

APRIL, 1930

MOTOR SPORT
SPECIFY

I

LAYSTALL

FOR SPECIAL MOTOR REPAIRS

CRANKSHAFT
GRINDING
and Bearings
Remetalled

CYLINDER
GRINDING
and new
pistons

SCORED
CYLINDER
REPAIRS
by the
Lawrence
Process

NEW
CRANKSHAFTS
for
Replacements

LAYSTALL
EWER ST.
SOUTHWARK
LONDON
S.E.1

DE LUXE
Light Weight
Cast Iron
Pistons

NEW
CAMSHAFTS
and
Camshafts
Reground

HELICAL
BEVELS
for
Quiet
Running

GEARS
Chrome Nickel Steel
Air-Hardened
for Quiet
Running

WELDING
that is
Guaranteed

Specify
Laystall
for
Accuracy

Branch Works for the North:-
55, FONTENOY STREET, LIVERPOOL.

Free Collection
& Delivery
in
London



Drivers of
SPORTS & RACING MACHINES
having extra high com-
pression engines should use

"Racing
SHELL"

Write for leaflet to:—
Shell-Mex Ltd., Dept. A., Shell
Corner, Kingsway, W.C.2.

Stuarts

MOTOR SPORT

INCORPORATING THE BROOKLANDS GAZETTE

EDITOR: W. S. BRAIDWOOD, B.A. (Mech. Sc.) Cantab.

Editorial, Publishing & Advertising Offices

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

Telephone: { REGENT 1937.
 { GERRARD 3436.

Cables: AGREYNOL, LONDON.

Telegrams: AGREYNOL, PICCY, LONDON.

The Way of Things

Let us remember—

CAREFULLY organised publicity can give to a comparatively ordinary event a glamour of achievement which it does not really deserve. Without wishing in any way to disparage such performances as "beating the Blue Train," in a modern car, or any other accomplishment of recent years, one feels that these events would appear in better perspective if they were duly compared with the efforts and successes of the past. Memories at times are regrettably short, and in applauding alleged unprecedented feats the records of pioneers are likely to be overlooked. To take a case in point, over 20 years ago, not one, but many motorists set up average speeds across Europe considerably higher than those which have lately caused so much excitement. In May, 1903, Gabriel on a Mors car, in the famous race which was the last of the great town-to-town contests, averaged 65 m.p.h. from Paris to Bordeaux. Far from having clear roads he had 167 other competitors to pass on the way and, although we would not suggest that progress from those days has been anything but remarkable, it would seem that there are better ways of demonstrating the efficiency of modern cars than by putting

up performances considerably less than those of nearly 30 years ago. Proof of progress is rather to be found in the speeds made in the few great road races of to-day, of which the ordinary public takes but scant notice, and in feats like that of M. Senechal's eight day circuit of Europe, which is certainly without precedent in motoring history.

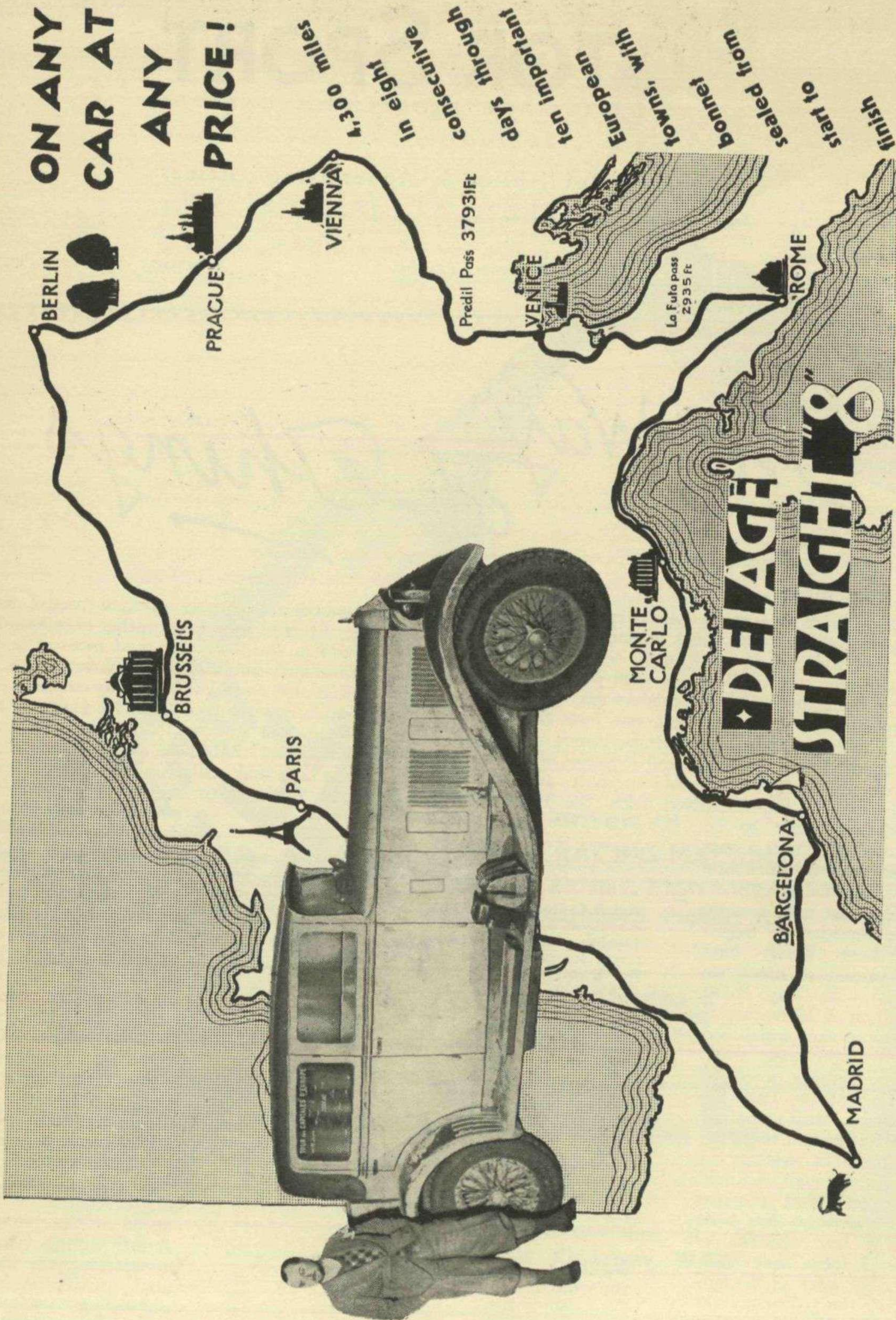
In aviation one notices the same thing, and although it is a fact that there are now many private owners of reliable and easily-controlled aircraft, some of them would do well to remember that flying did not commence in 1926, and that many of the stunts which they are inclined to consider as new discoveries, were actually performed in pre-war days on machines with which many of them would find great difficulty in flying at all. Progress in all phases cannot be denied, but let us remember that the advance is to be found in machines themselves rather than in the men who use them. Enthusiasm and pride of achievement is good, but it should not crowd out the due remembrance of the almost incredible performances of the pioneers; it should imbue the present generation with that desirable quality, a sense of proportion.

CONTENTS

LAND.	PAGE
B.A.R.C. Opening Meeting	5
Racing at Birkdale Beach	8
London—Scotland—London	9
Great Racing Marques—Itala, by E. K. H. KARSLAKE	12
C.U.A.C. Speed Trials	17
J.C.C. Half-day Trial	18
The Steel in your Car, B. G. MANTON, B.Sc., A.M.I.C.E.	20
Don's Daytona Sunbeam	23
A Racing Driver's Workshop	27
Club News	28
Here and There... ..	46
AIR.	
Aircraft Instruments	37
A 1,320 H.P. Air Yacht	39
Slipstreams	40
The Comper Swift	41
Gliding Gossip and News	44
WATER.	
The Sport Afloat	31
The Austin Seagull	32
Cruiser Conversions	33

THE WORLD'S FINEST ROAD PERFORMANCE

ON ANY CAR AT ANY PRICE!

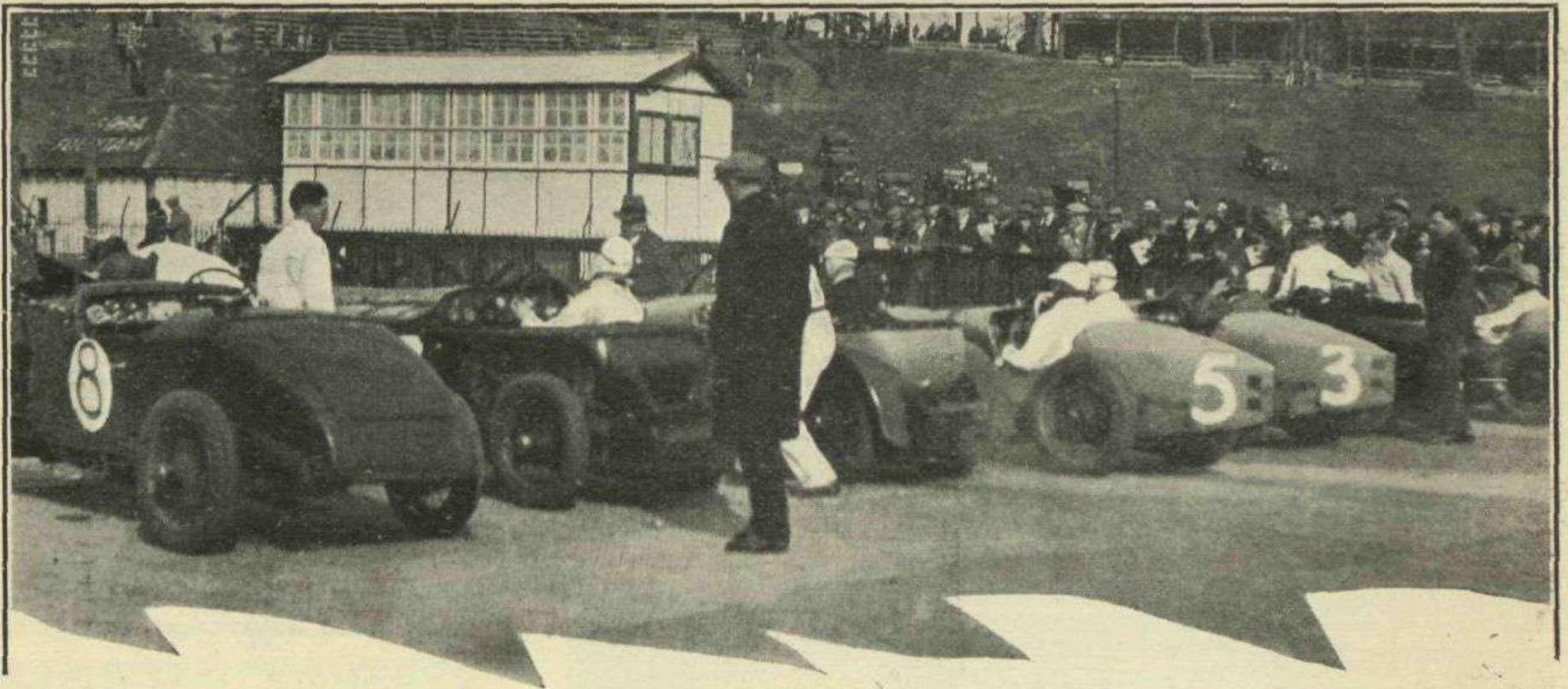


DELAGE STRAIGHT 8

28 ALBEMARLE STREET, W. 1, TELEPHONE: REGENT 1038.
 Service Depot, Works and Spare Parts: GREAT WEST ROAD, BRENTFORD.
 J. Smith and Company (Motor Agents) Limited. (Sole Distributors for London and Home Counties)
 TELEPHONE: CHISWICK 5591/2.



B.A.R.C. OPENING MEETING



PERFECT weather, an excellent entry and some good racing were good omens for the success of Brooklands under the new regime. Although all the innovations at the track were not complete in detail, the benefit of the improvements which had been carried out were very marked, and by the next meeting the "Brighter Brooklands," which has been so long talked about, should be even more of an established reality.

The Kent Short Handicap.

The first race of the year was won by Staniland on his 1½ litre Bugatti at the excellent speed of 107 m.p.h. and in this race Birkin's supercharged 4½ litre Bentley gave an inkling of the performance which it was to put up. Birkin was undoubtedly the star turn of the meeting, and in spite of having trouble with a cracked supercharger casing, achieved the remarkable lap speed of 126 m.p.h., which makes it fairly obvious that some of our regular Brooklands' stars will have to look to their laurels when he has had a little more time to get the car at the top of its form.

The Essex Short Handicap.

This was won by Charles Brackenbury on a Bugatti at 88.29 m.p.h. with Victor Horsman's Triumph

second. Thoroughgood, the scratch man, was 3rd on a 2300 c.c. supercharged Bugatti.

The Surrey Short Handicap.

In this race Harold Purdy made a welcome return to the list of winners at 98.2 m.p.h. on the 1500 Thomas Special; it was running beautifully, and as always held the track perfectly,—second Cyril Paul's Delage, and third E. L. Bouts' Sunbeam.

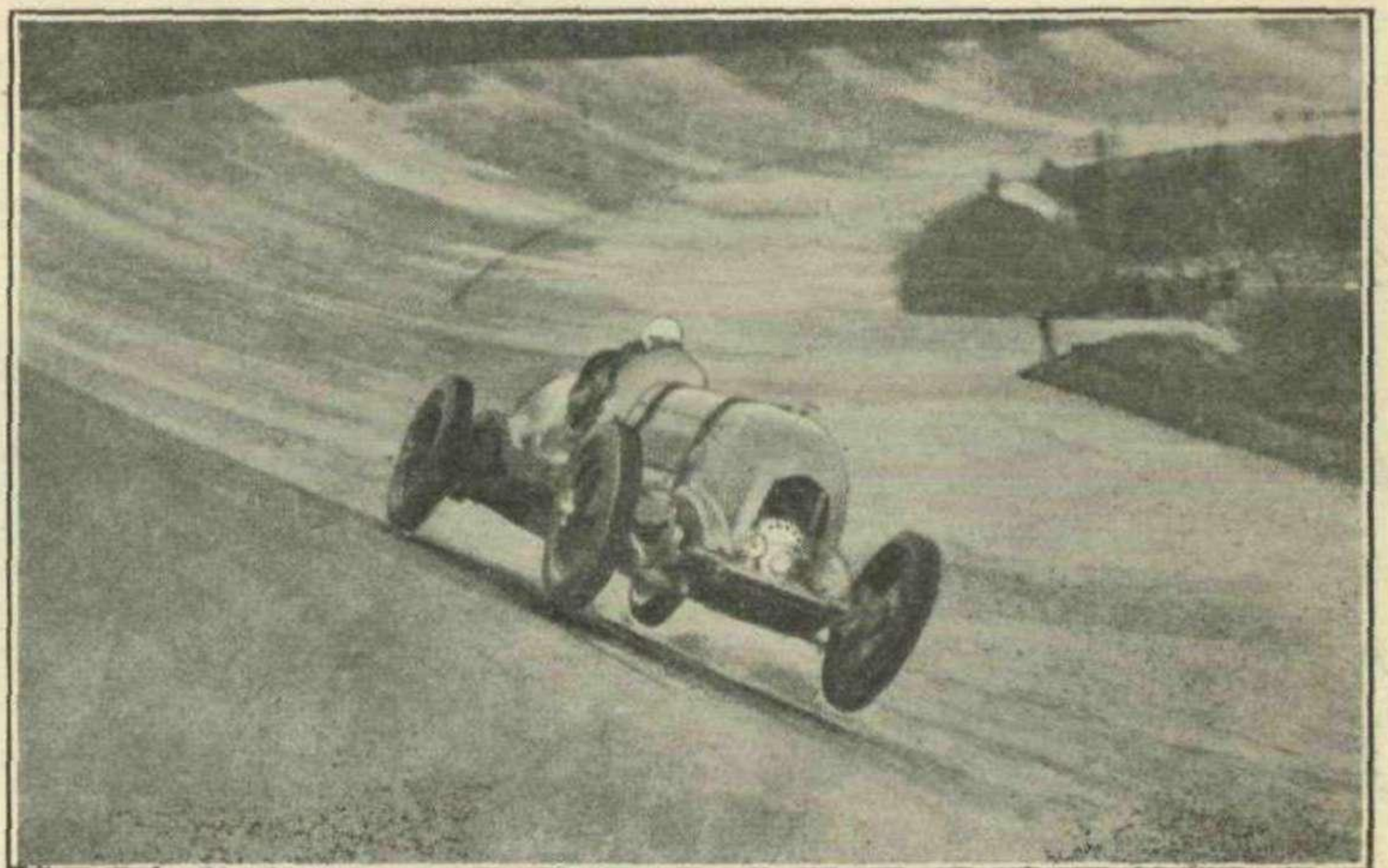
Ladies Handicap.

Mrs. Scott drove a wonderful race

but was too heavily handicapped to catch Mrs. Wisdom, whose Frazer Nash was going very well indeed, and was able to hold off the challenging Bugatti without difficulty. The winner's speed was 90.4 m.p.h.

Kent Long Handicap.

This race started with a scrap between Jack Dunfee's Ballot and E. M. Thomas on Mrs. Scott's Bugatti. Both started from the 46 second mark. On several occasions it looked as if Dunfee would be able to get past but on each occasion that he pulled out of the



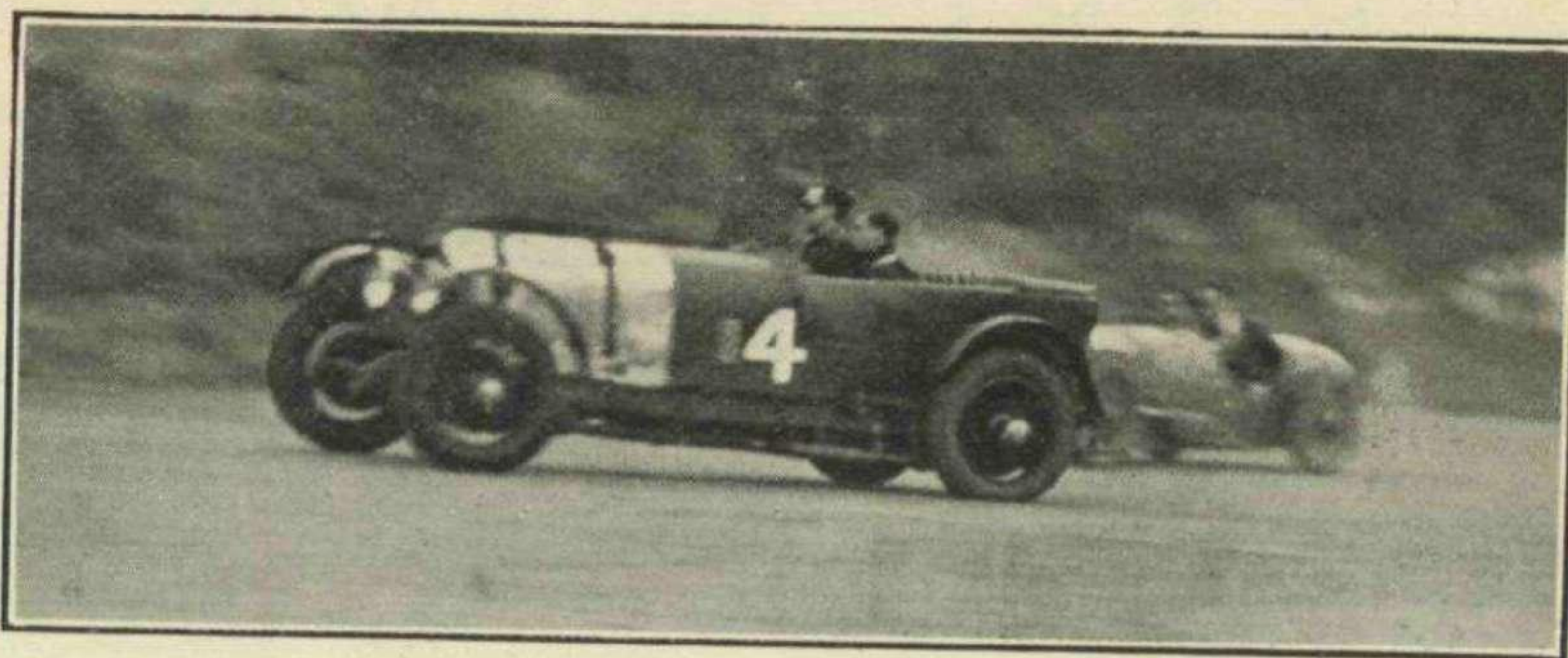
Birkin's Bentley coming back to earth after taking the famous bump at the end of the home banking.

B.A.R.C. OPENING MEETING—continued.

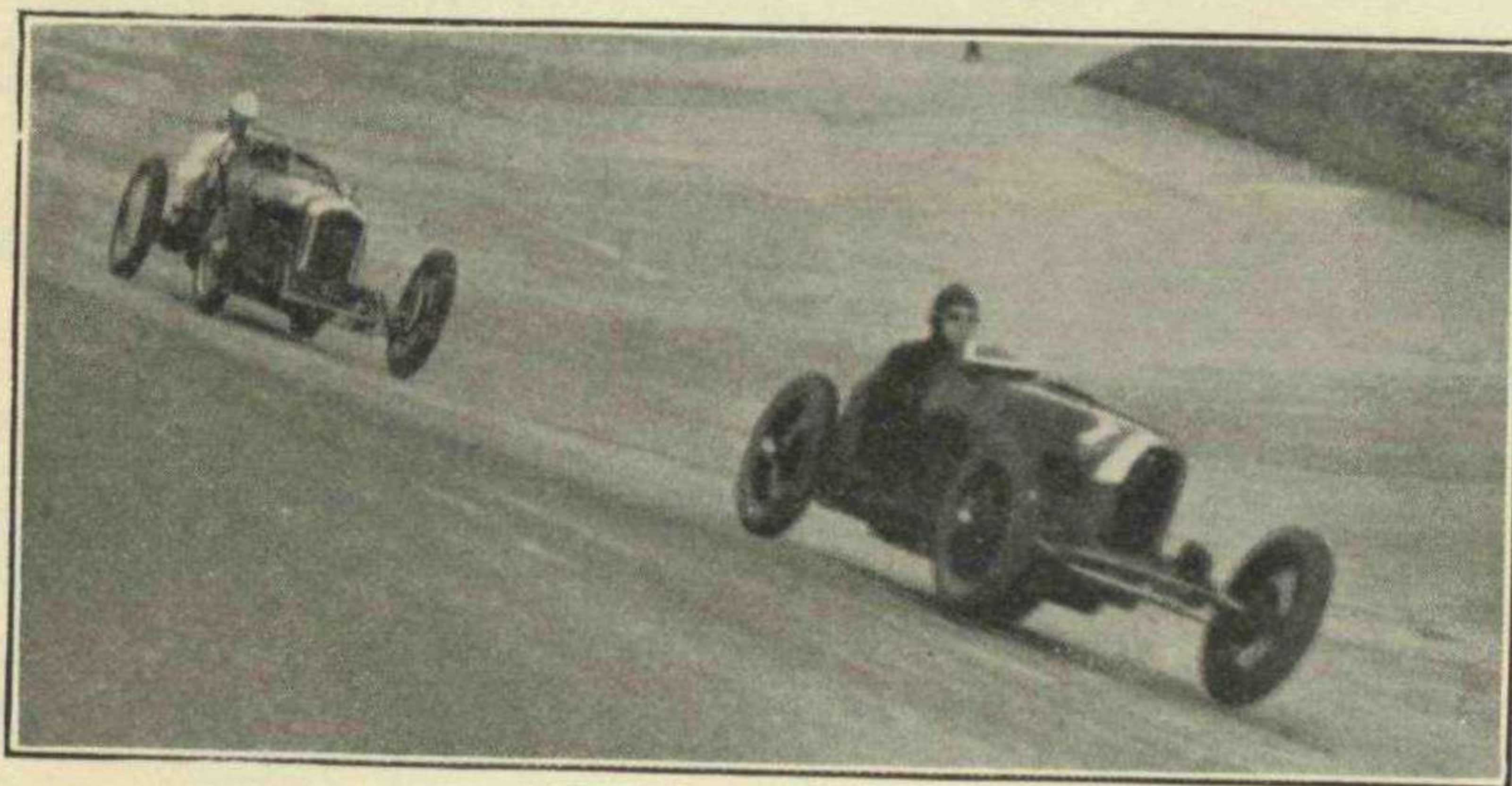
Bugatti's slipstream he lost speed and had to drop behind again. While this duel was in process Birkin had been sweeping through the field, and coming off the home banking in the last lap he swept by Dunfee and Thomas just on the famous bump to win a really well driven race at the excellent average of 119.13 m.p.h., his fastest lap being 126 m.p.h.

Essex Long Handicap.

Vernon Ball's Amilcar got away well at the start and just managed to avoid being caught by Marende on the Graham-Paige, winning by 100 yards at 92.28 m.p.h. C. Brackenbury (Bugatti) was third.



W. B. Scott passing another competitor in the mountain race, and (below) E. M. Thomas leading Dunfee's Ballot in the fifth race.

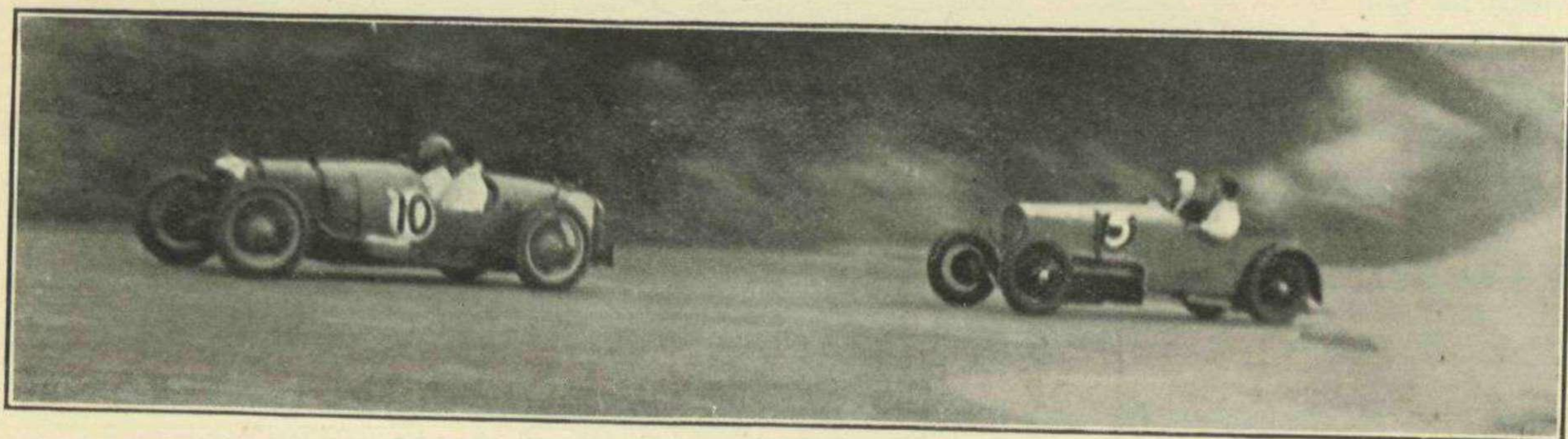
**Surrey Long Handicap.**

Purdy was certainly having an afternoon out, and his Thomas special got away well, was never challenged, and ran home a winner by a quarter of a mile at 107.4 m.p.h. an increase of nearly 10 m.p.h. over his winning speed in the 3rd race. The 2 litre Sunbeam in the hands of Jack Dunfee was 2nd and Cyril Paul's Delage 3rd.

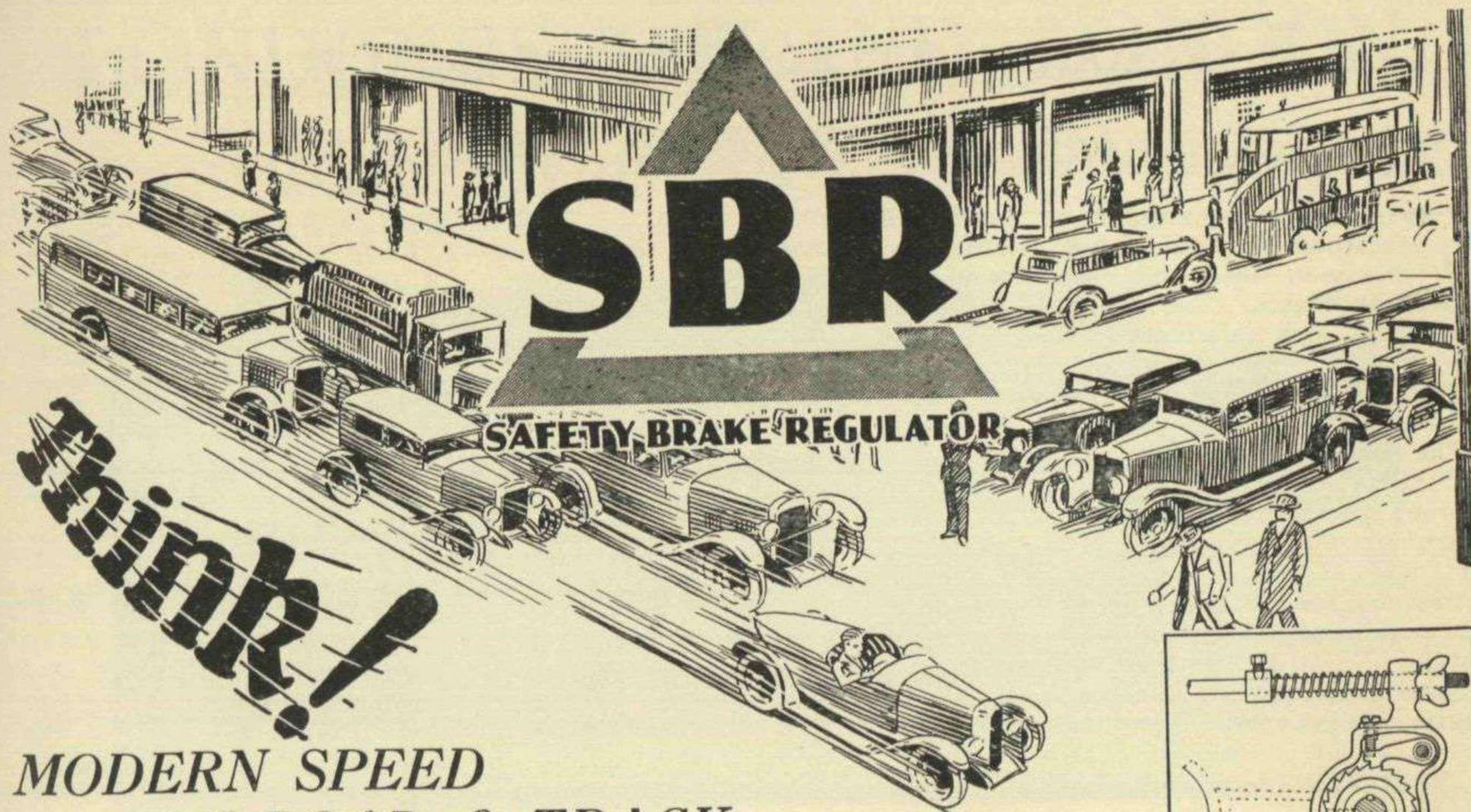
Mountain Handicap.

This race was certainly the most amusing of the afternoon and provided opportunity for people to let off steam in the matter of cornering. Styles of cornering were varied and in most cases unorthodox, the corner leading on to the banking giving the most scope for original ideas. Aldington (Frazer Nash) got off the mark well and looked like

winning as his cornering was quite the fastest in the race, and was also neat. Unfortunately his car went on 3 cylinders towards the end and he was compelled to drop out of the running. The manner in which he passed through a covey of Rileys on this bend was a treat, though the Rileys in question probably did not think so! Scott on an Austro-Daimler appeared to be enjoying himself hugely, and was doing his best to upset his motor car or alternatively remove the tyres. He certainly cornered very fast, but it was a good thing that it was not a long race or something would probably have suffered before long. While these varied frolics were in process Earl Howe on the supercharged "2300" Bugatti attracted little attention, being busy quietly winning the race from scratch with a very neat display of driving and cornering. A. F. Ashby brought his Riley home second, with Gordon Hendy's Lea Francis 3rd. The winner's speed was 62.5 m.p.h. Altogether a fine commencement to the Brooklands Season. Congratulations to Messrs. Bradley & Co.



H. J. Aldington (Frazer-Nash) about to overtake Ashby's Riley in the Mountain Handicap.



**MODERN SPEED
ON ROAD & TRACK
DEMANDS
SAFE BRAKING**

The S.B.R. provides evenly balanced braking which minimises the risk of skidding and ensures longer life to both the tyres and the linings.

At all times, without touching the ordinary adjustors a depression of the pedal or movement of the lever gives immediate braking, instead of an idle time—losing space before the linings and shoes come into contact.

Each Brake in Permanent Adjustment.

Once fitted brakes will always be ready for immediate application, and when new linings are fitted the brakes are self-adjusted to new thickness—automatically.

There are two models suitable for all types of brakes. Write for folder illustrating this ingenious safety device and give us the address of your garage or dealer.

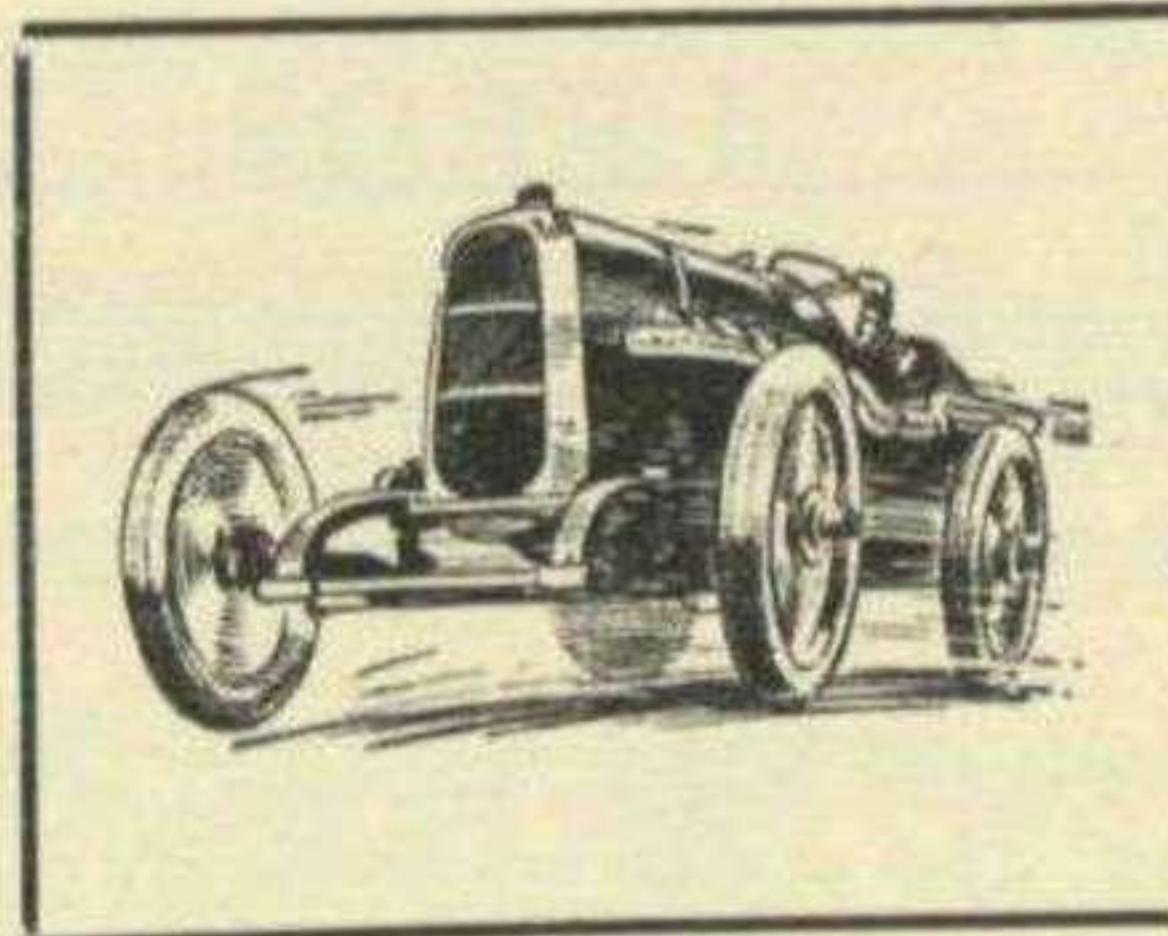
GUARANTEED FOR THE LIFE OF THE CAR

S.B.R. PATENTS LTD.

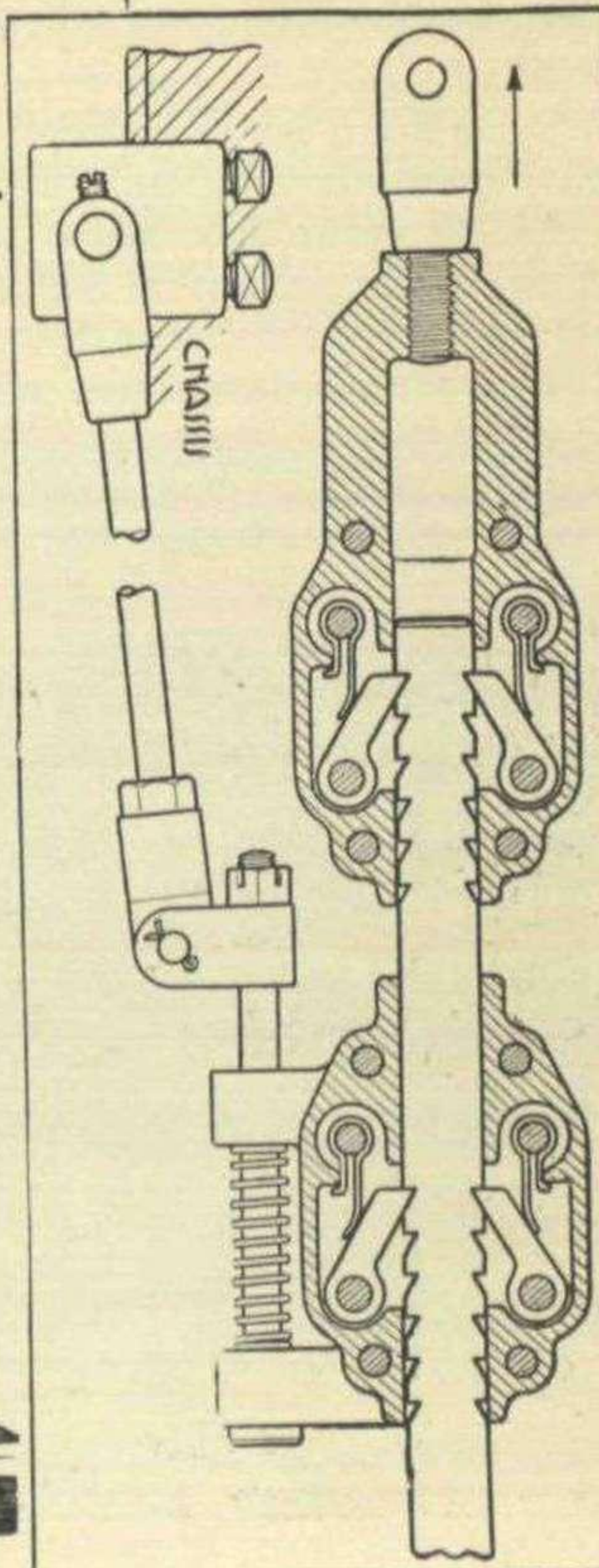
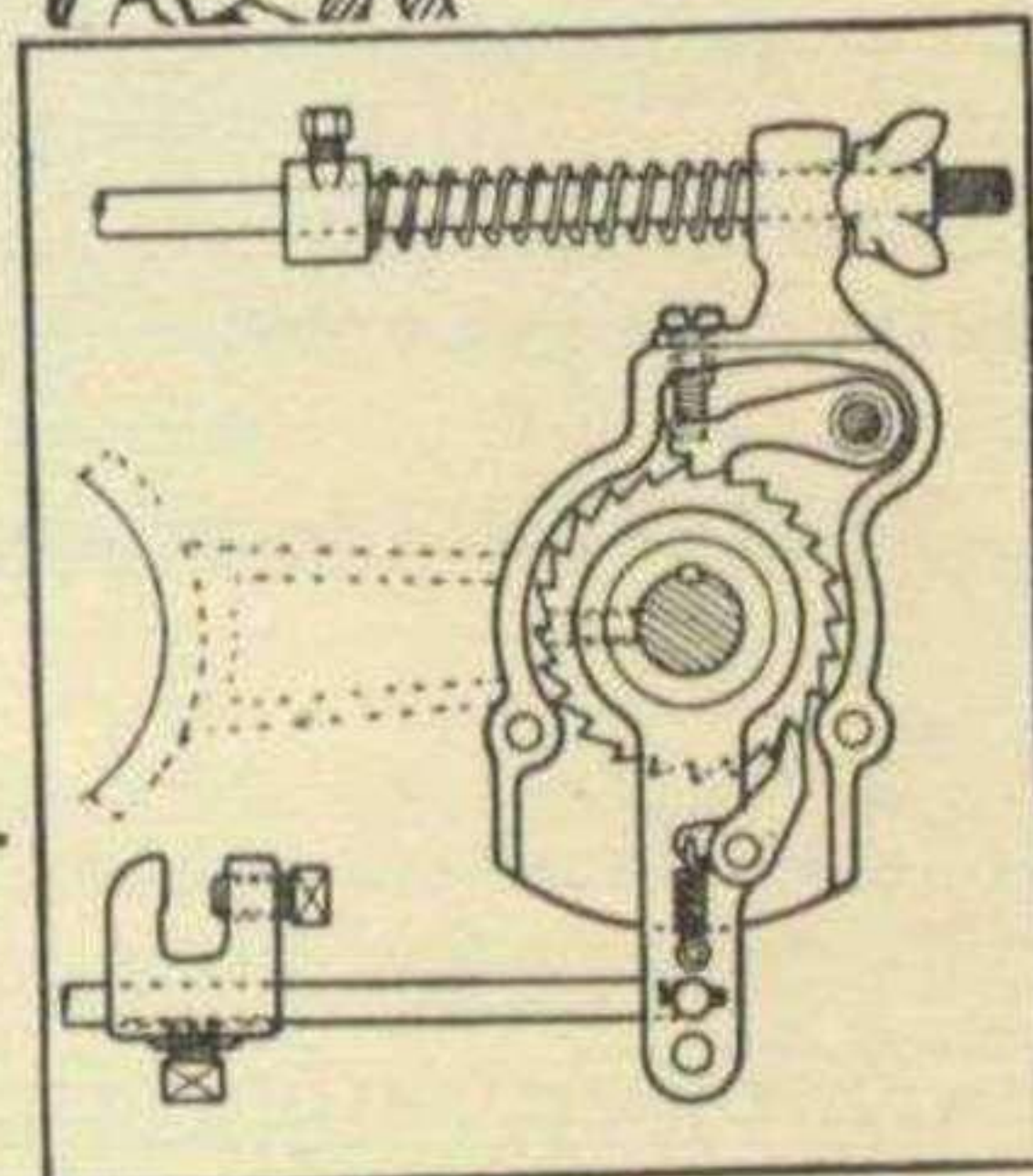
MARCOL HOUSE, 293, REGENT STREET, W.1

Phone: Longham 1161.

Telegrams: SAFBRAK, Wesdo, London.



You will be struck by the simplicity of the S.B.R. camshaft and brake rod models. Further details on request



Racing at Birkdale Beach.

SECOND SOUTHPORT MEETING.

LARGE crowds congregated on Birkdale Beach on Saturday the 22nd of last month to watch the Southport Motor Club's second sand race meeting of the new season. The entry lists promised a good day's sport, but unfortunately there were a considerable number of non-starters and the meeting as far as the car events were concerned, therefore, did not come up to expectations.

The nine-tenths-of-a-mile course was rather moist and the surface, as the afternoon wore on, became badly churned up. The car events opened with mile sprints, which were followed by ten-mile and twenty-mile races for 1,500 c.c. and unlimited classes. The paucity of entries, and the fact that a proportion of the competing cars passed out with sundry troubles rendered the long distance events dull, as there were only three in each. Austins and Bugattis figured conspicuously during the meeting as did a special Talbot, named "Golden Beach," and driven by J. Field.

The car events results are as follows:—

STRAIGHT-MILE RACES.

Up to 1,100 c.c.—1, B. L. Byrom (Austin); 2, P. Stephenson (Austin); 3, D. Scott (Triumph).

Up to 1,500 c.c.—1, J. Field (Talbot); 2, A. H. Canan Doyle (Frazer-Nash); 3, P. Stephenson (Austin).

Up to 2,000 c.c.—1, J. Field (Talbot); 2, R. G. J. Nash (Frazer-Nash); 3, J. C. Byrom (Bugatti).

Up to 3,000 c.c.—1, David Brown (Vauxhall-Villiers); 2, J. C. Byrom (Bugatti); 3, A. H. Barlow (Bentley).

TEN-MILE EVENTS.

1,500 c.c. Class.—1, J. Walker (Bugatti); 2, P. Stephenson (Austin).

Unlimited Class.—1, J. C. Byrom (Bugatti); 2, P. Stephenson (Austin).

TWENTY-MILE RACE.

1,500 c.c. Class.—1, J. Walker (Bugatti); 2, P. Stephenson (Austin). J. C. Byrom (Bugatti) won the James Challenge Cup as the entrant of the car to finish first in the race.

LEEDS M.C. TRIAL.

COMPETITORS had to contend with exceptionally rough going in the 120-mile course of the Leeds' Club's £200 trial which was run off on the 22nd March.

So severe were the conditions in some sections that the committee decided to divert the route so as to avoid a number water-splashes which would have been impassable through their swollen state, after the heavy rain and snowfall.

In the afternoon the route lay across the moors and for the most part competitors had to drive over sheer cart tracks. Then came the formidable Gab Wood hill with its hair-pin and bevy of observers, official and otherwise. Some very good climbs were made on this hill and rousing cheers were accorded the star turns.

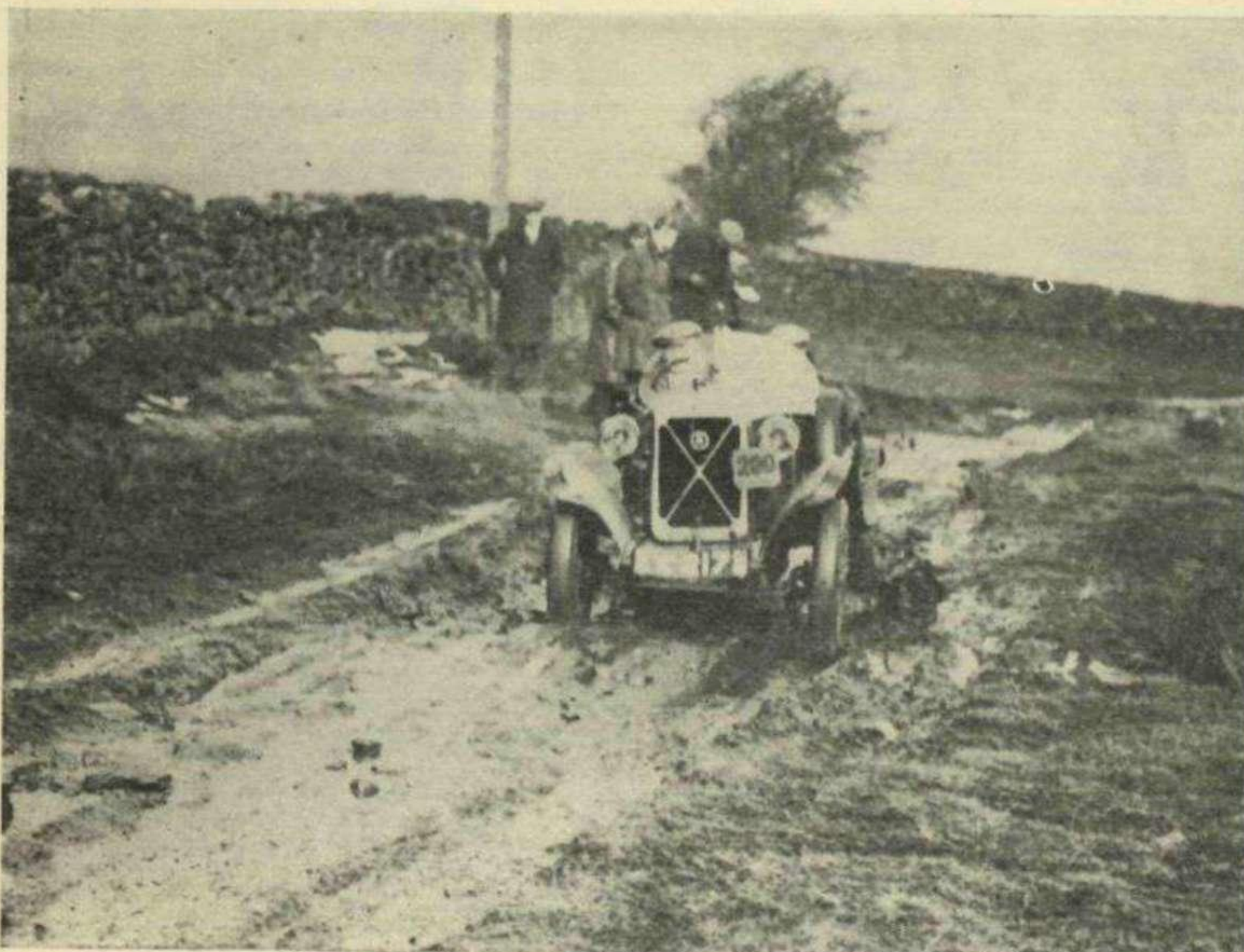
At the conclusion, all concerned voted the trial a thoroughly sporting and cheery affair. O.C.

Leonard Headlam.

It is with the deepest regret that we have to record the death of Mr. Leonard Headlam, while travelling down to Brooklands on March 18th. While at Cambridge University he was an ardent motorcyclist, and competed successfully in the events of that club. On going down from Cambridge he took up car racing and came rapidly to the fore, and was a formidable competitor in the classic events of the last few seasons. Cheerful and unassuming, alike in victory or defeat, his death will be an irreparable loss, not only to his many friends, but to the sport in which he so keenly and skilfully participated.

Count Brilli Peri's Fatal Crash.

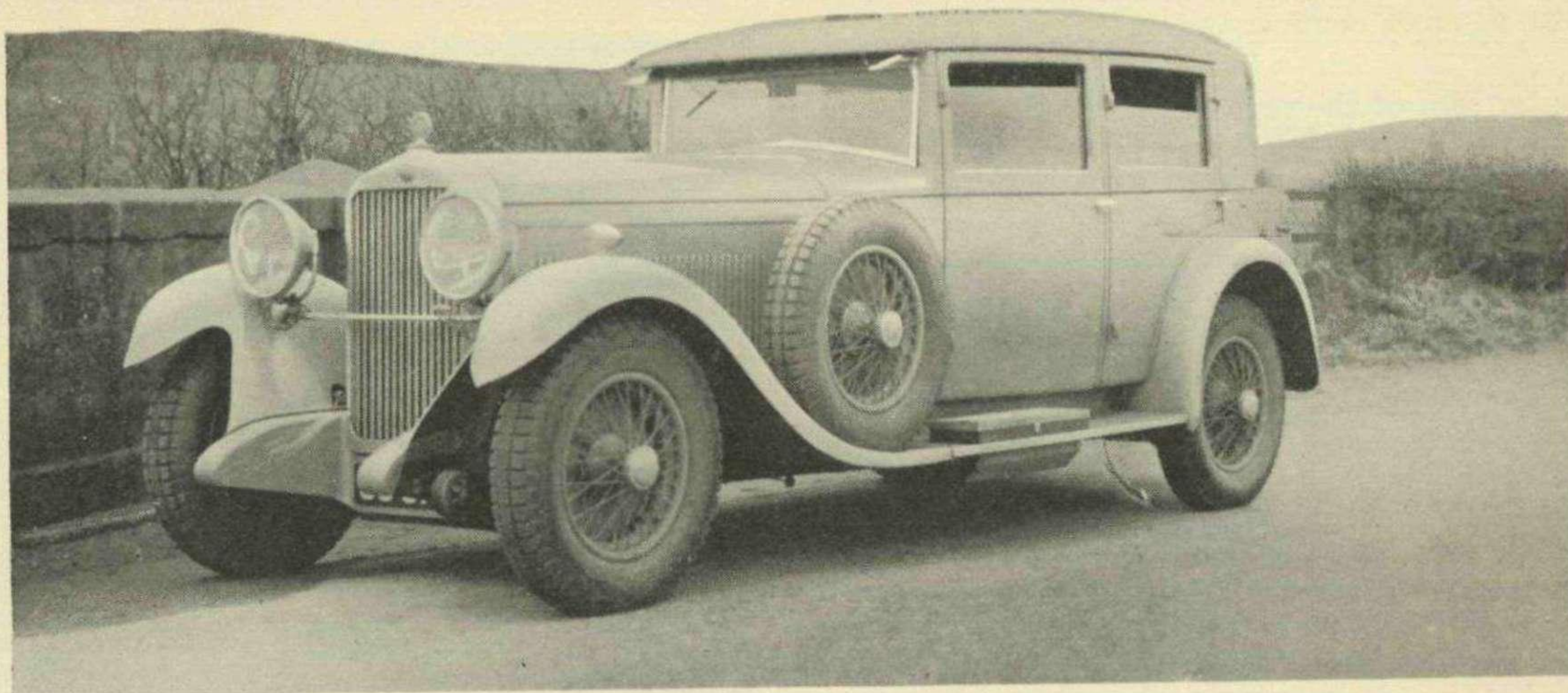
Another of the great names in motor racing passed into history when Count Brilli Peri, the famous Italian driver, was killed on March 22nd while practising for the Tripoli Grand Prix.



N. C. Mansley (Salmon) on Chevin Lane, Otley.

LONDON—SCOTLAND—LONDON.

A FAST DAY'S RUN ON THE 8-CYL. SPORTS DELAGE.



THE idea of a long day's run as a good test was primarily inspired by a wish to check accurately the reading of the speedometer, as after the first run in the Delage we got the idea that it was not a particularly fast motor car. For one thing, the speedometer was incorrectly geared and read low, how much we did not know. For another thing, the car is so quiet and comfortable that speed is deceptive.

At the end of the first day we motored home quite quietly, and happened to notice the time taken over a journey which we have made many hundreds of times in many different vehicles. After a second look to make sure that our watch had not stopped during the run, we decided that the Delage was anything but slow!

The same evening the subject of the speedometer cropped up again, and we decided that it would be interesting to check it over a route of known mileage. (It might be as well to mention that the rear axle ratio had been changed without a corresponding change in the speedometer drive, and that inaccurate speedometers are *not* a feature of this model.) Someone suggested that various places in the North of England were not only a known distance from London, but were far enough off to make the checking of the speedometer really accurate.

"Why not have lunch in Scotland?" was the next suggestion. The only party which might have queried this was the Delage, and this, as always, preserved a discreet silence. This little matter being settled, we turned in, and next morning, after an early breakfast, a crew of three, complete with A.A. books, maps, and three watches stepped into the comfortable saloon. The watches were synchronised, the speedometer set at zero, and with hearts full of confidence and a tank full of B.P. the starter pedal was depressed and the Delage purred gently away from the outskirts of London towards the North.

Ten miles to Hatfield and we were on the Great North Road, and settled down to a pleasant fast cruising speed which reeled off the miles in an amazing manner. This property of continuous, effortless speed is certainly the outstanding feature of this car. Its ability to cruise along, mile after mile, at over 70 m.p.h., with no sound but the hum of the tyres on the tarmac, and with a braking power as good as many cars at 40 m.p.h., make it one of the safest vehicles we have ever handled. The maximum speed is a genuine 85 m.p.h. on the level, while on more than one occasion when a suitable stretch of road presented itself we reached 90 m.p.h., slightly aided by the force of gravity; at this speed control was excellent, and in view of the considerable weight of the car, is remarkably light. Wonderful as these speeds are with a big saloon body, the best part of the speed range is in the "70's," and it is this that makes an average speed, which in most cars would be uncomfortable and none too safe, quite a novel performance for the Delage. The acceleration to 70 m.p.h. and over is so quick that we several times unconsciously felt for the gear lever to change up, to find that we had been in top gear all the time. The gear change is as nearly fool-proof as any we have tried, and third gear is really silent; 60 m.p.h. can be comfortably exceeded on this gear. Real acceleration is the one quality which makes high average speeds *safely* possible. During our journey we came across several examples of the type of motorist who holds that high averages are dangerous, and yet has little regard for the circumstances under which it is accomplished. When entering a town we would come up with some car which, by leaving us behind through the town, would seem to be in a hurry. After slipping gently through the populated area, we again overtook the other car, only to find that its speed in the open country was precisely the same as it was in the town!

The hill climbing of the Delage is remarkable, and on

LONDON-SCOTLAND-LONDON—continued.

the climb over the Yorkshire moors before dropping down again to Penrith it maintained between 60 and 70 m.p.h. in absolutely tireless fashion on the long gradient; on the level in open country it would run for mile after mile at over 80 m.p.h. without the least fuss, while the passengers could converse in ordinary tones with as much comfort as in a Pullman car on the railway.

No better idea of the performance of the car can be given than by the fact that the run of 300 miles occupied exactly 6 hours, and was achieved without risk or inconvenience to anybody.

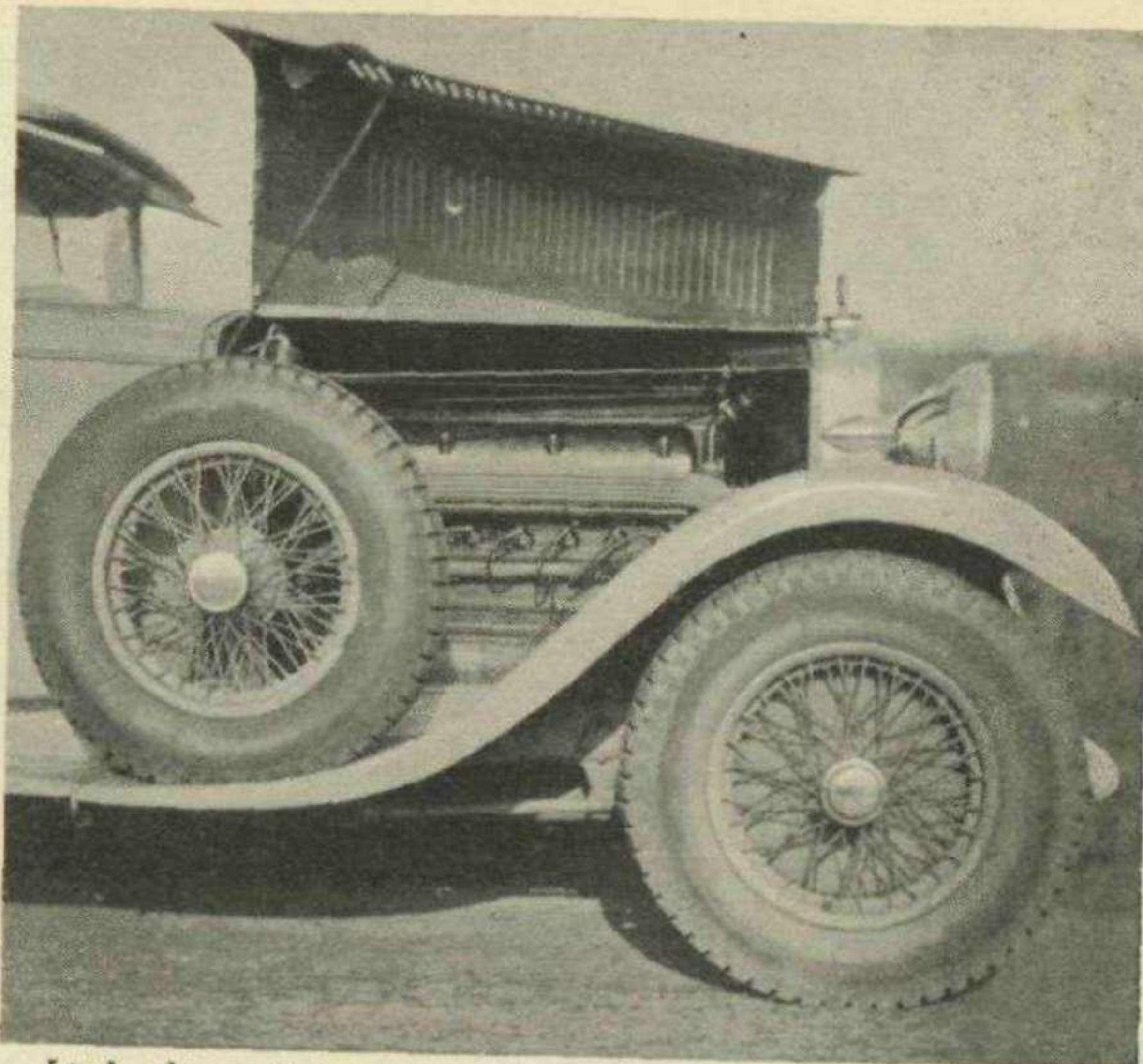
After a most excellent and reasonable lunch at the Union Jack Hotel at Gretna Green, we set out for home, and arrived in good time, though naturally at a slightly lower speed when night fell. The Marchal head lamps give a really excellent driving light, and the dimming device, for which the switch is mounted so that it can be operated by one finger without releasing the wheel, is typical of the care in details which is characteristic of the whole car. The two-note horn is similarly operated, and the position of every control is situated in such a manner as to make for the maximum convenience when driving. As already mentioned, the vacuum servo-operated brakes are extremely powerful and light to apply.

The very luxurious body, which has a special silent bloc mounting, is absolutely free from noise, the driving position is just right for control, and the comfort may be gauged from the fact that although driven single-handed for the 600 mile trip, no more fatigue was experienced than after a normal day's motoring of, say, 200 miles.

During the period of our test, petrol was the only replenishment required, and the consumption was just over 14 miles to the gallon, which means that under normal touring conditions 16 to 17 m.p.g. should be easily obtained. The oil pressure remained constant all the time the car was running, while the water temperature, after rising commendably quickly to the right point from cold, remained there without variation.

There are some people who on hearing of M. Senechal's remarkable performance on one of these models, when he covered 600 miles a day steadily for a week over

every sort of road in Europe, have thought that it was a freak performance of a specially prepared car. We can assure them, however, that such was not the case, and though not suggesting for a moment that ordinary mortals like ourselves could approach his performance,

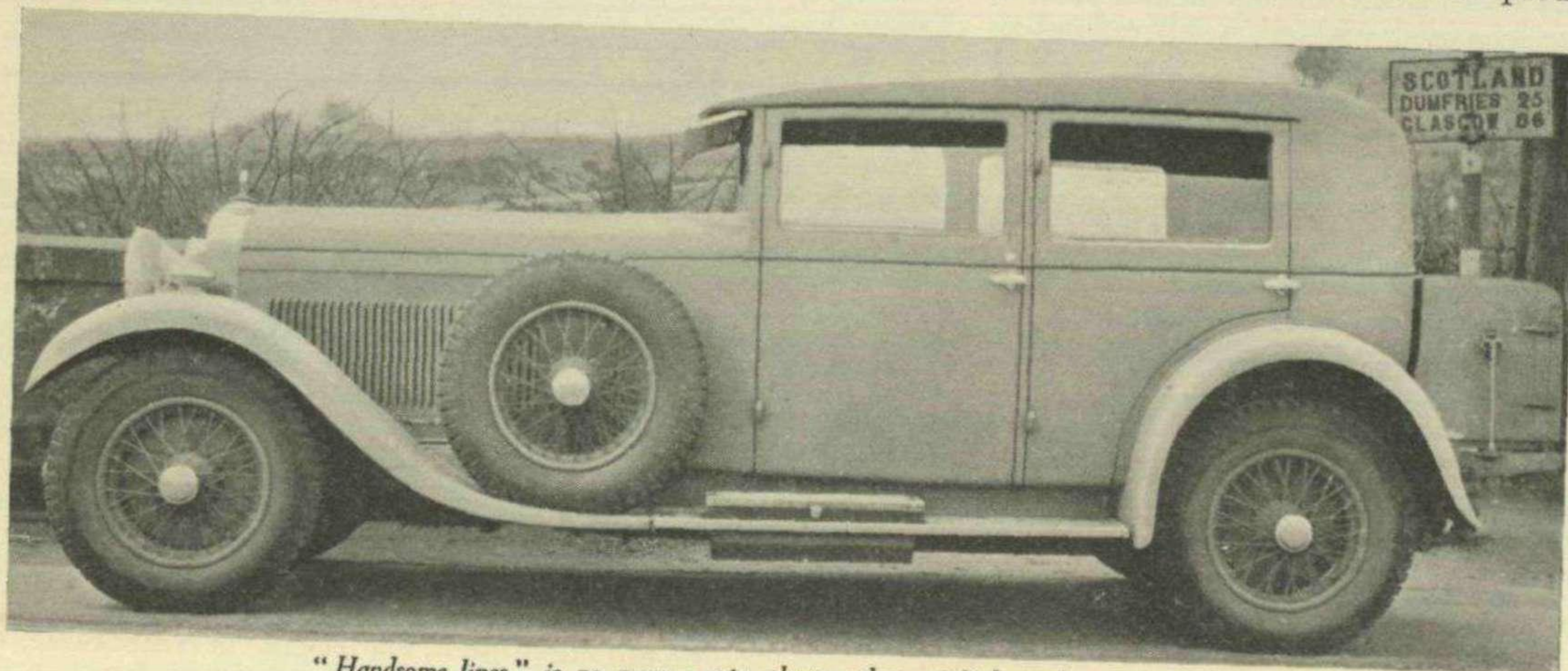


Little things that count—the neat bonnet support. Note also the very large brake drums.

as far as the car itself is concerned, it would repeat the test without difficulty.

J. Smith & Co., Ltd., of 28, Albemarle Street, W.1., who showed their confidence in the car by giving us the opportunity of a full test, had no idea what form it was to take, and had no opportunity of preparing the car for us in any way, as it was in constant use.

Such a car, which is at one time a really high grade town carriage, and one of the finest fast long distance cars made to-day, might be expected to be expensive. The price, however, is as remarkable as the performance. At any figure, it is a wonderful car and shows the value of its makers' great racing experience, but at £650 for the chassis it is a miracle of modern production.

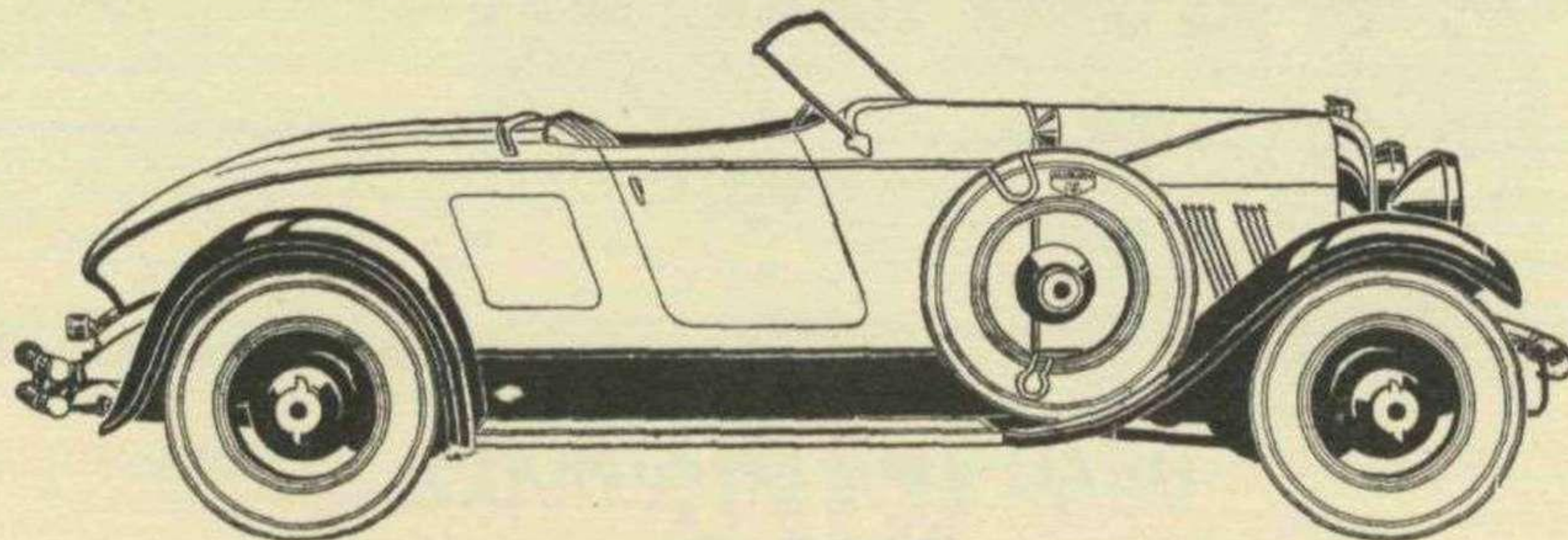


"Handsome lines" is no mere empty phrase when applied to the sports Delage.

ACCELERATE!
 SPEED!!
 BRAKE!!!

AUBURN
 TRAVEL IS SAFE TRAVEL

6 CYL.
 MODELS
 from
 £425



8 CYL.
 MODELS
 from
 £575

You can start like a rocket, travel like the wind and KNOW you can stop exactly when you want to. Yet you travel in comfort, in coachwork of distinction and quality

SINCLAIR MOTOR CONCESSIONS
 AUBURN LTD CORD

2. MILL STREET, CONDUIT ST., W.I.

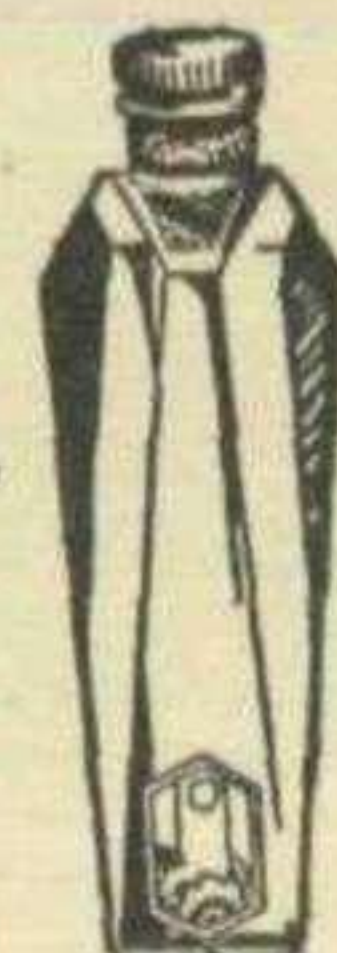


THE BEST "SELF-SMARTENER"

Why be a "Shock-Headed Peter?" Speed? Wind? Rain? The man who uses KU-BIST simply laughs at them all! At the end of a day's run he's as smart as when he started—and that's saying a lot, for KU-BIST not only keeps hair in place but gives it a perfectly *natural* appearance. Non-greasy, or with oil (Rosola), discreetly perfumed and cleanly—a delightful preparation for all occasions. Use it and look your best—always!

KU-BIST HAIR FIXATIVE, 1/-, 1/6 and 2/6 per bottle, Plain or Rosola (for dry scalps), KU-BIST SHAMPOOS, Cleansing and Invigorating. Price 1/3, 2/3 and 3/3 per bottle. KU-BIST SOLID BRILLIANTINE, 1/3 per tin. Sold by leading Stores, Chemists, Hair-dressers, Taylor's, Parkes', Needham's, etc., etc., or post free from KU-BIST SALES, LEEDS.

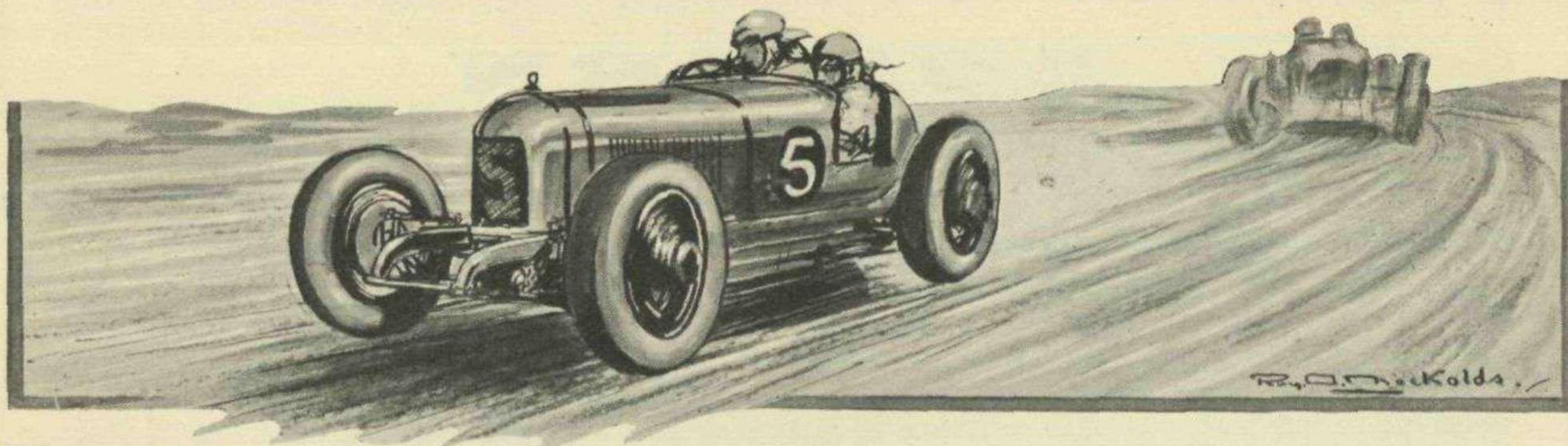
KU-BIST
HAIR FIXATIVE



KU-BIST—LEEDS—LONDON—PARIS.

GREAT RACING MARQUES

ITALA.



By E. K. H. KARSLAKE.

AMONG the Continental cars which were made in the early days of the century, some have by now attained great commercial importance, others have disappeared altogether, while a few have avoided these two extremes and gone on in their own quiet and aristocratic manner, recognised by all connoisseurs as possessing a special virtue born of a long tradition. Among such is the Itala, a car which was somewhat the rage when the nineteen hundreds were still in single figures and which still represents a very fine example of Italian engineering.

It was on the 7th August, 1905, that the first racing Itala appeared, the occasion being the Circuit des Ardennes race in Belgium. The experts were impressed with the appearance of the car, and expressed the opinion that from a technical point of view it was nearly as good as the Fiat. Everyone, however, was surprised when the newcomer proceeded to show a clean pair of heels to all the other competitors and took the lead in the early stages of the race. It was not destined to retain its position, however, as a broken oil pipe caused its premature withdrawal.

Early Debut.

Nevertheless, about a month later, on the 10th September, the Itala sprung a still greater surprise. On that date was run the second race for the Florio Cup over a course near Brescia, the competitors having to cover three circuits measuring 104 miles each, making a total distance of 312 miles. For this event three Italas were entered, with Ceirano, Falry and Raggio as their drivers. The racing cars were 100 h.p. 4-cylinder machines, with multi-disc clutches and shaft drive, a feature of which Itala was an early and very enthusiastic exponent, and were said to be capable of 100 m.p.h.

As soon as the race started it was seen that the Italas were very fast indeed and stood a good chance of victory if they could combine it with reliability. On the second round Ceirano punctured and had to run several miles on the rim, which was so badly damaged that his Itala

had to be withdrawn, while at the time he was occupying third place. His two team-mates, however, continued, and in the end Raggio got home first, covering the 312 miles at an average speed of 65.39 m.p.h., while Falry finished seventh. Raggio's average was the highest at which a long distance race had ever been won at that time, just beating Gabriel's record in the Paris-Madrid race, and the seal was set on the fame of the Itala in its first racing season. Raggio thus won the Florio Cup and the Salamé Cup for the most consistent running, while Ceirano, as some recompense for his hard luck, won the Italian Cup for the best time over the first 300 kilometres, his average for the distance being over 70 m.p.h.

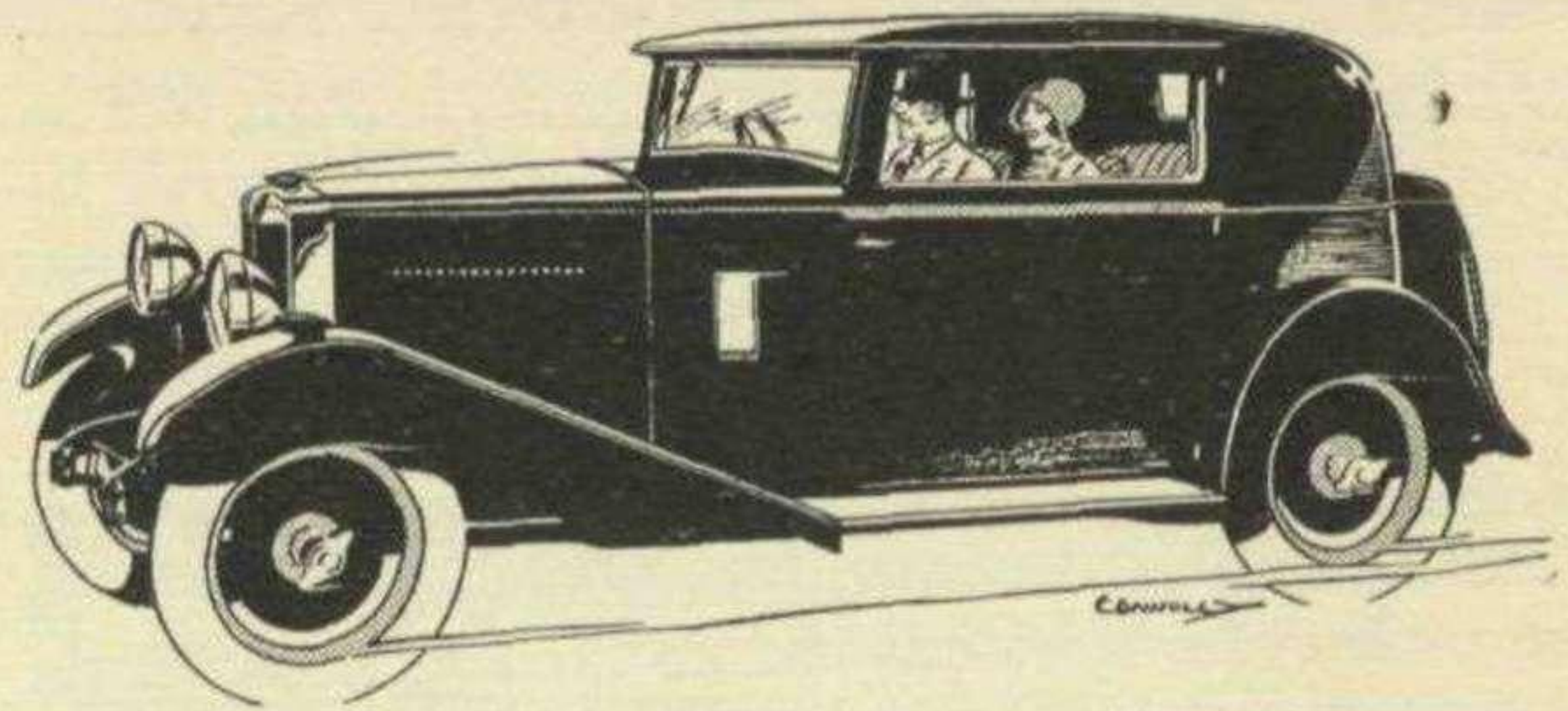
At Le Mans.

The next year the first Grand Prix race was run at le Mans, and for this event a team of three Italas were entered, their drivers being Falry (as before), Cagno and the Chevalier Florio. This year the nominal horsepower of the 4-cylinder engines was 110; those were the days when it was considered that the best power-weight ratio was obtained with as short a stroke as possible, and the Itala engine had the smallest stroke-bore ratio (0.8 : 1) in the race, the dimensions being 180 x 145 mm., giving a capacity of 14,856 c.c. Ignition was by a low-tension magneto, and the cars had multi-disc clutches, 3-speed gear boxes and, of course, shaft drive.

In the race, however, they were not able to repeat their performance of the year before. Falry dashed off at a great pace and covered the first kilometre from a standing start at an average speed of 52.4 m.p.h.; but while trying to overtake another competitor on a bend, he overturned, luckily escaping with minor injuries, though his car was put hors de combat. His two team-mates were also forced to retire before the end of the first of the two days' racing. Although not successful in the Grand Prix, however, the Itala scored an important success that year. In 1906 was run the first Targa Florio over the mountainous roads of Sicily, and for this event

The JARVIS Coupe for 1930

COMFORT and Beauty of the Sportsman's Coupe type of body combined with the fascinating 80 m.p.h. performance of the M.G. Six. Weymann-type Construction. Comfortable rear seats and exceptional luggage accommodation. Spare wheel at rear. Tools in special locker. Wide choice of finish. **£585**



JOINT LONDON DISTRIBUTORS

EARLIEST DELIVERIES

FOR  CARS

EXPERT SERVICE

MAIN SHOWROOMS:
VICTORIA CRESCENT,
WIMBLEDON.
(Opposite Wimbledon Station).
'Phone - - - Wimbledon 2526
Telegrams: "Jarvis, Wimbledon."

JARVIS
OF WIMBLEDON

M.G. SERVICE DEPOT:
GROVE WORKS,
SOUTH WIMBLEDON.
(Opposite South Wimbledon Station).
'Phone - - - Wimbledon 2881
(2 Lines).

THE MOTOR SPORTSMAN'S NOTE BOOK

Bound in polished Crocodile Leather, with pockets and pencil inside, 76 pages of sportsman's matter including Land, Water and Air records, and other information useful to the Sporting Motorist.

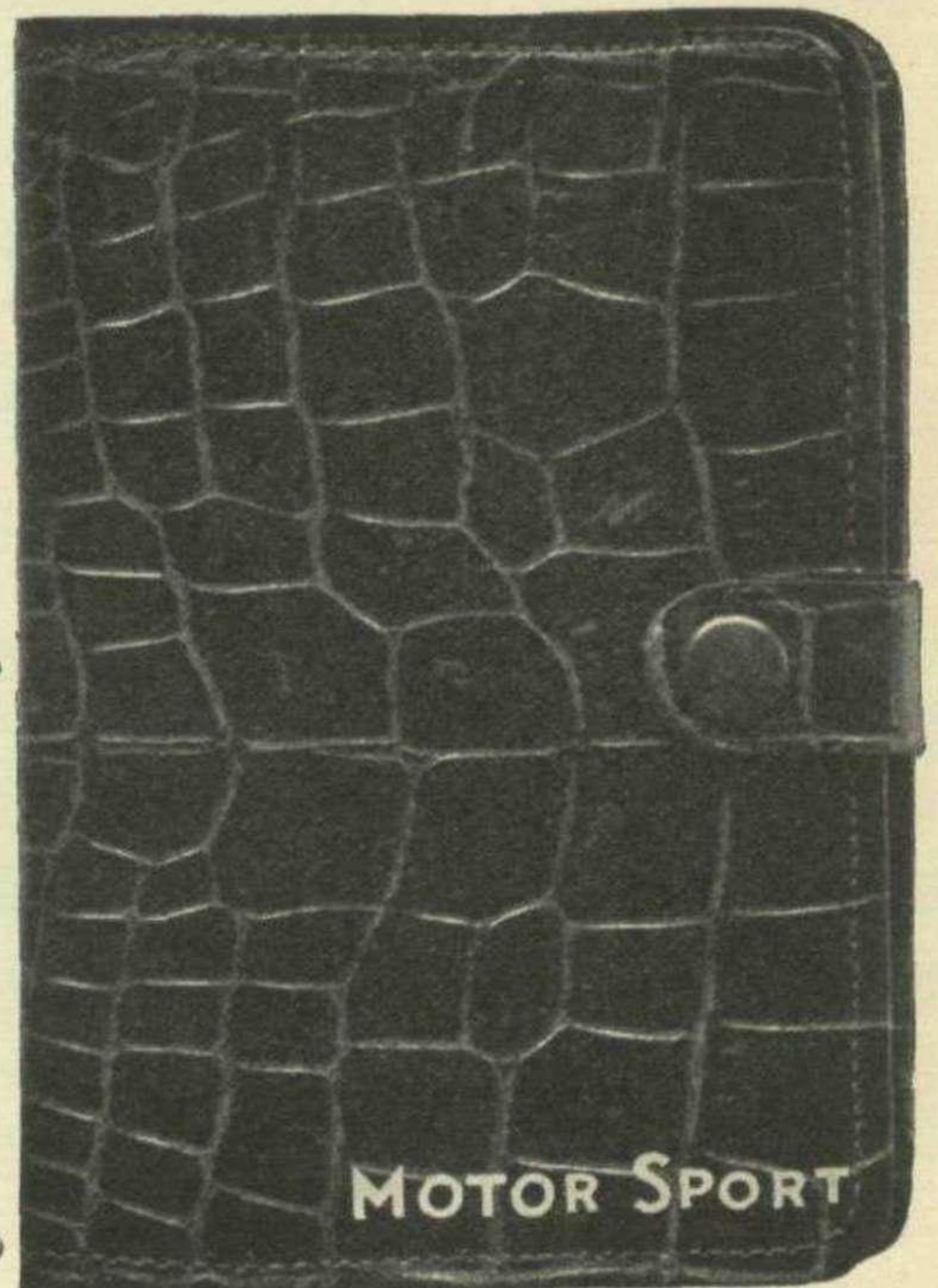
AS ILLUSTRATED
3/6

Specification as above but without pockets, pencil and button fastener

2/-

Published by
MOTOR SPORT (1929) LTD.,

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



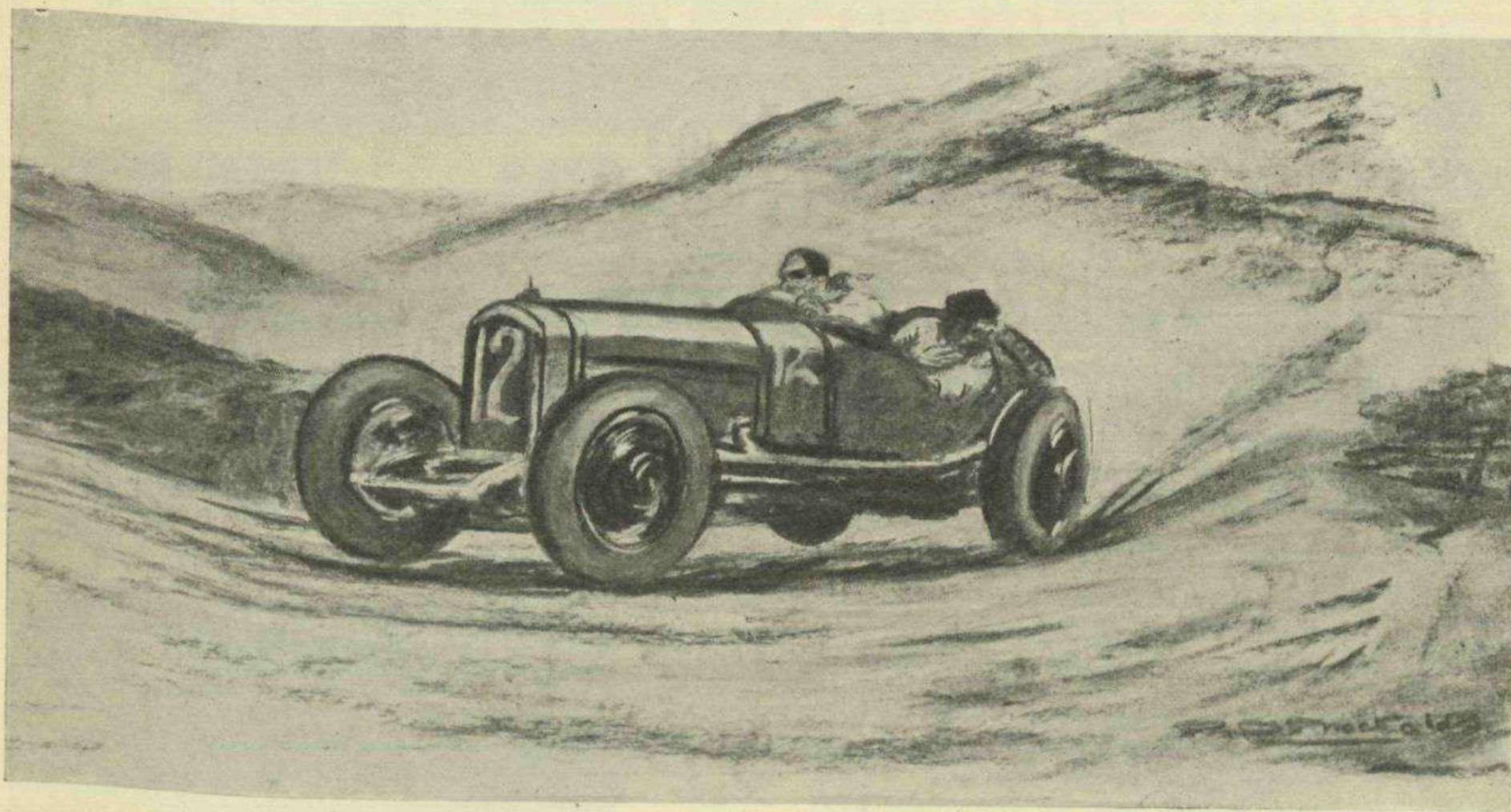
ACTUAL SIZE

GREAT RACING MARQUES—continued.

near Amiens. The three Italas which were entered for it were among the most interesting cars in the race, for their big 4-cylinder engines of 125 x 160 mm. bore and stroke (7,853 c.c.) were fitted with rotary valves. The cars were driven by the famous Felice Nazzaro, Moriondo and H. R. Pope; but it was soon proved that, like so many others, the Italian firm had again to serve its racing apprenticeship. Pope was especially unlucky. "With a name like that," said a Frenchman before the race, "le bon Dieu must be on his side." But the race was run on the 13th July, 1913, and Pope's car was No. 13, so it was natural that he fell out on the first lap with a seized bearing at the thirteenth kilometre stone! In the meantime also Moriondo had an exciting time. After covering the first lap at high-speed he took the corner

at high speed, and at the end of the first lap were fifth and sixth respectively. On the second lap, however, Landi was forced to retire with a broken differential; Moriondo, on the other hand, continued, and had some consolation for his plucky effort in the 1913 Grand Prix, which was won by Georges Boillot on a Peugeot, by finishing second to André Boillot on the same make of car.

When the Itala Co. began production again after the war, they commenced to build their well known 3-litre sporting model, with four cylinders of 83 x 130 mm. bore and stroke (2,831 c.c.), a model which afterwards became famous at Brooklands in the hands of Malcolm Campbell. At this time the Targa Florio contained classes for standard cars, and for the 1921 race three of



Materassi in the 1926 Targa Florio.

by the tribunes too fast and overturned. He and his mechanic extricated themselves and righted their car unaided, thereafter continuing despite a bent steering gear, the whole feat being probably unequalled in racing. In the end, however, both he and Nazzaro were put out of the race by broken back springs, due probably to the fact that for the first time the Itala people were not using radius rods.

Although success had not attended them in this race, however, the last had not been heard of the rotary-valve Italas. In 1919 the first post-war race was run in the shape of the Targa Florio, and for it were collected a heroic group of cars, mostly old in point of years, but young as far as use was concerned, due to the great hiatus of the war. The straight-eight Ballot was brand new, but the Peugeots had been built for the 1914 Grand Prix des Voitures, which was never run; the Fiats, the Nazzaros and the Aquilas were of 1914 Grand Prix vintage; and finally Moriondo and Landi appeared with two of the 1913 Grand Prix Italas. Both set off

these Italas were entered, with Moriondo, Landi and Foresti as their drivers. The race was for 268 miles, and in the end Foresti came home a winner of the 3-litre class, with his team-mates Moriondo and Landi in second and third places.

The next year Itala again returned to the charge, and three cars of the same type were entered, Moriondo again captaining the team, while the other two cars were driven by Rebuffo and Lopez. Again Moriondo proved the victor in the 3-litre class, being twelfth in the general classification, while Rebuffo and Lopez both finished. Incidentally, Moriondo, though not among the first flight of the race, succeeded in bettering the time of the victor of the year before.

The next year, Itala did not take part in the Targa, but in 1924 the race was run concurrently with the Florio Cup. This was the seventh race for the cup, and the rules stated that it was to become the permanent property of the firm who had won it most of the seven times. Actually six firms had so far won, including

GREAT RACING MARQUES—continued.

the Itala team was entered, Cagno finally proving victorious, his Itala averaging 29.1 m.p.h. over the difficult course.

The next year, Itala did not appear in the Grand Prix, and it was not until the 1908 race at Dieppe that they again appeared on the starting line. That year three cars were again entered, with Cagno again at the wheel of one machine, while the other two were entrusted to Fournier and Piacenza. The engines of the cars for this race were limited to a bore of 155 mm., while there was no limitation to the stroke employed. The Itala designers, however, still faithful to the short stroke, only used one of 160 mm., although one brave man built his engine for the race with a stroke of 185 m.m., a huge stroke-bore ratio for these days. The Itala engines were of a nominal 120 h.p. and used a hemispherical cylinder head, their capacity being 12,081 c.c., while the engine speed was nearly 2,000 r.p.m. The rest of the specification remained practically unchanged, with the exception of the use of a 4-speed gearbox. These new racers, however, did not succeed in gaining a very prominent position in the race. Piacenza retired on the second lap, leaving the other two to finish, Cagno being eleventh at 58.6 m.p.h., and Fournier nineteenth.

London-Monte Carlo Record.

In the meantime, however, the Itala had been engaged in another form of sporting activity. The affair was started in April, 1907, when Charles Jarrott on a Crossley set up a record between London and Monte Carlo in 37 hours 30 minutes. This time was beaten in the ensuing month by Rolls on a Rolls-Royce, who cut down the record by the narrow margin of two minutes. Then, in June, H. R. Pope took a hand in the game. He selected for the run a 24 h.p. Itala with a large tonneau body, and succeeded in lowering the record by well over an hour to 36 hours 5 minutes.

There the matter rested for that season, but in March, 1907, Jarrott set out again and lowered the record to 35 hours 20 minutes, this time being improved upon shortly afterwards by Auriac on a Napier, who completed the run in 33 hours 34 minutes. Once more, however, it was left to Pope to annex the record, this time for good. For his second effort, he used a 40 h.p. Itala

with a rather more business-like looking body, and after a magnificent run succeeded in lowering the record by no less than 4 hours 18 minutes to 29 hours 16 minutes.

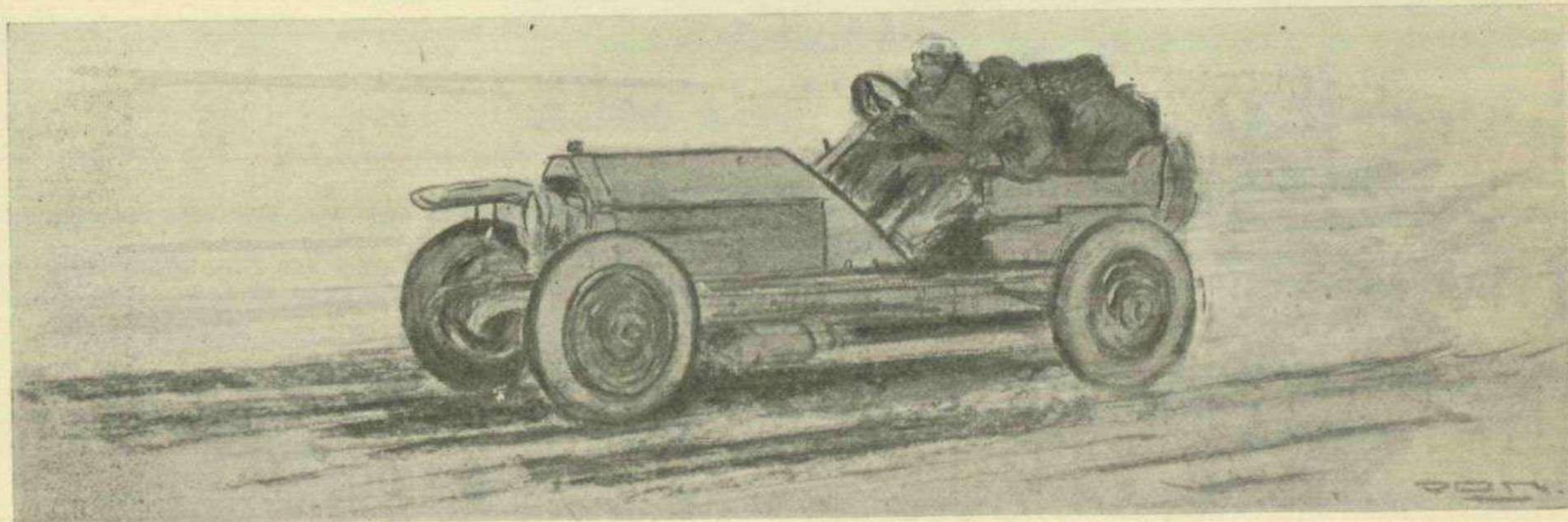
During this same year an Itala took part in a still more extraordinary sort of race. The trouble all started when "le Matin" thought of the happy idea of challenging anyone to travel from Pekin to Paris by motor car. In spite of the fact that conditions seemed to make the feat impossible, the challenge was widely taken up, and finally, 25 cars having been entered, the thing was transformed into a race. Actually, however, only five turned up at the starting point, consisting of a three-wheeler, a couple of De Dions, a Spyker, and a 40 h.p. Itala driven by Prince Scipione Borghese. Of these cars, the Itala was the only one which ever reached Paris. Starting from Pekin on 10th June, the car crossed the Mongolian desert into Russia, and finally, after incredible adventures, reached Paris on 10th August. "By travelling from Pekin to Paris in a motor car," said Borghese, "I have proved one thing—that it is impossible to travel from Pekin to Paris in a motor car."

In 1908, the Itala again made an appearance in Russia, for in that year a long distance race was held in that country, and once more H. R. Pope appeared on the scene, and succeeded in finishing third on his Itala from a field of eleven.

Three years later, in 1911, he again started on his sporting activities. This time the scheme was to set up a record from London to Turin, and for this he again used an Itala. London was left on 24th June at 8 p.m., and after a run of 23 hours, 51 minutes, the Itala triumphantly reached Turin at 7.51 p.m. on the 25th. Two years later Pope decided to improve on this performance, and, having left London on July 19th at 8.16 p.m., his Itala reached Turin at 5.52 p.m. the next day, thus cutting down the record to 21 hours, 36 minutes.

Rotary Valve Innovation.

After the 1908 race the Grand Prix had been allowed to lapse, but in 1912 it was again revived, and in 1913 the Itala firm decided to return to the fray. That year the race, which was on a fuel consumption basis of 14 miles to the gallon, was run over a distance of 570 miles



The Itala which annexed the Monte Carlo record in 1907.

GREAT RACING MARQUES—continued.

Itala on account of Raggio's victory in 1905. In 1924 Rebuffo set out on a lone effort with a 3-litre Itala, but was only able to finish fifteenth.

The race was won by Mercedes, which had not been victorious before, and a final had, therefore, to be run in conjunction with the 1925 Targa. Rebuffo set out again to try and gain the cup for Itala, but this time he was not able to complete the course.

In the meantime, however, the enterprising Materassi had put one block of cylinders from a Hispano-Suiza aero engine into an Itala chassis, and this car he entered for the 1926 Targa Florio. The competition in this race intense, but the success of Materassi's new car was apparent when, at the end of the first round, he appeared in third place; and in the end he finished fourth behind the victorious Bugatti team. The same car was entered for the Grand Prix de Milan later on in the year, and in the hands of Brilli Peri succeeded in finishing fifth, again behind the Bugattis. This car came to an unfortunate end the next year, when it was being driven by Materassi in the Grand Prix de Rome, and got out of control, ran off the road and was wrecked.

12-cyl. and F.W.D.

At this time Itala had decided to take part once more in the Grand Prix type races, and some very ingenious 12-cylinder racers of 1,500 c.c. and 1,100 c.c. were built.

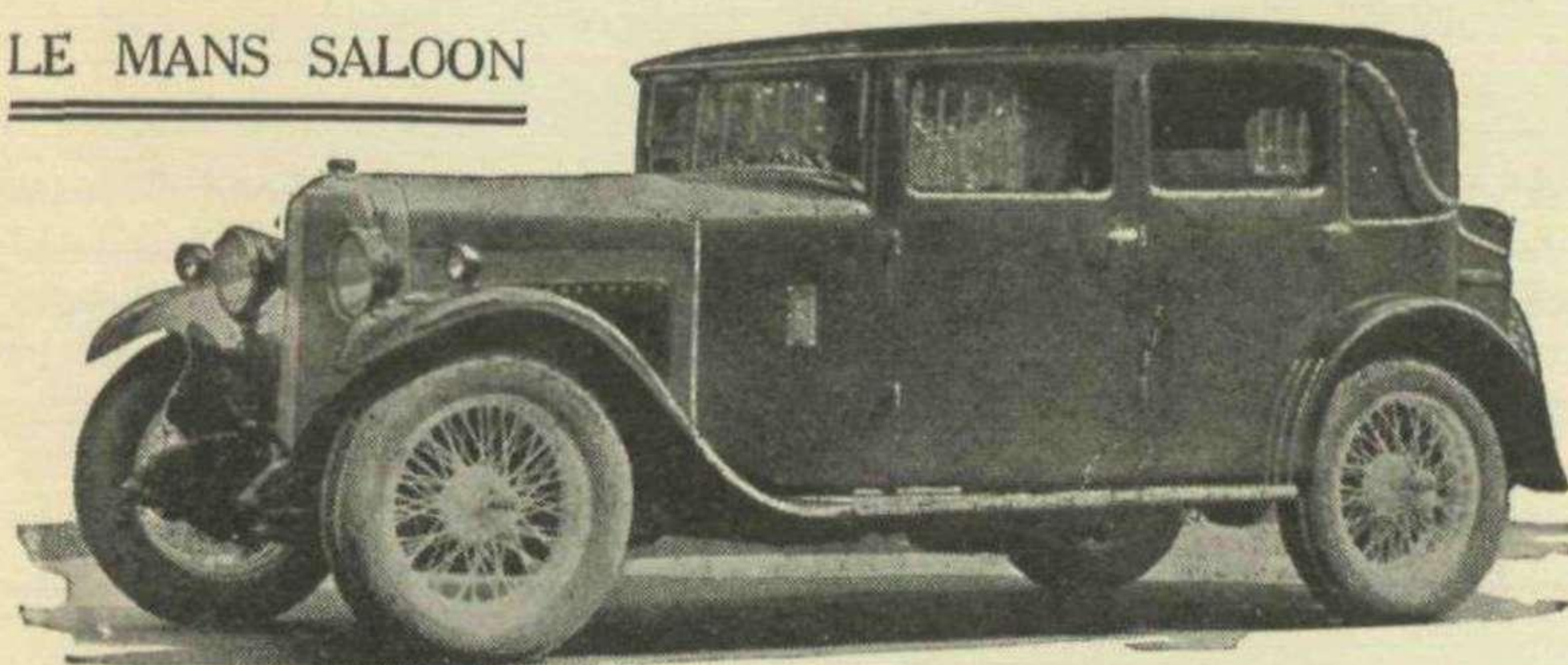
These cars had front wheel drive, and the engines had their valves set at right angles to the axes of the cylinders, operated by a single camshaft, while both forced induction and extraction were used. Unfortunately, however, owing to the lapse of the Grand Prix type races, these cars were never raced, and their ultimate fate remains a mystery.

At this time, however, the Itala Co. were making a 6-cylinder sports car of the 2-litre class, and in 1928 it was decided to enter two of these cars in the Grand Prix d'Endurance at Le Mans. These cars had engines of 65 x 100 mm. bore and stroke (1,991 c.c.), with push-rod operated overhead valves, and were driven by Robert Benoist and Dauvergne, and Sabpa and Christian. The second car had to retire fairly early on, but Benoist and Dauvergne had worked their car up into fifth place, directly behind the big cars, by half time, and, after retaining this position till near the end, finally finished eighth, having averaged 58.46 m.p.h. for 1,403 miles.

This was the latest appearance of the Itala in racing, but it is to be hoped that it will not be the last. Anyone who inspected the new 2-litre Itala with two overhead camshafts at Olympia this year must feel that this car has an excellent chance of distinguishing itself in the touring car races, which are at present almost universal.

'SCHNEIDER'

LE MANS SALOON



THE CAR
FOR
SPEED
AND
EXCELLENT
PERFORMANCE

Fast and a Joy
to Drive!—

30 Cars
IN STOCK FOR
IMMEDIATE
DELIVERY

4-Seater **£535**

Saloon **£595**

Tax £13. Speed 75 to 80 m.p.h.

**DEFERRED TERMS
AND EXCHANGES**

After a free trial run in this famous car—entirely without obligation, of course—you will agree that the "SCHNEIDER" is just the car you have been looking for. Lightning acceleration, amazing flexibility, silence and comfort are the main characteristics of all Schneiders.

SCHNEIDER AUTOMOBILES (ENG.) LTD.

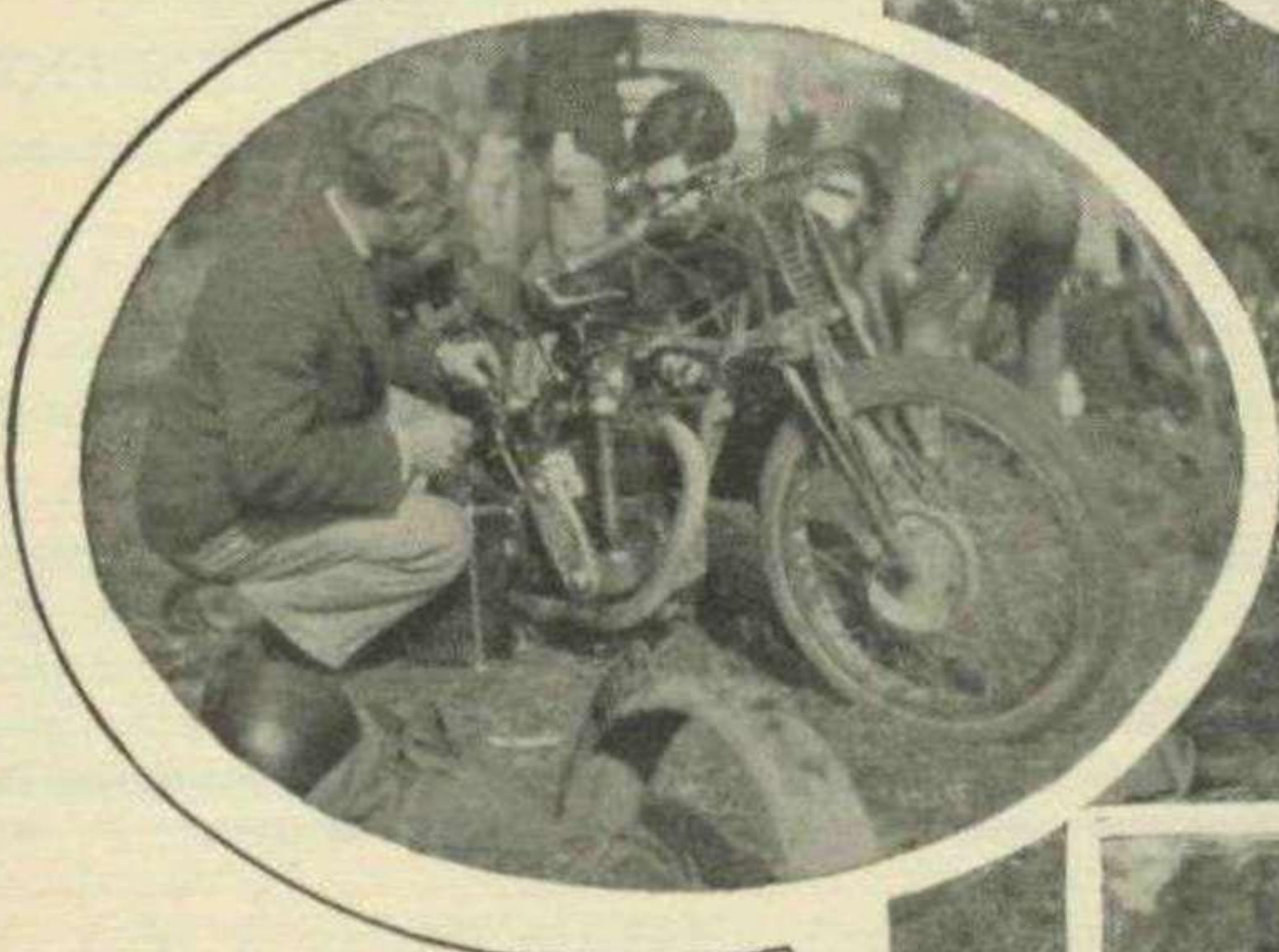
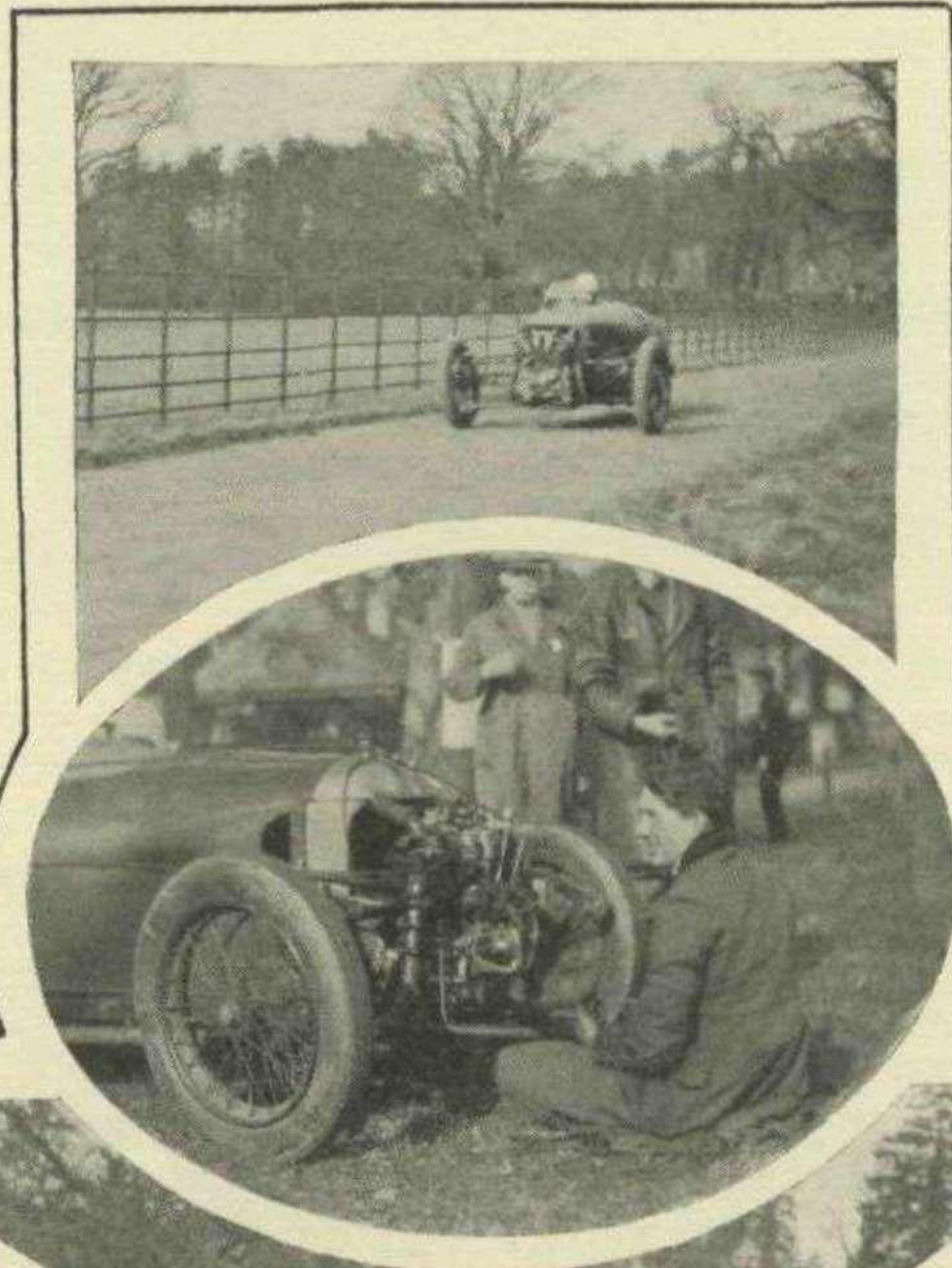
Phone: ————— **138, LONG ACRE, LONDON, W.C.2.** ————— TEMPLE BAR 3322.

C.U.A.C. Speed Trials

Successful event at Branches Park

OWING to the fact that Ewelme Down could not be obtained for the Intersarsity Hill Climb, this event has had to be postponed until a later date. In place of this, therefore, Cambridge ran a speed trial at Branches Park, near Newmarket, which was also open to members of the Oxford Club. The course which consists of 550 yards of straight macadam, was kindly lent by Mrs. Tonge, and favoured with perfect weather a very successful event was run off.

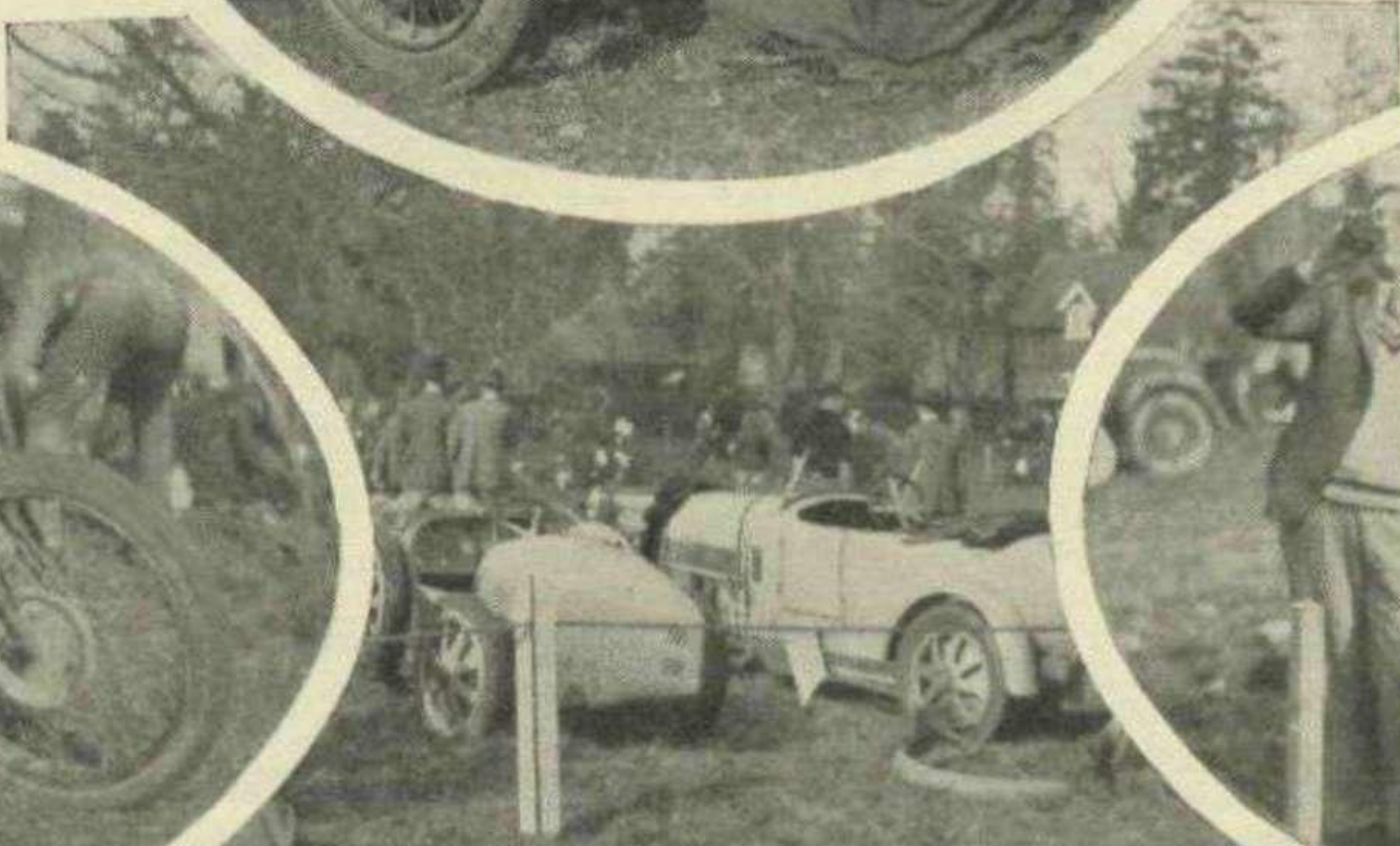
day, crossing the finishing line at well over 100 m.p.h. His victory was by no means a walk over however, for Spottiswoode on his Bugatti ran him within a fraction of a second. There were many interesting cars, including Meeson's Vauxhall, the Frazer-Nash "Slug" and a variety of Bugattis, varying from the utterly Grand Prix variety to considerably older models with strange and very home made bodywork, a good example of this being J. A. Robinson's car.



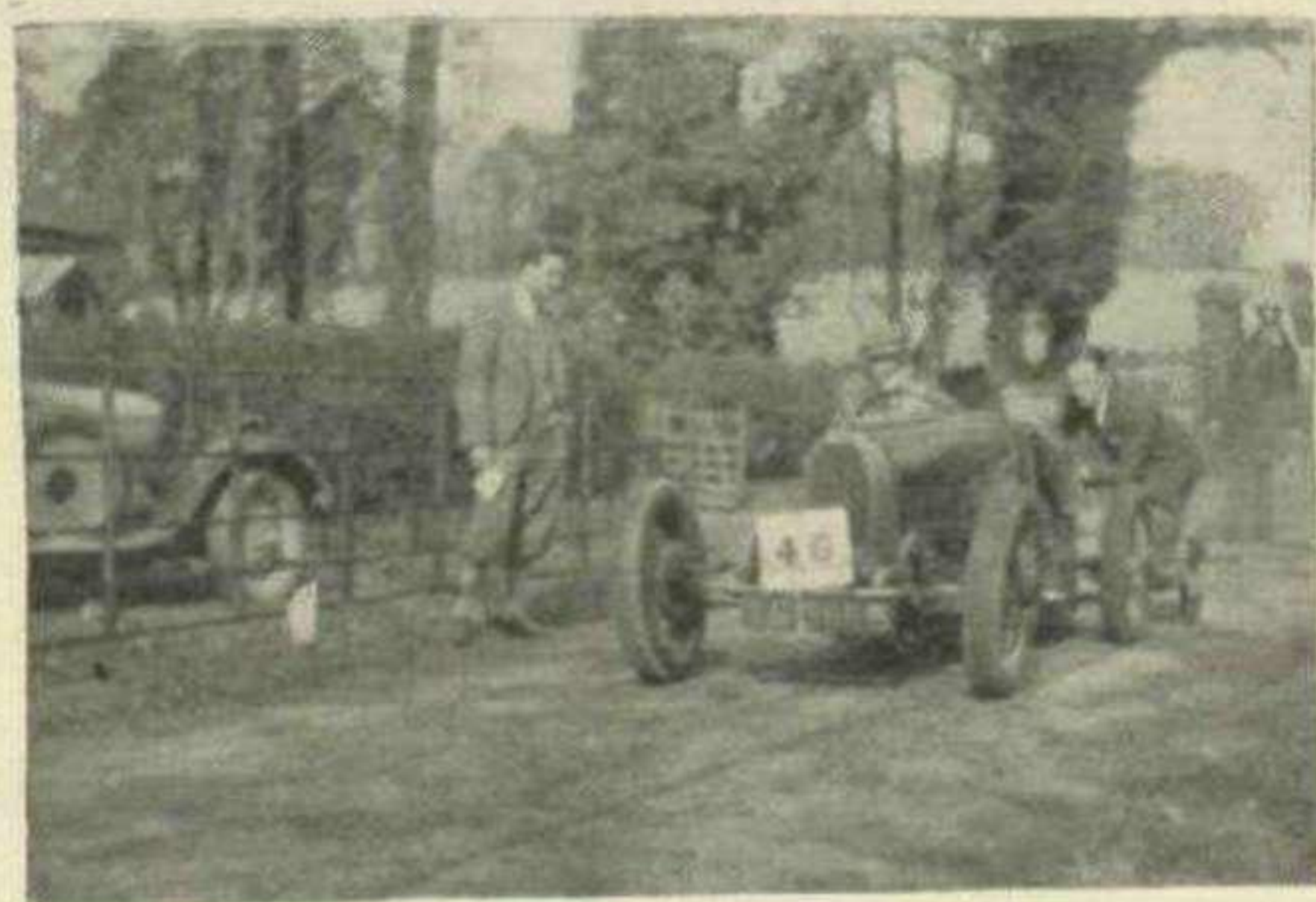
M. Muir makes a few final adjustments to his Velocette.

The whole day's motoring was carried through in the true tradition of a University event, where the trade element is entirely and delightfully missing, and every competitor does it because there is nothing he likes better!

Some weird and wonderful machines turned up as well as some very rapid and well known racing cars. W. B. Scott on his Delage made fastest time of the



The Lunch Interval!

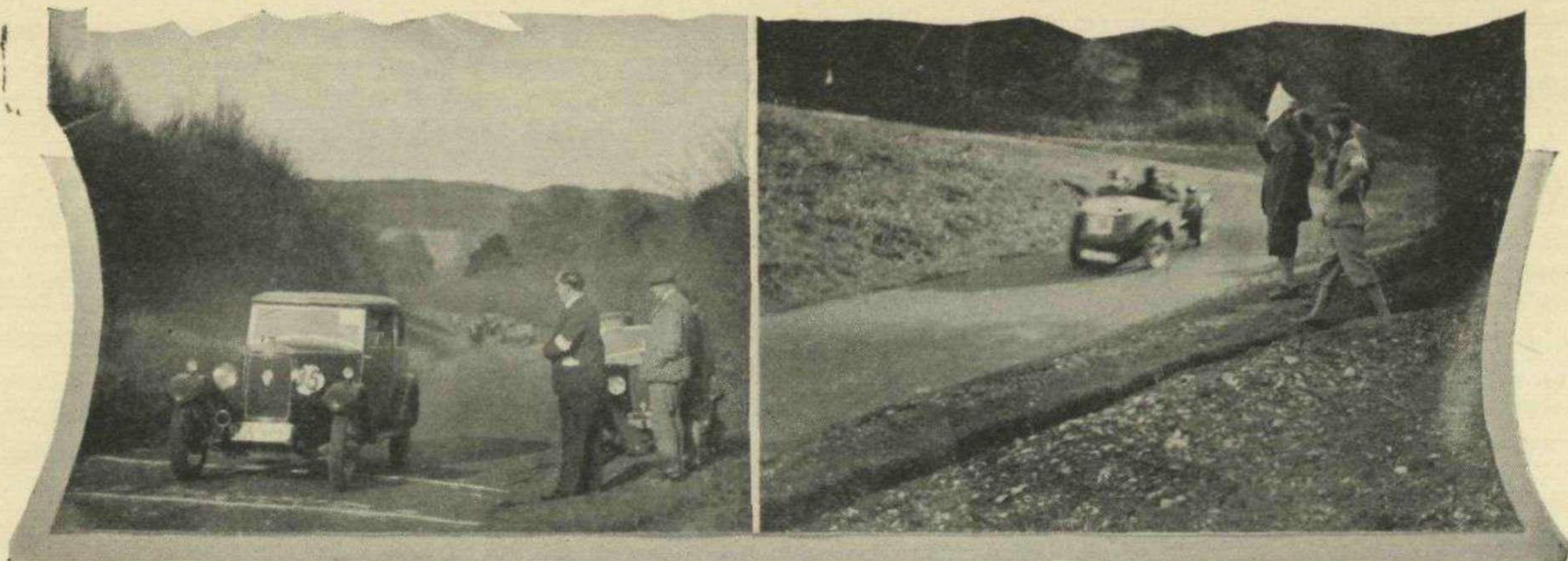


The top two views show R. R. Jackson's 1098 c.c. Morgan (a) at speed and (b) receiving attention from its owner between runs. In the centre is a corner of the paddock, while below W. D. Philips' 2-litre Bugatti is seen getting off the mark.

Good performances in the smaller class were put up by A. F. P. Agabeg on a Salmson who won the 1100 c.c. class at 40.6 m.p.h., and G. G. L. Willis's B.C. Austin which won the 850 c.c. class at 37 m.p.h. as against the fastest time of the day of 56.2 m.p.h. by Scott. The organisation throughout was excellent and it is to be hoped that further events of this sort will be held during the season.

J.C.C. HALF-DAY TRIAL

Series of Mishaps Mars First Event of the Season



On Ranmore—Mr. Hugh McConnell (left), and Mr. Lionel Martin (right) saying it with flags in the stop-and-restart test.

ALTHOUGH the weather conditions were distinctly pleasant, the support from members good, and the organisation and route well up to the usual standard, the Junior Car Club's opening-of-the-season event, a half-day trial, which took place on the 8th of last month, was rather a disappointing show, owing to outside forces upsetting the schedule and causing massed delays.

Seventy-four of the seventy-seven entrants turned up at the K.L.G. works at Kingston Vale for the start, and by an easy route competitors reached Ranmore Hill, where the stopping and re-starting test was held.

It was here that the first contretemps ensued, for, after the major portion of the stream of competitors had passed, two big non-competing vehicles collided at the foot of the ascent and held up the late members for over half-an-hour. Incidentally, the standard of driving during this section of the trial was far from high, and with the exception of C. G. H. Dunham (M.G. Midget), J. Dick-Cleland (Austin), C. Dugdale (Lea-Francis), G. E. Taylor (M.G. Midget), E. W. McNamara (Standard) and K. Jarvis (Riley), one saw no outstanding climbs.

The trouble at the bottom of Ranmore caused further havoc later on because the early competitors, having got ahead, reached White Downs Hill for the ascent only to meet the delayed cars coming down. Result: more loss of time. Then a Bayliss-Thomas driven by W. J. Haward had a spot of bother on the hill and a non-competitor became involved in a mix-up and there was another lengthy hold-up.

Eventually things were sorted out, however, and the Goat Track was reached. But owing to the cars having become bunched together there was another long wait, as they had to be sent up at intervals for their observed climbs. Then the police came along with complaints about obstruction, and took "the necessary action."

Nevertheless, the morale of the long-suffering drivers remained high and they attacked the slimy gradient of the Goat Track with verve. One noticed that the better performances were invariably made by the small cars;

one should mention in particular H. W. Wells (Triumph), who made a good steady climb without fuss; T. H. Wisdom (Frazer-Nash), who was very speedy; F. A. Thatcher (Triumph); C. W. D. Chinery (Riley); and W. A. L. Cook (Austin).

So far behind schedule were the "tail-enders" that several arrived at the Goat Track with their lights on, and the officials thereupon decided that the last section of the route should be cut out.

In due course all arrived at the finish (Burford Bridge Hotel) and the day was rounded off in a typically J.C.C. manner with a dinner and dance.

The discolation of the schedule, and the final curtailment of the last section of the course naturally necessitated a special formula being drawn up for the allocation of awards. The results are as follows:—

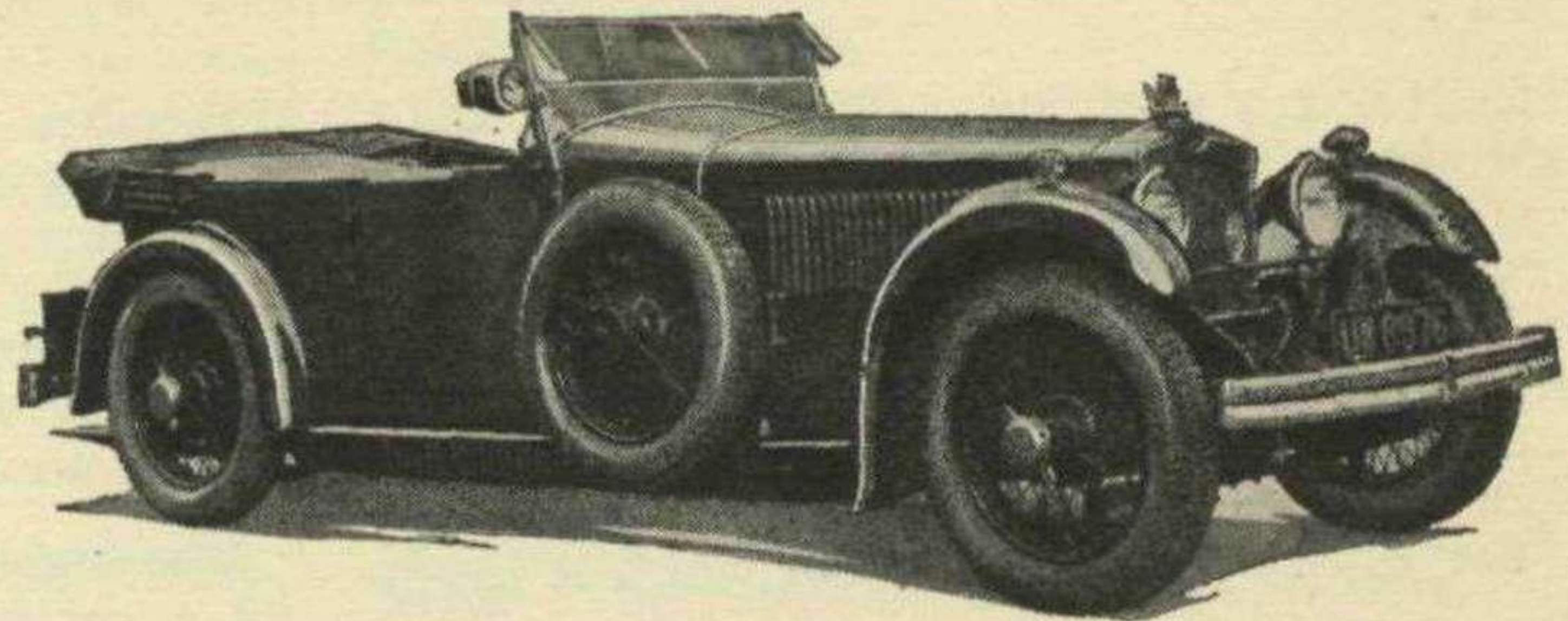
First-Class Awards:—R. L. Burnett (Riley), P. B. C. King (Salmson), H. C. Jacobs (Austin), A. L. Baker (Salmson), W. J. Haward (Bayliss Thomas), H. Metchim (Austin), S. F. Seyfried (Riley), H. C. Hunter (K.C. Austin), L. G. Bain (Aston Martin), E. A. Denton (M.G. Midget), A. P. Squire (Riley), G. Roberts (Riley), A. Issigonis (Austin), M. Collier (M.G. Midget), F. A. Thatcher (Triumph), H. W. Wells (Triumph), G. H. Goodson (M.G. Midget), R. Peaty (Singer), J. A. Lloyd (Standard), W. A. L. Cook (Austin), R. C. Player (Riley), W. K. Silk (Austin), A. H. Oxenford (Standard), L. A. Brook (Riley), K. S. Jarvis (Riley), S. A. Burnham (Salmson), D. E. M. Douglas Morris (Triumph), C. G. H. Dunham (M.G. Midget), Miss L. M. Roper (A.C.), G. E. Taylor (M.G. Midget), E. W. McNamara (Standard), Miss P. McOstrich (Alvis), J. Dick-Cleland (Austin), Mrs. M. Vaughan (Standard), R. S. Latham Boote (Lagonda), L. E. Drabble (Amilcar), D. G. Evans (Chrysler), H. S. Stevens (Chrysler), J. R. Laing (M.G. Six), D. Monro (Lagonda), F. H. Grain (Ford), B. G. Marriott (Morris-Oxford), S. R. Mitchell (Vauxhall), L. Baynes (Austin), G. F. Randall (Lagonda), A. S. Crowther (M.G. Six), M. H. Seymour (Humber), C. R. Salter (M.G. Six), "Tim" Dexter (M.G.), H. S. Davidson (A.C.), G. W. Olive (Standard), G. M. Giles (Bugatti).

Second-Class Awards:—L. M. Oliver (Tracta), N. Johnson Ferguson (Salmson), H. P. A. Peaty (Riley), E. P. H. Jones (Talbot), S. D. Marr (Tracta), C. W. D. Chinery (Riley), T. H. Wisdom (Frazer Nash), C. Dugdale (Lea Francis), A. J. Reese (Tracta), Digby King (Talbot), J. Harvey (Alvis), R. P. J. Morley (A.C.), Miss I. E. Hasluck (A.C.), R. H. Corbett (Ballot), L. R. Woods (Morris-Oxford), C. Woolnough (Vauxhall).

No Awards:—W. L. Booty (Riley), H. P. Arkell (Vauxhall), G. E. Templer (Talbot), A. A. Pollard (A.C.).

4 YEARS EXPERIENCE OF FRONT WHEEL DRIVE

Experts are saying that front wheel drive is the drive of the future. Tracta realised this more than four years ago. To-day's front wheel drive Tracta is the outcome of four years' experience of the car actually in the hands of owner-drivers. Tracta front wheel drive has been tested on road and track—by the ordinary sporting driver and the expert. *It has never been known to give any trouble whatsoever.* It is triumphantly successful because it is so simple. Front wheel drive allows of incredibly fast cornering and safe braking. It is the ideal drive for the sports car—and in the Tracta it is found in its perfected form. Try the front wheel drive car that passed the experimental stage years ago!



PRICES:

12 h.p. Sports 2-seater, 75-80 m.p.h. ...	£495
12 h.p. Semi-Sports 2-seater, 70 m.p.h. ...	£465
12 h.p. Semi-Sports 4-seater ...	£495
12 h.p. Sportsman's Saloon, English Coachwork ...	£555

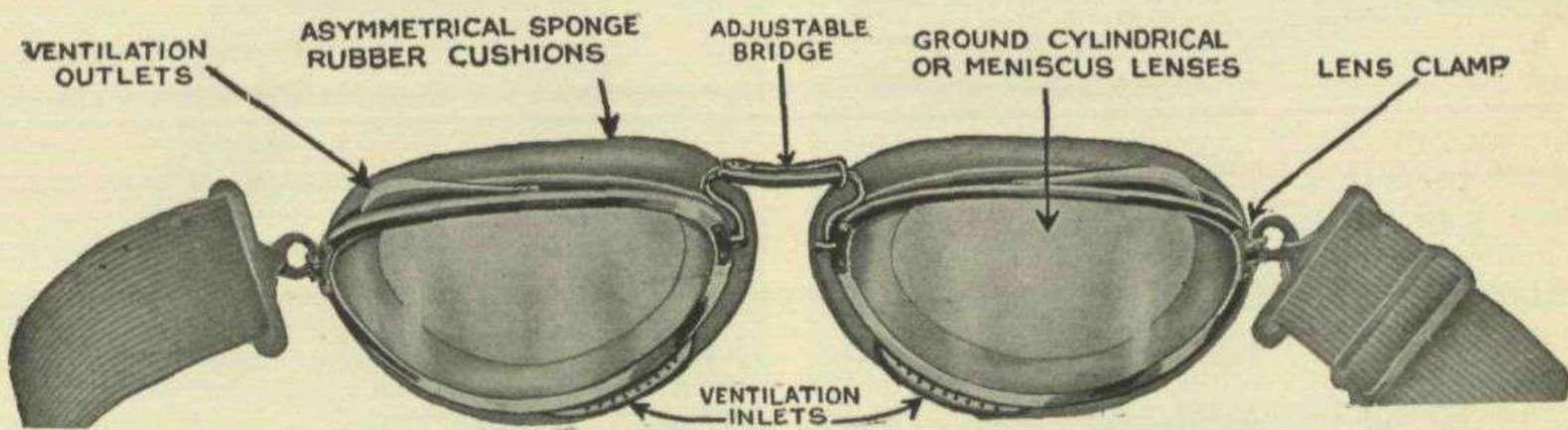
Sole Concessionaires for British Isles and the Colonies:

ARTHUR STUART AUTO SERVICES Ltd.,
5-11, 29-31, Vauxhall Bridge Road, Victoria, S.W.1.
Phone: Victoria 1864-5.

Distributors for Lancashire and Cheshire:—
The SOUTHERN MOTOR & ENGINEER CO.,
Store Street MANCHESTER.

TRACTA

LUXOR GOGGLES



Have been the choice of most of the World's Record Holders
DURING THE PAST TWENTY YEARS.

Send for latest Price List.

E. B. MEYROWITZ, LTD.

1a, Old Bond Street.

LONDON, W.1.

199, Regent Street.

Please mention MOTOR SPORT when corresponding with advertisers.

THE STEEL IN YOUR CAR

AND HOW IT IS TESTED.

By *B. G. MANTON, B.Sc., A.M.I.C.E.*

A CHAIN is only as strong as its weakest link and a car is only as strong as its steel. Sound design, careful workmanship and perfect finish are merely wasted if the material is faulty, and when one considers what is happening to the various parts of a car's mechanism, even at such a moderate jog-trot as forty m.p.h., it is amazing that metal can be endowed with sufficient endurance to survive for lengthy periods the drastic conditions under which it has to function.

The sports car, with its higher maximum speed, lightning acceleration and superior braking power naturally requires a higher standard of material than the more sedate tourer or family saloon and, in a car of good quality, there will usually be a surprisingly large number of different steels, many of the expensive alloy type, each particular variety being chosen for its special suitability under certain kinds of stress.

The British Engineering Standards Association has drawn up a number of specifications for a wide range of plain and alloy steels for use in automobile construction, and these materials are submitted to standard tests which give a clear indication of quality and characteristics, so that the conscientious car manufacturer, who employs the right types of steel, made by a reputable British firm to suit the appropriate standard specification, may be reasonably certain that his products will not fail through faulty material.

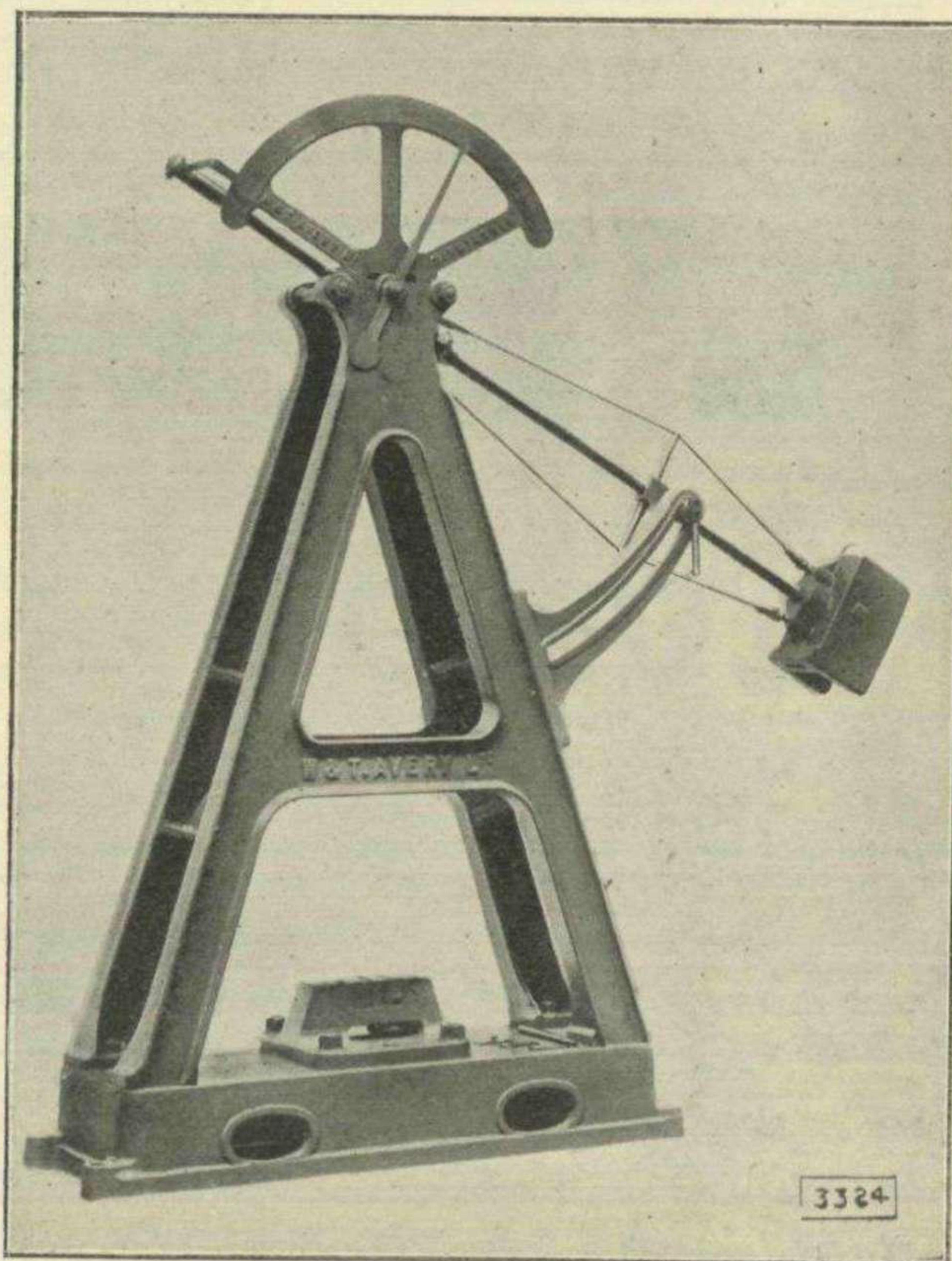
The Constituents of Various Steels.

A "plain" steel, as distinct from an alloy, will contain iron, carbon, silicon, manganese, sulphur and phosphorus. The percentage of carbon has a profound influence on the properties of the metal and it may be anything from 0.15 to 0.45 for ordinary automobile purposes, the lower percentages giving a softer material than the high. Where a special hardness is required, as in the case of clutch plates, the carbon content may be as much as 0.8 per cent., a figure which is also suitable for a plain spring steel; the percentage of both sulphur and phosphorus is usually limited to the range 0.05 to 0.07, as an excessive amount of either of these substances would make the steel brittle; a common figure for the silicon percentage is 0.3—this ingredient appears to give a certain degree of hardness to the metal, but an excess would result in brittleness; the manganese is a beneficial constituent—it improves the structure of the steel and assists in counteracting the bad effect of the sulphur and its percentage in a plain carbon steel may be anything from 0.3 to 1.0.

When superior steels are required for highly stressed parts, an alloy is usually adopted, containing an ad-

ditional metal or a combination of metals, those most frequently used being nickel, chromium, vanadium and tungsten. In this way a considerably higher strength is obtained, combined with good ductility (or, in other words, a complete lack of brittleness) enabling a great saving in weight to be effected while the parts will still be adequately strong and durable.

The higher quality of alloy steels is well illustrated by a comparison of tensile strengths, i.e., the pull,



Notched Bar Impact Testing Machine.

The pendulum is shown in its raised position and the holder for the test-piece is visible.

expressed in tons per square inch, required to snap a small bar of the steel by tugging at its ends:

A plain steel, containing 0.3 per cent. carbon will give a tensile strength of 28/30 tons per square inch.

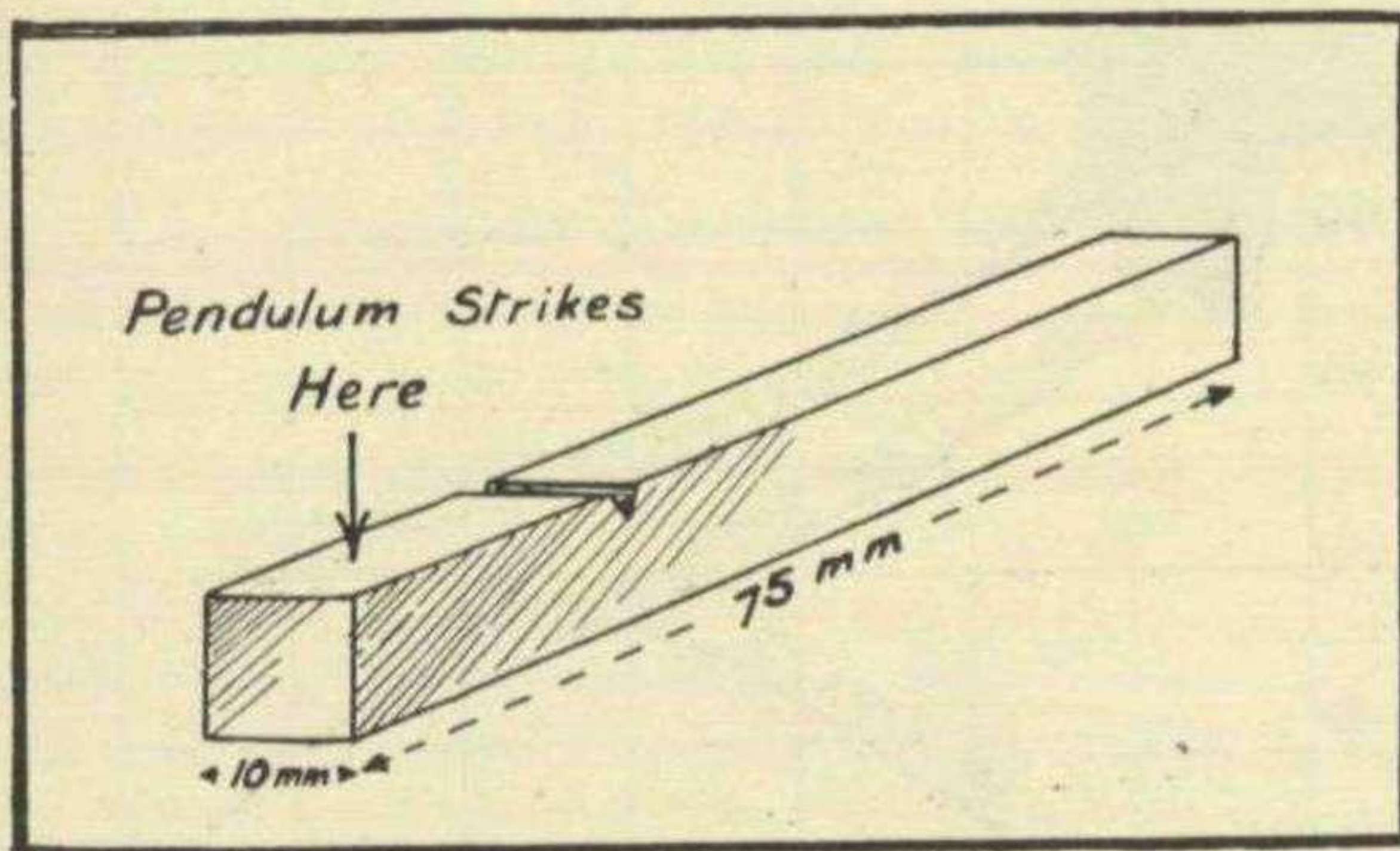
An alloy steel with the same amount of carbon, but

THE STEEL IN YOUR CAR—continued.

with 3.5 per cent. of nickel will have a figure of 35/38 tons per square inch.

The further addition of 0.75 per cent. of chromium to the nickel steel referred to above will result in an improved tensile strength of 50/55 tons per square inch.

These figures apply to steels which have not been "heat treated," or submitted to a series of processes which include heating to a high temperature and cooling with more or less suddenness, followed by re-heating to a lower temperature and again cooling. On the temperature of the second heating depends the final characteristics of the steel and the resulting product may have either a comparatively low tensile strength combined with great toughness (or ability to stand shocks),



A sketch of a standard square test-piece.

or a higher tensile strength with an inferior toughness, according as the re-heating temperature is relatively high or low.

Alloy steels lend themselves admirably to treatment of this nature.

Some Tests Described.

The principal test applied to steels is the "tension" test, in which a small sample test piece, machined in the form of a thin bar, is fractured by the pulling apart of its ends.

The standard test pieces are usually turned down to a diameter of .564 inches, although smaller sizes are also used, and collars are left at the ends of the bar for clamping in the grips of the testing machine, the edges of the collars being rounded off so that no sudden change in section occurs. In a specimen of the above diameter, the length of the narrow turned portion is 2 1/4 inches and within this length two lines are carefully scribed, exactly 2 inches apart, this distance being termed the "gauge length."

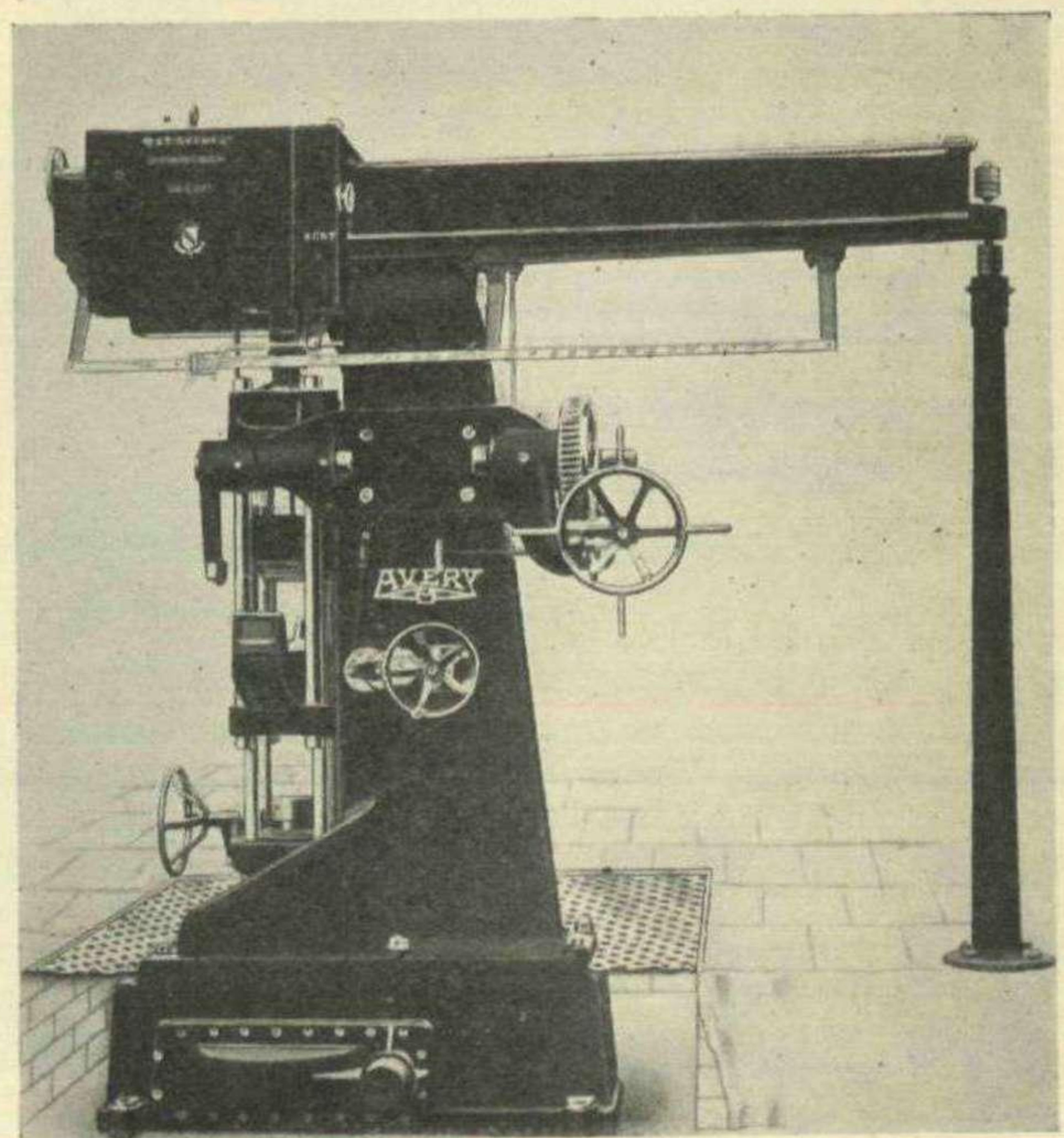
The specimen having been clamped in the testing machine, one of the grips is pulled outwards, usually by means of a crosshead threaded on to two massive screwed rods. These rods are really extremely large and lengthy bolts, on which the crosshead forms a nut, and a rotation of the rods results, of course, in a gradual movement of the crosshead along the thread. The rotation is produced by gearing, driven from an electric motor

and the pull set up by the moving crosshead is transmitted through the test piece to the second grip which is attached to a long pivoted beam. This is kept in a balanced position by a travelling weight and, as the tension increases, the weight is run out further and further from the fulcrum point, its distance therefrom providing a means of measuring the pull applied to the specimen.

At a certain period of the test it is always noticed that the beam drops suddenly, although the specimen has not been fractured and this dropping of the beam indicates that the metal has reached its "yield point." Previous to this stage, the test piece, although stretched under the tension, would return to its original length if the load were released, but after this particular point, the stretch becomes a permanent deformation and is followed ultimately by a complete fracture.

A specially calibrated scale, reading in pounds, is attached to the beam and the travelling weight carries a pointer indicating the load on the test piece corresponding to any position along the length of the beam.

After breaking, the specimen is micrometered at the fractured section and then held with the broken edges in close contact while the stretched length, between the original gauge marks is scaled off. The test piece will be drawn out somewhat, into a narrow neck, at the vicinity of the break and the dimensions taken after testing enable both the reduction in cross-sectional area and the elongation in the gauge length to be ascertained.



An Avery 30-ton Universal Testing Machine.

This machine is electrically driven and is suitable for carrying out a variety of different tests, including that for tensile strength.

THE STEEL IN YOUR CAR—continued.

These figures, to which limiting values have been given in the British Standard Specifications, form valuable guides as to the characteristics of the metal, a tough, ductile steel drawing out to a greater extent than a hard and comparatively brittle one.

It may be of interest to note that a high-class chrome-vanadium steel will give a maximum tensile strength of 65 tons per square inch (about twice the strength of mild steel), with a yield point of 45 tons, and a steel of this type, in a car of first-class quality, would be used for such parts as crankshafts, connecting-rods, axle and propeller shafts, steering arms and front axles, while air-hardening nickel-chrome steels, with a tensile strength as high as 100 tons per square inch, are sometimes used for gear-wheels, acquiring under correct heat treatment, the requisite properties of extreme hardness on the surface to resist the abrasive action on the faces of the teeth, combined with great toughness in the body of the material to withstand the heavy shock stresses, which are occurring constantly within the gear-box.

Another standard test is the "Brinell hardness test," in which a hardened steel ball, ten millimetres in diameter, is pressed into the specimen for at least fifteen seconds under a load of 3,000 kilogrammes (roughly 3 tons). The surface of the test piece is carefully prepared by filing, grinding, or machining and the area of the impression formed by the ball is accurately determined.

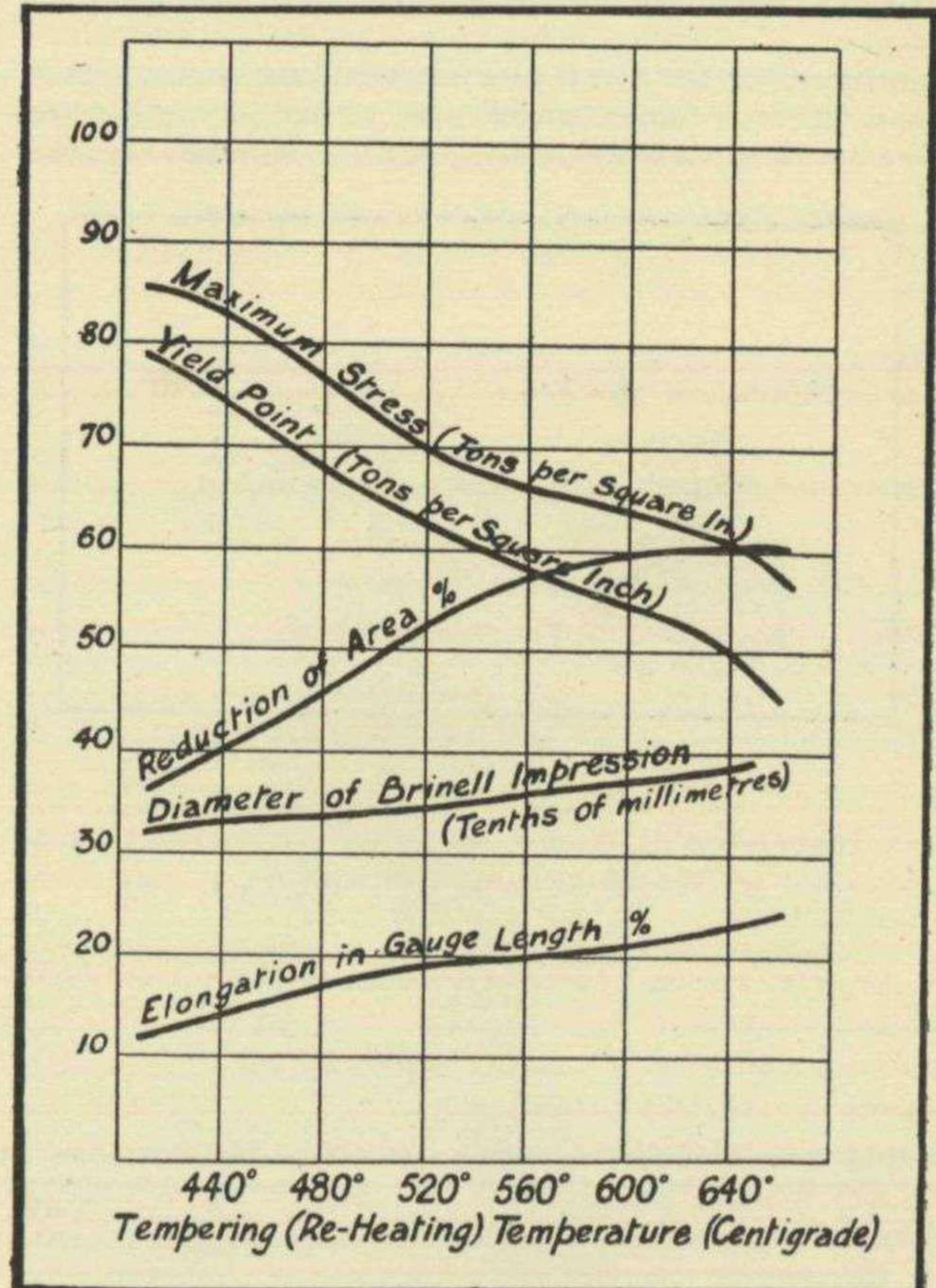
The "Brinell hardness number" for the steel under test is found by dividing the load on the ball by the area of the impression and this number bears a definite relationship to the tensile strength.

The "notched bar impact test" is another interesting method of investigating the quality of a steel. The specimen, as the name denotes, is formed into a small bar, either square or circular in section and one or more "V" shaped notches are cut in it, the angle of the "V" being forty-five degrees.

The testing machine consists of a massive framework, triangular in shape and some five feet high, the specimen being clamped rigidly at about the middle point of the horizontal base. A heavy pendulum swings from the apex and can be locked in a raised position and then released by a trigger, when it thereupon swings down and strikes the test piece at a point a short distance above the notch. After fracturing the specimen, it continues its swing in an upward direction and reaches a certain height on the opposite side to its starting point.

In fracturing the test bar, a portion of the energy of the falling pendulum is naturally absorbed and the extent of the swing, after the collision point, is correspondingly curtailed. By a simple automatic device, the amount of the absorbed energy is indicated on a specially calibrated scale, giving a measure of the strength of the specimen.

It will be realised that each of these tests is for a different purpose and each determines different qualities in the steel; therefore while the results of one test are of value, they must be considered in conjunction with the results of the other tests to give a clear idea of the full characteristics of the material in question, and it is to the development of these methods of testing that we owe in great part the extraordinary reliability of modern engines.



A Chart Showing the Effect of Heat Treatment on Nickel Chrome Steel.

As the tempering (or re-heating) temperature increases, the material becomes tougher and more ductile, as shown by the increase in elongation and percentage area reduction, but the tensile strength and yield point are lowered.

The modern sports car, with its high efficiency and wonderful capacity for revs. has called for the best efforts of the steel maker and the demand has been met, unflinchingly, from the laboratories and the furnaces of Sheffield, where, unobtrusively, but none the less effectively, the metallurgists have played their part and rendered possible the vast developments in every sphere of high-speed motoring, ranging from the remarkable performances of the sporting light car to the glorious achievement of the "Golden Arrow."

DON'S DAYTONA SUNBEAM

RATED at 4,000 h.p., weighing four and a half tons and measuring 31ft. 1in. from stem to stern, the Sunbeam "Silver Bullet," with which Kaye Don (at the moment of writing) is attempting an attack on the world's land speed record, is the most "special" of all the monsters that, so far, have been built. The earlier giants were, in a measure, hybrids; with the "Silver Bullet," the engines, like everything else in the car, are designed and built specially for their job and the whole vehicle is undoubtedly one of the most interesting things on wheels that has ever been evolved.

The engines have twelve cylinders, arranged in banks of six at an angle of 50°. The bore and stroke dimensions are 140 m.m. x 130 m.m. and the capacity is 24,000 c.c. The cylinders are cast in blocks of three and are of aluminium with Nitralloy steel liners. There are four valves per cylinder, and two camshafts for each bank of six cylinders; one sparking per cylinder is used. At the front of each engine, trains of spur wheels driving the camshafts are housed, and at the back of each there is a multiplication gear to the countershaft beneath the crankcase. The engines are installed in the frame tandemwise. Behind the rear engine is a spur-wheel drive which works a blower. The mixture is supplied by two special Amal carburettors. Lubrication is of the dry sump type and each engine has two pumps. The cooling system is unique; because an ordinary honeycomb radiator would present too much head resistance, an ice chest and cistern is used in conjunction with water pumps. Ignition is by coil and a battery.

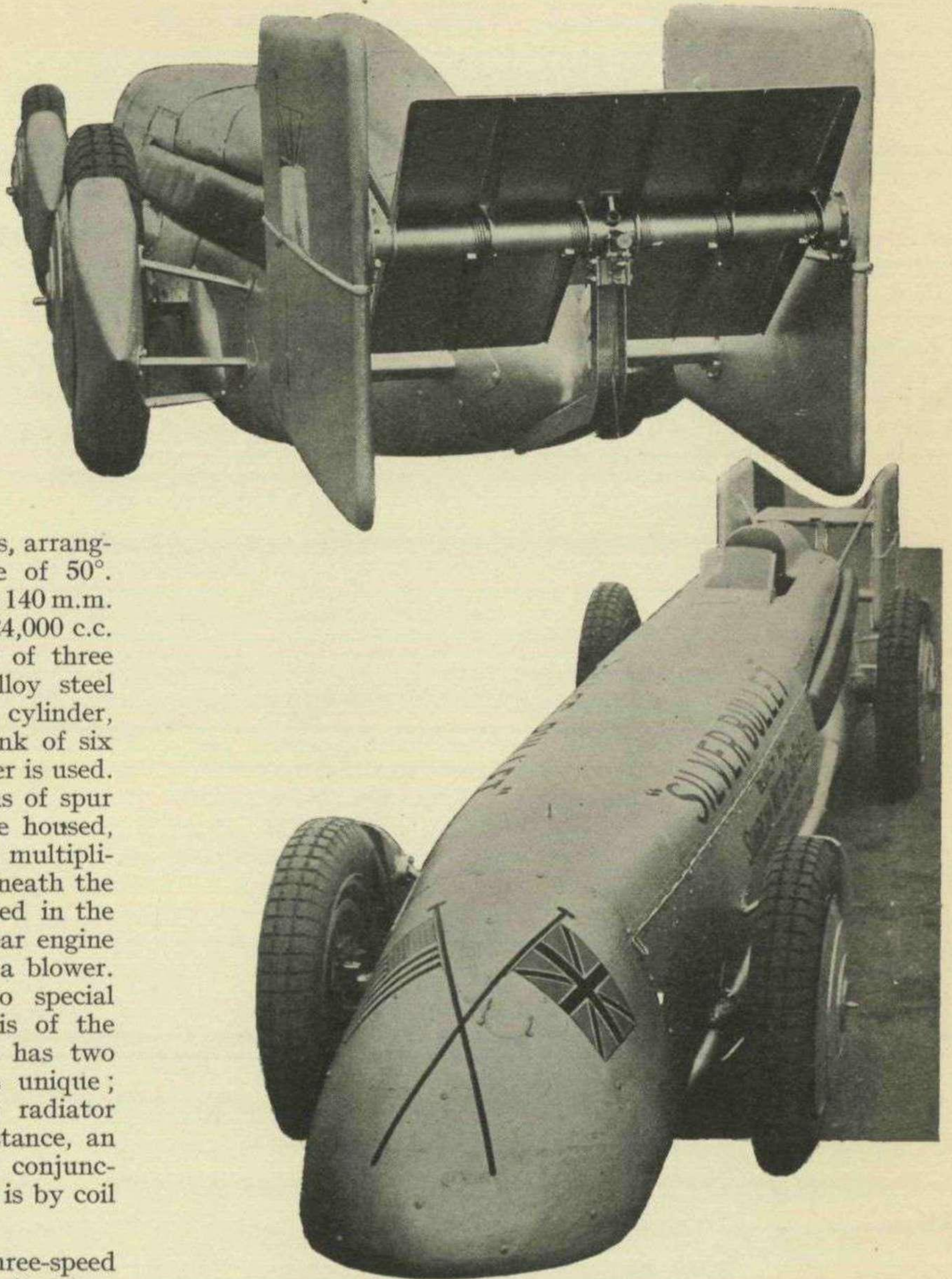
Transmission is through a three-speed gear box and two propeller shafts (one on each side of the driver's seat) and then by straight-tooth bevels to the axle shafts and road wheels. From engine to wheels the top-gear ratio is 0.965 to 1.

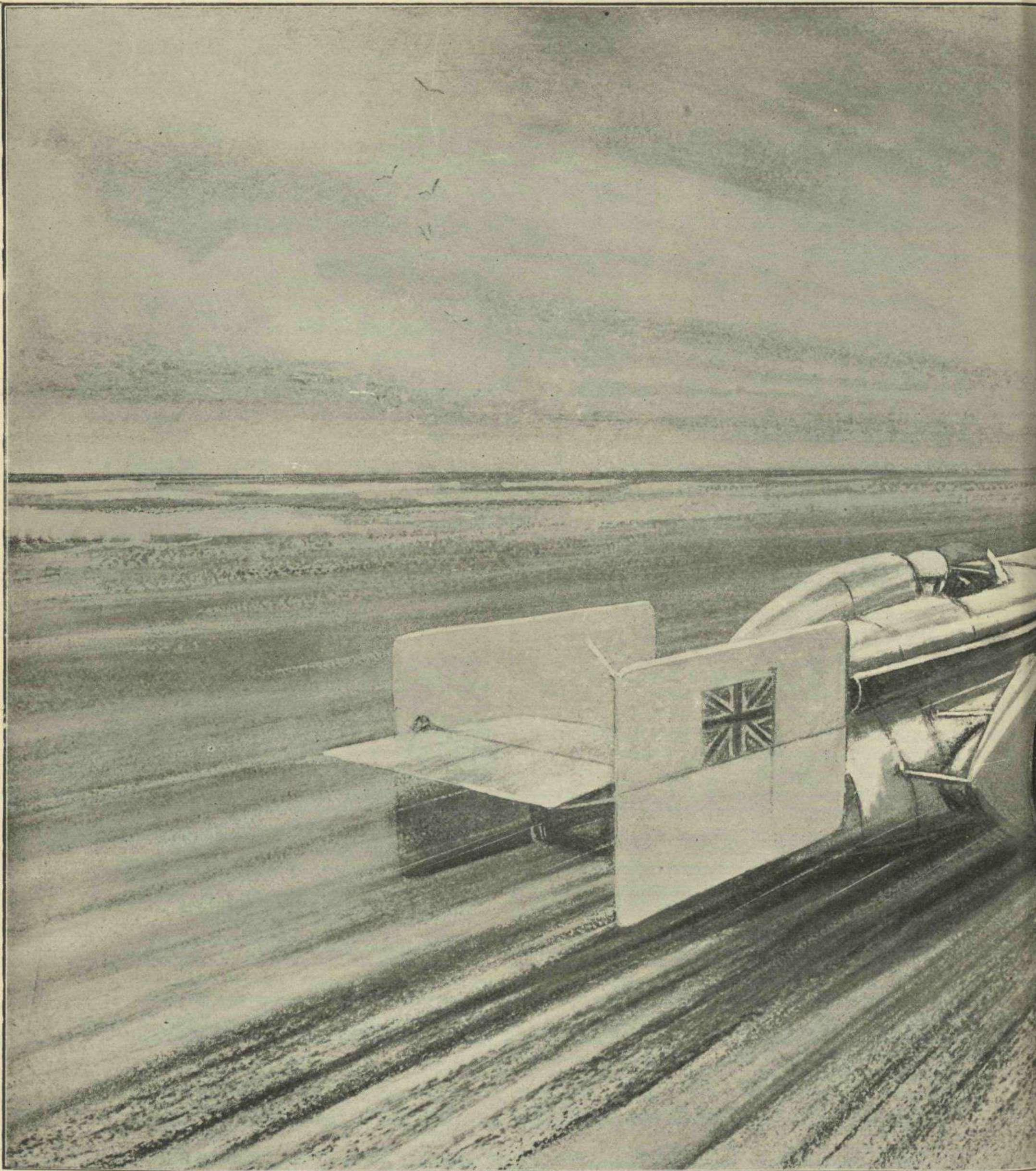
Brakes are operated on the Lockheed hydraulic principle, and the drums are situated within the wheel discs; they are almost as large in diameter as the rims themselves. There is also an air-brake fitted between the stabilizing fins in the tail of the car. This comprises a 2½ foot square plate which pivots on a cross shaft.

Springing is by means of straight semi-elliptics and Hartford shock-absorbers are fitted.

Steering gear is a duplicated Marles and allows a lock of only 15 degrees in each direction, giving the car a turning circle of 130 feet. There is no tie-rod between the front wheels.

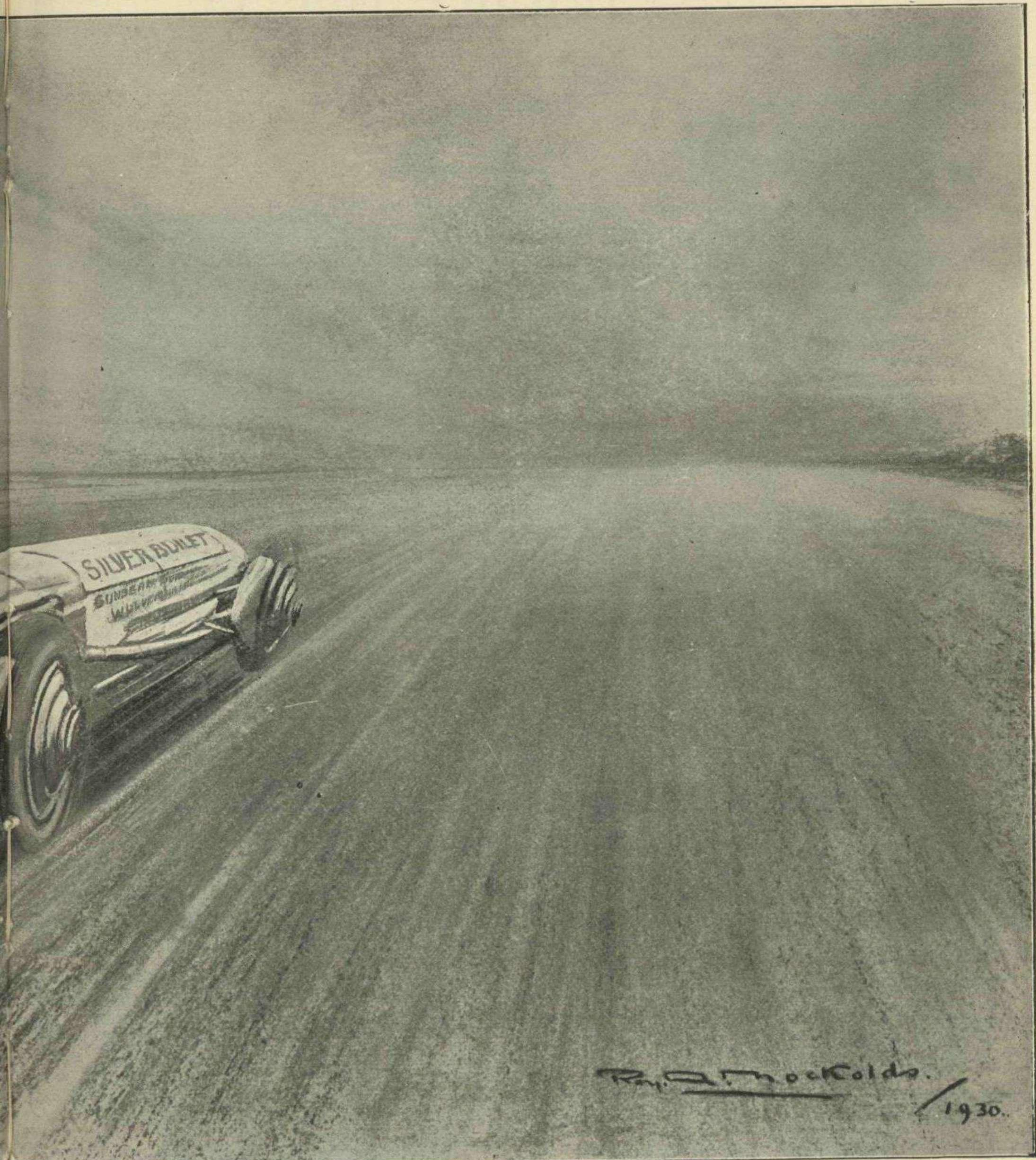
The body is very highly stream-lined and nothing projects from the main structure save the four wheels and the Splintex wind-screen.





Motor Sport Copyright].

THE SILVER



SILVER BULLET.

[April, 1930

THE J.C.C. DOUBLE-TWELVE

The entries for the race are coming in well and sixty-one were received up to the 17th of last month.
The following have entered:—

Class H (over 500 c.c. up to 750 c.c.)

E. Burt	Austin
Sir Herbert Austin	2 Austins (S)
	1 Austin
E. D. Sheppard	Austin
E. J. Kehoe	Austin

Class G (over 750 c.c. up to 1,100 c.c.)

Miss V. Worsley	M.G. Midget
C. J. Randall	3 M.G. Midgets
E. Martin	Riley
E. J. Kehoe	Riley
S. Watt	Fiat
A. F. Ashby	Riley
A. F. P. Agabeg	Salmson (S)
H. H. Stisted	M.G. Midget
Vernon Balls	Amilcar (S)
C. R. Whitcroft	Riley
Mrs. E. M. Scott	Riley
A. V. Wilkinson	Amilcar (S)

Class F (over 1,100 c.c. up to 1,500 c.c.)

F. W. Stiles	2 Alfa Romeo (S)
Miss D. M. Burnett	Aston Martin
The Hon. Mrs. Joan Chetwynd	Lea Francis (S)
L. P. Driscoll	Lea Francis (S)
D. K. Mansell	Lea Francis (S)
S. D. Marr	Tracta
J. Allan-Arnold	Lea Francis (S)
J. R. Jeffress	Alfa Romeo (S)
G. E. Took	Lea Francis (S)
A. C. Bertelli	Aston Martin
S. C. Whitehouse	Aston Martin

Class F—continued.

Gordon Hendy	Lea Francis (S)
A. Methley	Alfa Romeo (S)
Malcolm Campbell	2 Alfa Romeo (S)
H. J. Aldington	2 Frazer Nash

Class E (over 1,500 c.c. up to 2,000 c.c.)

T. G. John	3 Alvis
F. W. Stiles	Alfa Romeo (S)
A. H. Cranmer	Lagonda
A. J. Mollart	A.C.
J. W. H. Nash	S.A.R.A.
L. C. Rawlence	O.M. (S)

Class D (over 2,000 c.c. up to 3,000 c.c.)

A. H. Cranmer	3 Lagondas
H. D. Parker	M.G. Six
W. B. Scott	Austro Daimler
E. J. Kehoe	Bugatti (S)

Class C (over 3,000 c.c. up to 5,000 c.c.)

The Hon. Dorothy Wyndham	
Paget	3 Bentleys (S)
M. O. de B. Durand	Bentley

Class B (over 5,000 c.c. up to 8,000 c.c.)

Woolf Barnato	2 Bentleys
---------------	------------

Not Classified

A. W. Fox	3 Talbots
-----------	-----------

"(S)" denotes supercharged.

We have a limited number of

BOUND VOLUMES

of

MOTOR SPORT

Vols. I, II, III and IV

which we have acquired from the former proprietors of the journal

THESE ARE OBTAINABLE AT

21/- EACH

MOTOR SPORT (1929) LTD.

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

TEN YEARS of MOTORS

and

MOTOR RACING

BY

LT.-COL. CHARLES JARROTT

(The famous Pioneer Racing Motorist)

"... A book which everybody who is the least interested in motor racing should obtain at once. It is a revival of that old, famous and well illustrated book, practically the first of its kind, by Charles Jarrott, which remains one of the finest books on motor racing that has ever been written."

—THE AUTOCAR.

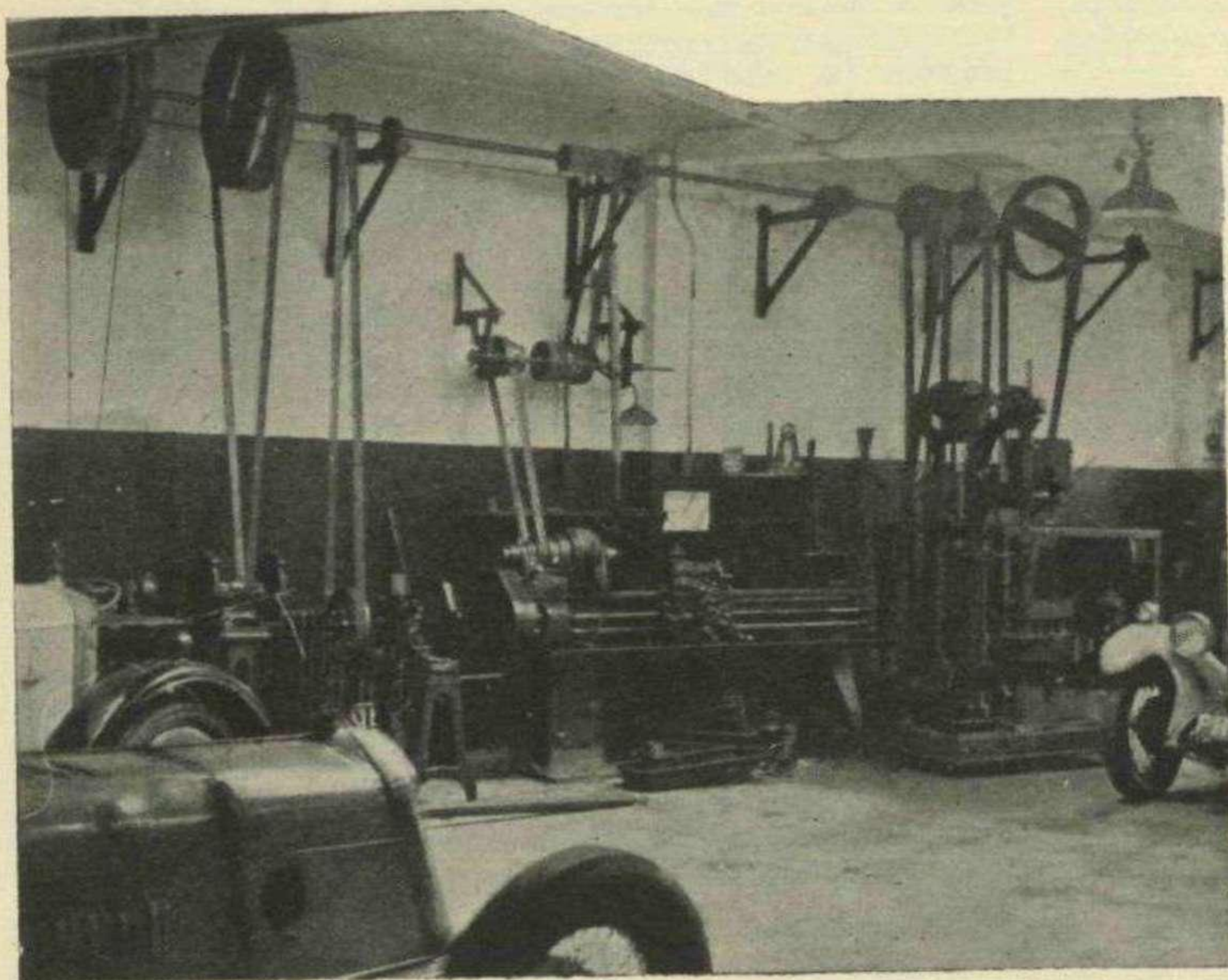
Price 7/6 (Post Free 6d. extra).

MOTOR SPORT (1929) LTD.

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

A RACING DRIVER'S WORKSHOP.

A visit to A. F. ASHBY'S tuning depot.



(Above) Corner of the machine shop and (right) Mr. Ashby's Riley nine being prepared for the season's racing.

THE sight of racing cars in various stages of disassembly, is always one to gladden the heart of the man to whom the acquisition of a few more r.p.m. is of greater value than rubies, and at Mr. A. F. Ashby's works at Hendon I found great activity in preparing various cars for the coming season.

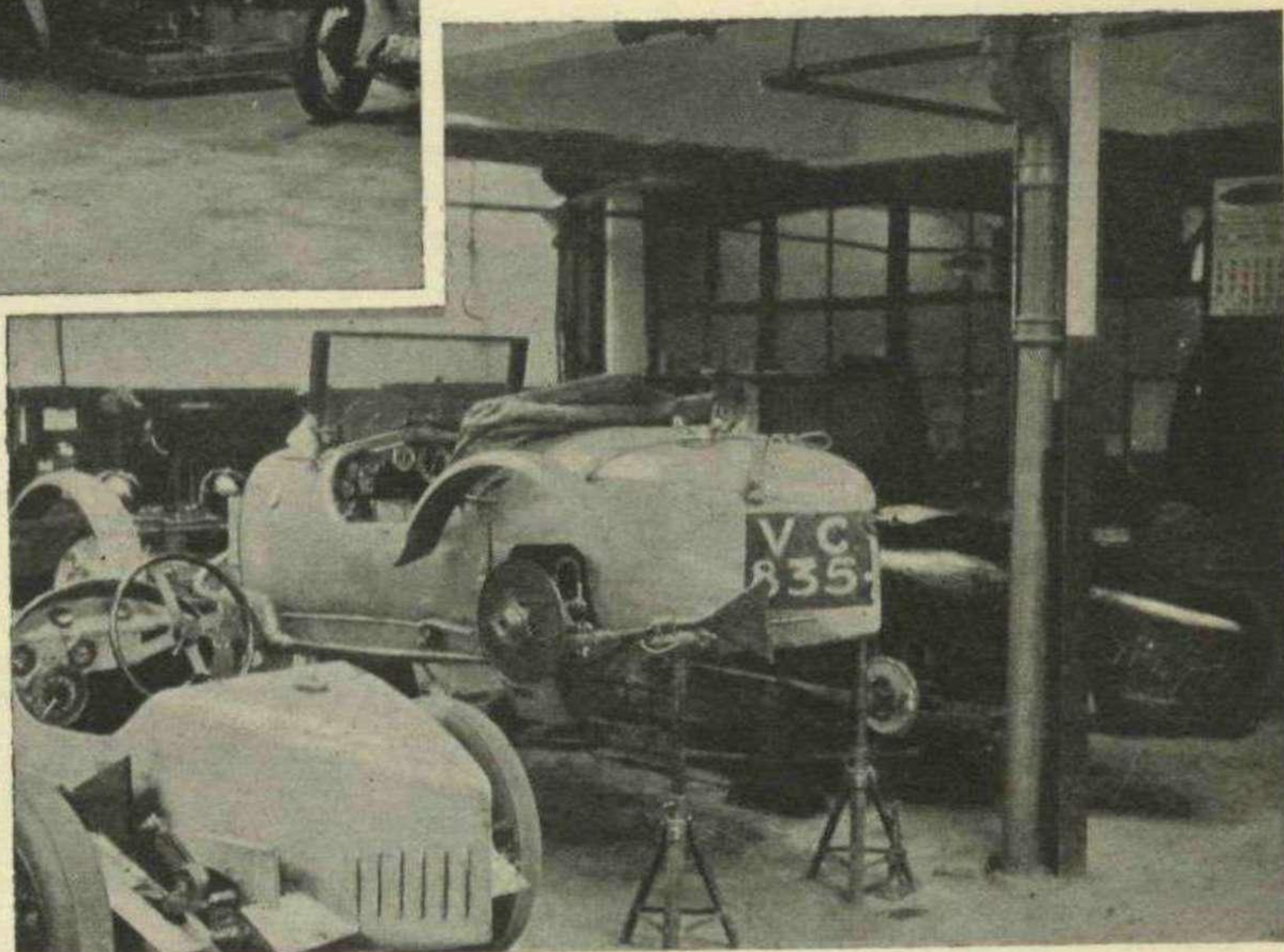
A comparatively small tuning depot is in many ways attractive to anyone who likes to follow the job right through, as not only can all the bits be inspected and discussed while the work is in progress, but the whole proceedings are carried out under the personal supervision of "the boss."

In spite of the fact that he was extremely busy with various tuning jobs, including his own cars, Mr. Ashby allowed us to waste a considerable amount of his time in arguing about tuning in general and his own cars in particular. On picking up any particular component from the bench, he was immediately able to give a detailed history of the part in question, how long it had run, why it was fitted, how it differed from standard, and so forth.

It is this detailed knowledge, and obvious love of

the work for its own sake, that makes conversation with its possessor not only interesting, but profitable.

A very interesting car is Mr. Ashby's own 1500 c.c. side-valve Riley, which he has raced successfully for some time. The fact that this car is now capable of a genuine 100 m.p.h. and more is remarkable testimony to his tuning ability, and explains the large number of private owners' cars to be seen in his works, being modified to give that extra "pep" which makes motoring so much more interesting.



He is now disposing of his old Riley, as he will be racing a "nine" of this make in Ulster and other races this season.

The 1½-litre, which was undergoing a complete overhaul prior to its retirement from racing, appears on the left of the above view, and is a car which should give a good account of itself in the hands of whatever fortunate acquires it for his own use.

Lack of space precludes further description of the varied jobs which Mr. Ashby has carried out, but anyone who has any plans for hotting up his car will always be welcome at 9, Watford Way, Hendon, where both he and his car will benefit from Mr. Ashby's experience.

Club News

MIDLAND AUTOMOBILE CLUB.

It is announced that the Shelsley Walsh open hill climb (which is sanctioned by the S.M.M.T. for "trade" entries), will now be the British venue for the *Championnat d'Europe de la Montagne* and will be run under the international rules of the A.I.A.C.R. and the R.A.C.

Readers of MOTOR SPORT should note that the dates for the climbs have now been altered and are as follows:—Open and championship event, Saturday, 12th July; amateur event, Saturday, 13th September.

The regulations are now being drafted and copies will be available in a week or so. Application should be made to the Hon. Secretary, Mr. Leslie Wilson, whose office is at 415, Stratford Road, Birmingham.

THE LIGHT CAR CLUB.

The racing committee of the Light Car Club, with the Earl of March, President of the club, in the chair, met recently to discuss an interesting proposal relating to the Brooklands meeting, down to take place on July 26th. and a deputation was appointed to wait upon the Clerk of the Course in order to obtain his views on the matter. Further facts will be revealed later.

The provisional date for this season's events have now been fixed and are as follow:—Opening rally, April 13th; first half-day trial, May 17th; river trip, June 22nd; Brooklands meeting, July 26th; 24-hours' trial, September 5th and 6th; social run, September 20th; second half-day trial, October 18th; annual dinner and dance, November 21st; and the New Year's party, January 17th, 1931.

THE JOYCE TROPHY TRIAL.

The snowstorm which occurred prior to the event, and covered the Midlands with deep drifts made the Shirley and District Motor Club's Open Joyce Trophy Trial a difficult and trying test for most competitors. It was originally intended that the 55-mile course should be covered twice, once in the morning and once in the afternoon, both circuits starting from and finishing at the Plume of Feathers Hotel on the Birmingham to Stratford-on-Avon road, but the organizers decided to wash out the afternoon circuit. Their decision was rather welcomed, for the single lap of the course, as it was on Saturday, was more than some of the entrants could tackle.

Only J. Priestley (Bugatti) failed to finish, and Mrs. R. M. Whitfield (Rover) did not start. Eleven observed sections were included, but a number of these were by-passed by the cars. A stop and restart test was held on Swan's Hill and here the competitors were glad that non-skid chains were permitted. G. Lewis (M.G. Midget) made the best show and won the Field Cup for the best car performance.

B.M.C.R.C.

The opening meeting of the year of the Club will take place at Brooklands next Saturday, 5th April, when racing will commence at 2 p.m. In all there will be seven events—three 3-lap handicaps, three 1-lap sprints and a 3-lap relay race. The entry fee for each event is five shillings.

AUSTIN AND SOUTH BIRMINGHAM M.C.C.

A most extensive sporting programme has been arranged for this season and there are to be seven trials, two grass-track meetings, and at least one hill-climb. The club's private half-mile course should provide the means for some excellent fast motoring.

The subscription is 7s. 6d. per annum, and this includes a free copy every month of the club magazine, "The Griptwister." The secretary is Mr. Tom Wyncoll, 275, Franklin Road, King's Norton, Birmingham, and the club is open to all motorcyclists.

CUMBERLAND COUNTY M.C.C.

The fixture list was completed at a committee meeting held recently, when an appeal was made for larger attendances in view of the fact that the club celebrates its 21st birthday this year. Possessing, perhaps, one of the prettiest counties in England, the club has no difficulty in arranging a series of attractive runs, while the hilly nature of the surrounding district enables several trials which promise some excellent sport, to be included. The fixture list contains nine trials and five social runs, covering some of the most picturesque scenery in the district.

Among those who have accepted vice-presidencies of the Cumberland County M.C.C. are the Earl of Lonsdale Mr. R. C. Chance (Mayor of Carlisle), Professor A. M. Low, Mr. George Middleton (M.P. for Carlisle), Alderman A. Creighton, Councillor W. Dobinson, Mr. R. D. Holt (Liberal candidate for North Cumberland at the last General Election), and Mr. W. T. Tiffen (member of the committee of the Cumberland M.C.).

SOUTH-WEST LONDON M.C.

The annual general meeting was held last month at the East Hill Hotel, Wandsworth. The hon. secretary's report showed a fine response to the efforts of the committee. Reporting upon the club's finances, the treasurer placed a most satisfactory balance sheet before the members, and his statement proved the financial as well as the social and sporting success of the organization. The trials' secretary was specially commended for his efforts in arranging the long list of events during 1929, which resulted in nearly 50 awards being presented.

BUY THE INVENTOR

A MONTHLY JOURNAL TO
KEEP YOU UP TO DATE
IN THE WORLD OF
INVENTION.

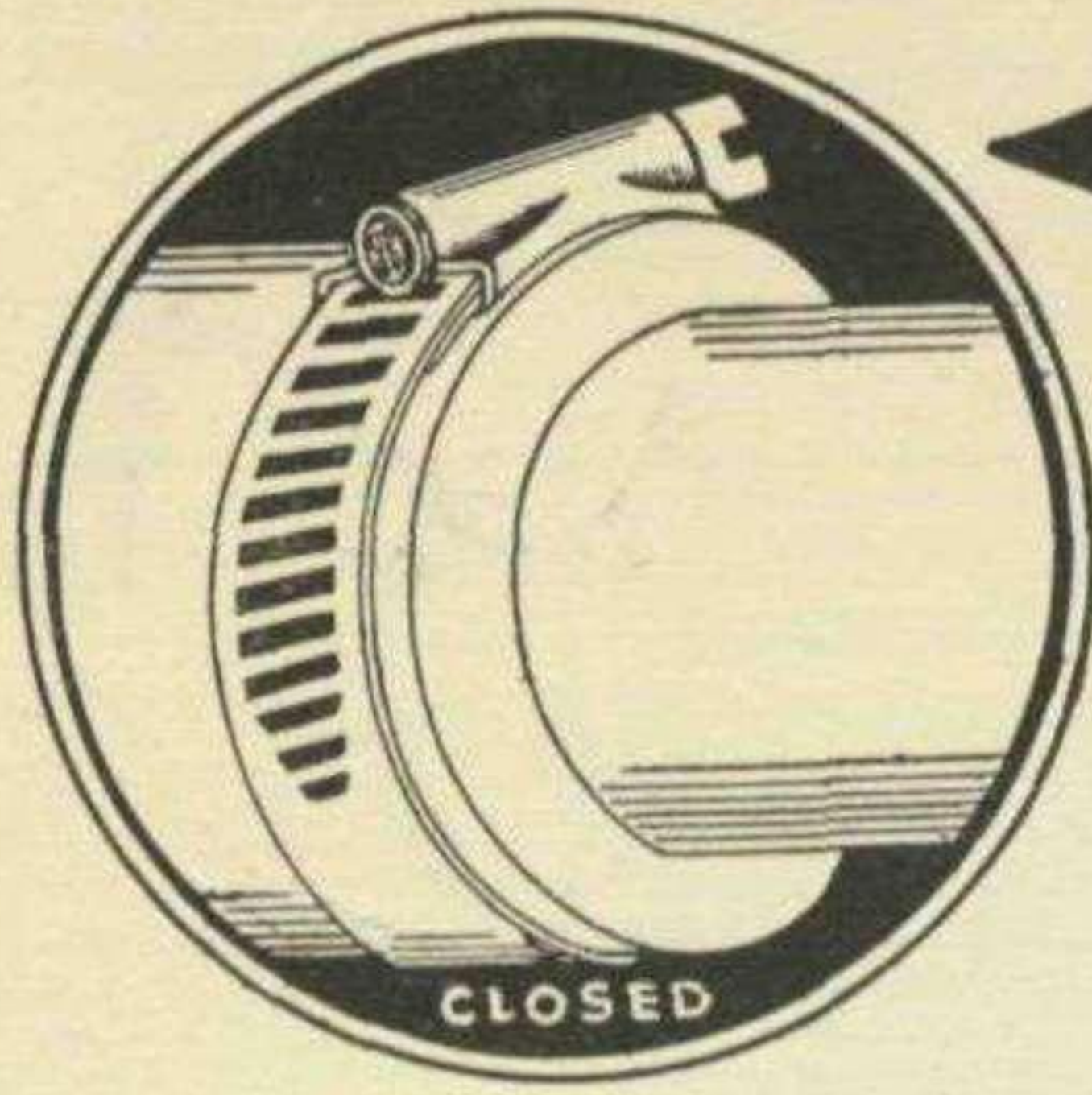
SOME OF THE LATEST
INVENTIONS.

INVENTIONS WANTED

ARTICLES BY
WELL-KNOWN WRITERS.

PER YEAR 5/- POST
FREE
SPECIMEN COPY 7D.

Apply to:—INSTITUTE OF PATENTEES (Inc.),
39, Victoria Street,
Westminster,
S.W.1



Tight with equal pressure all round

← **THIS JUBILEE
WORM-DRIVE CLIP**

Will always stop the leak or drip

**MAKE SURE YOU HAVE THEM ON YOUR
RADIATOR JOINTS, LEATHER COVERS ON UNI-
VERSAL JOINTS, AIR, OIL AND WATER HOSE JOINTS, AND FOR
ALL OTHER PURPOSES WHERE CLIPS OR WIRE ARE REQUIRED**

**ALL IN ONE PIECE NO PARTS TO LOSE
EASY TO FIT GUARANTEED NEVER TO LEAK**

A KEEN MOTORIST WRITES: *"I cannot understand anyone using any other pattern, as yours are the last word in satisfaction and efficiency."*

STOCKED BY ALL GARAGES
& ACCESSORY DEALERS, OR

L. ROBINSON & Co., 2, London Chambers,
GILLINGHAM, KENT.

**SEND FOR A FREE SAMPLE
CLIP FOR TEST.**



**For Maintaining Steady Nerves, Keeping Absolute
Fitness and Relieving Strain and Tension**

TURKISH BATHS STAND UNRIVALLED

The Charing Cross Turkish Baths

25 Northumberland Avenue, W.C.2 and all over London.

FOR ADDRESSES SEE TELEPHONE DIRECTORY.

Booklet M on application to Head Office, 24, Northumberland Avenue, W.C.2.

THEY ALL AGREE

A few of our "Men of Mark" as seen by Hynes, the cartoonist.



"Ellis is an Artist."
GEORGE ROBEY.



"An actor cannot afford to be dressed in any way but the best."

FRED DUPREZ



"Well-cut clothes are a passport to success. Ellis knows how to visé your passport."

GEORGE GRAVES



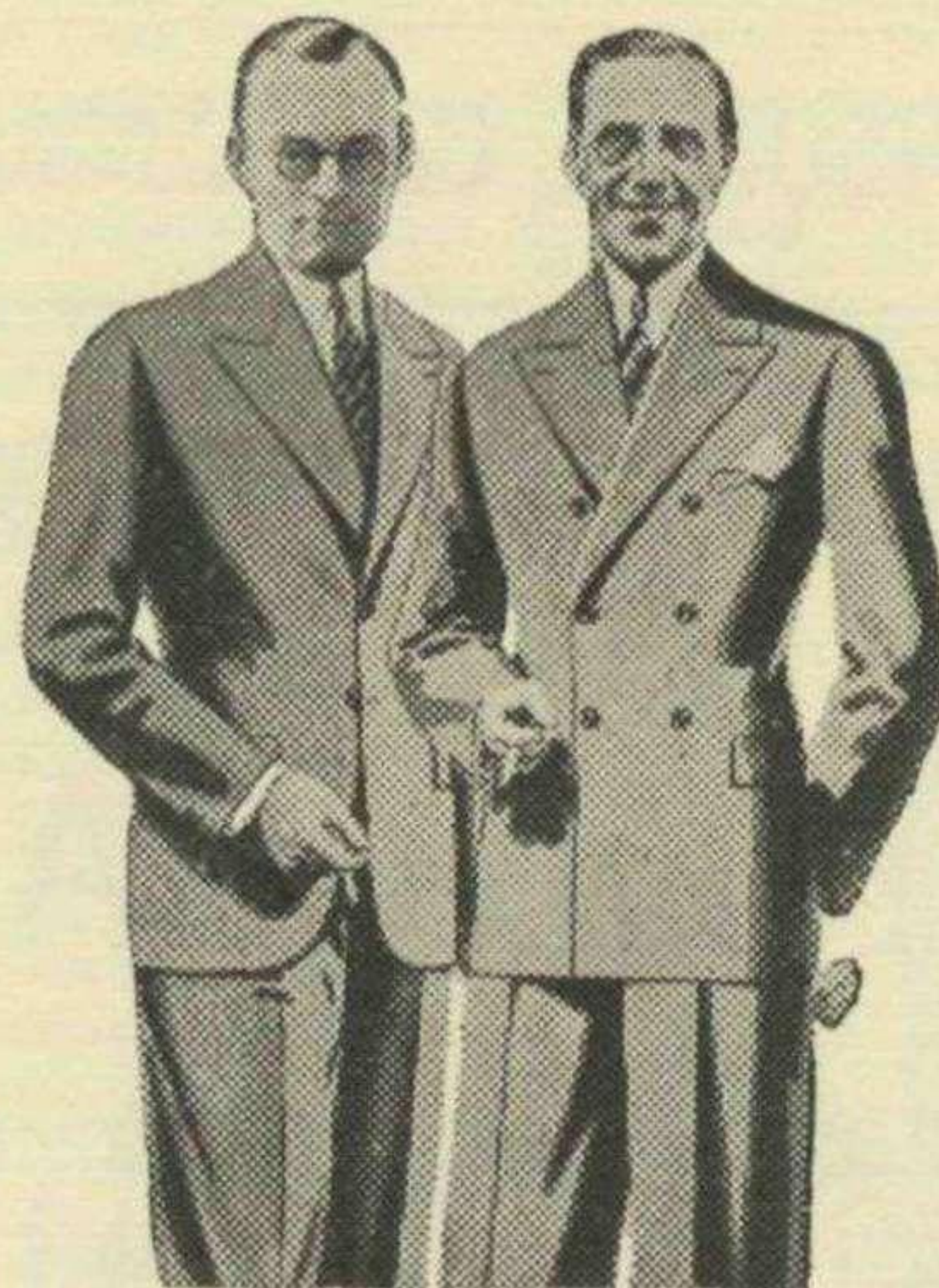
"Clothes are like top notes—they must be perfectly produced. Mr. Ellis is my tailor."

CARL BRISSON



"Your Services have given me unbounded satisfaction."

SEYMOUR HICKS



Mr. Leslie Henson and Mr. Ralph Lynn, wearing their Ellis-made suits.



"Uncanny skill in giving perfection of cut."

JACK HYLTON



"I cannot speak too highly."

ARCHIE COMPSTON

Follow the lead of the leading men of Society, Sport and the Stage and make Mr. Ellis your Tailor. Every client of J. & H. Ellis is assured of correct cut and the finest cloths and trimmings it is possible to obtain. All work is carried out in our own Workrooms and under the PERSONAL supervision of Mr. Ellis.

J&H Ellis

200, 201 & 202, STRAND, W.C.2.

Nearest Station, Temple Embkt.

(OPPOSITE LAW COURTS). 'Phone: Temple Bar 6865.

An Ellis-cut Lounge Suit or Spring Overcoat to your order costs from 6 GUINEAS. If unable to call, write to Mr. Ellis for a selection of his exclusive new Spring materials and a copy of his book "Men of Mark." Mr. Ellis will be pleased to wait until 7.30, for customers who phone or write him that they are unable to call when the establishment is open.

Please mention MOTOR SPORT when corresponding with advertisers.

THE SPORT AFLOAT



The Amateur Outboard Club.

AN organisation which promises to have a large membership among those who are interested in the purely sporting side of motor boat racing is the Amateur Outboard Club of Great Britain. This club is, as its name implies, confined to genuine amateurs, and has its clubhouse and headquarters at Rickmansworth.

The hon. secretary is Mr. Reginald T. Wild, of 35, New Broad Street, E.C.2, from whom full particulars of membership may be obtained. This is divided into two grades; full membership at three guineas covering the use of the clubhouse, car park, etc., also free admission to all meetings, and an option on one guest ticket at a guinea entitling the guest to ordinary privileges. Full membership is required for racing members. Associate membership at one guinea allows admission at half-price, but does not include the privilege of a guest ticket. Exclusive rights have been obtained by the club on Rickmansworth lake, and the first meeting is due to be held on April 5th, and thereafter on the first and third Saturdays in the month.

Another Outboard Cruiser.

Ever since the introduction of the outboard engine cabin cruiser there has been a considerable difficulty in obtaining reasonable accommodation with attractive lines. A design which shows remarkable ingenuity in this method of getting over these difficulties is that of Mr. Percy See of Fareham whose racing hulls have achieved considerable success in the last season. In common with all his productions, the lines are excellent and the workmanship and finish extremely good. The chief differences from the normal outboard cabin cruiser are found in the provision of two cockpits, the fore one having a protecting windscreen and in the lifting roof. This latter feature has been well carried out and means that much better head room can be obtained than is normally the case with this class of vessel. The appearance with the roof closed is irreproachable and the additional height available with it lifted is 18ins. The windscreen of the fore cockpit can be folded out of the way when required and the seat lifted up through the deck and secured in such a manner as to completely enclose this cockpit. Thus with the roof raised and the fore cockpit flattened down the whole fore part of the boat is open to the cabin and gives as much room as can be expected from this size of boat. It is powered

with the well known Johnson Sea Horse "32" engine and as can be expected gives a very fine performance. The dimensions are 20ft. x 5ft. 8in. beam and the price with the Johnson "32" and full equipment is £255.

Proposed Dublin Club.

A motor boat club is now in process of formation at Dublin, and judging by the number of inquiries received by its sponsors, it seems likely that it will receive a great deal of support.

Already a great many marine motorists in the district have signified their intention of joining and it is hoped that before very long the Club will be got under way. Amongst the proposed activities is the holding of races at fortnightly intervals.

All those interested in the project are advised to get in touch with Lieut.-Colonel Mansfield, of Barrettstown House, Newbridge, Co. Kildare.

The Petter Atomic Diesel.

Petters, Ltd., of Westland Works, Yeovil, have recently published a pamphlet concerning a four-days' test carried out by Mr. W. A. Tookey, on their 130 b.h.p. Atomic Diesel. The performance figures given show that the fuel consumption under full load was 0.40 lbs., and the lubricating oil consumption was 0.648 pints per engine hour for all purposes. In summing up in his report Mr. Tookey gives it as his opinion that the design of the engine represents a definite advance, in that it offers the simplicity of the two-stroke crankcase compression motor with the thermal efficiency of the four-stroke.

Sales and Service.

The Hon. Victor Bruce and J. Holroyd, who have been putting up some excellent shows recently on the Brooke Hydrocar, have now opened a motor-boat showroom at Feltham, Middlesex. A range of Johnson engines is included in the stock, also two See hydroplanes, a 106 h.p. Chrysler engine and a Wood speed dinghy.

The premises also include a fully equipped workshop, where every kind of repair and service can be undertaken. Two more genuine enthusiasts cannot be imagined, and with their extensive experience they will be in a position to help anyone who is thinking of taking to the water.

THE AUSTIN SEAGULL

A Seven h.p. Inboard Launch with a Good Performance.



Three views of the Seagull.

THERE is undoubtedly a considerable demand for a low priced runabout which combines a good turn of speed with the advantages of neatness and compactness of the inboard engine. The Austin Seagull, which is manufactured by Messrs. Maintenance, Ltd., the well known Austin specialists, of Beavor Lane, Hammersmith, is another example of the remarkable performance of which this little engine is capable. This firm make a speciality of tuning Austin engines for greater power, and the unit installed in the Seagull has been subjected to the usual modifications made by this firm to give increased power, 33 $\frac{1}{3}$ % increase over the standard engine being claimed.

The hull, which is built by the Moorcar Boat Co., of Faversham, is 16ft. by 4ft., "V" bottom, with mahogany decks, frames and planking, and spruce bottom planking; it is arranged to be set with davits if required. The engine is installed in the fore deck giving a neat appearance and ample room in the boat. This drives through a high tensile bronze propeller shaft to a two bladed propeller, which is protected by a skeg from any possibility of damage when grounding. The petrol tank is carried under the small deck aft and the petrol is conveyed to the carburettor by an electrical Autopulse. Complete electrical equipment, as in a car, is fitted, so that the luxury of electrical starting, not a usual feature on small motor boats, is obtained. The equipment is remarkably complete including fend-offs, boat hook, fire extinguisher and the usual switch board equipment of a car for the navigation lamps, etc. A one piece safety glass windscreen can be fitted as an extra for £5

and is quite useful in broken water. The price is £200.

We recently had the opportunity of trying this boat on the Thames in company with Mr. S. J. Bassett of Maintenance, Ltd., and found it handled

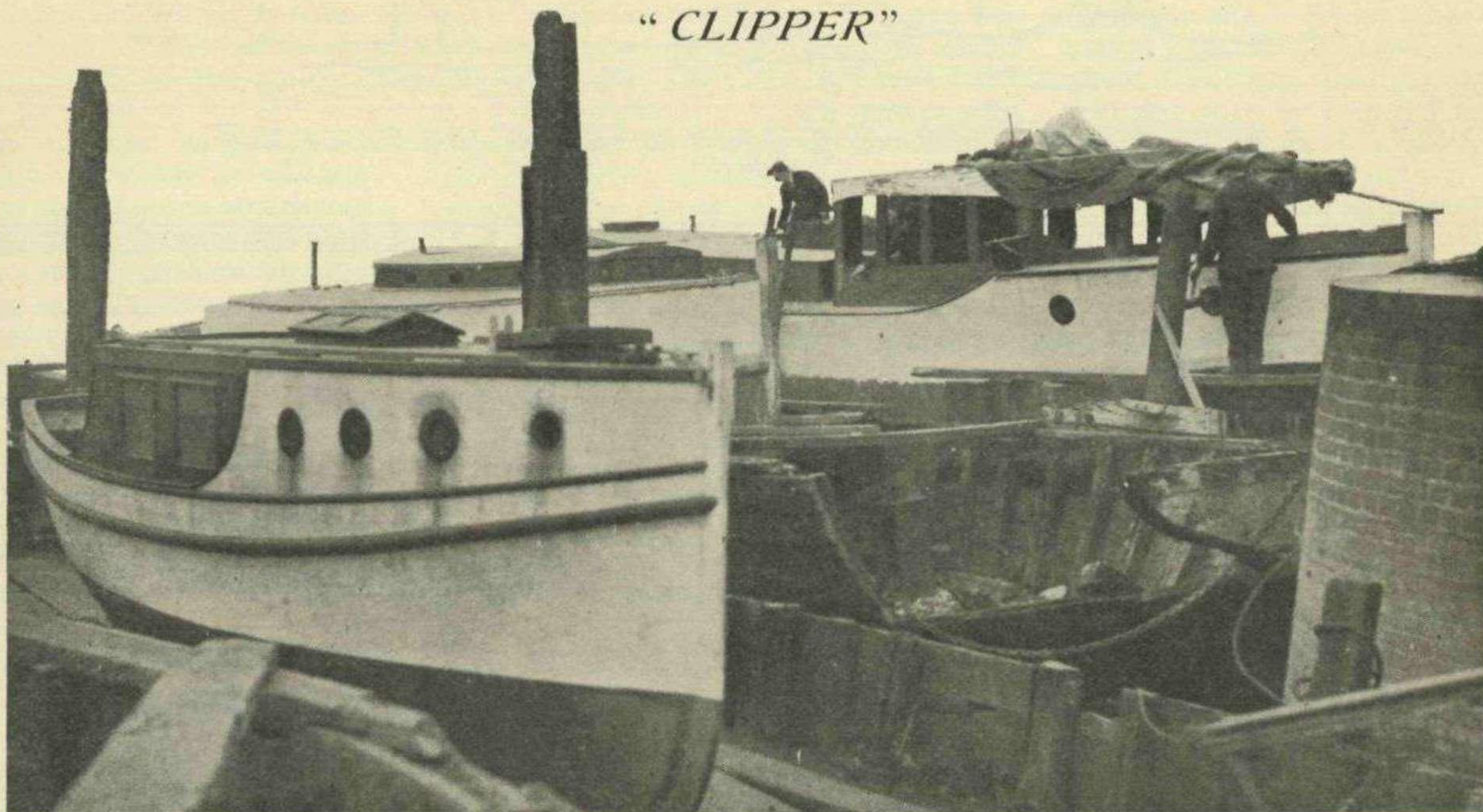
well and had quite a good turn of speed. The actual mean speed over the measured mile is 18 m.p.h., which for the power installed, is good. The engine is tuned to peak at 3,500 r.p.m., at which speed it runs quite smoothly, but with a certain amount of noise, caused by the fore deck acting as a sounding board. This however is being considerably stiffened up, in order that the boat may be carried at davits and this should reduce the noise considerably, though even now it is by no means excessive. The turning circle at full speed is commendably small, and the boat may be put hard over suddenly and brought out of the turn suddenly without any tendency to cavitation which we have found in some boats of this type with high speed propellers. Without wishing in any way to disparage the qualities of outboards, there is undoubtedly an added charm in the flexibility of the 4-cylinder inboard engine; complete control from a crawl to full speed, and also the addition of a reverse, makes the slightly greater cost of this type of craft well worth considering.

The number of inboard engined small launches is increasing, and this season will certainly see many of them in use on estuaries and rivers. The low running cost of an Austin Seven engine is of course proverbial, while on larger craft the advantages of being able to carry a light fast runabout are too obvious to require further comment.

CRUISER CONVERSIONS

By

"CLIPPER"



Some conversions in progress at J. White & Co.'s yard at Fulham.

THE idea of taking an open boat and converting it to a cabin cruiser is a very old one, but one always fascinating to the man whose desires in the matter of boats outruns his financial capabilities. There are, however, many things to be guarded against in this business of conversion and one of the greatest points to be watched is that nothing is undertaken on a hull that is not absolutely sound. Even in the case of a small cruiser of about 24ft. the cost of the materials and sundry other expenses of conversion, even when carried out by the owner, are apt to run to a rather higher figure than was at first expected. Therefore, a few pounds saved in the cost of the hull at the expense of its quality are a very false economy.

Of course, the idea of picking up a hull for £10 and superimposing some structure, which the owner may in the height of his enthusiasm imagine to be a very fine bit of work, is extremely attractive but one to be

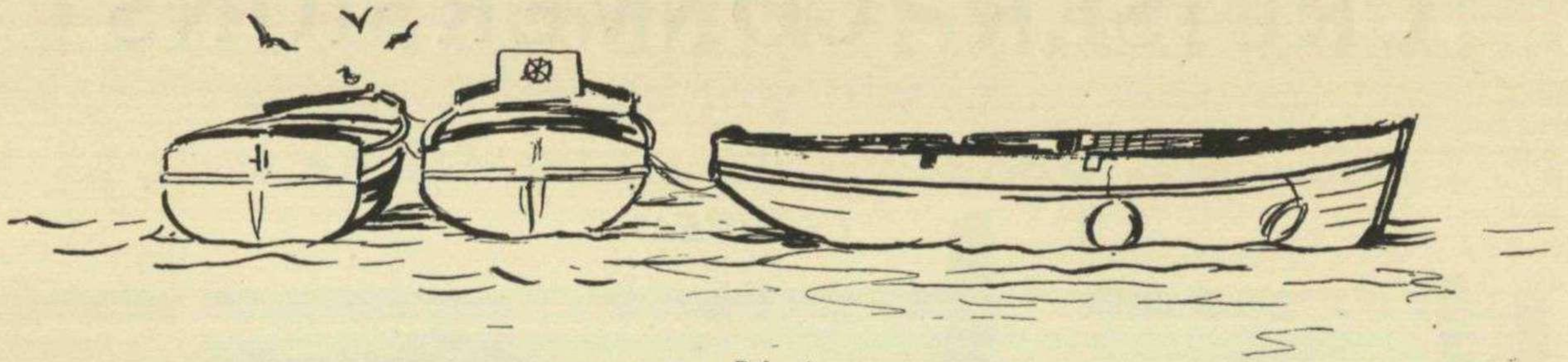
guarded against. It is for this reason that ex-naval hulls are very popular for this class of work. Types available vary from 20 footers up to 50 feet or more, giving plenty of choice of size; and the amazingly fine quality of material and workmanship in these craft are proverbial. They are all built of double skin teak and this means that, provided they have not been damaged in any way by collision or otherwise, they are practically everlasting. When fully considered, the price of a conversion can be seen to be a greater saving than at first realised. One is of course able to buy a 30 foot cruiser of good make complete, for something in the region of £500 and, although these are undoubtedly thoroughly serviceable craft under reasonable conditions, the materials of which they are made naturally cannot, at the price, be up to the specification of the naval hull.

We recently had the opportunity of going over some cruisers in course

of construction which had started life as open boats of this type, at Messrs. White & Co.'s yard at Fulham, where we were able to see the various stages of the work. This firm specializes in these jobs and has done so for many years. One interesting case was an ex-42-foot hull which had had 6 feet added to the length by altering the stern, and this completely disguised its origin. Most of the constructional work was finished, the craft awaiting the installation of the two Gardner Diesel engines. The actual cost of this boat without engines will come out to little over £1,000, and when one considers that a cruiser of this size (nearly 50ft.) complete with double-skin teak hull would cost anything up to three times this figure without engines the enormous saving can be appreciated; while the owner will know that he has something which will not only last a lifetime but be capable of going anywhere.

Any who started reading this

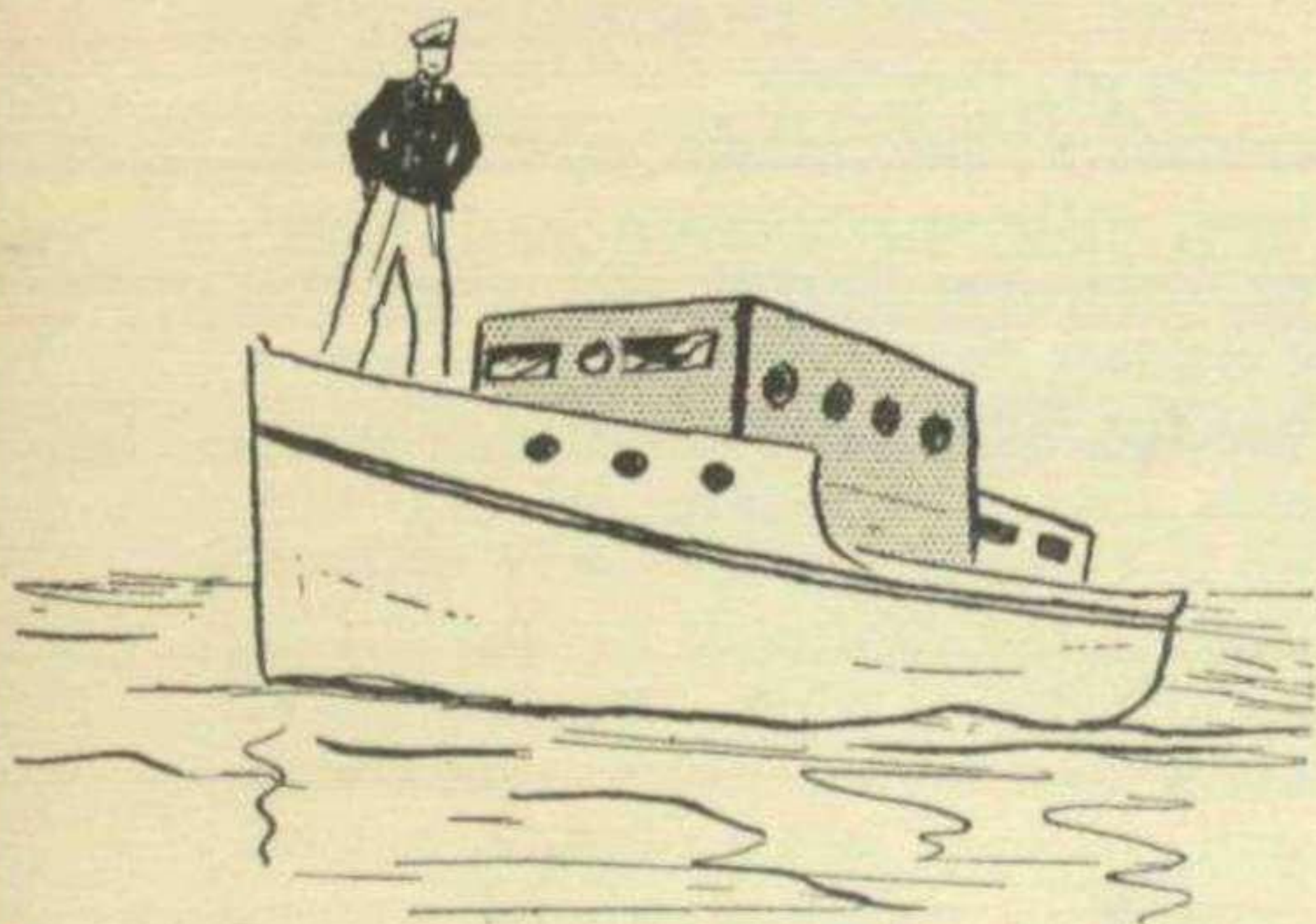
CRUISER CONVERSIONS—continued.



Before!

article with ideas of home-made conversion at a few pounds may be rather disappointed by this talk of comparatively large sums, but we have mentioned this to show that the idea of converting is not as some people imagine a makeshift idea for those who can't afford a proper vessel. The finished job is every bit as much a complete yacht as any built to the owner's original plans. There are, of course, many smaller hulls suitable for this work as well as the 42 x 12 ft. which is definitely a large boat. The 40ft. x 10ft. makes an excellent job with sufficient room for 4 to 6 people according to the accommodation arranged, and the price completely converted by the firm mentioned above will come out at considerably less than £400 to which of course the cost of engines must be added. This so depends on the owner's preference and also on his pocket it is extremely hard to lay down any definite price; naturally the latest type of cold starting Diesel will differ rather drastically from the converted secondhand car engine, although the first cost is very often in inverse proportion to the cost of upkeep and running.

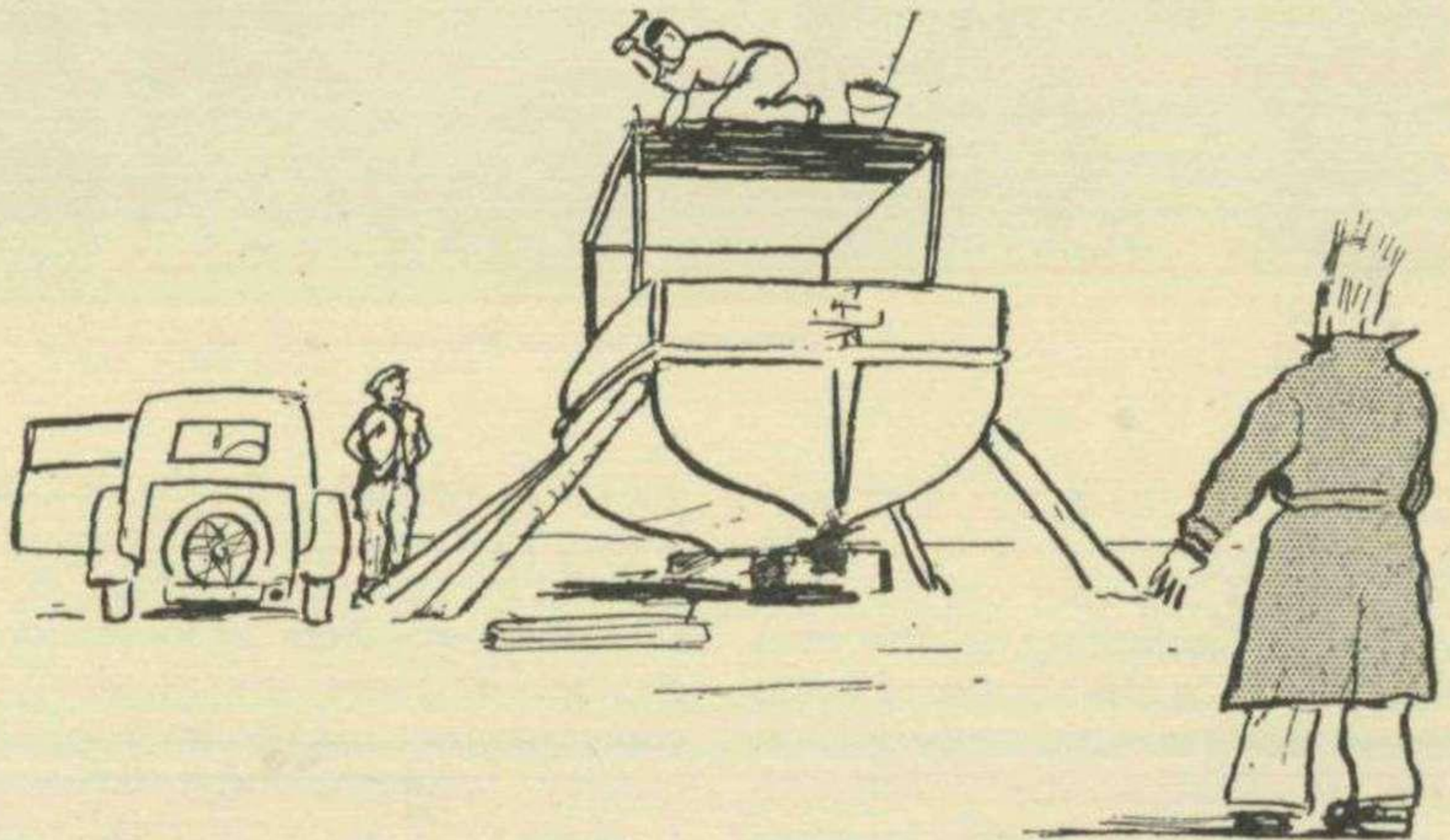
Again we have to consider the



". . . the apple of the owner's eye. . . ."

man who is capable, or thinks he is, of doing all the constructional work himself on the hull, and there are certainly a great many cases of excellent jobs which have been carried out by amateurs resulting in a thoroughly sound cruiser which anybody would be glad to own. There are also, unfortunately, a considerable number of craft which although possibly the apple of their owner's eye are inclined to be a

trunk cabin construction, which without apparently increasing the height, gives at least a portion of the ship in which there is room to stretch. Any tall person who has tried to struggle into his clothes under a 4ft. 6ins. high roof will agree that just a few inches in the centre line of the cabin where he can stand a little more upright will save many an oath and bruised cranium. A question we have often been asked



". . . . picking up a hull and imposing some structure."

nasty jar to anyone who has an eye for form. One of the commonest mistakes is to try to give 6ft. or more head room in a small cruiser. The result is ungainly to look at and unseaworthy owing to the excess of top hamper in relation to the draft. When the point is reached where head room is going to spoil the lines and behaviour of the vessel it is time to give up the idea of being able to stand upright, and one must put up with sitting head room. Probably the best method of getting headroom in a small boat without spoiling the lines is the

is, "What about the ordinary ship's lifeboat for conversion?"

It is true that these hulls when they come out of service can be picked up for a few pounds but the ordinary ship's lifeboat is naturally not built of anything like the same material as a hull built to Admiralty specifications, oak and elm being favourite materials for this type of boat. They are often sound however, and if care is taken to see that the particular hull selected is really worth the work which is going to be required, it will make good cruiser. Those constructed of elm need the

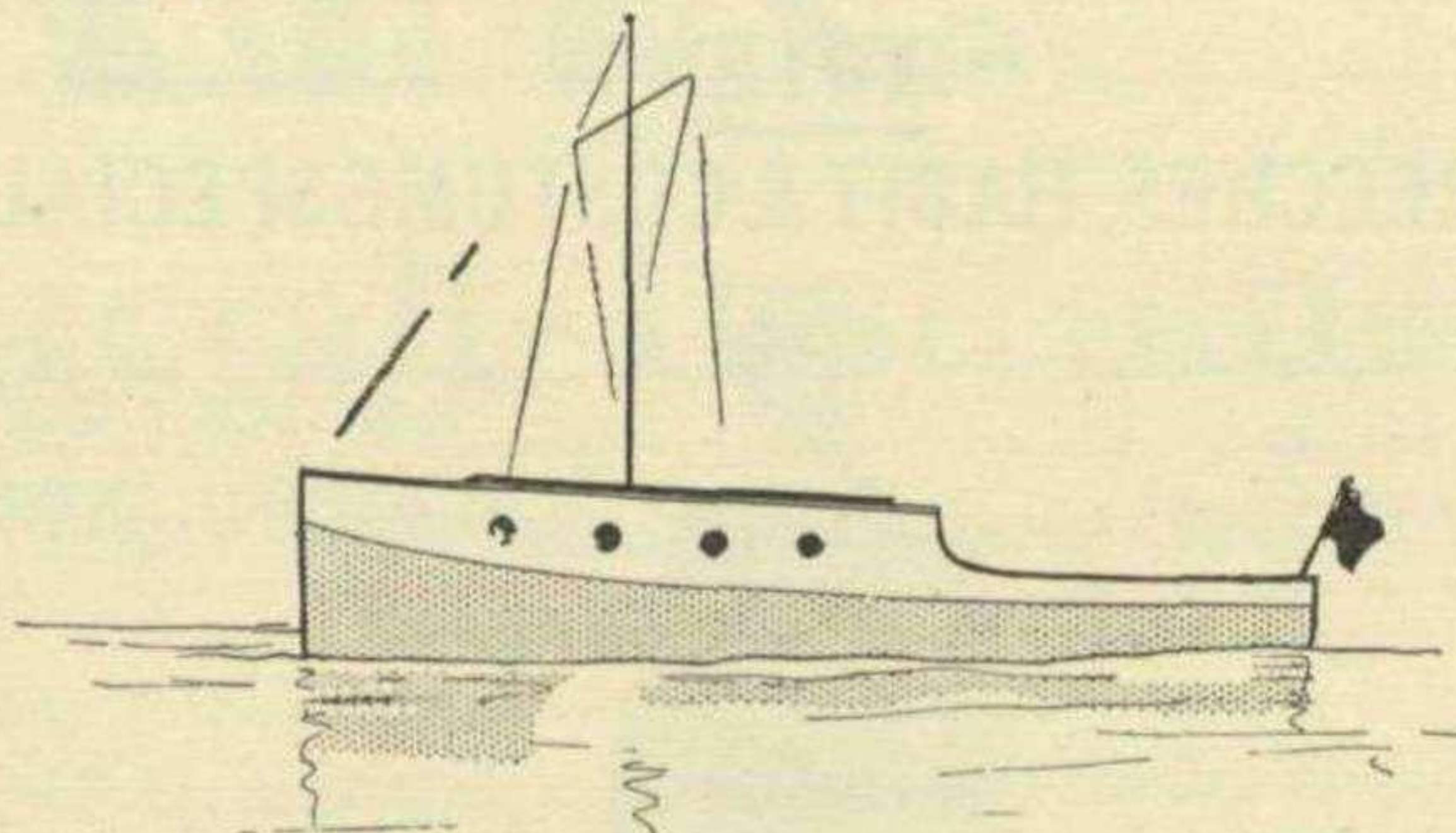
CRUISER CONVERSIONS—continued.

greatest care in examination to see that they are sound as this wood, especially if the boats have been laid up or in fresh water for some time is liable to deteriorate. Another point against them is that they are clinker built, and therefore do not conform to the ideals of appearance demanded by the more fastidious.

However, to the man who wants, in fact must have, a boat of some sort on which he can live for short periods and cannot afford anything better, there is a great deal to be said for the ordinary double ended clinker built 28ft. (or thereabouts) ship's lifeboat. Again the result depends so much upon the ideas of the man who is planning the conversion. We have seen many converted ship's lifeboats which more resembled a Noah's Ark than a respectable cruiser, and

although possibly serviceable, they must belong to a class of person with no eye what ever for line. Conversion carried out by a pukka boat builder will always look reasonable, as no firm which values its reputation will agree to carry out any plans which are going to offend the eye. But the amateur must be prepared to take a considerable amount of trouble if the finished

article is going to be satisfactory. We do not wish it to be imagined from these remarks that it is better for an amateur not to try and do a conversion, as some amateur built cruisers are quite up to the standard of a good boat builder; but this is only in the case where the owner has considerable skill and is really prepared to take trouble. If the hull is worth having a cabin put on it, is worth planning properly and carrying out conscientiously, and if the prospective owner does not really feel capable of the job he would do better to get the work carried out by some firm who specializes in it. Although this may cost him a bit more at the time he will have no cause to regret it. A few pounds extra will be forgotten in time, but an ugly or unseaworthy boat is a curse to the end.



After!



FREE. Send for the complete Illustrated Catalogue of Super ELTO Motors, No. 1 Post Free on request.

5 Super ELTO Motors for racing and utility. Prices from £35.

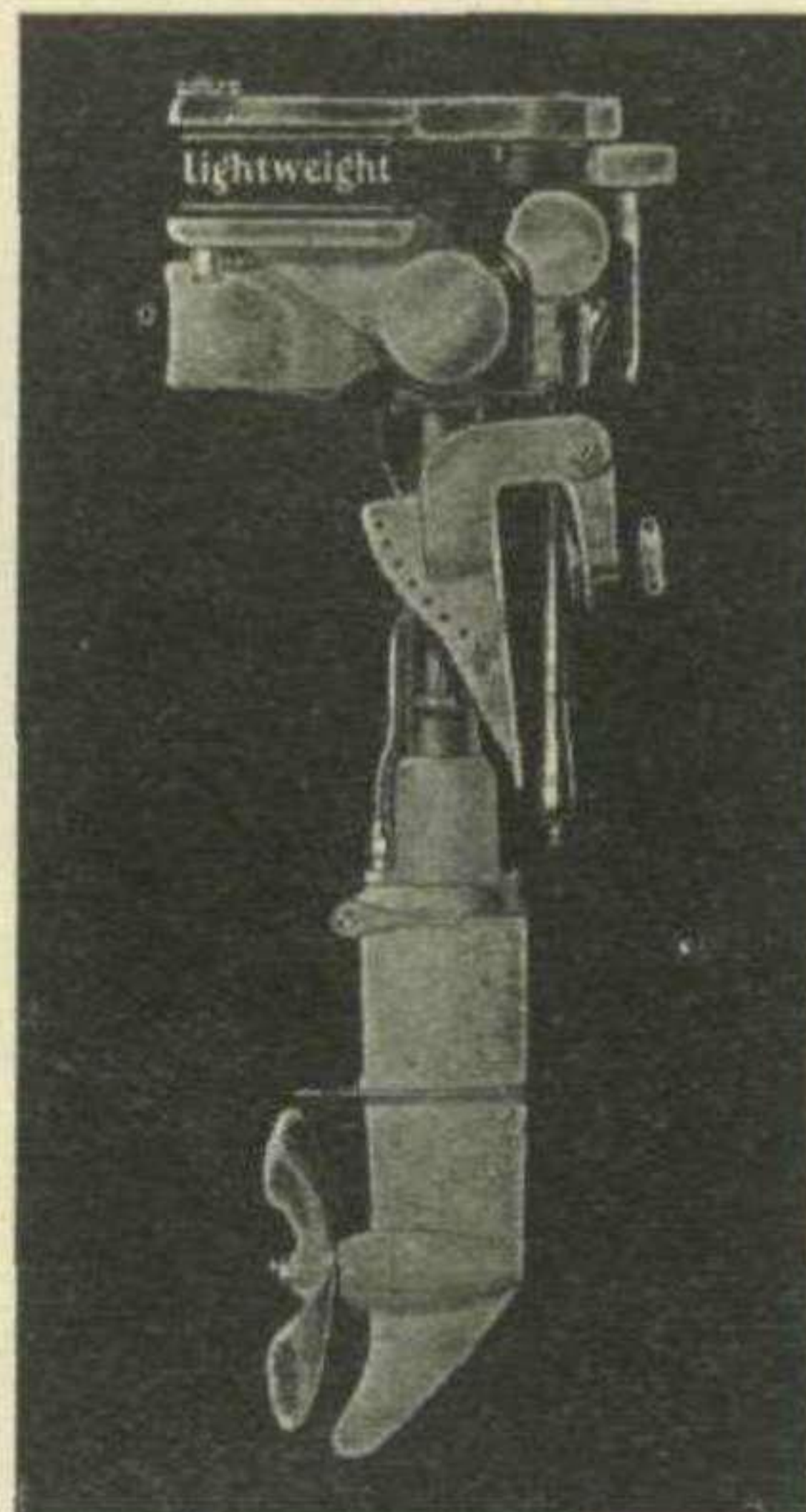
HIRE PURCHASE TERMS ARRANGED

Thrills afloat

with an ELTO Outboard to power your favourite boat

In outboard motor boating there's your greatest promise of pleasure—but your motor must be ELTO.

Not simply because Super ELTO Outboards figure most prominently in speed championships and endurance tests. But because they are built exactly for you. Not only in power and speed, but in silence, easy starting and durability are they unquestionably your motors. Especially the Super ELTO lightweight—handiest of all outboards; weighs only 38lbs.; actually **folds** for easy carrying, yet supplies ample power for all average needs.



The
Super ELTO
"Starts with a quarter turn"
Outboard Motors

ELTO MOTOR SALES CO.

"ELTO" HOUSE

24 Harrison St., London, W.C.1

"HALLZONE" Clothes are Distinctively Tailored from Finest Quality Materials, are of Irreproachable Cut, Fit and Style, and of Unequaled Value.

Awarded 12 Gold Medals for Superlative Sartorial Service,

HARRY HALL^{LD}

GOVERNING DIRECTOR:- HARRY HALL

"THE" COAT, BREECHES, HABIT & COSTUME SPECIALISTS



"HALLZONE" IDEAL GOLD MEDAL PRODUCTIONS.

- Lounge Suits from £6 6 0
- Overcoats " £6 6 0
- Raglans " £6 6 0
- Motor Ulster " £8 8 0
- Dress Suits " £10 10 0
- Dinner Suits " £8 8 0
- Plus 4 Suits " £6 6 0

SPECIAL OFFER.

- Jacket and Vest in Black or Grey from £5 5 0
 - Trousers in Solid Worsted from ... £2 2 0
- An Ideal Suit for Business and Professional Wear.



Ladies' Salon

181 OXFORD STREET, W.1.

- Astride Habits from £10 10 0
- Side Saddle " £12 12 0
- Riding Breeches " £2 2 0
- Ski-ing Suits " £9 9 0
- Costumes " £6 6 0
- Long Coats " £5 5 0



UNEQUALLED VALUE.

DISTINCTIVE STYLES.

EXCLUSIVE MATERIALS.

PERFECT FIT.



Only Maker of "Hallzone" Ideal Gold Medal

42/- Riding Breeches

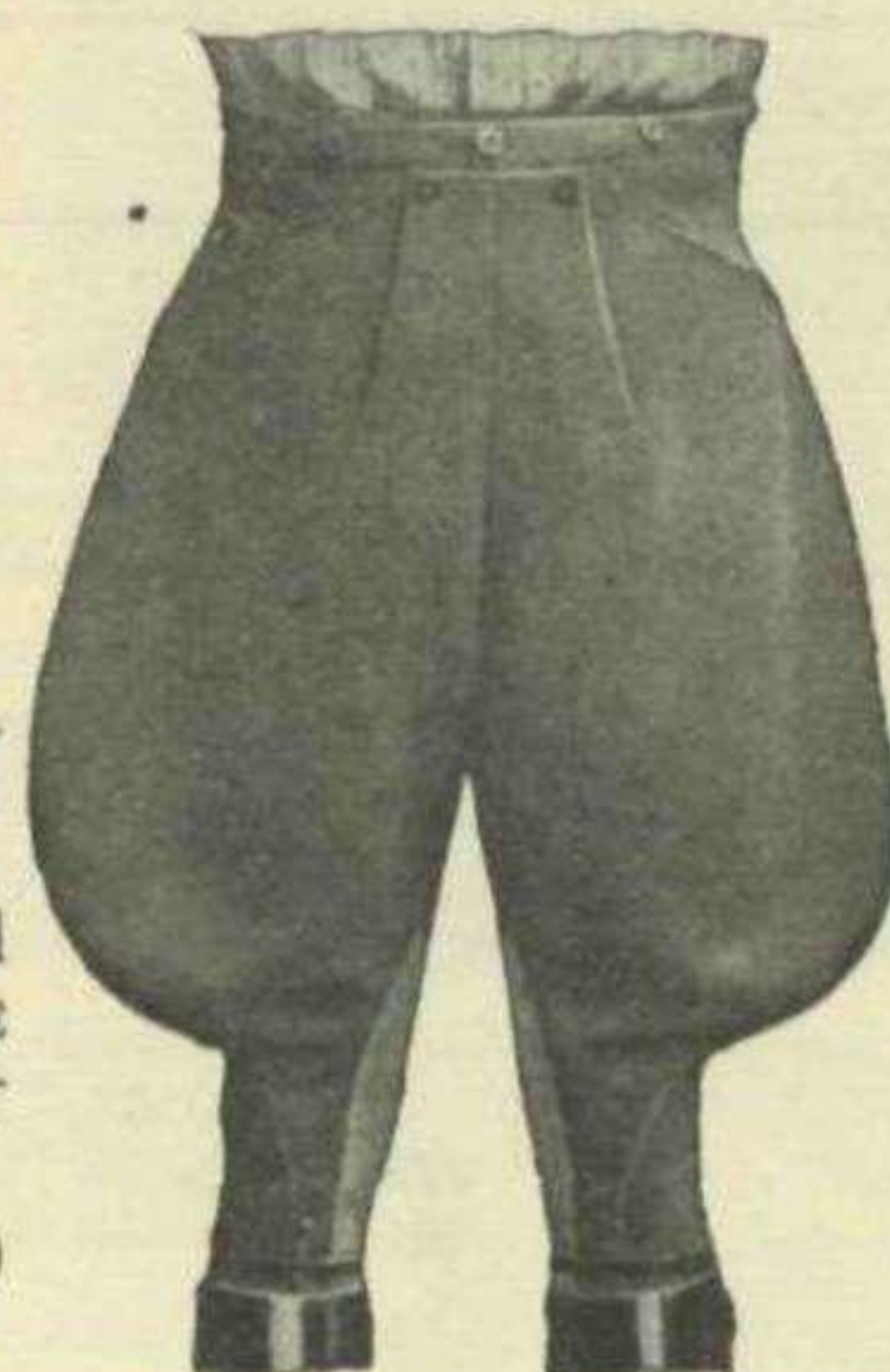
Best Value, Fit and Style Breeches obtainable



The "Sunday Graphic" Critic says:

Jasper Maskelyne appeared in the most IMMACULATE EVENING DRESS I have ever seen.

(Made by Harry Hall Ltd.)



(From Actual Photo)

AQUASHINE COVERALL.

The Ideal Weather-Resisting Rain and Dust Coat, Indispensable for Town and Country, Proofed Check Art Silk or Woollen Lining 63/-

PATTERNS POST FREE

PATTERNS POST FREE.

181 OXFORD STREET, W.1

&

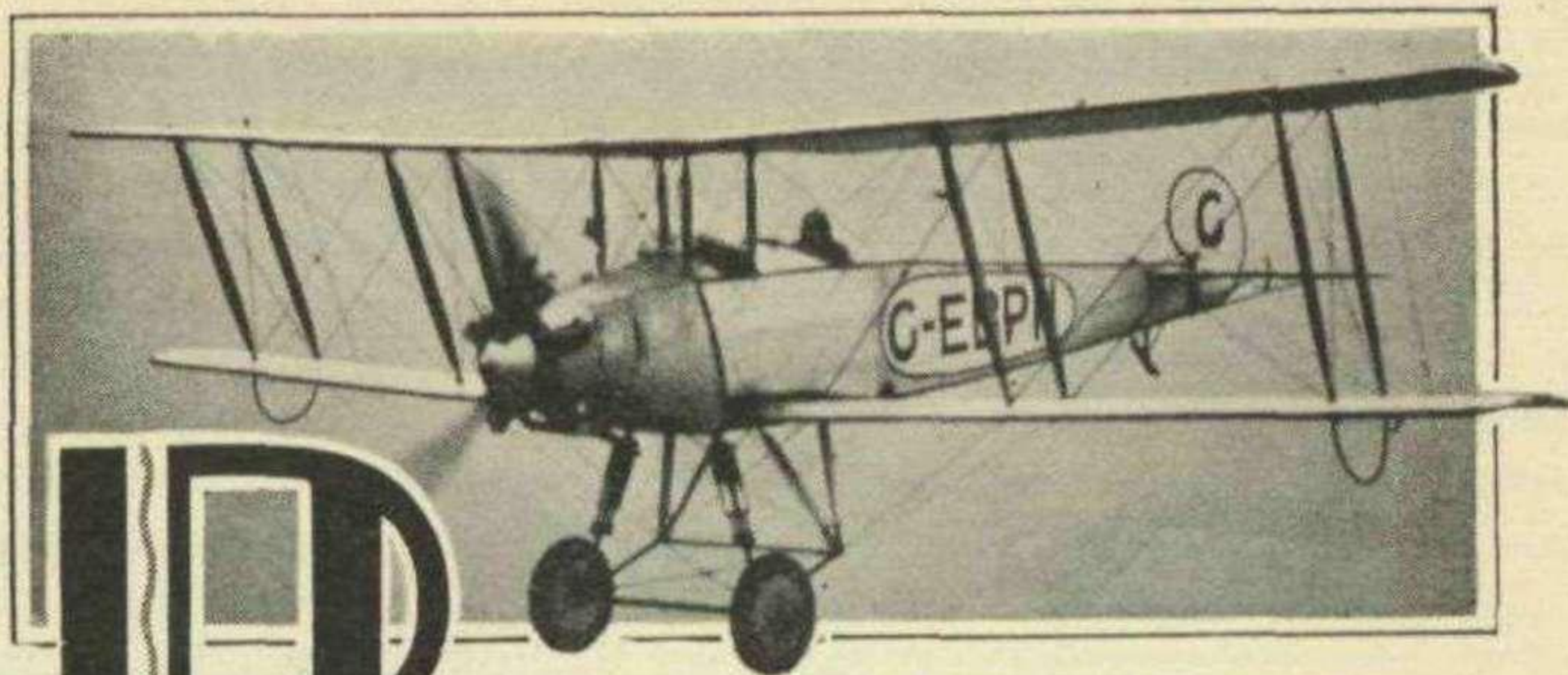
149 CHEAPSIDE, E.C.2

'Phones: REGENT 3024, 3025 and 7486.

NATIONAL 8696-8397.

Please mention MOTOR SPORT when corresponding with advertisers.

AIR



Aircraft Instruments

Their Internal Mechanism Described

THERE was a time when any form of indicator on an aeroplane was regarded as a novelty; that was when air pilots relied solely on their judgment, air sense, hearing and "feel" in flying a plane. Present day conditions and requirements have altered this so that every aeroplane which takes the air is now equipped with at least three different instruments; in fact no machine is eligible for an Airworthiness Certificate unless it carries a specified complement of indicators.

The three principal instruments, as everyone who sits in the cockpit knows, are the revolution indicator, the airspeed indicator and the altimeter, and while most people are familiar with the appearance of these, few know of the intricate details of the design and mechanism which lie behind the dials which help to record the behaviour of an aircraft engine, speed, through the air, and the height at which a machine travels.

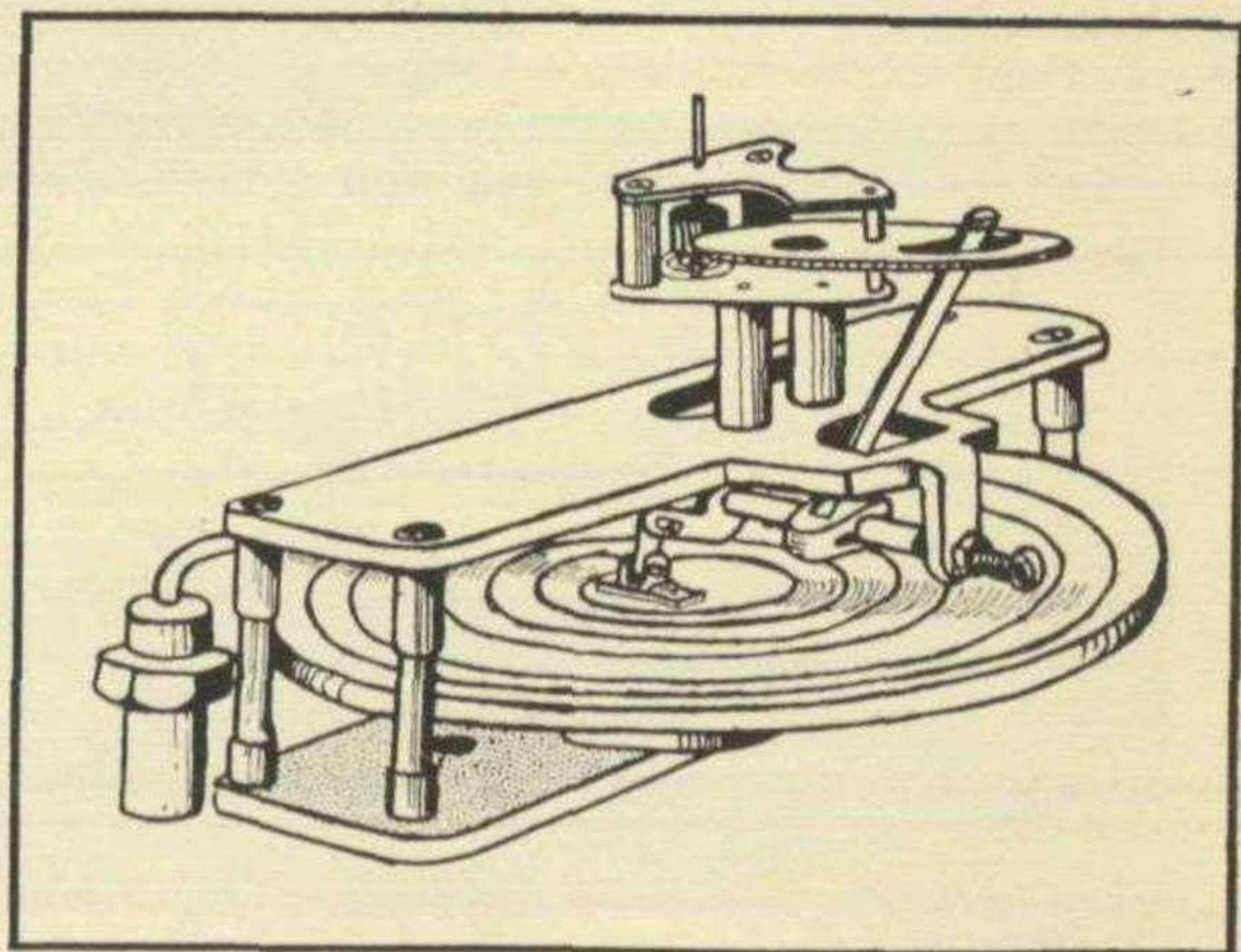
The Revolution Indicator.

In the evolution of the R.P.M. indicator, various principles have been tried in the system of working—notably magnetic, hydraulic and centrifugal, but the test of time has resulted in the centrifugal type being the most favoured.

In the head of this instrument a rotating spindle is mounted, which is driven by a flexible shaft coupled to the engine. The spindle carries a form of sloping fly-wheel which, owing to centrifugal force, tends to run true as the speed of rotation increases. This action is transmitted to a spring-loaded sliding collar (also mounted on the spindle), which, in turn, transfers the movement through a rack and pinion to the pointer on the familiar calibrated dial, and thus the varying speed of the engine is indicated.

It goes without saying that the essential quality of an indicator is accuracy, and in consequence, manufacturers work to very fine limits in calibrating their instruments. The Accurate Recording Instrument Co., for example, test and calibrate their R.P.M. indicators with a highly-scientific apparatus known as a Stroboscope. The standard adopted in this machine

is a tuning fork of a known vibratory pitch; this fork is set humming, and the vibrations are used to make and break the contact of an electric circuit, consisting of a neon tube and a secondary cell. The neon tube is



The internal mechanism of an airspeed indicator. Movement of the diaphragm is transmitted to the pointer through the link gear and pinions.

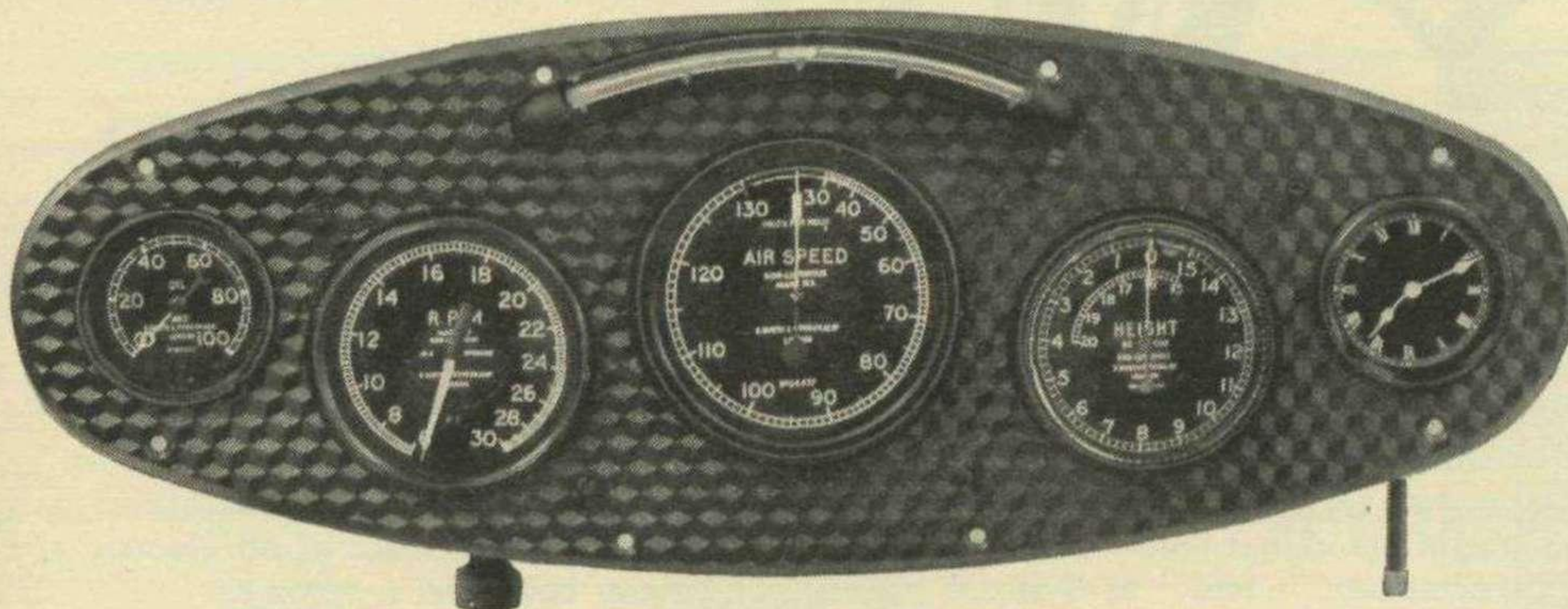
mounted in a dark cabinet, at one end of which is a spindle connected to a small variable-speed electric motor; on the end of this spindle is a disc which is covered with various geometric designs, and the reverse end of the spindle is coupled through a flexible drive to the instrument under test.

When the motor is revolved, the speed of which is controlled by a rheostat, the disc also revolves at the same speed and being illuminated by the vibrating light from the neon tube, gives the operator a series of designs caused by an optical illusion. The operator knows by the shape and contour of the design the exact speed of the motor, and he can thus accurately calibrate and check the instrument undergoing test.

AIRCRAFT INSTRUMENTS—continued.

Airspeed.

Modern airspeed indicators may be divided into two classes—those which embody the pitot static head and those of the Venturi type. While the latter is in general use in America and on the Continent, the pitot head instrument is the type commonly installed in machines in England. In reality, the British type of airspeed indicator is a very sensitive pressure gauge, working on the diaphragm principle. An oiled silk or metallic capsule with corrugated walls is mounted in an airtight housing, and the movement of this capsule, or diaphragm against a spring is transmitted by a highly sensitive rack and pinion device to the pointer on the dial. An aluminum tube is taken from the pressure side of the diaphragm and connected to the pressure head which is mounted on the leading edge or wing strut of the machine, and another tube connects the static side of the diaphragm to the static side of the pitot tube. Thus a combined pressure and suction is created on the respective sides of the diaphragm, which varies according to



A typical light plane facia board, equipped with Smith instruments.

wide range under the most varied conditions of temperature and different altitudes—factors which can easily upset the accurate registering of the instrument. As an instance of the high standard which has now been reached, a test, carried out some time ago, of an indicator made by S. Smith & Sons, showed that it had an accuracy of from one to one and a half miles per hour over a speed range of 40 to 170 m.p.h., and under a range of temperature of 40°C. to -30°C., the error was within one mile per hour.

With machines operating in all quarters of the world—in intense heat and cold—fabric diaphragms and rubber connections for the pitot tubes have proved to be a source of trouble in the past, so that all-metal instru-

ments are now being used in increasing numbers.

Altimeters.

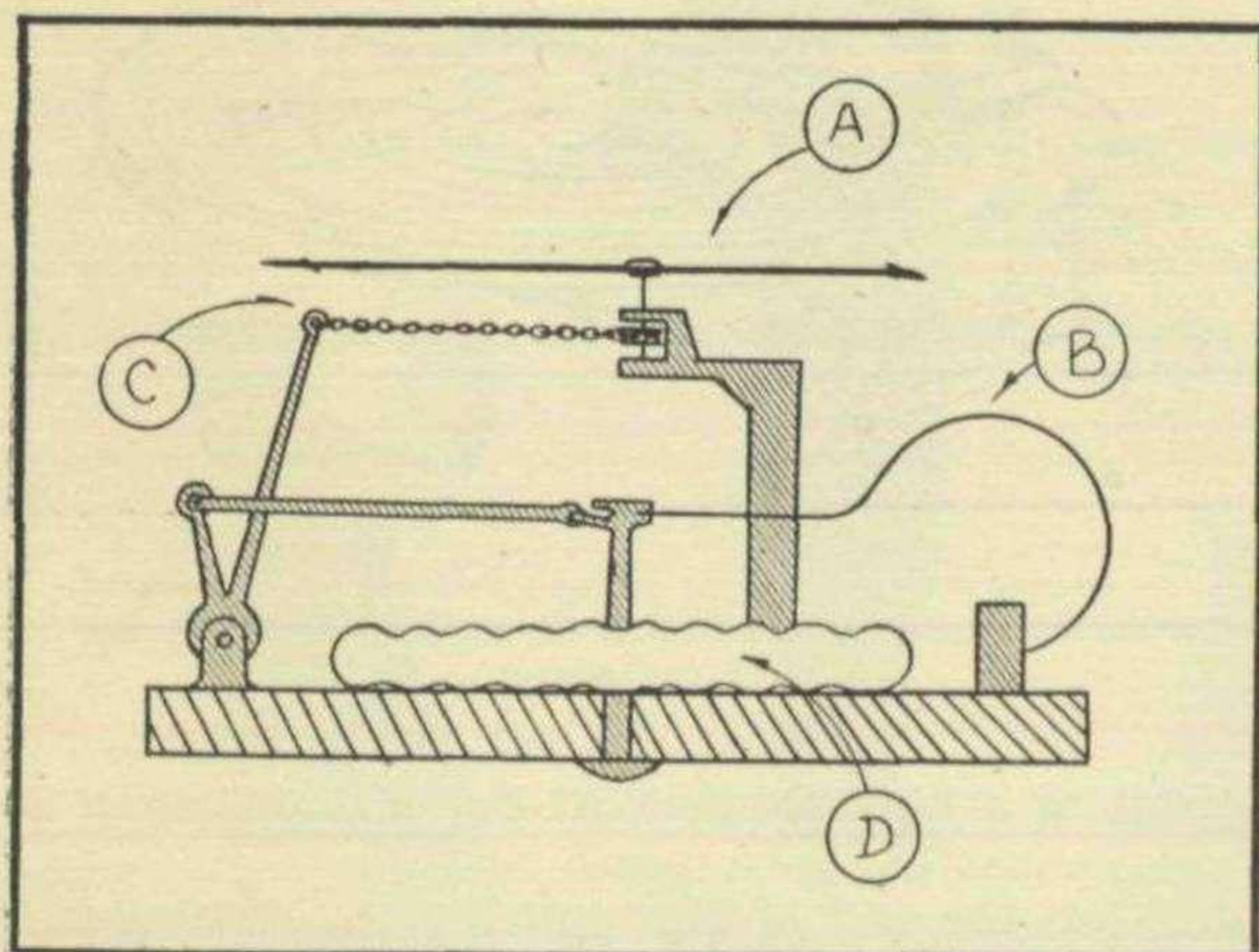
The altimeter, like the air speed indicator, is now regarded as a highly essential instrument for modern flying, and similarly, has now reached a stage of development when its action is extraordinarily accurate and reliable.

Its internal mechanism comprises a form of aneroid barometer, with a corrugated metal capsule. There is a partial vacuum inside the capsule and a steel spring is attached to the exterior in such a way that it pulls against the atmospheric pressure acting on the capsule, and balances the two forces at "sea-level" (14½ lbs. per square inch). Thus the capsule is sensitive to barometric pressure and tends to expand (aided by the spring) as the altitude increases, the external pressure being lessened by ½ lb. for every 1,000 feet. This movement is conveyed to a pointer by magnifying mechanism comprising: a compensating arm, a fulcrum, a fine silver chain, a "puller" and a hair spring.

The instrument is compensated for variation of temperature by the expansion of two metals—brass and iron—which are to be found in the compensating lever. Atmospheric pressure varies, of course, at ground level, hence the revolving dial arrangement operated by the knurled head, which permits the setting of the instrument at zero before the machine to which it is fitted is taken off.

Altimeters are tested by makers by being placed in a chamber which is connected to a standard mercury column gauge. Vacuum or pressure can be introduced to the chamber from secondary tanks, the control being by means of highly sensitive valves and the working of instruments can be checked to an extremely fine degree.

G.G.O.M.



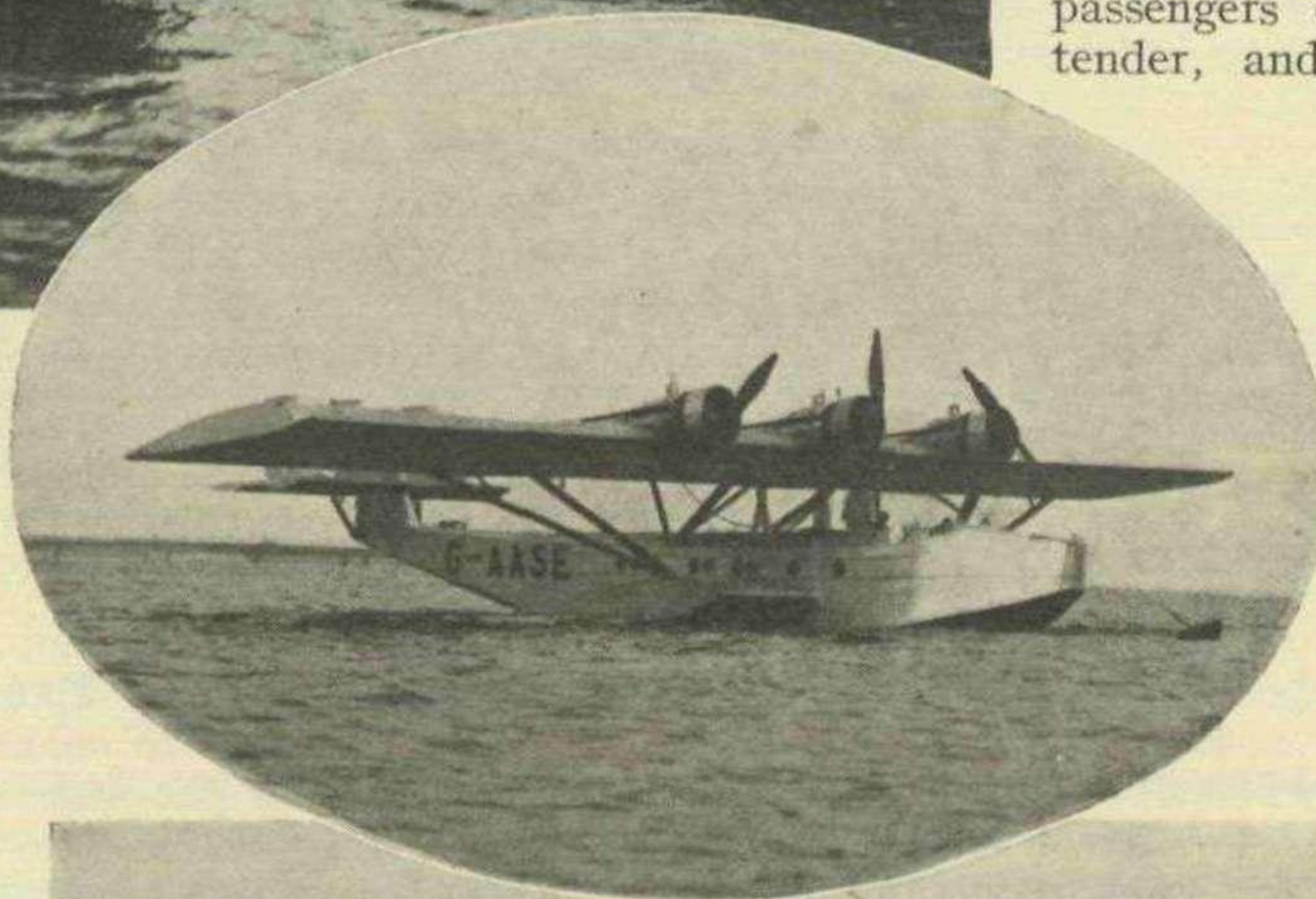
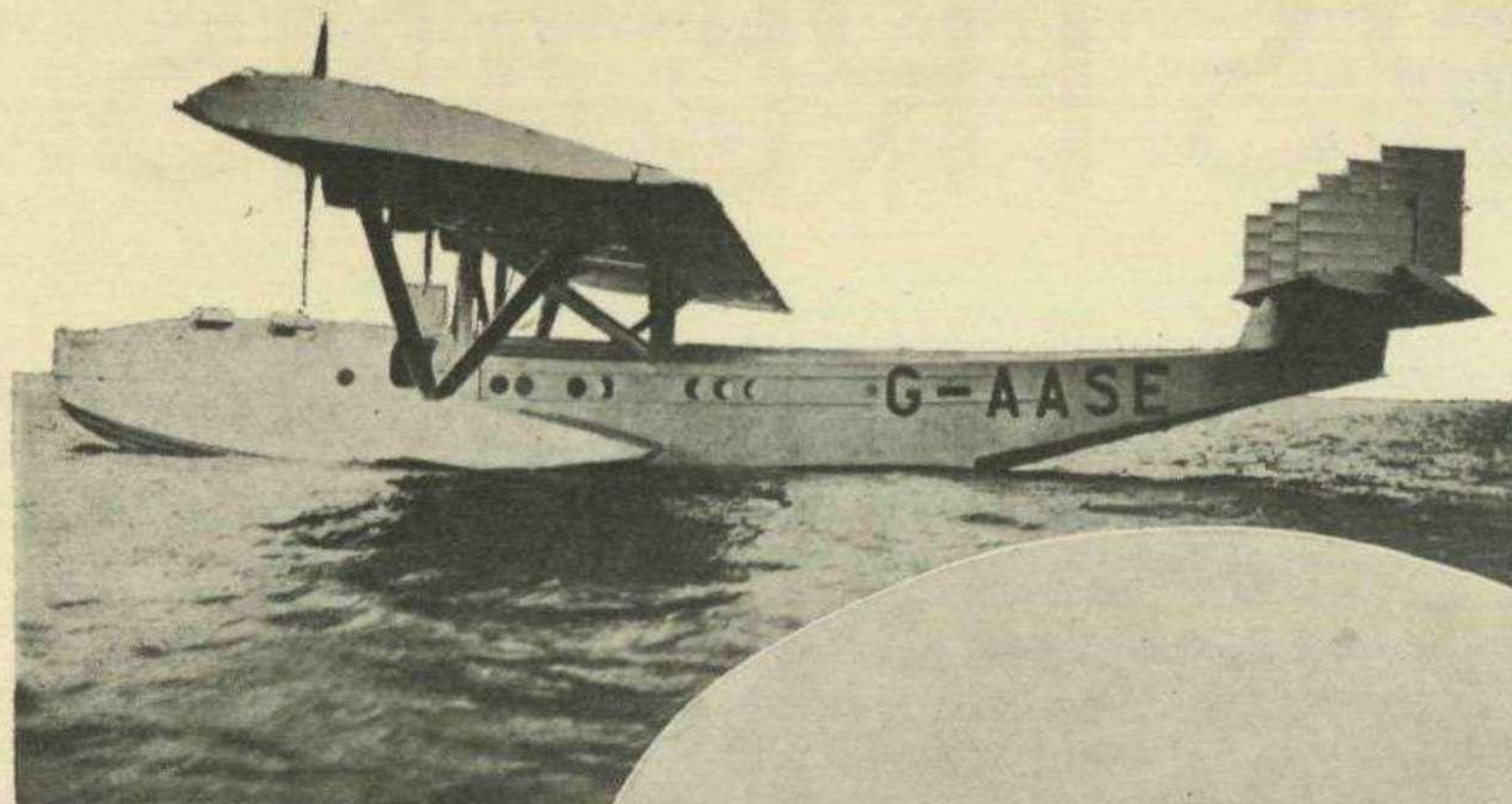
A part-sectioned diagram of an altimeter showing (a) the pointer, (b) compensating spring, (c) actuating arm and chain, and (d) the corrugated metallic capsule.

the speed of the machine when in the air. Airspeed indicators are usually calibrated and tested by means of a water column pressure gauge, but, of course, they may be, and very often are, checked for accuracy by being placed in a wind tunnel.

Considerable ingenuity has been employed during more recent years in the construction of air speed indicators so that they now give dead true readings over a

A 1,320 H.P. AIR YACHT

THE SPECIALLY-BUILT SUPERMARINE MONOPLANE



triple rudders are partially balanced, as is usual on a machine of such size.

The fuel and oil tanks are situated in the wing, and with a full load of petrol and a minimum crew, 2,000 miles can be covered with the machine without re-fuelling; emergency petrol tanks are carried in the stub-floats. The latter, by the way, serve as a convenient platform for passengers coming aboard from a tender, and when at anchor the space is available for ordinary deck use.

The quarters within the hull are extraordinarily replete and well-equipped. In the bows there is an open cockpit for the use of passengers and behind this are situated the pilots', which are fitted with dual-control. Aft of these are two more

IN the U.S.A., the flying boat and the amphibian are fairly popular amongst private owners, and during recent years one or two remarkably elaborate "air yachts" have been built to the requirements of wealthy American sportsmen. Nothing so far conceived however, can approach the new monoplane flying boat which has been designed and produced by the Supermarine Aviation Works Ltd., to the special order of the Hon. Ernest Guinness.

Apart from the incorporation of the most up-to-date principles and ideas in its design, this craft is interesting in being the first flying yacht to be built in England to the order of a private owner; it is also the first multi-engined monoplane produced by the Supermarine Company.

The material used in its construction is, for the most part, duralumin; the main members of the hull superstructure, the wings and the controlling surfaces are all of this metal, and stainless steel is used largely for the hundred and one small fittings and parts under heavy stress. The wing covering, however, is of fabric. As can be seen from the accompanying photographs, the wing (which has a span of 92 feet) is mounted high on the hull, on struts in N-shaped formation, while lift-struts run from the wing to the extremities of the stub-floats or stabilizers which are placed amidships.

The three Armstrong-Siddeley "Jaguar" engines are mounted on the wing and are fitted with Townsend exhaust-collector rings, which in conjunction with the streamline fairing, give the installation a very neat appearance and reduce drag. The elevator and the

cockpits, again, for the use of passengers. Down below, the accommodation is spacious and luxurious, there being a saloon and berths, provided with wardrobes, dressing tables, sideboards, and in fact, everything which is usual in yacht furnishing practice.

A neat little galley, with oil cooking apparatus is also included, and a wireless plant is carried which allows of transmitting and receiving messages when the craft is in flight or on the water. Due consideration has been given to the matter of lighting and an electric system is installed throughout, while a row of portholes on the port and starboard sides give a brightness to the interior, which is by no means common in plenty of cabin machines. The cabin is also fitted with a ventilating arrangement so that it is possible to keep the atmosphere at an even temperature.

All told, the weight of this remarkable aircraft is $10\frac{1}{2}$ tons, and with six passengers, a crew of three, and 600 lbs. of luggage she has a cruising speed of 100 m.p.h. and a top speed of 120-130 m.p.h.



SLIPSTREAMS

Coming Events.

ALTHOUGH we must wait until 1931 before we shall be able to witness once again the greatest of all flying events—The Schneider Contest—this year's calendar already contains a round dozen fixtures of more than ordinary interest.

Foremost among these is the International Touring Competition for light aeroplanes, which is to take place during the period July 20—August 7. The Germans won the Competition last year, it will be remembered, and in consequence the arrangements for 1930 are being made by the Aero-Club von Deutschland. The contest will start and finish at a German 'drome. The competition will be divided into two parts—a circuit of Europe of 4,690 miles, and a technical test. There will be some twenty-eight stopping places in the itinerary, and added interest will be given to the trial, from the point of view of people in England, by the fact that the competing machines will land at Croydon and Bristol on one stage of the route. Points will be allotted in the first part of the contest for speed, regularity, and fuel economy, and in the technical test the judges will award marks for such qualities as ease of starting, fire protection, comfort, and ease of erecting and dismantling; there will also be take-off and landing tests.

The rules of the competition will be stringent, and, the course being a particularly arduous one, the winning pilot will well deserve the 100,000 francs which is to be offered as the first prize.

The King's Cup.

In regard to the King's Cup Race, the Royal Aero Club announces that it has been fixed for Saturday, July 5th. The course will be approximately 750 miles and the race will be confined to one day only, the start and finish being in London. A big and varied entry is anticipated and one or two new types of machines, I am told, will make their first public appearance on occasion of the race.

The Royal Air Force Display at Hendon is scheduled for Saturday, June 28th., and with the King's Cup coming just a week after, there will be plenty to interest air-minded Londoners during these two week ends.

Other fixtures include the Leicester Flying Meeting, arranged by the Leicestershire Aero Club on the 19th of this month; the Bristol Air Pageant on 31st May, when the Bristol Municipal Aerodrome is to be officially opened; the Northampton Aero Club's meeting at Sywell; an air rally at Haldon (21st June) and a pageant at the new municipal aerodrome at Ipswich (26th June). On 26th July the Norfolk and Norwich Aero Club will

hold a big meeting at their 'drome at Norwich and on the 20th of the month following, that enterprising body, the Lancashire Club will combine with the Liverpool and District Aero Club in the staging of an elaborate air pageant.

N.F.S. also intend to hold three air meetings at the London Air Park at Hanworth this year, and two at each of the provincial clubs associated with them. So far as possible, the dates selected will avoid clashing with other events. The meetings for which provisional dates have been fixed, up to the moment, are:—

Reading—Saturday next, 5th April and 7th June; Hull—12th April and 19th July; Hanworth—Easter Monday, 21st April and 27th September; Leeds—26th April and 13th July; Nottingham—15th June.

The Berks, Bucks and Oxon Aero Club, as the first N.F.S. club outside Hanworth to be fully organised, is going full-out to make a big show next Saturday. On the eve of the pageant, a ball will be held at the Town Hall, Reading, to which all visiting pilots are invited.

I hear that the N.F.S. stunt circus consisting of Messrs. Schofield, Wilson and Mackenzie, who "did their stuff" at the Hull Pageant last October, have been busy lately with formation practice in preparation for these meetings and their presence at the various 'dromes will undoubtedly make things go.

Inverted Engines.

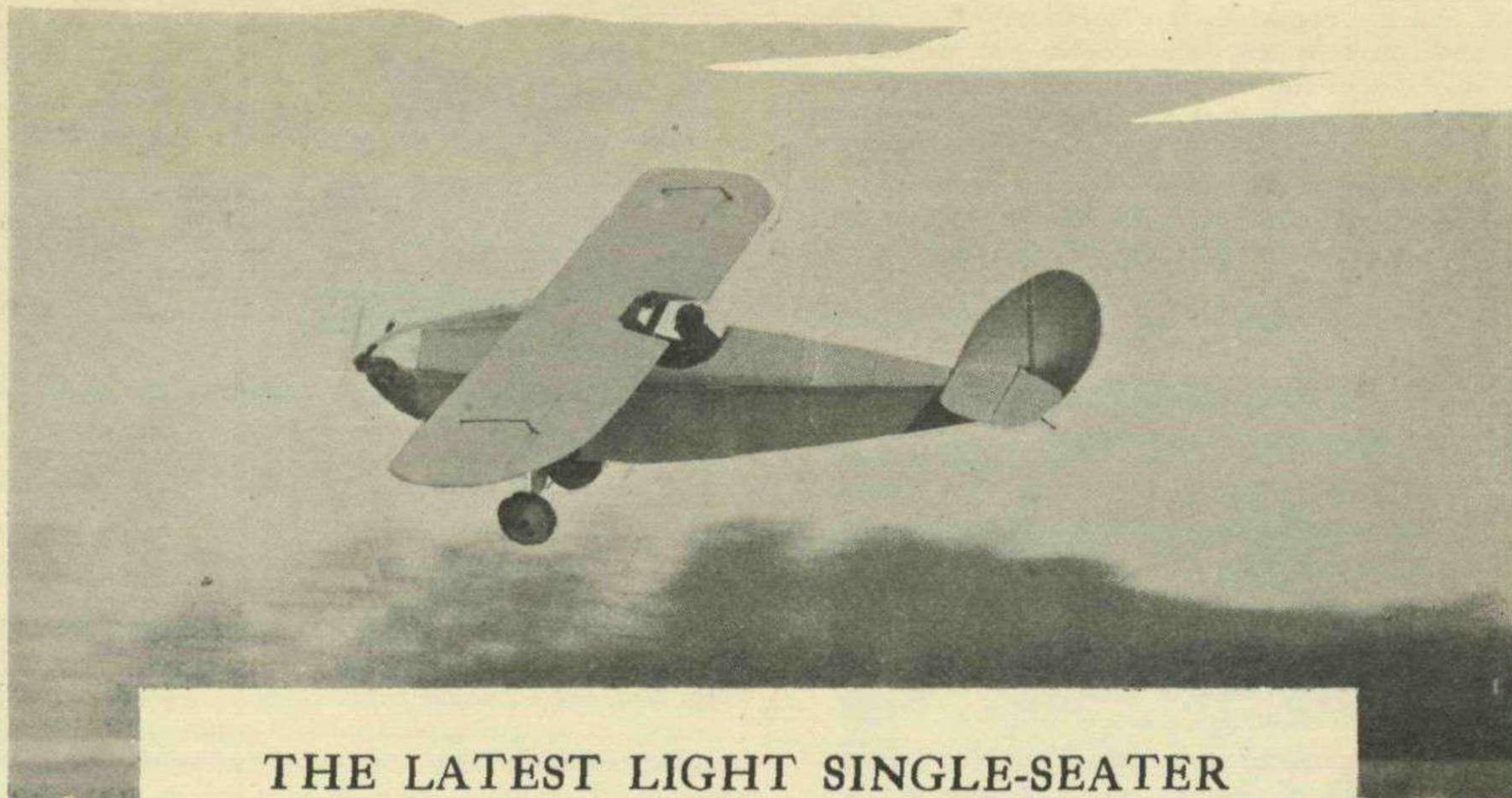
Designers, nowadays, are giving increasing attention to the matter of the pilot's view-obstruction in light 'planes, and various means are being adopted to improve the forward visibility. The mounting of the engine in an inverted position, as found on the new Moth III., is an example, and considering the obvious advantages offered by this upside-down arrangement, I should not be surprised if other makers soon follow the lead set by the D.H. concern.

The inverted engine, by the way, is no novelty for, although it never became popular, a unit of this type was made as long ago as 1913. This was a 70 h.p. four-cylindered motor, made by the German Daimler Co. It was water-cooled, with overhead valves and the cylinders were cast in pairs.

An up-to-date German version of the inverted engine, it may be remembered, was exhibited at the Aero Show last year—the 80 h.p. air-cooled four-in-line Argus. This type of engine is used in an interesting German monoplane—the Arado L.II., a cantilever high-wing, cabin machine with side-by-side seating.

"RUDDERBAR."

THE COMPER "SWIFT"



THE LATEST LIGHT SINGLE-SEATER

[“Flight” photo]

THE Comper Aircraft Co., Ltd., of Hooton Park, Cheshire, is a newcomer to the industry, but to those who remember the early light aeroplane trials at Lympne, the name is not at all unfamiliar because in those days some remarkably good performances were set up by machines designed and flown by Lieut. N. Comper, who is a principal of the firm now bearing his name.

Lieut. Comper has always been a strong advocate of the really light aeroplane and his Company have produced their little “Swift” in the belief that there is a certain potential market for a fast sporting machine of low initial cost and maintenance. In particular such a machine should be of undoubted value to flying clubs in that it could be used by solo pupils instead of dual-control machines which are always very much in demand for instructional purposes. Moreover by using a safe and reliable single-seater machine of 40 h.p. in place of a 90 h.p. or 100 h.p. two-seater the expense entailed during the period of training people to fly could be substantially reduced.

There is a saying in the flying world that if an aeroplane looks right it generally *is* right, and the truth of this is certainly confirmed by both the appearance and performance of the Comper “Swift.” From whatever position this little machine is viewed one gets the impression of robustness, efficiency and speed and it is difficult to see where the excellent lines of the plane could be improved.

Constructional Features.

The structure of this monoplane is unusually interesting, and a detailed inspection of it reveals the fact that all the best features of its predecessor, the C.L.A.3, which put up such a good show at Lympne in 1925 are

incorporated. The fuselage is built in three portions which are bolted together; this system obviously minimises repairs and replacements and simplifies transport work. Unlike the usual fabric covered fuselage there is no “bag” (which is somewhat troublesome to remove when an internal inspection is necessary), each portion having its own independent fabric covering. Thus, when any major adjustment or inspection is carried out it is only necessary to strip off a section of the fabric. Provision has also been made for minor inspection by a quickly-detachable panel in the underside of the fuselage. The longerons and intermediate struts are of spindled spruce with plywood gussets, while the top decking is covered with plywood so shaped as to give a pleasing and well stream-lined form.

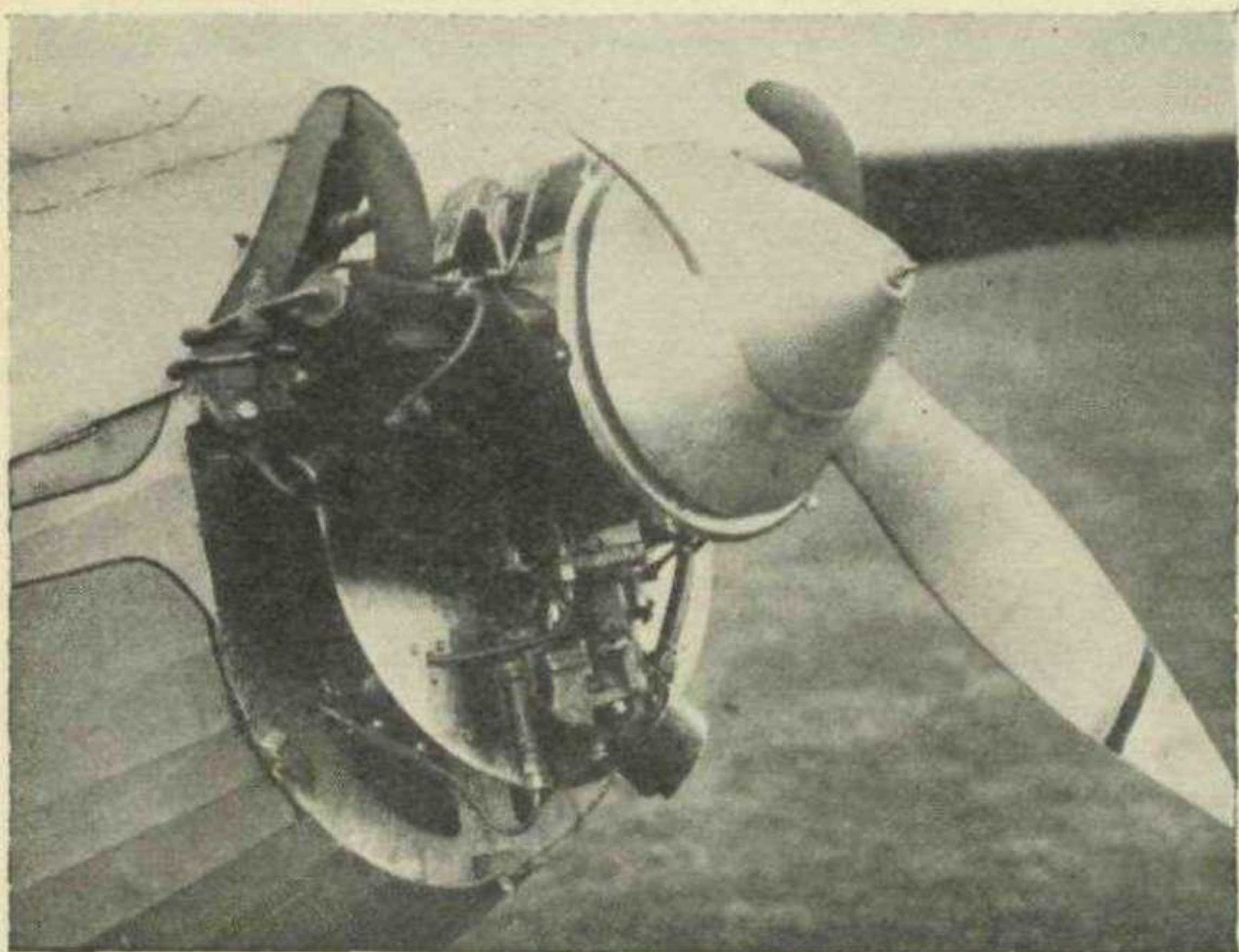
As the illustrations show, the monoplane wing is without dihedral and is braced by means of V struts which are attached at one end to the wing spars and at the other to the bottom longerons. The wing is built up in three portions the centre section being supported on two fuselage bulkheads situated in front of the cockpit. The front and rear spars of the centre section are attached to extensions of these bulkheads by means of simple steel plates and there is an auxiliary spar which carries part of the aileron control gear. The trailing edge of the centre section is cut away in order to obviate any view-obstruction to the pilot, and the air-speed indicator and altimeter are placed in a convenient position on the rear spar, where they can be read at a glance.

Conforming to usual practice, the wings are of the folding type, and are hinged at the rear spar so that by simply withdrawing locking pins from the front spar they may be folded back close to the fuselage. The spars are made of spruce, spindled and routed for lightness and the form ribs are of built up girder construction

THE COMPER "SWIFT"—continued.

with plywood gussets. The ailerons are hinged to the rear spar and are operated by a combination of cables, cranks and push tubes; the cables are duplicated. The leading edge of the wing is stiffened with a plywood covering in order to preserve the true wing section profile.

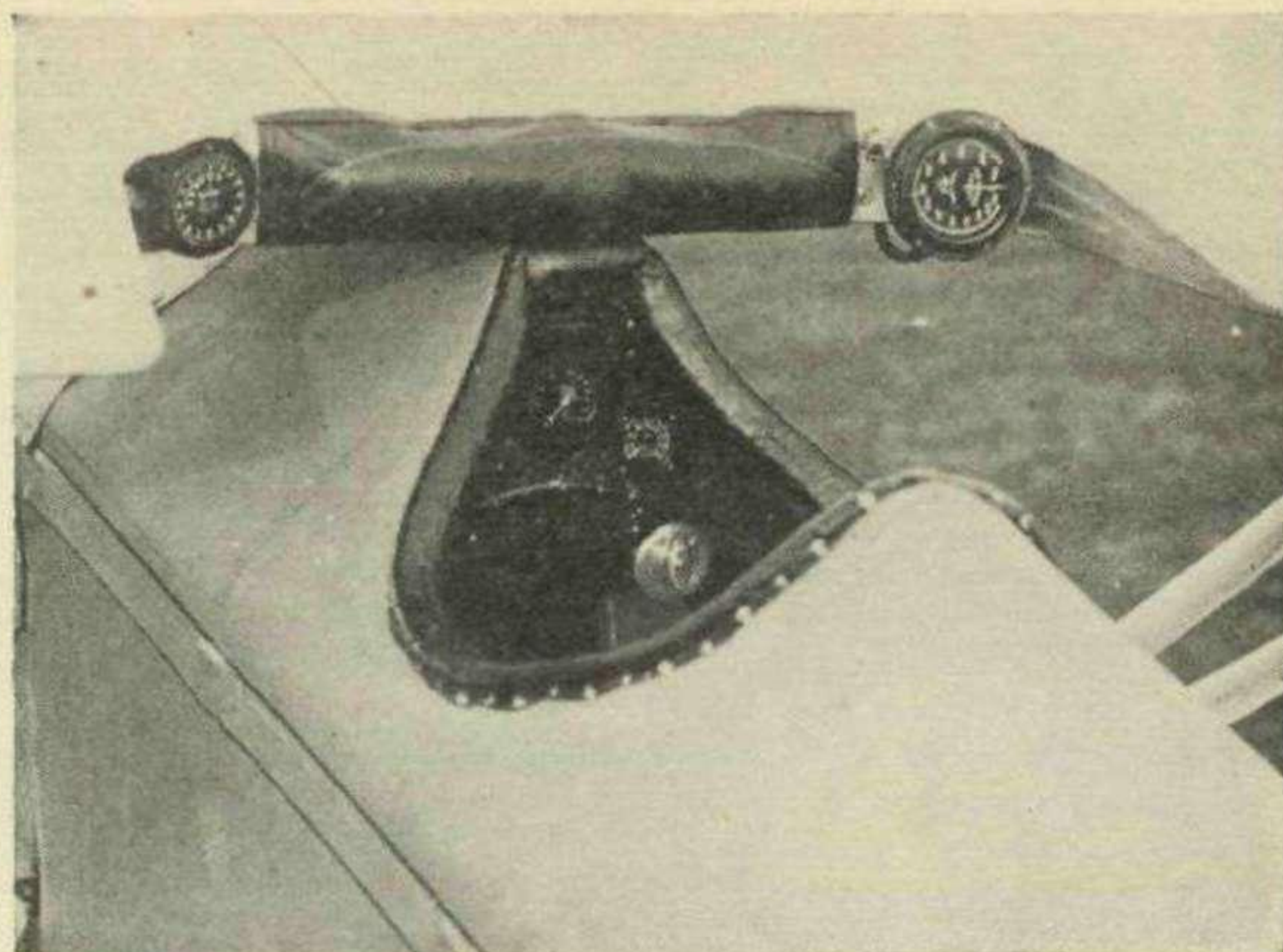
The tail unit is of normal monoplane type, and the fin and rudder are built up with steel frames. Both the rudder post and fin post are of high tension steel tube and being cantilever, are devoid of any exterior bracing. Like the main plane, the tail is of fabric-



*The A.B.C. "Scorpion" engine with cowling removed.
Note the neat spinner.*

covered wood construction and has no internal or external wire bracing. All the controlling surfaces are unbalanced.

The undercarriage is of the "split" type with the shock absorbing units placed within the fuselage. The landing shocks are taken by rubber cords in tension, the movement being transmitted from the wheels via nearly-vertical tubes to two radius arms which are hinged in the centre of the fuselage.

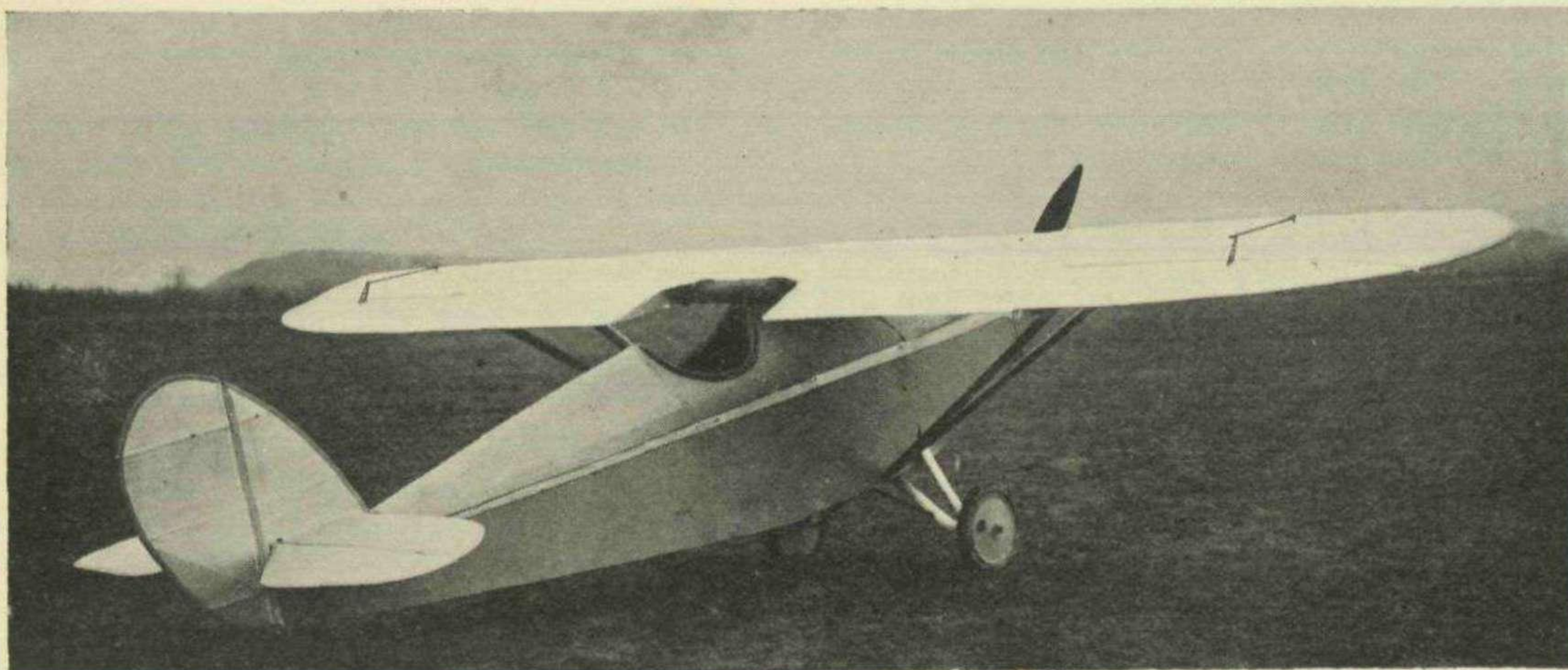


The cockpit of the "Swift."

The shock absorbing cord is attached to these two arms. The cockpit is placed immediately behind the wing, and, for so small a machine, is unusually roomy. The seat is so arranged that an equally good view is afforded the pilot both above and below the wing while a simple arrangement permits adjustment to be made in leg room to suit individual cases. The control column is hinged to the end of a longitudinal shaft, which is mounted on two bearings attached to the floor of the cockpit. At the front end of the shaft there is a lever attached to a push-and-pull rod which is linked up to the aileron control gear housed in the centre section, previously mentioned.

The elevator is also worked by a push-and-pull rod which connects the stick to a rocking shaft behind the pilot's seat and thence by cables to another shaft behind the tailplane. There are no control wires running outside either the fuselage or the wing and this feature is typical of the design as a whole in that there are very few excrescences and "bits" to spoil the sleek streamline of the machine.

The engine used in the "Swift" is the well-known



A three-quarter rear view of the Comper "Swift."

[*'Flight' photographs.*]

THE COMPER "SWIFT"—continued

A.B.C. 40 h.p. "Scorpion" and a wooden airscrew is fitted as standard, with a neat spinner which completes the very-fully streamlined form of the nose. The power unit is mounted in an ingenious manner so that any vibration is damped out from the machine. The method adopted comprises a patented design of engine bearer in which the 4 engine retaining bolts pass through and compress rubber blocks in such a manner that there is no metallic contact between the engine and the air frame. The device is the invention of Lieut. Comper and after prolonged tests it has proved extremely effective.

The petrol and oil tanks are mounted in the fuselage in front of the centre section, the feed being by gravity to the engine. The fuel tank has a nine gallon capacity and there is a one-gallon reserve compartment which can be drawn on by means of a simple tap control.

The inclusion of detail refinements in the design is a marked feature of the "Swift," and one which affords a high degree of comfort to the owner-pilot who makes a practice of travelling extensively by air. This is exemplified by the two capacious lockers, situated in the fuselage behind the cockpit. The larger of these contains a strong fibre suitcase measuring 23ins. x 13ins. x 6ins. (sufficient for full week-end requirements), and the other provides accommodation for golf clubs, tennis racquets or other light articles. A tray for maps, gloves,

etc., is also fitted under the instrument board across the width of the fuselage.

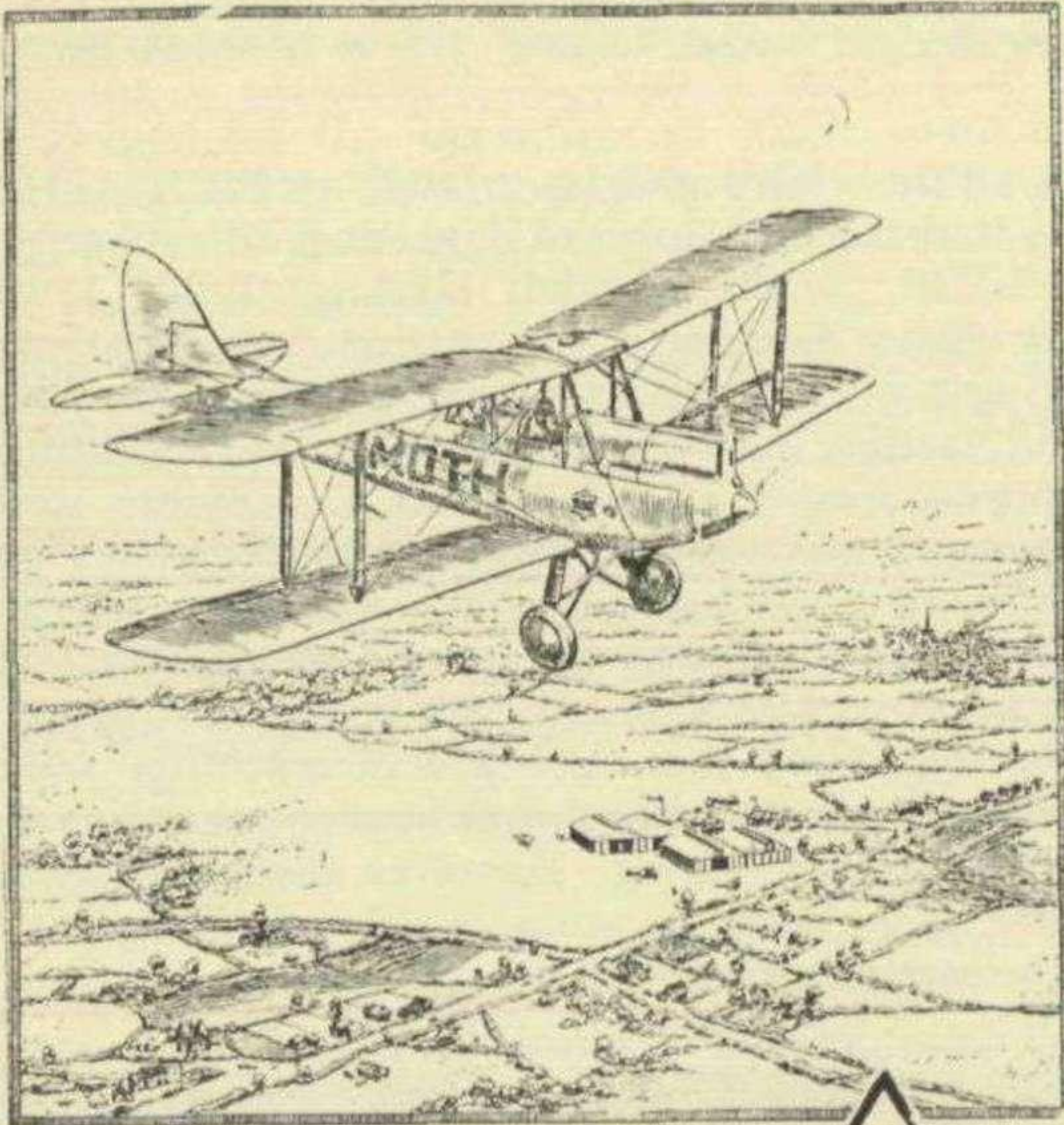
In regard to the performance, the machine when under test showed itself to be possessed of an unusual range of speed, its maximum being no less than 105 m.p.h. (with a cruising speed of 90 m.p.h.) and a low landing speed of 35 m.p.h. Its initial rate of climb is 700 feet per minute, and its take-off is very good, being 90 yards in 8 seconds. Its normal duration is approximately 350 air miles.

The dimensions are as follows:—

Span 24ft., length 18ft. 4ins., height 5ft. 7ins., wing area 90 sq. ft., dimensions when folded 8ft. 6ins., useful load 275lbs., tare weight 445lbs., total weight 720lbs.

The standard model "Swift" is marketed, ex-works at £400; a de luxe model is also obtainable at £450. This has extra refinements in the form of a Fairey-Reed propeller, a Rexine-lined cockpit, and a compass, streamlined and mounted in the centre-section. Picketing gear, a waterproof cover for the cockpit and a rear-view mirror is also included in the equipment.

The "Swift" is undoubtedly a very attractive little aeroplane and we may expect to hear much more of it in the near future. Other types of aircraft are in the course of preparation by the Comper concern, and the first addition to their range will be a 2-seater cabin monoplane with side by side seating.



THE DE HAVILLAND
AIRCRAFT CO., LIMITED
Stag Lane Aerodrome
Edgware, Middlesex



*the
greatest sport
of all...*

FLY A MOTH

THOSE who have never yet experienced the joys of flying a Moth should immediately obtain their copy of "THE BOOK OF THE MOTH." It is a 40-page copiously illustrated publication, telling in detail of every phase in private flying. It is published in separate English, French, German and Spanish editions.

Send to-day a note giving your name and address, and remittance for the cost of the book, 1/8 post free.

WRITE FOR "THE BOOK OF THE MOTH"

Gliding Gossip and News

LONDON CLUB'S
INITIAL TESTS—

BUSINESS
DEVELOPMENTS—

GLIDING
ABROAD



At Guildford. Members man-handling the L.G.C.'s Kegel "Zogling" prior to the first test flight.

ON Sunday, the 16th of last month, the London Gliding Club carried out the first level ground tests with their two gliders at Stoke Park Farm, Guildford. The Committee was most anxious that these tests should be done with as little publicity as possible, but, in some way or another, the news leaked out, and long before the machines were finally checked over, a crowd of several hundred people had congregated in and around the testing ground. Owing to the heavy rain which had fallen prior to the trials, the ground was in a very soggy condition, which made matters rather difficult for the launching party.

The first test was carried out by Mr. Marcus D. Manton, the veteran pilot, in whose hands the machine behaved very well. The glider, which is of the American "Zogling" type and built by the R.F.D. Co., was then tried by a number of other pilots, including C. L. Startup, Douglas Culver, Ashwell-Cooke, Lowe Wylde, G. G. O. Manton, Clarkson, and Flying Officer Needham. Later on in the afternoon, Col. The Master of Sempill and Mr. Gordon England arrived with Flying Officer Atcherley, and all three were invited to try the machines. Mr. Culver also flew the German "Zogling," but it appears that the rigging was not quite correct, as the pilot found the machine a little tricky to handle.

As a result of these tests, and after a conference of those who piloted them, one or two minor alterations have been carried out to both machines in order to improve their performance. Both machines are now

installed at the club's gliding ground at Pitstone Hill, Ivinghoe, and the club is quickly getting into its stride.

PREVIOUS to the London Gliding Club's initial tests, the Kent Gliding Club carried out what was described as a public demonstration with their machines at the old Detling Aerodrome, close to the Maidstone-Sittingbourne road. The fact that the flights made with the machine were done over level ground and therefore of only very brief duration, and that onlookers were charged admission to the aerodrome, called forth a certain amount of adverse criticism in various quarters, as it was considered that such a demonstration might result in a wrong impression being formed regarding the sport of gliding and soaring. However, the Kent Gliding Club have now found a suitable site, and they will shortly be operating from it.

GLIDING is now becoming extremely popular in the Antipodes, and in Australia a number of clubs have recently come into being. The principal one is the Gliding Club of Australia, and some time ago they held their opening meeting at Para Hills, near Adelaide, where flights were made with machines of the "Zogling" class.

THAT gliding and soaring is now regarded as a pastime with a definite future and with commercial possibilities in this country, is instanced by the fact that recently a number of business developments associated with the sport have materialised. For example, Messrs. S. T. Lea, Ltd., the Klemm concessionaires, of 140,

GLIDING GOSSIP AND NEWS—continued

New Bond Street, W.1, inform us that they have now been appointed English agents for the Kegel Co., and that they will shortly be giving demonstration flights, not only on the simple "Zogling" machine, but on the more elaborate type of machine such as the Kegel III. and the "Professor." It is understood, also, that a company is now in process of formation for the manufacture of sailplanes in this country, while it seems probable that at least two firms will establish schools of instruction for gliding and soaring flights in the near future.

THE LANCASHIRE Aero Club have formed a gliding section, and have placed an order for a Kegel "Pruffling," the secondary training type of glider. Members are eagerly awaiting the arrival of this craft from Germany.

ACCORDING to a report, so great has become the demand for gliders in America, that the Detroit Aircraft Co. have now increased their initial factory order from 100 to 200 machines. These will be of the "Gull" primary type.

ONE of the largest orders so far received by this concern is that from the Philadelphia Airways Corp., who are now awaiting a consignment of fifty "Gull" machines. The St. Louis Glider Club have also ordered five.

A LECTURE on gliding was delivered by Mr. Gosling last month before the Aircraft Club, at Harrogate. The audience displayed great interest in the subject, and at the conclusion, a number of questions were put to the speaker regarding different aspects of the sport.

MEMBERS of the Sydney University have formed a gliding a sailplane club, and a novel plan has been arranged for the operation of their machines. The scheme is that about twelve members will each form a group, and these will be responsible for the building, flying and repairing of their particular machines. By this means, keenness should be sustained within the club.

NUMBER One of the Journal of the British Gliding Association has just made its appearance, under the editorship of Mr. Howard Flanders, A.F.R.Ae.S., M.I.Ae.E., A.M.I. Mech.E., the Hon. Secretary of the Association. It contains a considerable amount of useful information of a technical and semi-technical nature of interest to all gliding club members, prospective members and others. Copies may be obtained from the B.G.A. offices at 44a, Dover Street, London, W.1., price 2s. 6d.

AN INTERESTING type of motorised glider has been undergoing tests lately in Germany. It is a tailless, strut-braced monoplane pusher, with a flat-twin 7 h.p. engine. It has a span of 40 feet 7 inches, and a wing area of 199 square feet. It is supposed to be capable of 90 m.p.h.

EARLY last month, the Midland Gliding Club got their first machine into the air. The launching of the craft (which was built by Mr. Rushton, the Club's Secretary) was done by means of shock-absorber cord and towing by cars—a hazardous procedure, not to be recommended.

COLONEL Lamplugh, of the British Aviation Insurance Group, has been working on a third-party insurance scheme for gliders, and it was announced recently that

he has kindly offered one year's free policy to the B.G.A. for their first glider.

IN ADDITION to the munificent gift of £1,000 which he has made to the British Gliding Association, Lord Wakefield has now presented a cup, which is to be competed for annually, as an inter-club trophy. The rules and conditions will be announced later.

SOME interesting facts were revealed in a discussion which followed an informal dinner held in London by the Royal Aeronautical Society some time ago, on occasion of the visit of Dr. Georgü and Herr Stamer, the German glider experts. In answer to a query put forward regarding the "cockpitless" and cockpit type of machine, Herr Stamer said that he considered the closed type of craft (such as the "Pruffling") more suitable for the trained aeroplane pilot to learn on than one in which the pilot is exposed, and added that the idea of the open seat on the "Zogling" type was that the handling of the controls by the pupil could be more easily observed by the instructor. It was also stated that gliders can be spun and that machines had inadvertently been spun while being flown in clouds.

THE Royal Aero Club has appointed a special sub-committee to confer with the British Gliding Association on matters pertaining to the sport. The committee comprises the following:—Lieut.-Colonel M. O'Gorman, C.B., Captain H. S. Broad, A.F.C., and Major H. A. Petre, D.S.O., M.C.

KLEMM

The Safe Low-Wing Monoplane

The latest model has a cruising speed of
100 m.p.h.

Prices from **£495** upwards

Sole Concessionaires,
also sole agents for KEGEL GLIDERS:

S. T. LEA

141, NEW BOND STREET,
W.1.

HERE and THERE

By "Camshaft"

THE Maidstone Show which is organised annually by Rootes, Ltd., was this year open for the week beginning March 17th. This is the tenth occasion on which the Show has been held, and it can truthfully be described as an Olympia in miniature.

It is also a strictly British affair, for all the cars exhibited were of British manufacture. The cars on view included Austin, Bentley, Hillman, Humber, Rolls-Royce, Standard and Sunbeam, a full range of each make being exhibited.

The Maidstone Show, which is held in Rootes' Show-rooms, was this year more interesting than ever, for many new body designs, etc., which have been introduced since Olympia, were on view. There was also a "day-light" cinema depicting cars in process of manufacture, on test, and, finally, competing in exciting races.

1930 Scholarships for Inventors.

In co-operation with the Polytechnic and Association of Principals of Technical Institutions, a scholarship foundation of far-reaching importance has been inaugurated by the Institute of Patentees (Inc.). With the object of encouraging inventive talent amongst those whose circumstances do not permit them to undergo the ordinary courses of technical training, the Institute has decided to found a series of Presentation Courses at one or more of the recognised technical schools and Polytechnics which exist throughout the country.

The Scholarships are open to candidates of both sexes of all nationalities and in general of any age over 16. They entail about three evenings work a week in addition to home work.

Successful candidates will have the necessary fees paid for them which will include Associate Membership of the Institute of Patentees (Inc.), and a grant of £1 towards the cost of books.

Further information may be obtained together with forms of application, from the Hon. Secretary, Scholarship Committee, Institute of Patentees (Inc.), 39, Victoria Street, London, S.W.1.

Dunelt's 42 T.T. Races.

I learn from the I.O.M. that the 500 c.c. Dunelt machine which is attempting to cover a distance equivalent to 50 Tourist Trophy races on the Isle of Man course, under A.C.U. observation, had completed 293 laps—nearly 42 complete races—by the end of the 13th riding day.

The speed over the distance—11,095 miles—has averaged $35\frac{1}{2}$ miles per hour. As compared with the speeds of the T.T. races themselves this may not seem very great. The excellence of the performance, however, will be appreciated when it is remembered that the roads are not closed, that speeding is forbidden,

that the riders have to drive extremely carefully through the many villages on the course and that, since the machine is carrying on night and day, nearly half the riding has taken place in darkness.

In addition to these handicaps, the weather has been, for the main part, appalling. For several days the road over Snaefell Mountain was covered in snow and at other times fog or heavy rain have been encountered. The variations of temperature on certain days have been such that whilst it has been raining in the valleys there has been severe frost on the mountain. As a result, ice an inch thick has formed on the lamp glass.

For the Facia.

Known as the Car-Thermo Safety Gauge, a new instrument has been placed on the market recently by the British Instrument Co., Ltd., of Hendon. This comprises a combined oil gauge and radiator thermometer. The two calibrated dials are contained in the same head, and readings are registered by revolving scales, the indications being read over a fixed index mark. The whole unit is very neat and compact and well in line with the present day ideas of simplicity infacia-board equipment. It has been designed so that it fits in place of the existing oil gauge and needs no further holes in the instrument board, thus obviating any drilling, cutting or soldering. A commendable feature is the supply of a special tool with the instrument, for cutting a hole in the radiator hose into which the thermometer is fixed. The oil gauge, of course, is connected to the usual pipe. A MOTOR SPORT staff car has been fitted with the device and it has been found to function admirably. Made in two sizes and different finishes, it is marketed complete at 37/6. The makers guarantee it for 12 months.

A Motoring Boxer.

Mr. Phil Sparling, the well known boxing referee, who is a keen motorist owning several sports cars, has now added a Le Mans Schneider to his stable. This car was supplied by Schneider Automobiles (Eng.), 138, Long Acre, W.C.2.

Changes of Address.

The new works of the Frazer Nash Cars at Isleworth are now completed and in future all communications to this firm should be addressed to A.F.N. Ltd., Falcon Works, London Road, Isleworth, Middlesex.

* * *

The Birmingham branch of David Moseley & Sons, Ltd., manufacturers amongst other things of the famous air cushions fitted to nearly all racing cars including Kay Don's Sunbeam "Silver Bullet," have changed their address to 17, Ombersley Road, Balsall Heath, Birmingham. Telephone Calthorpe 1285.

Motor Sport Classified Advertisement Section

HEAD OFFICES :

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

Telephone: Regent 1937.

„ Gerrard 3436.

Telegrams : Agreynol, Piccy, London.

Rates (prepaid) - 1/- per line
(minimum 3 lines).

CLOSING DATE first post on
the **23rd** of the month, for
publication on the 1st of the
following month.

NEW CARS FOR SALE

LAGONDA

LAGONDA, Huskinson & Fane, Ltd. Grosvenor 3016.

SPECIAL Lagonda Agents for West End. Trial runs at any time. Deferred Terms and your present car taken in part exchange.—Huskinson & Fane, Ltd., 11, Curzon St., W.1.

M.G.

M.G.—Huskinson & Fane, Ltd. Grosvenor 3016.

AUTHORISED M.G. AGENTS. Trial runs arranged at any time. Earliest delivery of all models, including New Mark II. 6-cylinder.—H. & F., Ltd.

SECOND-HAND SPORTS CARS

ALVIS

£65 Sport ALVIS aluminium 2-seater, perfect condition, very fast, green leather and wings; exchanges. S.H. Motors, Lanark Place, Maida Vale. Padd. 9750.

AMILCAR

AMILCAR, 1929 super-sports 2-seater, in excellent order throughout, red, £165. A. Rix, 153, Euston Rd., N.W.1. (between Euston and St. Pancras Stations). Museum 5739.

A.C.

1926 Monthery A.C. Super Sports Streamlined 2-3-seater, with 2 carburettors, F.W.B., wire wheels; £100.—Denman's, 132-3, Long Acre, W.C. Open week-ends. Temple Bar 8135-6-7.

AUSTRO-DAIMLER

ACTUAL Tourist Trophy 19-100 h.p. 3-litre Austro-Daimler, recognised as one of the fastest standard safe road cars in the country, will do a guaranteed speed of 105 miles per hour with full equipment, winner of a number of important road events, appearance and mechanical condition as new, numerous refinements including vacuum and pressure feed system, also a special 32-gallon petrol tank at rear; specially reduced to £495.—Mr. Phillip Turner, 19-21, Great Portland St., W.1. Langham 3966.

ALFA ROMEO

£895—Mr. Phillip Turner offers his 1½-litre supercharged 2-seater sports Alfa Romeo, in almost brand new condition, delivered new late 1929, a special competition road car, cost with extras over £1,200; easiest deferred terms.—Thorns, 19-21, Great Portland Street, W.1., Langham 3966.

15-75 h.p. 1½-litre sportsman's saloon, coach-built, new and unregistered, list price £950, our price £676. S. T. Lea, 141, New Bond Street. Mayfair 4376.

BUGATTI

D. M. K. MARENDAZ, Ltd., the firm with a name, have 1927 Bugatti model 40 small 4-seater, body by Compton, engine completely overhauled.—1, Brixton Rd. (one minute Oval). Reliance 3381-2.

1929 (July) Bugatti Type 40 Super Sports 3-4 seater, low mileage, in perfect condition; £220, or will exchange for late model Frazer Nash.—23, Riggindale Rd., Streatham, S.W.16. Phone: Streatham 6039.

FRAZER NASH.

FRAZER NASH cars. Falcon Works, London Rd., Isleworth (Hounslow 3172) always have for disposal reconditioned and guaranteed cars, fitted with new tyres and F.W.B. prices from £125.

GRAHAM-PAIGE

NEW 1930 (shop-soiled) GRAHAM-PAIGE 6-cyl. model 615 2-seaters, 4-speed twin top gearbox, 80 m.p.h., list £475, our price £295. Archie Simons and Co., 94, 94, Gt. Portland St., W.1. Langham 1343.

HISPANO-SUIZA.

1927 Barcelona 27 h.p. model, fitted attractive sports 4-seater body by Mulliner, mileage 10,000 miles, short chassis, 90 m.p.h., £395 Schneider Automobiles, 138, Long Acre.

INVICTA

THE INVICTA CARS (SALES) CO. offer the following:—

1929 4½-litre chassis, fitted with sports fabric touring body, exterior dark red fabric, interior soft black hide, Triplex glass, two spare wheels and tyres, 10,000 miles only, new tyres all round, £725.

THE INVICTA CARS (SALES) CO. Showrooms: 11, Albemarle St., London, W.1. Phon. Regent 2608-2609.

LEA-FRANCIS

1928 LEA-FRANCIS 4-seater, blue sports, engine fitted 1929, lovely condition, one owner, £165. Arthur Stuart, Auto Services, Ltd., 5-11, and 29-31, Vauxhall Bridge Rd., S.W.1.

BARTLETT for guaranteed sports cars. LEA-FRANCIS 1928 1½-litre specially tuned supercharged Hyper sports, 4-speed close-ratio gearbox, ultra-low black fabric 4-seater body, wings and chassis in red cellulose, 6 cream wire wheels, full rigid all-weather equipment, amazing acceleration, 80 m.p.h., cheapest ever offered, £165; exchanges, deferred. 27a, Pembridge Villas, Notting Hill Gate.

LAGONDA

1928 LAGONDA 2-litre sports fabric 4-seater, magnificent condition, £295. George Newman and Co., 369, Euston Rd., London, N.W.1. and 39-40, Old Steine, Brighton.

£185 Scrupulously maintained since new, only one owner, very late 1927 14/60 Lagonda semi-sports 4-seater, painted the exclusive Lagonda grey and red two colour scheme, and upholstered in red leather pneumatic upholstery, paintwork and upholstery both in beautiful condition, chromium plated fittings, wire wheels, all tyres almost as new, with a lavish equipment including, exceptionally good F.W.B., rear screen, tonneau and hood covers, Duplex Hartford shock absorbers, 80 m.p.h. speedometer, revolution counter, thermostat, driving mirror, semi concealed dash lighting, petrol gauge, dash ventilator, Triplex windscreen luggage grid, etc. The car is extremely fast—at 80 m.p.h. it is merely drifting on the edge of the throttle—and possesses lightening acceleration and remarkable flexibility; genuinely a car of outstanding performance and unusually distinctive sporting appearance, mechanically above criticism in every respect. Taxed. Exchanges, Deferred. C. & O., Water Lane, Kingston, Surrey. Kingston 4585.

O.M.

LAWLENCE & CO., LTD., Ulster T.T. car raced successfully in most of the principal races in 1929, fitted with new body, O.H.V. engine, 3 carburettors, finished black and red, £750.—39, Sackville St., Piccadilly, W.1. Phone 1100 Regent.

1926 O.M. 1½-litre Sports, fitted with magnificent 2-seater body, wire wheels, F.W.B., finished blue and cream, in exceptional condition; list price £550, our price £125.—Leslie Russell, Ltd., 32, Bruton Place, Bond St., W. Mayfair 2947.

RALLY

1929 10 h.p. RALLY, fitted special 2-seater body, in new condition, 80 m.p.h., 35 m.p.g., very attractive. Schneider Automobiles, 138, Long Acre.

RILEY

SPROSEN, LTD. 1929 RILEY Brooklands Mark IV, as new.

SPROSEN, LTD. 1929 Brooklands, red, unscratched.

SPROSEN, LTD. 1929 Brooklands, green, small mileage.

SPROSEN, LTD. 1928 Brooklands, black and red, repainted.

SPROSEN, LTD., 1928 Brooklands, special racing car, green.

SPROSEN, LTD. 1929 Biarritz saloon, Mark IV, 2 carburettors.

SPROSEN, LTD., 1929 Biarritz saloon, unscratched, black and red.

SPROSEN, LTD. 1929 Monaco saloon, unscratched.

SPROSEN, LTD. 1929 Monaco saloon, Mark IV, 2 carburettors.

SPROSEN, LTD. All guaranteed, 80 sports cars. 111, Gt. Portland St., London. Langham 1212.

Motor Sport Classified Advertisement Section—continued.

SECOND-HAND SPORTS CARS

(continued)

RILEY

BARTLETT for guaranteed sports cars. RILEY 1929, 1,100 c.c., special competition Ulster T.T. model, 2-seater, latest type brakes, twin Zenith carburettors, 4-speed close-ratio gearbox, polished front axle, innumerable special features, over 90 m.p.h., with full touring equipment, £295; exchanges, deferred. 27a Pembridge Villas, Notting Hill Gate.

SALMSON

VADUM CO., Salmson Specialists—offer 1928½ Grand Prix, twin overhead camshaft, low understrung chassis, streamlined long tailed, fabric body. 12 volt lighting and starting, 55 m.p.h. on second gear. Bargain—115 gns.

1928 model Grand Prix, fabric body, very smart—99gns.

Two 1927½ Grand Prix, streamline fabric bodies, striking appearance—75 and 79 gns.

1926½, Sports Special F.W.B., fast—49 gns.

1924½, two-seater, excellent performance—24 gns.

Definite exchanges; any A.A. or R.A.C. examinations. 352 High Road, Willesden Green, N.W.10. Willesden 2469.

VAUXHALL

30/98 h.p. D. M. K. Marendaz, Ltd., the firm with the name, always have in stock a good selection of 2 and 4-seaters from £60.—1, Brixton Road (one minute Oval Tube). Reliance 3381-2.

85 M.P.H. VAUXHALL, 30-98 sport coupé, £65, 5 new tyres, paint as new. Specialoid pistons, the best value offered in town in genuine sports car. Robinson, 67, Catford Hill, S.E.6. Sydenham 7312.

REPAIRS & TUNING.

LONDON.

C. O. A. Guaranteed Repair Service; perfect workmanship, lowest cost, completion to time.

C.O.A. Quotations Submitted for every form of engine and chassis repair and adjustment (large or small), coachpainting, electro-plating, etc.; Standard charges for decarbonising, valve grinding and brake re-lining, etc.; cars reconditioned equal to new with 6 months' guarantee, replated and repainted.

C.O.A. Engineering Representative will call to inspect and estimate by appointment (London Radius).

CAR OWNERS' ASSOCIATION, Ltd., 91-95, Manor Street, King's Road, Chelsea, S.W. Flaxman 3829.

We hot up all cars. Austin 7's a speciality. Boyd, Carpenter & Co., Ltd., 47, West End Lane, N.W. Maidavale 4977.

THE STAR WELDING CO., LTD., 38a, Peterborough Rd., London, S.W.6. 'Phone, Putney 3046 and 5792. Specialists in welding and cylinder grinding, cylinders, aluminium crankcases, gearboxes welded and machined and guaranteed on "no cure no pay" basis, valve seatings welded and recut and scored cylinders filled by special process; chassis straightened and repaired; distance no object; keenest prices and prompt delivery; cylinders rebored and oversize pistons fitted complete, any make or size; price list sent on application.

REPAIRS & TUNING

(continued)

FOR Brooklands regulation silencers, super tuning, special aluminium cylinder heads for Austin 7's, sports exhaust systems, consult the expert, V. W. Derrington, 159, London Road, Kingston-on-Thames. 'Phone Kingston 3720.

NEW MOTOR CARAVANS and TRAILERS

RAVEN Caravans.—Lightness. Cheapness. Comfort. Value for Money. Made in all Sizes.

RAVEN Trailers.—Standard models, from 8ft., 2-berth, at £70; to 13ft., 3-room, at £175.

RAVEN Outboard Boat Trailers, luggage trailers, office trailers, horse box trailers.

RAVEN CARAVANS, 2, Ravenscourt Sq., Goldhawk Rd., Hammersmith. Riverside 0353.

CAR CRUISERS, the lightest and most useful caravan on the road.

CAR CRUISERS, stream-line featherweight de luxe models, 4-bed, 2 rooms, 15 seats, weight 9½cwt. fully furnished, suit 12 h.p., £147

CAR CRUISERS, have 3 bed and 2 bed models to suit cars down to 7 h.p.—£85.

CAR CRUISERS, have models available for hire from £3 3s. per week.

CAR CRUISER CARAVANS.—North Hyde Rd., Hayes, Middlesex. (Near Hayes Station). 'Phone Hayes 253.

SECOND-HAND MOTOR CARAVANS and TRAILERS

RAVEN Caravans.—A number of second-hand 1929 models for sale at attractive prices.

RAVEN CARAVANS, 2, Ravenscourt Sq., Goldhawk Rd., Hammersmith, Riverside 0353.

AIRCRAFT FOR SALE.

NATIONAL Flying Services Ltd. 'Phone Gerrard 9316. Quick deliveries. New or second-hand machines. Grand Buildings, Trafalgar Square, W.C.2

A 28 feet span single-seater biplane, fitted with 45 h.p. six-cylinder Anzani engine. Rafwire bracing and complete less air-speed and revolution indicators. Price £45. Also 25-gallon petrol tank five-foot propeller with hub (clockwise rotation and suitable for 30-40 h.p. engine) and sundry forked-ends, turnbuckles, aero bolts and nuts. All can be seen near London. Box No. A36.

PRACTICAL FLYING.

NATIONAL Flying Services Ltd. 'Phone Gerrard 9316. Join N.F.S. Learn to fly. Fly when you wish. Grand Buildings, Trafalgar Square, W.C.2.

AIR TAXIS.

NATIONAL Flying Services Ltd. 'Phone Gerrard 9316. Go by N.F.S., 1s. a mile; 1s. 6d. two passengers. Grand Buildings, Trafalgar Square, W.C.2.

MOTOR BOATS (Outboard).

RECONDITIONED second-hand outboards guaranteed from £10, Eltos £15, Johnsons £20, Service Quads £30, Fortis £14, Speedsters £24, Watermota £30. Largest stock in this country. Write for spring list additional. Thornton's, 618, London Road, Isleworth. Telephone, Hounslow 1734.

A FEW 2½ h.p. standard outboard motors, 1929 model, still in their packing cases available at 25% reduction to clear before new stock arrives; also a few engines, which have been used for demonstration purposes only, at much reduced prices; also two 13ft. runabout hulls, two 12ft. 8in. hydroplanes, one sea skiff, all new and one second hand mahogany 20ft. launch, with cushions, luncheon table, etc., for the river, all at much reduced prices to clear. Can be seen in our showroom at 32, Pancras Road, King's Cross, London, N.W.1. R. W. Rempier, Ltd.

PARTS & ACCESSORIES

CLAIRE'S MOTOR WORKS for Spares.—Over 300 cars dismantled, including Austin 7 h.p. and 12 h.p., Alvis, Angus-Sanderson, A.B.C., Anzani, Armstrong 18 h.p., Ariel 9 h.p., A.C. 12 h.p. and 16 h.p., Belsize-Bradshaw, Bugatti, Bean, Buick 18 h.p., 26 h.p., and Master chassis, Coventry Premier, Cubitt, Citroen 10 h.p. and 7 h.p., Clyno 11 h.p., and 13 h.p., Crossley 25 h.p., Crouch, Cowley, Calthorpe, Cluley, Delage, 14 h.p., Fiat 10 h.p. and 21 h.p. 6-cyl., Ford, Humber 8 h.p. and 10 h.p., Hillman, Hampton, Lagonda, Morris, Mercury, Peugeot 7 h.p., Phoenix, Rover 8 h.p., 9 h.p. and 14 h.p., Rhode 1922, Riley 11 h.p., Renault 8.3 h.p., 13.9 h.p. Salmson, Standard 11.4 h.p. and 13.9 h.p., Swift 9 h.p., 10 h.p., and 12 h.p., Sizaire-Berwick, Singer 10 h.p., Talbot 8 h.p., 10-23 h.p., and 8-cyl. Talbot-Darracq, Wolseley 10 h.p., 11 h.p., and 15.9 h.p. Waverley, and many others; quotation by return; approval.—Clare's Motor Works, 118, Tulse Hill, S.W.2. 'Phone, Brixton 6507. Closed Sundays.

MISCELLANEOUS.

FLYING CLOTHING.

No Connection with any other Firm.

S. LEWIS'S.—The Old Firm of Flying-Racing and Motor Clothing Fame, 19 and 27, Carburton Street, London, W.1. We wish our Thousands of Customers to know we have no connection with any other Firm. Flying Helmets, best Quality, Fur trimmed, 14s. 6d., 12s. 6d.; All Leather Lined Chamois, 10s. 6d., 12s. 6d.; Flat Type Phones, 5s.; Metallic Tubing and Rubber Connection, 2s. 6d.; Y Piece and Adapter combined, 3s. 3d.; White Flying Suits, 25s. 6d.; Ditto, with Lightning Fasteners, 35s.; White Combination Suits, 14s. 6d.; White Flying Helmet, 6s. 6d.; Featherweight type Goggles, fitted genuine Triplex Lenses, slightly tinted, new W.D., 7s.; Ditto, fitted genuine clear Triplex Lenses, 11s.; Aviation Mask Goggles, fitted genuine Tinted Triplex Lenses, 14s. 6d.; Ditto, fitted Tinted Triplex, 12s. 6d.; Meyrowitz Luxor Goggles, fitted Triplex unsplinterable lenses, 40s.; R.A.F. Scarf, 5s. 6d.; Pilot's Gauntlets, 12s. 6d. per pair; Suede Golf Jacket, best quality, ideal for flying 50s.; Silk Under Gloves, 2s. 9d. per pair, 2 pairs 5s. We are contractors to Foreign and Colonial Governments. S. Lewis's, 19 and 27, Carburton Street, London, W.1.

No Connection with any other Firm.