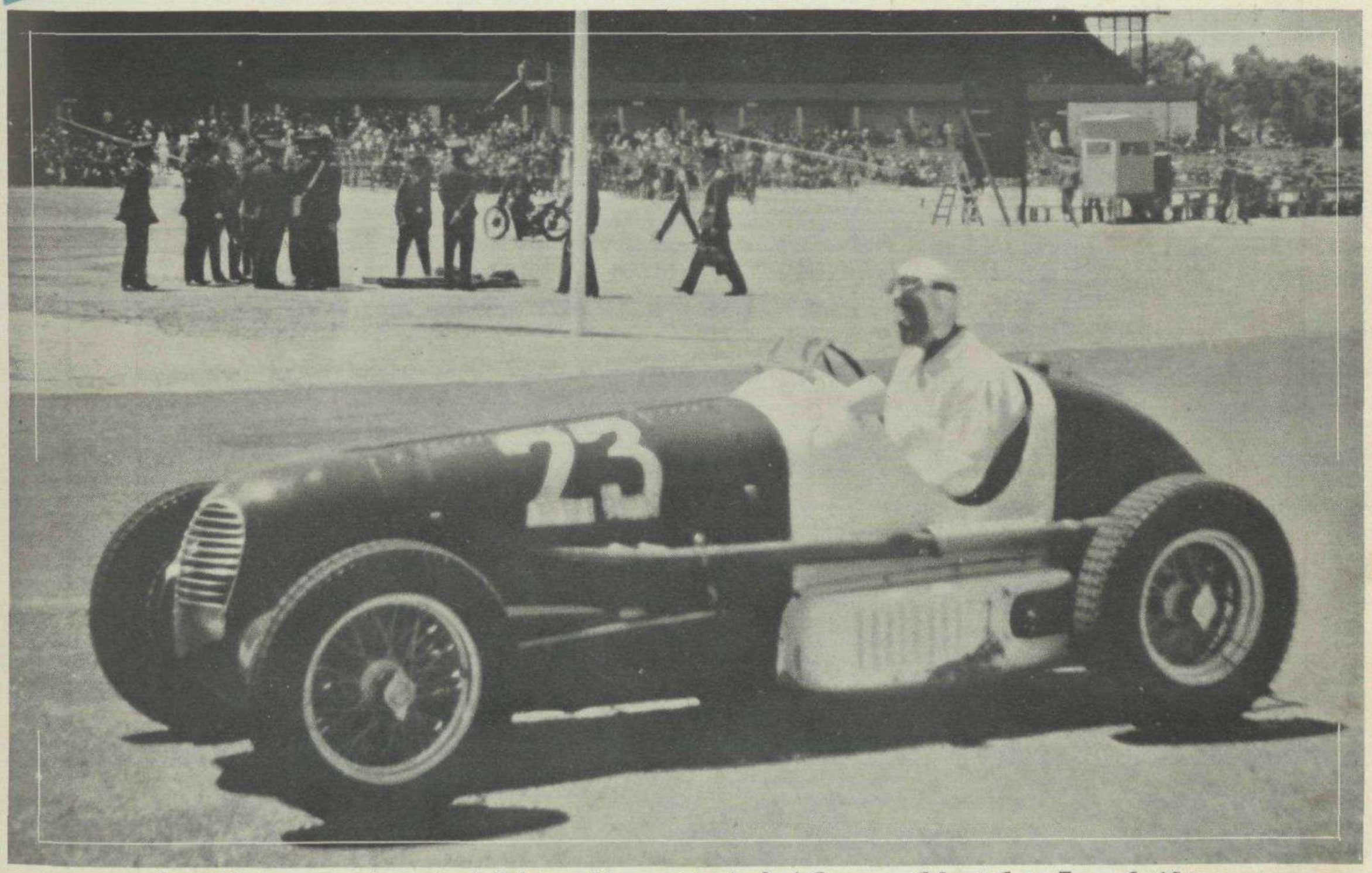
Vol. XIV. No. 2 **The Monte Carlo Rally** *February, 1938*

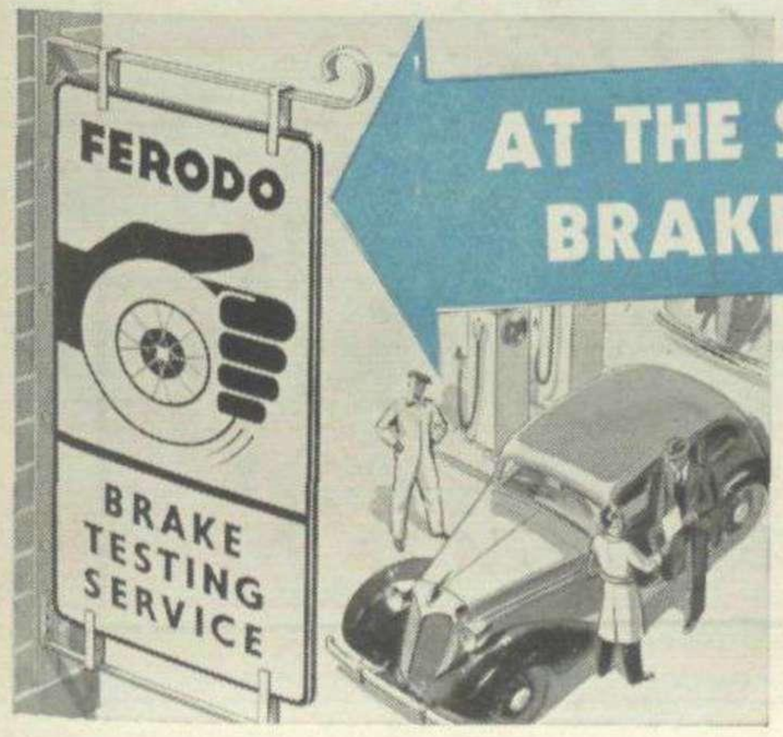
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Lazlo Hartmann with the 4-cyl. 2.5-litre Maserati in the 2nd Grovenor G.P. at Cape Town, S. Africa.



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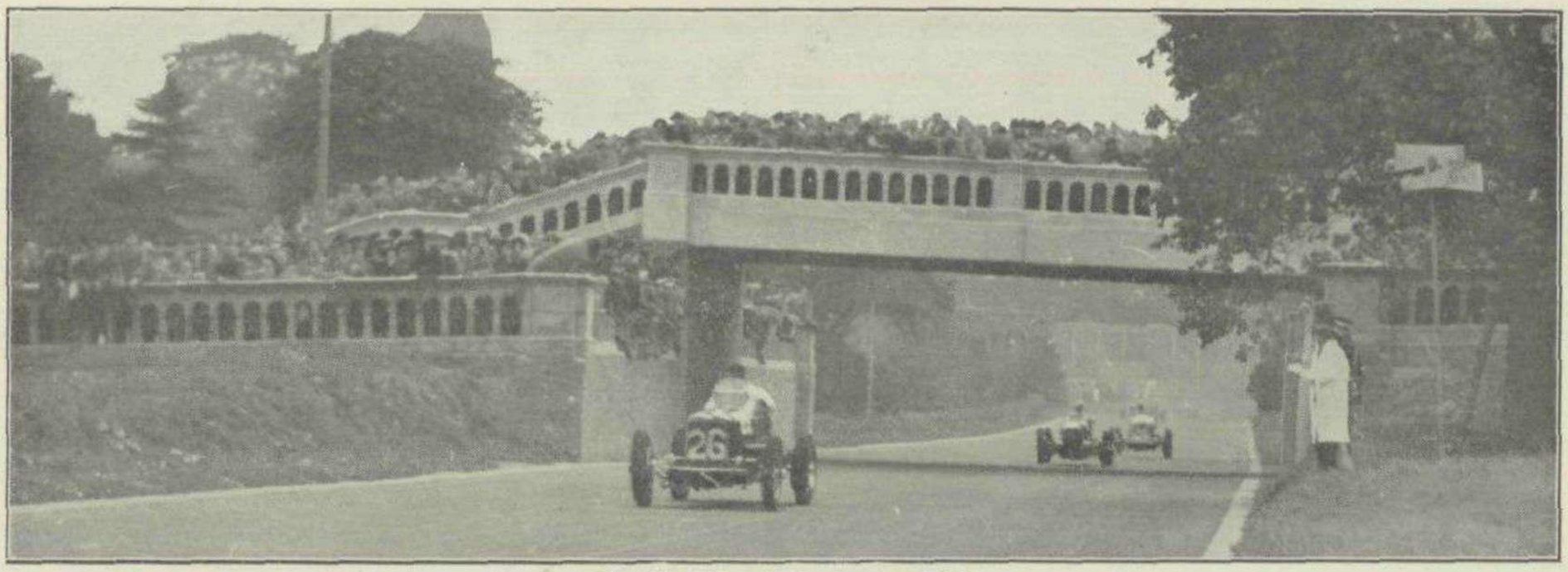
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THE DONINGTON GRAND PRIX, 1937



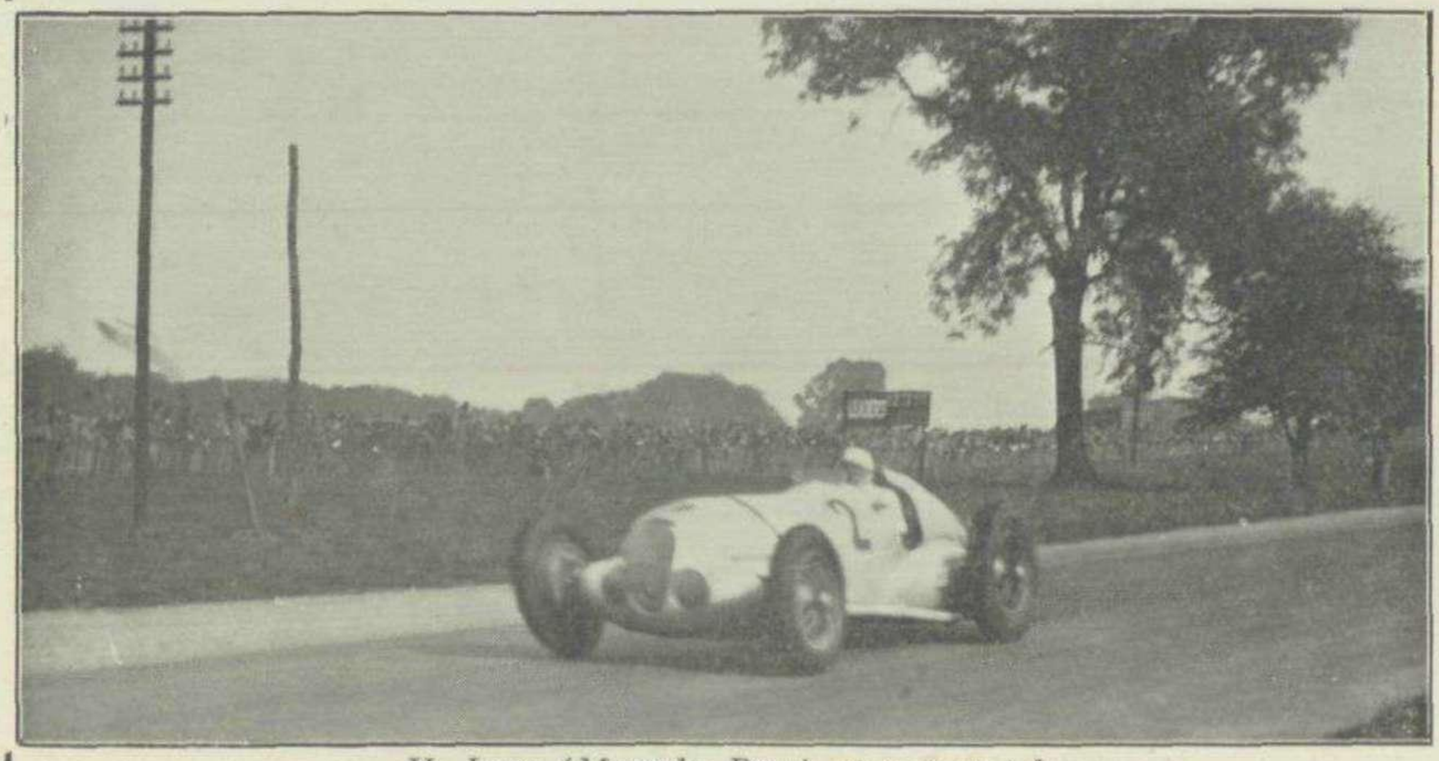
Earl Howe follows M. von Brauchitsch.

THE IMPERIAL TROPHY RACE. CRYSTAL PALACE, 1937



Charlie Martin leads the field.

THE DONINGTON GRAND PRIX, 1937



H. Lang (Mercedes-Benz) at 170 m.p.h.

★

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A FURTHER SELECTION OF OUR READERS' SPARE PARTS FOR SALE AND WANTED

FOR SALE

Axles, front and rear for Riley Nine.....
Austin body, 1927, four-seater, aluminium.....
Austin Seven : 1929 engine and gearbox. Magneto ignition, engine, chassis, complete.....
,, 3-speed gearbox, Austin special chassis frame.....
Amilcar 8.9 h.p. Type C.H.S. Not run in since being rebored, and fitted with special alloy pistons. Crankshaft reground. New valves, double springs. High lift camshaft. New bearings for crank and camshaft. New crown wheel and pinion and bearings in back axle. New tyres and battery. Magneto, starter and dynamo overhauled. Aluminium louvred bonnet. Body not completed. Several spares available to purchaser .....
,, G.P. front and rear axle.....
,, Various parts for Amilcar engines.....
,, (Nurburg model) .....
A.C. Six cylinder head (approx. 1924) camshaft and crankshaft .....
Back Axle for 8.9 h.p. Amilcar G.P., complete with hubs, shafts, crown wheel and pinion, torque tube, prop. shaft, etc., dropped front axle beam.....
Bentley "B" type gearbox .....
,, All general spares.....
,, 3-litre spares .....
Bentley 3-litre crown wheel and pinion, ratio 3.5 to 1
,, Close ratio "A" type gearbox.....
Bluemel telescopic steering wheel (unused). Several clockwise Bosch dynamos with distributor (4-cyl.) unused. Back axle (complete with shafts, brakes, and drums).....
Bugatti Modified Brescia. Axle shafts, differential, crown wheel and pinion, straight tooth ratio 13/45, steering box, less column and wheel (new), crankshaft, ball bearing to centre and rear main, other journals plain, needs regrinding. Camshaft, 16 valve, all auxiliary O.H.V. drive gear, 4-cyl., S.E.V. magneto, as new, 12-volt starter, two dynamos 12-volt. 15 valves, as new.....
,, Brescia engine. 1½-litre rebored, overhauled, fitted new pistons, bearings, etc., has two carburetters, starter, distributor and clutch.....
,, cylinder block, rebored and new pistons, also other engine parts.....
Bosch head lamps, one pair.....
Four road wheels (knock on 21 × 4.50) .....
Camshafts and boxes, from Brescia Bugatti.....
Racing camshaft for s.v. Anzani and parts to convert timing from chain to gear drive .....
Carburetter, Wingfield racing set, with 2 Wingfield carburetters, mounted on a special twin induction manifold. Fits any 1934 to 1936 V8 30 h.p. Ford, without alteration .....
,, downdraught, suit Austin Seven.....
,, For Ford V8.....
,, Zenith triple diffused horizontal, 36 mm. bore .....
,, Model 36 H.K. Horizontal Flange. 2 5/16" between centre of bolt holes. Right-hand float chamber.....
,, (Two) Zenith N type Horizontal 36 mm. top feed float chambers.....
,, 26 mm. H.Z. Zenith.....
,, 26 mm. triple diffused.....
,, R.A.G. suit Riley Nine.....
,, (New) racing 36 mm. Amal, with large assortment of spare jets and chokes
Connecting Rods (tubular), Laystall for Austin Seven, size big ends 1⅛".....
Cozette supercharger, No. 9 (clockwise) complete with drive suitable for s.v. Anzani engine...
Cylinder head with rocker gear for Riley Nine.....
Chassis special single seater, complete with central steering (Marles), transmission (4.5 to 1 solid back axle), four new tyres, brakes relined. Only used in one speed trial.....
,, only, Riley Nine, complete less body, 1929, nearly new tyres.....
Crankshaft, rear half of a two-piece Laystall, size of journals 1⅛".....
Dewardre, one vacuum cylinder. Recently used for assisting braking on a heavy 12 h.p. car, with operating rods and "trigger and motor" levers on a short cross-shaft in solid bearings, also half copper pipe line to manifold.....
Duogauge Cartherns (oil pressure) thermometer.....
Roller Crankshaft and rods for s.v. Anzani .....
Engine : Austin, 1927, engine and gearbox, without magneto and dynamo.....
Engine : Blackburn V. Twin, 750 c.c. engine, all ready to fit to G.N. chassis. No magneto or carburetter.....
,, G.N. full o.h.v. push-rod, 1,100 c.c. with many spares. Low compression pistons, and one high compression piston. Special large roller main bearings, high lift cams, drilled oilways, etc., in bits. Fellows magneto and single Zenith carburetter...
,, 1,500 c.c. s.v. Anzani, complete with magneto, dynamo, and starting motor, overhauled and in very good condition. Cylinder liners are fitted.....
,, Austin, 1931, Ulster engine, complete with tulip valves, double springs, pressure fed crankshaft, good dynamo, coil ignition and gearbox. Less manifolds and carburetter.....
,, 1,100 c.c. o.h.v. Salmson, complete with clutch and gearbox.....
Zenith carburetter type 36 V.H., special exhaust system.....
,, Full Boulogne Anzani, 1926, H/C coppered head, and normal head. New pistons, crown and crankshaft. New main and big ends. New timing wheels, and springs, tappets and rollers. New starter ring. This engine holds the Anzani Cup for the fast Anzani engine .....
1,089 c.c. Riley engine, fitted special Ashby pattern magnesium electron pistons with rings. Comp. ratio 7.25 to 1, lightened flywheel, clutch, Duplex valve springs, twin S.U. carburetters and manifold. (No magneto, dynamo or starter). Suitable for a light chassis.....
,, 30/98 Vauxhall Engine, No. O.E.....
,, 11.9 h.p. Morris Cowley engine, new piston rings, new S.U. carburetter, and H.C. gasket, Lucas magneto.....
,, 1923/4 Aston-Martin, side valve, engine (fixed head) special lightened con-rods, new pistons. (No flywheel, magneto or carburetter) .....
,, Talbot 10/23 h.p. engine and gearbox complete. Water pump, coil ignition.....
,, Two s.v. Anzani engines, good condition...
,, Ford V8 and gearbox.....
,, 16 h.p. A.C. engine, good general condition Overhauled, complete Scintilla magneto, clutch. Never run since overhaul.....
,, Riley 12 h.p. s.v. engine. Ricardo head—new valves and all bearings—dynamically balanced crankshaft, high lift camshaft. New oil pump, complete with magneto, dynamo and starter, all in excellent condition .....
,, from Babe Peugeot, has been overhauled, with radiator, believed to be 1912.....
Frazer-Nash, One E.N.V. rear axle 4' 0", track 34¼", spring centres, 14" diam. brakes, 42 Type Rudge-Whitworth hubs, unused .....
,, One E.N.V. Wilson preselector gearbox, Type 110. Ratios 3.5 to 1, 2.25 to 1, top direct reverse 3.5 to 1. Also bell housing to suit No. 5 S.A.E. Flange unused. Chassis frame with 40" rear springs, unused.....
,, Several twin port cy. heads suitable for Meadows 12 h.p. engine.....
,, Several cylinder blocks for various types of Anzani s.v. engine .....
One s.v. Anzani engine suitable for supercharging. Fitted with roller bearing crankshaft and 100 ton steel connecting rods.....
,, Several 710 × 90 Wire wheels (unused)
,, Several V type windscreens.....
,, Several spring spoke steering wheels, with centre boss to fit 1" diam. shaft
,, One Frazer-Nash 3/4-seater body, complete with windscreen and seats.....
,, Steering box.....
,, Four normal full length chains.....
,, Sprockets .....
,, 18" steering wheel.....
,, Powerplus 1½-litre engine. Special pistons and rods. 10 to 1 compression. Fittings for one or two carburetters. Complete with magneto
,, Front axles (three).....
,, Set of front axle clips.....
,, latest type 100 ton back axle.....
,, Cylinder head and valves. Wheels. Differential, complete with pinion, steering box and wheel. Front axle and assembly (brakes, etc.). Prop. shaft. Crankshaft (reground). Clutch (complete).....
Boulogne type, front axle 3' 8", complete with hubs, brakes, clips, springs, plates and shockers.....
Frazer-Nash, Back axle, unassembled but complete with springs, radius rods and hubs. Bevel box with four-speed shaft and reverse shaft with bearing housing.
,, Frame, complete with gear level and brake shafts. Boulogne type body, four wheels with tyres and tubes...
Gearbox, M.G. Midget, 3-speed, with Derrington remote control .....
G.N. roller bearing o.h.v. engine, H.C. pistons .....
,, Bosch magneto .....
,, transmission complete, and back axle.....
,, parts, cylinder barrels, heads, con-rods, timing-case and cover. Gauge, 14" dial blower.....
,, twin cylinder o.h.v. push-rod engine .....
,, chassis, equipped with high compression Morris Cowley engine and specially tuned. Would sell separately .....
,, Gearbox, four-speed, off 1934 Wolseley Hornet...
,, Front axle, steering box, wheels, countershafts, radius rods and sprockets.....
,, Engine 90° V twin, 1,100 c.c. Two plugs per cylinder. Push-rod o.h.v., not quite complete .....
Hartford shock absorbers.....
J.A.P. engine and chain drive.....
Lea-Francis, 1929 12/40. Complete set of gears, two axle shafts, differential with crown and pinion, clutch plate, lined, steering box, complete with wheel and controls, front brake drums, road springs, front and rear.....
,, 1930. 12/10 engine, back axle assembly, and four wheels.....
,, 1930 hyper model (parts available), rebored cylinder block, pistons (30 thou.), new con-rods and big-ends, cylinder head and valves. Wheels. Differential, complete with pinion steering box and wheel. Front axle and assembly (brakes, etc.). Prop. shaft. Crankshaft (reground). Clutch (complete) .....
Lucas P100 headlamps, single reversed bulb type. Chromium and reflectors in good condition...
M.G. J.R. Racing, crankshaft (only used in one short race) crankshaft (used for two seasons), cylinder head complete with valve gear, etc. Three connecting rods, piston, front main bearing housing, one rear bell housing, dynamo, starter, flywheel, sump, valve cover, water pump (complete), distributor (complete), set of front timing gears, induction pipe, exhaust manifold, water manifold, B. R. 12 coil, set of clutch plates, oil filler body, and various oil pipes, all these parts can be sold separately.....
M.G. J2 1933. One engine complete (damaged sump), four wheel caps (knock-on), one rear petrol tank, one spare wheel carrier, one hood, one rear axle assembly (complete), two rear springs, one front spring, two front hubs, one gearbox (without remote control casting), one speedometer and rev. counter (without drive), one oil gauge, cut out and fuse box, one prop. shaft (complete), two bucket seats, one set (four) shock-absorbers, one N/S front mudguard (cycle-type) .....
M.G. K3 Racing Magnette, spare crown wheel and pinion, crown wheel 44 teeth, pinion 9, new.....
M.G. O.H.V. 8 h.p. 1929 "M" Type. Engine complete with 2 carburetters, dynamo, starter, etc. Clutch and 3-speed gearbox (engine just fitted new main bearings and new pistons. Linered) .....
,, Four wheels, all true .....
,, Steering column, complete with gearbox and spring wheel Front axle, complete with hubs, brakes and track rods.....
M.G. J2 brakes and cables, the set.....
Magneto, Scintilla, for Ford V8.....
Morgan rear wheel, sprockets, two-speed bevel box, chains, propeller shaft.....
,, bevel shaft, specially made in high tensile steel, almost guaranteed not to bend. Fit model about 1927.....
Morris 11.9 engine, rebored, all new bearings new valves .....
Meadows single port heads.....
,, crankcase .....
,, sump .....

Continued on page 42

SECONDHAND SPARE PARTS—continued from page 41

Meadows crankshaft with cone clutch.....
,, close ratio gearbox, complete with clutch casing .....
,, engine, complete 12 h.p. single carburetter (Solex), rebored and sleeved, Lucas magneto, dynamo starter in good condition. Small wear in bores, good oil pressure.....
,, 12 h.p. complete blower, with roller bearing crank (No. 8 Cozette blower).....
Mudguards, pair O/M type or D type front.....
New Zenith horizontal carburetter for 12 h.p.....
Pistons, two new H.C. alloy.....
Petrol gauge .....
Petrol tank from M.G. Midget.....
Radiator, Morris beehive.....
Rev. Counter, New 5" Rolls-Bentley with 15-jewel 8-day clock.....
Scintilla Vertex, four-cylinder.....
Saloon, Arrol Aster six-cylinder coachbuilt 1929, or parts .....
Salmson 3-speed gearbox.....
,, Solid back axle.....
,, Front axle .....
,, Transmission .....
,, Flywheel .....
,, Cylinder head.....
,, Wheels .....
,, Steering .....
,, Sump .....
,, Twin overhead camshaft.....
,, steering and universal, also reverse pinion...
Seats, bucket type, float-on-air, from M.G. Midget. Blue leather .....
Seat covers and cushions.....
Silencer, Brooklands, large, suitable Bentley, unused
Singer "Junior" tourer, good condition. No back axle. Chassis suitable for a "special" .....
Smith 5" rev. counter, new .....
,, ,, speedometer, 100 m.p.h.....
Speedometer, Smith's A type .....
Spotlight, new Stadium with mirror.....
Spring Steering Wheel, Ashby, as new, from 1934 Le Mans Aston-Martin.....
,, ,, Ashby, as new, from Railton 1934, Series II.....
Standard Big 9 1929 engine, clutch and gearbox, absolutely complete, but sump is damaged .....
Steering Gear, less wheel.....
Stoneguard, radiator, Aston-Martin, chrome-plated...
Supercharger, Marshall, new, complete with all fittings, suitable for Ford Eight or Ten .....
Tyre, new, for Renault (13×45).....
Tyres, competition, Invicta tread, used once on Lancia Lambda, 780×150.....
Comp. tyres, 4.00×19 .....
Valves, set of K.E. for s.v. Anzani and sundry parts
30/98 Vauxhall, o.h.v. model, parts available.....
,, ,, cylinder block.....
,, ,, ,, head .....
,, ,, sump.....
,, ,, crankshaft .....
,, ,, gearbox.....
,, ,, front axle (complete) ...
,, ,, con-rods .....
,, ,, starter motor, overhauled .....
,, ,, dynamo (1924 type) ...
,, ,, magneto .....
,, ,, water pump (overhauled) .....
,, ,, carburetter overhauled
,, ,, flywheel (teeth bad) ...
,, ,, wheels, 820/120 .....
,, ,, valves .....
,, ,, ,, springs, the set
,, ,, pistons .....
,, ,, Velox 4-seater body.....
,, ,, steering-box .....
Vernon-Derby chassis (late) solid back axle, front axle, steering gear with spring wheel, front axle with brake assembly. Prop. shaft and four wheels with good tyres.....
Wheels, 2 wire Dunlop, with 27.400 comp. covers and tubes (Dunlop M/C Sports).....
Wheel, one wire (ex Le Mans Singer). Wheel in perfect condition, just been cellulosed.....
Wheels, racing, one set, 42 mm.....
,, 2 from M type M.G. 29-32 .....
Windscreen with triplex for M.G. Midget M. type.....
Wings, pair of cycle.....

WANTED

Aluminium Strips, 2 pieces 3′×5″, 3′ 9″×5″.....
Amilcar, 9 h.p. differential (one from the saloon model but not from the sports two-seater, except the six-cylinder) .....
Austin Spares : Starter .....
Batteries .....
Carburetters .....
Dynamos .....
Petrol Tanks .....
Fold Flat Windscreen .....
Front and Rear axles .....
Pair of doors (suit sports model).....
Bucket seats .....
Pair of new Cycle-type Mudguards...
Headlamps.....
Wheels .....
Austin, Ulster : Dropped front axle .....
Aero screen.....
Manifold .....
Remote control gear.....
Racing magneto.....
Downdraught carburetter .....
Ulster body, any condition .....
1928 gearbox, three-speed, extra large wheels for Austin Seven.....
Alta cylinder head.....
Alvis "blower" front drive, chassis, engine and drive .....
Bentley Speed Six Induction manifold and twin carburetter assembly, also quick lift camshaft.....
Bugatti, modified Brescia. Cylinder block, valves in good condition, camshaft, with pulley drive for dynamo, oil pump, and 1 or 2 con-rods .....
Exhaust Pipes, external.....
Fold Flat windscreen. Width 2′ 10″, height 6½″ at centre, chromium plated.....
Frazer-Nash front axle, suitable for Boulogne model, chains and sprockets .....
,, Outside exhaust manifold and piping for fitting to Meadows engine (three port) .....
,, T.T. replica body, rear petrol tank, or similar two-seater complete.....
,, Stub axles, hub and brake gear.....
Gearbox, light, for special chassis.....
Headlamps. Fitted dipping reflectors, chromium plated, diam. of front 8″.....
Louvred Aluminium bonnet, 2′ 3″, rear 2′ 3″, front 18″ wide .....
M.G. set of brakes.....
M.G. Midget, C type cylinder head complete with camshaft and vertical drive.....
M.G. J.2 oil and radiator thermometer (dash-board type) and Tapley motor.....
Spring wheels.....
Type 37 1½-litre G.P. block (Bugatti).....
Gearbox, 4-speed, for a 1930 O.H.C. Morris Minor.....
Cylinder head, complete with valves and rockers for a blown Lea-Francis (roller-bearing crankshaft) .....
6-volt Battery, for motor cycle (Exide).....
,, for car (Exide).....
Boyd-Carpenter body, any condition.....
Brooklands Riley Engine .....
,, Series ,, with high lift cams and two carburetters .....
Lea-Francis hyper sports engine, fitted with needle bearing, connecting rods and No. 9 blower .....
Supercharger for Austin Seven.....
Sturmey-Archer gearbox for Dunelt 250 c.c.....
Instruction Book for 9.5 twin o.h.c. Salmson, 1926 or 1927 .....
,, for M.G. Midget, 1930.....
Spares for 1926 Delage tourer, D.I.S.S.....
Particularly Required Rudge Spline hubs T47D.....
Two twin port Meadows, 12 h.p. heads.....
Four con-rods steel, suitable for Meadows engine,
Crown wheel and pinion. 10×47.....

THESE ARE GENUINE OFFERS. IF YOU ARE REQUIRING ONE OF THE ARTICLES MENTIONED ABOVE, WRITE AND ASK US. WE WILL COMPLETE THE TRANSACTION.

As there are several items duplicated and at varying prices under the above heading "For Sale," we should greatly appreciate it if readers, when replying, would state, if possible, the highest price they are prepared to pay for the item in which they are interested.

Owing to the enormous amount of interest that has been shown in the above feature, some of our readers have had to wait for a few days for an answer to their enquiry. To them we offer our apologies.

Apply to: Box M/S 20, c/o Motor Sport, 21, City Road, London, E.C.1

THE WINWOOD CUP TRIAL

Definitely one of the better trials, the Winwood Cup Trial of the Berkhamsted M.C. & C.C. will start from Hudnall, near Hemel Hempstead, at 11 a.m. on February 27th. It is open to Harrow, Singer, M.G., West Middlesex Amateur and N.W. London Club members as well as to Berkhamstedians. The course in the Chilterns area embraces a route of fifty-five miles and two special tests besides the hills. Competition tyres are barred. A marking system will be used, the special tests included for general marks. The awards include the Winwood Cup, Visitors' Cup, Team Awards, Tankards for the best 10 per cent., and ash-trays for the next 10 per cent. in order of merit. Entries close on February 20th, at 5/- per car, or 7/6 per car for invited members. Team entries 5/- per team. There will be a lunch stop. The Clerk of the Course is E. G. M. Wilkes, of 6/9 G.N. fame. Last year heavy snowstorms added to the difficulties. Particulars from :—E. G. M. Wilkes, Chilterns, Cross Oak Road, Berkhamsted, Herts.

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SUBSCRIPTION RATE 7/6 PER ANN. POST PAID

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TESTING ELECTRICAL EQUIPMENT

BRITISH RACING DRIVERS' CLUB VISITS THE LUCAS FACTORY AT BIRMINGHAM

ELECTRICAL equipment plays a big part in the working of any car. Even on a racing-car, with no lamps, dynamo, self-starter, screen-wiper, or horn, there is still the vital ignition apparatus, and sometimes an electric petrol pump as well. In sports-car races, particularly of the type of the Le Mans 24-hour event, almost every item of the equipment listed above is needed, and becomes as important as the power of the engine itself.

Last month a party of members of the British Racing Drivers' Club visited the Lucas works at Birmingham, with George Eyston as the guest of honour. Eyston had had recent experience of Lucas products in his long-distance records in America, and was able to tell Oliver Lucas, who received the party, that the big headlamps on his "Speed of the Wind" gave ample driving light even at speeds of 170 m.p.h.! He had used the self-same pair of headlamps on another car in a previous attempt on the 24-hour record. On that occasion the frame broke, and in consequence the lamps had received a tremendous battering and vibration. However, he was able to fit them to "Speed of the Wind" without any overhaul.

In the morning the B.R.D.C. party split into two groups, one visiting the battery works and the other the Service Station. Later they were conducted all over the main works, which has a floor area of a million square feet, and the only regret was that so little time was available to see the many intricate processes of manufacture and testing.

A feature of much interest was the Refrigerator Room. Fortunately, this was not as cold as it might have been, for one of the tests is to leave a car (without water in the radiator!) in this chamber for sixteen hours with the temperature at 47 degrees of frost. The starter must then turn the engine over at a reasonable r.p.m., enough to secure a start. Carburetter settings are also tested in this cold temperature, to enable the various manufacturers and the electrical suppliers to work together.

In another room opposite temperatures could be attained, to reproduce conditions at will, with steam-laden air to give the requisite dampness.

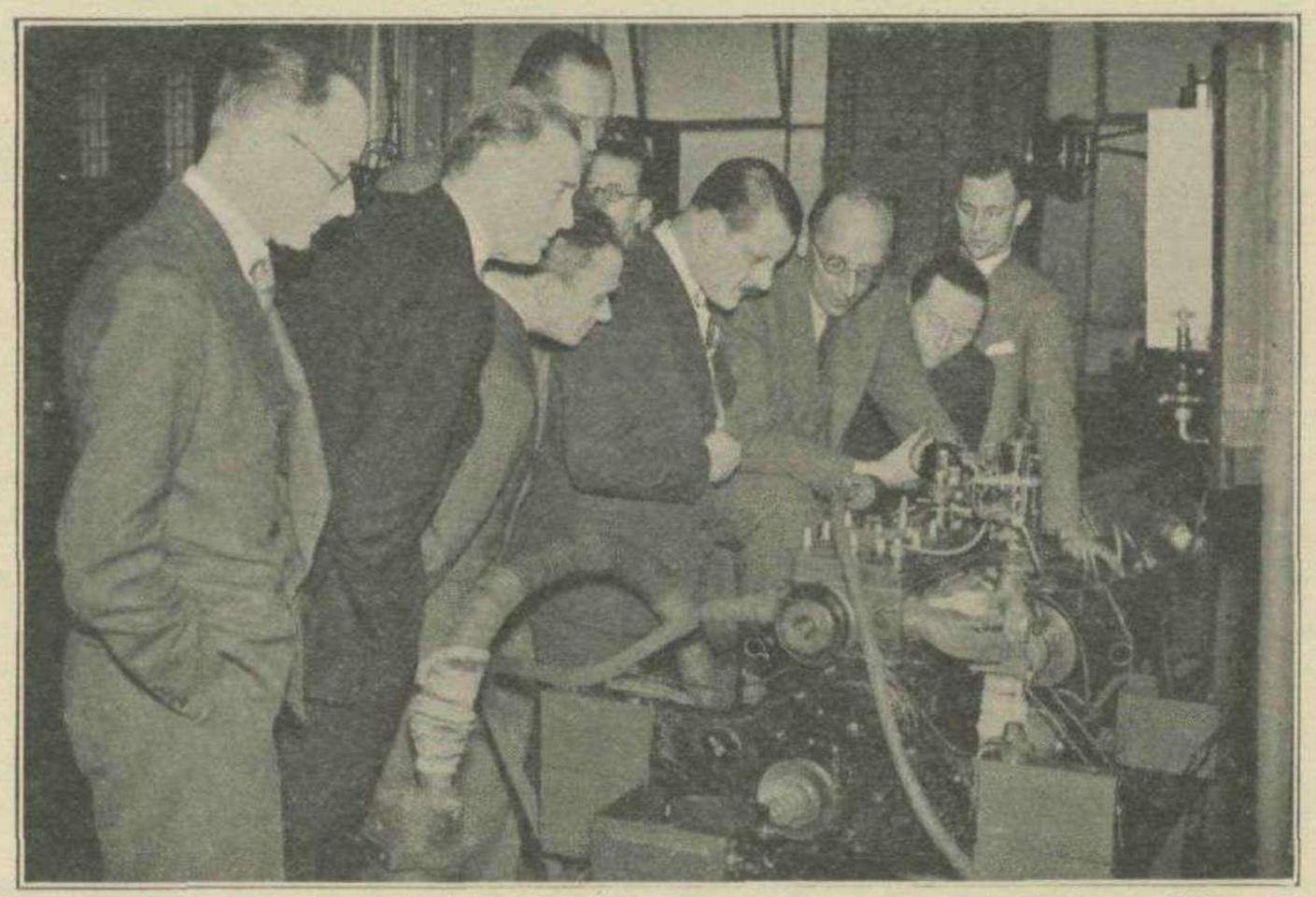
Those who have experienced a sheared shaft were interested in a machine, designed for testing spindles of various kinds, which applied a twisting force of 10° seventy-two times a second to a constantly rotating spindle.

Automatic advance and retard mechanisms are tested by a kind of miniature brake, which records the horse-power given off by an engine according to the varying position of the spark.

One of the most interesting features of all was the Gauge Room, where all the gauges used in manufacture are checked with meticulous accuracy. A Zeiss Contour Projector throws an image, greatly magnified, on a horizontal screen. Small parts can thus be seen on a drawing-board with a profile from 10 to 100 times full size. Even a hair would look like a mighty cable.

Then there is an automatic gauging machine, which selects the pivot pin inserts in the contact breaker plate, but discards all that are oversize or undersize by more than .0015 in. 7,200 pins an hour pass through this machine.

Continued on page 78



Captain Eyston and the B.R.D.C. visited the Lucas Factories last month. Harry Edwards and Major Gardner seem interested in an ignition and engine test.

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FORD V8 WINS THE SEVENTEENTH MONTE CARLO RALLY

LANCIA'S GRAND SLAM IN THE LIGHT CAR CLASS. SMALL BRITISH SALOONS DO WELL.

IT is difficult to believe that such a successful event as this Seventeenth Monte Carlo Rally has been, could ever have been, in jeopardy. And yet after the previous year's Rally there had actually been talk of discontinuing it.

The point is, of course, that the Rally will always be popular for a variety of reasons, chief of which is that it offers an outlet for the spirit of adventure latent in all of us. Even if the discomfort and suffering (and it *is* suffering) is self-imposed, the sense of achievement at the end of it all is none the less pleasurable.

But there was not much pleasure to be seen in the facial expressions of many of the weary, bleary drivers who checked in at the final control on the Saturday. They had no interest in the blue sea and sky, the colourful scene and the warm sunshine. Their one-track minds were focused on thoughts of a bath, and a long, long sleep. More than anything, on sleep.

There were ninety-three finishers out of 125 starters. Let us see how they fared on the various 2,000 odd mile routes converging on Monte Carlo. This year the routes were marked on a different system, according to their severity instead of their distance. Athens was generally conceded to be the most difficult starting point of all, and was thus given 500 marks. Bucharest, considered by some an even more hazardous itinerary, was marked with 498 points. Palermo, Stavanger and Tallinn were given 497; Umea and John o'Groats 496; and Amsterdam 468.

How they Fared on the Road Sections

Athens is always a gamble. If there has been a heavy fall of snow in the Balkans, no one can get through. Otherwise it is just an extremely bumpy journey for long sections, with the possibility of snow near Munich. To be on the safe side, several competitors who chose Athens this year also filed entries from Palermo, leaving it to the last possible moment to decide which to use. Good weather reports from Athens encouraged them to start from the Grecian capital, and this enabled them to gain three valuable extra points over their rivals.

On the whole, the Athens route was easy, but there was one very bad accident involving Molinari's Fiat, in which the driver was killed. There was the usual tale of one car having its sump removed by a rock, but twenty out of the thirty-three starters got through with clean sheets. British cars among this number were a Hillman Minx driven by Gatsonides, two Fords driven by Whalley and Scott (we nearly wrote Scott and Whaley!) and Alan Good's big Lagonda, which gave its occupants the most comfortable ride of the lot. Aldington and Fane lost no marks with their 2-litre Frazer-Nash-B.M.W. Some redoubtable finishers from Athens were Lahaye and Quatresous (Renault), Quinlin (Matford), Jean Trevoux (Hotchkiss) and the Dutch Ford driver, Bakker-Schut.

Bucharest, too, was not such a difficult route as usual this year, and three out of the five starters got through without loss of marks. From Stavanger twelve of the twenty-one starters retained clean sheets, the most meritorious performance being that of Stanley Barnes and Tommy Wisdom with a perfectly normal Vauxhall "Ten" saloon. Mrs. "Bill" Wisdom and Mrs. Lace were also among the *elite* in their Talbot-Darracq. Of the twenty Palermo starters eleven lost no marks, but none of the four Tallinn starters were so successful. The five Umea starters were equally unlucky, but the biggest tale of woe came from the John o'Groats contingent.

There were twenty-three starters from the only British control, which is generally considered to offer a fairly easy route. Only six of these arrived at Monte Carlo without losing marks *en route*. Their names, therefore, are worthy of being recorded: Balfour (Alvis), Willing (3½-litre S.S.), Lord Waleran (Lancia), Garrad and Davis (Talbot Ten), Rasch (Morris Ten), and Count Heyden (Delahaye).

All went well to begin with, and the Scottish roads were in good condition. There was a little patchy ice which was rather tricky on the way to London from Doncaster, and Miss Taylor's £35 Lancia Lambda was slightly delayed with dynamo trouble, but it was in France that things really began to go wrong.

Between Le Mans and Nantes, Wise (Balilla Fiat) crashed into the back of Denis Burrage's V8 Standard, which had pulled up suddenly to avoid a lorry. Result, two cars badly damaged, and much time lost straightening them out. Denis, incidentally, was in charge of the car in place of his father who was taken ill on the eve of a long-anticipated first Rally.

But it was on the stretch between Toulouse and Lyons, including the crossing of the Massif Central, that the real fun began. The weather was foul—snow, sleet, rain and ice—and, either because fatigue was beginning to set in, or because of a lack of signposts, people began to lose their way. Worse still, some of them ran off the road and crashed, more or less seriously. Baron Dorndorf and his wife (Miss Patten that was) in their British Salmson plunged down a steep ravine and overturned. Miraculously they were not too badly hurt, but Miss Taylor's Lancia party, which was following, lost must time in going to their assistance.

Sir W. C. Anstruther's Ford was another car to leave the road with a considerable crash, and the occupants were removed to hospital. J. G. Silcock's brand-new Jensen also deviated from the straight and narrow path. The Smiths' elaborately equipped Wolseley lost marks at the Rodez control, while Wise's patched-up Fiat lost twenty-three marks at Toulouse and two at Rodez. Mrs. Joan Cotton had bad luck in puncturing a tyre just outside the Lyons control and failed to check in on time.

Through it all, however, two small British saloons came with flying colours. Fred Rasch, publicity chief of Morris Motors, accompanied by W. A. McKenzie of the "Daily Mail," drove a little Morris Ten saloon taken at random from the Morris demonstration fleet. Never for an instant did it falter. The same can be said for the Talbot Ten coupé driven by Norman Garrad and Sammy Davis, of the "Autocar."



The first of the British competitors to arrive at Monte Carlo from Stavanger. Mr. and Mrs. W. G. Lockhart and their Talbot.

The First Eliminating Test

All routes converged at Lyons before tackling the difficult last section to Monte Carlo. This year it was intended to make

THE MONTE CARLO RALLY—continued

the run from Grenoble to the finish in the nature of an eliminating test, in order to avoid the " gymkhana " tests at Monte Carlo being the decisive factor. The average speed for all routes as far as Lyons was 24.85 m.p.h., but from then on it was raised to 31 m.p.h. This last lap was divided into four sections of unequal length. The first included the Col de la Croix Haute (4,000 ft) ; the second was considered to be the worst of all, the seven-mile crossing of the Col de Lecques having to be accomplished at 31 m.p.h. ; the third section, still with many corners, leading down to Grasse ; and the final stage taking the competitors through Cannes and Nice to the finish.

Dire predictions of disaster had been foretold of weary drivers crashing over precipices in their endeavour to maintain the necessary average speed over ice-bound and snowy roads. As it turned out, the organisers decided to merge the dreaded second section with the longer third stage—to the intense relief of many competitors. Just to prove that it could be done, however, the crew of the Talbot Ten actually achieved the required 31 m.p.h. average over the Col de Lecques—a grand performance.

The only serious " incident " on the Grenoble-Monte route was when Bjorkman's Lancia collided with a non-competing car near Grasse. Boughton's Talbot-Darracq fused its defroster and afterwards became ditched for a short while—but the control was reached on time. Altogether, sixty-one competitors got through the 31 m.p.h. average section from Grenoble without loss of marks, including the gallant British " Tens," the Morris, the Talbot and the Vauxhall. And so, as an eliminating test this stage was a flop. On the other hand, no one got hurt, which was all to the good of the reputation of the Rally.

The Final Eliminating Test

After all, it came down to the usual " driving skill " tests to find the ultimate winner among the fifty-five cars which had come through the road section without loss of marks. Refreshed by a long sleep, the competitors presented their cars for examination at 9 o'clock on Sunday morning, immediately after which the tests took place.

Big crowds lined the Quai de Plaisance where the drivers had to perform the intricate manœuvres of accelerating, braking, reversing, turning, and repeating the same thing to a flying finish. Each driver was given two tries, one from each end of the course. There were no freak cars this year, because a new rule confined the event to standard closed cars, without superchargers.

The whole test called for a cool head and unhurried, deft movements—combined of course with good acceleration and brakes. In some cases the latter had become weak through hard work on the road section, and no overhauling was allowed to be done before the tests. The situation was given added piquancy by the fact that the favourite for fastest time was René Le Bégue (Talbot-Darracq), who had a 3 mark handicap to make up on the Athens starters. Le Bégue began well with a neat 57.1 seconds, which was not quite good enough to put him in front of Bakker-Schut's Ford, which took 1 min. 2 seconds. On the second run, however, Le Bégue failed to cross the reversing line by 1 inch in clocking 57 seconds dead. Bakker-Schut then put the matter beyond all doubt by getting down to 58 seconds, and ran out a deserving winner. Other fast times were those of Trevoux (Hotchkiss), 1 min. 1 sec., Lord Waleran (Lancia), 1 min. 2.1 secs., Descollas on a similar car, 1 min. 2.8 secs., Mme. Roualt (Matford), 1 min. 4.4 secs., and Whalley (Ford), 1 min. 5.2 secs.

Lord Waleran's time, although fastest of the " 1,500s," was not sufficient to make up for the extra marks gained by Descollas in starting from Athens, and the Light Car Prize accordingly went to the latter. Mme. Roualt's handling of the Matford (Ford V8 made in Mathis factory) showed her long experience of this kind of thing, and gave her the Coupe des Dames.

These were the outstanding performances. The majority of drivers put up good, unspectacular shows which space does not permit us to mention individually. A few, overcome by the importance of the occasion and letting haste confuse their minds and movements, gave grotesque performances which recompensed the crowd for their long attendance. It will be kinder not to mention them by name.

The Comfort and Engine Appearance Prizes

British cars came into their own in the Comfort and Engine Appearance Competitions. The Grand Prix d' Honneur for Comfort went to the 3½-litre S.S. Jaguar entered by J. O. H. Willing, who was thus the third successive British driver to win this coveted prize. The S.S. thoroughly deserved its success, for at £455 it is an amazing motor-car, possessing both the looks *and* the performance of cars costing two or three times as much. This result is a real triumph for Mr. " Bill " Lyons, the brilliant head of the S.S. Company.

British cars also filled second, third and fourth places, so that altogether we can regard our coachwork as pretty good—in direct competition with the best Continental and American practice. In the all-weather class, Alan Good's Lagonda was placed second to a Buick, and third prize went to Balfour's 4.3-litre Alvis.

The under 1,500 c.c. closed car class was another triumph for British manufacture, this time a normal Hillman Minx saloon, entered by D. E. M. Douglas-Morris, being the victorious car. Garrad's Talbot Ten was placed third, and the Barnes-Wisdom Vauxhall Ten fourth.

The Engine Appearance Competition went to Smith's Wolseley, which just beat Willing's S.S. Jaguar.

PROVISIONAL RESULTS
GENERAL CLASSIFICATION

1. G. Bakker Schut (Ford), Athens: 780.9 marks.
2. J. Trevoux (Hotchkiss), Athens : 779.7 marks.
3. C. Lahaye and R. Quatresous (Renault), Athens : 777.8 marks.
4. E. Mutsaerts (Ford), Palermo : 774.6.
5. J. Quinlin (Matford), Athens : 773.9.
6. R. A. Carriere (Matford), Athens : 772.3.
7. Mme. G. Rouault (Matford), Athens : 771.7.
8. G. Descollas (Lancia 1,352 c.c.), Athens : 771.6.
9. Tie between Lord Waleran (Lancia 1,352 c.c.), John o'Groats, and R. Cantoni (Lancia 1,352 c.c.), Palermo : 770.5.
11. Mme. Simon (Hotchkiss), Athens : 768.8.
12. Tie between Dr. Sprenger van Eijk (Lincoln), Palermo, and C. de Cortanze (Peugeot), Athens : 768.4.
14. J. W. Whalley (Ford), Athens : 768.2.
15. K. Olsen (Ford), Stavanger : 767.5.
16. B. Van der Hoek (Packard), Palermo : 767.3.
17. J. Danniell (Peugeot), Stavanger : 766.9.
18. F. Hoffman (Lancia), Stavanger : 766.5.
19. Mrs. Greta Molander (Dodge), Stavanger : 765.1.
20. R. Le Begue (Talbot-Darracq), Stavanger : 762.8.

Other British Placings

22. N. Garrad and S. C. H. Davis (Talbot Ten), John o'Groats : 761.9.
23. Count Heyden and E. O. Cemlyn Jones (Delahaye), John o'Groats : 761.2.
27. Mrs. A. C. Lace and Mrs. Wisdom (Darracq), Stavanger : 759.2.
28. F. S. Barnes, J. D. Barnes and T. Wisdom (Vauxhall Ten), Stavanger : 758.3.
29. A. P. Good and C. Brackenbury (Lagonda), Athens : 757.7.
40. G. L. Boughton (Darracq), Stavanger : 747.2.
42. J. O. H. Willing (3½-litre S.S.), John o'Groats : 743.9.
44. F. H. S. Rasch (Morris Ten), John o'Groats : 742.3.
49. A. C. Lace (Darracq), Stavanger : 735.45.
53. A. C. Scott (Ford), Athens : 727.7.
59. Mrs. M. J. Cotton (Lancia 1,352 c.c.), John o'Groats : 719.35.
60. P. F. Smith (Lagonda), John o'Groats : 714.5.
61. H. J. Aldington, A. F. P. Fane and N. A. Berry (Frazer-Nash-B.M.W.), Athens : 712.0.
62. H. M. Balfour (Alvis), John o'Groats : 709.6.
65. G. W. Wilkin (Triumph), John o'Groats : 690.3.
66. Major A. Schwabe (Ford), Stavanger : 688.25.
73. H. Halliwell (Riley), John o'Groats : 645.25.
86. A. W. MacArthur Onslow (M.G.), John o' Groats : 484.0.
87. T. C. Wise (Fiat), John o'Groats : 463.4.
89. Miss K. Taylor (Lancia 2,570 c.c.), John o'Groats : 440.6.
— Major D. E. M. Douglas-Morris (Hillman), Amsterdam : 440.

W. G. Lockhart (3-litre Talbot) is still under consideration on a technical point.

A. B. Grant (Triumph) disqualified owing to non-standard coachwork measurements.

LIGHT CAR CLASS

1. G. Descollas (Lancia), Athens : 771.6 marks.
2. Tie between Lord Waleran (Lancia), John o'Groats, and R. Cantoni (Lancia), Palermo : 770.5.
4. F. Hoffman (Lancia), Stavanger : 766.5.
5. L. Garrard and S. C. H. Davis (Talbot), John o'Groats : 761.9.
6. E. Bellen (Lancia), Stavanger : 761.0.

Other British Placings

8. F. S. Barnes, J. D. Barnes and T. Wisdom (Vauxhall Ten).
14. F. H. S. Rasch (Morris Ten).
19. Mrs. M. J. Cotton (Lancia).
21. G. W. Wilkin (Triumph).
24. H. Halliwell (Riley).
35. T. C. Wise (Fiat).
36. Major D. E. M. Douglas-Morris (Hillman).

LADIES' CUP

1. Mme. Rouault (Matford).
2. Mme. Simon (Hotchkiss).
3. Mrs. Greta Molander (Dodge).
4. Mrs. A. C. Lace and Mrs. Wisdom (Darracq).
5. Mme. M. J. Marinovitch (Matford).
6. Mrs. M. J. Cotton (Lancia).

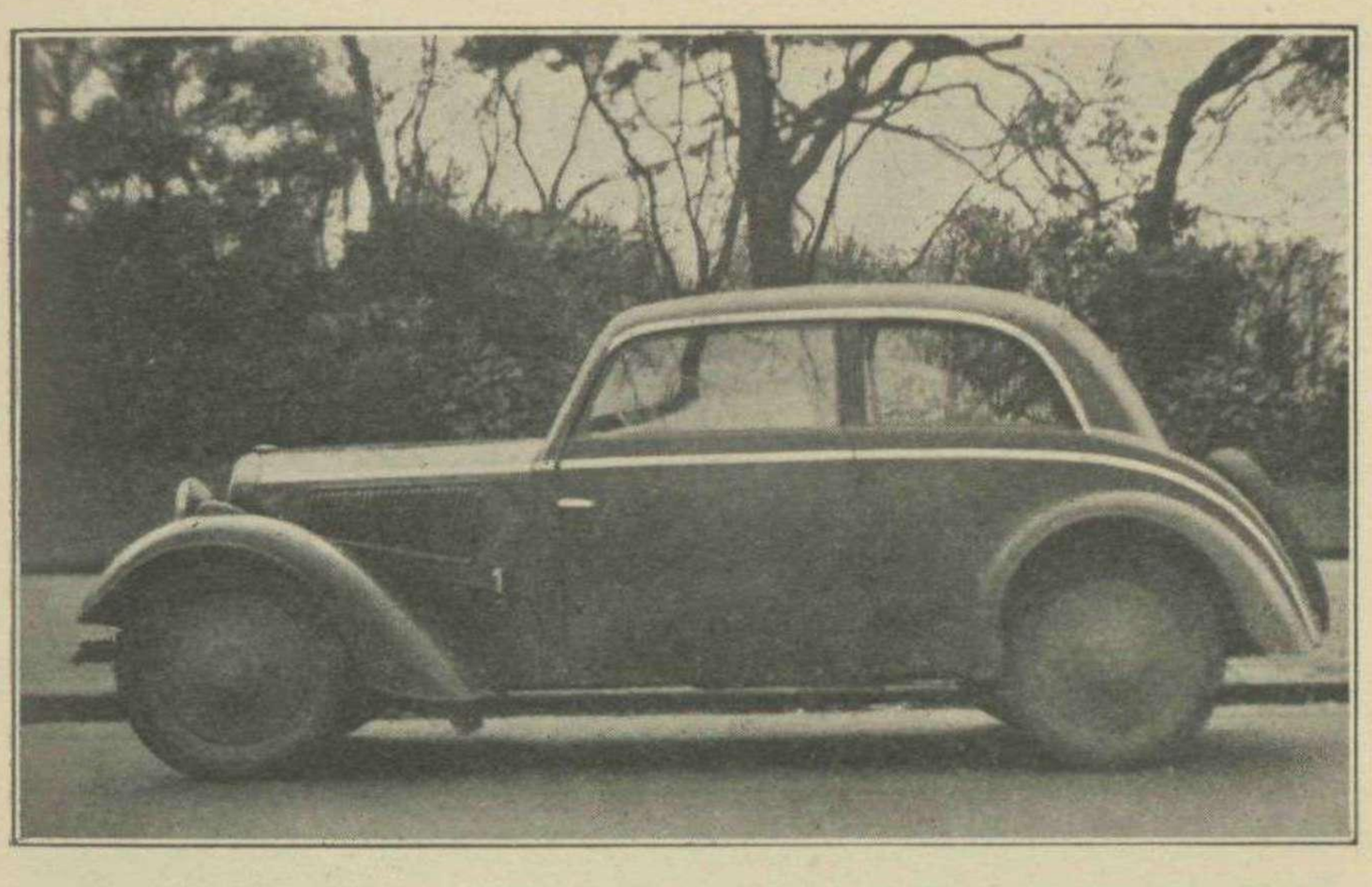
Closed Cars over 1,500 c.c.—1, J. O. H. Willing (SS Jaguar) ; 2, T. A. Smith (Wolseley) ; 3, J. H. T. Edward Moss (Alvis) ; 4, A. W. MacArthur Onslow (M.G.) ; 5, Count Heiden (Delahaye) ; 6, W. G. Lockhart (Talbot).

All-Weather Cars over 1,500 c.c.—1, J. I. Lovgren (Buick) ; 2, A. P. Good (Lagonda) ; 3, H. M. Balfour (Alvis) ; 4, A. Noll (Opel).

Closed Cars Under 1,500 c.c.—1, D. E. M. Douglas-Morris (Hillman) ; 2, W. Kolaczkowski (Lancia) ; 3, N. Garrad (Talbot) ; 4, F. S. Barnes (Vauxhall).

All-Weather Cars Under 1,500 c.c.—1, V. Formanek (Aero) ; 2, H. J. A. Janssen (D.K.W.) ; 3, G. Stoinschegg (D.K.W.).

Engine Appearance Competition : 1, T. A. Smith (Wolseley) ; 2, J. O. H. Willing (SS. Jaguar) ; 3, A. Noll (Opel) ; 4, A. P. Good (Lagonda).



THE TWO-STROKE FRONT-DRIVE D.K.W. PROVES A VERY FASCINATING AND PRACTICAL ECONOMY CAR

A PRODUCT OF AUTO-UNION

ALTHOUGH readers of MOTOR SPORT are primarily concerned with high-performance cars, and open-bodied sports-cars in particular, many of us are obliged, for reasons of economy, to run utility models, while others are fortunate enough to stable two cars and, having in the garage a car comparatively expensive to purchase and maintain, interest naturally centres around a really economical vehicle as a supplementary means of transport. Even so, qualities of good control, smart appearance, and a measure of up-to-dateness or even unorthodoxy in specification are appreciated by such persons in respect of their utility cars. For these reasons we are pleased to be able to give our impressions of the £169 684 c.c. D.K.W. saloon, extending over a fairly varied 300 miles driving, more especially as a test report of another baby car, published last March, aroused considerably more interest than we anticipated and resulted in the direct sale of an appreciable number of the cars in question.

Auto-Union's great win at Donington last October lends added interest to the D.K.W., which is a product of that important German combine, a fact that materially contributes to pride of ownership.

The D.K.W. is technically of outstanding interest, with its "backbone" frame, independent front suspension by transverse leaf spring, front drive, free wheel transmission and transversely-set two-cycle two-cylinder engine. These features combine to provide a degree of controllability and accuracy of handling appealing to enthusiastic drivers, besides giving distinct character to the car. Over and above all that the D.K.W. is truly economical, commanding only a £6 tax, and doing a genuine 40 m.p.g., while carrying four adult persons. The price, as tested, is £169. The question at once arises: What sort of performance is possible with so small an engine with such economy? The answer is that the D.K.W. will cruise all day very smoothly at 40 m.p.h., or maintain 50 m.p.h. if asked, with a maximum of about 55 m.p.h. down long straights, while its acceleration is quite brisk, and seems to be on an equality with that of the average "Ten." As the road-holding is of a high order, as one has come to expect of modern independently-sprung Continentals, a skilful driver can consequently maintain a quite excellent average speed. The two-stroke engine makes, perhaps, rather more noise than a conventional unit when pulling, and four-strokes, Trojan-like, when idling, which it does for a considerable period of town-driving, on account of the free-wheel. The free-wheel can be easily locked by a lever on the steering column but as the braking effect of the small power-unit is negligible it is better left in use to contribute to the economy of running. The front-drive, apart from stiffness of steering when the engine is pulling and a slight tendency to diminish steering accuracy on the over-run at speed, presents no unusual conditions. In brief, the construction of the D.K.W. presents only very minor disadvantages which in no way offset the appreciable advantages thus endowed.

The road-holding is excellent. Only when purposely "thrown round" acute bends does the D.K.W. roll and emit momentary slight tyre squeal, and this rolling is merely a spragging outwards of the rear wheels, the body remaining level. It can be put into a slide on wet surfaces, but controls well, with a slight suggestion that it is more stable when the front wheels are driving than on the over-run, though not decisively enough to reflect adversely against front-drive. Much of the D.K.W.'s security centres around its generally solid build. The chassis feels solid, as in fact it is, the body is devoid of rattles and flexing movement, and the front-works remain rigid over all surfaces, a rigidity emphasised by a tendency towards bonnet-panel movement. Moreover, the radiator shell is solidly constructed and unobtrusively efficient, as a fitting background to the four-ringed Auto-Union badge. The suspension is on the hard side, promoting an up-and-down movement at low speeds, which has the merit of obviating any sense of lifelessness which sometimes results from the employment of a really rigid frame. At higher speeds this hardness smooths out and in any case road shocks are very effectively insulated from the occupants. Over a very rough private road we held 40 m.p.h. in complete comfort and apparently without embarrassment to the car, where 25 m.p.h. is normal. No pitching is experienced.

The steering is stiff when manœuvring, but fairly light when under way, though it stiffens up if the engine is pulling. However, it is pleasantly high-geared, asking about two turns of the small well-placed wheel, lock to lock, and negotiation of congested areas calls for little more than wrist work, while the action is pleasantly smooth and the lower wheel spokes most conveniently spaced. At the lower speeds it is accurate to a degree but on the open road there is a tendency to wander somewhat as the drive fluctuates between pulling and free-wheeling, though it is still safe excellent steering. In a similar way the castor action varies from being very quick and positive at times or almost non-existent on the drive. Personally we liked the

BRIEF SPECIFICATION

Engine: 2 cylinders. 76×76 mm. (684 c.c.). 7.16 h.p. Tax £6. 20 b h.p. Two-stroke cycle. Coil ignition, automatically controlled. Thermo-syphon cooling. Petroil lubrication. 5.9 to 1 compression ratio.

Gearbox: Three speeds and reverse. Dash control.

Suspension: Independent at front by transverse leaf spring. Transverse at rear. Hydraulic shock-absorbers.

Brakes: Cable operated on all wheels. Central hand-lever.

Chassis: Front wheel drive. Box-section, central member frame.

Fuel range: 7 gallons. Approx. 280 miles.

Dimensions: Wheelbase 8 ft. 7 in.
Track Front 3 ft. 9½ in.
Rear 4 ft. 1½ in.
Weight (unladen) approx. 13½ cwt.

Price: "Special" four-light two-door saloon: £169.

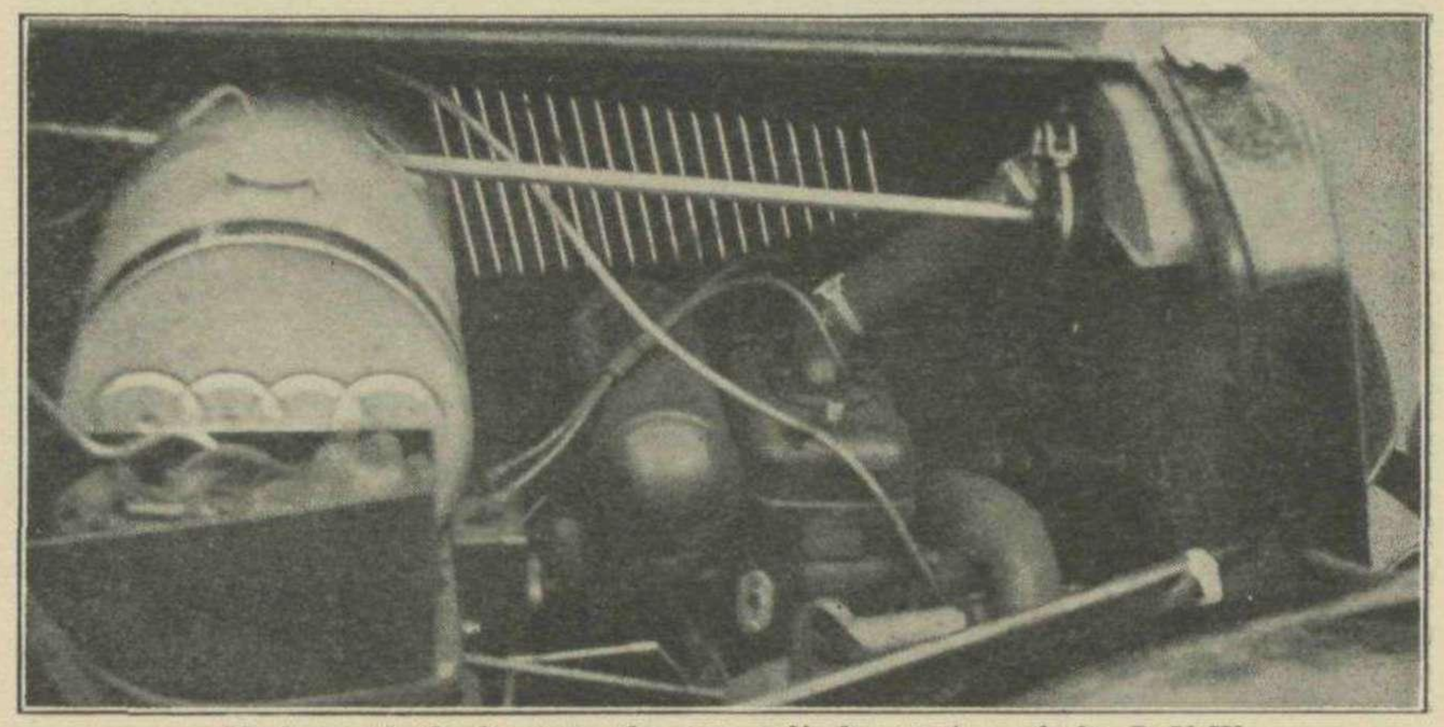
Agents Auto-Union (Sales) Ltd., 151-153 Gt. Portland Street, London, W.1.

A PRODUCT OF AUTO-UNION—continued

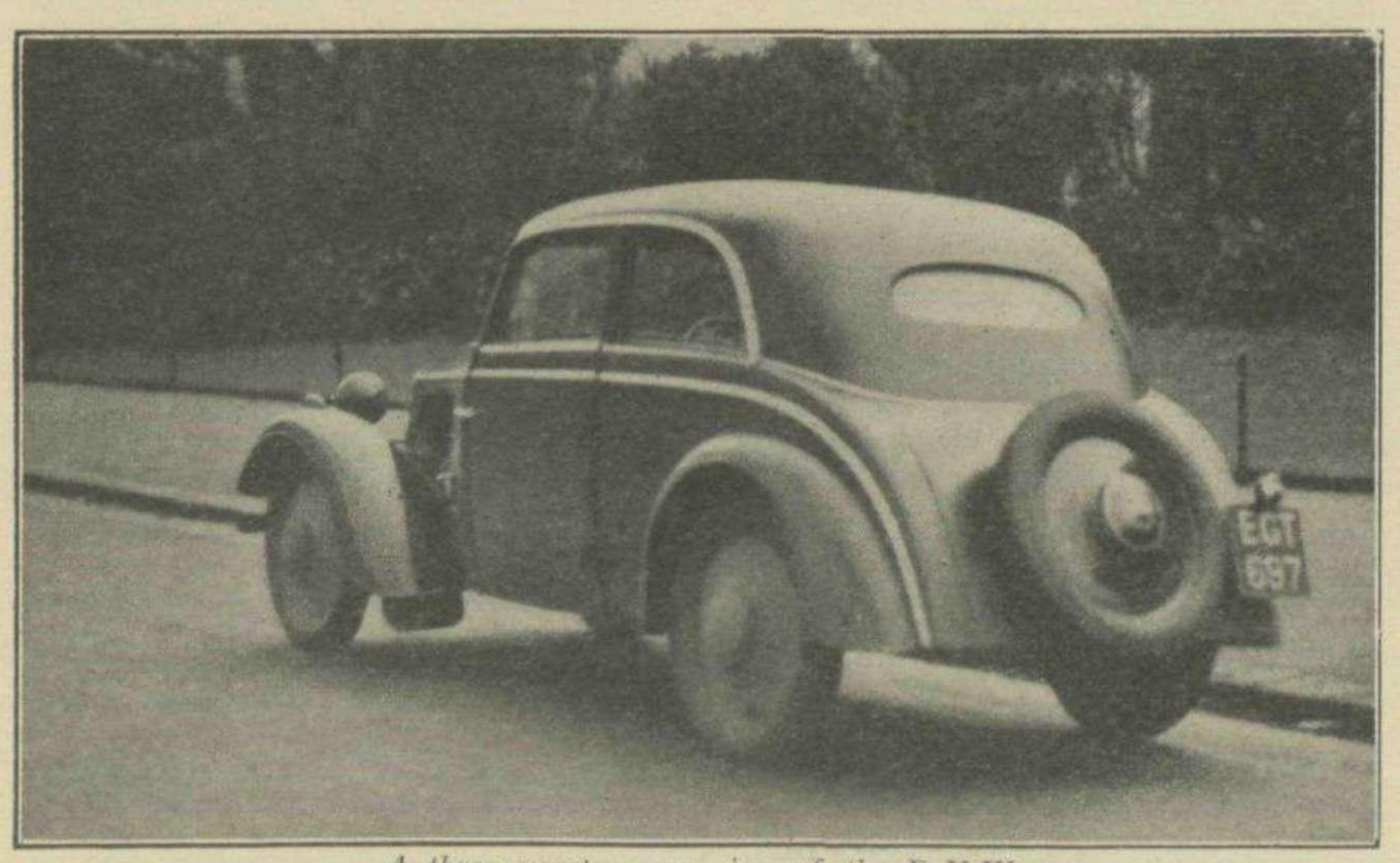
collective character of the steering. There is no return action, and wheel vibration occurs only over bad surfaces, the column brackets being noticeably loose. Fast cornering seemed better on the drive than over-run but was not sufficiently abnormal for a driver strange to F.W.D. to decide whether it was the unconventional drive as such, or the more constant feel of the steering occasioned by keeping the throttle open, that gave this impression. Certainly D.K.W. front-drive calls for no new driving technique.

The brakes called for a heavy pedal pressure for rapid stops and, while they slowed the car well, they tailed off at low speed and could have been more powerful. They were progressive for casual stops and absolutely " square " in action. Towards the end of the test they squealed occasionally under heavy application, but showed no appreciable diminution of power. The hand lever is placed very conveniently between the seats, holds the car effectively, and has a simple ratchet that works well. The brake warning light displayed a tendency to stay alight after the pedal was released. The little two-cylinder two-cycle engine is a willing worker and very smooth, except for bad vibration when pulling at a certain speed in second. It responded at once to the accelerator and had no flat spots. When idling it four strokes rather audibly but one has the satisfaction of knowing one is conserving fuel and saving wear and tear. The free-wheel engages smoothly and at around 40 m.p.h. the running is effortless, with more noise as the maximum is reached. On top gear it is possible to run down to about 10 m.p.h. and acute corners can be taken without a change down if one is content thereafter to crawl up to 25 m.p.h. On first acceleration is rapid to 20 m.p.h., when one goes into second, changing into top at 30 to 35 m.p.h., though the brisk acceleration on second can be continued to 40 m.p.h. if desired. Some pinking is evident on straight fuels. Starting from cold is rapid if assisted by a little choke and it is normal to drive hard at once. Naturally economy of running is of major interest and we carried out a fairly careful test. Over eight gallons, six of expensive and two of cheap fuel, we recorded 38.1 m.p.g. In climbing trials hills and fast road work we did 36 m.p.g., in extensive town pottering 39 m.p.g., and finally, in mixed town running with much restarting, covered exactly 80 miles on 2 gallons of 1/5 Dominion fuel. 45 m.p.g. should certainly be possible on straightforward running. Lubrication is effected by putting in a pint of Shell oil with 3 gallons of fuel, no mixing being necessary. With the last 2 gallons we used only half a pint of oil with no apparent detrimental effects, an average of 1,280 m.p.g.—moreover, there is no oil to change. There is a reserve fuel supply, the tap being under the bonnet, and although the engine doesn't give sufficient warning of starvation to prevent it stopping it restarts almost instantly on the reserve. The 6 volt Dynastart gives silent starting.

The gear-lever protrudes as a downward pointing crank from the centre of the dash. To engage first it is pulled out and pushed leftwards, second gear is push in and over to the right, top straight over to the left. Reserve is opposite bottom. The lever worked a little stiffly, perhaps because the various connecting links appear to have been unlubricated.



Underneath the bonnet—the two cylinder engine of the D.K.W.



A three quarter rear view of the D.K.W.

But quick wrist movements put the changes through very well, double-declutching being required for downward changes, though bottom could be engaged at low speed with a single movement of the clutch, on account of the free-wheel. The clutch has a long pedal movement and bites towards the end of the travel, but nevertheless engages smoothly with no trace of slip. Pedal pressure is moderate. There is some transmission noise in top, and the indirects are not appreciably noisier. The transmission was taut.

We found the D.K.W. especially attractive as a town car and, as has been emphasised, its road-holding and steering qualities render it a fast proposition over winding roads. On arterial highways it is notable how many larger cars are passed by maintaining a cruising speed of 50 m.p.h. and using one's skill on open bends. Long hills can be taken in top gear, the little engine pulling strongly, but naturally use of the gears is advisable if one is in a hurry.

Turning to details, the seats, adjustable bucket-type with folding backs in front, are comfortable and well set and the major controls nicely positioned. The accelerator, which has a fairly stiff spring, is a shade closer to the brake pedal than is advisable and the brake pedal is rather far above it. The near-side wing is invisible, but on a small car this is of comparative unimportance and visibility is really very good. The body is in keeping with the sense of rigidity conveyed by the frame design, with two big doors that shut easily, taut windows, and plain serviceable cloth upholstery. It was silent save for slight door-rattle. The doors have pockets. There are two excellent cubby holes in the dash, and a useful interior light. There are no running boards and entry and egress is unimpeded either side of the car. The lights are adequate for fast after-dark driving, with good dimming arrangements. Criticisms concern the fact that the lamp switch is tucked away behind the steering

A PRODUCT OF AUTO-UNION—continued

wheel, which is inconvenient as it incorporates the dimmer control, the lack of a screen wiper for the passenger and rather limited arc of that for the driver, a tendency to steam up internally on a cold day with both windows shut, a non-openable screen, a rather low-toned horn, and absence of a rear blind. Against that must be set an excellent wiper switch on the motor-box on the screen base, permitting accurate parking of the blade. The facia carries, left to right, cubby hole, speedometer, choke below, dash light, fuel gauge, gear-lever, direction indicator switch, light switch and ignition lock below, cubby hole, wiper box and switch above. The speedometer registers in miles and m.p.h., with no trip, the fuel gauge registers after a plunger is operated and shows the amount in reserve down to zero (it seemed consistent but optimistic as to total quantity), the direction indicators are non-cancelling but there is a most useful warning light in the switch centre, and the ignition key looks essentially thief-proof. There is a dynamo-charging window but no ammeter and, naturally, no oil-gauge is needed. In spite of the front drive, the tubular frame necessitates a central tunnel, but the rear seat could probably be occupied by three persons if the central passenger had adaptable legs. The rear side windows give an excellent view but the rear window is small for reversing visibility and the view in the central mirror rather limited. The front windows wind efficiently; the off-side handle is apt to foul the driver's elbow. The steering lock is commendably taxi-like. The view from the driving seat is rather reminiscent of that of a Lancia "Augusta," the unplated radiator shell having sharply sloping sides. The filler cap is of screw pattern; the under bonnet fuel tank has a plug-in cap. The wings keep the car fairly clean and with its easy contours and disc wheels the D.K.W. should be readily kept presentable in appearance. There is a generous built-in luggage space behind the rear seat.

Any objection to front-drive should be removed by our foregoing impressions and the fact that in following a trial the D.K.W. successfully climbed the very slippery Coldharbour Hill. Certainly the front wheels, shod of course with standard Dunlop "90" 4" × 19" covers, sent out clouds of steam as they spun merrily, but the car never faltered. Subsequently we got nearly up Temple Hill, after it had been churned up by competing cars. Right at the summit the spin lowered our speed and we came to rest, only to restart almost unaided. With some of Mr. Dunlop's competition tyres on the front we should enjoy tackling trials in a D.K.W.

In conclusion, we like this little car very much indeed. Its unconventional specification makes it a real possession of unflagging interest to those who appreciate the practical application of ultra-modern automobile engineering practice, as instanced by independent front suspension, front-drive, back-bone frame construction and free-wheel. Apart from that, the D.K.W. possesses those excellent steering, springing and road-holding qualities which are a feature of modern Continental products, and which particularly appeal to sports-car enthusiasts, allied to low first cost and really economical functioning. The model tested was the Special Saloon, priced at £169, available in blue, grey, maroon or black, relieved by a plated waist-line. Equipment includes Bakelite facia, Solex carburetter, and Dunlop tyres. The two-cylinder two-stroke engine is of conventional crankcase-compression type with flat top pistons and inverted scavenging, developing 20 b.h.p. Cooling is thermo-syphonic, the capacity being 1½ gallons, the Solex quick-start carburetter has a big cleaner and silencer, and the 6 volt dynamo, ignition distributor and starter is a single unit driven direct from the crankshaft, with automatic advance and retard. This engine should require remarkably little servicing to maintain in good tune. It drives via a multi-disc oil-filled clutch to the three-speed and reverse gearbox, combined as a unit with engine and differential. Front drive is via jointed shafts. Front suspension is transverse leaf, and the same system is used at the back with the wheels tied by a floating non-roll axle. The shock-absorbers are hydraulic. Worm steering is used, the brakes are cable operated with hand adjustment, and chassis lubrication is by grease-gun. The D.K.W. is a product of Auto-Union A.G.; which controls D.K.W., Audi, Horch and Wanderer products, and full particulars are available from Messrs. Auto-Union (Sales) Ltd., 151-153 Great Portland Street, London, W.1 (Langham 3939). In his recent lecture before the I.A.E. Mr. Platt estimated that up to July of last year there were 232,000 of these two-cylinder D.K.W. cars in use in Germany. More specialised editions are the "Master" and "De Luxe" series, costing £189 and £259 respectively.

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A LIVELY M.C.C. MEETING

THE annual general meeting of the M.C.C. is amongst the better free entertainments. This year it was held at Pagani's on Saturday evening, January 29th, and some valuable as well as amusing views were aired. Many famous persons attended, including the M.G. team drivers, and L. A. Baddeley was in the chair with Capt. J. H. Wylie, Captain, on his right and "Jackie" Masters, Secretary, on his left.

The chairman pointed out that if this year's trials were run as last year, a loss of some £150 would result. Parking charges in Exeter, etc., for competitors' cars were considerable and horses and towing charges totalled about £100. Complaints were being made about trials from which the M.C.C. is fortunately immune, probably because of this careful organisation. The account was carried and Messrs. Baddeley, Wylie and Masters re-elected.

Much discussion followed as to whether the meeting served any good purpose as the Committee did not guarantee to act as the voting dictated. Mr. Baddeley differentiated between "resolutions" and "motions" and Mr. Prail, who raised the issue, asked if the M.C.C. was a democratic body. He proposed to take action if the Committee did not act as it promised. Mr. Prail suggested that cars need horses and tractors and it was right and proper to charge car members more than motor-cycle members. More sporting trials might reduce costs and Toulmin offered to contribute a landslide in Buxton. R. J. Low said one-time motor-cycle owners with means now run M.G. Midgets. After cries of "Advert." he amended this to 750 c.c. four-wheelers. The Club's present resources had been built up by motor-cycle membership. Car folk do not like rough sections and road repairs absorb money. There were dozens of fresh hills in Devon. The chairman replied that severe hills cannot be cleared in big trials and all new hills had been inspected and turned down for that reason. Observers cannot do longer periods and his club reluctantly has to refrain from using severe sections. He said existing entry fees would probably continue and urged members to leave the matter to their Committee. They did not want to cheapen awards. Mr. Low wanted separate accounts for each event but was reminded of the cost and told that members can always apply for this information. The composition of the M.C.C. as a company was queried and the chairman explained that all members own a share that costs them nothing but a dividend is payable on winding up. (Cries of "Could we wind up?") Mr. Low persisted for separate accounts. It was pointed out that he never attends events and appears to come to obstruct and he should be bought out (laughter and claps). The chairman said separate net accounts would be published in future. Mr. Low asked for money in place of awards as he had often wondered how much gold there was in a gold medal. He suggested certificates and prizes as credited entry fees in next M.C.C. event. J. A. Harrison said as a teetotaller he had no use for tankards and Mr. Masters had agreed to carry over his awards as future subscriptions. Mr. Low thought it disgraceful that no member knew of Mr. Harrison's arrangement. Mr. Masters replied that he had yet to answer Mr. Harrison's letter. There was a clause in the rules permitting members a choice of prizes and Harrison liked Revelation suitcases. Someone suggested "running a book." Mr. Low said the Club had no legal right to hold *motor-car* contests and quoted a company which worded its associations equally unsuccessfully, and the C.T.C., as also "coming unstuck." (Cries of "Clink!") A motor-cycle member said car folk were welcome and good fellows. The chairman had taken solicitor's advice and thought the Club was covered. Mr. Low, after it was suggested he should pay the expenses of a legal investigation, asked if members realised the seriousness of the situation. The chairman said he disliked council's opinion but would take further solicitor's advice. The general discussion followed. Mr. Prail asked for a second motor-cycle Hour Trial at Brooklands and Mr. Masters said motor-cyclists would not enter a morning event and had the best period of the afternoon. Cutting car races would not save the necessary time and no more vehicles could be allowed on the track together. The Committee would go into this matter. Harrison asked for a better road for the final tests in the Torquay Rally. The chairman said they used the only possible road. Torquay was an ideal venue. (Cry of "Yes, I have a dame there!") Mr. Pidgeon asked why the Buxton entry fee was cheaper than that of the long-distance trials. Did night sections cost 15/- extra? (Cry of "You've been kept in the dark!") The chairman replied that longer events cost more and awards vary. The question of a motor-cycle team trial was raised, but the M.C.C. cannot get the A.C.U. to agree with their views. It was suggested that London entrants get late numbers in the big trials. The chairman said a fair ballot was taken, which led Mr. Prail to ask if more ink was used in writing "London" and someone else to enquire if the thinnest paper obtainable was used for the other names. A "Five Premier" Trophy to replace the Triple Award was suggested, but the "Triple" was favoured. Maurice Toulmin asked that pressure be brought to bear on the R.A.C. and A.C.U. in respect of checking the conduct of trials organisers, in view of increasing complaints. Small clubs might be afraid to act in case of suffering a hit back. The chairman said the R.A.C. had appointed a committee of three. Action was being taken over the attempt to close Jenkins Chapel. Sunday events might be reduced, but motor-cyclists are usually confined to Sundays. Harrison suggested downhill tests to replace hills, but avoiding a gymkhana aspect. Mr. Low thought the Saturday general meeting had met with poor response and someone said members must have read his motions (laughter). Toulmin wanted a supper afterwards and it was suggested the motor-cycle members buy it if their cheap subscriptions continue. The supper was favourably discussed. Standard tyres and night sections were discussed but not disposed of. Tales of competitors waking by alarum-clock after long waits outside checks were alleged. The chairman said the Press says a lot that doesn't happen. [Will he please clear the motoring Press?] Prail wanted the check outside Exeter moved to reduce the noise nuisance, an idea enlarged upon by Toulmin. Chaplin asked why the Exeter could not start on Boxing Day but as he did not stand up he was unanswered. Rhyll Hill was alleged to have a cross-road in an observed section. Asked whether night sections were welcomed as pitting tired drivers against easy hills, the chairman replied "It helps." He agreed to spend less money on Simms hill.

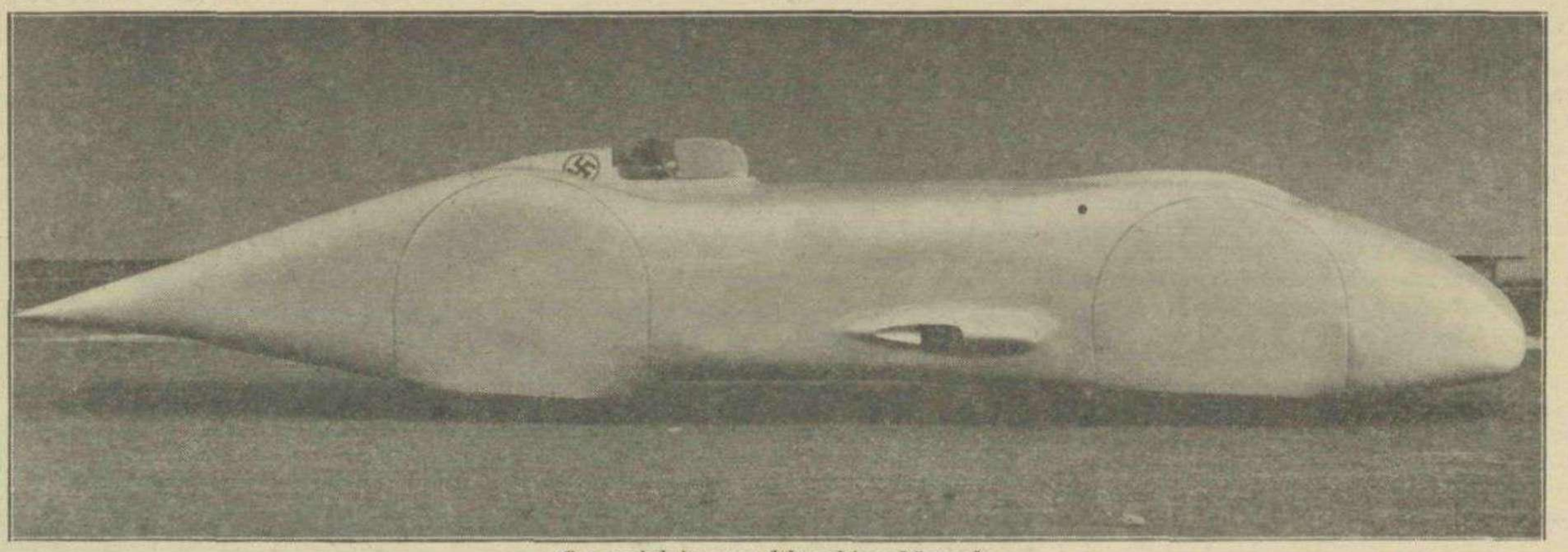
ANY FACILITIES?

Fred Craner's great Grand Prix last October has stirred many Englishmen and we anticipate a widespread desire to spectate at Formula races. Air travel constitutes the most pleasant means of transit to Continental races and we shall be pleased to publish details of such travel facilities, if private aeroplane owners of the Air Lines or Charter companies will send details. The approximate period away from home, cost, and number of seats likely to be available is the information primarily required. Those who contemplate going by train and boat can naturally get particulars from the usual sources. Meetings likely to have a special appeal are Cork (April 23rd), French G.P. (July 3rd), Albi (July 10th), German G.P. (July 24th), Monaco (August 7th), Swiss G.P. (August 21st), Masaryk (September 25th) and Le Mans (June 18th-19th). If anyone has facilities to offer in respect of these or other races we shall be pleased to place details before our readers.

* * *

AN INTERESTING LAGONDA

For a fee of 1/6 per year additional to the 1/- affiliation fee, the Northern Section of the Vintage S.C.C. sends out a photograph with each of its Notes. The first concerns Norman Ledson's special 1926 2-litre Lagonda. This car has had fifteen inches of side-member removed from immediately before the rear spring shackles, rejoining being by bolts and welding. The body, a four-seater, was shortened to suit, ash-framing with steel panels being used for the new body sides, finished in green cellulose. The hood came from a 3-litre Sunbeam, the screen from a 16 h.p. Sunbeam. The cylinders did not require re-boring after a vast mileage, but at the time of the conversion new valve-guides, new timing chains and four new exhaust valves were fitted. The flywheel was lightened considerably, and an S.U carburetter replaced the existing Zenith. This conversion cost between £70 and £80. The car weighs 25 cwt., pulls a top gear of 4.65 to 1, does 75 m.p.h.



Caracciola's record-breaking Mercedes.

ACHIEVEMENT AND TRAGEDY

BERNDT ROSEMEYER KILLED ON THE FRANKFURT AUTOBAHN. CARACCIOLA'S AMAZING 271 M.P.H.

THE whole sporting fraternity has been struck with a sense of grievous loss by the sudden death of Berndt Rosemeyer, one of the three greatest road-racing drivers in the world.

The accident which cut off the champion Auto-Union driver in his prime occurred on the Frankfurt-Darmstadt *Autobahn*, scene of his triumphs during the record week last October. Earlier in the day Rosemeyer had seen his 253 m.p.h. records, which created such a sensation at the time, handsomely beaten by his friend and rival, Caracciola of Mercédès-Benz. It was in an attempt to regain the honours that he met his death.

Truly has it been said that the astonishing formula cars of 1933-37 have become almost too fast for any track. Rosemeyer's own 253 m.p.h. records were hailed as an unparalleled achievement, set up as they were on a road designed for ordinary motor traffic, and not specially built for record breaking purposes. The *Autobahnen*, it must be remembered, are divided into two strips, each less than 30 feet wide. It was only a short time ago that a broad stretch of sand, several hundred yards wide, and many miles in length, was considered essential even for 200 m.p.h. Rosemeyer and his colleagues added 50 m.p.h. to this speed without turning a hair, ou a road narrower than the Barnet By-pass.

In the October record week there was an incident which might have resulted in disaster, when Caracciola's car, under the terrific wind pressure, tried to lift at the nose. Many years ago, tragedy overtook Frank Lockhart at Daytona sands for the same reason. It was a treacherous gust of wind which brought Rosemeyer to his doom. The horrified spectators, already thrilled by Caracciola's breath-taking speeds in the early morning, saw the Auto-Union swerve, saw Rosemeyer fighting madly for control. Then, like a flash, it was over. The super-streamlined silver car had given a vicious lurch, hit the stone parapet of a bridge over the *Autobahn*, and had leapt hurtling over the heads of the crowd, to lie a tangled mass of metal at the foot of an embankment. Ambulance men and doctors rushed forward, but Rosemeyer had been killed outright.

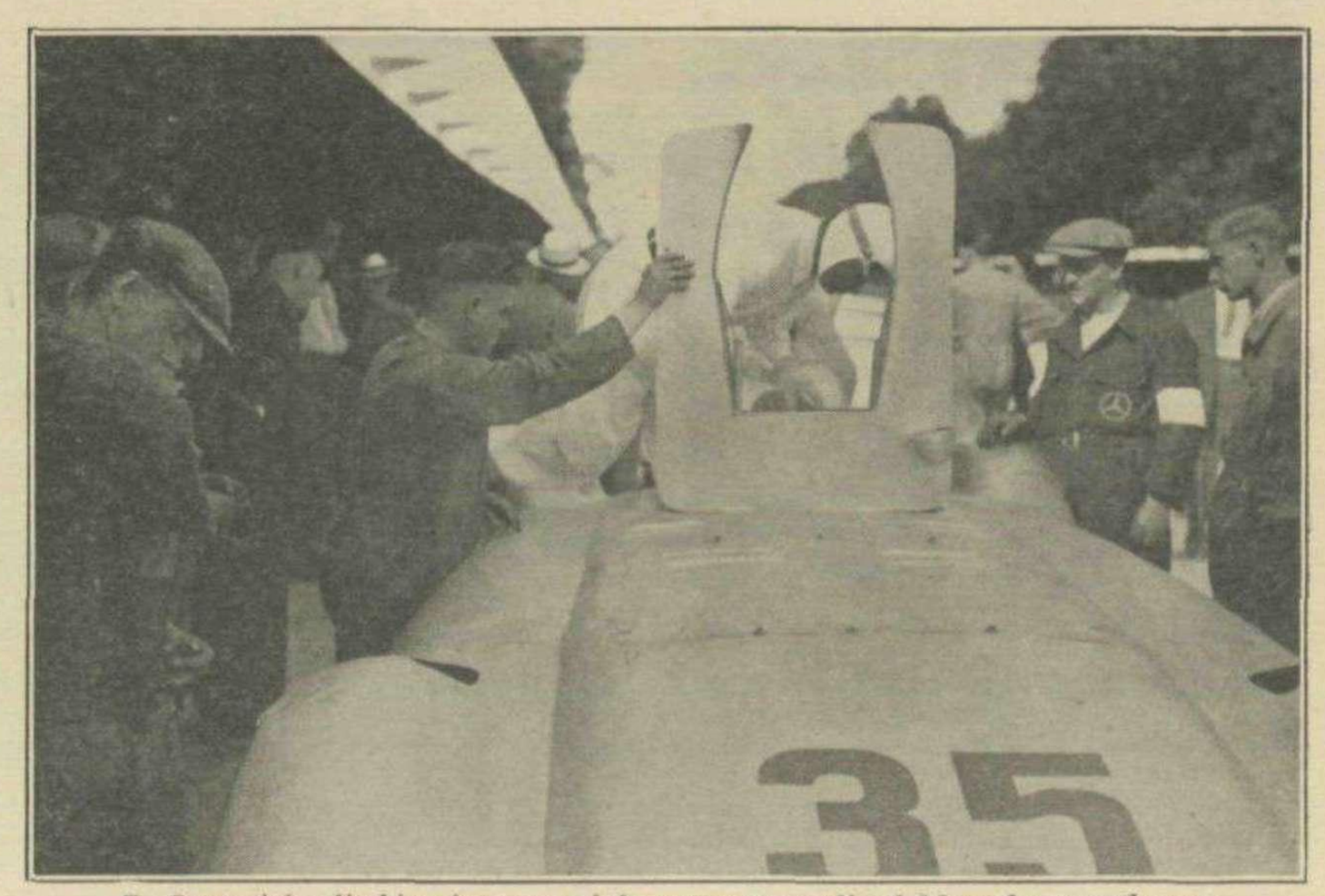
Rosemeyer was only twenty-nine years of age. He had had an astonishing rise to fame. The son of a garage proprietor at Lingen, he first took the wheel of a car at the age of nine, with special extensions bolted to the pedals. He started competitions as a motor-cyclist, and showed such promise that in 1934 he was engaged as a rider for the Auto-Union D.K.W. team.

He was not satisfied with motor-cycles, however, and at the close of the 1934 season managed to get a trial in the Auto-Union racing-cars at the Nürburg Ring. At once it was evident that a new star had arisen, and Rosemeyer made his début in the Avus races in 1935. Tyre trouble caused his retirement, and it was in the Eifelrennen of the same year that Rosemeyer first came into the limelight. After a stirring race, he lost to the already famous Caracciola by only 1⅘ secs., after leading for the whole of the last lap till within a few hundred yards of the finish! Later in 1935, Rosemeyer won the Masaryk Grand Prix, against the full force of the Continental drivers.

This paved the way for his greatest season, 1936, when with his Auto-Union he carried all before him, and won the title of European Champion. In this season he gained no fewer than seven victories, five of them in the biggest races of the year—the Eifelrennen, the German Grand Prix, the Coppa Acerbo, and the Swiss and Italian Grands Prix.

In 1937 he was almost as successful, though Caracciola regained the championship of Europe. However, Rosemeyer won the Eifelrennen, thus scoring his third consecutive victory at the Nürburg Ring, the Vanderbilt Cup, in America, the Italian Grand Prix, and the Donington Grand Prix. British spectators of this last race will always count themselves privileged to have witnessed his driving.

In October of 1937 Rosemeyer accomplished perhaps his most sensational performance, setting up a record for the standing start mile at no less than 138.68 m.p.h.! For the standing start kilometre he averaged 117.24 m.p.h., almost as



R. Caracciola climbing into one of the super-streamlined Mercedes record cars.

ACHIEVEMENT AND TRAGEDY—continued

fast as the previous record for the mile. Over the flying mile he averaged 253.708 m.p.h., and over the flying kilometre 252.487 m.p.h.

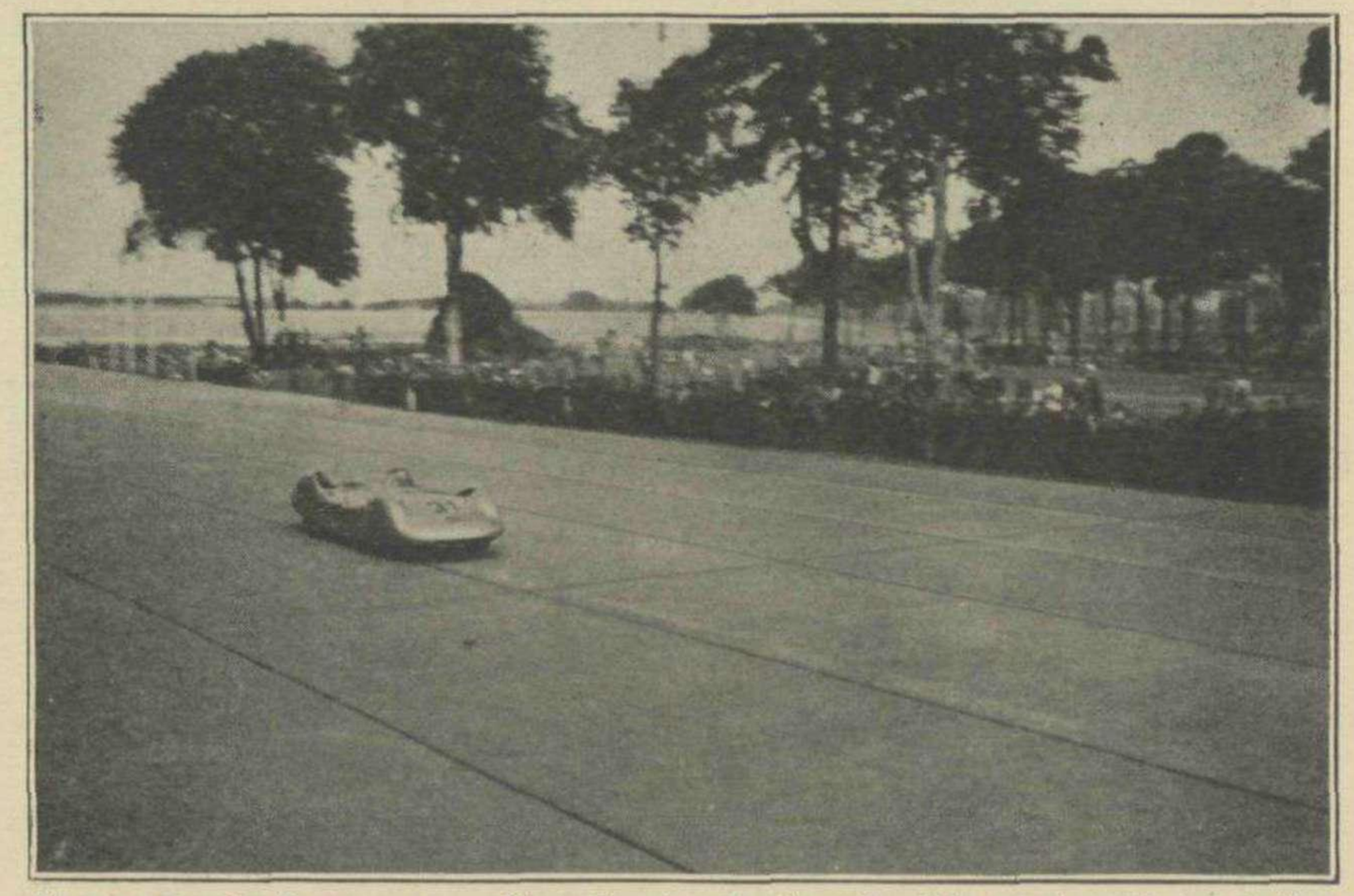
Rosemeyer was married during 1936 to Elli Beinhorn, the well known German airwoman. His wife was not present at the time of the accident, but at most of his races was to be found in the pits, helping with a stop-watch. He leaves one little son, 2½ months old. To his family, to the Auto-Union team (which was robbed of another fine driver last July when Ernst von Delius was killed during the German Grand Prix), and to German motor sport as a whole, we extend our deepest condolences. A great driver has entered into Valhalla.

* * *

The tragedy followed one of the most startling performances ever made by a car and driver. Early that morning, at 5 a.m., the Mercédès-Benz équipe had been active, and as dawn broke over the *Autobahn*, Caracciola took his seat in the long silver car. The engine size was only 5.66-litres, or slightly smaller than that used last October, and the shape of the aerodynamic body had been modified to prevent the trouble of the nose lifting. The weather was splendid, and at this time in the morning the air was still.

After a short run, Caracciola expressed himself satisfied, and the attempt began, to regain for Mercédès-Benz the honours of the fastest speed on the road. On the first run, so steady was the car that spectators thought that Caracciola was having another practice spin, in order to warm up the engine. The engine, however, had already been warmed up to some purpose, for a gasp of astonishment went up when the speeds were announced—266.099 m.p.h. for the flying kilometre, and 268.086 m.p.h. for the flying mile.

At the far end of the record stretch Dietrich, the *Reifenmeister*, or Continental tyre expert, was waiting. Mechanics set to work, and tyres were changed as a precaution. Then the silver projectile began its return run. The engine note rose shriller and shriller. This time it was obvious that the Mercédès was travelling faster than ever before. There was an expectant hush while the timekeepers worked out the speeds. Neubauer, the Mercédès manager, could contain himself no longer, and hurried to the box. Then a great cheer went up—271.311 m.p.h. for the kilometre, and 268.893 m.p.h. for the mile!



The late Berndt Rosemeyer travelling all out at the Avus Track in an Auto-Union similar to that in which he met his death.

The full times and speeds for these amazing runs, which, subject to official confirmation, rank as International records in Class B, for cars up to 8-litres, were :—

Flying Kilometre :
Outward : 8.40 secs. 266.099 m.p.h.
Homeward : 8.24 secs. 271.311 m.p.h.
Mean Speed 268.712 m.p.h.

Flying Mile :
Outward : 13.43 secs. 268.086 m.p.h.
Homeward : 13.38 secs. 268.893 m.p.h.
Mean Speed 268.496 m.p.h.

Caracciola said after the records that the road-holding of the car was marvellous, and that he never had a moment's uncertainty. He was not, however, able to take full advantage of the power of the engine, which was reaching its maximum r.p.m. too quickly, owing to the gear ratio fitted. Immediate arrangements were made to take the car back to Unterturkheim for a higher gear to be fitted, but in view of the subsequent accident to Rosemeyer, it may well be that Mercédès-Benz will rest on their laurels.

In any case, Caracciola was of the opinion that speeds much in excess of 270 m.p.h. were impracticable on this particular stretch of road, owing to a bend which had to be negotiated. For higher speeds they would have to await the completion of the special road to be built for records near Dessau.

THE INSTITUTION OF AUTOMOBILE ENGINEERS

On January 4th, before the Institution of Automobile Engineers, Dr. F. W. Lanchester, LL.D., F.R.S., read his paper, and that of his brother, G. H. Lanchester, on Independent Springing, before a large gathering which included representatives from R. R. Jackson's and Thompson and Taylor's. Mr. G. H. Lanchester places the origin of the various systems of independent suspension as : Sliding pillar type ; 1905 Sizaire, developed by Lancia, Wishbone links with coil springs ; 1908, F. W. Lanchester Patent, and Laminated Springs ; 1912 Parnacott Patent, almost identical with B.S.A., 1929 to date. The papers dealt with mainly independent rear suspension, but the Rolls-Royce front layout, which uses swinging transverse links controlled by double coil springs, hydraulically damped, was described at some length. It figures on the Phantom III Rolls-Royce. Swinging half-axles were shown to limit body-width, but tyre scrub was proved to be less serious than is often imagined, on account of the flexibility of the walls of the covers. Torsion rods were alleged to have little, if any, advantage over coil springs, save for location about the chassis and were not very favourably accepted. Mr. Straussler took part in the discussion, saying that each vehicle needed suspension of characteristics to suit. He described a layout for military use in which the road wheels were steering through the medium of rods and gearing to obviate bad geometry consequent upon axle movements. Another speaker, prominent at I.A.E. meetings, was Mr. North, who designed the North-Lucas car about 1925—it had rear-mounted radial engine, independent suspension, and streamline closed body-work, and we saw it running up to about six years ago. Mr. North said in that car he had got his steering layout hopelessly wrong, yet on the road most people liked the handling very much indeed! Dr. Lanchester humorously recalled disliking the proximity of the air-cooled radial to his nether regions. Mr. North has said a word of praise for the road-holding of his present 570 c.c. " Micky Mouse " Fiat at the last two I.A.E. meetings, though this time he confessed he wondered if there was any damping at all, the wheel movement being about 3 inches. The chairman, Major-Gen. S. Capel Peck, C.B., D.S.O., again displayed his love of the mechanised army. In opening the discussion he mentioned being involved in an accident in an early Lanchester, purchased secondhand, through failure of the transmission brake. This brought a most amusing reply from Dr. Lanchester, in the course of which he reminded us that in those times whenever a car skidded off the road the brakes or steering was inevitably blamed.

Letters from Readers

RE PAGE 32, JANUARY EDITION

Sir,

I see another enthusiast, Laurence Allen by name, has created a special using a 12/50 Alvis power-unit.

In June, 1937, I obtained a later model (1927) 12/50 Alvis. Since that date in my spare time and at week-ends I have reconditioned the old car to the extent of having fitted Sheepbridge liners, Aerolite pistons, new main and big-ends, regrinding the crankshaft, twin horizontal S.U. carburetters in place of the original single one and a Burgess exhaust system. These along with a newly designed two-seater body sans doors have produced a fine motor car.

No adjustments were needed on the transmission beyond a very good cleaning and I found no wear in the steering, stub axles or king pins—this speaks well for the metals used by the manufacturers ten years ago : the gear ratios are untouched.

I cannot give any performance figures as yet because I am still running the motor in—this being done I intend to raise the compression ratio. The whole outfit I hope will be ready for the road by March. The original cost of the old car was £15.

I am, Yours etc.,
J. F. WHITE.

Lancs.

* * *

A TRIAL WITH A NEW IDEA

Sir,

I should like first to congratulate you on producing a paper which is obviously by arch-enthusiasts for ditto. "General Notes" in "Club News" is always worth the humble tanner alone.

Whilst the present and very necessary dust-up in the matter of trials congestion is in progress, I should like to see another oft-discussed point raised, i.e. trials for the poorer brethren like myself.

There are many of us who run a cherished motor for general purposes—in my case, an aged Hyper Leaf minus its blower—and would fain perpetrate mud-pluggery. Unfortunately for us, however, trials organisers nowadays have to cater mainly for high-efficiency small motors and the multi-cylindered light-weights now favoured, and the courses usually become far to fierce for the palsied innards of our "old faithfuls." Not, mind you, that I think any true enthusiast minds entering with little hope of bagging a premier, but it is simply too hard on our pockets.

My own idea is for a trial in which cars eligible should have a market value of not more than, say, forty pounds. There might be a slight difficulty in arriving at said "market value" but with the help of a certain trade paper which publishes a monthly table showing average prices, and a committee with definite power to decide, I imagine this could be overcome.

The trial could be separated into over and under 2-litres, to allow for the still very potent big cars that can be bought cheaply, and comp. tyres etc. definitely banned, again on account of expense. The course should include two or three stiff, but not chassis-breaking hills, and some sensible tests calling for real driving skill, as opposed to the usual high-speed transmission-wrecking type.

Should the proposed amalgamation of neighbouring clubs come about, four or five trials on these lines could be run annually, one for each section of the country, and I venture to think that they would be enormously popular with those of us who must usually be content to marshal or spectate.

Wishing you continued success with MOTOR SPORT.

I am, Yours etc.,
KENRICK HICKMAN.

Middlesex.

* * *

THE AUSTIN MOTOR CO. LTD.

Sir,

We note in the December issue of MOTOR SPORT on page 496 a reference to the Austin Trial cars and a suggestion that the racing type side-valve engines are being used for this purpose.

This is entirely wrong and we would like you to contradict the statement as the cars in question are the Sports Type engine fitted with a Centric supercharger and bearing very little resemblance to the special side-valve racing-cars. One or two of them have now been equipped with the three-bearing crankshaft engines similar to that which ran in the "T.T." but the majority are of the two-bearing type which we ran so successfully last season.

We quite agree that the performance is exceedingly good and that they have been very successful in trials so far this season but the mention in your paper gives rather an erroneous impression.

I am, Yours etc.,
W. S. SEWELL.

Birmingham.

* * *

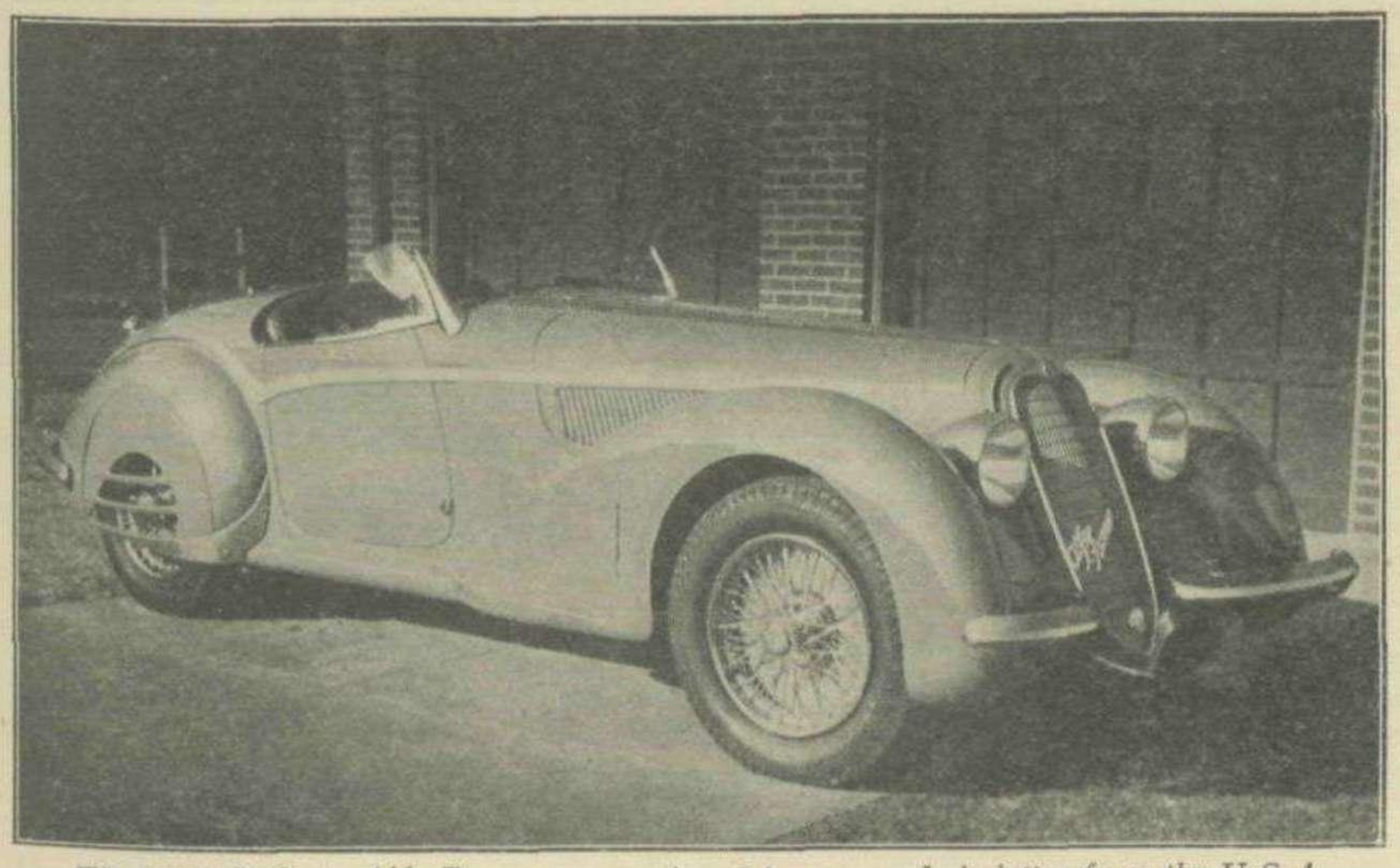
WHAT A CAR!

Sir,

I am enclosing a photograph which I think may prove of interest to your readers. It is a picture of my 2900 B Corto Alfa-Romeo, eight-cylinders, two superchargers, 9 ft.wheelbase, special body by Carrozzeria Touring of Milan. It was considered by the manufacturers to be as fine a finished automobile as ever constructed by them. The chassis would be classed as a show chassis ; the entire motor is polished and chromium plated, the independent suspensions, the wheels and brake drums all chromium plated. It took twelve months after the order was placed before it was completed and it is without a doubt the finest sports-car that has ever been imported into this country. The body work is outstanding—perfectly streamlined and still a beautiful car to look at. The way the car is to-day, it has a guaranteed speed of 120 m.p.h.

I am, Yours etc.,
MCCLURE HALLEY.

Ocean Parkway,
Brooklyn, N.Y.,
U.S.A.



The 2900 B Corto Alfa-Romeo as mentioned in our reader's letter from the U.S.A.

LETTERS FROM READERS--continued

WHEN TRIALS WERE TRIALS

Sir,

In days of yore when trials *were* trials, and comp. tyres had not been discovered, and bottom gears were still in their "early teens," a competitor entered his own motor, self-tuned and prepared, and enjoyed himself in competition with other similar cars. He pitted his skill on gradients against two main factors, (*a*) lack of power, (*b*) wheelspin. One demanded more power and, or, less weight, the other more weight and, or, less power.

The position to-day is that (*a*) does not exist. "The modern car cannot be stopped by gradient alone" we are told. Nonsense "The modern car plus the modern bottom gear can't be stopped" is nearer the truth.

Regarding (*b*) we now seem to have a "vicious" circle: bigger and better comps.—slimier slime—bigger and better comps.

So there seems to be three alterations needed in trials regulations :—

1. Abolition of comp. tyres.
2. Abolition of *low* bottom gear-ratio.

This could be done either by stating a maximum ratio per litre (or h.p.) or by awarding prizes by a formula, e.g. :—

$$\frac{N \times 100}{R \times H.P.}$$

N=Number of hills climbed non-stop.
R=Ratio of bottom gear.
H.P.=R.A.C. Rating.

This ought to produce motors with sensible ratios, and would allow all the old standard hills to be used without too many people getting first-class awards.

3. Abolition of the "Wolf in Sheep's Clothing," or non-owner drivers of motors prepared by the manufacturer: which species seem to have crept into trials since the awarding of team prizes.

I am, Yours etc.,

L. A. COWCILL.

Chesham Bank,
Bury.

[The idea of using a formula taking into consideration bottom-gear ratios is a most interesting one. For example, if a 12 h.p. car with 12 to 1 bottom gear climbs five out of six hills clean it just beats a car of the same rating which climbs six hills by reason of having a ratio of 15 to 1—which seems fair enough.

Concerning (3), at first trade interference would seem detrimental to private owner entries, but actually private owners seem to take heart from professional and semi-professional successes, so it may be as well if such participation continues.—Ed.]

* * *

SPORTS-CARS FROM TEN POUNDS

Sir,

During the last few years I have attended many trial and race meetings. A certain aspect of these functions few others probably notice impressed me very much. And that was the envious, one might almost say forlorn, glances of those spectators and enthusiasts who either own very ordinary cheap cars or none at all. These folk, and I was once one of them, look at the sleek or fierce machines with admiration and wonder, yes, but also with envy. Of course, I know that the majority of enthusiasts attending these sports and racing events own their own special types of car, but many do not. Why? For the simplest of all reasons: they cannot afford any car, least of all a sports-car. To those unfortunates this letter intends to remedy their plight.

I have owned twenty-four cars. Nineteen of them cost less than fifty pounds, ten less than thirty pounds and five less than ten pounds. I must make it quite clear that I fully realise that a real high performance car of comparatively low horse-power (an essential to economy) cannot be bought for a few pounds, but there are cars that can be bought to-day for between ten and twenty pounds that with a little work exerted upon them become sports-cars in the true sense of the word. I will not bore the reader with details of my own personal motor-cars, suffice to say they included such varied makes as Bentley, Bugatti, M.G., Talbot, F.W.D. Alvis, 12/50 Alvis, Morris, Austin Seven, O.M., Lea-Francis, Delage, Ballot, Singer, etc., etc. But I think the first car I ever bought and details of it will clarify my point about the possibility of owning a sports-car on a £3 a week salary. I want to be perfectly frank about the money side of the whole matter because it is only lack of cash that prevents millions of individuals becoming members of the sports-car community. And obviously the more members this section of the motoring public embraces the better for the movement as a whole. A one hundred per cent. red-blooded, healthy, movement if there ever was one.

The first car I ever bought was a 1927 14/40 M.G. I bought it from a garage in Wimbledon for £14 in 1934. Its condition, except for paintwork was terrible, to say the least. Actually the transmission, clutch, etc., needed attention but never got it and never let me down. But the engine would not have run long in its condition. It needed a rebore but I could not afford a good one so I decided to spend my few remaining pounds on a general overhaul and attempt to make it resemble a sports-car in appearance and performance. As far as the body was concerned I merely fitted a fold flat windscreen (£1/10/0) I got off an old Sunbeam at a breaker's. I took the clumsy Morris type mudguards off and had some T.T. type ones made for £2 by an ironmongers. With quick filler radiator cap and aeroscreens it began to look something like a speed model. But I was not, nor ever will be, a member of that fraternity that likes any car with two exhaust pipes, two bonnet straps and all the noise in the world.

But I do realise the subconscious satisfaction gained by knowing one's car does look something different which, in all truth, every motoring enthusiast's car is. As far as the engine was concerned this needed most attention but after merely fitting new pistons (being Morris they were cheap) and tightening up here and there the oil consumption was extremely low. When I bought the car it did fifteen miles to the gallon and about nine in traffic. After working on it, it ran twenty-four to twenty-seven to the gallon. Just before I sold it I fitted a thinner gasket and this helped raise the performance slightly. The total cost of car and all repairs worked out at twenty-one pounds and a few shillings. I always got accurate estimates before any of the work was started and made sure that nothing else was done and charged up afterwards. Under favourable conditions the car would do about 61 m.p.h. which for a 14 h.p. car was nothing. But it would do it all day, and in a holiday tour of 3,000 miles around the coasts of England during which I made the lighthouse film "Danger at Sea" absolutely nothing went wrong although I used 10d. a quart oil, 1/5 petrol and drove nearly flat out everywhere. Once I cruised at 55 m.p.h. for nearly three hours, only slowing down through villages. Compared with modern sports-cars it was of course nothing very terrific, but the car was a thoroughbred and like all of its type yielded to treatment in the form of tuning. For the benefit of any readers interested it would do 23 m.p.h. on first and 42 on third. A £14 motor nearly eight years old upon which I spent some £7 never to pay another penny. I finally sold the car one year after purchasing it and after covering about 12,000 miles absolutely without any repairs of any sort. Curiously enough I saw the car the other day on the Great West Road giving a 1935 "Le Mans" Singer a good run for its money.

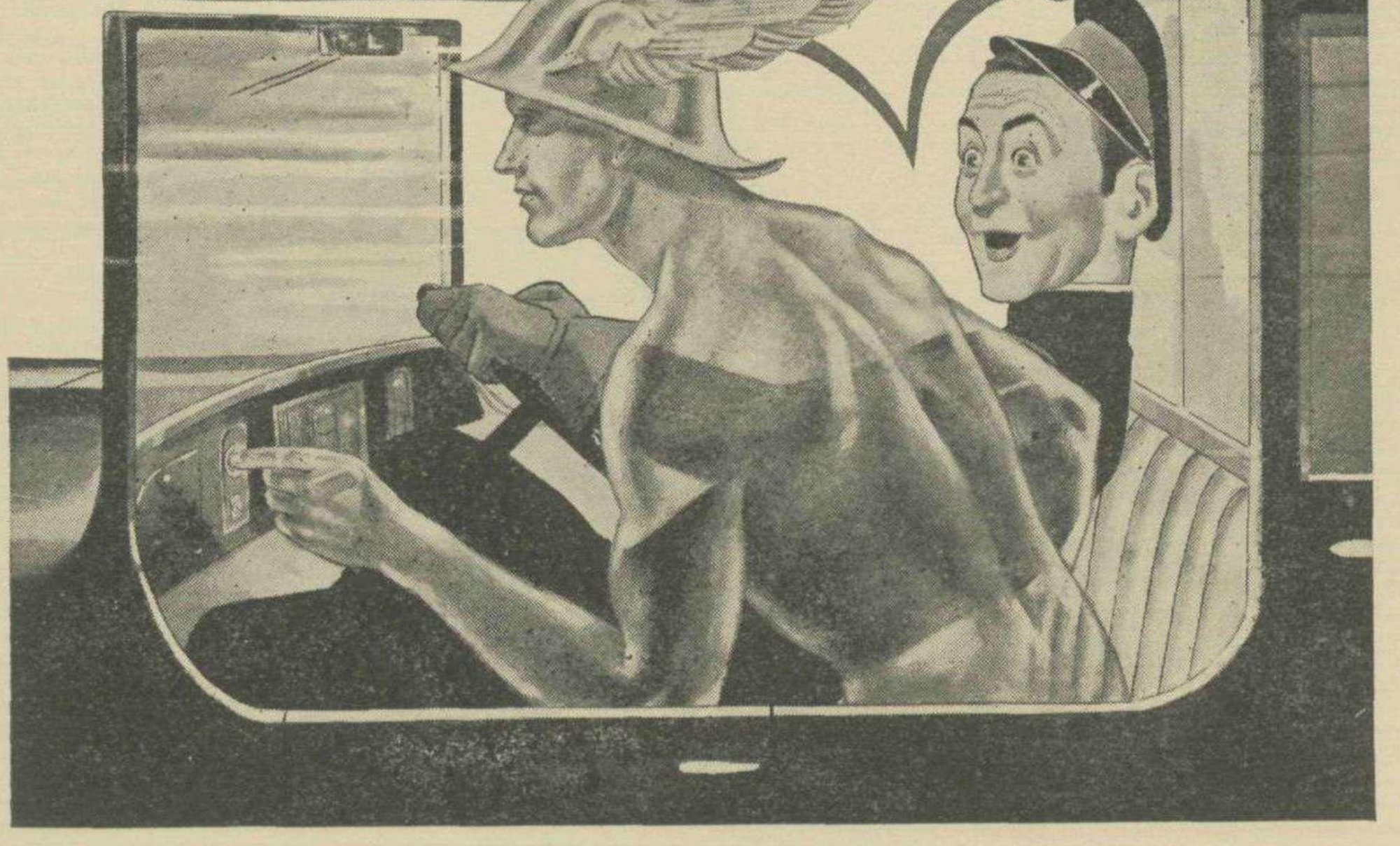
To-day you can go to any car breaker's or cheap garage with ten, fifteen or twenty pounds in your pocket and, provided you are not too impatient and can if necessary wait a week or so while you look around, find an old M.G. like the above, an old Alvis 12/50 (in my opinion an absolutely unique car), a F.W.D. Alvis (in spite of unfavourable opinion I ran one of these for nine months, covering 6,000 miles, travelling from here to Scotland and back several times, again often keeping at 50 to 60 m.p.h. for mile after mile), or even an old Morris with a little time and work expended upon it will give you quite good motoring for many thousands of miles. Lightening the body, raising the compression and other simple methods add m.p.h. onto the performance and make it altogether cheaper to run. Please understand that I am addressing this to those to whom ten pounds means a considerable amount and there are plenty of people thus affected. My advice is do not always look for out-and-out sports-cars with snappy bodies and "Mrs. Frequently" written alongside the bonnet. Go rather for the reliable touring cars and look for possibilities for lightening bodies and tuning engines, and cars of the type listed previously are often easy to tamper with as secondhand spare parts are nearly always obtainable. Probably many are advertised in this very issue of MOTOR SPORT. Don't wait till you have £50 or £100 before you join the growing band of enthusiasts who prefer real cars to "family ovens," start right now and buy your sports-car for ten or twenty pounds.

I am, Yours etc.,

ROBERT BRAUN.

Wimbledon,
S.W.19.

Lumme, Mr. Mercury, you did give me a start!



When even a leather coat is no defence against the cold, you'll appreciate how Benzole makes good petrol better. Switch on the ignition, press the starter, and the engine will fire at once. That is, it will if you use National Benzole Mixture, which a famous Motor Engineer has described as the very spirit of startability.

NATIONAL BENZOLE MIXTURE

Benzole makes good petrol better

NATIONAL

BENZOLE MIXTURE

The spirit of 'STARTABILITY'

LETTERS FROM READERS—continued

ON THE INFLUENCE OF SLIME-STORMING

In reply to Mr. S. H. Allard, whose letter appeared in the January issue :—

Sir,

Mr. Allard jumps to an incorrect conclusion in believing that the writer deplores an Allard-Special ; in the article it was emphasised that trials adversely influenced, in the main, small sports-cars costing under £300. Mr. Allard contrives to achieve excellent results by using 3.6-litres of lightly-stressed motor in a very light frame, but it costs £480 to purchase the resultant car. This car and the B.M.W. which Mr. Allard mentions and others mentioned in the article are very admirable all-round performers, simply because they incorporate certain special characteristics possible at the comparatively high prices they command. That everything done by M.G. and Austin to their trials team cars renders them better sports-cars, as Mr. Allard contends, is contrary to the argument expressed in the article ; it depends on what constitutes a *sports-car* in Mr. Allard's estimation. And to say that a typical small trials car needing adjustments before being raced is no different from the adjustments necessary for racing a standard sports-car is to miss the point completely, given that the *standard* car is a thoroughbred production whose designer has *not* been influenced by trials requirements. Although certain alterations and adjustments may be desirable before the latter type is raced, they cannot be so extensive as those required in a car destined for slime-storming, because to achieve success in trials such a car will inevitably possess a number of features quite foreign to racing success (as the article endeavoured to make clear) excepting when the car comes into a price category that enables all conditions to be met by sheer brilliance of design and construction. Mr. Allard may be correct when he says that the M.G. and Austin cars in the 1937 12-Hour Sports-Car Race at Donington were virtually the trials cars, but I believe the M.G.s used higher compression ratios, aluminium in place of steel sumps and had higher gear-ratios than they used for trials work. The fold flat screen was introduced for sports-car races, but it became universal for trials motors ; in the 12-Hour Race M.G. used single aero screens. That some competitors fit small wings for trials to preserve standard mudguards is no argument against my contention that trials killed the close-up, or cycle-type, wing. Mr. Allard suggests that I am a Bugatti fan, and I confess it, for a Bugatti is a thoroughbred, though I was recently taken to task for mild criticism of the Type 37. May I return the compliment by assuming that Mr. Allard is thinking solely in terms of the Ford V8 when he mentions a car which can run with its radiator blanked off in trials, yet which overheats on Brooklands ? In this case overcooling permits of blanking off and the boiling at high speed is due to an exhaust-system, head formation and water-pump not designed for racing work. The fact still remains that most small sports motors overheat on trials hills unless they have big "coolers," even though they will get through an M.C.C. or J.C.C. High Speed Trial without loss of water ; a case in point is the original H.R.G., which can be driven hard on the road and in speed trials, etc., without anxiety, but which overheats on muddy hills, so that production models have a deeper radiator to humour slime-stormers—though that must increase both weight and cost. Compare an Amilcar radiator of pre-slime days with that of a modern M.G. or Singer . . .

I am very surprised to learn that low first gears are too low for trials. Surely the ultra low bottom ratio of the typical trials car was introduced to cope with restart tests ; it is useless in ordinary motoring. On Fingle at least two of the Austin team used bottom to complete their climbs, during the "Exeter," when there was no question of a restart. Does Mr. Allard really tackle restart tests on his second ratio ? And if "very low-geared steering" is a feature of the Mercédès-Benz and Auto-Union racing-cars, how do their drivers contrive to take corners such as Melbourne, or the Station Hairpin at Monaco, without changing the position of their hands on the wheel rim ?

I do agree that "thoroughbred" types very often have small high-revving engines when there is such a lot to be said for using a bigger engine in a chassis of equal weight. But I contend that they are still better road cars than the cheap sports job that shines in slime-storming. Mr. Allard uses a big motor in a light frame and the resultant car is one of which I very much approve, but he does not sell his Specials at under £300. And if he still feels that racing has evolved the buzz-box class of anchorism, I would remind him that modern racing practice centres around 5 to 6-litre engines in cars weighing under 15 cwt.—surely the doctrine he himself is preaching ! To his allegation that a Ford V8 saloon is usually a lot quicker than a Bugatti or similar 1½-litre car, that may be so where the majority of drivers in this country are concerned, but at least some of us believe in Safety Fast. And if the racing-type car is as unpleasant as Mr. Allard suggests, then all little trials motors are equally so, with nasty road-holding and under-gearing thrown in, penalties one pays to slime-storming in a cheap motor, and in some expensive ones—see the road-test in a contemporary of the old "Musketeer" M.G. Magnette.

I am, Yours etc.,
W. BODDY.

S.W.17.

* * *

Sir,

Having taken your book for a year, I thought I might write to tell you how much I enjoy my monthly tanner's-worth. I quite agree with your article on mud-slinging, but it must be immense fun. As I am only fifteen I can't give my opinion on how it affects stability and steering, but it may interest you to know that the enthusiasts around here, impatient to "dice," got up some bike trials. The creations that turned up were wonderful ; my own was so unsteady on the road that I preferred to walk to the venue. But I cannot see how such things improve cars, and surely that is the main object.

As for motor-racing I fear it can never be popular over here. I have seen three races, and the immediate question that I am asked on returning is : "Were there any good crashes ?" If that's what the public want they had better go to the dirt-track.

But I find myself this racing business all very exciting. The Coronation Trophy was the first race I saw, and I was amazed at the friendly attitude of those among the crowd who knew what was what.

I also had the good fortune to see the International Trophy, and I must say that the opening rounds and the great duel between Mays and "Bira" staggered me and the friend who was with me, and we were not bored at the end of thirty laps. The Imperial Trophy was a great race, but the method of parking the dicers at the start of the final seemed all wrong to me. Was it fair that Maclure's magnificent effort in the first heat was rewarded by a back-rank position in the final ? Brooke's luck was of the hardest ; his car seemed to me to be a beautiful job (am I right in saying that the gearbox is under the seat ?), and his potent pressure pumping certainly deserved its reward.

I much enjoy your articles on veteran cars and I found a Ballot which looks very much like the one described a short time ago. As far as I can remember the frame is upswept at the back and the rear axle is underslung ; the front springs pass through eyes on the front axle and the brakes are operated by cables and levers. The engine and gearbox are suspended in a subframe which ends at a tubular cross member in the cockpit. The engine, of which only the crankcase remains, appears to have been a fairly hot job, and the tail of the car is similar to that on the 3-litre, only it contains a seat.

Thank goodness for your road-tests. From reading weeklies I have almost obtained the impression that there is not any difference in handling between a Pontiac floating drawing-room and an H.R.G. Excuse this long and disjointed epistle, but there is nobody to let off steam to around this place.

I am, Yours etc.,
E. W. YOULDON.

Brentwood,
Essex.

[Mr. Youldon's enthusiasm is a tonic and although we can beat him in point of years, our own has not diminished. The Ballot is a mystery, unless a sports straight eight job. We certainly try to quote impressions when we test a car, as distinct from compiling a list of imposing figures.—Ed.]

We welcome letters for publication in these columns. Letters intended for publication must be written on one side of the paper only and they may be signed with a nom-de-plume, but the name and address of the writer must be enclosed.

AN OLD MASTER RE-DISCOVERED

A. POWYS-LYBBE'S GRAND PRIX TALBOT RECALLS THE GLORIES OF THE 1½-LITRE FORMULA

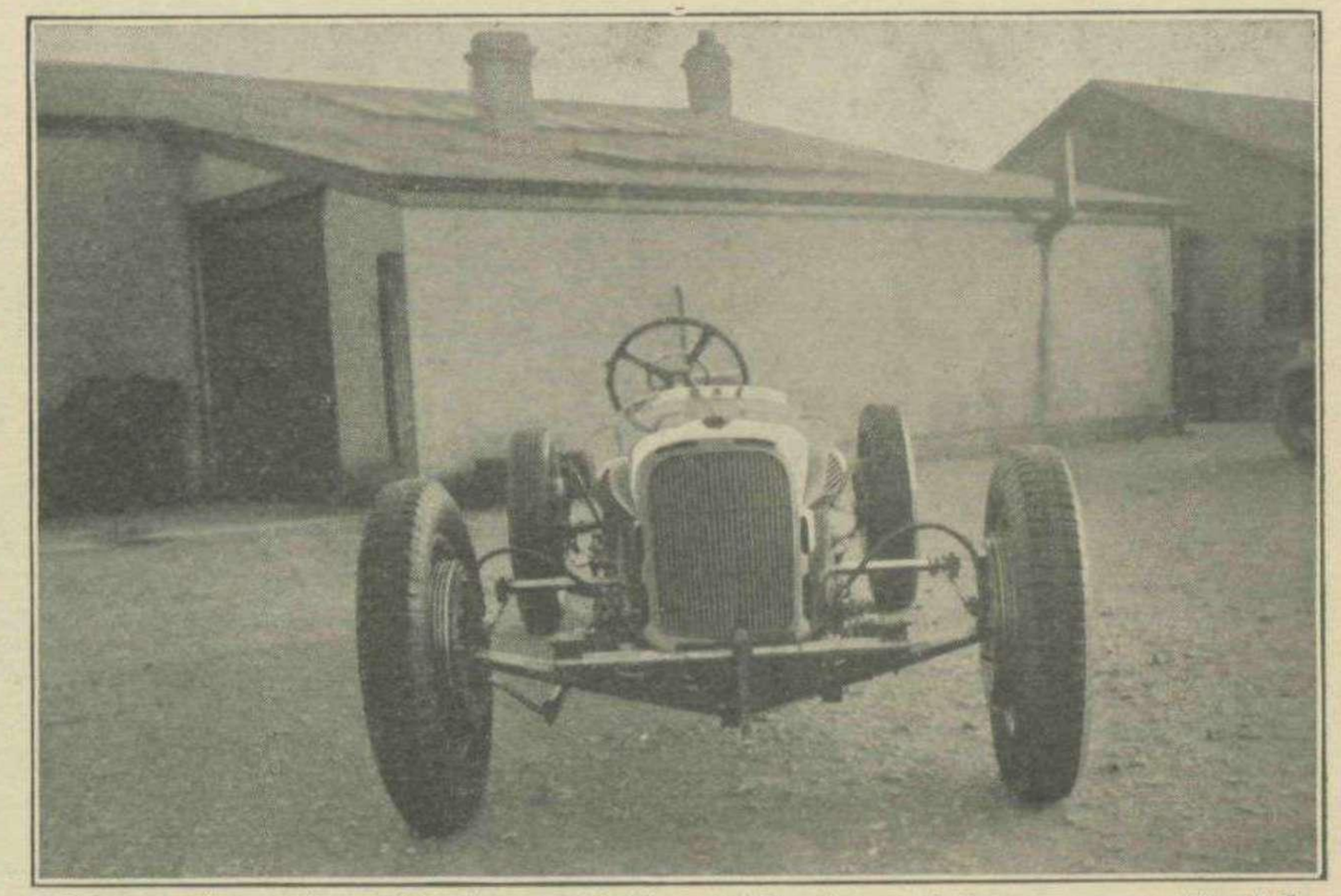
IN the last few years there have been a number of races confined to 1½-litre cars, and it has been gratifying to note the successess of British cars in such events. It was the success of the E.R.A.s in the 1,500 c.c. race during the Eifelrennen of 1935 which focused the interest of the Continent once more upon this type of event, and since then there has been keen competition, even if overshadowed by the mighty formula cars of 1934-1937.

Twelve years ago, however, 1½-litre racing was at its zenith. At that time the Grand Prix formula set a limit of 1,500 c.c., a limit reached in a descending scale of engine sizes, decreasing over a number of years in view of the speeds which were being attained by the formula cars. After the 1½-litre formula period, Grand Prix racing lapsed for a time, till it regained its full glories under the recently expired formula.

But the fame of the old 1½-litre Grand Prix cars is still undimmed. They were built regardless of cost, as pure racing machines from start to finish. Even the E.R.A., it must be remembered, was originally developed from a sports-car design, and its cost is far less than that of the Grand Prix cars, which must have been comparable to that of the present day formula machines, i.e. about £5,000 each, though the figure has never been accurately checked.

That the thoroughbred cars of the last decade are not by any means back numbers at the present day was proved by R. J. B. Seaman in 1936, when in his ten-year-old Delage he scored victory after victory against the latest modern 1½-litre designs. Even now, in 1938, Earl Howe still holds the lap record for 1,500 c.c. cars on the outer circuit at Brooklands at 127.05 m.p.h., with a Delage of the long dead formula.

Not much has been heard lately of Seaman's Delage, now owned by "B. Bira," but another of the famous cars of the same era has been resurrected, one of the straight-eight Talbots, principal rivals of the Delages in their hey-day. One of these cars was recently found in Italy, and was acquired by Mr. A. Powys-Lybbe, the well known racing driver, who has scored many successes with Alvis and Alfa-Romeo cars. During the past year it has been entirely rebuilt by "T. & T.'s," or Messrs. Thompson and Taylor, of Brooklands Track, but the work has been handicapped by the difficulty of obtaining certain parts, owing to the re-armament programme. Now at last the work has been completed, and the car is ready to do battle with its modern rivals.

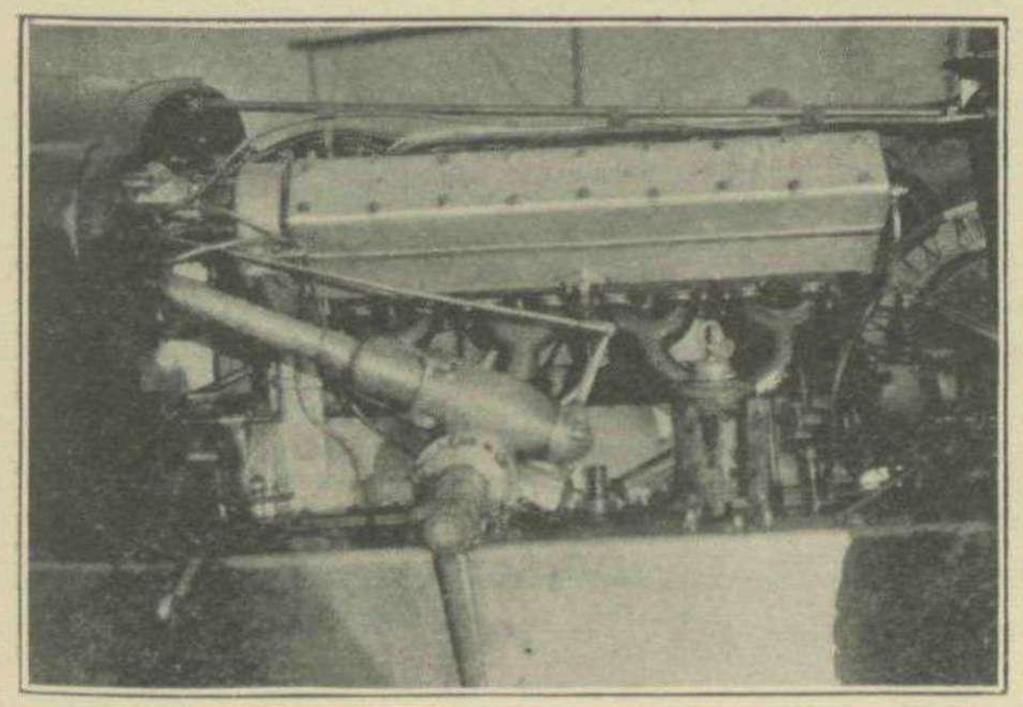


The new radiator, shows the influence of Italian modification, and the narrowness of the body.

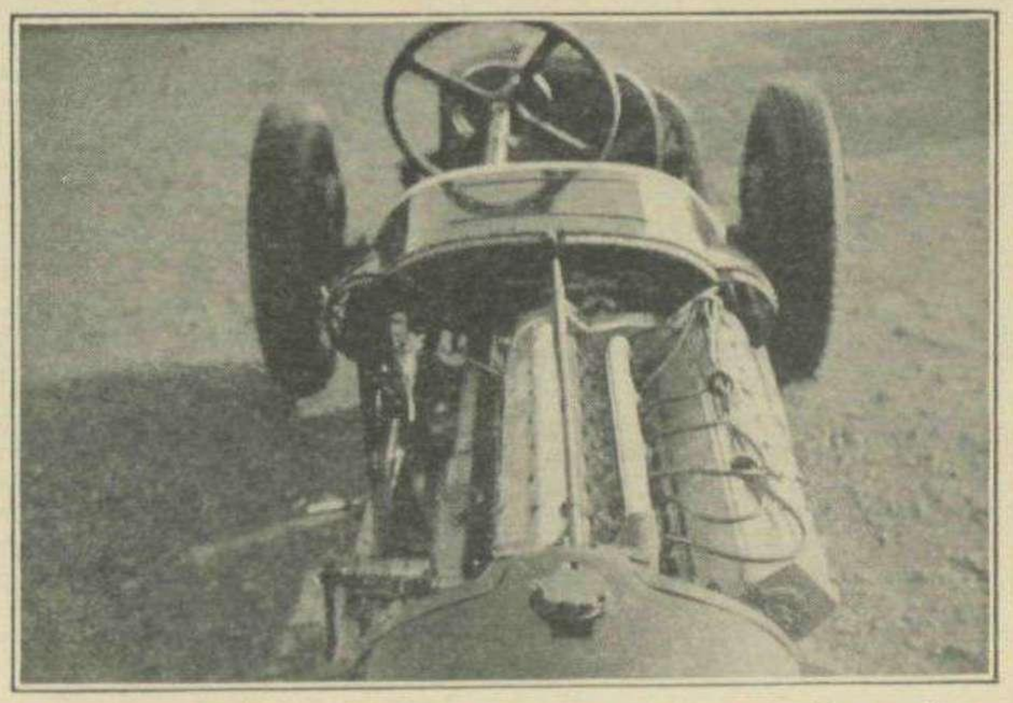
Before describing the straight-eight 1½-litre supercharged Talbot, it is of interest to recall some of the history of the period during which it was designed and built. The Delages were the most consistent winners under the 1½-litre formula, but, in addition to the Talbots, they met a strong challenge from other teams. Bugatti was not out of the limelight, winning the Targa Florio right through the period, and at that time the "Targa"—now, alas, fallen on evil times—really was a race.

Great Britain, too, even at that time, had promising contenders in the two Thomas Specials, supercharged straight-eight cars like the others, and designed and built by the late J. G. Parry Thomas to the international formula. But Thomes's tragic death at Pendine Sands robbed the British machines of their presiding genius.

Italy was not strongly represented among the 1½-litre cars, till late in 1927 Fiat brought out a team of twelve-cylinder 1,500 c.c. machines, which only ran in two races, displaying prodigious powers, before the Fiat company was



The eight branches of the inlet manifold recall the design of one of the modern Grand Prix Cars. The supercharger is in front of the engine.



A feature of racing cars of the time was desaxe or offset engine and transmission.

AN OLD MASTER RE-DISCOVERED—continued

ordered to concentrate on the Schneider Trophy. This was the last appearance of the famous Fiat concern in Grand Prix racing, where once it was supreme, and the rumours of cars from this factory for the 1938 formula are therefore doubly interesting.

As regards the Talbots, some confusion has always existed concerning the French and English companies bearing that name. The position in 1926 was different from that at the present time, for at that period the "S.T.D.," or Sunbeam-Talbot-Darracq combine, was still in existence. The three firms, two English and one French, used to work in common, and their racing cars sometimes bore the name of one member of the combine, and sometimes of another. The same car might, indeed, be called a Talbot in one race, and a Darracq, or Talbot-Darracq, in another.

Later the combine split up, and at the present time there is no connection between the British firm of Clement Talbot, Ltd., and the French Talbot company, whose cars in England are now called Darracqs, and which raced with success in the last Tourist Trophy under the name of Talbot-Darracq. A connection has, however, been re-established between the English Talbots and their old partners, the Sunbeams, for both firms are now members of the Rootes combine.

As has been stated, at the period of the 1½-litre Grand Prix formula the British Talbots and the French Darracqs were in close alliance. The straight-eight supercharged Grand Prix cars were built at the Suresnes factory near Paris, which is still the home of the French Talbot company, and they were designed by two celebrated engineers, Bertarione and Bechia. Bertarione, amongst other exploits, had won fame by designing for the third member of the "S.T.D." the Sunbeams with one of which the late Sir Henry Segrave won the French Grand Prix in 1923. Bertarione, incidentally, is now chief engineer of the Hotchkiss company, and Bechia is still chief engineer of the French Talbot company.

After the 2-litre Grand Prix formula expired in 1925, Sunbeams built no more racing-cars to the new 1½-litre limit, and the new cars were shared, as it were, between the other two members of the combine. When the cars raced in England, they were known as Talbots. When they raced abroad, they were known as Talbot-Darracqs.

The cars were really designed for the French Grand Prix of 1926, the first year of the new formula, but neither Talbot nor Delage were successful in that race, which was won by Bugatti. Later in the same year, however, the two teams took part in the British Grand Prix at Brooklands, when Delage was successful. There must be many spectators who still remember the bearded Senechal leaping from his car in that race to plunge his overheated feet in a bucket of cooling water! He and Wagner shared the driving of the winning car.

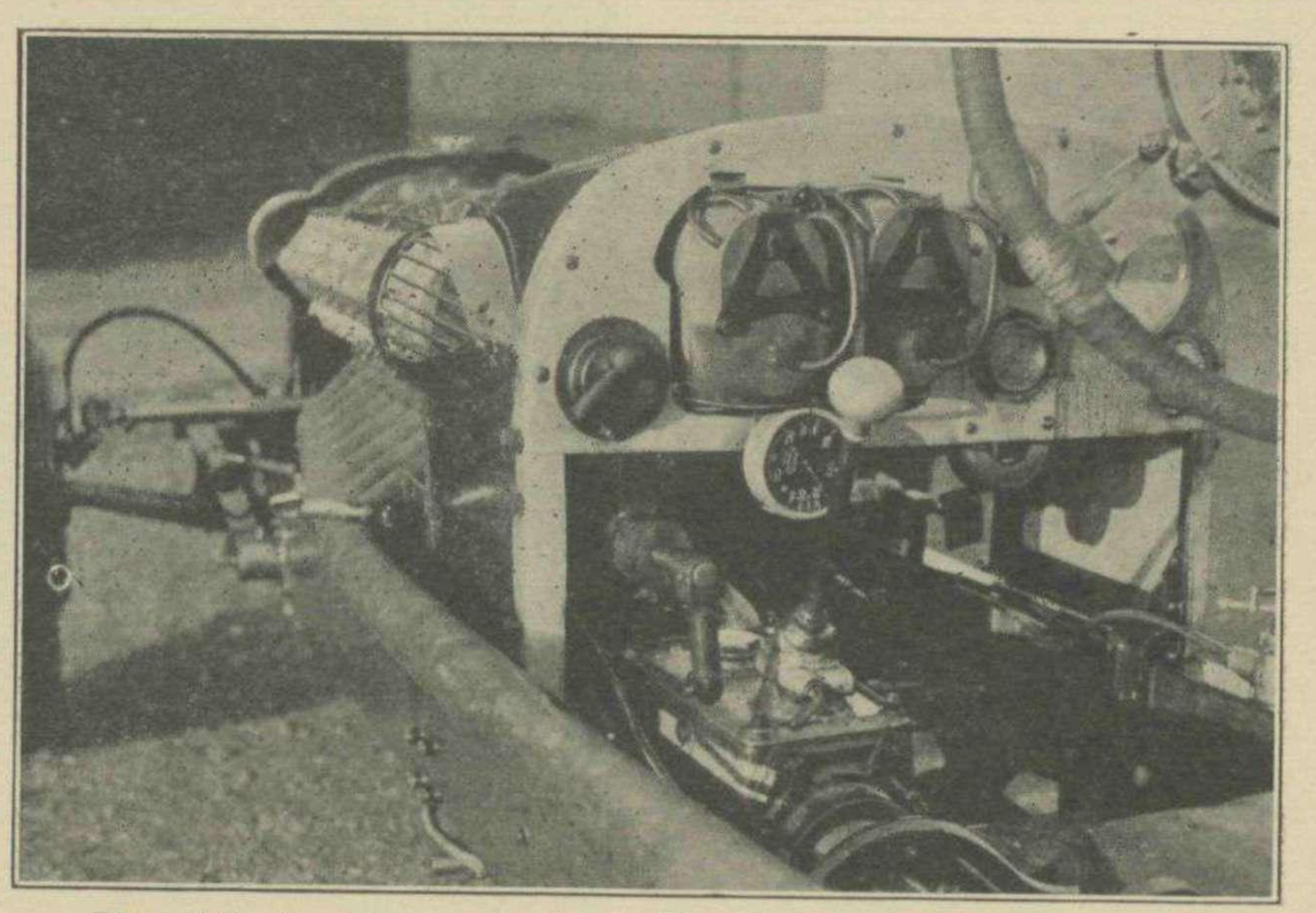
The Talbot troubles, however, were more serious than an overheated cockpit. The cars had shown terrific speed, and throughout their history they were, indeed, regarded as being faster than the Delages. However, brake troubles developed, and the cars would not hold the track satisfactorily, even in the hands of Segrave, Count Conelli, and Moriceau. On subsequent experiments it was found that the design of the chassis frame was defective. The frame was very deep, and had great longitudinal strength, but there was a lack of torsional resistance.

However, later in 1926 the great Segrave scored his third victory in the 200-Miles Race with one of the Talbots, their undoubted speed defeating all opposition.

When at the end of 1927 the manufacturers temporarily abandoned participation in Grand Prix events, the Talbot team was broken up, and several of the cars were sent to Italy. The car now owned by Powys-Lybbe was the property of G. Platé, who still retains another of the straight-eight Talbots.

In Milan extensive modifications were carried out. Indeed, Powys-Lybbe's car has embossed upon its camshaft covers the words "Milano Talbot Speciale." A new frame, again with very deep and massive longitudinal members, was fitted, and, though accurate weights are not at the moment available, it seems probable that the car is now considerably heavier than its original form. It is estimated that the original weight was round about 650 kgs., and that at present the modified car weighs some 750 kgs. It may be noted that the minimum weight for 1,500 c.c. supercharged cars under the 1938 formula is 560 kgs. (10 cwt.), so that the Talbot, while fully eligible, would be giving away weight to modern built machines.

Another modification carried out in Italy was the fitting of hydraulic brakes, in view of the trouble originally experienced. The car also has a Weber carburetter.



The cockpit, showing the gearbox by the side of the driver, and the two magnetos projecting through the dash.

The engine has a roller-bearing crankshaft, a design considered essential on racing-cars at the time, with nine main roller-bearings, and one ball-bearing at the front. The big-ends also are all roller-bearings, and each of the twin overhead camshafts has five roller-bearings. The crankshaft bearings are pressure lubricated by small jets, and the big-ends by splash.

The valves are set at 45°, with central plugs, and the camshafts are driven by a train of straight-cut gears at the rear of the engine. An interesting feature is that off the centre pinion of the camshaft gear train two magnetos are driven, by means of a spherical joint, each supplying the ignition for four of the cylinders. The twin magnetos project through the dash in a readily accessible position. The camshafts operate the valves through the medium of "fingers," or rocking levers, and tappet adjustment is made by means of specially machined thimbles, of varying thicknesses, on top of the valve stems.

At the front of the crankshaft, the Roots supercharger is driven, through a laminated spring drive, to absorb shocks, and a drive is also provided for a single water pump, and for a plunger pump to maintain pressure in the fuel tank. The engine has a dry sump, and a four-gallon oil tank is located under the driver's cockpit.

The whole of the engine and transmission is off-set, or désaxé, in the chassis, to enable the driver to sit low beside the propeller shaft. This was a feature of the racing single-seaters of the time, whereas the modern practice is to place the driver relatively high up above a central shaft. A four-speed gearbox is fitted, not a five-speed, as on the Delage.

The springs are short and stiff, and are off-set both fore and aft. The shock-absorbers are extremely small, and may have to be modified. The track-rod is placed

Continued on page 68

Club News

VINTAGE S.C.C.

The annual general meeting was held at Chiltern Court on January 12th, and a very good attendance resulted, the members present including Messrs. Chambers, Heal, Windsor-Richards, Choate, Kirkman, Waddy, McKenzie, Robertson-Roger, Wrigley, Eason-Gibson, Boddy, etc., etc., and, in state behind the trophy-stacked top table, Messrs. Forrest Lycett, Michael May, Sam Clutton, Bowler, Carson, and Seth-Smith. It was rather a curious general meeting as no balance sheet was presented, but these will be circulated to members in due course, after an honorary audit which will not incur the club in any expense, and it is expected that there will be a credit balance of about £70, a very satisfactory state of affairs, as 1938 subscriptions are not included. It was proposed that the Committee be increased from ten to thirteen members and this was carried, the new members being elected and Colin Nicholson standing down. S. C. H. Davis is now a Vice-President and not President, at his own suggestion in view of pressure of business. Mr. Lycett remarked on the flourishing state of the club, which has some 280 members, on the excellent work of its committee and on the admirable competition for the annual trophies he has put up. In view of the proportion of new full to new associate members no need was felt of altering the car age limit from December 1930. An amendment was made in the system of marking for the annual aggregate awards, as previously a member winning four classes at one speed trial could outstrip a winner of first-class awards in all trials. At the suggestion of a member this amendment also took Donington races into consideration. Bowler briefly reviewed the past season's events and it was announced that this year a Lewes speed-trial, a Prescott hill-climb, three trials, a Donington meeting, and a speed trial or Donington meeting by the Northern Section, were proposed, as well as a trial by the newly-formed Northern Section on January 23rd. Clutton reminded members that the Motor Sports Club is "at home" to vintagents every Wednesday evening, after Carson had replied to a question to the effect that dinners and socials had been unsuccessful in the past. The question of cash-awards for speed-trials was to be "considered." Mr. Lycett then presented the annual aggregate award to Windsor-Richards, who amassed 73 points with his 30/98 Vauxhall, and the runner's-up award to A. S. Heal, whose 30/98 acquired for him 69 marks. John Bolster was third. C. H. Wrigley won the Pitchford 1½-litre Cup, scoring behind the wheel of his Lea-Francis. Mr. Lycett has given another cup for competition amongst the Northern Section. Thanks were then given to the Committee, the Vice-Presidents, and to members for their support, though the Press came in for no mention during the evening. Michael May said he hadn't bags of gold as a Vice-President should, but he would serve the Club faithfully in that office and all the time, if his lack of those bags didn't matter. We look forward with keen anticipation to the next Bulletin, due this month.

Hon. Sec.: T. Carson, "The Phœnix," Hartley Row, Hants. 'Phone: Hartley Wintney 84.

CORRECTION

In the last issue we inadvertently stated that Denyer's Lea-Francis was described in the Vintage S.C.C. Bulletin as winning the 1937 Vintage Gloucester Trial, although a report of that trial elsewhere in the same issue made it clear that J. C. H. Wrigley was the winner. As Mr. Wrigley drives a standard 1930 12/40 Lea-Francis tourer, whereas Mr. Denyer gains his successes with a rather special 12/50 Lea-Francis, he is naturally anxious that we should insert a correction, which we do gladly, with apologies.

B.A.R.C.

The usual annual general meeting was held in the Paddock Club-house last month, followed by a film show. Mr. Percy Bradley was in the chair. Amongst suggestions put forward were that the silencer ruling should be reconsidered, in view of the relative noise of aircraft and gravel-pit machines in and around the St. George's Hill estate, that a bridge be erected over the Campbell circuit where it crosses the Aerodrome road, that steps should be taken to prevent congestion of traffic at the tunnel, and that members should receive free programmes. Mr. Bradley stated that legal advice dicated against the abolition of silencers—that the rule ever had to be enforced at all shows how funny the Law is, for Brooklands opened in 1907 and was used daily by cars and aircraft from 1914, yet the fuss only came to a head in 1924 by the action of householders the majority of whom had probably never heard of Weybridge before the War. The proposed bridge would be too expensive. The road course will be opened at certain times in 1938 on non-race days, but only for use by approved drivers. The Track will be open for at least a week's practising on circuits used for important races. A House Committee has been formed, composed of Mrs. Eccles, Mrs. Lionel Martin, A. L. Phillips, F. A. Thatcher and C. A. Holbeach, which will look after club catering. The Brooklands season is due to open on March 12th, with a B.A.R.C. meeting. This year the Members' enclosure on the Hill will always remain open to members. We hope the excellent Press bulletin service instituted last year will continue.

B.A.R.C., Brooklands Motor Course, Weybridge, Surrey.

INVICTA C.C.

The Invicta C.C. held its annual general meeting on January 26th, followed by a film show. Owing to a deficit of about £14 on the first year's working, it was necessary to propose an increase in annual subscription from 10/- to 15/-.

The February Rally was scheduled to commence from Broadway on February 12th, concluding thereat on February 13th, the long route of 410 miles going via Conway, Festiniog, Bala, Gemmaes, and Aberystwyth. There was also a shorter route of 338 miles. We have long felt that there is a great deal to be said for driving long distances on good cars, and the Invicta Car Club has taken an excellent lead in putting on a Rally of this nature, with an Annual Challenge Cup for the Club gaining the most points irrespective of number of cars entered, to be decided solely on route and time-keeping, with no driving tests of any kind. Even to a modern car 400 miles over Welsh roads in winter constitutes no mean test and the Rally results will be watched with interest. Naturally, the average speed has to be low—22 to 30 m.p.h. according to sections. The January issue of "The Gauntlet" contains an interesting list of 4½-litre Invictas, with notes of past and present owners and means of recognition, etc. Amongst those owned by members are Donald Healey's Monte Carlo tourer, two of the three T.T. cars, Monro's ex-Gardner diesel job, now fitted with ordinary engine, that does 90 m.p.h. at 3,800 r.p.m., five h.c. low-chassis cars, eight low-chassis "S" type, four coupés, and a number of special cars. The club gives names to all Invictas; thus "Bira's" 4½-litre low-chassis tourer is known as "Siam." About 150 4½-litre Invictas were built between 1931 and 1933.

The Patron of the Club is S. C. H. Davis, Esq.

Hon. Sec.: D. Monro, "Windbrow," Winnington Road, N.2.

SOUTHSEA M.C.

A Club social run will be held on February 13th, and the Fourth Annual President's Challenge Trophy Trial is scheduled for February 27th, with a St. Patrick's Eve dance on March 16th. The President is J. Luther Dyer, the Vice-President D. Gammon, the Hon. General Secretary G. F. Rose, Hon. Competition Secretary J. W. Dyer, Hon. Treasurer N. Lloyd Evans, Hon. Social Secretary C. S. Dewey and Hon. Press Secretary D. P. Kirkman.

Sec.: G. F. Rose, 125, Queen Street, Portsmouth. 'Phone 2657.

BUGATTI OWNERS' CLUB

The annual dinner and dance was held on February 4th. A model electrically-functioning G.P. Bugatti was an interesting

CLUB NEWS—continued

exhibit. The Opening Rally will be held on April 10th. The annual general meeting will be at the Green Park Club on March 9th.

Hon. Sec. : E. L. Giles, 2, Queen Street, Mayfair, W.1.

E.R.A. CLUB

The E.R.A. Club continues to issue its informative publication. A very interesting visit was held last year to the E.R.A. works at Bourne, and it is hoped to arrange a few evening runs to fill in time before the season starts. Thereafter the Club will arrange mass visits to, and special enclosures at, most of the race meetings at which E.R.A. cars participate. Carless members can often be conveyed to same, very satisfactorily, judging by past Editorial experience. This is the motor-racing social club *par excellence*, and everyone who seeks to see Britain regain lost prestige in International racing should be on the Membership Roll. The minimum subscription is £1 and it is very good value. Those who subscribe over that amount assist the fund which is maintained to encourage E.R.A. to enter essentially British cars in the big races.

THE MOTOR SPORTS CLUB

Club secretaries are reminded that trials regulations and results will be displayed in the club-room if forwarded to the secretary. The world's motor Press is kept up-to-date on the reading table and includes many club journals, folders and sheets. But we miss the Scuderia Ferarri publication, though doubtless it is now defunct. This club, apart from providing an invaluable centre for club committee meetings, etc., is an oasis for enthusiasts in a restricted, no-parking, pedestrian-crossing infested city. And fortunately parking rules in the vicinity are quite tolerable.

The Motor Sports Club, Grand Buildings, Trafalgar Square, W.C.

THE BOCHATON COMMITTEE

The Bochaton Committee met again on January 20th to discuss trials policy, which we dealt with in some detail last month. Already good is resulting, as the Great West M.C. and Kentish Border C.C., with trials scheduled for January 30th and February 6th respectively, both in the Hampshire area, combined on a voluntary basis and ran a combined trial on the latter date.

VINTAGE S.C.C. NORTHERN SECTION

A News Sheet comes along every other month. The Committee has been concentrating on social gatherings, which have been highly successful, but on January 23rd they held a follow-my-leader trial, confined to twenty entries, with a distinctly moderate entry-fee, and later in the season they will assist with the organisation of a Donington meeting or other Northern speed event. Some interesting motors are owned by club members, notably Macgrath's very immaculate 12/50 Alvis, Lees's Bentley, and Peter Wike's collection of old cars, including a 4½-litre Bentley and an Alfa-Romeo, and many many litres of Fiat. The affiliation fee to the Vintage S.C.C. proper is 1/-.

Hon. Sec. : K. Neve, 36, Deacon Road, Widnes, Lancs.

BENTLEY DRIVERS' CLUB

A Club run, starting from Croydon Aerodrome, was held on January 23rd. The Annual Dinner will be held at Bush House on February 23rd. Capt. Woolf Barnato is President and the Vice-Presidents are Oliver Bertram and Forrest Lycett.

FORD ENTHUSIASTS' CLUB

A driving-skill event specially planned to appeal to owners of ordinary Ford cars who are new to competitions has been provisionally arranged for February 13th at Knatt's Valley, Farningham, Kent. A suggestion has been made that prizes should include Ford replacement engines and Ford spares. It is hoped to hold a more ambitious driving-skill event at the Autodromes School of Driving, Croydon, on March 13th, followed by a film show and social evening. The Club will be represented by a team of Allard-Special Fords in the N.W. London Inter-Club Team Trial on April 18th, and another strong Ford Team will compete for the Club in other Inter-Club events. An excellent car badge is available and a news-sheet is issued at intervals.

Hon. Sec. : S. H. Allard, 15, Millbrooke Court, Putney, S.W.15.

IMPORTANT TRIALS DATES

The following important trials are due to be contested in the immediate future :—

Feb. 20th.	Harrow C.C. Trial. Hants.
,,	Margate & D.C.C. Wye Cup Trial.
Feb. 26th.	S.S.C.C. Trial, Scotland.
,,	Colmore Trophy Trial, Cotswolds.
Feb. 27th.	Berkhamsted & D. M.C. Trial, Chilterns.
,,	Southsea M.C. Presidents' Trophy Trial, Petersfield area.
,,	Yorkshire S.C.C. Team Trial.
Mar. 6th.	West Hants & Dorset Hartwell Cup Trial.
,, 13th.	Vintage S.C.C. Trial, Chilterns.

J.C.C. ANNUAL GENERAL MEETING

At the annual general meeting of the Junior Car Club, held on Thursday, January 20th, it was reported that membership showed an increase of sixty-two over last year's figures, the present total of 2,179 being a new high level for the Club.

Although not being able to record the customary surplus on the year, the Club had succeeded in maintaining its general financial position, and its reputation in the motoring world.

At the meeting itself, a discussion took place with regard to the possible representation of affiliated Clubs on the R.A.C. Competitions Committee, and the subject was referred to the new Council of the Club for consideration.

The Secretary stated that the 1938 programme would follow on similar lines to that for 1937, the first event of importance being the Brooklands Rally on March 26th. It is hoped that, by being a month later in the year, this event will be favoured with more reasonable weather !

The following officers and committee were elected :

President : The Hon. Sir Arthur Stanley ; Hon. Solicitor : Mr. A. I. Logette ; Hon. General Treasurer : Major F. H. Bale ; Council : B. H. Austin, A. G. Benstead, E. Burt, L. F. Dyer, W. Urquhart Dykes, E. C. Gordon England, C. B. Follett, H. R. Godfrey, E. Gribbon, A. M. Low, E. Magee, Lionel Martin, H. P. McConnell, A. Frazer Nash, J. Gordon Offord, G. Roberts, E. H. Tustain, L. H. White.

1938 Fixtures

February 19th. Dinner/dance, Park Lane Hotel, London.
March 26th. Brooklands Rally.
April 23rd. Half-Day Trial (South-Western Centre).
May 7th. *International Trophy, Brooklands.*
May 14th-15th. Inter-Centre Rally, Malvern.
June 18th-19th. Rally and Trial, Scarborough (Yorkshire Centre).
June 22nd. Evening Trial.
July 2nd. Members' Meeting, Brooklands.
July 23rd. Members' Meeting, Donington Park (Midland Centre).
August 27th. 200-*Miles Race, Brooklands.*
September 24th. Annual Trial (South-Western Centre).
October 8th. Dinner/dance, London.
November 18th. Film Show, London.
November 25th. Annual dinner, London.

BERKHAMSTED MOTOR CYCLE AND CAR CLUB

The annual general meeting of the Berkhamsted M.C. and C.C. was held on the 16th January, and the following were the officials elected for 1938 :

President : A. P. Good, Esq.

Vice-Presidents : Lord Chesham; E. C. E. Baragwanath, Esq., J. Harter, Esq., C. De L. Leach, Esq., T. Norman Hinton, Esq., G. Murdock, Esq., A. L. Kent, Esq., Armand-Blackley, Esq., S. F. Seyfried, Esq.

Chairman : A. P. Good, Esq.
Vice-Chairman : N. C. Lone, Esq.
Hon. Secretary : A. D. G. Beveridge, Esq.
Assistant Secretary : F. R. Witty, Esq.
Captain : A. G. Sanderson, Esq.
Hon. Treasurer : F. Groom, Esq.
Advisory Committee : N. B. Robins, N. T. Sanderson, E. G. M. Wilkes.
Magazine Editor : Mrs. N. C. Lone.
Press Secretary : E. G. M. Wilkes, Esq.

The address of the Secretary, Mr. A. D. G. Beveridge, is "Inverkeithling," The Drive, Rickmarsworth, Herts.

CLUB NEWS—continued

GENERAL NOTES

Following the suggestions made last month for a Mudless Trial, a very interesting letter is to hand from Mr. Pringle, of Cambridge. He says that in Ireland trials are run rather differently from here, as observed sections are rarely used, competitors being required to average something like 24 m.p.h. throughout, over routes embracing bog-roads, grass tracks and mountain paths, so that the whole thing constitutes a sort of cross-country race, and only a few people maintain the stipulated average and so qualify for awards. Special tests decide ties. In England such an event would be heartily frowned upon, as our average speed over country roads between hill sections is usually limited to about 20 m.p.h.—though once upon a time there was a trial by night which included a timed climb of a once famous speed-hill, which induced someone to bring along a stripped racing-car on a trailer. Hush, Hush! Mr. Pringle gives some useful data concerning an Irish Mudless Trial held on Boxing Day. Results were almost entirely decided on four special tests. The first of these comprised running as slowly as possible over a distance of 20 yards, and then accelerating over a distance of 40 yards, the whole on a slight, uphill gradient. The second test was on a rutty surface and consisted of starting from line A, driving 30 yards and stopping astride line B, then accelerating over 30 yards to line C in the time honoured manner. The third test, on a loose-surface, consisted of a cross roads test, with one reverse and two forward runs of about 25 yards each. Apparently excellent entries were obtained and the event is reported to have been most enjoyable. Something of this sort should appeal to clubs catering for family-type cars and there is no reason to believe that the absence of hills would render such a trial too dull; after all, lots of people motor 400 miles in a Rally with only driving-tests as punctuation, and intervening routes can be planned to embrace good scenery and tricky going. In this respect, the Irish trial was run to a stiff average and a secret check constituted the fourth test. On the other hand, as I emphasised last month, I crave something rather more ambitious for the proposed Mudless Trial.

Several readers have expressed enthusiasm for a four-wheeler edition of the V-twin Morgan tricar. They may not recall that a very prominent trials driver originally competed with such a car. He tells us that the power developed by the V-twin engine, although it is of only 1,100 c.c., makes it desirable to use 1½-litre transmission components, especially if a solid axle is to be employed. In his case a Lea-Francis axle and final drive was used, with Bugatti knock-off hubs. Another point to watch is weakness of the front hub assembly when cornering rapidly with the increased loading. Lancia hubs were substituted for the car in question. It was agreed that the V-twin motor is essentially reliable and productive of about 80 m.p.h. and the chief shortcoming, it was suggested, lies in the essentially experimental nature of the conversion, bearing in mind the need to keep the conversion down to a strict weight limit so as not to kill performance. Naturally, the above remarks refer to a "gearbox" Morgan chassis, with shaft-drive substituted for the normal chain final-drive.

* * *

Friction is again being felt over trials, so that Bochaton's endeavours to untangle things are certainly opportune. Trouble seems to be brewing in the Cotswolds and the Cheshire County Council has asked the Ministry of Transport to prohibit driving of vehicles on Bank Lane, Rainow, which embraces the famous Jenkin's Chapel Hill. More than ever before are trials organisers advised to apply to local police chiefs for permission and advice on proposed routes and, in any case, to interview property owners living adjacent to the hills. From our own experience, in a "congested" area, every help will usually be extended, and often residents will suggest the best means of parking waiting cars to obviate inconvenience, or will request the services of a local to sweep the road at the foot of a hill clear of mud after the cars have passed. Incidentally, if Jenkin's Chapel is to be no more, Photographer Brymer's calendar which he sent to his friends will become something of a souvenir. It depicts Guy Warburton's well known 30/98 Vauxhall with both front wheels clear of the ground in tackling the Jenkin's hairpin, the caption being "Up Jenkin's." I like it because it depicts a trials scene, a well known "dicer" and his wife, and a very fine old car.

* * *

This time the M.C.C. "Exeter" was seen as an observer instead of as a passenger, and most unexpectedly. A friend of like interests implied the need of companionship only an hour before we left, at midnight, *en route* for Fingle Bridge. The car being a seven-year-old very commodious Wolseley saloon hired for the occasion and of doubtful mechanical order, there seemed possibility of adventure. For some miles we were engrossed in discovering the peculiarities of our carriage, the actual type of which we were quite unaware, and the alleged 16 h.p. of which we were inclined to doubt. Having tarried longer than we should have done at the start at Virginia Water, we got going to some purpose at what we imagined must be 50 m.p.h. behind quite good lights, to the tune of a disturbing clatter from the engine. After Salisbury the writer took over, finding the car at first embarrassingly wide and possessed of "railway-train" characteristics not uncommon amongst old family cars, i.e. it ran at a steady speed, whereas a modern, with its reserve of performance, spends the day (or night) accelerating and slowing down, while everything, steering, braking and gear-changing, was very heavy and decisive. So we rattled through the night, refuelling for a second time at Yeovil, working up to a stern 55 to 60 m.p.h. on the straights, and passing clusters of competing motor-cyclists. The steering, devoid of castor-action, was really not too bad if one worked hard on bends, and by the time Exeter was reached we had something amounting to respect for this ponderous saloon with its mahogany instrument-board and a rear seat so well divorced from the driving compartment—though it *did* fill with fumes. Moreover, over a truly excellent breakfast in the small hours at Deller's we discovered the average to be in the neighbourhood of 35 m.p.h. The writer then slept as far as Fingle. Arrived there we went up to watch and went on watching without relief until 4 p.m., when we were truly glad to re-enter the Wolseley and make light of a picnic meal, after opening the bonnet to ascertain that the model was Viper, the rated horses really sixteen, and that the compact six-cylinder engine had o.h. camshaft valve actuation reminiscent of an enlarged Hornet unit. The journey home was uneventful, save that the writer, hurrying more than somewhat, came upon Yarcombe Hill (which, with Chard, used to be the only hazard in pre-war "Exeters") unexpectedly in the downhill direction, his cornering resembling that of an early and epic Grand Prix, so that the sleeping passenger awoke not long afterwards. Thereafter the noise that should not have been increased, but, confident that it was but a blown exhaust gasket, we kept on hurrying, to crawl into bed just prior to the dawning of another day, with another "experience" booked and thoroughly enjoyed. But if you have ever driven through two nights and spent the intervening day standing on a chilly hill in the rain with no food, you will appreciate the writer's feeling on facing a celebration lunch the next day and thereafter being taken to tea with friends on board a ship at the East India Docks. Which was worse: descending from the ship to the dockside, or being manœuvred in an Austin Seven by a young lady driver in equal proximity to the uninviting water?

Recovered, we went down to Brooklands in a touring Type 45 Frazer-Nash-B.M.W. to try the Monte Carlo test, only to have the car die on us until too dark to "dice." It puzzled many racing wizards and then proved to be merely possessed of a sticking distributor arm, so that it ran back to town beautifully, with the marque's essential fitness for purpose, and on a subsequent very fast run through London's rush-hour traffic the writer several times murmured, as he has done before, "Thank God it's a Frazer-Nash-B.M.W." Incidentally, that we got wheelspin in third gear and could sometimes scarcely restart in second on the road surfaces in the West End is a tragic reflection on the condition of the streets in the capital city of the Island set in a Silver Sea.

Reverting for a moment to Fingle Bridge, that hill on the occasion of the "Exeter" provided a splendid example of the mixed humanity you see spectating at motoring events. There was the young lady down from the nearby village, obsessed with the idea that she possessed extreme personal charm and in consequence expecting continual attention from the village youth who had brought

CLUB NEWS—continued

her to view " this motor-ricing," attention that was readily forthcoming. There were pleasant groups of youngsters in wellington boots and prominent school ties, rivalling one another in their knowledge of the cars' technicalities. There was a good-looking gentleman who seemed conscious that he would be more at home in Hollywood than at Fingle, proud of his lady companion, who was dressed more suitably for Bond Street than for a long vigil on a muddy trials hill in the rain. The towing-gang of local farm hands embraced a number of distinctive characters, and it was noticeable that motor-cyclists can never look anything but motor-cyclists even amongst a crowd of heavy-eyed, unshaven and very queerly garbed car-enthusiasts. Our study of motor-minded humanity embraced a local youth of some aloofness, secure in the knowledge that he owned an Austin Seven and that his girl-friend had mastered the art of make-up, if not of dress, and a charming family, quite unashamedly " county," of whom the mother and father showed a far greater and sustained interest in the proceedings than did their small sons and very serious small daughter. Also the undergraduate, tall and good-looking, arm in arm with an athletic girl, hatless and in tweeds, who was thoroughly enjoying the ascents, or who disguised her boredom very skilfully, if she were not. This motor-racing is truly cosmopolitan !

What of the writer ? Silent and sulky would probably be more than accurate—and so would you be, with breakfast ten hours away and twopennyworth of chocolate the only stimulant since . . .

I have had an interesting letter from Cecil Clutton, commenting on the Mudless Trial idea. He feels that there are all too few steep hills of the right character, devoid of slime, and that if the idea ever became universal it would be most difficult to find suitable routes and there would then be a tendency to incorporate chassis-wrecking gradients such as Bamford Clough. He thinks re-start tests of a severe nature would still encourage ultra-low bottom gears. Lengthy acceleration tests to minimise this tendency would worry the R.A.C. Stewards—actually, this is where use of private drives would become desirable. He also reminds me that to judge results fairly in an event where both hills and special speed tests are used will entail using a very complicated system of marking—that I had already foreseen.

Opinions on new ideas are always worth having, and it does seem that our Mudless Trial, if it ever materialises, will have to be confined to the club which has the foresight to originate it, and be held not more than twice a year—which would not prevent its ranking as a classic, though it would diminish to vanishing point its useful influence on car design. Any more opinions ?

ON THE ROAD WITH A LEYLAND EIGHT—continued from page 64

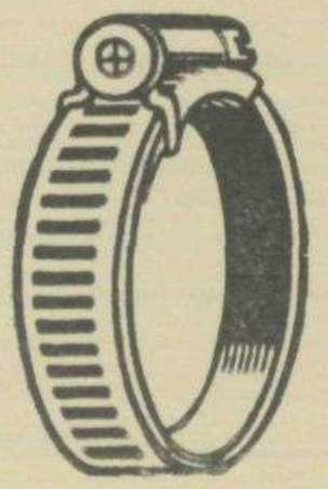
though Thompson and Taylor who maintain the car subsequently found us a new set. The maxima on second and third are about 35 m.p.h. and 70 m.p.h. respectively.

Along that undulating bit of road after one leaves the Portsmouth Road for Brooklands I discovered just how well this big car holds the road. It went up to 75 m.p.h. and stayed there, up the rises and down the dips, and steering into the gutter for approaching traffic, notwithstanding. Moreover, the brakes checked speed very smoothly and surely in emergency and the dash, bonnet and radiator remained absolutely as one piece, only the horizontal steering column showing a desire to wag about. Remember this when you take this road in any other fast, really big motor. Incidentally, the passenger finds it quite unnecessary to clasp the grip, save on sharp corners, or to drape his right arm behind the driver. At the Track repairs at the Fork made timed lappery impossible, but at just over 90 m.p.h. the Leyland rode the Byfleet like a rock, and at a paltry 2,600 r.p.m. We tried two acceleration tests, but being in a hurry they were done without giving the driver any chance to get " warmed up," nor had we changed the faulty plug. Under the circumstances the figures are indeed excellent : 0 to 50 m.p.h. in 12 secs. dead ; 0 to 70 m.p.h. in 19 secs. dead. The carburation was also by no means perfect.

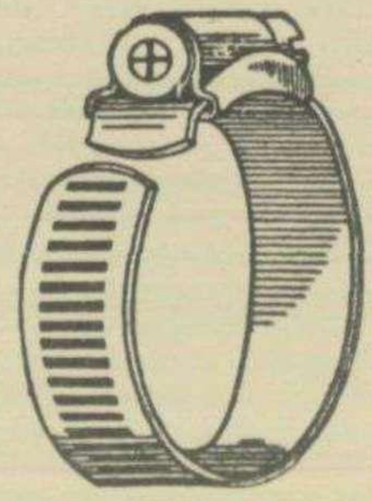
Looking back on a very pleasant experience I cannot enthuse too strongly over a car which is not only an extremely interesting technical study, but one that possesses remarkably good performance and which is a practical road-car into the bargain. We can congratulate ourselves that it has gone into such good keeping.

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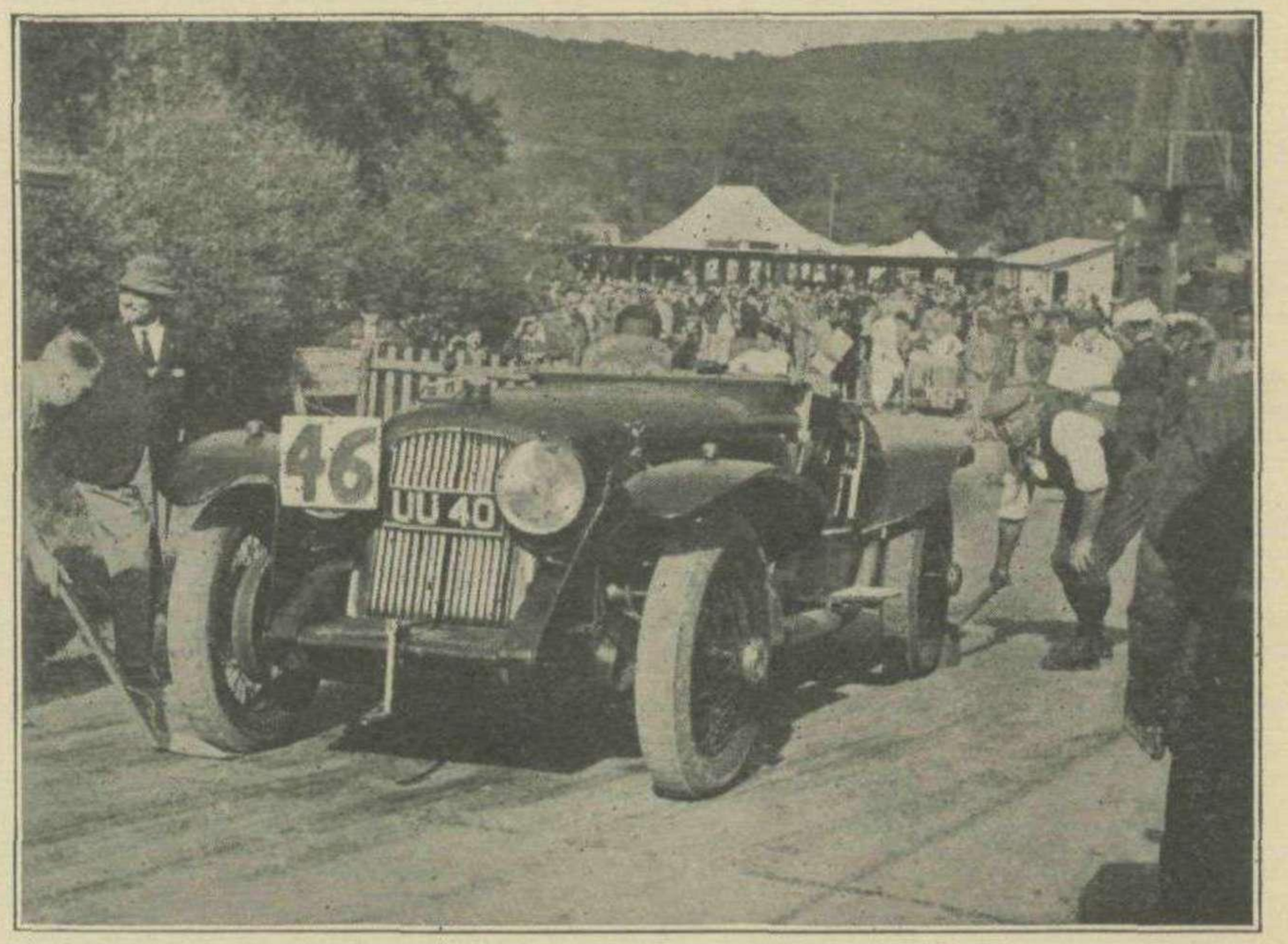
ON THE ROAD WITH A LEYLAND EIGHT

IMPRESSIONS OF SIR LIONEL PHILLIPS'S 1927 TWO-SEATER. EXTREME ORIGINALITY AND A MAXIMUM OF WELL OVER 100 M.P.H.

ALTHOUGH the Leyland Eight was discontinued over a dozen years ago, it is a car which still arouses great interest and no little respect amongst enthusiasts, as one of the most outstanding of the many first-class cars for which the late J. G. Parry Thomas was responsible, and the one from which he evolved the Leyland Thomas single seaters, probably the most consistently successful track cars ever constructed anywhere in the world.

The Leyland Eight, evolved as a supreme development of the British super-car, was described in the motor Press at the end of 1920 and exhibited at the Motor Show of that year. It bristled well-nigh literally with advanced and original features. Its straight-eight 7-litre engine, originally designed for aero work, had an overhead camshaft driven by rods and triple eccentrics, each cam arranged to actuate an inlet and an exhaust valve. The tulip valves, designed to obviate any need of grinding in, were inclined in hemispherical heads and closed by transverse leaf-springs. The lubricant was flung from the sump into a crankcase-container by the flywheel, from whence it was fed under pressure to the bearings and even to the gudgeon pins in the tubular connecting-rods. The intake pipe was exhaust heated and thermostat cooling was used in conjunction with a belt-driven fan arranged to run less effectively at high speeds by reason of a suction control. The pistons were aluminium and the crankshaft ran in six bearings. In 1920 form this engine was claimed to develop 100 b.h.p. at 1,800 r.p.m., and 60 b.h.p. at 1,000 r.p.m., with a maximum b.h.p. of about 145, and a m.e.p. of 112. The separate gearbox was mounted on leather rings, and there were double bevels in the final drive, the differential assembly being carried on the torque tube, while the axle shafts were splayed in a wide V.

The chassis had deep drilled side-members and suspension was by torsion bar, at the rear in conjunction with very long quarter-elliptic springs, at the front in union with half-elliptic freely-shackled springs. Anti-rolling bars were used for both axles, and the torsion bars ran transversely. The rear brakes were vacuum-servo operated, there was a suction-operated ignition switch to cut off current whenever the engine stopped and chassis lubrication by gravity feed aided by plunger-pumps controlled by the rear spring movements. In brief, Parry Thomas laid down a design that might well have been a rich enthusiast's individual ideal and it is hardly surprising that in 1920 the chassis price of the Leyland Eight was £2,500. In 1921 this wonderful car went into limited production and the 1922 catalogue gives the chassis price as £1,875. Thomas found that a practically standard two-seater would lap Brooklands at 100 m.p.h., and he was encouraged to commence development work. His earlier racing two-seater lapped at 117½ m.p.h. and a later Leyland-Thomas single-seater eventually lapped Brooklands at 129.36 m.p.h. Reverting to the standard job, in a letter which he wrote to me seven years ago, Mr. H. Spurrier, Junr., Assistant General Manager to Messrs. Leyland Motors, Ltd., told me that production ceased in 1925 and that approximately eighteen Leyland Eights were completed—incidentally, H. Spurrier, Senr., was recently given a birthday party by his employees to celebrate his seventieth birthday. He is the first and only Managing Director of Leylands Motors Ltd., of Lancs.



The Leyland Eight at the Shelsley Walsh Hill Climb.

In spite of its age, the advanced design of the Leyland Eight allied to its performance qualities, lifts it right out of the ordinary run of vintage motors. Certainly I was extremely interested to have the privilege of a run in the two-seater which must be the only car of this marque still on the road; that owned by Sir Lionel Phillips, Bart. This car is a 1927 model, and it was first registered in London in 1929. That would seem to need some qualification, in view of the foregoing remarks, but I think the solution is that after Parry Thomas's sad accident Messrs. Thompson and Taylor, Ltd., took over his stock of Leyland cars and parts, and the car in question would appear to have been assembled by them for a client after production had ceased at the Leyland works. Sir Lionel retains two chassis at Brooklands for spares, and Thompson and Taylor still have a tourer, *sans* engine, in their works at the track. The particular car in question had only one previous owner, who used it for fast touring abroad, as one is reminded by the "G.B." plaques on the tail. Sir Lionel Phillips acquired it a short time ago, for the sum of £440, and set about reconditioning it. He is fairly certain that it was not one of the racing chassis. The dashboard, however, bears a plate with the legend: "35 c.v. Leyland-Thomas. 1,778 kgs. M.O.T. No. T.T.22. Chassis No. T.T. 22." However, I believe that the Leyland-Thomas raced by Capt. Howey was the one subsequently raced by Dudley Froy and T. H. and Mrs. Wisdom, after being fitted for a while with a coupé body, and that it is still in racing trim. So that unless Sir Lionel's car is the second Howey car, which I believe blew up, it could only be Thomas's own job, and that was being raced in 1927, by John Cobb. So I am quite prepared to believe it to be a normal chassis assembled by Thompson and Taylor. However, it differs somewhat from the earlier production chassis. For example, there are four Zenith carburetters on the off side, feeding via external two-branch manifolds, whereas the catalogue talks of twin instruments and internal piping. The manner in which the plugs enter the combustion spaces, and the provision of a crankshaft vibration damper, also distinguishes this car from earlier examples. There is no fan, and I believe the chassis joints are lubricated by grease-gun, and not automatically. Then there are cable-and-rod-operated front brakes, though the right-hand brake lever actuates on the rear drums only, and the engine size is 7,200 c.c., whereas the 1921 cars were 89×140 mm. (6,920 c.c.), though subsequently the stroke grew another 6 mm., giving 7,266 c.c., which starts off suspicion, —especially as Howey's car was 7,938 c.c. from 1926, growing with the years to

ON THE ROAD WITH A LEYLAND EIGHT—continued

8,468 c.c. Certainly there is nothing "racer" about the body, which displays beautiful finish and design that is a credit to Barker & Co., Ltd., It is a black two-seater with cowled radiator and wedge tail, with very low doors to the cockpit. The flaired wings detach easily, the big brass-bound running-boards have strap-staples to facilitate luggage carrying, and the main screen folds flat, when twin aero screens deflect the wind over the occupants' heads. The tail lifts to disclose two batteries mounted high up behind the seats, the spare wheel, set horizontally, a cylindrical fuel-tank holding about 25 gallons, and a space for tools, the lid being padlocked when shut. The rear-lamp is in the centre and the rear number-plates are inbuilt and illuminated—the first body to incorporate this idea. On the near side eight external exhausts drop into an immense silencer



The Leyland Eight in the M.C.C. High Speed Trial, when it averaged 97.85 *m.p.h. for the hour.*

and the exhaust pipe terminates in a big fan tail. The full width cowl and untaped bonnet, together with the flaired wings and raked screen, render the Leyland one of the most imposing road cars in existence. I was extremely anxious to try this car, as the only other road-test published to my knowledge is a rather uninformative one in a contemporary of November 1921, though it is significant that the only criticism therein concerned the noise of the brake servo!

Arrived at Sir Lionel's London residence, where I made friends with his Alsatian pup, the Leyland's owner soon arrived astride "Cissy," his very healthy Rudge motor-cycle that he hopes to race this year over the Brooklands road circuit and perhaps in considerably more ambitious races abroad. After an innocent Morris Eight had been persuaded to remove itself from the garage entrance, Sir Lionel and his manservant coaxed the mighty Leyland into action. The immense bonnet was opened, to disclose the neat engine with inclined plugs set deep in the off side of the block and fed by a single distributor. The starting handle was unstrapped from its place beside the engine and, aided by a few pumps of the Ki-gass, the response was surprisingly prompt. The idling note is a brisk crackle from the fan-tail. Climbing into the car one is immediately intrigued by the high-seating position, giving a very soul-satisfying view over the wide expanse of bonnet and of both front wings. The doors reach only on a level with one's legs, so that occasionally the passenger is glad of the grip on the facia. Incidentally, in starting yet another Leyland novelty is apparent, as the starter is actuated by putting the short right-hand gear-lever in a special notch between reverse and first-gear locations in the gate, which obviates fiddling movements with hand or foot. A battery master switch puts the starter out of action for servicing requirements.

Pausing at a garage in the King's Road for air, water and 20 gallons of Discol, the Leyland came in for the not unexpected "hero-worship," from awe-inspired fug-box owners. Running out into heavy London traffic, I was amazed at the rapid pick-up, once the clutch had coped with the drive, which belied the capacity of over 7-litres. The engine runs smoothly and unobtrusively until opened up for acceleration or gear-changing, when the crackle from the fan-tail becomes an increasing roar, and not a "wuffle-wuffle" one might have expected. It was immensely fascinating to dribble along at a mere 750 r.p.m., in the knowledge that to exceed 1,000 r.p.m. in top would incur the displeasure of the police in built-up areas, as this speed is equivalent to 34 m.p.h. The gear-change needs knowing, and is slightly complicated because the engine, although warming up remarkably quickly and displaying hardly any tendency to mis-fire, does not pick up from idling absolutely without hesitation. Even so, the changes are quite rapid and no protests came from the gearbox.

Until we were clear of London town the revs. did not rise beyond 2,000 r.p.m. on the indirects, and mostly we sailed majestically along at about 800 r.p.m., for the top ratio is about 2.8 to 1 and the Dunlop racing covers are 6.00" ×21". By the time Putney Bridge was negotiated the oil-pressure had settled to 45 lb. per square inch and Sir Lionel had brought the water temperature up to 70°C. by use of the hand-controlled radiator shutters. Along the Kingston By-Pass we consequently got moving at once at around 70 m.p.h.—a mere 2,000 r.p.m.—checking only for slower traffic, when the exhaust roar would cut out and give way to tyre hum as the brakes took hold. Although the suspension shows indications of supple action by the sound of the wheels moving over undulations, the big car rides like a rock, and in town the action is of that hardness associated with the true sports-car. If the acceleration on the indirects had been impressive before, it now became a source of joy as we negotiated one of London's most miserable exits. The Leyland got along very fast, swinging past obstructions and going easily up to 70 m.p.h., conveying a sense of immense latent power, as only a really big car can. The second and third ratios are engaged at comparatively moderate speeds, yet the pick-up is terrific. On third the Tapley Performance Meter would swing up to 450 lb., and in top it presented "250 lb." on nearly every occasion when the throttle was opened. The small three-spoke steering wheel, very thick rimmed, is set almost horizontally, a Leyland Eight feature, as the short column terminates in gearing on a vertical shaft immediately behind the facia, which operates the Marles box. The ratio is high. The disc wheel-centre carries sliding buttons around its circumference, which control ignition, mixture and throttle-opening. The mottled-silver facia, set well under the scuttle, carries, from left to right:—an inspection lamp; fuel gauge; Ki-gass; Tapley meter; Jaeger rev-counter and speedometer; with oil-pressure adjuster, oil-gauge and water thermometer above them; dash lamp; and lighting panel on the extreme right. The inspection lamp is certainly not out of place on this unique car, as its lead pulls out and stays out until the lamp is extinguished, when it re-winds itself on a sprung roller! The rev-counter reads to 4,000 r.p.m.; the speedometer to 120 m.p.h. There are three electric horns.

On the run to the Track Sir Lionel told me that the car has been in regular use since the M.C.C. High Speed Trial, when it averaged 97.85 m.p.h. for an hour on a wet Track, and has merely been decarbonised since. It has a hood and excellent Marchall headlamps, the latter fitted before its owner had seen the latest Lucas equipment. In the M.C.C. affair, with full equipment, it reached about 115 m.p.h. and should do 117 on larger wheels. Rather aghast I said: "What m.p.g. do you get, just touring?" "Ten," came the reply, "if I don't keep using bottom gear!" R.1. plugs are used, and we "lost" No. 8 on the way down,

Continued on page 62

THE TREND OF DESIGN

Once again the time has come to survey, as concisely as possible, the progress that has been made in the design and production of high-performance cars during the past twelve months

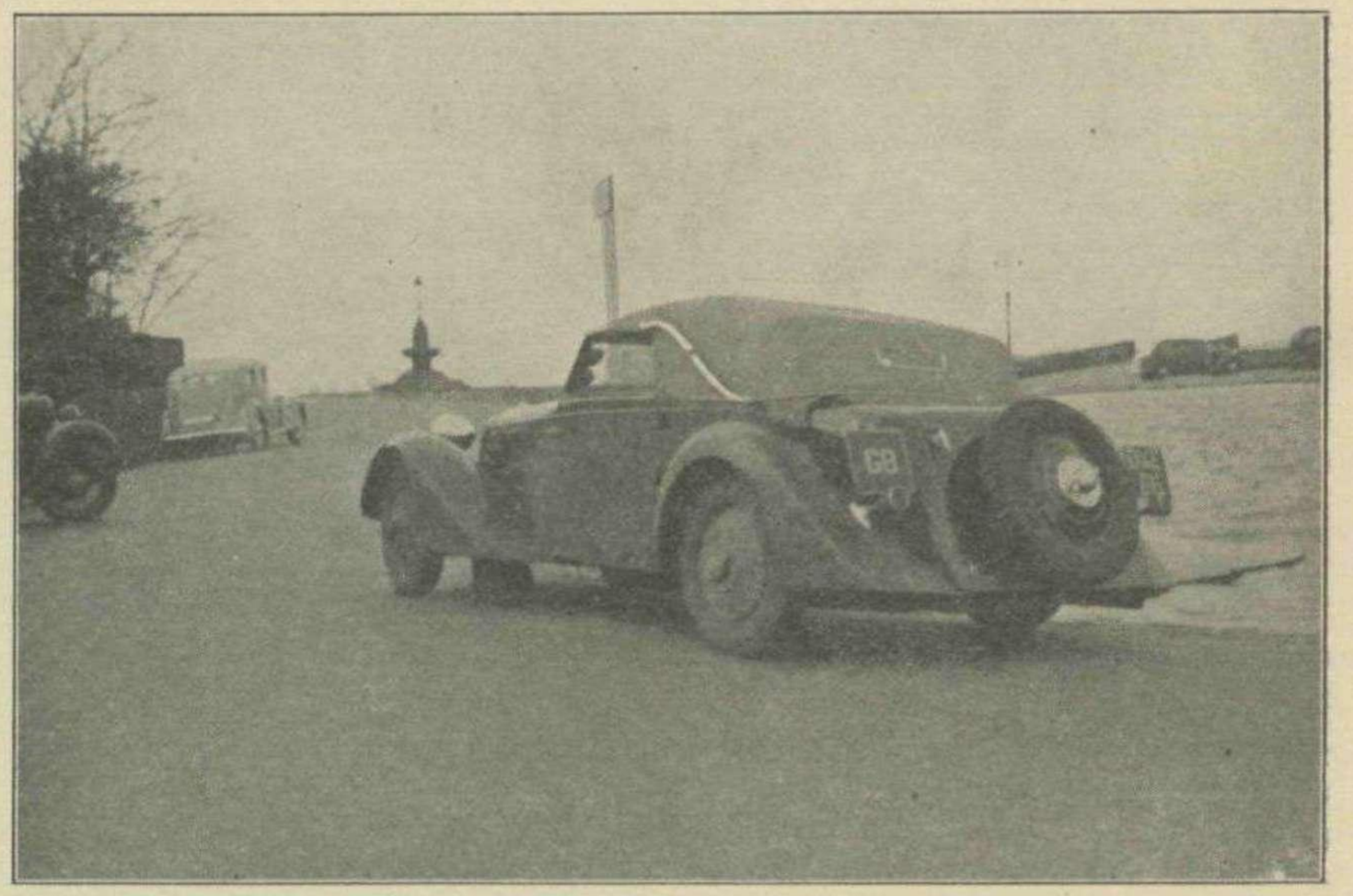
(TO BE PUBLISHED IN TWO PARTS)

I. SPORTS-CARS

FIRST and foremost, the distinction between sports and utility cars continues to narrow and not a single newly-introduced sports-car, no matter how high its maximum speed, or how varied its general performance, that does not possess very many of the sober characteristics of the more ordinary vehicle. The under 1½-litre class is the only one in which this rule does not apply strictly and even small-engined sports-cars now largely attain their performance with power-units which would drop quite readily into closed-car chassis without embarrassing the owner by reason of noise, roughness, or the need for delicate handling and frequent servicing. Actually, the racing-class of sports-car is not defunct, but today it is a definitely specialised production, built in limited numbers for enthusiasts, by concerns like Alta, Bugatti, Atalanta, Alfa-Romeo, Frazer-Nash and Rapier and, even so, Bugatti and Alfa are at more than the transitional stage, exhibiting racing-car aspects in their specifications rather than in their road behaviour.

The conventional sort of power-unit holds undisputed sway in the general sports-car field, and recent newcomers are nearly all in this category. These new sports models are sparse in point of numbers, but individually notable. Alvis have the 1.8-litre four-cylinder, a sturdy extremely sound quality car, which emphasises the modern trend by being available only in closed form. The same well-established British concern has, however, introduced the open short-chassis edition of their 4.3-litre model. The Atalanta is a new marque with advanced specification, embracing a blower operatable at will and an o.h. camshaft, 12 valve, four-cylinder, 1½-litre engine. The Invicta has reappeared, based on Delage designs with electric gearshift, and the Lea-Francis is shortly to be reintroduced as a high-grade medium-priced quality car with distinctive valve gear. S.S. have introduced the intensely interesting 3½-litre S.S. "100," which is a car of careful but quite normal design that contrives to offer extremely high performance, including a maximum speed in the region of, if not appreciably exceeding, 100 m.p.h., at a distinctly moderate list-price. Definitely this car represents a land-mark in progress, as combining the performance once associated with expensive advanced super-sports cars with design features belonging to the medium-price class. Talbot announces another example of the big modern side-valve engined car of really presentable performance, while Frazer-Nash-B.M.W. has a short-chassis edition of the big 2-litre introduced early last year. That is about the sum total of new sports-cars on the British market for 1938, though that is not to say that other makers have not effected useful and extensive improvements. Prices have tended to increase, but generally the sports-car market has not suffered extensively and in many cases beneficial alterations or equipment additions have been incorporated with no change in prices.

Bentley Motors Ltd. continue the 4¼-litre Bentley, which represents the highest conception of British sports-car technique and is a car which has experienced thoroughly satisfactory sales-success ever since its inception in 3½-litre form four years ago. M.G. have found it quite unnecessary to make any change in their 1½ and 2-litre cars, and the T-model M.G. Midget also continues as before. The "Phantom III" Rolls-Royce, however emphatically it is pronounced as not a sports-car, offers truly exceptional performance allied to such accuracy of control and refinement of design and construction that it is in demand the world over amongst those who can purchase cars in this price-class. The wonderful Type 328 Frazer-Nash-B.M.W., possessed of perhaps the highest all-round performance in relation to engine capacity of any push-rod production sports-car, is now very popular amongst amateur sportsmen, and British-Salmson are in active production with their sports "Six." The "lions" amongst Continental marques, Bugatti, Alfa-Romeo, Mercédès-Benz and Delahaye, find a ready following amongst connoisseurs, Bugatti offering the exceptionally potent yet absolutely docile Type 57 at astonishingly low prices thanks to the deflation of the franc. Alfas contribute a genuine over 110 m.p.h. job and Mercédès-Benz, Darracq and Delahaye find interest amongst British sportsmen stimulated by racing successes. The more stark type of small sports job, still beloved by real enthusiasts who combine competition work with fast long-distance travel, is offered by Frazer-Nash and H.R.G., and the more inexpensive field is dominated by B.S.A., Morgan and M.G. Finally, in some attempts at classification, such marques as Triumph, A.C., Aston-Martin, Riley, Talbot, Rover, Alvis, M.G., British-Salmson, Crossley and S.S. produce excellent high-performance, as distinct from purely sports, models, which offer a means of interesting high-speed motoring with the maximum of comfort and full retention of dignity. Lagonda retain that extremely fine British sports-car, the 4½-litre, and W. O. Bentley has almost completed his magic on the new V12 4¼-litre Lagonda, which will unite extreme performance with comparative economy and the ability to carry really spacious bodywork. Georges Roesch's beautiful straight-eight Sunbeam seems to be in abeyance, temporarily, we hope.



The 3½-litre Delahaye.

Turning to design details, as we have said, the conservative type of engine rules supreme in point of numbers. The o.h.v. type is the more popular, with actuation by push-rods and rockers. But side-valve engines are now notably efficient and, apart from the high-performance American makes responsible for a quite serious invasion of our market, Talbot has introduced a sports s.v. 3-litre, and the Railton, Lammas-Graham, Jensen, and Brough-Superior represent versions of U.S.A. designs modified to conform to British ideals. The medium-sized Mercédès-Benz is an outstanding example of really high-performance side valve car and O.M., curiously, offers both s.v. and o.h.v. engines of identical capacity in two sizes. Amongst smaller cars Morgan use an o.h. inlet, side

THE TREND OF DESIGN—continued

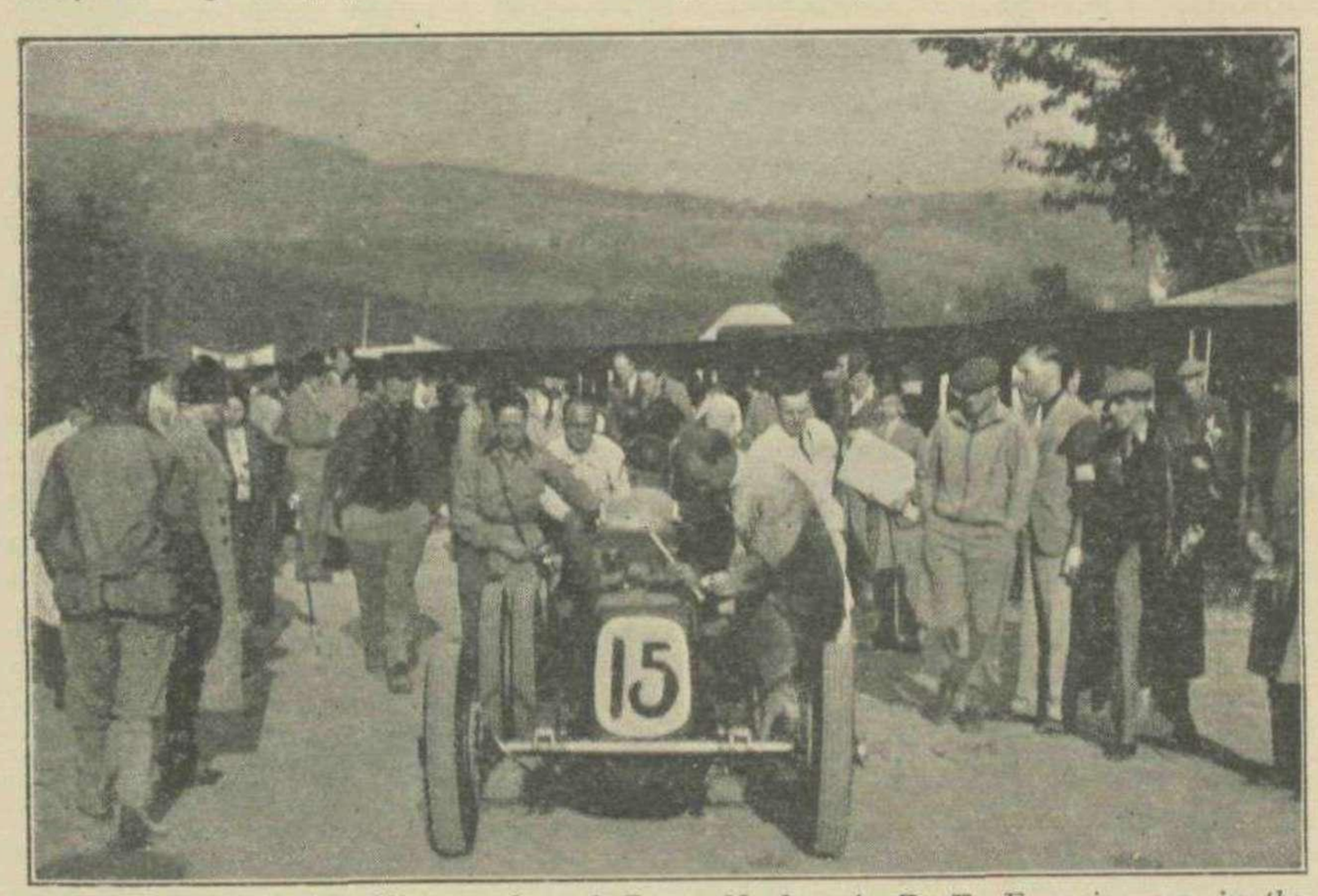
exhaust engine and the Talbot Ten, in much improved form, and the new 1,267 c.c. Railton, are semi-sporting s.v. types. Vauxhall Motors, Ltd., have done much research on the subject of controlled carburation and wide-gap ignition to obtain better fuel economy from small engines and their new o.h.v. Ten saloon does 60 m.p.h. and 40 m.p.g., and Talbot employ similar methods on the revised Ten, which uses .032" plug-gaps. The 75 m.p.h. 35 m.p.g. sports job is consequently in sight. Much of the present efficiency of s.v. engines is attributable to the use of high-compression ratios, which average around 6 to 1 with alloy head, the 10 h.p. Railton using a ratio of 6.5 to 1. Combustion chamber research and the excellence of modern commercial brands of leaded or alcohol fuel, such as B.P. Ethyl, are responsible. The b.h.p. per litre of the average s.v. sports engine is around 28, or 37 if supercharged, and that of the average s.v. American unit approximately 25. Naturally the flat or pent-roof head is dominant amongst o.h.v. operation, because of push-rod actuation, and here again excellent fuels and improved understanding of combustion conditions results in knock-free high-power output. The b.h.p. litre of the average engine of this type is roughly 34. On the other hand, the hemispherical head has a great deal to recommend it, even though compression ratios are no higher than those employed with vertical valves. Better filling results, due to excellent port shapes, combustion is more complete and heat-loss is reduced. Moreover, such head-design renders an engine capable of greater development, not only on account of the ability to operate at really high compression-ratios, but because ports polish more easily and valves remain unstressed at higher speeds. The greater turbulence may give rise to knocking, but ignition adjustments can cope with this sufficiently to satisfy a skilful driver. Inclined valve heads are used by A.C., Alfa-Romeo, Alta, Autovia, British-Salmson, Bugatti, Darracq, Frazer-Nash, Frazer-Nash-B.M.W., Lancia Aprilia, Lea-Francis, Rapier and Riley. They average about 37 b.h.p. per litre, taking such figures as are available. Thus it is seen that the use of inclined valves is equivalent in power output per litre to supercharging a side-valve unit, with the important qualification that most of the o.h.v. engines used to obtain this average will not be working at maximum compression-ratios and so will be less prone to knocking and detonation than blown s.v. units and capable of greater development. Alfa, Bugatti, Alta, British-Salmson, Frazer-Nash Six and Rapier use twin o.h. camshafts, as is permissible on high-grade cars where rapid owner service is not essential and care can be given to details of lubrication and drive. Riley, Lea-Francis, and Autovia have the ingenious system of push-rods each side of the block, which simplifies servicing. The Type 328 Frazer-Nash-B.M.W. has a single camshaft which operates the distant valves via rockers and horizontal push-rods. Another example of hemispherical head with push-rod valve actuation is found in the Competition 4-litre Darracq, and this model develops 25 b.h.p. more than the corresponding pent-roof head model, and is allowed to run up to 200 r.p.m. higher, while it uses a compression-ratio of 7.4 to 1, against 6.3 to 1 of the other model. This operation of inclined valves by push-rods is a noteworthy development of 1937. A.C., Frazer-Nash Four and Lancia use single o.h. camshaft operation, in many ways the most practical layout. Naturally, modern engine speeds prohibit the inclined system with recessed cams and a single push-rod and rocker for two valves, as used on many pre-war aero-engines and for a time by Salmson. Modern o.h.v. engines employ very high-compression-ratios, a notable example being the new 3½-litre S.S., where very careful cooling permits a ratio of 7.2 to 1. Some designers use a single o.h. camshaft to operate vertical or semi-vertical valves, obtaining direct cam contact with the stems, or using very short rockers, a practice followed by Mercédès-Benz, V12 Lagonda, Buick and Singer. Camshaft drive is usually by the silent chain, perfected of recent years, but Alfa, Bugatti, British-Salmson, and Mercédès-Benz use shaft or gear-train drives. Aston-Martin have a single o.h. camshaft head with special valve location and Atalanta has a three valve head with actuation by single o.h. eight-cam chain-driven camshaft. In engines having ports on opposite sides of the block hot-spotting is usually obviated by use of multi-carburetters, but the Lea-Francis has a contact hot-spot for its single instrument by means of a passage through the block and in some inclined valve engines the ports emerge on the same side, as on the 1½-litre Riley. The rotary-valve type still only exists in experimental form and sleeve-valves are practically defunct. Citroen, however, now list a diesel-engined car as standard. It has a capacity of 1,750 c.c. and a speed range of 350-3,500 r.p.m., giving 40 b.h.p. and costing as a saloon £375. More recently a 2,245 c.c. Tippen diesel, having a speed range of 800-3,600 r.p.m. producing 42 b.h.p. at 3,000 r.p.m., has been tested in a Lanchester Eighteen saloon.

Big four-cylinder engines show a tendency to return, thanks to the evolution of satisfactory flexible mountings, and the 2½-litre Riley and 1.8-litre Alvis are high-performance examples. Otherwise the six is popular as an in-line type, with the U.S.A. still producing the bulk of straight-eights, abetted by Bugatti, Delage and Renault in France, Mercédès-Benz and Horch in Germany, Minerva in Belgium, Alfa-Romeo in Italy and Daimler in this country. In spite of the complications of crankshaft design and accessibility, the V form of construction is tempting in point of compactness and good fuel distribution. In eight-cylinder types, Autovia, Cadillac, Ford, Horch, Jensen, La Salle, Riley and Standard employ the V formation and all the twelve-cylinder cars—Delahaye, Hispano Suiza, Lagonda, Lincoln and Rolls-Royce—are V types, though M. Voisin has contrived to build a straight-twelve. Constructional methods remain normal, with A.C. using wet-liners, Lancia employing light-alloys extensively and other makers using steel liners in alloy blocks in isolated cases. Cylinder-wear is being combated by numerous means and has been the subject of extensive research. Thin steel-backed bearings, manufactured to very fine limits and strictly interchangeable, have come into use for journals and big-ends, notably those of Messrs. Vandervell Products Ltd., used by Alvis, S.S. and Talbot, etc. Crankshaft design has improved out of all knowledge and balanced stiff shafts in rigid crankcases have rendered the highest output engine smooth at all rates of revolution. The use of one carburetter per pair of cylinders continues to be popular, possibly because in this age of Belisha-lamps rapid pick-up is essential and designers are loth to rarefy the mixture by hot-spotting, more especially as accurate hot-spot control in accordance with exhaust volume is not easy to ensure. Supercharging makes no appreciable headway. The new Atalanta has an Arnott vane-type compressor which can be disengaged by operation of a cockpit lever, a method used by Stutz when a blower was applied to the "Bearcat." Mercédès-Benz retain their famous clutch-controlled Roots system on the 5.4-litre straight-eight engine, Alfa-Romeo still use their double Roots blower on the sports 2.9-litre chassis, and Frazer-Nash use twin Centric vane compressors on the 1½-litre "Shelsley" job. As the Mercédès-Benz comfortably exceeds 100 m.p.h. with closed bodywork and the "Spyder" Alfa does over 110, and the "Shelsley" Frazer-Nash is probably the highest performance production-model 1½-litre in the world, forced induction has its merits. But the ordinary car used will not tolerate the increased fuel consumption, often occasioned by the very inefficiency of the engines to which proprietary layouts are tacked. Marshall Roots and Centric and Arnott vane-type superchargers are still available as proprietary articles and we believe A.C. are interested in the application of the latter type to their cars. Auburn, Cord, Brough-Superior, Lammas, and Lammas-Graham are available with low-pressure centrifugal boosters, and O.M., Rapier and Alta list blown models. Jensen now fit a turbo-impeller to their larger V8 model for £45 extra cost. The Type 540K Mercédès-Benz, father of all production supercharged cars, gains 65 b.h.p. by reason of the boost, with no increase in engine speed, which its clutch system of control makes available for acceleration as well as speed increase. It is in many ways the ideal form of forced-induction application. Otherwise the supercharger-outlook is stagnant and even Mr. Geoffrey Taylor, who has been making his own Roots blowers for the racing and super-sports Altas, contemplates introducing a range of unsupercharged cars.

Lubrication systems now cope adequately with bearing loadings, and naturally pressure-feed is universal, though that essentially reliable high-performance car, the Railton, uses a modern version of splash-feed. Dry sump lubrication makes no headway, even Aston-Martin having dropped it for all save their Speed Model of the 2-litre range. Base chambers

THE TREND OF DESIGN—continued

are frequently ribbed, but all too often tucked away behind dumb-iron aprons and fancy fronts, though increased capacity seems to look after cooling well enough in most instances. Some makers have developed a horrible habit of omitting an oil-gauge from amongst the facia instruments, and that is a pity, because an oil-gauge has so many tales to impart to a knowledgeable driver. Ignition is universally by coil, which doesn't seem to matter so much now that the system is generally understood and modern batteries are so excellent, and there is the consolation that if there is insufficient juice to energise the plugs there would be precious little for operating other vitals, such as lights, fuel-feed and even, in some cases, gear shift, if one *could* get going, anyway. But some makers carry such philosophy a trifle far and



The Shelsley model double-supercharged Frazer-Nash. A. P. F. Fane is seen in the Paddock at Shelsley.

omit any provision for hand-starting, as, for instance, Opel, which makes it almost essential to turn the car into a service depot for major overhauls.

At last suction as well as centrifugal ignition-timing control has arrived, though naturally a sports-car driver likes to have a hand override, and hand control only is desirable on cars specially sensitive to ignition advance, except where sold to a class of person who would never use a minor hand control—even direction indicator switches are forgotten to-day. 14 mm. sparking plugs assist in conserving space in o.h.v. combustion chambers, and the 12 mm. size may become quite common ere long. Cooling systems if anything seem to overcool engines, but thermostatic regulation is general, applied to the water-flow, as nothing has come of automatic control of fan or radiator shutters. It is distinctly sad that even marques like Alfa-Romeo now employ radiator grilles and concealed filler-caps, with the proviso that the old-style radiator is certainly a very weighty component. Very considerable progress has been made in the matter of cylinder and head cooling, largely on account of the improved castings now possible, and when use is made of this factor to diminish the hot-exhaust-valve bugbear, astonishingly high compression-ratios can be employed with normal head design and commercial fuels. Outstanding examples are the new 3½-litre and 1½-litre S.S. cars, in which water is pumped at high velocity over the exhaust ports, exhaust-valve guides and around the plugs, leaving the head via three large-bore take-off pipes, enabling 7.2 to 1 compression-ratios to be used. There continues to be a general simplification of component drives, and belt-drive is widely used for auxiliaries, including water-impellers and even water-pumps. Alvis do all their own iron and alloy foundry work, and the old weathering process of cylinder hardening is made use of. Detail design still varies very materially, make by make, as, for instance, the nine springs per valve used by Alvis against a single spring and leaf tappet-adjuster of the S.S. valve-gear. Unfortunately in a brief survey such as this we must now pass to the chassis.

Clutches, in spite of the abuse they frequently are called upon to withstand, function astonishingly well. Flexible mounting of power-units is apt to result in a sense of vagueness of operation unless the pedal linkage is well designed and this portion of the withdrawal mechanism can be too flimsily constructed. The single-plate class of clutch is universal and Ferodo is a much-used lining. Synchro-mesh gear-change has engulfed us, but fortunately it has improved considerably all round during the past year and double declutching is now usually possible for those who prefer, without the dogs tying themselves in knots, while remote-control can safely be employed without the short lever movement resulting in a speed of manipulation able to defeat the synchro part of the mesh. And there is no doubt that a well-placed rigid remote-control adds enormously to the pleasure of handling. One can hardly forgive the designer of a £700 car who, in providing it, gets his lever movements reversed and still omits to fit a reverse catch, however. The open gate change we have to mourn, unless we drive an H.R.G., the Moss gearbox of which has an excellent remote gated change. Actually, some makers do still pay their clients the compliment of using quite "plain" gearboxes, including Bianchi, B.S.A., Bugatti, D.K.W., H.R.G., Jowett, Opel, Lancia, the larger Railtons, and Terraplane. Nor does the change need to be difficult, given stiff shafts and properly-ground gears. The disadvantage lies in the inability to use silent pinions, but from what we have heard with some so-called silent boxes, this may apply more in theory than in practice. Bugatti actually uses silent pinions, but has a dog-clutch engagement calling for normal handling methods, and H.R.G. likewise has a dog-engaged silent third. The famous Wilson pre-selector box, proved thoroughly in racing, is found on Alta, Autovia, Cord, Darracq, Rapier, and Riley sports models. Mercédès-Benz have a special box on the Type 540K, which has been fully described in MOTOR SPORT and the 2-litre Frazer-Nash-B.M.W.s have an automatic free-wheel operating on the two higher ratios, permitting foolproof changes. Otherwise the free-wheel is used only by Rover and D.K.W. amongst cars of note. Electric change is found on Atalanta, Delage, Delahaye, Invicta and Hudson, and certain sports-cars are available with Wilson epicyclic boxes as an extra. Frazer-Nash retain their famous all-chain transmission of many merits. Synchro-mesh for all ratios figures on Alvis, Humber-Hillman and Talbot productions. Gear levers, as we have said, are often remote-control type on sports and semi-sporting cars, but, just as there is a subtle difference between the external aspect of the thoroughbred's engine and that of mass-produced cars, so the layout of remote controls varies considerably. The aristocratic right-hand lever is found on the 4¼-litre Bentley, and both Rolls-Royce models, and Rapier has right-hand conventional lever control of a Wilson box. Lockheed have introduced a useful "hill-holder" which should be universally fitted judging by the number of persons who run back when restarting on hills, and in view of the weird places modern designers put equally weird hand-brakes. A possible development is a system of pre-selection with a synchro-mesh box. Overdrives are found on some American cars and used by Mercédès-Benz, Riley, Atalanta and Jensen. It will probably prove essential for *Autobahn* use. The Type 320 Mercédès-Benz, with a maximum of over 90 m.p.h., and a sustained cruising speed of 82 m.p.h. in closed form, portrays the influence of *Autobahnen*.

Front-drive features on the B.S.A. in this country, the excellent French Citroen, and the Hotchkiss, the Adler, Audi and D.K.W. from Germany, and the Cord in America, after practical pioneering by Alvis and Tracta. It exhibits its full advantages combined with a flat

THE TREND OF DESIGN—continued

platform frame or backbone chassis. The B.S.A. Co. have recently stated that their cars restart happily on greasy 1 in 4 grades and our own experience suggests that lack of grip is not a major disadvantage, except, perhaps, on mud surfaces.

Normal transmission is by open shaft, now well balanced and with thoroughly reliable universals, to a spiral-bevel rear axle. Dipstick oil-level indicators gain ground, and steel banjo axle-casings hold the fort, with rubber effectively used to deaden sounds. Too many inexpensive 1937 cars developed noisy axles very early in life. Frame design has passed through a multitude of stages and now box-members are popular for obtaining stiffness, with less accentuation on cruciform centre sections for this purpose. Very stiff frames make for " dead " riding. Skilful use is made of electric flash, spot and oxy-acetylene welding, but if stiffness is gained, weight reduction seldom follows. The revolutionary Hotchkiss Alpax one-piece construction gives appetising food for thought. One-piece construction, introduced ages ago by Lagonda and Lancia, or backbone frames are future developments, but limited to large-output construction and single body styles in the former instance, hence the recent Aprilia Lancia change.

Lockheed hydraulic, Bendix semi-servo and Girling direct-action brakes fight a continued battle amongst proprietary systems. From data recently included in a contemporary's road-tests it appears that the mechanical systems impart the lightest pedal pressures, though it is early to quote without comprehensive figures. Generally, modern brakes are very excellent indeed. Bentley and Rolls-Royce alone retain servo-motor actuation ; a particularly excellent piece of detail design, incidentally. We prefer hand-levers between the front seats, where benches are not fitted, to dash-placed pistols. Steering is varied. Sometimes five turns are required, lock to lock, and the Minister of Transport might well enforce a maximum of three turns. The Frazer-Nash-B.M.W. remains the finest modern steering we have tried, though its fascinating smoothness of action is being wooed by others, usually with lower gearing and seldom the same accuracy. We believe two-speed steering has arrived—in America. Automatic chassis lubrication figures on A.C., Alvis, Autovia, Brough-Superior, Daimler, Lea-Francis, Rover and Triumph cars, and the same effect by one-shot layout is found on the large Alvis, Audi, Bentley, Darracq, Delage, Frazer-Nash-B.M.W., Horch, Invicta, Lagonda, Mercédès-Benz, Riley and Rolls-Royce. Lea-Francis have a propeller-shaft in two sections, with a bearing on the frame, like the Austin Seven. Permanent jacking, so appreciated by sports-car users, is standard on A.C., Alvis, Aston-Martin, Autovia, British-Salmson, Brough, Darracq, Hansa, Lagonda, Lammas, Lea-Francis, M.G., and Rolls-Royce chassis. And so we come to that very important matter, suspension. Independent suspension, even on quite inexpensive utility cars, makes good headway. For steering accuracy, maximum acceleration and braking adhesion, and greater comfort, both by reason of more level riding and the possibility of employing softer springs, there is a great deal to be said for independent suspension all round. The criticism that this gives rise to rolling is hardly serious, and the reason that only a limited number of makers independently suspend the rear wheels is attributable to the extra complication of hinged drive-shafts. Those who do comprise Adler, Alfa-Romeo, Austro-Daimler, Buick, Hansa, Hotchkiss Ten, Imperia, Lancia Aprilia, Mercédès-Benz, Steyr, and Wanderer. Horch uses jointed shafts but ties the wheels with a light axle to prohibit rolling, as on the forward drive D.K.W. Front independent suspension only gives vastly improved riding over bad roads and definitely increases steering accuracy, while, well carried out, very supple springs can be employed with perfect road adhesion, as instanced by the behaviour of all Frazer-Nash-B.M.W. models. The following British makers have adopted front independent suspension (we include utility types) :—Alvis, Atalanta, British-Salmson, B.S.A., Daimler, Hillman, Humber, Invicta, Lagonda, Lanchester, Morgan, Rolls-Royce, Talbot and Vauxhall. It is in the same stage of development that front brakes were in around 1923-4 and divers systems are in use. Wishbone layouts allow the wheels to move in an arc and court gyroscopic motions unless very carefully designed, swinging arm systems alter the wheelbase with wheel movement, and Lancia and Morgan alone use vertical sliding guides. Similarly, there is much variation of springing methods, Alvis, British-Salmson, B.S.A., Hillman, Humber, and Talbot favouring transverse leaf springs, Atalanta, Rolls-Royce, Daimler, Lanchester, and Morgan coil springs, and Lagonda a torsional method, while the Vauxhall has the Dubonnet system. The fact has to be faced that well designed conventional layouts give extremely good road-holding, instanced particularly by Bugatti, Bentley, M.G., Aston-Martin, S.S., and Frazer-Nash. Bentley, Aston-Martin and M.G. use cables or arms to steady the front axle, and Bentley, Rolls-Royce and Lagonda have driver-controlled shock-absorbers of Luvax manufacture.

Here we must leave this very big subject. If this survey has been less interesting than that of the previous year and rather more a tabulation of makers' tastes than a story of startling engineering innovations, we must plead lack of space and the fact that design has progressed steadily rather than in revolutionary jerks emphasised by individual exploitation of advanced ideas. This is as it should be, for thereby does a much wider public enjoy the benefits of engineering and constructional advancement. We can congratulate ourselves on the excellence and variety of the sports and semi-sporting models, in particular those of British manufacture, and remind ourselves that utility types have exhibited very little progress since about 1932 in respect of improved performance, because every increase in engine-power has been cancelled by increased weight resulting from larger bodywork or multiplication of equipment. Designers of high-performance cars must guard against such a trend in the future. Those who are interested in this question of design trend should read this article in conjunction with that published in our issue of December 1936, because a year's development hardly allows a broad appreciation to be obtained.

Part II, dealing with racing design, will appear in next month's issue.

AN OLD MASTER RE-DISCOVERED—continued from page 58

above the frame, an unusual feature, and runs across behind the radiator.

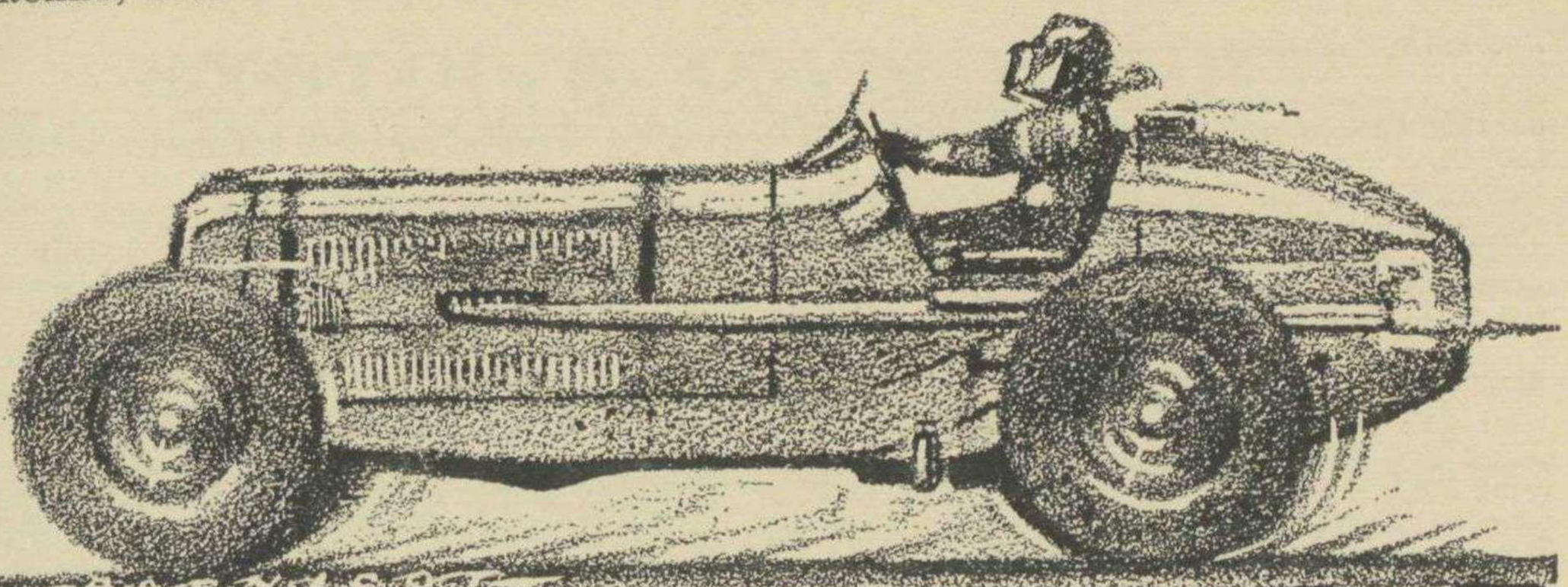
At present a 10/48 rear axle is fitted, and the caution mark on the rev. counter begins at 6,600 r.p.m. In its original form, the engine developed 160 b.h.p. at 7,000 r.p.m., using a fuel consisting of 56 per cent. alcohol, 40 per cent. benzole, and 4 per cent. ether, so that with modern developments in racing fuels the power could certainly be increased.

The car is also much changed in appearance from the days of the British Grand Prix, when its sharply sloping square radiator was quite distinctive.

In its modern form, as assembled by Thompson and Taylor's, it will be strange if the car, in the hands of as good a driver as Powys-Lybbe, does not prove a formidable contestant, and its début in the coming season will be an event of note.

WHERE BROOKLANDS SCORES

We have remarked previously on the difficulties that arise when a road-circuit is opened to members of the public. This was nicely emphasised by Mr. Percy Bradley in " The Sphere " last month, wherein he stated that he only once opened the Mountain circuit at Brooklands to ordinary drivers, and had in one day two hospital cases, whereas during his eight years as Clerk of the Course he has not experienced a single casuality amongst members of the general public using the outer-circuit. A rapid run round Brooklands is a great tonic, so this is cheering news. The difficulty of similarly opening a road-circuit lies not only in the funny things novice drivers do when trying to corner fast, but in the difficulty of observing an accident immediately it happens, for the prompt rendering of aid. Donington inner-circuit we believe is opened at times to manufacturers, but the Crystal Palace has never been open to non-racing folk. Mr. Bradley's experience would be even more interesting if backed by figures for annual usage of the Track on non-race days, but as takings at the gate are not sub-divided, such statistics are impossible to come by.



RUMBLINGS

Heartiest Congratulations

IT'S great news that Charlie Dodson is being given a trial by Auto-Union, with a view to a place being made for him in the Grand Prix team. Of course, everyone would like to see a driver of Dodson's calibre at the wheel of a car produced by his own country, but an artist's style should never be cramped, and one rather expects an Auto-Union to be more rapid than anything we can offer. That Dodson has been recognised by Auto-Union in spite of the maximum speed of the cars he has been driving not exceeding about 140 m.p.h., indicates that it is his corner-artistry and general bearing as a racing-driver that are outstanding. In offering Charles Dodson, ex-racing motor-cyclist, our very heartiest congratulations we should spare a thought for Lord Austin, whose racing participation has given Dodson an opportunity of showing his worth, and for Murray Jamieson, now with E.R.A., who designed the astonishing little racing Austin which Dodson has driven of recent years. Nor should we forget Dick Seaman—not that anyone is likely to—who was the first, and is still the only other British driver, in a German G.P. team. With Dick and Charles as members of rival Continental teams we have one more interest-factor to look forward to this coming season. And we can also congratulate ourselves that if Britain does not build 170 m.p.h. racing cars, at least we have two drivers capable of handling such healthy bolides.

Abingdon Advances

The M.G. Car Co. Ltd. will continue to take active participation in trials this year. The T-type M.G. Midget " Musketeer " team of rather special cars has been pensioned off, and in future Macdermid, Langley and Bastock will drive supercharged T-models, while Toulmin, Jones, Crawford and Imhof will handle T-type cars having 1½-litre power-units. They will be up against the " Grasshopper " Austin Seven team, composed of Buckley, Langley, Scriven, Hadley and Goodacre, whose cars have the ex-racing blown s.v. engines. Other strong teams are the Allard-Specials of Allard, Hutchison and Warburton, and the " Jabberwock " Ford V8 team of Norton, Loader and Koppenhagen, the latter 1933 drop-head coupés with 1938 30 h.p. motors. When will a manufacturer have the courage to enter a team of standard cars ? I believe the Ford teams, of Tens and 22 h.p. V8s, are more or less " off the line " jobs, although they run mainly in M.C.C. events.

A Grand Season Ahead

Soon the 1938 season will be in full swing and we shall be driving with some definite objective, up the Great North Road, or down to Cheltenham, or along the Kingston By-Pass . . . Once again strange lorries and trailers containing exciting racing machinery will journey about the British Isles and car-loads of enthusiastic, curiously-garbed young men and beautifully appointed young ladies will invade our racing venues. The fixtures, except for the clashing of dates, are very nicely balanced. Brooklands will stage the traditional meetings of short and long handicap races, productive of a fascinating collection of entries, this year rounded off by the International Dunlop Jubilee meeting in September. Then, also at Weybridge, we shall have the J.C.C. " 200," over part or all of the road circuit, which attracts all sizes of cars, and is a scratch event with additional interest by reason of special 1½-litre prizes. Then there is the J.C.C. International Trophy Race, over about 250 miles, attracting a similar entry to the " 200 " and akin to a scratch race from the spectators' point of view, yet with the small cars on an equality with the big fellows by reason of the handicap formula. A mass start is a novelty in this race and the lap is the longest used at Brooklands. The B.R.D.C. " 500 " will probably continue as a 300 mile outer-circuit race run at very high speed indeed. In addition, we have the J.C.C. Rally, the J.C.C. Members' Day when amateur speed-kings can drive over a course with corners in the highly instructive high-speed trials, and the M.C.C. Members' Day will include the outer-circuit high-speed trials, a sister series of events to those of the J.C.C., but especially appreciated by drivers whose motors dislike corners, and, to spectators,

RUMBLINGS—continued

equally informative. Besides these fixtures, the Light Car Club has a date in July, when we believe a six-hour event for standard sports-cars is to be run over the entire Campbell road circuit. This should attract the more ambitious sports-car owner, and probably excellent manufacturers' entries, as a first prize in a race is more compensation than a gold medal, for hammering your motor for half a day. The M.C.C. also has a mystery date in June, when they may run the Relay Race, which "Jackie" Masters organised for the L.C.C. last year. If a sports-car event is contemplated they will doubtless confer with the L.C.C. to avoid a clash. Which reminds us that there is scope for a series of outer-circuit races for club-men having greater status than those at J.C.C. and M.C.C. Members' Days, yet with lower entry fees than prevail for B.A.R.C. meetings. "Ebby" should do the handicapping. Moreover, Brooklands starts its year on March 12th, with a B.A.R.C. meeting.

At Donington we have the B.R.D.C. Empire Trophy Race of about 200 miles, attracting all sizes of cars by reason of class handicapping, which at least encourages a comprehensive entry and stirs slide-rule wallahs. Then there is the Nuffield Trophy scratch race over 200 miles for 1½-litre cars, which, now that the R.A.C. race is dead, will be our leading 1½-litre contest. The 12-Hour Sports-Car Race has something of Le Mans status about it and should attract a most imposing entry, especially if some acceptable way of deciding an outright winner is introduced. If the T.T. is abandoned this will constitute our premier sports-car fixture. The Donington Grand Prix, with Continental support promised, is likely to be the greatest British race of the year, run from scratch for all sizes of cars. Apart from these classics we shall have six club meetings at Donington, when lesser lights in sports-pattern cars indulge in real racing, handicap and otherwise, as well as the more important Derby and District M.C. series of races. The Donington circuit has been improved in detail. As already announced, the Crystal Palace will strike a note of its own, with five International fixtures, comprising short heats culminating in a final, also over a short distance, races in which corner-work plays a very big part and pit-work none at all. No small meetings are scheduled at this venue. Sand-racing will continue at Southport and over in Ireland we have extremely important races at Ulster, Phœnix Park, Limerick and Leinster, headed by the Grand Prix at Cork. Of the sprint events, it can be said that they will flourish as last year, with the addition of Prescott's Sunday fixtures, and the Brighton Speed Trials moved to July, when they may enjoy better weather. The Bugatti meeting at Lewes has been dropped, but the Vintage S.C.C. will run a meeting additional to the three organised at this pleasant spot by the local club. I see no reason why Prescott should affect Shelsley, or vice versa. In the olden days there was a sprint meeting every week-end, and, even if gate-money just wasn't, the attendances then realised suggest a place in the world for both Leslie Wilson and the brothers Giles.

Those pessimists who mutter "Too Many Races" must surely agree that the location and variety of the 1938 fixtures could not be bettered. Certainly our big races rather attract all the same entries and are run over identical distances, but the mass of fixtures forces an organiser to play for every car he can attract and to obtain the essential public support it is desirable to start a race about 2.30 p.m. and end it before the audience is bored, or fidgeting about leaving for home, hence the universal duration of 200-250 miles for road races. Taken all round, we who find joy in attending races and analysing results are in for a most enthralling summer, commencing in less than a month and not concluding until Mr. Bradley rings down the curtain on October 15th.

Enough motors? Well, the Austins and Rileys will be running, there are quite a lot of private E.R.A.s, even when the works cars are abroad, and Masers. and Alfa-Romeos will lend support. Arthur Baron may give a new lease of life to the 3.3 Bugatti, Powys-Lybbe's "monkey-gland" 1½-litre Talbot-Darracq will definitely be in the field, and Charles Martin's air-cooled job should be ready. And there are the Continentals . . .

In Retirement

I called on Vernon Balls last month, and discovered that his racing interests have been largely swallowed up by business calls and that, like many other drivers of his day, he feels that in many ways racing isn't quite what it was. Balls had the Amilcar agency for this country since that little sports-car first became known over here. He started racing one of the four-cylinder jobs, complete with flaired wings, in the very dark ages, and by 1927 that car, supercharged, but still with side valve engine, was lapping Brooklands at 96 m.p.h., Balls tells me. Then he turned his attention to the twin o.h.c. Amilcar Six—"an extremely fine little car"—and with one of these he finished third in the 1927 200 Mile Race, being beaten by Malcolm Campbell's Bugatti and Morel's Amilcar Six, and had he not been hampered at the turns by loose sand displaced by a very famous driver he was tailing, V. B. thinks he would probably have been higher up still. One of his sons still runs an Amilcar, a 1929 saloon chassis with two-seater bodywork. About the last model to come to this country was the straight-eight, of which, I was told, eleven were imported. Nowadays Vernon Balls, dapper, bald-headed and dreaming of his racing days, occupies his time running a super-garage in High Holborn. He claims that his car-valeting plant is amongst the most modern in the land, with high-pressure cleaning appliances and air-pressure internal cleaning apparatus, the whole grouped about a grilled floor wash with a car-hoist, having drained runways, in the centre. At the other end of the garage is a car-lubrication bay with mirrors set in the walls, and spotlessly clean Wakefield cabinets grouped round the sides, operatives working in a full-size pit and all feeds being below ground level to obviate oil and grease straying over the coachwork. The equipment includes new apparatus from America, whereby oil is visibly pumped into the sump and the old lubricant that is flushed out can also be seen flowing away through glass tubing. Cars are continually being groomed while their owners toil in offices nearby.

EYSTON'S OWN STORY

WORLD'S FASTEST DRIVER GIVES PERSONAL ACCOUNT OF HIS RECORDS AT THE SALT FLATS

SINCE his return to England in triumph from the U.S.A., the penalties of the successful record-breaker have fallen upon George Eyston. A whirl of social activity has occupied his time, for all kinds of bodies throughout the country have been anxious to do honour to the fastest man on earth.

George has certainly shown himself fully competent in this side of the record breaker's activities, which in modern times has become scarcely less important than skill at the wheel. One of the functions at which he must have felt most at home was the dinner at the Savoy Hotel, London, given in his honour by the British Racing Drivers' Club. At this dinner Eyston gave a most interesting account of his recent experiences at the Bonneville Salt Flats, and in his speech many hitherto unrecorded incidents were brought to light. The difficulties met with may well have been even greater than those mentioned in this personal account, for George is never one to make the most of his own exploits.

The chair was taken by Sir Malcolm Campbell, owing to the absence of the B.R.D.C. President, Earl Howe, in South Africa, and he and other speakers paid tribute to Capt. Eyston's career, in which he has already crammed so many successes. Eyston is only forty years of age, and the hope was expressed that he had at least another twenty years of record-breaking in front of him!

After going down from Cambridge, Eyston started his motoring career in 1923 with various hill-climbs. Lionel Martin, who was present at the recent B.R.D.C. dinner, sold him his first car, an Aston-Martin, which recalls the fact that the name of this famous make is derived from the Aston Clinton hill-climbs, which were prominent at the time, and from Lionel Martin's own surname.

Not long after this Eyston was married, and gave up racing for a time. In 1926, however, he could no longer be restrained, and, returning to racing, won the Boulogne Grand Prix in a Bugatti supplied to him by Malcolm Campbell. He continued with various other successes until in 1931 he turned seriously to record-breaking, a sphere of activity in which he has proved himself more proficient that anyone else in the world, having taken since that time approximately 250 records over distances ranging from one kilometre to 5,000 miles.

In 1931 Eyston was the first man to reach 100 m.p.h. in a 750 c.c. car, and later in the same year covered 100 miles in one hour with the same type. He has naturally had many thrilling experiences, but his only serious accident was also in 1931, when at Montlhèry his car caught fire and crashed. Eyston's forethought probably saved his life on this occasion, for he was wearing asbestos overalls. His famous car, "Speed of the Wind," was constructed in 1935, and embodied many interesting features to his own design, such as front wheel drive and independent suspension.

It was with this car, "Speed of the Wind," that Eyston arrived at the Salt Flats during the first week in September, 1937. The "Thunderbolt" was not yet quite ready and followed a month later. Ab Jenkins, the American, was already there, with his Mormon Meteor Special, in order to attack the 24 and 48-hour records.

Usually a twelve-mile circle has been used for these long distance records at the Salt Flats, but this course was in bad condition, for there was a kind of morass at one end of the lake. An eleven-mile circle was therefore marked out, and Jenkins had "first whack," putting up the 12-hour figure to just over 160 m.p.h., and the 24-hour to 157.27 m.p.h. On the very day that Jenkins finished his 24-hour record, it rained in torrents, and quite soon the entire surface of the lake was three or four inches under water.

A fortnight's wait ensued, to let the water evaporate. Eyston's luck appeared to be out, for when the surface had dried sufficiently, he took out "Speed of the Wind" and promptly seized up the front drive. Meanwhile "Thunderbolt" had arrived, and after a test run at 309 m.p.h., the clutch gave trouble on this machine as well!

However, "Speed of the Wind" was soon put right again, and at midnight George Eyston set off once more to attack the 24-hour record. The reason for starting at this peculiar time was that the prophets had promised fine weather, and no opportunity could be lost. But as dawn broke ominous clouds obscured the sky, and then a violent storm burst and swamped the lake again.

Eyston was prepared for this emergency, and changed over to a ten-mile circle, which had been marked out in readiness, and which was in better condition. Driving at 167 m.p.h., there was a considerable difference between the twelve and the eleven-mile circles, owing to centrifugal force, and even greater difficulty on the ten-mile circle, especially with the surface as slippery as it was. It was then that the vane on the front of the car, a device designed by Reid Railton, was of the utmost service, and Eyston was able to keep going at a speed above the record.

When only half-an-hour of the 12-hour period was left, a further storm broke over the lake, and it became imperative to slow a little. As a result, Eyston failed to get the 12-hour record by a decimal point. He went on for the 24-hour figure, and also during the run made an attempt on the hour record, lapping at 180 m.p.h.



Captain G. E. T. Eyston.

After another wait for the water to evaporate, Eyston set out once more, and this time, lapping at 170 m.p.h., was more favoured by the weather, and got the 12-Hour record at 163.68 m.p.h. Then the supplies for "Speed of the Wind" which he had brought from England ran out, and for this reason only he had to abandon a further attempt on the 24-hour figure, which thus remained in the hands of Jenkins.

Another test run on "Thunderbolt" had been sandwiched in between the long-distance attempts, but the clutch again proved defective. Eyston paid a big tribute to his mechanics, who had to strip the complicated mechanism of the big car three times in all.

At last on November 19th "Thunderbolt" was ready, and the party were up at 2 a.m. It got light by about 7 a.m., and it was evident that there was no time to lose, for black clouds hung over the mountains. The great car was taken out to the record stretch, but then, to show how a hitch can occur even in the best laid plans, it was found that the special fairing to prevent fumes entering the cockpit had been forgotten!

While this was being fetched and fixed in position, Eyston chafed and fumed, for the clouds were becoming more threatening, and the oil was getting cold.

It took sixteen minutes to change all the wheels and refuel, and Eyston set off in the southward direction, a course that he had not previously traversed on either of his test runs. He said that the first indication he had that the speed was up quite a lot was a rag, which had somehow got lodged in the cockpit, dashing past his face, and immediately afterwards his goggles lifted, and he had to haul them back again.

The timed stretch for the kilometre was at the end of the mile, and for the former distance the speed was now 319.11 m.p.h., and for the mile 317.74 m.p.h. Thus it is seen that the car was accelerating right through the distance, and indeed Eyston said he was so exhilarated that he kept on accelerating long past the final mark post.

Eventually he got back to the garage at Wendover, and was just lifting a drink to his lips when someone told him there was a telephone call, and he was asked to broadcast to England, nearly 6,000 miles away. By this time it was raining cats and dogs, and an aeroplane arrived to take him to Ogden to the broadcasting station. He was pushed into the plane, still in his overalls, and at the other end got his talk over.

He thought that "Thunderbolt" still had speed in hand, but a mean speed of 312 m.p.h. was enough to be going on with. If anybody thought it was not real motoring, he recommended, "You go and try it!"

MIDGET AUTO RACING IN AMERICA

MIDGET auto racing, fast becoming a major sport in the United States, attracted more than five million persons to race meets staged in different sections of the country during 1937.

Why, one might ask, has this sport become so popular in the short period of four years? There are many reasons, but the most important is that the sport is crammed with action. Then again, the American public has, and always will be, attracted to a sport that offers thrills. Many persons get a thrill from a hard fought football game, or a baseball pitching duel. Others sit tensely on the edge of their seats watching two boxers in a ring jab and punch their way to fame. But those who have come to know midget racing find more thrills and action in one race meet than in any other sport As one spectator once remarked after a meet, "I feel as though I've been racing with those fellows."

Skill, courage and experience are needed to pilot the little cars, for mechanical genius has developed them to a point where serious injury and death await the reckless and devil-may-care driver.

Many sport enthusiasts have now discovered that the sport is being brought to their "back door." Heretofore it was necessary to travel great distances to see big car races, and the trip discouraged one's enthusiasm. One also quickly notes the cleaner atmosphere along with the fact that every bit of action can be easily seen. Yes, it appears as though the midgets will be around for a long time.

The sport of racing midget cars in America, it is claimed, originated when a number of mechanics and drivers began cutting down stock cars in 1932, but the first midget car was definitely born in 1933 when the late William Betteridge, eighteen-year-old youngster of Los Angeles, California, built a small car powered with a twin-cylinder Henderson motor-cycle motor. The car was considered a novelty and exhibited at a big car race during the same year in Denver, Colorado. Not long after, Betteridge installed an outboard motor in the car and drove it at a speed of over 100 m.p.h. at Muroc Lake, California. Unfortunately, Betteridge was fatally injured last June during a midget race at Atlantic Stadium, Los Angeles, but the youngster had given the racing world something to think about.

In August of 1933 eight cars were assembled at Loyola Stadium, Los Angeles, for the first midget race ever held. To-day there are probably forty tracks, generally one-fifth or one-quarter of a mile in size, upon which the drivers can test their skill. Many tracks are dirt, some paved, others composed of cinders, and may be flat, banked, or of a novel type. Recently an indoor wooden bowl was constructed at the Boston Square Garden, Massachusetts, which to date has been difficult to negotiate even by the best of drivers.

Gilmore and Atlantic Stadiums in California have all the features and colour of the big car tracks. In the East, William Heiserman, leading promoter, stages two race meets a week during the summer months at Freeport Stadium, Freeport, L.I., New York. This Stadium alone attracted over a quarter of a million persons in 1937. Throughout the country, tracks have been specially built to bring this sport before the American public.

The usual race meet begins with qualifying time trials with the driver turning in the fastest time for the oval getting pole position. This advantage invariably resulted in winning the first heat and pole position in the main event. Lately, the inverted start has gained popularity, and at Freeport Stadium all of the fastest cars are arranged in each heat in last positions with the slower cars in front. This system of racing eliminated qualifying time trials and permitted extra events. The main event, however, is generally run with the fastest cars in front. Consolation and novelty races are generally included in the programme.

The inverted start has increased the thrills, in racing, and it is apparent that the driver with a fast car must do some expert driving to get in front. Spectators get their thrills as the little cars jam into the first turn with the drivers of faster cars trying to get through, and the slower cars trying to stay in front. Many times the cars are tightly packed, and drivers speed their cars through a hole when there is an opportunity. Locked wheels, roll overs, spins and stalled motors keep the fans on their toes, and one can never be sure of the winner until he crosses the finishing line.

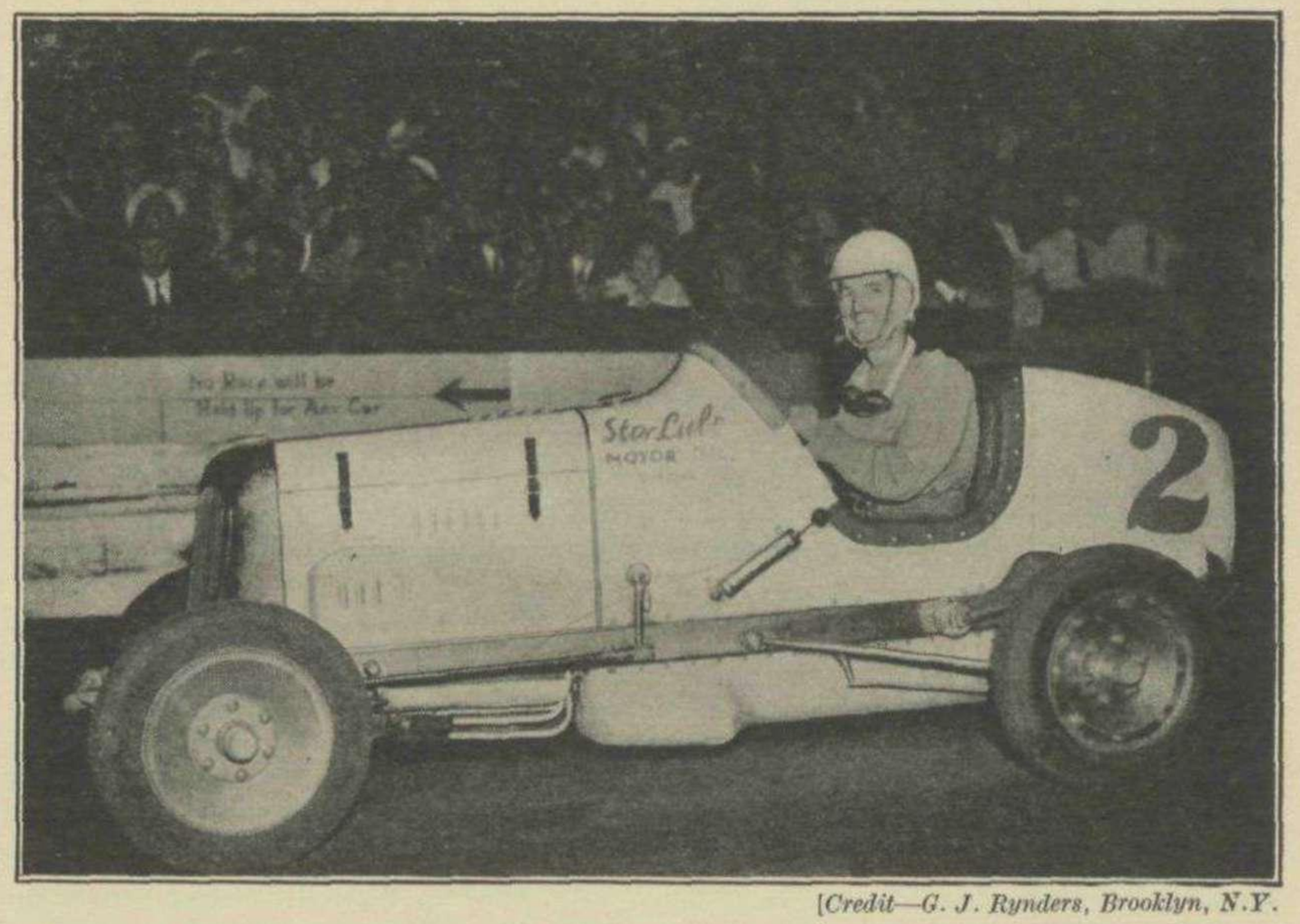
Drivers, with a fair amount of good luck and competing five and six times a week, can win from $400 to $600. At Freeport Stadium, for the season of 1937, a total purse of $54,000.00 was awarded the drivers, and in view of the fact that they also competed at other tracks along the Atlantic seaboard, one will readily understand their profession can be a profitable one.

Probably the most popular midget car is the four-cylinder 100 cubic inch Offenhauser, priced around $3,000. The English two-cylinder JAP midget is also another favourite. Many 4-60 Elto outboards are in evidence, along with a few Millers, Harley Davidson, Bugatti, and Indian powered cars.

Although no governing body rules midget racing, it is generally conceded that if one did Ronney Householder would be selected champion of the small car drivers. A lean young fellow about twenty-eight years old, Householder is an expert mechanic, and a skilful and courageous driver. Originally a resident of Omaha, Nebraska, Ronney has travelled from coast to coast gaining fame at each track upon which he has competed. In 1937 he raced at Indianapolis and Roosevelt Raceway, but his greatest laurels have been won on the midget tracks.

During the last season, Householder won the National 150 mile Midget Classic at the Zeiter Motor Speedway, Detroit, Michigan, covering the distance in 2:18:01.95, averaging about 65 m.p.h. on a half-mile track. On the same track he set a new record in the Offenhauser, covering one lap in 22:82, averaging about 79 m.p.h., which was faster than any big car for the distance. Ronney also set a world's record in his midget when he raced around a one-quarter mile track in 14:69, June 10th, 1937.

Not far behind the great midget driver there are many big car drivers such as Bob Sall, Frank Bailey, and Frank Beeder, all of whom have been crowned champions by the American Automobile Association.



[Credit—G. J. Rynders, Brooklyn, N.Y.

Duke Nalon, one of the leading big-car drivers in the U.S.A., is also a great midget driver.

Continental Notes and News

By AUSLANDER

When is a G.P. not a G.P. ?

I can never understand why the A.I.A.C.R., who are so strict about the arrangement of the International Calendar, allow the name "Grand Prix" to be used indiscriminately. The citizens of Antwerp, for example, have been bitten with the speed-bug and have decided to hold a motor-race for sports-cars on May 22nd. Such enthusiasm is all to the good, but they really ought to be told not to call it the Antwerp Grand Prix.

I may be something of a purist in these matters, but to me a race for sports-cars can never be a Grand Prix, and I shall no doubt be howled down by many when I say that the Grand Prix d'Endurance at Le Mans is misnamed.

There is a simple solution. Let the A.I.A.C.R. decree that the description "Grand Prix" be confined to races run under the existing formula. After all, there are plenty of other names : Circuit, Cup, Trophy, and what's wrong with the common-or-garden Race ?

The Antwerp "Grand Prix," incidentally, is to be for sports-cars of three categories : up to 1,100 c.c., up to 2,000 c.c., and up to 4½-litres. A supercharger will be considered as a 65 per cent. increase in cubic capacity. The distance will be 500 kilometres (which my ready reckoner tells me is 312 miles). Only twenty-four cars will be allowed to start.

We Beg to Differ . . .

The Belgians are taking more interest in motor-racing these days, for they have decided to revive the 24-Hour Sports-Car Race at Spa on July 9th and 10th. There will be four classes : 1,100 c.c., 2-litres, 4-litres and 4½-litres. The most coveted award will be the King Albert Challenge Trophy, which goes to the winning team of three cars.

Here again the supercharger is handicapped to the tune of 65 per cent., and it looks as though the Belgians must have been a dissenting minority when the new formula was discussed by the A.I.A.C.R. You will remember that under the new formula the blower ratio is only 50 per cent.

Personally, I think 65 per cent. is the fairer figure.

French Designs on Mille Miglia Laurels

That sounds like one of those incomprehensible headings you see in American newspapers—and English tabloids as well nowadays. Anyway, you know what I mean, don't you ?

It is just possible that we shall see a French victory (for the first time) in the Mille Miglia this year. The Ecurie Bleue is going to send a strong team of three cars, to be driven by Schell, Dreyfus and Comotti. Talbot-Darracq have not actually entered at the time of writing, but they are expected to send Pintacuda, Chiron and Taruffi. There may also be private entries of a Delahaye by Mazoud and a Talbot by Raph. Italian reply to this redoubtable invasion will be the usual Ferrari Alfas and a Maserati in the hands of Achille Varzi.

Formula Race Prospects

To begin with, at any rate, it looks as though the formula is going to result in much keener competition in Grand Prix races this year. There will be more teams, of a more international character : Auto-Union and Mercédès-Benz from Germany, Bugatti (?), Delahaye and Talbot-Darracq from France, Alfa-Romeo and Maserati from Italy, and E.R.A. from Britain.

I have got a hunch, however, that as time goes on the German cars will once more gain a clear superiority, and that several of the above teams will decide that repeated beatings are neither good advertisement nor good business. I may be wrong—I hope I am—but I don't see the unblown cars being a match for the blowns, when it comes to the all-important matter of acceleration.

In performance the new Mercédès-Benz, for example, will probable be equal to the original Grand Prix cars produced in 1934. In those days the Mercédès engine was 3.5-litres, and developed 350 h.p., or 100 h.p. per litre. Engine research is supposed to have progressed since then, and with higher revs. the new 3-litre engines will probably develop about 350 h.p. Will the unblown 4½-litre Delahayes and Talbots have the same performance as the early Mercédès-Benz ?

Much has been made of the fact that the average speed of the Delahaye and Bugatti, in their timed runs for the Government prize at Montlhèry last year, was equal to the record lap made by the Mercédès-Benz in the 1936 French Grand Prix. People overlook that there were three "chicanes" in that race which considerably slowed the German *bolides*.

It seems fairly certain that the 1938 Mercédès-Benz cars will have eight-cylinder 3-litre engines, on the general lines of the previous models, so as to take fullest advantage of the experience gleaned since 1934. Auto-Union, on the other hand, are rumoured to be changing over to orthodox engine-in-front practice. I say rumoured, because it is impossible to get official information on this point. They will probably stick to sixteen cylinders.

Both Dr. Porsche and Herr Neubauer have made public statements praising the new formula, but giving nothing away as to their own plans. Probably by the time these lines are in print we shall know a little more, because both German teams are scheduled to pay their annual training visits to Monza some time this month.

Ferrari plans are more public, but are unsettled. The Alfa Corse, as it is now known since the racing side of the Scuderia officially merged with the factory, is experimenting with a sixteen-cylinder 3-litre engine, and has meanwhile done a great deal of work on the 4½-litre "twelve" and the 3-litre "eight." It will depend on final tests as to which engine will be favoured. Enzo Ferrari is hard at work with his henchmen Bazzi (who was responsible for the *Bimotore*, I believe) and Marinoni, and the Modena stable is in a state of great optimism at the moment.

Maserati has a 3-litre eight-cylinder engine with twin blowers from which it is hoped to extract many horses and a road speed of 170 m.p.h. The chassis will be similar to that used before, with torsion bar independent springing in front and normal semi-elliptic at the rear.

It is significant that the Germans fear the 2-litre E.R.A. more than the French cars. The Bourne people certainly "have something" when it comes to acceleration, and if only they could combine this with a higher maximum and a shade more reliability, they might be able to do something which has not been done by a British car for fifteen years. Here's wishing them the best of luck.

The Driving Position

The question of team personnel has been considerably affected by the death of Rosemeyer. Auto-Union had accepted Stuck's resignation, and were going to be content with Rosemeyer, Hasse and Muller. But the last two are certainly not experienced enough to rank as first and second strings, and the two alternatives apparent at the moment are that Stuck will be invited to cancel his retirement and lead the team, or that Nuvolari will leave Italy and join Auto-Union.

Alfa Corse will not let the Italian champion go without a struggle, and there is always the possibility of Il Duce intervening. However, the latter will not do anything likely to upset his precious Rome-Berlin axis, and anyway he did not stop Varzi when he went to Auto-Union two years ago. Nuvolari tried an Auto-Union in the Swiss Grand Prix last year, but didn't seem to like the unorthodox layout. But with the engine in front he may be induced to lead the team. Altogether, it looks as though Auto-Unions are in a bit of a spot as far as drivers are concerned.

Mercédès-Benz are in the strongest position of all, with Caracciola, Lang and Von Brauchitsch. Seaman and Kautz will presumably be available for some races, and the two cadets, Walter Baumer and Hans Hartmann, will continue to receive training throughout the season. The Alfa team, apart from the doubtful Nuvolari, will be as before : Farina, Brivio, Tadini and Pintacuda. In addition, Sommer, Villoresi, Biondetti and Siena may turn out occasionally, and it is just possible that the motor-cyclist Aldrighetti may be given a wheel in some races. Maserati will have a strong leader in Varzi, and a brilliant second-string in Trossi. The rest of the team will consist of Cortese, Marazza and Rocca, these three being mostly used for 1,500 c.c. races.

In France, the Delahayes will be driven by Schell, Dreyfus, Comotti and Carriere, and the Talbots by Chiron, Etancelin and Le Bégue.

CONTINENTAL NOTES AND NEWS—continued

Talking of cadet drivers, the R.A.C.I. has a plan for training racing drivers *en masse* which was put into execution last season by the introduction of touring car classes in several sports-car races. This resulted in the number of budding drivers increasing from 235 to 470. Next year these aspirants will be moved up to the sports class, and the logical development seems to be that in 1939 there will be about 500 racing drivers clamouring to join the Alfa or Maserati teams !

On the 1,500 c.c. Front

The excitement of the new formula has rather overshadowed the 1,500 c.c. movement, which made such great strides last season. However, there will still be plenty of fun to be had with the " juniors," and the E.R.A. colours are likely to be severely challenged this year.

The Maserati bolt was rather shot last year, but the Bolognese manufacturer has managed to put in some good work on the cars and hopes to do better next season. Both the six and four-cylinder engines will be used, and it is interesting to note that the former car complies with the new formula specification. In addition, the amalgamation of the Alfa factory with Ferrari seems likely to accelerate the plans for a 1,500 c.c. car which have been rumoured concerning both parties for some time. In fact, I am assured that the Alfa Corse actually has a six-cylinder 1,500 c.c. engine on test, which is good news.

The rumour is given added point by the statement of Emilio Villoresi, who said that he had joined the team to race 1,500 c.c. cars.

A Race to be Seen

I strongly advise Grand Prix enthusiasts to start making plans now to see the French Grand Prix on July 3rd. Arrange to have your summer holidays then, so that you can get to Reims in good time to see the practising.

Here is motor-racing at its best. All the traditional atmosphere is to be found at the magnificent Reims circuit, and the excitement (and the champagne) in the town before and after the race are unforgettable.

All the " boys " will be there this year, most of them at the " Lion d'Or." Team entries have been promised by Mercédès-Benz, Auto-Union, Alfa-Romeo, Delahaye and Talbot-Darracq. There is little fear of their failing to appear, because the first prize is almost up to Littlewood standards, £6,000. The second man gets £3,000. The race will be over sixty-four laps, or 312 miles, and only three cars of each team will be allowed to start.

Crying " Wolf! "

I see the old story of Monza being rebuilt is going the rounds again. I " scooped " this story way back in 1934, I think it was, and since then the scheme has been postponed, resuscitated, and shelved once more, at the beginning and end of every season.

The economic situation in Italy is pretty bad just now, so I should rather doubt that anything will be done immediately.

Perhaps next year . . .

The Curtain Raiser

Once again the Pau Grand Prix will mark the opening of the racing season. This year it has been delayed until April, in order to give manufacturers a chance to complete their new formula cars. The event should provide valuable data for future use. It will be a good test, because the distance has been increased to 100 laps, or 276 kilometres.

Positively Amazing

I cannot do better than end these notes by adding my little paean of praise to Caracciola and the Mercédès-Benz folk on their wonderful Class " B " records made at Frankfort.

Like the writer of American film advertisements, all I can do is to string together a list of superlatives—superb, breath-taking, epoch-making, staggering, amazing, colossal, stupendous—and even then I cannot do justice to the feat of getting 268 m.p.h. out of a 6-litre engine on a 30 ft. road. There is more than a touch of genius about it all.

Here are the exact figures of what will probably rank as the greatest motoring feat of 1938 : Class " B " (5,000 c.c. to 8,000 c.c.) flying kilometre, outward 8.40 secs., return 8.24 secs., mean 8.32 secs., or 268.8 m.p.h. Flying mile, outward 13.42 secs., return 13.38 secs., mean 13.40 secs., or 268.711 m.p.h.

It is difficult to know what to make of the rumour that Rosemeyer was attempting to break Eyston's World Land Speed Record when he met his death. It seems unlikely, unless the car he was using had the fabled 24-cylinder engine in it. Personally, I think it is more likely that he went out to regain the Class " B " records which he had just lost to Caracciola.

LORD NUFFIELD BACKS MAJOR GARDNER

Lord Nuffield, who has recently handed such big chunks of his fortune to charity, and the M.G. Car Co. Ltd., which used to actively participate in racing, are backing Major A. T. G. Gardner in the construction of a 1,100 c.c. car to attack all Class G records.

Robin Jackson will part-design as well as assemble and tune the engine and Reid Railton will look after the wind-defeating arrangements. A speed of 170 to 175 m.p.h. is aimed at for short-distance records. Major Gardner will do his testing at the Avus Track, Berlin, and make his short-distance attempts during the 1938 German Record Week. With another engine he may attempt to raise the Brooklands Lap Record, standing to the credit of John Cobb's 24-litres of Napier-Railton, at over 143 m.p.h. It will be recalled that last year Major Gardner's 1,100 c.c. M.G. just exceeded 150 m.p.h. on a one-way run, and experts then suggested that with new bodywork and enclosed wheels, 170 m.p.h. should be possible. That Lord Nuffield is putting up the money for this all-British venture is extremely gratifying.

ANOTHER BIG HILL-CLIMB ?

It seems that in addition to Shelsley-Walsh, Prescott and Backwell House, we may have another big hill-climb in England this year. The Brighton and Hove M.C. has found a venue on War Office ground which embraces a hairpin bend, S-bend, a horse-shoe curve and a straight, in a total length of 1,200 yards. The hill is at Dover, was discovered by Frank Illingworth and has been approved by the R.A.C. The proposed fixture is for July. Almost a return to pre '25 days.



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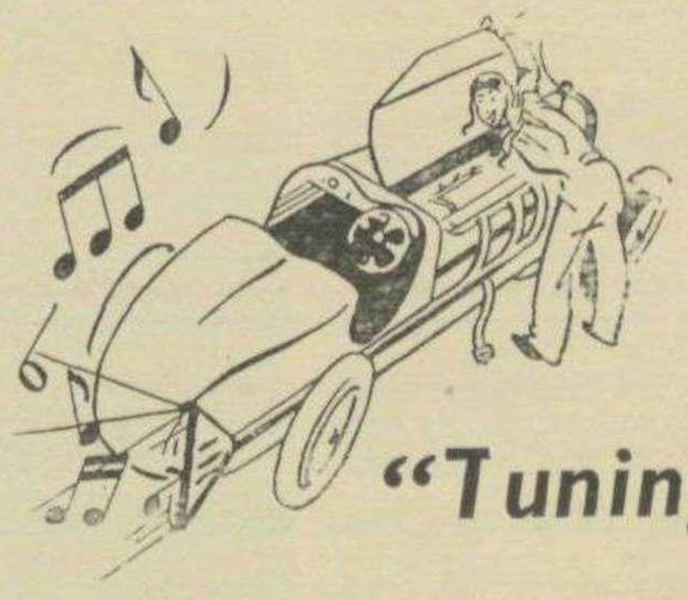
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FINGLE MAKES ITS "MARQUE"

ALTHOUGH the M.C.C. Exeter Trial is now past history, the following observations of a MOTOR SPORT representative are of interest, as a complete record of what happened on Fingle Bridge, the compilation of which involved an all night drive of 200 miles and nine and a half hours at the hill-side. These notes refer to the upper bends of the second observed section :—

M.G. A. L. Baker's Magnette was very rapid, with fierce spin, Biddle's F-type was excellent, likewise Hartnell's, with more spin, while Milnes's N-type was very good. R. D. Harris's T-type had no difficulty, Cornish's T-type made a fine showing, but Scobey's T-type failed high up after a good effort. Weight's T-type had rear-axle judder and failed at the last bend. Sharp's PB, with "comps" on the front wheels, was slow, failing before the middle bend, and Smithies's blown PB stopped by the last bend. Walters's T-type with oversize rear covers was very good. C. A. N. May was excellent, likewise E. H. Goodenough. C. H. Richardson was too slow to succeed, but Delingpole's blown PB with cut-away wings got up. Bayles, Fielding and R. A. Macdermid were very good, but Ainley failed. A. B. Langley made a very quick ascent and Toulmin, Crawford, and Jones were outstanding. Estyn-Jones was good, the crew in awful hats, and Weatherhead very good, and Wilkes had no bother, while Kendrick's T-type made a wonderful recovery. Grove's successful T-type appeared to have a short-silencerless external exhaust system. A. R. Kendrick blipped up well and Hall, whose Magnette had metallic external exhaust, was good. E. J. Haesendonck's blown PB was misfiring but made a truly fine climb. Cook's J2 lost revs. and failed, and Payne did likewise in spite of bouncing on his seat. Bennett's T-type was unworried, lady passenger calmly smoking a cigarette. Moss (blown Magnette) blipped up nicely, by Varley failed. Frey, another who favoured flexible exhaust, could not make it, but Wvidart's s/c P Midget, also with exposed gas-pipes, did a splendid ascent, stones flung away behind. Potter's blown PB was extremely fast but a cracked sump gave rise to bearing failure before the summit. Richardson's T-type just got up, F. N. Crane's passenger bounced vigorously, but in spite of light wings and "comps" on the front wheels, a failure was recorded.

Shattock's ancient 14/40, with fair passenger isolated in a single-seater dickey, stopped at the middle bend, but C. M. Davis was excellent in a T-type, in spite of axle judder. Clare's P.A. stopped, but D. E. Harris's T-type, with oversize rear covers, was praiseworthy, whereas Kirkman's T-type failed early. Rushbrook was clapped for an excellent climb, his T-type using oversize rear tyres, and W. J. Lanes (blown T) put up a simply terrific fight, making best use of throttle and clutch, a splendid show. In contrast, Paul's T-type failed, also Turnill's T-type, and Mobbs's sister car. Montgomery's T-type was very rapid, but both Crundwell and Goodwin stopped low down.

Morgan 4/4. Huxham make a wonderful recovery at the last bend and got slowly up. Coney was successful, but Lilley stopped on the middle bend with spin. W. A. Goodall made a very nice ascent, likewise G. H. Goodall, but Tomkinson failed. Thomas stopped low down, amid oil-smoke, and Boutle did not reach the upper bends unaided.

Aston-Martin. Hitchens broke his rear axle in restarting between sections. Anthony's 2-litre sent back a barrage of boulders and did a typical climb, almost stopping and then pulling away. Stapleton's T.T. job failed by the first bend of the "S."

H.R.G. J. E. West blipped up, and spin slowed Uglow, but did not stop him. Perkins was O.K., and Curtis fought the whole way up in a very fine ascent. Peter Clark used revs. in plenty, getting immense spin, and Undery was just as sure, but slower. Hadley stopped between corners, but Ponting got up, rather slowly, steam showing at the radiator and Miss Redfern bouncing and smiling as passenger in her own car.

Singer. Slade was extremely polished, but Sturgess failed, and then Whittingdale showed us how. N. Miller failed at the last bend of the "S." F. S. Barnes took his 1½-litre up nicely, throwing back stones, with plenty of power in spite of a tendency to mis-fire. J. D. Barnes tried hard, but stopped, but Booth managed it, although slowed by the "S." Bunn made a well judged, slowish climb and Hawkes failed. W. A. V. Davis picked a rapid course, instructed by his passenger, but Walker, fair passenger in the tonneau, stopped. Bacon revved strongly but eased up to fail on the last bend, with spin. Hall failed in spite of bouncing. Christmas made an excellent climb right at the end, but Goodman stopped.

Riley. Roe failed, but Hague gave a fine display of driving skill in his Sprite. Clough was excellent and a stone thrower. Frazer stopped with spin, but although Beetson lost revs. through the "S" he just got up. Fishleigh, with an old Nine saloon, almost failed but pulled away, deservedly clapped for a fine effort, in which his passengers shared. Both Clare and Acres stopped before the "S." Hill on a Nine got up fast with no pother at all.

Frazer-Nash-B.M.W. King had rear-axle judder and was slowish, but Mills's climb was a good effort, while Frost's 1½-litre made a great ascent. Dargue, attired, with his passenger, in a bowler hat, was extremely good with a Type 55, and Hunter and navigator, in fur headpieces, gave a demonstration of a Type 328's b.h.p. Johnson's Type 55 made a very rapid spirited climb, well clapped, and Biggs three-up in a 2-litre, made a beautifully steady climb. Fitt had plenty of horses and made excellent showing in his Type 55, the brake light shining the while to the amusement of the towing-gang, who appreciated this added compliment to the ability of the famous marque.

Wolseley. Mason was good, but Collier slid sideways in the ruts and stopped and Hall failed low down.

Frazer-Nash. Mortyn, his right arm protected by a big metal shield, failed before the "S," likewise Ackery, who favoured a visor.

Bentley. Elgood got up by sheer healthy horses, and Walker, with twin rear wheels, fought his 4½-litre manfully to the top.

Austin. Scriven blipped up, Langley slowed but recovered, and Buckley changed to bottom momentarily, beyond the "S." Cole's blown Seven had ample power in spite of an occasional miss. Goodacre also used his gearbox, and climbed really well, and Hadley seemed to oil a plug but climbed quite undisturbed. Holdsworth lost revs. and failed, but Smith, a bunch of turnips in his Chummy's radiator, was remarkably good. Highland's Chummy got as far as the last corner of the "S."

A.C. Day, looking very stern, just failed beyond the bends, rocking to a standstill.

Triumph. Ferguson climbed slowly and Mills made a steady, altogether excellent ascent.

Ford. Soames was notably clean, but Dryden touched the bank at the top bend of the "S," failing with severe spin. Burton stopped at the first bend, brother Burton smilingly vacating the dickey at the request of the towing gang. Crutch was excellent and Scroggs's Ten just did it. Denton was another "just," and Cleland was good. McEvoy and Whalley failed on the middle bend, likewise Koppenhagen, after sliding broadside. Norton almost slid into the bank on his successful climb and Loader's "Jabberwock" coupé was spirited. Blaw was clapped for a model ascent. Abecassis failed, Tapley's Ten stopped low down and Wisdom got almost round the "S." McGillivray's Eight failed and Laing went in for bank hitting, failing above the "S."

Standard. Rhodes failed with spin.

Morris. Mantle failed very early.

Fiat. Stothert did very nicely after initial spin.

Lammas. Poore was outstanding, slinging boulders in a very fast climb.

Talbot. Barritt's saloon stopped between bends but restarted, only to fail again. Wooding had power in hand and roared up.

L.M.B. Symmons wuffled up quite effortlessly and slowly. L. M. Ballamy's Nine stopped before the "S" and failed to restart in spite of immense spin. Scutts in a V8 taxi stopped before the "S" after a slow run.

Lea-Francis. Burman's 1927 tourer failed between bends. Denyer made a wild very rapid ascent, beautiful to behold.

R.W.J. Special. Jaggard made a steady, excellent climb at low revs., after nearly hitting the bank.

Jensen. Whiddington, wheels spinning furiously, just did it.

Batten. Inderwick failed low down. The bearded Murray-West's coupé was excellent, but Batten slid broadside and failed.

Bayliss-Thomas. Haward's neat veteran stopped at the middle of the "S."

Rapier. Zwick stopped before the "S" and had trouble higher up.

Rover. Twigg's old 2-litre was good as far as the "S" but needed two extra horses thereafter.

S.S. 100. Snell failed low down, but Truett nearly reached the middle of the "S."

THE 18 h.p. LANCHESTER SALOON

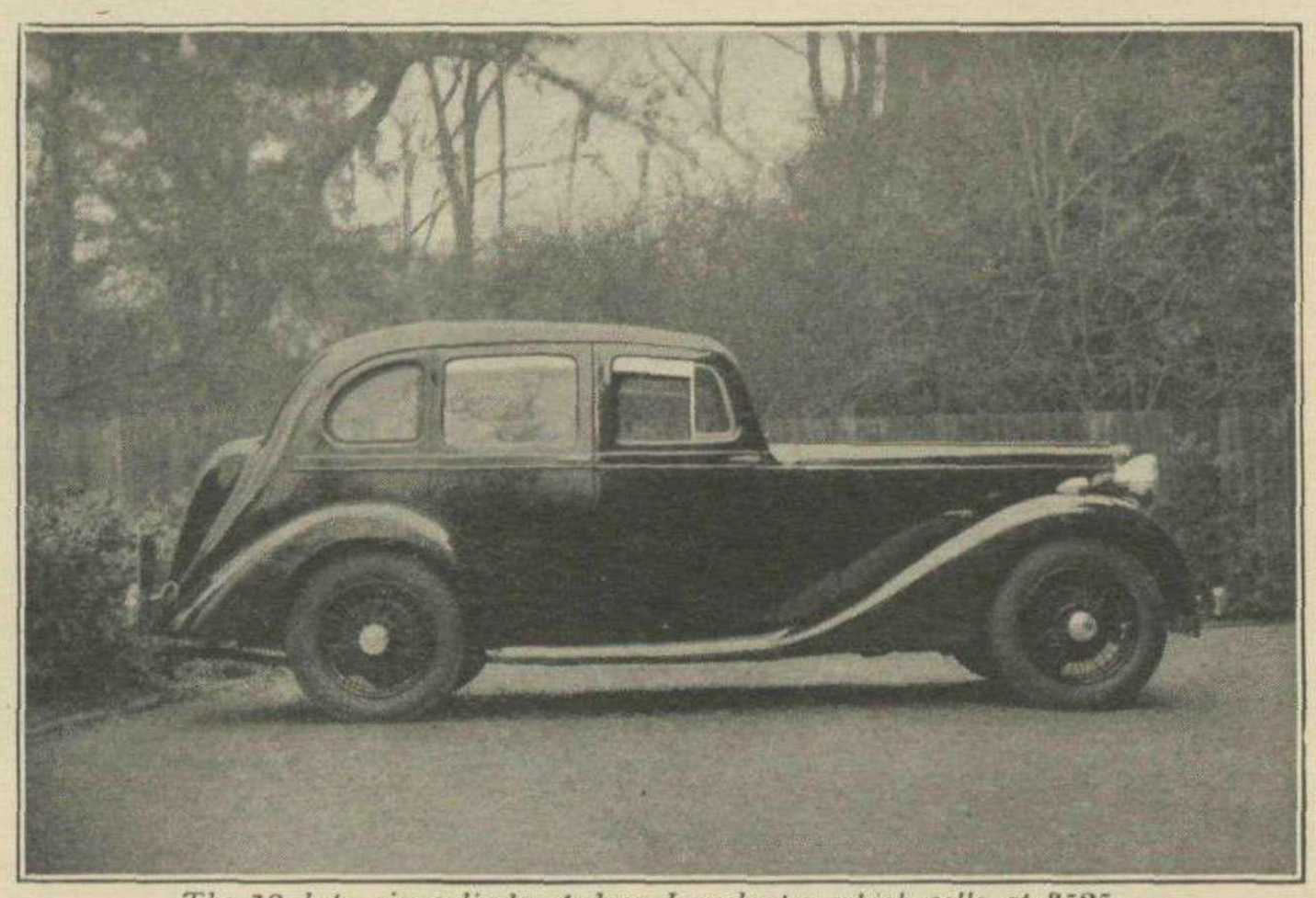
AN EXCEPTIONALLY PLEASANT CAR WITH MAGNIFICENT SUSPENSION

A COMBINATION of qualities in the 18 h.p. Lanchester makes it a very attractive car. Those acquainted with many makes of cars and having experience of previous models of the Marque are able to feel at once that the car has many salient points, the chief of which being its suspension.

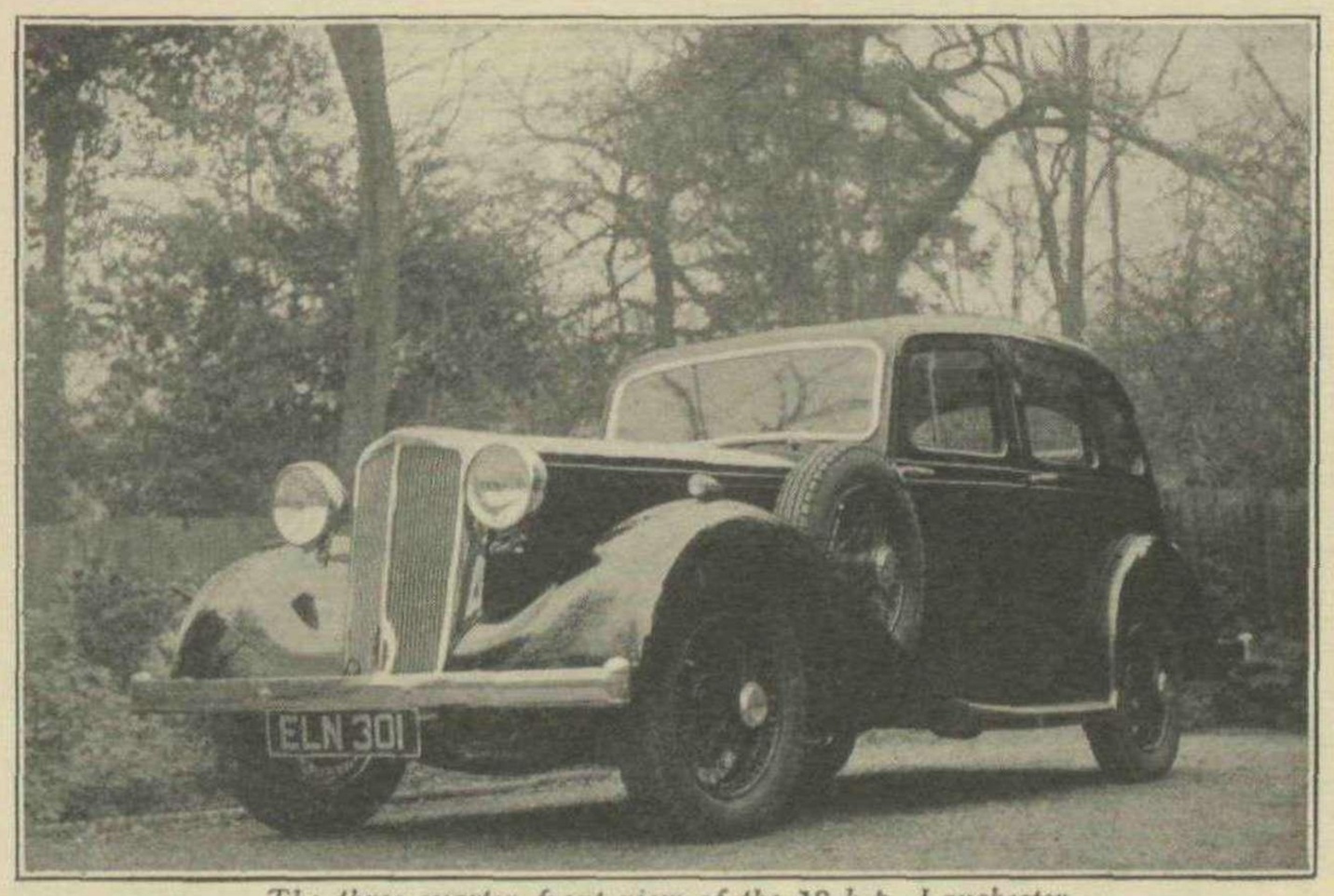
The Lanchester eighteen, as has been found in the past, is not a vehicle to be praised simply on account of one or two outstanding merits—performance, control, or bodywork. It is one in which a state of affairs has been achieved whereby a modern kind of performance is matched by ease of handling, and a balance has been arrived at throughout the car.

The car has the happy facility of being entirely suited to the driver whose principal need may be for running in and around town, since it is flexible on top gear, very quiet mechanically, and sombre of appearance, yet it is full well able to satisfy the same driver when a long distance is undertaken, for the cruising speed is quite high.

The engine runs very smoothly, right from start on to top gear up to the 75 m.p.h. mark or so of which the car is easily capable. The engine is extraordinarily quiet. Good carburation has been secured and the top gear running speed is there if desired. The car is pleasant as regards handling and general control. It feels solid and rides steadily, but is not cumbersome, and it has sufficient weight to keep it down on the road. Driving position is very comfortable, and the view obtained particularly clear.



The 18 *h.p. six cylinder* 4*-door Lanchester which sells at* £525.



The three-quarter front view of the 18 *h.p. Lanchester.*

of the Eighteen is particularly commendable. An unusually good performance is still desired and appreciated by a driver of a car even with the self-changing gear.

On the open road its happiest speed is about 65 m.p.h., without any sound of mechanism, but a real reserve exists and top gear acceleration onwards from this

The instruments are grouped in the centre of the facia board, and consist of a large-dial speedometer.

The finger-tip gear-lever on the 18 h.p. Lanchester is moved to another notch on its quadrant and depress the pedal thereby changing up or down with complete certainty. Any gear can be selected with the engine idling, but because of the fluid flywheel the car does not move forward until the accelerator pedal is depressed.

The coachwork offers a great deal of room, the seats are generous and there is leg room to spare in the rear compartment. The usual fittings are included, such as a rear blind controlled by the driver, twin roof lights with a switch on the centre pillar, pockets in the doors, elbow rests, a folding centre arm rest, a balanced drop window in the forward doors. The sliding roof has a centre lock, and in front of the driver is a neat little self locking blind for use as an anti-sun glare shield.

The spare wheel is housed in the tail with the wheel tools, and the tool kit itself is in a locker underneath the bonnet.

There is quality about this car in its running, as well as an easy performance.

BRIEF SPECIFICATION.

Engine : 6 cylinder. Bore 72. Stroke 105. Capacity 2565 c.c. Rating 19.3 h.p. **Price £525.**

Gearbox : Fluid Flywheel. 4 speed and reverse.

Cooling : Pump and Fan.

Ignition : Coil.

Top gear ratio : 4.86 to 1 ; Wheelbase : 9′ 6″ ; Tyres : 5.50×18.

Price : Chassis £395.

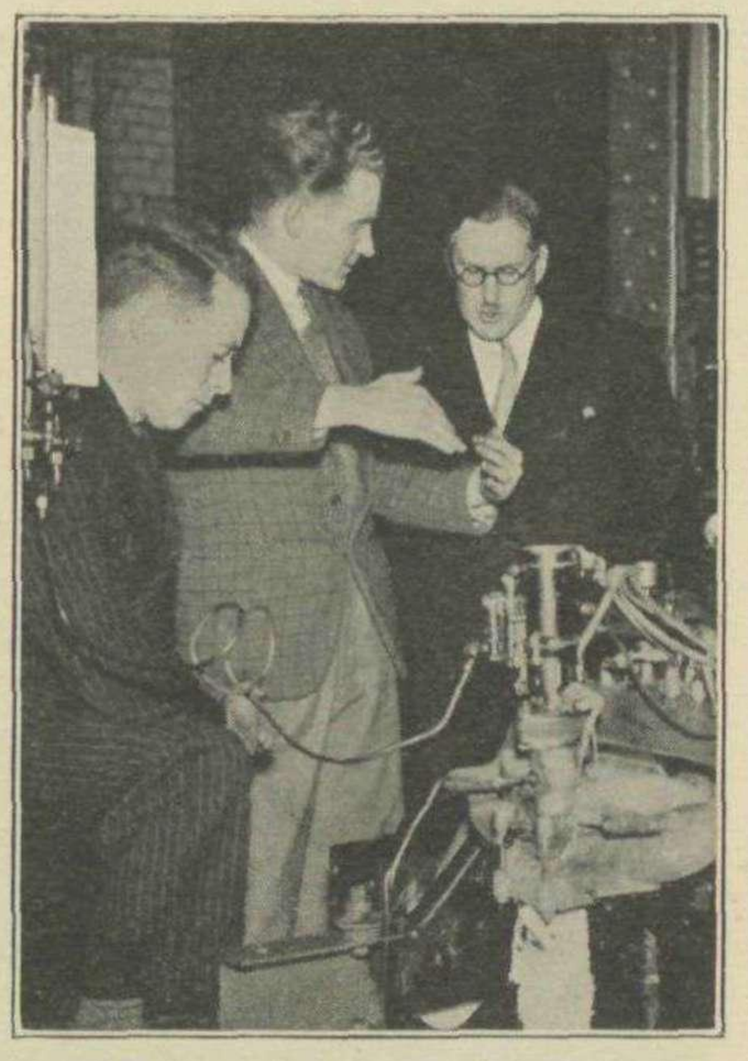
Sole London Agents : Car Mart Ltd., 146, Park Lane, W.1.

TESTING ELECTRICAL EQUIPMENT—continued from page 43

Condensers are tested by means of a 750 volt D.C. supply through contact breakers operating approximately 4,000 times per minute. The charge is measured on a moving coil ammeter, but a thermal ammeter is used for measuring the discharge, owing to its extreme rapidity. Charge and discharge readings should be equal, a low discharge indicating a leaking condenser.

The high frequency test for armatures is to induce current from a 1,000 cycle A.C. field. At every 1¼ revolutions of the rotating armature a white light shows on an instrument panel, ensuring that the tester covers the whole of the armature. If there is a short circuit, a blue light goes up, while a red light indicates earths, and is supplied from a 500 volt transformer. There is also a neon light, which is extinguished if any part of the apparatus is not working properly.

Magnetos were seen sparking at 10,000 r.p.m., and also at the opposite extreme of 60 r.p.m. The windings are first tested separately. The primary winding is supplied at 8 volts D.C. through a contact breaker operating at 5,000 times a minute, and the resulting secondary voltage is fed to a three-point spark gap. An earth prod is used to test the insulation, attracting a spark through any faulty part. Continuity of windings is tested by passing a 2-volt current through primary and secondary windings. The very low voltage supply shows up any tiny break, as the spark cannot jump across.



Captain Eyston in the Research Department on the occasion of the visit of the B.R.D.C. to the Lucas Works.

To adjust the notes of horns by ear would be a noisy procedure, and one lacking in accuracy, and there is an ingenious machine to test the frequency with, apparently, a number of concentric circles all rotating on a dial. When a horn is switched on, a number of the circles begin to rotate in the opposite direction, but between the two sets there is one circle which appears stationary. This gives the frequency of the note, and enables the horn to be tuned in to the frequency of other horns.

The construction of the fog-lamp or pass-light was also demonstrated. A lamp was fixed opposite a screen, and first the effect of the lower half of the reflector was shown, giving the basis of the flat-topped beam. When the upper half was brought into use, the beam was still quite flat-topped, but the light was doubled, though it was all concentrated below the axis of the reflector. With the fluted glass front in place, the beam became broader—it is designed to show up both sides of the road without causing dazzle or upward rays.

Many other processes were seen, often too intricate to be understood at a passing glance, but enough has been said to show some of the careful methods of test and counter-test which have built up the Lucas reputation.

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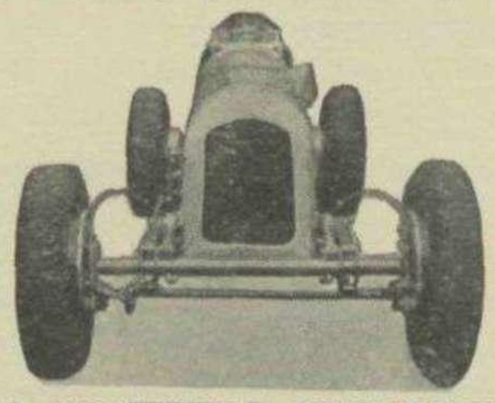
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Make of Car	Issue
A.B.C. 11 h.p. 2-cyl., 2-seater	Feb. 1926
A.C. 2-litre, short-chassis, 15.7 h.p. 2-seater	July 1936
A.C. 2-litre, 16.40 h.p., 3-seater	Oct. 1927
A.C. 2-litre, 16.66 h.p., 2-seater	March 1926
A.C. 2-litre, 16.66 h.p., 4-seater	June 1934
Alfa-Romeo 22.90 h.p. 6-cyl. (push-rod) super sports test chassis	April 1927
Alfa-Romeo 1½-litre supercharged 6-cyl. Charles 2-seater (1929)	March 1934
Alfa-Romeo 1¾-litre supercharged 8-cyl. "Zagato" 2-seater (1932)	July 1934
Alfa-Romeo 2.3-litre supercharged 8-cyl. "Zagato" 2-seater (1933)	Aug. 1936
Alfa-Romeo 2.3-litre supercharged 8-cyl., 4-seater (1931)	Aug. 1932
Alvis 11.9 h.p., 4-cyl., "Firefly" saloon	Feb. 1933
Alvis 4-cyl., 12.60 h.p., 2-seater	July 1931
Alvis 6-cyl., "Silver Eagle" 4-seater coupe (1929)	Aug. 1931
Alvis 6-cyl., "Silver Eagle" 4-seater	June 1930
Alvis 3½-litre saloon	Feb. 1936
Alvis Speed Twenty Vanden Plas saloon	Feb. 1935
Alvis Speed Twenty Charlesworth saloon	Feb. 1934
Alvis Speed Twenty 4-seater	June 1932
Amilcar 4-cyl. 1,100 c.c. "Grand Sports" 2-seater	July 1927 & May 1926 & Jan. 1925
Ansaldo 2-litre, 4-cyl. o.h.c., 4-str.	Sept. 1924
Armstrong-Siddeley 20 h.p., 6-cyl., 4-seater	July 1933
Aston-Martin Mark II, 11.9 h.p., 2-4-seater	Jan. 1935
Aston-Martin Ulster 11.9 h.p., T.T., 2-seater	Oct. 1935
Aston-Martin Le Mans 11.9 h.p., 2-4-seater	June 1935
Aston-Martin International 11.9 h.p., 4-seater	Aug. 1932
Aston-Martin T.T., 11.9 h.p. racing 2-seater	Dec. 1931
Aston-Martin 11.9 h.p. 2-seater	Jan. 1930
Auburn 30 h.p., 8-cyl. supercharged 2-seater	June 1935
Austin Seven Boyd Carpenter 2-str.	Sept. 1930
Austin Seven "65" 2-seater	Jan. 1934
Austin Seven sports 2-seater	July 1930
BENTLEY 3-litre, 4-cyl., 4-seater (1927)	Jan. 1932
Bentley 3½-litre, 6-cyl., Vanden Plas, 4-seater	Nov. 1933
Bentley 4¼-litre, 6-cyl., Park Ward saloon	June 1936
Bentley 4½-litre, 4-cyl., supercharged 4-seater	Jan. 1931
Bentley 6½-litre, 6-cyl., long-chassis saloon (1928)	Dec. 1936
Bugatti 11.9 h.p., Modified Brescia 4-seater	Aug. 1925
Bugatti 1½-litre, 4-cyl., Type 37 G.P. 2-seater	Sept. 1926
Bugatti 3.3-litre 8-cyl., Type 57 saloon	May 1934
Bugatti 2.3-litre 8-cyl., Type 55, supercharged, 2-seater	July 1932
Bugatti 2.3-litre, 8-cyl., Type 43, supercharged 4-seater (1930)	Dec. 1932
Bugatti 2.3-litre 8-cyl., Type 43, supercharged 4-seater	May 1930
Bugatti 3-litre 8-cyl., Type 44, saloon	July 1928
CROSSLEY 20/70 h.p., 4-cyl., s.v., 4-seater	Nov. 1925
Crossley Ten, 1½-litre "Regis" saloon	Jan. 1936
Crossley Ten, 1,122 c.c. 4-seater	April 1932
Crouch Anzani 12.30 h.p., 2-seater	Aug. 1924
FIAT 20.70 h.p., 6-cyl., 2-4-seater	April 1933
Fiat "Balilla" saloon	May 1934
Fiat "Ardita" 17 h.p., 4-cyl., saloon	Feb. 1934
Fiat "Balilla" 10 h.p., 2-seater	Jan. 1935
Fiat 6 h.p. Type 500, Coupe	March 1937
Ford V8, 30 h.p. saloon	April 1936
Ford V8 30 h.p. "Greyhound" 4-seater	Jan. 1933
Ford L.M.B. Epoch 10 h.p., 4-seater, supercharged	Sept. 1936
Frazer-Nash-B.M.W., 2-litre, Type 45, saloon	Feb. 1937
Frazer-Nash-B.M.W., 2-litre Type 55, 2-seater	Nov. 1935
Frazer-Nash Anzani s.v. super-sports, 4-seater	Feb. 1927
Frazer-Nash 6-cyl., 1½-litre (Black-burn) 2-seater	July 1933
Frazer-Nash 4-cyl., 1½-litre push-rod o.h.v. "Interceptor" 3-4-seater	Jan. 1931
Frazer-Nash 4-cyl., 1½-litre T.T. Replica push-rod o.h.v. 2-3-seater	Nov. 1931
INVICTA 12/90 h.p. 1½-litre super-charged 4-seater	Oct. 1932
Invicta 4½-litre low-chassis, 4-seater	March 1931
Invicta 4½-litre Weymann saloon	June 1929
Invicta 4½-litre saloon	Dec. 1929
LANCIA AUGUSTA 11.9 h.p., saloon	Sept. 1934
Lancia Astura, 25 h.p., 8-cyl., James Young saloon	Nov. 1932
Lancia Dilambda 31 h.p., 8-cyl., saloon	Dec. 1930
Lea-Francis 1½-litre supercharged T.T. 2-seater (1929)	June 1934
Lea-Francis 1½-litre supercharged special T.T. 2-seater	Sept. 1933
Lea-Francis 1½-litre supercharged "Hyper" 4-seater	Aug. 1930
Lea-Francis 2-litre 6-cyl., "Ace-of-Spades" saloon	Nov 1930
MERCEDES-BENZ Type 540K, 5.4-litre, 8-cyl., supercharged 2-str.	April 1937
Mercedes-Benz Type 500, 5-litre, 8-cyl., supercharged, 2-seater	Nov. 1934
Mercedes-Benz 12.40 h.p., super-charged 2-seater	June 1925
Mercedes-Benz 36.220 h.p. super-charged, 2-4-seater	April 1928
Mercedes-Benz 38.250 h.p., super-charged, 2-4-seater	Nov. 1929
Mercedes-Benz 33.180 h.p., super-charged, 4-seater	Aug. 1927
M.G., 6-cyl., Mark I, 4-seater	May 1931
M.G. Midget Jarvis 3-4-seater	Jan. 1931
M.G. Magna, 12 h.p. Abbey 4-seater	Feb. 1932
M.G. Magna "L" 2-seater	Nov. 1933
M.G. Midget "P" 2-seater	Aug. 1934
M.G. Midget "J3" supercharged, 2-seater	May 1933
M.G. Midget 750 c.c. Montlhery supercharged 2-seater (1931)	May 1932
M.G. Six Mark I, saloon	Aug. 1930
M.G. Midget Double-Twelve racing 2-seater	June 1930 & Aug. 1930
M.G. Midget "J1" 850 c.c. 2-str.	Sept. 1932
M.G. Magnette "N" 4-seater	Feb. 1935
M.G. Midget "PB" 2-seater	April 1936
M.G. 14/40 4-cyl., 3-speed, 4-seater	Oct. 1925
M.G. Midget "T" 2-seater	Jan. 1937
M.G. 14/40 h.p., 4-cyl., super-sports, 2-seater	May 1927
O.M. 6-cyl., 2-litre, 4-seater	Oct.-Nov. 1928
RILEY NINE "Gamecock" 2-seater	March 1932
Riley Nine "Monaco-Special," two-carb. saloon	March 1931
Riley Nine, 4-seater	June 1931
Riley Nine "Monaco-Special" saloon	July 1930
Riley Nine "Brooklands" racing 2-seater	July 1930
SALMSON 1,100 c.c. o.h.c., Grand Sports 2-seater	Jan. 1926 & Dec. 1926
Salmson 4-cyl., twin o.h.c. Grand Sports 2-seater (1928)	April 1931
Singer 1½-litre, 6-cyl., Le Mans 2-str.	March 1935
Singer Nine, 4-seater	March 1933
Squire 1½-litre, 4-cyl., 2-seater	Aug. 1935
TALBOT "90" Brooklands-bodied 2-4-seater	April 1931
Talbot "105" sports saloon	April 1934
Talbot 3½-litre saloon	March 1936
Talbot Ten "Rally" 4-str.	Oct.-Nov. 1936
Talbot "105" Vanden Plas 4-str.	Nov. 1932
Talbot "90" 4-seater	Nov. 1930
Tatra 4-cyl., 1,154 c.c., coupe	Dec. 1932
Terraplane, 8-cyl., 29 h.p., 4-str.	July 1935
Triumph 2-litre "Vitesse Six" saloon	April 1935
Triumph 10 h.p. 'Gloria Southern Cross" 2-seater	June 1935
Triumph 10 h.p. "Gloria" saloon	Jan. 1934
Triumph Nine "Southern Cross" 4-seater	June 1932
Triumph Eight "Gnat" 2-seater	Aug. 1931
Triumph Eight, supercharged 2-str.	Dec. 1929
VALE-SPECIAL 832 c.c. 2-seater	Aug. 1933
Vauxhall 30/98 O.E. 4-seater	Sept. 1925
Vauxhall 30/98 O.E. 4-seater (1925)	Jan. 1936
Vauxhall 30/98 O.E. 4-seater (1924)	Dec. 1930
Vauxhall 20/60 h.p. "Velox" saloon	May 1929
Vauxhall 20/60 h.p. "Hurlingham" 2-seater	Feb. 1930
Vauxhall 17 h.p., 6-cyl., "Cadet" saloon	Sept. 1931
Vauxhall 14 h.p. "Stratford" 4-str.	Sept. 1933
Vernon-Derby 1,100 c.c. (Ruby) 2-seater	March 1928
WINDSOR 4-cyl., 11 h.p. "Special" 2-3-seater	Nov. 1926
Wolseley Hornet Swallow 2-seater (1933)	April 1934
Wolseley Hornet Abbey AS.3 2-4-seater	Jan. 1932
Wolseley Hornet E.W. "Daytona-Special" 4-seater	May 1932
Wolseley Hornet Boyd-Carpenter ?-seater	Jan. 1931
Wolseley Hornet (12.08 h.p.) saloon	Sept. 1930

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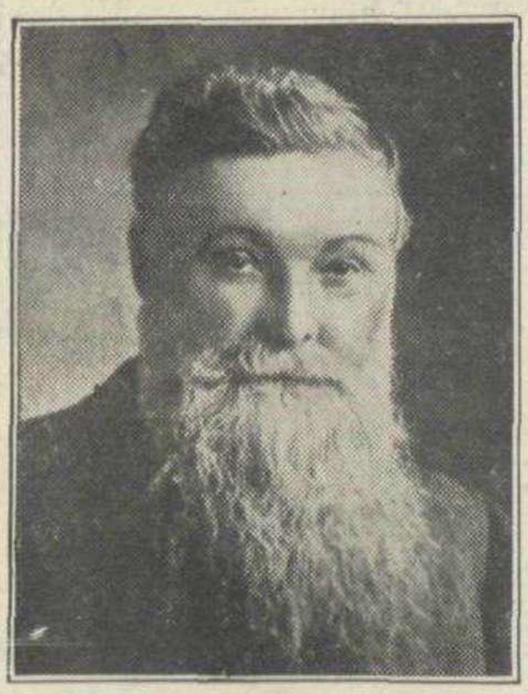
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