that if a man ever suggested that he felt giddy at Brooklands I should advise him not to watch any more racing from the bar.

Some idea of the size of the track and the points of interest to the spectator can be gathered from the sketch map. The finishing straight is not used for finishing but it is used as the starting point for most of the long races and for short races the cars go up to the start this way. It is really the starting straight.

The surface is composed of concrete which is laid in strips each strip being at a different level from its neighbour, whether this is done on purpose or not I don't know, but motoring on Brooklands is distinctly good for the inevitable liver.

There is one thing against the paddock at Brooklands, one cannot see the racing. The stand there faces the finishing straight so that the only thing one can see is the cars going up to the start and coming in after the race. But the Brooklands authorities have at last realised that some people do go to Brooklands to watch the racing and there is going to be a stand right opposite the finish over in the Railway Straight; this will be a great help as at present to see the race at close quarters one has to dodge several gate keepers and policemen. It seems as if these men have received orders not to allow anyone to see anything of the racing, and possibly this is why so many people imagine that the surface of the track is comparable to that of a billiard table. A few laps in a racing car at anything over 100 m.p.h. will soon convince anyone who imagined this to be the case. The first time the writer went round the track in a racing car it was to oblige someone who wanted his rev. counter read at different points on the lap. This sounded easy but a little 100 m.p.h. motoring soon made it appear that there was not one but many rev. counters, one above the other varying in number size and position to such an extent that it really seemed as if lunch had not been arranged with as much discretion as it should have been. But no it was only Brooklands! Another fallacy which is soon removed by experience is the idea that all the curves are banked. Not so the one past the Vickers sheds, which is a perfectly good right hand bend on the flat, and motorcycles crashing past the lap scorer's box with the bars almost grazing the side will be seen to be banked well over to get round—that is if the watcher manages to see anything but a cloud of dust, and a glimpse of a crash helmet.

That is only one of its many sides, but Brooklands to anyone who knows it is—well—just Brooklands, a spot with an atmosphere of its own. To the average visitor who is not normally a motor enthusiast it is a concrete track situated in a picturesque part of Surrey, where great "speed kings" fight desperate battles to improve the speed and endurance of their own particular brand of car.

Driving down to the paddock from the entrance gate one might almost be in a private estate, woodlands, rhododendrons and other shrubs on each side of a normal

BROOKLANDS—continued.

drive (except for some suspicious looking skid marks). Sundry notices advise one to drive slowly which seems to be the signal for everyone to accelerate and roar through the tunnel under the track, into the paddock. On a Race day this paddock is like a bee-hive of overalled figures, blue, white, and some that once were either, a smell of petrol and castrol pervades the air, the voices of bookies can just be heard above the roaring of engines which are tuning or warming up for the next race.

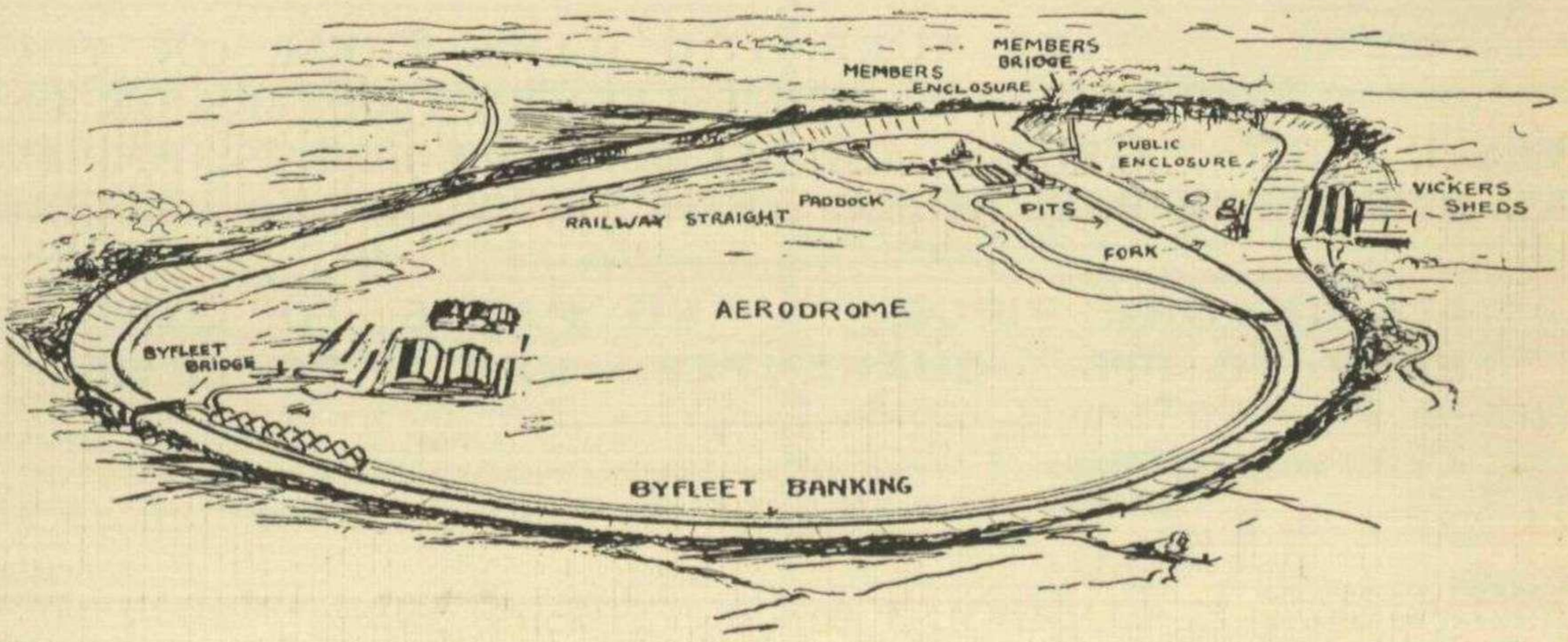
To the on-looker is seems rather as if the owners of these low noisy cars left the assembling of the engine till the last few minutes, or else feeling over anxious picked it to pieces to be sure that nothing was missing. After a glance round the cars and a few awed glances at the drivers the visitor usually drives back up the way they came branching off to the right before sighting the gate across the Members' Bridge on to the top of the test hill. In front of the refreshment rooms here are large green lawns where members of the B.A.R.C. park their cars and take up their position for a good view of the race. Loud speakers boom from every corner latest paddock news intermingled with all the new dance records. Impromptu meals are the order of the day, people dash from gazing at the members' banking to the bridge to gaze feverishly down the Railway straight, chewing sandwiches or gulping down drinks as the cars flash past with their marvellous whining roar, which is all part of the fascination of Brooklands. On hot days the heat is almost tropical as the sun beats down on the concrete, yet it does not prevent the keen from dashing down the Test hill to see a finish at the fork, and immediately dash up again to take the car along the road past the Aeroplane sheds to watch events from the Byfleet Bridge. Overhead aeroplanes hum drearily



"Not one, but many rev. counters."

the while, taking passengers on short circular trips, occasionally diving low as if to borrow a little of the crowd's attention from the cars. There are always breath-taking moments at a big meeting, one car overtaking another high upon the banking leaving a tyre-track to show just how perilously near the top it really went, a terrific skid corrected in the right manner, or again a "dog-fight", the term commonly applied to a bunch of cars all together each striving desperately to attain the lead without unduly crowding its rivals.

In the future no doubt bigger and better courses will replace it, in fact it obviously will be necessary to use such, but it will be difficult to regain the atmosphere that the pioneers of motoring have given to this track amongst the pine trees at Weybridge.



A sketch showing the chief landmarks of the track and its surroundings.

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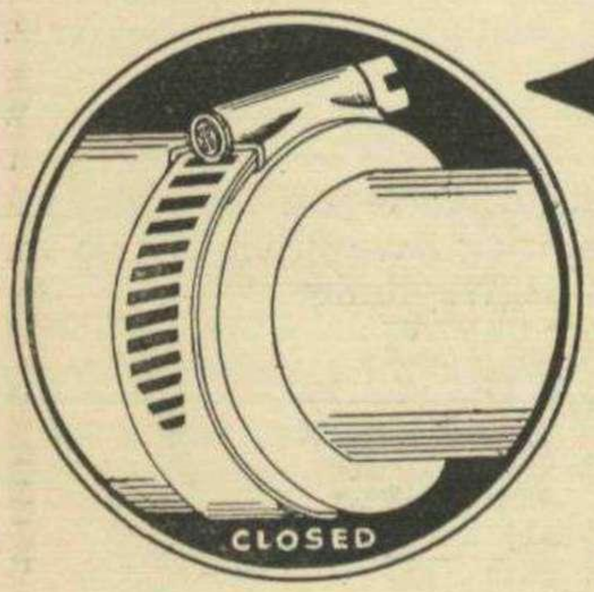
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CLUB NEWS

B.A.R.C. Dinner.

THE committee of the B.A.R.C. have decided to hold a club dinner and dance in London on Monday, February 10th. The president of the club, the Earl of Lonsdale, will preside, and during the course of the evening the testimonial to Col. F. Lindsay Lloyd, the retired clerk of the course, will be presented.

It has been decided this year to arrange for lady guests at the Dinner, and it is anticipated that the price per ticket will be 15s.

B.R.C.C. Dinner.

The annual dinner and dance of the British Racing Drivers' Club will take place at the Park Lane Hotel, Piccadilly, London, on February 7th, dinner being served at 7.30 p.m. and dancing continuing until 2 a.m. Lord Howe will preside. Tickets have been limited to avoid overcrowding, and should be applied for at once —price £1 each, exclusive of wines. Tables may be reserved for parties of not less than six.

Croydon M.C.

The club, although only formed in November, has already a large membership and promises many exceptionally interesting events for 1930. A very enthusiastic committee is working hard for the benefit of members. The secretary and members are very honoured and pleased at having received letters from Major Sir Henry Segrave and Capt. Malcolm Campbell in which warm wishes for the success of the club are given.

The secretary and treasurer are both visiting the Isle of Man to see the T.T. races in June, and have opened a slate club into which members intending to accompany them can pay what they wish each week. Particulars may be obtained from headquarters.

Rudge-Whitworth M.C.C.

Provisional results of the Graham-Walker Trial have now been announced as under :—

Graham Walker Challenge Trophy (for the best all-round performance) and Marine Gardens Speedway Challenge Trophy (for the best performance by a regular dirt-track rider) : R. McGregor (Rudge).

Latimer Challenge Trophy (for second best all-round performance) and Angus Challenge Trophy (for fastest time, irrespective of performance) : S. Reid (Velocette).

Nelson Challenge Trophy (for best performance on observed sections) : A. D. Stewart (B.S.A.).

Rudge-Whitworth M.C.C. Award (best member) : J. Beck, Junr. (Sunbeam).

MacDougall Team Award : Edinburgh and District M.C.

First-class awards, in addition to those winning cup awards, as above : J. C. Edwards (Douglas).

Second-class awards : J. McArthur (Dunelt), A. Moir (Ariel), G. Simpson (Ariel), W. L. Steward (S.O.S.) and S. Gargan (Sunbeam).

Dunstan and D. M.C.

At the annual general meeting a very satisfactory report was presented, and the election of officers resulted as follows :—President : Mr. D. Lambert. Hon. Secretary : Mr. F. King. Hon. Assistant Secretary : Mr. T. Jarron. Hon. Treasurer : Mr. W. S. Griggs. Committee : Messrs. D. Lambert, F. King, T. Jarron, W. S. Griggs, R. S. Cook, L. A. Burke and J. M. Garry.

A most ambitious programme is contemplated for this year. The club is affiliated to the A-C.U. (North-Eastern Centre) and caters for the social and sporting rider. Motorists in the district desirous of becoming members can have full particulars from the Hon. Secretary, Mr. F. King, 23, Newton Street, Dunston-on-Tyne. The annual subscription is 6s. 6d.

Ulster A.S.C.

At the annual general meeting of the Ulster Automobile Sports Club Capt. R. L. Henderson was re-elected president and an enthusiastic and energetic band of officials was gathered together for the coming season. The Hon. Secretary is now Mr. R. M'Cann, J.P.

Future Fixtures.

News has now come to hand regarding the dates of a number of important events for the coming season.

These include sand race meetings at Southport, the first on 22nd March and the second on 26th April. Then there is the Land's-End Run on 18th and 19th April. The Irish Grand Prix will be held on July 18th and 19th and the great Indianapolis Grand Prix, for which a big entry is expected, will be run on 30th May.

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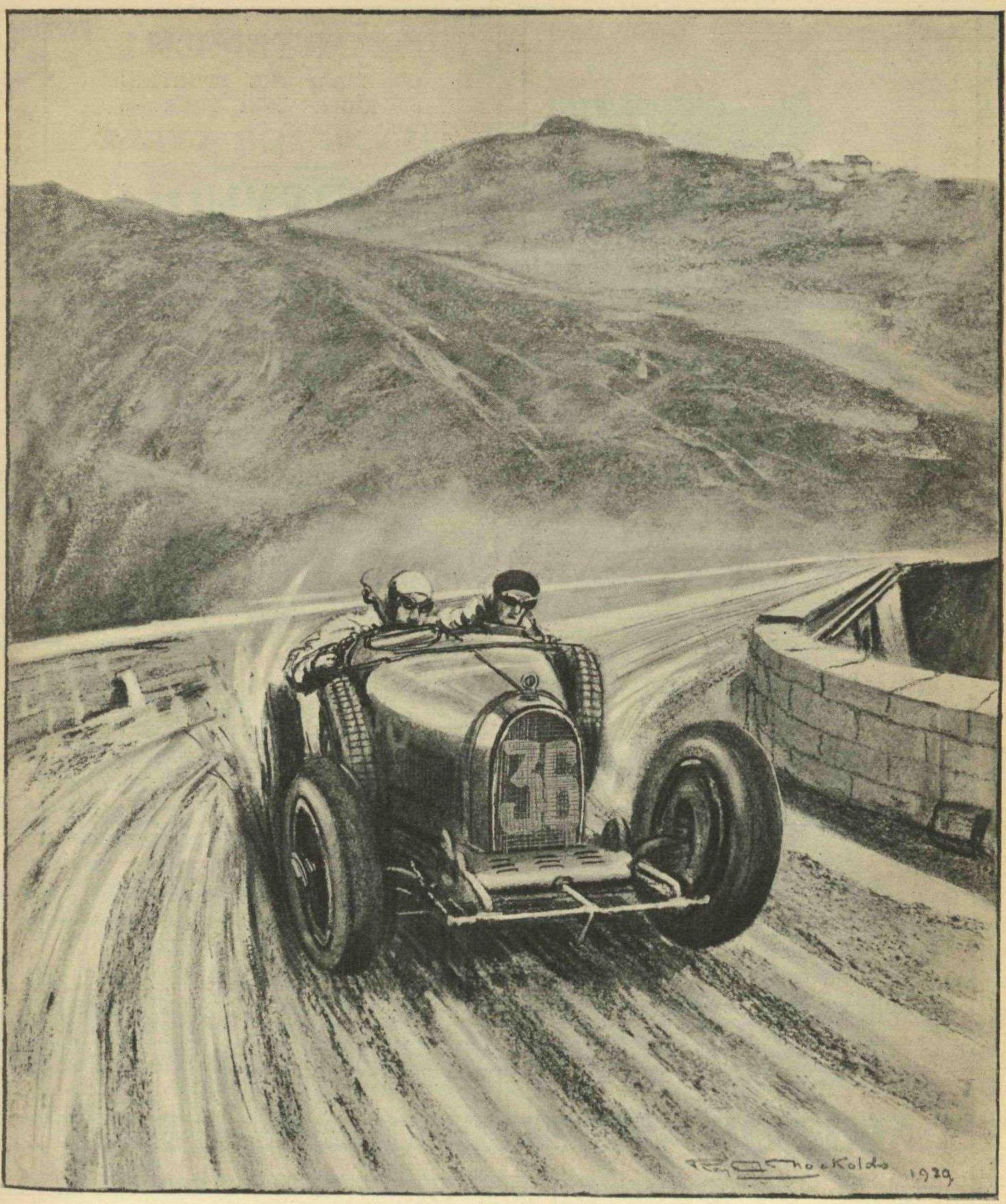
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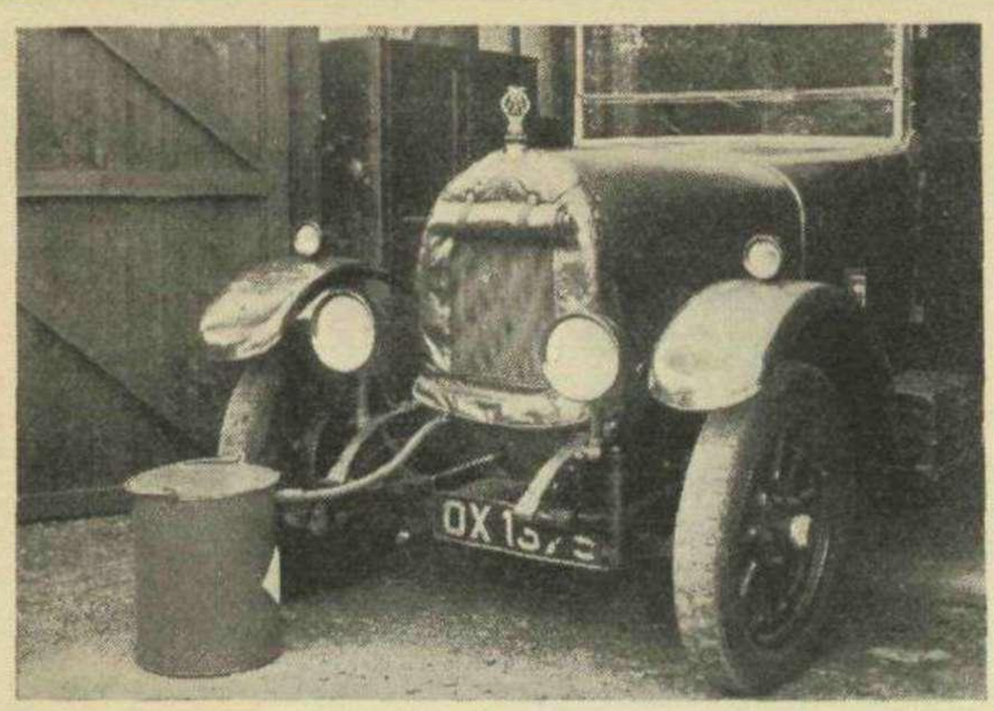


Charles Jarrott (Wolseley "Beetle") Gordon-Bennett Cup Race, 1904.



Minoia (Bugatti) Targa Florio, 1929.

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LETTERS FROM READERS.

Letters from readers on any subject are always welcome but they should be as brief as possible.

English and Foreign Sports Cars.

SIR,

I am delighted to notice that MOTOR SPORT in its new form is giving a proper showing to foreign sports cars. British manufacturers require to be shaken up, by comparing such cars as the Mercedes and the Stutz with the British large car which seemed unable to hold the road at all in Ulster last year.

In the medium capacities we are slightly better catered for by the 3-litre Lagonda and M.G. Six. What a pity that Bentleys have ceased to make their old model which really did go, and held the road like a leech.

In the 1,500 c.c. class there is no British made car to touch the Alfa Romeo, but from your road test the Aston Martin sounds a promising rival. I hope we may soon have a test of the Italian car, also of the latest edition of the old speedman's favourite, the Bugatti.

A. T.

Stamford.

Stamina of Small Engines.

SIR,

I notice with interest the increasing size of the sports car, reaching its climax in the Mercedes, Double Six Daimler, Duesenberg and now the sixteen cylinder annnounced as appearing at the New York Show.

At present I own a fast 6-cylinder touring car of just over 3 litre capacity, but have been tempted to change it for a high efficiency 1,500 c.c. machine, offered me at a reasonable figure. I know that the car, which is a year old, has been driven hard but well looked after, but in view of the tendency towards bigger engines, am wondering whether a 1½ litre would be much use after the mileage it has had. My work entails frequent journeys to the midlands and to counties further north and I should give the car full throttle when an open road presented itself. I should be very grateful if any of your readers who use a small car for this class of work can advise me as to the durability I can expect, how soon the first overhaul would be needed and any other figures of interest.

J. B. F.

St. Albans.

The Road Testing of Cars.

SIR,

May I begin by expressing an opinion that MOTOR SPORT supplies a long standing want to the motoring public. In spite of the growth of utility motoring and that greater menace to motoring as a sport, the pseudo-sports car (such lovely colours, such a loud exhaust note and a speed of quite 55 m.p.h. !), there are some of us left to whom " the sport " means competition on two or four wheels—I beg your pardon—two, three or four wheels.

Apart from technical articles, the road testing of cars will, I hope, receive as much space as ever. The average man has little opportunity of knowing the capabilities of the majority of cars : even a study of racing results can give only one side of the story. I hope then that you will use your best endeavour to give unbiassed reports of such cars as come under your notice. No one realizes better than myself that such a policy may lead to friction, but I believe I am correct when I say that the " no offence at any price " policy which seems universal in motor journalism is played out. Purely destructive criticism is out of place anywhere but a paper having the reputation for the truth will not deceive its readers nor be troubled with the inferior products of the motor industry. Inferior products exist and no one knows it better than the makers themselves : one cannot expect the same from two 1½ litre cars with a guaranteed speed of 75 m.p.h. when one costs £700 and the other £400 : one is a car for life, the other for a season.

May I also express a hope that you will make a feature of racing on the Continent, a field which is insufficiently covered by any other journal in this country.

Hoping you will take these remarks in the same spirit in which they are made.

MARTIN LEIGH.

The Ultra-Light Plane.

Sir,

Although greatly interested in the article written by Mr. Tinson printed in your January issue apropos the ultra-light plane, he touches upon a number of points which, to me, appear debatable. He is certainly correct in saying that " the number of suitable engines of about 30 h.p. which can be purchased for less than £127, is very small," whatever the reason. As a fact, one is aware that an " opposed twin " aero engine is marketed at the figure he quotes, beyond which one's choice is somewhat limited, for the simple reason that there are no more to choose from.

The modification of 4-cylinder motor cycle engines to meet the requirements is a pretty hopeless proposition, even though it has been done in some few instances. Such engines must run at their " peak " all the time, and at a crankshaft speed entailing enormous airscrew velocity, as reduction gears are out of the question. High airscrew speed means inefficiency. Apart from which, the all important factor of reliability, so necessary in an aero engine, is conspicuous by its absence. It is far better and infinitely safer to design your engine with its ultimate service conditions in view from the outset.

The aeroplane as outlined is good, but the advocated construction, particularly of the wings, has no apparent advantage over more conventional methods of construction. As proposed they would scarcely be simpler or cheaper to build than normal twin spar fabric covered planes, and they would undoubtedly be heavier. Strutting the planes would save weight, as those of cantilever design are usually heavier per square foot of surface.

Mr. Tinson's most impracticable paragraph is his last, regarding materials. An aeroplane is a pretty useless possession unless one is permitted to fly it. Careful reading of an up-to-date set of the Air Navigation Directions discloses the fact that an aircraft must be certified airworthy before it is flown, and a number of conditions must be observed before this certificate is issued. One of these conditions entails the use of approved materials in the aircraft structure, and these are, generally speaking, procurable only through the aircraft industry. This may be a worthy safeguard against failures in the air, which, though unattended by disaster, the writer once found to be definitely frightening.

In any case, a machine has just been marketed at £400, embodying tried and conventional methods of construction, and equipped with an approved aero engine—the same unit previously referred to, costing £127. Thus, the aircraft price is almost exactly comparable with Mr. Tinson's projected craft. But most important is the fact that it will be certified airworthy by the Air Ministry, and one may therefore use the aircraft " without let or hindrance."

With best wishes for a great success to the new and very much improved MOTOR SPORT.

FRANCOIS KAPPÉ.

Owing to pressure in our columns, a number of interesting letters have been unavoidably held over in this issue.—ED.

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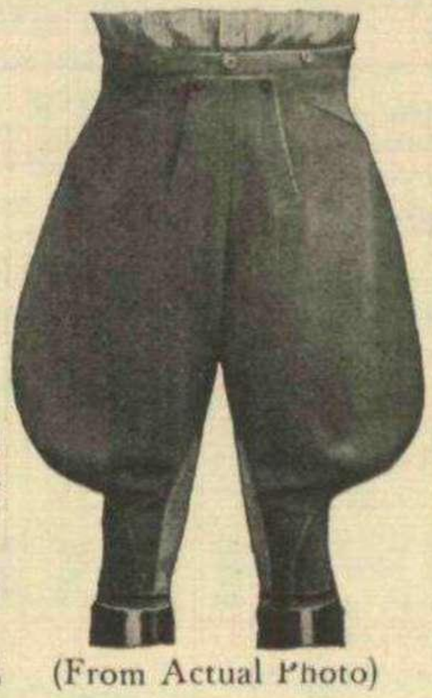




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THE SPORT AFLOAT



INTERNATIONAL EVENTS

FOR THE BEGINNER

By COUNT JOHNSTONE-NOAD

MOTOR boating has lately come to the fore in the public eye through the medium of outboard racing, which is a particular class of motor boat racing and one of the finest sports at present open to the average pocket of the sporting fraternity, hence a few words on that which every enthusiast aspires to, the blue riband of the sport, namely International motor boat racing.

"The big stuff" International races and world's speed records are the ambition of many in land racing, whether they run motor bikes or cars; true, it is expensive and difficult but time and determination find ways and means—brains, hard work and good luck and you're doing what once seemed impossible. The same applies on water. Whether in outboards, which are the "motorbikes" of the water, or the bigger boats, the goal is the same and never out of reach or impossible. My one remaining ambition is to be the first to attain 100 miles per hour on the water, but at the moment—!

Those whose racing exploits now lie in high speeds on the land, in the air or on the water, will agree that the most fascinating is that of International racing, as there is always the extra thrill that you are doing a little something for your country, not only yourself, in other words playing for the team.

Whatever successes you have achieved in your own exploits, when taking to the water you will, if wise, commence with outboarding, not only because of the saving to your pocket until you know what you want and where you are, but because in no other manner can you obtain, with such a small amount of expense and risk, all the experiences, thrills and symptoms of handling a light racing craft at high speed.

When one becomes thoroughly at home with outboarding it is advisable to race abroad at International regattas, still with outboards. There are lessons which can only be learnt by practical experience such as little difficulties and trials in organising the transport of your boat, the provision of supplies, ascertaining the routine and rules of the regatta, and haggling in foreign tongues, which will be invaluable when it comes to handling bigger and more expensive craft.

Having done the round, shall we say, in the outboarding world, then study the activities of the national authority as to which is likely to remain the most important International racing class, during the following few years—as in all sports the governing body has a peculiar way of changing their views and arriving at decisions, irrespective of the humble competitor—although our governing body, the Marine Motoring Association is now in excellent hands.

Having obtained the prevailing class of boat, one is inclined to enter immediately for every possible race. Avoid this enthusiasm, for, however you work out your expenses and organization, in practice, both will be doubled. It may not sound much, but if one aims at six leading International events throughout the season and concentrate on these, you will have all your spare time occupied—one presumes throughout that the sportsman is the enthusiastic amateur, with other business to claim his attention.

Some of those who have already had considerable experience in outboarding will probably say that they have entered in so many dozens of events at home and abroad and that they feel confident of equal activities in the bigger international classes. But it is well to remember that you will not have an engine you can take off and put into a car for transport, or take into the workshop and strip or replace by another, in a few minutes; nor will you have a hull which can be lifted by two people and which does not have an installation, apart from the engine, of coils, wires, pipes, brackets, and what-nots. No, you will have a high speed land racing engine fitted in a light hull, full of assortments, from the handling of which you yourself will be evolving every day, through your difficulties, improvements which can be effected in design and installation. There is

INTERNATIONAL EVENTS—continued.

great interest in this work, for there is always something to learn.

Some people will say that this stage is past and that I am speaking of years ago, but it is not so.

High speed on water, it will be agreed, is still in its infancy and there are very few people who really know where they stand from the constructional point of view.

Heavy expenditure will not ensure success, unless of course it is backed by high efficiency and helmsmanship, and always good luck. The foundation of success is organization and the detail work so essential to any racing. Have we got the world's speed on water, or the British International Trophy? No! And British endeavour over the last two years has spent over £100,000 on this alone. I know of a personal experience, when winning an International event by the expenditure of £50, it cost a brother sportsman some four or five thousand to lose.

Do not imagine by the above remarks that the "big stuff" of motor boat racing is too expensive or too difficult, but just take the warning that it is not too cheap or too easy.

It has not arrived at the stage where everything works simply by pressing buttons, hence the great interest and fascination that this section of the sport gives.

It depends entirely on the individual as to whether success is obtained and whether it costs a penny or a £. And the great secret, to my mind, is seeing to all the work oneself, and doing as much as possible with one's own hands.

I would suggest for six events, a national record, an international record, an international blue riband, such as the Duke of York's Trophy at home, and three other similar events in say France and America,—do not miss the latter when the opportunity arises. You will find that in preparing and organizing everything in connection with these and in the safest way, namely yourself, all your time will be occupied.

Sir Henry Segrave I believe, started with an outboard; Malcolm Campbell does, as far as two hands are able, all his own work. Join in the sport of motor boating, start with outboards, do your own work and aim at the bigger International stuff, and you will find one of the finest sporting hobbies that you can wish to take part in.

The Water has it.

I have driven high speed cars, played with the air, raced motor boats at home and in several countries abroad and as a sport which will always give you something interesting to do, believe me, you cannot beat the water. Outboarding alone can produce the greatest fun imaginable. I have had the privilege of driving a motor boat at over 80 miles per hour (the world's record stands at a little over 90 miles per hour), but the outboard at its 35/40 miles per hour, gives almost as much thrill, although of course the former is the achievement to aim at eventually.

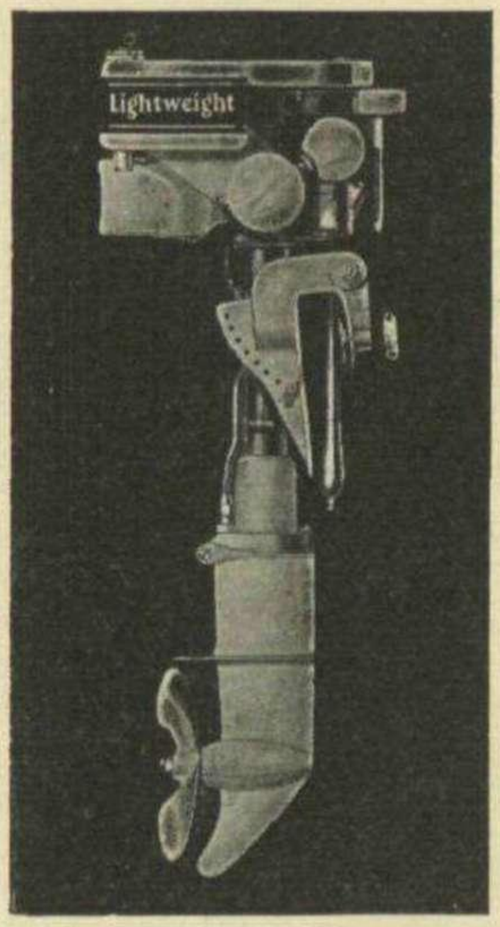


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Air-cooled Engines in Light Speedboats

By R. R. POOLE, B.Sc.

THE light speedboat is such a recent development of marine engineering that it has not yet outgrown the conservatism of long established practice.

From earliest times it has been both necessary and customary to provide vessels with ballast and all parts of a boat have in consequence grown to generous dimensions and unstinted weight. Marine engines are therefore naturally much heavier than their counterparts on land, and weight-to-power ratios of 20 lbs. per b.h.p. are not uncommon, as compared with some 10 lbs. per b.h.p. for ordinary car engines. Racing car engines run from 3 to 5 lbs. per b.h.p. and aircraft naturally lower still, down even to 1 in the larger motors. Now great massiveness may be right and proper in a slow moving displacement hull, but it is evident that the resistance to motion of a fast boat depends in some way on its immersion and so on the total weight.

This has not been lost sight of in the case of larger and higher powered racing boats in which aero engines figure prominently, and in the Duke of York's trophy class, where supercharged high speed motors are used, identical in design with modern racing car engines. It is in the very light boats that one finds the engine weight becoming disproportionately high, though undoubtedly some modern outboard units are very light when the whole assembly is taken into account. Even here, however, there is room for considerable improvement, possibly, in the direction of aircooling, since a water-cooled two-stroke of some 350 c.c. cylinder volume develops not more than seven or eight b.h.p., while one well known overhead camshaft motorcycle engine can be made to develop 25 b.h.p. with the same capacity, and is rather lighter so far as the actual power unit is concerned.

There appears to be no fundamental objection to aircooled engines, since rusting can be absolutely prevented by means of electrolyte deposits of zinc or cadmium, and the absence of a circulating system is an advantage not to be despised, particularly for racing on some of our unclean inland waters. The silencing of the exhaust by means of the waste cooling water in the usual types of engine is often insisted upon in competition work, and in many cases aircooled engines are definitely debarred. However this is by no means universal and in any case need not prevail indefinitely, so there may be a considerable future for the aircooled motor in both outboard and inboard driven boats.

In the former, some such engine as the A.B.C. opposed twin would appear to possess advantages over the water cooled two stroke of about the same capacity, on the grounds of both power and lightness, though its additional complexity might prejudice many in favour of the valveless unit. For inboard drives one's mind turns towards a hefty single cylinder of perhaps 500 c.c. such as the Norton. This could be housed in the forward section of a single step skimmer, with its cylinder barrel and head projecting through the decking into an unobstructed air current, and readily accessible for carburettor and valve adjustment. Alternatively a V twin mounted transversely would give a very accessible arrangement and certainly a very high power ratio, both on weight and capacity bases.

The overhead valve 500 c.c. Norton develops nearly 30 b.h.p. at a maximum speed of about 4,500 r.p.m., a suitable speed for a direct driven propeller of 5 or 6 inches diameter. Overhead valve twins of some 850 c.c. are said to be capable of about 40 b.h.p. at roughly the same speed.

It would appear therefore that if real advantage would accrue from a saving of weight in a boat really designed for the purpose of travelling fast, the use of air cooled engines would be one of the first steps towards this end, and their performance in their more normal field testifies well to their reliability and general performance.

ENGINE OIL IN BAD COMPANY

IT may be noticed that every oil company advises the motorist to empty his engine sump fairly frequently and refill with fresh oil—say, every 1,000 miles during a car's first year and subsequently every 1,500.

One is frequently asked by cynically-minded readers whether this advice is not merely sales propaganda.

Frankly, no. There is a perfectly sound and sufficient reason. It is not that the oil itself becomes " worn out " and so useless, but that it becomes contaminated.

" This occurs on even the best regulated car " says a technical expert in the Shell Research Department. " There are five main sources of contamination—unburnt petrol in the oil, condensation of water vapour, particles of carbon, grains of road dust and small quantities of metal worn off the moving engine parts.

" Petrol, of course, thins down the oil it mixes with, and so in time impairs its lubricating qualities. " Then, water vapour is a normal product of combustion.

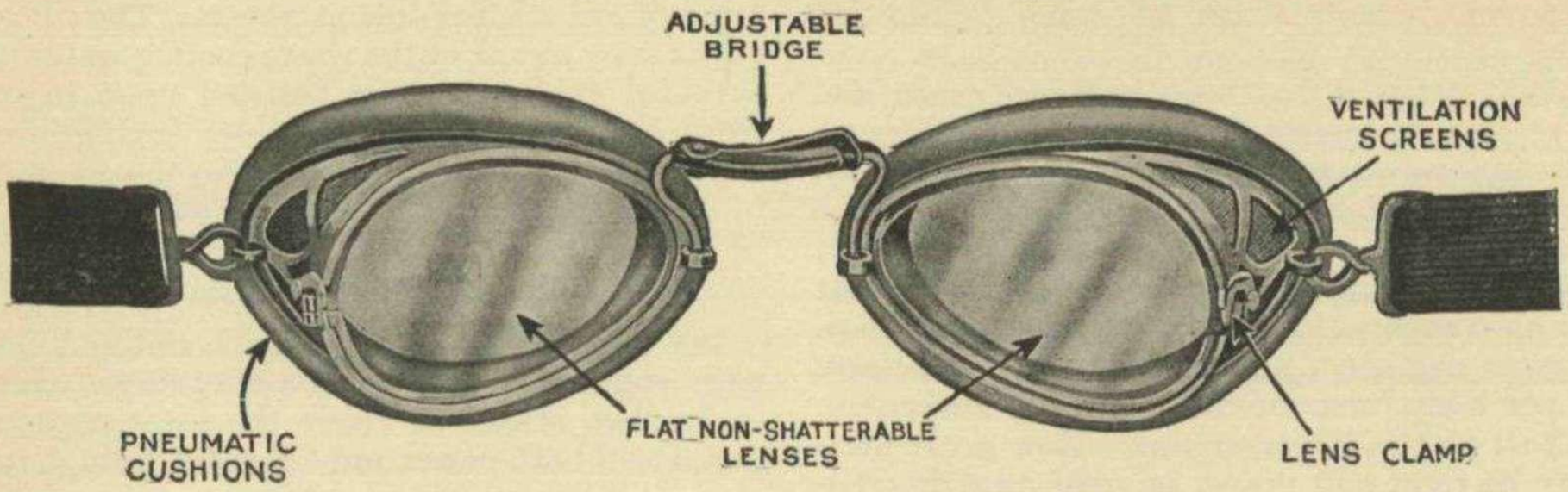
This is why on cold mornings you can sometimes see water dripping from the cold end of the exhaust pipe.

" Some of it—a good deal, if the pistons, rings and cylinder bores are at all worn—finds its way, like unburnt petrol, past the piston rings into the crankcase and sump. So also with particles of carbon from the cylinder head, and with road dust admitted through the carburetter.

" If these impurities are allowed to remain in the lubricating oil they will circulate to the bearings and cylinder bores where they are bound to have an abrasive wearing effect.

" The only remedy is to drain off the old oil—being careful to do so when it is hot, after a run, so that it flows freely—and refill with fresh oil. Years of research and practical experience with our own very large fleet of cars and commercial vehicles have shown us at what intervals this ought to be done.

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STILL A FEW LEFT!

THE MOTOR SPORTSMAN'S DIARY

1930

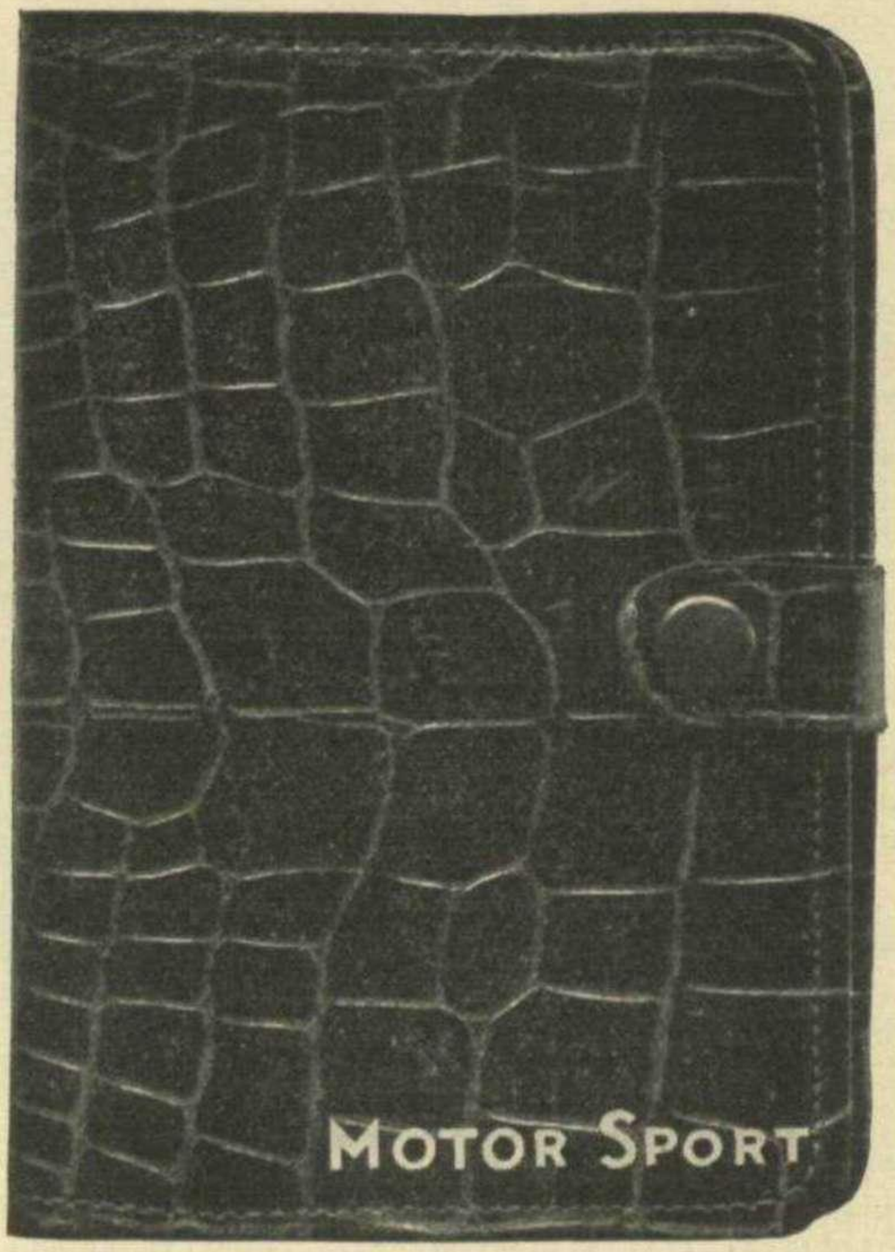
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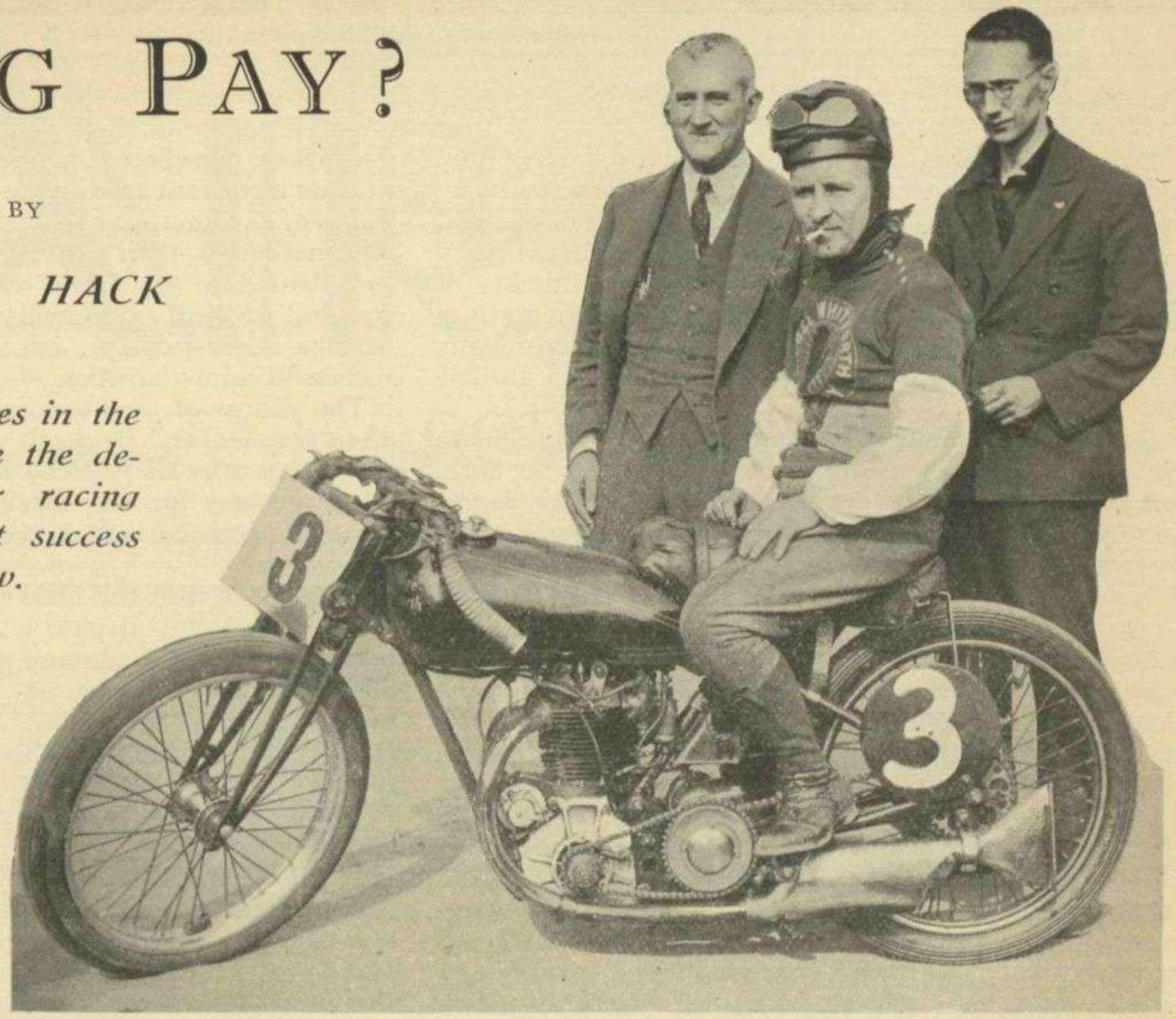
34 DUKE STREET, St. JAMES'S, S.W.1.

DOES MOTOR CYCLE RACING PAY?

BY

G. L. HACK

Whose varied activities in the Rudge works include the development of their racing machines, with what success our readers well know.



Mr. John Pugh and Mr. Hack, with Ernie Nott and the Rudge with which he won the last 200 miles race.

"Motor Cycle" Photograph.

THE question asked above is a very difficult one to answer and discussion on the point usually bring out the advantages and disadvantages involved without assessing the cash credit or debit of any of them.

The three main advantages of racing to the manufacturer, as the writer sees them, are, the intensive development that must be carried out, the publicity that will be obtained from a successful season and the improvement of the esprit de corps of the company as a whole.

The disadvantages are the heavy expenses which will necessarily be incurred, the risk of failing badly in a race or even a whole season of races with a negative influence on sales, and the danger of over concentration on one type of machine.

Let us analyse the foregoing considerations carefully.

Obviously no manufacturer is going to participate in racing without doing his best to win and therefore whether he is new to the game or an old hand he is forced to sit down and take stock of his machine, and a number of pertinent questions present themselves, some of which cannot be satisfactorily answered.

If the machine could speak we might hear a conversation with its maker something like this :—

MANUFACTURER : Is your engine reliable ?

MACHINE : Fairly, if handled gently, but when she gets revving the crankcase sides resemble a pair of bellows, and the valves bounce enough to deafen one.

MANUFACTURER : Is she fast enough ?

MACHINE : For a London funeral—yes, but something on two wheels went past me the other day like a shot out of a gun. 100 m.p.h. is what the Doctor orders on petrol-benzol.

MANUFACTURER : Hum ! What about the frame and bicycle parts generally ?

MACHINE : Wonderful up to 70 m.p.h., but wobbles like the dickens over 85 and bucks as well. What's more, two and a half inches of fork movement will finish me at Ballig on the first lap, that is if the brakes are good enough to stop me hitting the wall at Quarter Bridge, which I doubt. The brake drums are no bigger than two ounce tobacco tins.

MANUFACTURER : Is there anything right at all ?

MACHINE : Ye-es, the transfer on the tank is very pretty, but even that won't show when the gate change is put in the proper place.

(Exit the manufacturer.)

To be serious again, every single item on the machine must be searchingly criticised from the points of view of efficiency, reliability and utility. There is no time to lose either if the work is to be done thoroughly. I used the words intensive development at the beginning

DOES MOTOR CYCLE RACING PAY?—continued.

of this article advisedly. There is nothing like a T.T. to get the product finished by a certain date. Time and Tide wait for no man—neither do Tourist Trophies. So that racing ensures a complete review of the design every year and guarantees a thorough testing of all modifications in the same year—at a cost.

Now no firm can live without development and very active development at that, from which it follows that any firm wishing to survive will maintain an experimental staff. Further the satisfactory behaviour of one test model is no criterion of the performance of thousands of production models. It is essential that a number of models preferably built up at intervals from castings and forgings from different batches shall be thoroughly tested before there is reasonable certainty of a trouble free production.

So far then sound development and racing run on identical lines and expenditure will be similar for both, but while ordinary development schemes may legitimately stop at this point racing costs are increased first by transport and hotel expenses necessarily incurred in sending men and machines to race in the Isle of Man, Germany, Czecho-Slovakia and elsewhere, and secondly in the provision of cash prizes to riders for successes that may be gained. The only thing to offset this additional expense is the publicity gained, and the assessment of the cash value of this publicity is a knotty problem which the writer prefers to leave to brighter intellects than his. This much may be said, that the success on the continent of British machines as a whole is largely responsible for the excellent reputation they hold there and therefore racing has benefited the British Motorcycle Industry as a body, but because the export market is exploited just as much by firms who do not race it may well be that firms who do race are not reaping their just reward and that the expenses incurred represents too great a tax on the machines sold.

There is indeed a lot to be said for the production of what would be called "The British Racing Motorcycle" produced and entered in all foreign events by the co-operative efforts of the whole industry and embodying the best features of modern practice regardless of its "office of origin" but it is to be feared that the difficulties of such co-operation render the suggestion impractical.

In conclusion one advantage and one disadvantage of racing postulated at the commencement of this article merit a little consideration.

In our school days great stress was laid upon esprit de corps which may be defined as pride in the school and pride in being a unit of it. We want the same spirit in our manufacturing concerns and racing can make a great contribution towards it. If competition managers will drop the attitude of "see how clever I am" and make everyone with whom they come in contact feel the essential nature of their part in the racing performance it will soon be reflected in the work turned out.

After any event reports are posted up in the office and works of my company so that employees get first hand information of their colleagues efforts and the writer feels bound to say he is amazed at the interest and goodwill evoked. Goodwill is a nebulous item in the balance sheet perhaps, but a very real factor in the successful administration of a works.

The charge of over-concentration on racing types is often levelled and demands an answer. At first sight the charge appears justified having regard to the unfulfilled demand for the ideal utility machine and the wholesale prosecutions of nosiy or dangerous driving of motorcycles.

While it is true the ideal machine has yet to be designed wonderful strides in efficiency and controllability have been made and racing practice has almost always been the inspiration. It is not sound criticism to condemn the very thing that has transformed a toy (and that a quite dangerous one), into a useful and reliable servant of man.

Finally a word as to the type of racing a manufacturer should undertake.

In the writer's opinion road racing is the only one really worth while because it forms the most comprehensive test of the machine. Engine, gearbox, clutch, brakes and frame get the most severe treatment it is possible to give them in service and further, road racing secures the most publicity. Track racing as carried out at Brooklands or Montlhèry can be made a much more exact science as the human element is not such a powerful influence and therefore it has its place as a comparison of power output and reliability of engine. Other forms of racing may be more spectacular but do little to develop the motorcycle as everyman's transport.

It is feared that this article has followed much the same lines as many discussions on the subject the writer has participated in, that is the pros and cons have been elaborated without a definite answer revealing itself but reviewing the foregoing he feels confident that road racing has been worth while and that a substitute for it has yet to be found.

A LOW-PRICED RADIATOR SHUTTER.

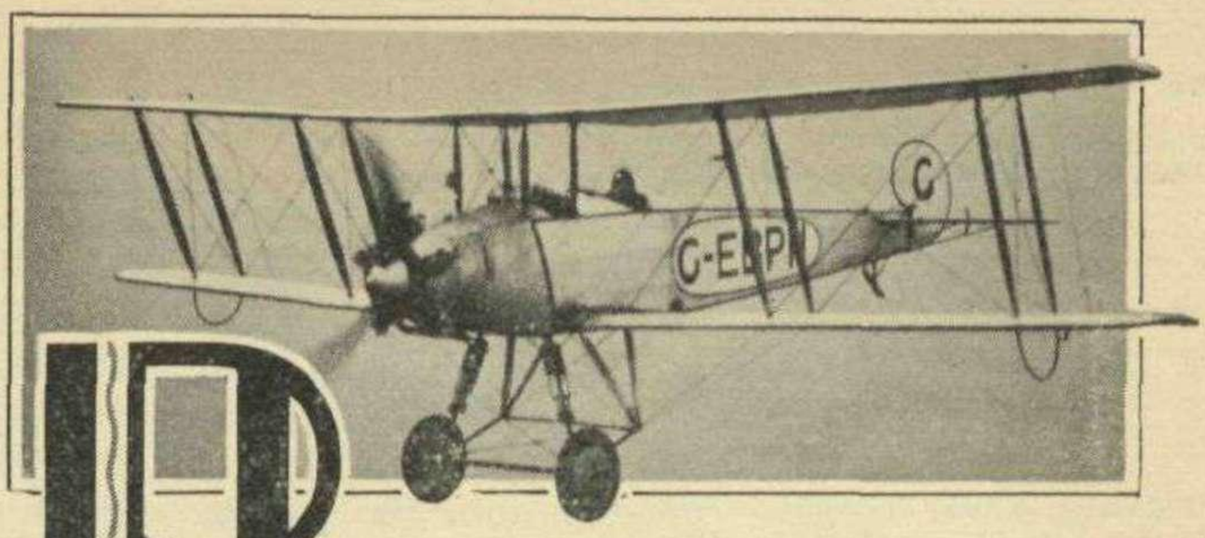
Most motorists are familiar with one or other of the various F.E.W. fittings for cars and engines, and a new accessory has now been added to their range in the form of a neat, quickly detachable radiator shutter. This can be fitted either behind or in front of the radiator, and has an easily adjustable shutter opening. In view of the low price of 5/- asked for this fitting, there should be no further excuse for the crude fitments of cardboard etc., which one sees on all sides.

MOTOR SPORT ILLUSTRATIONS.

In response to numerous enquiries for reproductions of the double page picture in the January MOTOR SPORT, we have prepared some proofs on a special chromo paper, suitable for framing. A limited number of these, signed by the artist, are available at 5s. 6d. each, post free.

Reproductions of later pictures appearing in this journal from time to time will also be available.

Enquiries should be addressed to the Art Dept., c/o MOTOR SPORT.



AIR

LIGHT PLANE POWER PLANTS

Both the Radial and Horizontally-Opposed Engine Have Played Prominent Parts in Aviation History.

WHEN flying was very young the static radial was one of the most successful types of aero-engines. Even in 1909 when everything pertaining to aviation was crude and very experimental the advantages of a short crankshaft, ease of mounting and compactness found in the radial were at once realised by designers and a number were produced, notably the Anzani, Buchet, Clement, Farcot Miesse and R.E.P.

Bleriot used an Anzani on his historic cross-Channel flight in 1909, the motor being an air-cooled 3-cylindered fan-type. This engine, which gave off 25 h.p. at 1,400 r.p.m. was a development of the famous Anzani motor cycle power unit and had automatic inlets and side exhaust valves.

It cannot be said that it was very efficient, its weight per horse-power being over 5 lbs., and also, because of the design—the three cylinders placed at an angular distance of 72°—the balance was bad, necessitating the inclusion of heavy bob weights and internal flywheels. Nevertheless it had the redeeming quality of reasonable reliability and it must be regarded as one of the pioneers of a type of engine which has now found universal favour.

After the fan-type, the Anzani Company produced another three-cylinder engine known as the "Y"-type. The air-cooled cylinders in this case were disposed at angles of 120° (in the form of a Y), and the connecting rods, working on the same throw, the power impulses occurred at equal intervals resulting in a much better balance. As in the fan-type, the inlet valves were automatically operated but the exhaust valves were overhead.

The better balance of the "Y" permitted a considerable reduction in weight (as the flywheels were dispensed with) and the engine was far smoother and cooler-running than its predecessor. Its normal r.p.m. was 1,300 at which speed it produced 30 h.p. Because of its reliability, its compactness and simplicity the "Y" soon became popular in pre-war days and several famous makes of planes were powered with it.

Then, as now, the demand for more power was felt and the Anzani concern, who were the leading manufacturers of radials, responded to it with the production of a 40-45 h.p. six-cylinder engine. This new type retained the main characteristics of the Y engine, with automatic inlet and overhead exhaust valves, cast-iron cylinders and so forth. The cylinders were placed in two groups of three, the cylinders of each group being arranged at 120° apart around a two-throw crankshaft, with the throws set at 180°. Throughout, the design was distinctly clever and was a marked advance on any previous attempt at making a multi-cylindered radial. The cam-gear for operating the exhaust valves, for example, was extremely ingenious, comprising a single cam running at half engine speed which operated the tappets and push rods of one or other of the two cylinder groups, alternately in its cycle. The arrangement of the two groups of three connecting rods onto the crankshaft was also interesting. The big-end of each rod was formed as a shoe, cut with helical edges, the whole being retained on to a split bush on the crank journal by two split phosphor-bronze collars or rings. The magneto was bolted to a platform at the rear of the engine and was gear-driven from the end of the crankshaft. Situated also in the rear of the engine was a cam-operated plunger oil pump which drew its oil through a large-bore pipe and delivered it under pressure through oilways in the crankshaft and external pipes to the big end assemblies, main and thrust bearings. The gudgeon pins and cylinder walls were lubricated by the oil-fog within the crankcase. Its robust construction and simplicity combined with its moderate normal speed—1300 r.p.m., made this 40-45 h.p. a very reliable unit and that there are quite a few of them in use in various light planes at the present day is a matter of some significance.

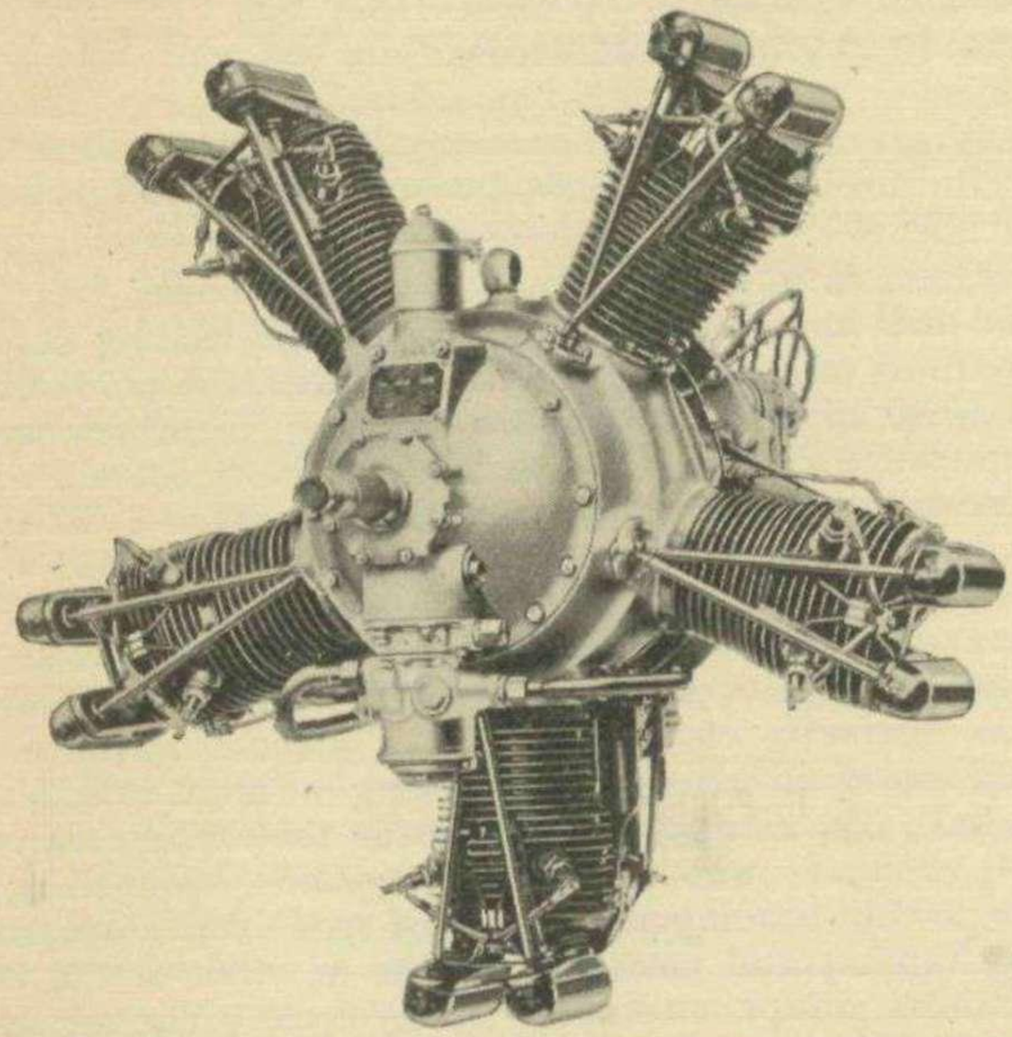
Other engines were added later to the Anzani range,

LIGHT PLANE POWER PLANTS—continued.

notably the 50-60 h.p. six-cylinder, the 80 h.p. 10-cylinder and the 100-110 h.p. 10-cylinder. These were produced in 1914 but it is curious to find that the radial engine rather faded into the background during the four years that followed and gave place to the rotary, the straight-in-line and "Vee" types.

The end of the War, however, witnessed a big revival of the radial not only in this country but in France, Italy and the U.S.A. Most of these modern engines were of big power though,—ranging from 180 h.p. to 400 h.p. and it was not till the Armstrong-Siddeley "Genet" was produced that the modern radial engine figured in light planes in England.

The first "Genet" which was made in 1926 was a five-cylinder of 75 h.p. The cylinders were of steel and had alyminium-alloy heads which housed one inlet and one exhaust valve. The heads were shrunk, screwed and retained to the cylinder barrels by lock-rings.



The 100 H.P. "GENET MAJOR." Note the streamline covers for the valve rockers.

The pistons, as on all modern engines, were of alloy and carried two narrow rings and one scraper. The crankshaft was carried on ball races, the front one acting as a thrust as well as a main bearing. The magneto was placed at the rear and skew-driven and the carburettor was bolted to a flange on the crankcase casting, the gases passing to the cylinders through an annular chamber and separate induction pipes. The weight of the engine including carburettor, magneto, exhaust stubs and propeller hub was 168 lbs., giving 2.5 lbs. per h.p. The normal r.p.m. was 1,850 and the maximum, (at which speed 75 h.p. was given off) was 2,035 r.p.m.

The "Genet Major" (100 h.p.) is the latest addition to the range af Armstrong Siddeley engines and made its first appearance at the 1929 Aero Show at Olympia. Like the earlier "Genet" it has five cylinders, the vertical cylinder being situated at the bottom.

The crankshaft is of ample proportions and is supported by three bearings; two heavy roller bearings of the "no-cage" type. (the races being packed with rollers, giving greater carrying capacity), take the load from the crankpin and the third bearing, situated at the front end of the front cover of the crankcase, is a deep groove ball bearing, and besides supporting the front end of the crankshaft, takes the thrust load of the propeller in either direction.

The connecting rods comprise one "master" which is of H section and four auxilaries.

The auxiliary rods are also of H section and machined all over from steel forgings.

The pistons follow the standard Armstrong Siddeley practice and are machined all over from "Y" alloy forgings.

Each piston has two compression rings and one scraper ring above the gudgeon pin and one scraper ring below the gudgeon pin. The gudgeon pins are of the full floating type.

The crankcase is spherical in shape and provided with five bosses for the cylinders; it has an integral diaphragm supporting the front main roller bearings and extends forward to enclose the timing gear.

The Timing Gear.

In the timing gear the cam drum has two series of cams, one disposed to the rear for the inlet valves and one to the front for the exhaust valves and each series having three cams. The drum is directly attached to the satellite carrier of an epicyclic train of gears and revolves at one sixth engine speed in the same direction as the crank.

Roller ended tappets are housed in pairs in tappet guides fitting in circular bosses in the crankcase.

The cylinder barrels are machined all over from steel forgings and are screwed and shrunk into the aluminium cylinder head. Each cylinder has two overhead valves, one inlet and one exhaust. They are returned to their seats by duplex valve springs, which enable a spring of small rate to be accommodated in a small space.

The valve springs and rocker arms are enclosed in covers of streamline shape, thus minimising the head resistance of these parts.

A feature of all the Armstrong Siddeley engines is the compensated valve gear. As is well known, owing to the expansion of metals when heated, the distance from the centre of the engine to the top of the cylinder differs when the engine is hot from when it is cold. With a non-compensated design the valve rocker, supported from the cylinder head, moves away from the crankcase as the engine warms up. The tappet rods, however, exposed to a cool stream of air do not expand to the same degree and a considerable sloppiness develops in the valve gear. In order to obtain correct timing when hot, the engine has to start with longer valve periods, necessitating undue overlap of the inlet and exhaust valve periods, thus adding to the difficulties of starting.

By supporting the valve rockers on an external bracket anchored at some specific point on the cylinder, the variations of expansion of the different parts are com-

LIGHT PLANE POWER PLANT—continued.

pensated and the same valve timing hot and cold is obtained.

The Genet Major is constructed on this principle but as the inlet and exhaust valves differ in their working temperatures, in order to avoid duplicity of parts a mean position for the anchorage of the rocker brackets was determined. The hot clearance between the end of the valve stem and the rocker striking pin is .013" and in order to obtain this the inlet valve clearance is set at .010" cold and the exhaust at .020".

Each valve with its rocker and rocker support bracket lie in the plane of the tappet push rod. There are thus no side loads and this allows the rocker bracket to be of very small section, consequently offering little head resistance.

In regard to the cylinder barrels, these screw into steel adaptors in the crankcase bosses. These adaptors are free to turn and are flanged on the inside of the crankcase. They are pegged when the correct position has been found to line up the cylinders with their ports facing rearwards. Each cylinder is screwed down on to a loose split ring having conical faces at each end. When the cylinder is screwed down and in correct alignment, the clamping screw of the split ring is tightened.

The induction casing with integral diaphragm to carry the rear roller bearing, closes the rear end of the crankcase.

A Claudel Hobson A.V. 48 C.R. carburettor mounted vertically at the end of an induction elbow supplies the mixture. This is equally distributed by a fan to the cylinders through fine partly-tangential pipes in the induction casing. The carburettor is fitted with interconnected altitude and throttle controls and is designed to have all its principle parts easily accessible.

In one piece with the induction elbow is the magneto gear housing, on the cover plate of which are mounted the two B.T.H. magnetos and the hand starter. The port magneto is fitted with an impulse starter.

Two oil pumps are secured to a flange on the underside of the front cover and are driven from a bevel gear on the crankshaft immediately in front of the timing gear. Both the pressure and scavenge pumps are of the "gear" type and are driven in tandem.

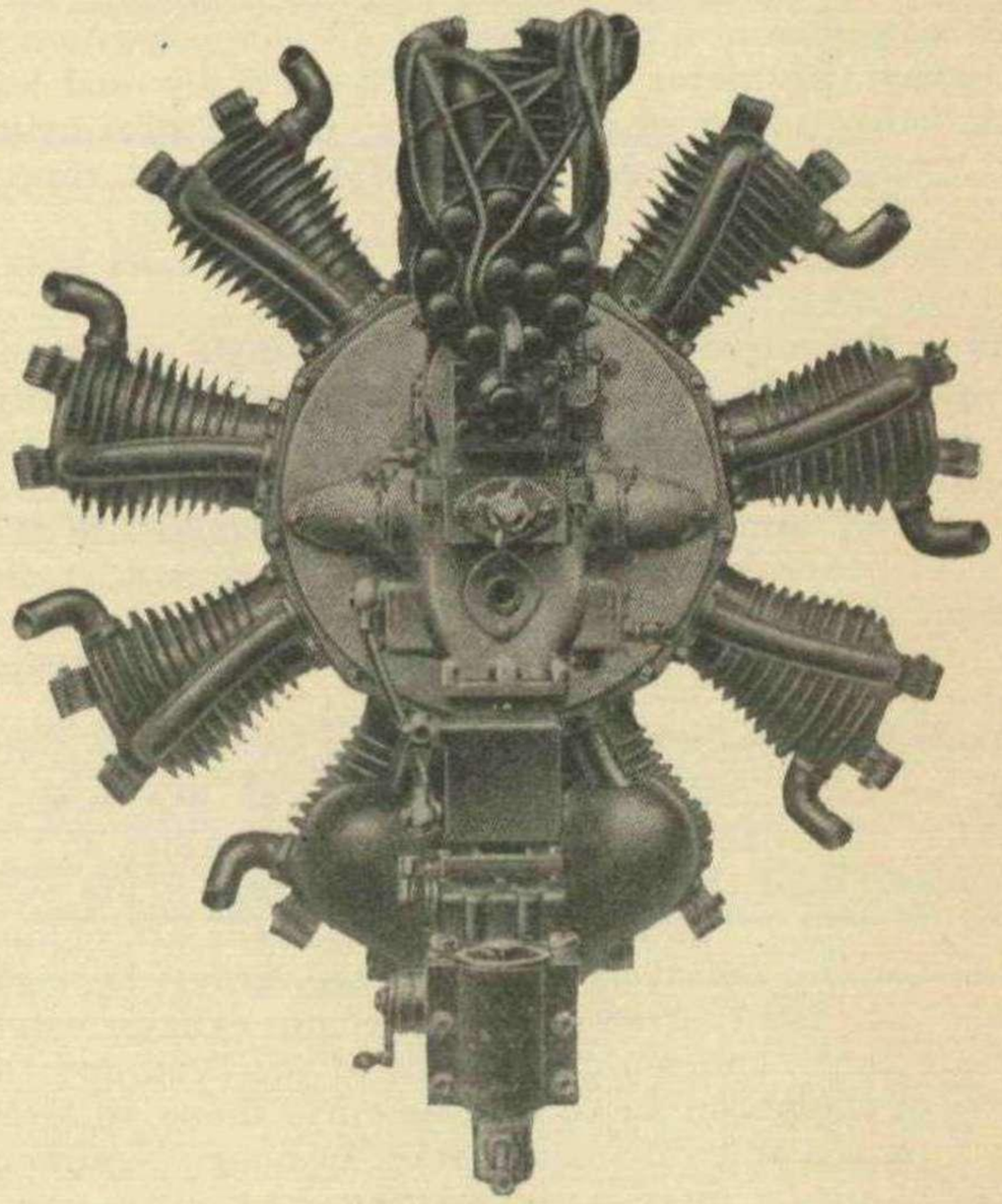
The engine is of the dry sump type. The scavenge pump draws oil from the sumps on either side of the bottom cylinder through a strainer incorporated in the pump body and discharges the oil to the tank. Before reaching the tank the oil passes through a chamber surrounding the induction elbow and this serves the dual purpose of heating the ingoing mixture and of cooling the oil.

The normal B.H.P. of the "Genet Major" is 100 and the normal and maximum speeds 2,200 r.p.m. and 2,420 r.p.m. respectively. The weight of the engine is 250 lbs.

The 40 H.P. Salmson.

Another light radial power unit which has come very much to the fore in recent years is the little 40 h.p. Salmson. Hitherto it has been made in France by the Société des Moteurs Salmson, but an English company has recently been formed and it will shortly be manufactured in this country.

This engine has nine air-cooled cylinders with a bore and stroke of 70 mm. x 86 mm. Of steel, the cylinders have special aluminium heads, which carry a single exhaust and inlet valve, operated by push-rods; the



The 9-Cylinder 40 H.P. SALMSON which is to be manufactured very shortly in England. It will then be fitted with two magnetos to comply with British standards.

valve springs are of the hairpin type. The crankcase is in two halves, held together by nine long bolts, the rear ends of which pass through the engine plate for mounting the engine in the machine. The cylinders are spigoted into the crankcase and held down on to four substantial studs. The pistons, of course, are of aluminium, short-skirted and fitted with three rings. The ignition is provided by a single magneto mounted at the rear of the engine, and driven from the crankshaft by a train of gearwheels, which also incorporates a skew drive for the oil pump. The carburettor (a 26 D.K.1 Zenith) is placed low down in the rear of the engine, the mixture being admitted to the cylinders via passages in the back plate of the crankcase and nine separate induction pipes. The carburettor is shrouded with a stream-lined shield and has a hot-air intake. With a cubic capacity of 2,979 c.c. the engine develops 45 h.p. at 2,000 r.p.m. and in spite of its comparatively low power numerous makes of light 'planes in which it has been installed have carried out various remarkable flights of endurance, speed and altitude.

LIGHT PLANE POWER PLANTS—continued.

Contrary to the general impression, the horizontally-opposed aero engine is not an innovation of recent years, being in fact, like the radial, one of the earliest forms of power units for aircraft. But owing to the fact that it could not be made as a comparatively high-powered engine without having unduly large cylinders with its attendant disadvantages it was not developed to any extent. However, before it was abandoned, the h-o twin contributed quite considerably in making flying history. The famous pioneer, Santos Dumont, used such an engine in a monoplane of his own construction in 1909. This motor was a Darracq of 25 h.p. and was remarkably advanced in its design, having steel cylinders, push rod operated overhead valves and copper water jackets.

It weighed about 120 lbs. and developed its maximum of 25 h.p. at 1,500 r.p.m.

With the introduction of the small single-seater and the earlier type of light two-seater, the horizontally-opposed engine has again appeared, two notable examples being the A.B.C. and the Bristol "Cherub." The A.B.C. company have of course specialised in this type of air-cooled engine for many years and at the present time market two versions for aeroplane work—the two-cylinder "Scorpion" and the four-cylinder "Hornet."

The "Scorpion" is an engine of 1,500 c.c. capacity and has bore and stroke dimensions of 102 m.m. x 91.44 m.m. It runs at 2,300 r.p.m. and develops 35 h.p. Machined from the solid, the cylinder barrels are very highly finished; and the detachable heads are of cast iron, liberally finned and fixed to the barrels by eight studs. The head carries one inlet and one exhaust valve, both inclined, and both the inside of the head and the crown of the piston are of hemispherical shape, so forming a partial spherical combustion chamber. Aluminium pistons are fitted with two rings at the top and a scraper at the base of the skirt. The big end bearings are of the split floating bush type and the connecting rods are threaded onto them over the crank webs. All the other bearings in the engine are of the ball or roller type and are of ample dimensions. The thrust loads are taken by a ball race positioned between two roller bearings at the front end of the crankshaft. A special B.T.H. magneto provides the ignition and gives two sparks to each cylinder, and the carburettor is a double-choke, triple-diffuser Zenith. Oiling is on the dry sump principle and incorporates a simple feed pump (which delivers oil to the main bearings at a pressure of 40 to 60 lbs.) and a scavenger pump. The oil consumption is .04 pints b.h.p. hour and the petrol consumption, .52 b.h.p. hour and the stated weight of the engine with magneto, carburettor and propeller boss is 109 lbs.

The "Hornet", which is the latest production of A.B.C. Motors Ltd., is a particularly interesting motor. It is a flat opposed four and might be described as a "double-Scorpion" as several salient features are common to both engines. The cylinder and cylinder head design, for instance, is identical and the pistons and gudgeon pins are interchangeable.

The following are the main data of the "Hornet":—Normal power, 75 h.p.; maximum, 82 h.p.; bore and stroke, 102 mm. x 122 mm. (3,990 c.c.); normal and maximum speeds, 1,875 r.p.m. and 2,175 r.p.m.; weight of engine complete, 225 lbs.; petrol consumption, 0.53 pints b.h.p. hour; oil consumption, 0.035 pints b.h.p. hour.

The Bristol "Cherub" engine needs scarcely any introduction, for in the days when the light plane really was "light" it was used on practically every machine of note and figured conspicuously in the various competitions during the years 1924-1926.

It was produced in various forms—first as the Mark I, then the Mark II and finally as the Mark III. Owing however to the manufacturers being fully engaged in making high-powered engines and planes, it is now not in regular production. The Mark III had a capacity of 1,288 c.c. and gave 36 b.h.p. at 3,200 r.p.m. The cylinders were of steel with alloy heads in which were screwed steel valve seatings, valves guides and inlet and exhaust passages. Aluminium alloy pistons were fitted, each having three narrow rings. They were attached to the connecting rods with hollow gudgeon pins of the floating type. The crank shaft of special alloy steel, was carried on four bearings and the camshaft was placed transversely in the crankcase and operated from the crankshaft by a train of spur wheels.

Although of such small proportions and (for an aero motor) a high speed engine, the "Cherub" has shown itself to be highly reliable and long-lived and many are still in use in this country, on the Continent and in America.

FLYING AT NINEPENCE PER MILE.

An ambitious scheme for an air-taxi service was inaugurated last month by National Flying Services, Ltd., when the first batch of a fleet of fifty-five Desoutter cabin monoplanes were delivered to them at Hanworth and put into operation.

These machines are available for public hire at the rate of 1/6 per mile for two passengers or 9d. a mile per head—the lowest so far offered in aerial transport.

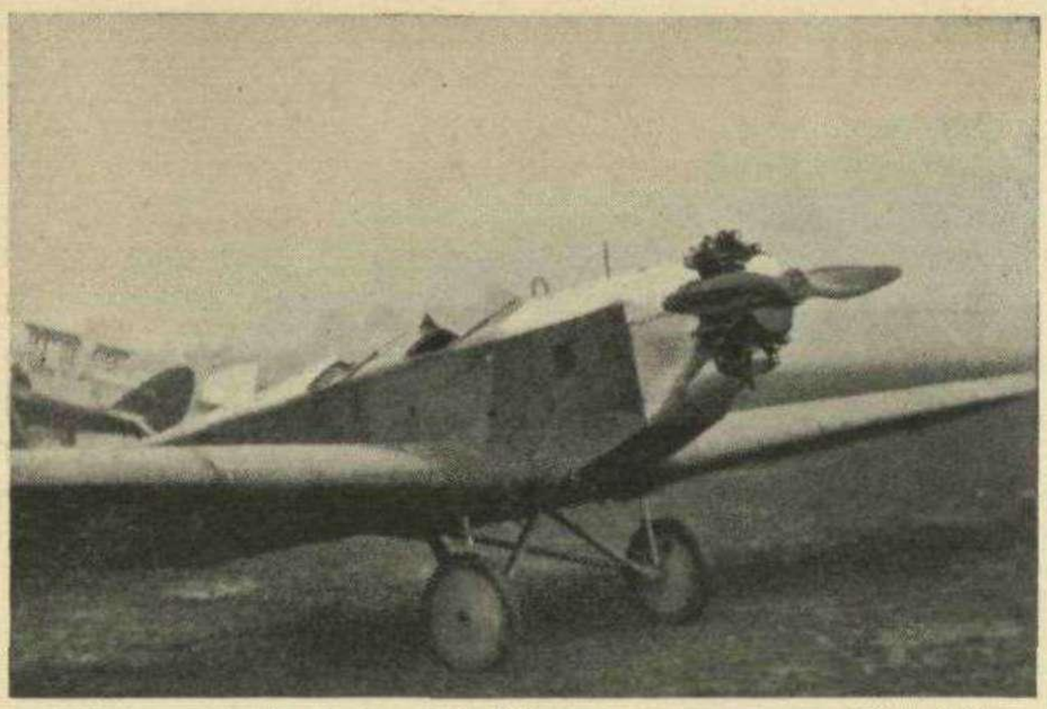
The London Air Park at Hanworth is the first station to be equipped with these taxi-planes and will be followed by stations at Reading, Hull, Leeds, Nottingham and other centres where aerodromes are in course of construction.

The new Desoutter recently passed its acceptance tests and gave very good results. With an 115 h.p. Cirrus-Hermes engines it flies at a maximum speed of 114 m.p.h. The cabin of the machine contains one seat in front for the pilot and two comfortable seats behind for the "fares." The cabin is warm and there is no need for the occupants to wear special flying kit, moreover conversation may be carried on with the same ease as in a car.

The service has already proved very popular and the Desoutters are being chartered extensively for both business and pleasure purposes.

THE KLEMM L.25 MONOPLANE

A 40-H.P. REALLY LIGHT AEROPLANE OF OUTSTANDING DESIGN AND PERFORMANCE.



A three-quarter front view of the Klemm, showing the clean lines of the nose and the neat undercarriage.

DURING the past half-dozen years the trend of light aeroplane design has progressed along two distinct lines. In England the tendency has been to get away from the simpler type of machine and the low-powered plane has been almost wholly superseded by machines of 80 to 100 h.p. and there are indications that the open cock-pit type will give place to the coupé and cabin type before very long. Thus, British manufacturers appear to be concentrating on producing machines of the purely utility-cum-luxury class with high performance and high power.

On the Continent, however, particularly in France and Germany, the small-powered aeroplane is still being made and developed and vies with English type of so-called light plane in general popularity.

Foremost amongst these little machines is the Klemm low-wing monoplane, which to many readers of MOTOR SPORT is no stranger, since examples of the latest type and many of its predecessors have been amassing an enviable reputation by their performances ever since the first edition appeared in 1919. It may be remembered that this early Klemm was powered, like other light planes, with a motorcycle engine—a Harley-Davidson—but in spite of its limited power it flew well as a two-seater, and a number of remarkable flights were made with it both as a land and seaplane.

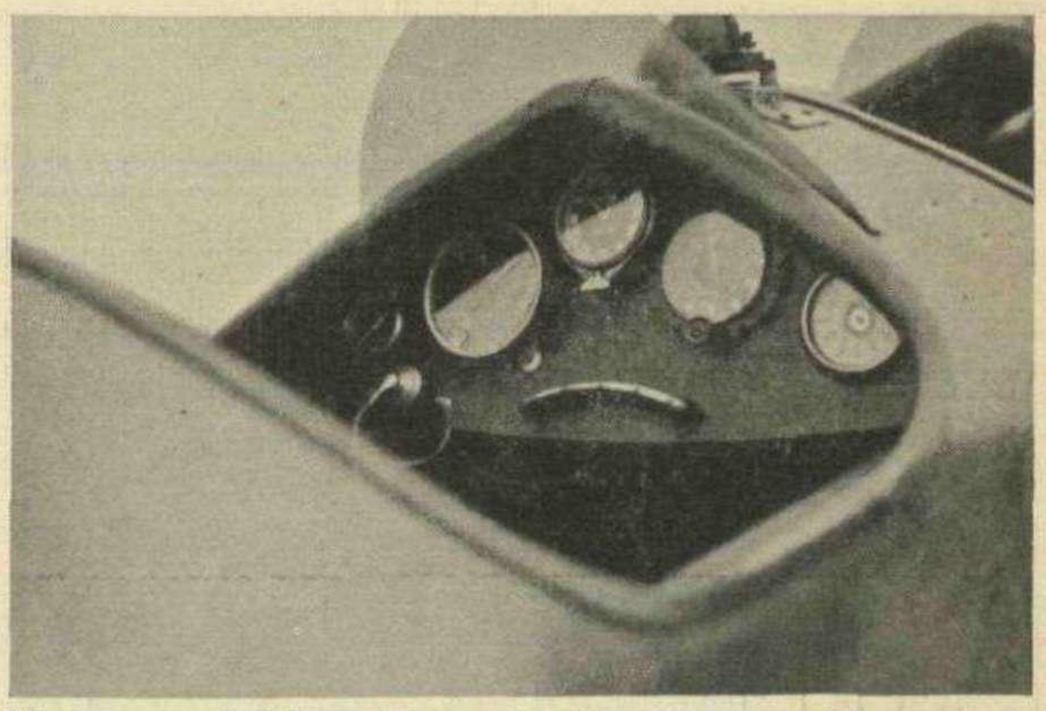
In the more advanced type of Klemm—the L.20—the engine used was a 20 h.p. Mercedes horizontally opposed twin. This type is still available and is being used all over the world, notably in Germany, France, South America and Australia, and one of the most recent achievements carried out with this little craft is a round-the-world flight by a young German pilot.

In 1926, it may be recalled, an L.20 was flown (with passenger) from Stuttgart to Vienna and Budapest and back and the route taken entailed the crossing of the Gross-Glockner Alps at a height of over 12,000 feet in very bad weather. Considering the size of the engine, which had bore and stroke dimensions of only 75 mm. x 100 mm. this flight was no mean achievement.

Recently we had the opportunity of inspecting and trying one of the latest Klemm-L.25's, which has been used during the past two years for demonstration purposes by the English concessionaires, S. T. Lea, Ltd., of 141, New Bond Street, London, W.1.

Design Details.

The salient constructional features of the Klemm are the all-wood construction, the cantilever high-lift wing, and the entire absence of wire bracing. All the covering of the machine, with the exception of the controlling surfaces and the section of the mainplanes between the rear spar and trailing edge (which are fabric-covered), are of plywood. Both the wing thickness and the chord of the wings diminish towards the tips and the dihedral angle is 2°. The wings are quickly detachable for storage purposes. The cock-pits are in tandem, the instruments being in the rear, but dual control is fitted as standard. The elevator, rudder and ailerons are worked through cables which pass to their respective kingposts over pulleys, and it is noticeable that care has been taken in the design to avoid running the cables through acute angles.



The instrument board is well arranged. Note the position of the compass in front of the windscreen.

The undercarriage is of the split axle type and is of steel tube construction. Landing shocks are conveyed

THE KLEMM L.25 MONOPLANE—continued.

to the rubber-chord absorbers via two vertical tubes, the former being neatly disposed in the wing roots close to the fuselage.

The power unit is the well-known AD9 Salmson nine-cylinder radial of 40 h.p. and the propeller is of wood, with metal covered tips. A fireproof bulkhead is placed between the engine and the gravity tank which is situated in front of the front cock-pit. The total capacity of the petrol tanks is 22 gallons, the major quantity of which is carried in the main tank housed in the port wing root. The fuel is pumped from this tank by means of a hand pump in the cock-pit, to the gravity tank and a very simple float-type indicator gives the pilot warning when a further supply is necessary.

In our test flight, which was carried out at Heston, we found the Klemm remarkable in a number of ways. In the first place although the machine is a really light aeroplane and the weather was by no means ideal, she showed herself to be exceptionally steady; that is to say, we were not "chucked about the sky" in the way that is usual under such conditions. The bumps and gusts which struck us did not "flick" us suddenly over on one wing tip, or lift the machine and drop it in the way which to the average passenger is so distasteful. All uneven movements were easy and cushioned and indeed, we felt that we were in a full-sized machine rather than in one which weighs but little over a thousand pounds when fully laden.



The general proportions and pleasing outline of the Klemm are shown here to good effect. The wing span is 42 feet 8 inches and the height 7 feet 3 inches.

No Blind Spots.

Another feature which appealed to us very much was the excellent view, which of course, is made possible by the low-wing construction. The question of the pilot's view is one of growing importance since aerial traffic around all public 'dromes has now become quite formidable and the danger of collision by no means remote. With the Klemm one is freed from a lot of anxiety when approaching a crowded aerodrome, for there are no blind spots when flying level or when on the glide.

The cock-pits are deep and snug and singularly free from draughts and the stick and rudder bar are so placed as to give an easy and comfortable position for the pilot. The only criticism which one might make is that glass windscreens might be an improvement on the existing celluloid type.

As to the general performance of the machine we were truly astonished with its capabilities. In the take-off, for instance, the Klemm got off after a very brief run and in the able hands of Mr. J. Rogers, Messrs. Lea's demonstration pilot, nosed skywards in a most impressive manner. In the air the control, both fore and aft and lateral, was light and easy but not over-sensitive and the rudder, similarly so. The Salmson, too, was absolutely dead smooth at all throttle openings and although fitted with only short exhaust stubs was not unduly noisy.

On the glide, after flying other machines, we at first found the Klemm almost disconcerting! We anticipated a stall, so shallow was the gliding angle and so low the speed. But, of course, the L.25 is renowned for its landing speed of 25-30 m.p.h.

This quality, coupled with its other attributes, to our mind, makes the Klemm an exceedingly pleasant machine for long distance touring because one is enabled to cruise at an altitude sufficiently low to make the panorama interesting without undue risk of mishap in the untoward event of a forced landing. Normally, cross-country flying, it will be agreed, can be somewhat tedious, especially for the passenger, for if one is to be ordinarily cautious one must travel at an altitude where the ground below appears flat and details are lost.

Performance.

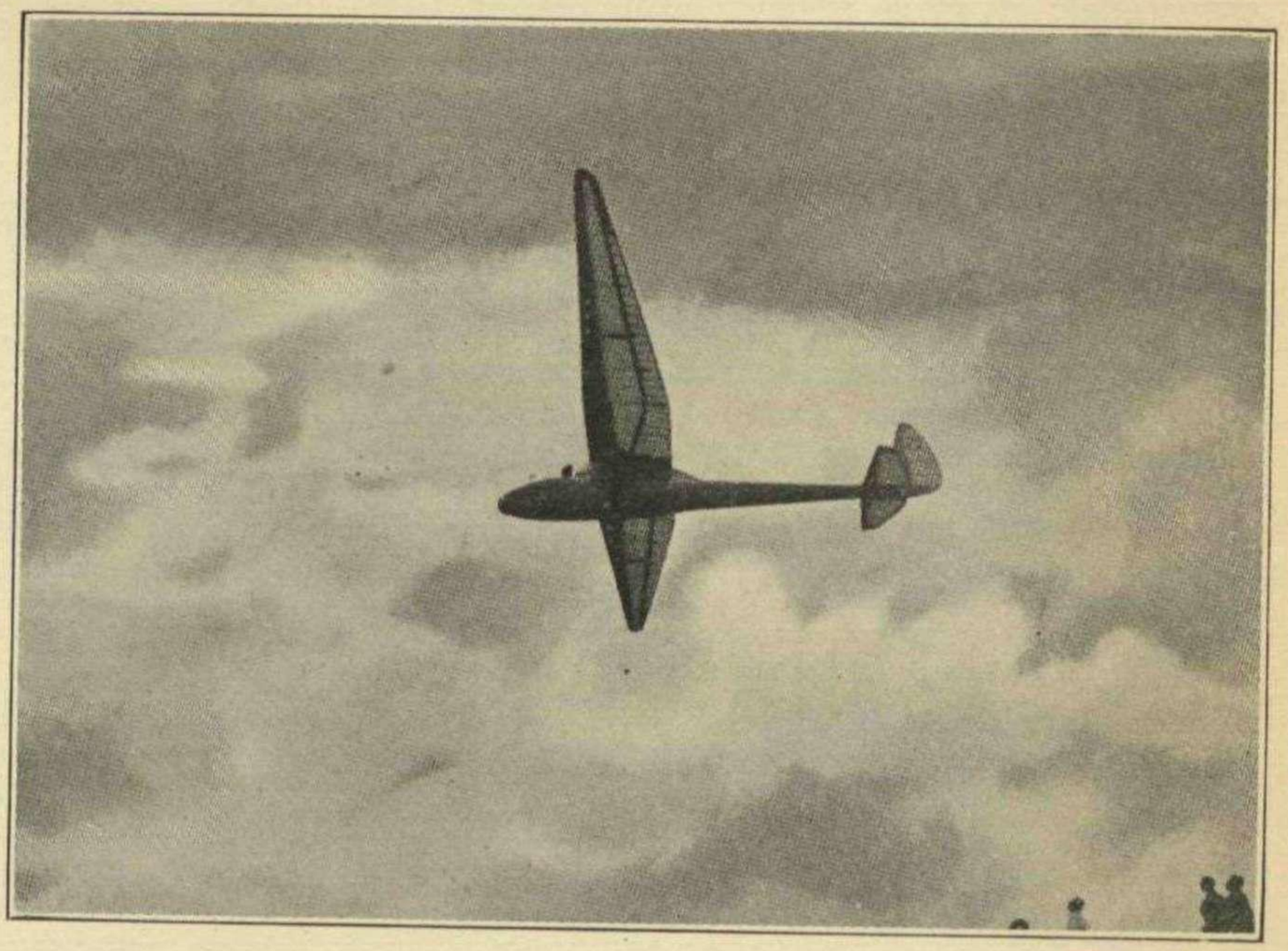
The top speed, flying level with full load is 80-85 m.p.h. and the cruising speed, with the engine throttled down, about 70 m.p.h., so that it will be seen that while the machine is docile and comparatively low-powered it is at the same time a really useful craft. Moreover it has a cruising range of 700 miles and the moderate fuel consumption of but 4 gallons per hour.

Altogether we were most favourably impressed with the Klemm and because of its qualities of safety (Mr. Rogers informs us that it is impossible to make it spin), its controllability at low m.p.h., speed and cruising range, together with its simplicity and low running costs it undoubtedly approaches an ideal type of craft for which there is a big potential market.

The following is the main data respecting the machine: Span, 42 feet 8 inches; length, 23 feet 8 inches; height, 7 feet 3 inches; area of supporting surfaces, 215 square feet; weight empty, 600 lbs.; useful load, 700 lbs.; total weight, 1,300 lbs.; wing loading per square foot, 6½lbs.; power loading 29 lbs. per h.p.; ceiling with full load, 15,000 feet; ceiling with pilot only, 22,000 feet.

GLIDING GOSSIP AND NEWS

THE LONDON GLIDING CLUB— "C of A's" FOR SAILPLANES— AN IMPORTANT LECTURE



THE GLIDER movement in this country is now definitely taking shape and by the time next month's issue of MOTOR SPORT appears it is probable that the first inaugural gliding meeting will have been held by the newly-formed organisation—the London Gliding Club.

The club will commence its operations with a Kegel "Zogling" machine, which is the standard elementary training glider used by the schools in Germany. It is of very robust construction and is of the simplest possible design, having been developed by the makers so that it is capable of standing up to the arduous work of preliminary training and at the same time, repairs can be carried out with the minimum amount of stripping-down. The wing span is 33 feet and the overall length about 17 feet. The gliding angle is 17°.

Several committee meetings of the L.G.C. have already been held and recently the Chairman of the club, Mr. J. R. Ashwell-Cooke and his colleagues made an extensive tour of the environs of London in search of a likely site for the club's venue of activities.

At the time of writing, no definite decision has been made but it is probable that the hills in the neighbourhood of Guildford or Westerham will be chosen. The selection of a site suitable for the sport is not an altogether easy task, for while the formation of a stretch of country may appear ideal, the prevailing wind may not be in the right direction and ease of access and possibilities of accommodation for the machines are other features which have to be taken into consideration.

The club is pursuing its reconnaissance, however, and the committee is confident of finding a place which will meet with all their requirements.

At first only one "Zogling" will be in use but it is hoped that two others will be in commission in the near future.

The London Gliding Club's committee comprises the following:—Mr. J. R. Ashwell-Cooke (Chairman) and Messrs. Douglas Culver, E. K. Blyth and Grenville G. O. Manton, with Mr. S. O. Bradshaw as Hon. Secretary. The rules of the club have now been drawn up and copies of these together with membership forms and so forth may be obtained from the Secretary, whose address is 1, Deansbrooke Lane, Edgware, Middlesex. The subscription fee for the year ending 31st January, 1931, is £1 1s. and the entrance fee one half-guinea.

The L.G.C. is affiliated to the British Gliding Association which, under the Secretaryship of Mr. Howard Flanders, will assume the position of governing body of the movement in the same way that the Auto Cycle Union does in the motor cycle world.

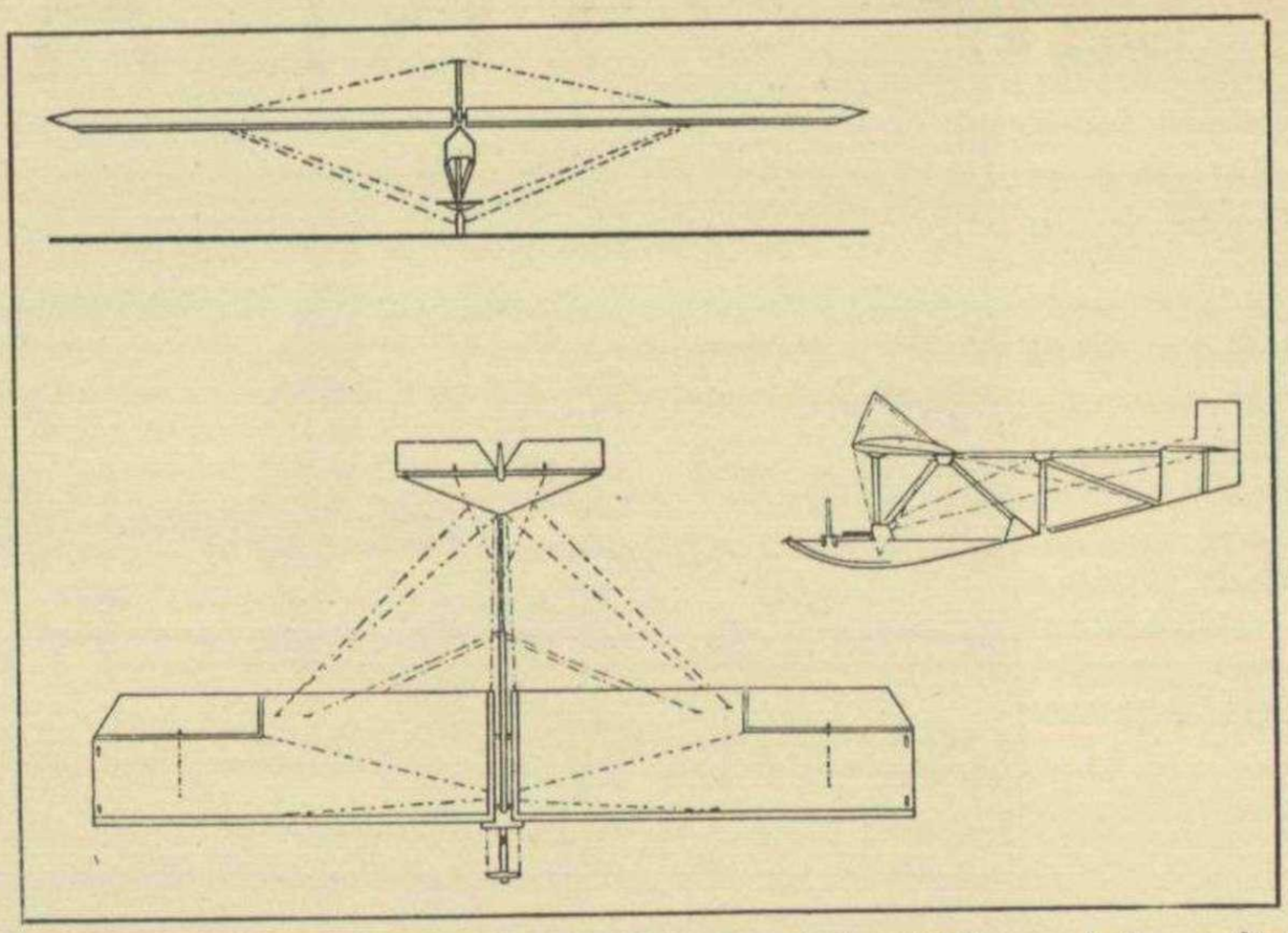
It was recently announced that Sir Sefton Brancker the Director of Civil Aviation, has consented to be the President of the Association and as a result a Provisional Council has been formed. A scheme has been formulated to affiliate clubs and set up branches throughout the country. Readers of MOTOR SPORT who are interested in the Association should communicate with Mr. Flanders at the Royal Aeronautical Society, 7, Albemarle Street, W.1.

A DEVELOPMENT in connection with gliding, which was not altogether unexpected, is that the authorities have under consideration certain rules and regulations regarding the sport.

(Continued overleaf)

GLIDING GOSSIP AND NEWS—continued.

These will cover matters of airworthiness of motorless craft and their operation, and while this move may be not welcomed by a good number of enthusiasts we are assured that the action contemplated is solely in the interests of those who will participate in the pastime. In discussing the matter with someone who is in close touch with the authorities we gathered that their view was that unless some control is placed on the construction of gliders and sailplanes there will be a likelihood of numbers of amateur constructors building their own craft from unsuitable materials. Structural failures and fatal accidents would follow and gliding in England, at the outset, would fall into ill-favour.



The Kegel Zogling glider. The newly-formed London Gliding Club has acquired a machine of this type for initial training purposes. Simplicity is the keynote of its design.

IN GERMANY glider pilots are issued with certificates and there are three categories, "A", "B" and "C." To obtain the first a pilot has to make a flight in a dead straight line, terminating with a successful landing, of course, and the duration of the flight must be not less than 30 seconds.

To qualify for certificate "B" it is necessary to carry out a flight of not less than 60 seconds and two right-angle turns have to be executed, one to the left and one to the right. Pilots qualify for both the "A" and "B" certificates on the "Zogling" machine. The rules in connection with certificate "C" entail a flight of not less than 5 minutes and the point of landing must not be lower than the starting point. "C" certificates are obtained on the "Prufling" glider which is used for advanced training. It is a parasol monoplane machine of orthodox fuselage design with the pilot's cock-pit just below the leading edge of the wing. The latter is semi-cantilever and strut-braced.

After becoming proficient on the "Prufling," pupils advance to the final stage and are sent solo on sailplanes proper. These machines have a span of as much as 50 feet and with them it is possible to remain "upstairs" for hours at a stretch. They have a high degree of manoeuvribility and a very low "sinking" speed.

Up to date, between two and three thousand gliding certificates have been issued to pilots in Germany.

A LECTURE, which has been arranged by the Royal Aeronautical Society will take place at a most opportune moment, just as, it is to be hoped, the movement has been got under way in this country. This lecture, which is fixed for the 19th of this month, will be on gliding, the speaker being Dr. Georgii, who is recognised as one of the leading authorities on motorless flight in all its aspects.

We hope to give points of the lecture in our next issue and it is anticipated that much of Dr. Georgii's address will be of exceptional interest.

GLIDING is now being taken up with enthusiasm in Belgium and clubs are in process of formation in different parts of that country. Recently one of these clubs enlisted the aid of one of the Kegel Company's pilots, Herr Hirth, to help them in choosing suitable gliding territories and he also gave demonstration flights on various types of machines. It is understood that there is a possibility of Herr Hirth paying a visit to this country for a similar purpose in the near future.

THE D.H. MOTH ABROAD.

THE increasing number of manufacturing licences which have been granted by the de Havilland Aircraft Co. for the manufacture of both the Moth and the Gipsy engine abroad, affords an extremely interesting sidelight on the aircraft industry in Great Britain and an example of the extending world-wide use of English machines.

An agreement to manufacture the Gipsy Moth has just been concluded with the well-known firm of French aircraft constructors, MM. Aeroplanes Morane-Saulnier, and a similar agreement has been granted to the Norwegian Ministry of Defence.

Last year a licence was granted to the American, pioneer firm, The Wright Aeronautical Corporation, to manufacture the Gipsy engine and the American Moth is now being supplied by them with this type. The Moth Aircraft Corporation, U.S.A., who, for some time, have been in possession of the licence to manufacture the Moth aircraft, have now joined the Curtiss-Wright Group, the largest and most powerful aircraft constructors in the United States. The Finnish Government were the first to acquire the Moth manufacturing licence. A significant point is that in every country of its adoption the Moth has been chosen in preference to local types.



SLIPSTREAMS

Single-Seaters Again.

AFTER a lapse of several years, manufacturers are again turning their attention to the small, simple single-seater machine. One found examples of this type of 'plane at the Aero Show last year and since that time details have been made public of one or two newcomers.

In discussing the matter of the cheap single-seater craft in the past one found a certain divergence of opinion. Designers and people associated with the aircraft industry generally dismissed the suggestion that there was a certain market for it and raised numerous objections.

The majority of people who buy aeroplanes, they asserted, have had either no flying experience as pilots at all, or else have flown two-seater machines for a very limited number of hours. Therefore, a single-seater would prove to be no attraction to them. Again, people do not like travelling about alone—otherwise there would be single-seater motor cars—and the private-owner inevitably wishes to share his aviation with a friend. All this sounds quite reasonable, but while these arguments may have held good some years ago there is the fact that there are numbers of club members who by this time have piled up a sufficient number of solo-flying hours to entitle them to consider themselves capable of flying a single-seater machine without difficulty. It is these people who have been agitating for this type of 'plane for some time, and who will now welcome its appearance as a production job.

Brooklands in Wintertime.

One of the bright things about aviation is that it is not a seasonal business as is motor racing. This was forcibly brought home to me when I visited Brooklands recently. Had I been a racing "fan" I am sure the dismal spectacle of the great track as I saw it on that occasion would have filled me with acute depression. The entrance road, the paddock, the sheds—all were damp and extremely desolate. Even the stout fellows who at this time of the year add some animation to the scene, as they sprawl over the concrete, levelling out the bumps for Cobb and Co., had taken their departure, leaving behind their barriers, barrows and buckets as the only evidence that the place had not been completely deserted for years. Then I wended my way round to the aeroplane sheds and found an amazing amount of activity and the Brooklands School of Flying seemed to be busier than ever . Their Avros and Moths were all in active operation and Captain Davis told me that in spite of the bad weather the work of his school had gone on with very little interruption.

Incidentally, I should say that no other school in the world has a finer or more experienced staff of instructors than that of the B.S.F. Captain Davis was himself graded "A1" at the School of Special Flying of the R.F.C. in the dim past and since that time he has been teaching people the art of aviation almost without a break. He has as able assistants, Mr. E. A. Jones who has been flying for over fourteen years and has now completed 5,000 hours as a pilot; Mr. C. M. Pickthorn, who commanded a squadron during the War and was for a lengthy period a chief instructor to the Chilean Air Force and Mr. R. Y. Bush, who has an impressive total of flying hours to his credit.

Ambitious Amateurs.

The "fly-the-Atlantic" mania which followed Lindbergh's epic flight has died down now but not before many courageous but over-confident people of comparatively limited flying experience have lost their lives in futile attempts. Ambitious amateurs are still gaining fleeting notoriety, however, in the lay press by setting out on light 'planes to fly to distant parts of the globe—only to finish up ignominously with a write-off or partial write-off within a few days of making their start. Generally the cause of their failure can be traced to insufficient knowledge of navigation rather than lack of skill in handling their machines. It seems a pity that these people do not realise the vital importance of navigation and undergo a thorough course of instruction before setting out on such flights.

Models.

I had no idea, until I visited the works of Messrs. Mee, at Greenwich, how extensive is the business of model 'plane making or how large a following there is for model flying.

I did not attempt to count the number of Mr. Mee's employees, but as I walked through the various shops I was surprised to find so many workpeople engaged in making model 'planes of numerous types and sizes. Mr. Mee showed me a sheaf of orders he had received just previous to the day of my call, from Norway, Switzerland, France, and even America and amongst his many English customers are Squadron-Leaders of the R.A.F., several "reverends" and, of course, boy scouts.

He has a drawing office staff and experiments are constantly being made with different types of machines. I was most interested in two special racing models which he showed me, the perfect streamlining of which rivalled that of any full-sized 'plane I have ever seen.

Besides the manufacture and marketing of toy aeroplanes, Mr. Mee's firm, I understand, also does a considerable amount of work for the National Physical Laboratory in connection with its aeronautical research.

"RUDDERBAR."

SOUTHPORT'S FIRST SAND MEETING

Bad weather conditions cause small entry.

ANYONE who has ever maintained that the supporters of Motor Racing lack enthusiasm should have journeyed to Southport on January 11th. There, if they had avoided being frozen where they stood or blown away altogether, they would have seen proof that at least one club are too impatient and too enthusiastic to wait for fine weather before restarting their events. In spite of half a gale, varied occasionally by the addition of snow and hail, quite a good series of races was run off, and if nothing else was achieved at least the competitors were given further illustration of the fact that machinery does not like salt water, and most of the failures were due to the entrance of this otherwise refreshing commodity into the vital portions of the mechanism.

In the motorcycle races the paucity of entries may be considerably accounted for by the recent action of the manufacturers in the matter of bonus, but apart from this the weather was enough to make strong men wonder whether, after all, January was a trifle soon to start fast motoring.

The straight mile events for cars failed to produce any startling results owing to the lack of competitors, D. Brown, driving the Vauxhall Villiers, making very sure of the events for which he could enter.

The 20-mile race confirmed the impressions of Brown's Vauxhall already suggested by the sprint events, and although Byron on his Bugatti drove exceedingly well, he was much slower and from the word "go" no one but Brown was ever in the picture.

The 1500 c.c. class of the same race was won easily by J. Walker on a Bugatti who, as was only to be expected walked away from the Austins to win as he liked, though in view of the great difference, in capacity of the two makes the Austin's performance was very good. The conditions were absolutely appalling for this event, and it is really a miracle that any one could see where they were going, through the barrage of spray flung up by the wheels of the car in front.

In the motorcycle events the entry although sadly depleted in numbers from the usual Southport gathering was by no means lacking in quality, and Brockbank showed that he has not lost any of his cunning during the winter.

In the sprints no one could get near him and this took some of the interest out of these events.

The 25 mile solo race started well, and a lively scrap ensued between Emery (Sunbeam) and Gardner (Norton) with the latter just holding a small lead and the pair being chased by P. Hunt (Norton).

Soon after the start the Scotts started having a bit of bother due to the waterlogged condition of the beach and Chapman and Kitchen were both in trouble with them.

Unfortunately just as the race was getting really exciting, and Emery was about to pull into the lead, Gardner's engine gave up the ghost, possibly as a protest against being so early aroused from its winter sleep, and Emery proceeded to have things his own way from then on, and made a clean sweep of all classes for which he was eligible.

This was evidently a Sunbeam day for R. Shiers led the 350 c.c. class home on his 347 c.c. Sunbeam, who actually finished in front of the 3rd man in the 500 c.c. class.

Then, following an interval for a snowstorm, came the 10 miles sidecar race which produced a close finish, Buckley on a Brough Superior just beating C. F. Edwards on a similar machine after coasting over the line minus any noticeable connection between the engine and the rear wheel. His was a lucky win as he had only just gained the lead from Edwards whose ignition had commenced to complain of the wet.

Emery who had led in a hectic manner at the start was put out with engine trouble, but as he had already had a very satisfactory afternoon he had nothing much to worry about.

Any chilliness which may have marked the afternoon's performance was however amply compensated for by the annual dinner, held the same evening at the Palace Hotel, Birkdale, when the prizes were distributed, and speeches containing a note of cheerful optimism for the opening season were the order of the day.

CAR RESULTS.

Straight Mile Races.

1,100 c.c.—General: B. L. Byrom (Austin).
Ditto, Novice: B. L. Byrom (Austin).
1,500 c.c.—General: P. Stephenson (Austin), w.o.
Ditto, Novice: P. Stephenson (Austin).
3,000 c.c.—General: D. Brown (Vauxhall-Villiers).
3,000 cc..—Novice: J. C. Byrom (Bugatti).
Unlimited.—General: D. Brown (Vauxhall-Villiers).
Ditto, Novice: J. Field (Bugatti).

Twenty-mile Races.

1,500 c.c.—1, J. Walker (Bugatti); 2, P. Stephenson (Austin); 3, D. Z. De Ferranti (Austin).
Unlimited.—1, D. Brown (Vauxhall-Villiers); 2, J. C. Byrom (Bugatti); 3, J. Field (Bugatti).

MOTORCYCLE RESULTS.

Straight-Mile Races.

350 c.c.—General: 1, S. Anderton (348 A.J.S.), w.o. Novice 1, R. Shiers (347 Sunbeam), w.o.
500 c.c.—General: 1, H. F. Brockbank (490 Norton); 2, A. Simister (498 Excelsior); 3, S. Anderton (348 A.J.S.). Novice: 1, T. Price (494 Douglas); 2, A. Simister (498 Excelsior); 3, R. F. Turner (490 Norton).
750 c.c.—General: 1, F. Parker (498 Vincent-H.R.D.). Novice: 1, A. Simister (498 Excelsior); 2, J. G. Hall (596 Scott); 3, T. Price (494 Douglas).

SOUTHPORT'S FIRST SAND MEETING—continued.

1,000 c.c.—General: 1, H. F. Brockbank (490 Norton); 2, F. Parker (498 Vincent-H.R.D.). Novice: 1, A. Simister (498 Excelsior); 2, J. G. Hall (596 Scott).

500 c.c. Sidecars.—General: 1, H. F. Brockbank (490 Norton sc.), w.o.

1,000 c.c. Sidecars and 1,100 c.c. Three-wheelers.—General: 1, C. F. Edwards (998 Brough Superior sc.); 2, H. F. Brockbank (490 Norton sc.); 3, N. H. Buckley (998 Brough Superior sc.).

Twenty-five-mile Race.

350 c.c. Class.—1, R. Shiers (347 Sunbeam); 2, M. Carson (348 Raleigh).

500 c.c. Class.—1, G. L. Emery (493 Sunbeam); 2, R. F. Turner (490 Norton); 3, A. Simister (498 Excelsior).

750 c.c. Class.—1, G. L. Emery (493 Subbeam).

0,000 **c.c. Class.**—1, G. L. Emery (493 Sunbeam).

Ten-mile Sidecar Race.

600 c.c. Class.—1, W. Riley (596 Scott sc.).

1,000 c.c. Class.—1, N. H. Buckley (998 Brough Superior sc.); 2, C. F. Edwards (998 Brough Superior sc.).

SMALL CAR POPULARITY AT HOME AND ABROAD.

Recent statistics supplied by the Ministry of Transport show that the small car is increasing in popularity by leaps and bounds, in that whilst the number of cars up to 8 h.p. registered in September 1928 was 17 per cent. of the total, the percentage has risen to 28 in September, 1929.

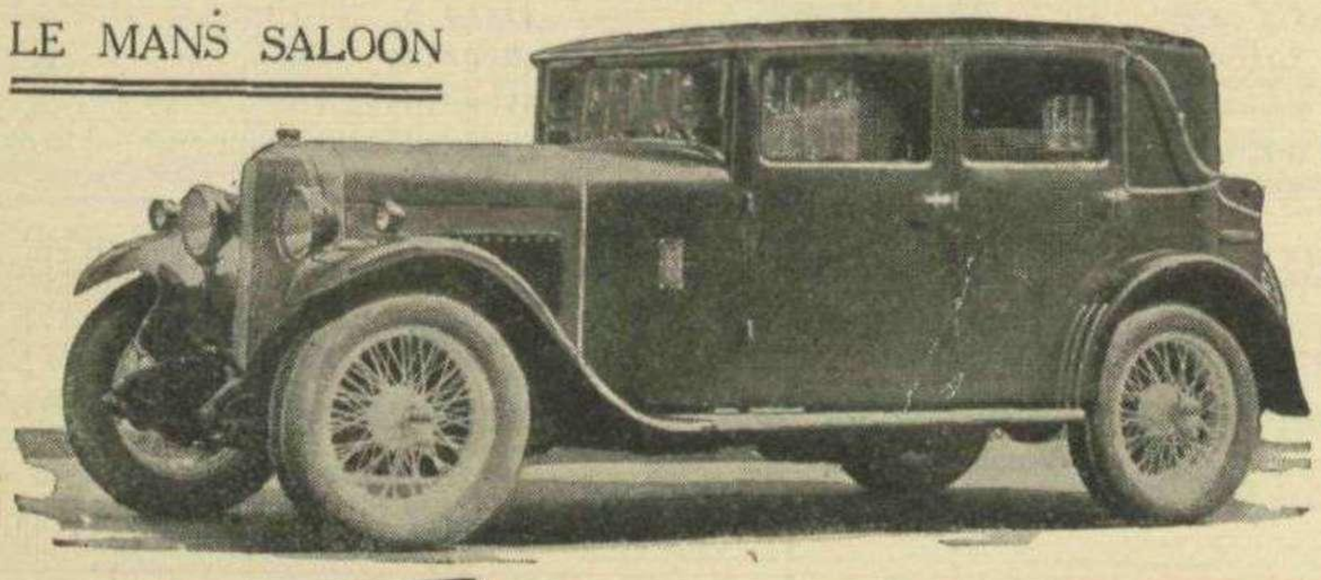
Overseas, too, the genuine light car is coming into its own. A proof of this is found in the export figures of the Triumph Co., for no less than 25 per cent. of the output of Super Sevens during the past few months has been despatched abroad. This is particularly interesting when compared with the exports of the British motor industry as a whole, the latest figures showing that 15.9 per cent. of the total output is exported.

The very much larger export percentage by a company which concentrates on small cars indicates clearly what overseas motorists require. It should be noted, too, that despite the high degree of American sales organisation throughout the world, exports of American cars (which are, of course, mainly of large capacity) are only 9.6 per cent. of the total production.

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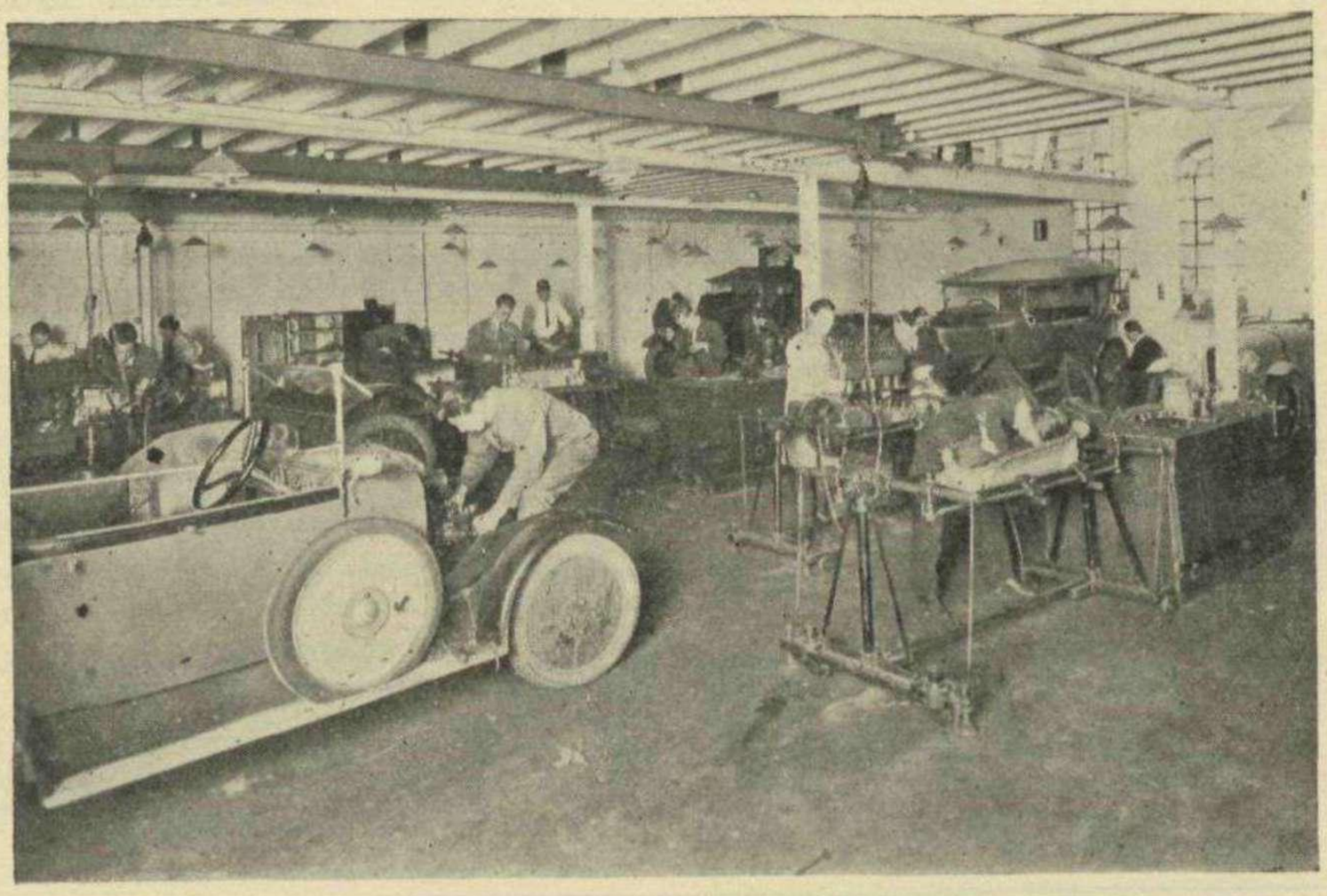
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ONE of the chief differences between this generation and the last is, that whereas then the common desire of youth was to be an engine driver, now it is to be a motor engineer. Also whereas the engine driver complex usually passed away at an early age, the desire to investigate the mysteries of the internal combustion vehicle is apt to stick, and become a career. As such it is good, but like many others it does not offer much opportunity for the enthusiastic amateur without specialised knowledge.

He may be able to "talk cars" and sometimes to render assistance to a fair driver who is stranded by the roadside, by unneccessarily cleaning a plug, only to find that more petrol is required. This, however, contrary to what some people fondly imagine is no qualification for the motor trade as a profession, and the successful man must know how, and this means training. One of the best mediums for acquiring a really practical knowledge is an establishment like the Automobile Training College of Sydney Street, Chelsea. Here a complete course of theoretical and workshop training takes two years, which is a considerable advantage over the usual period of apprenticeship in a works where the training is not supervised, and is largely a matter of chance. Another point of this college which will probably be of more interest to those of our readers who already have considerable experience is that special short courses in a particular branch may be taken by anyone wishing to specialise, where it is inconvenient or unnecessary to take a full course.

FOR THE COLD WEATHER.

A very ingenious and at the same time simple anti-freezing device for cars is now being marketed by Super Tools Ltd., of 31, Spencer Street, Victoria Street, S.W.1. The "Thermstore," as it is called, consists of a non-conducting vessel, into which the hot water is drained from the radiator, and after the manner of the familiar Thermos flask keeps it hot till next morning, thus making sure of an easy start by refilling with hot water. As it uses no fuel or current in any form, it costs nothing for upkeep.

PORTABLE HANGARS.

Following the practice of the motor trade, The de Havilland Aircraft Company Limited are now in a position to sell to the purchaser of a Gipsy Moth a sectioned garage which can be erected in any field of adequate size reasonably near his residence.

This is a great advantage to those who do not happen to live within easy reach of an aerodrome where a light aeroplane with folding wings, such as the Moth, may be housed at a weekly charge of approximately £1, including the services of an engineer.

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1925 Bentley 3-litre Short Chassis, sports fabric Saloon, Red Badge twin carburetters, speed model, in fine condition, engine seals unbroken, recently recellulosed black with cream wheels, new tyres, Triplex glass ; price £420, or would take little used Riley Nine saloon in part exchange.—Haines, 2, High Rd., London, N.W.10. 'Phone : Willesden 7294.

USED SPORTS CARS
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