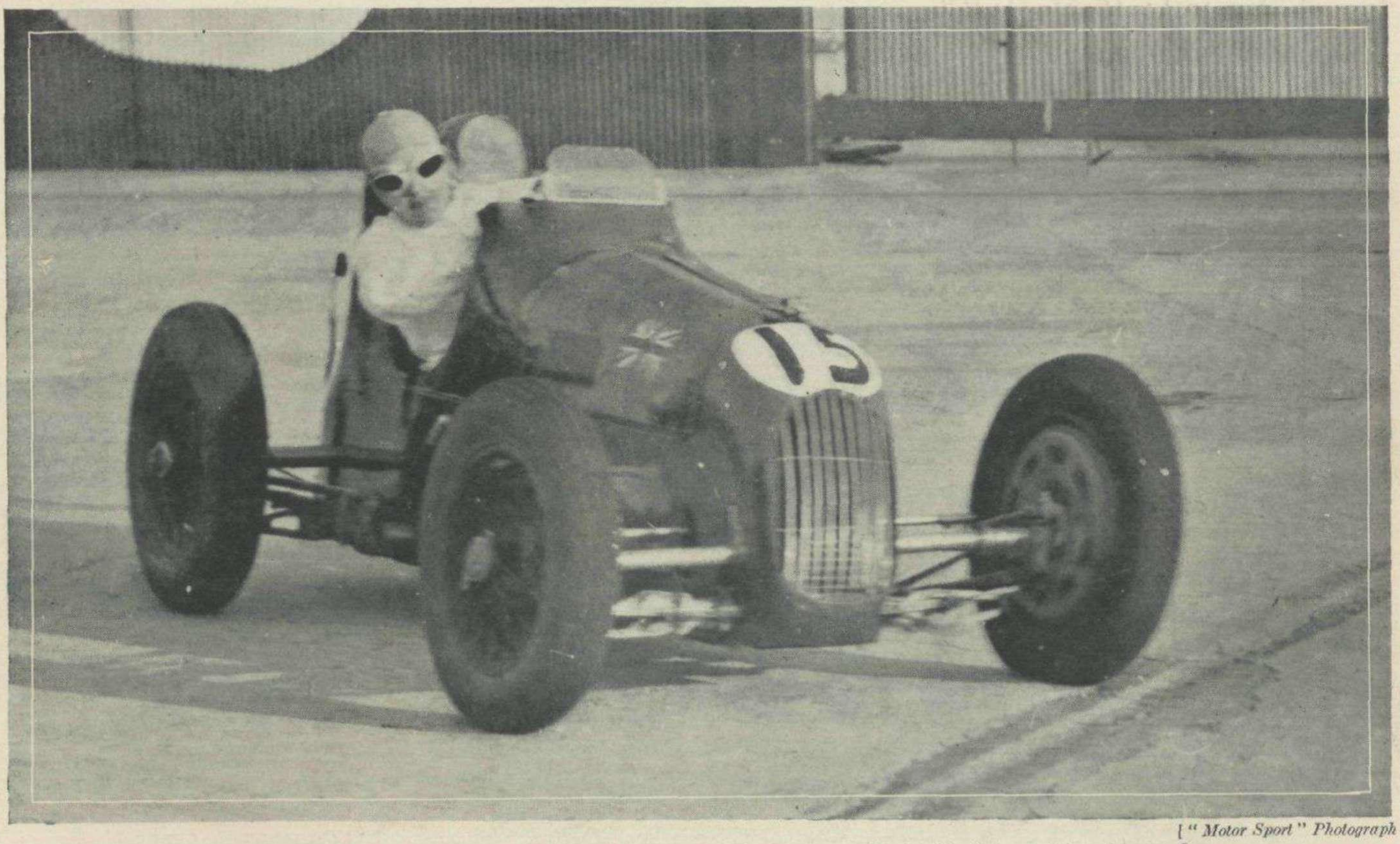
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MOTOR SPORT

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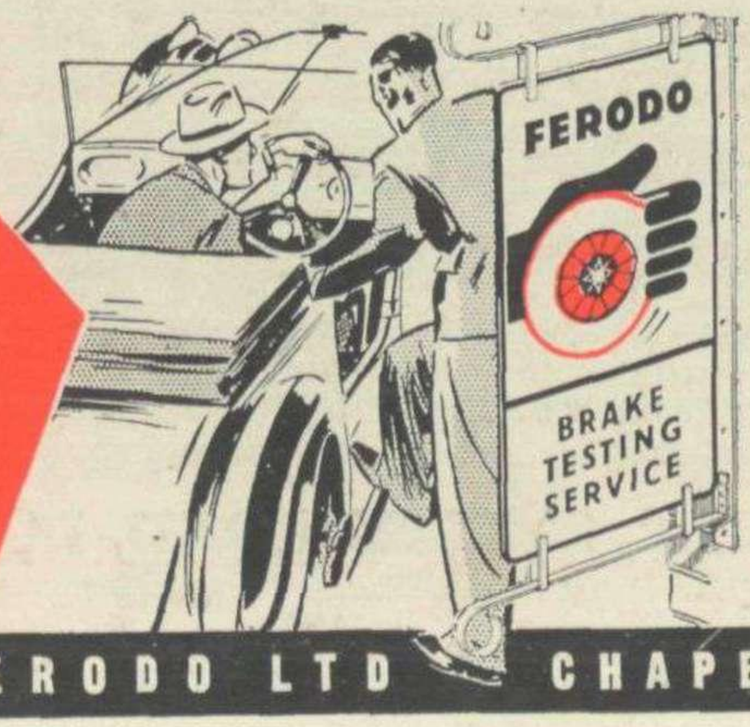
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A consistent performer at Brooklands, Shelsley and Donington—H. L. Hadley and his Austin Seven

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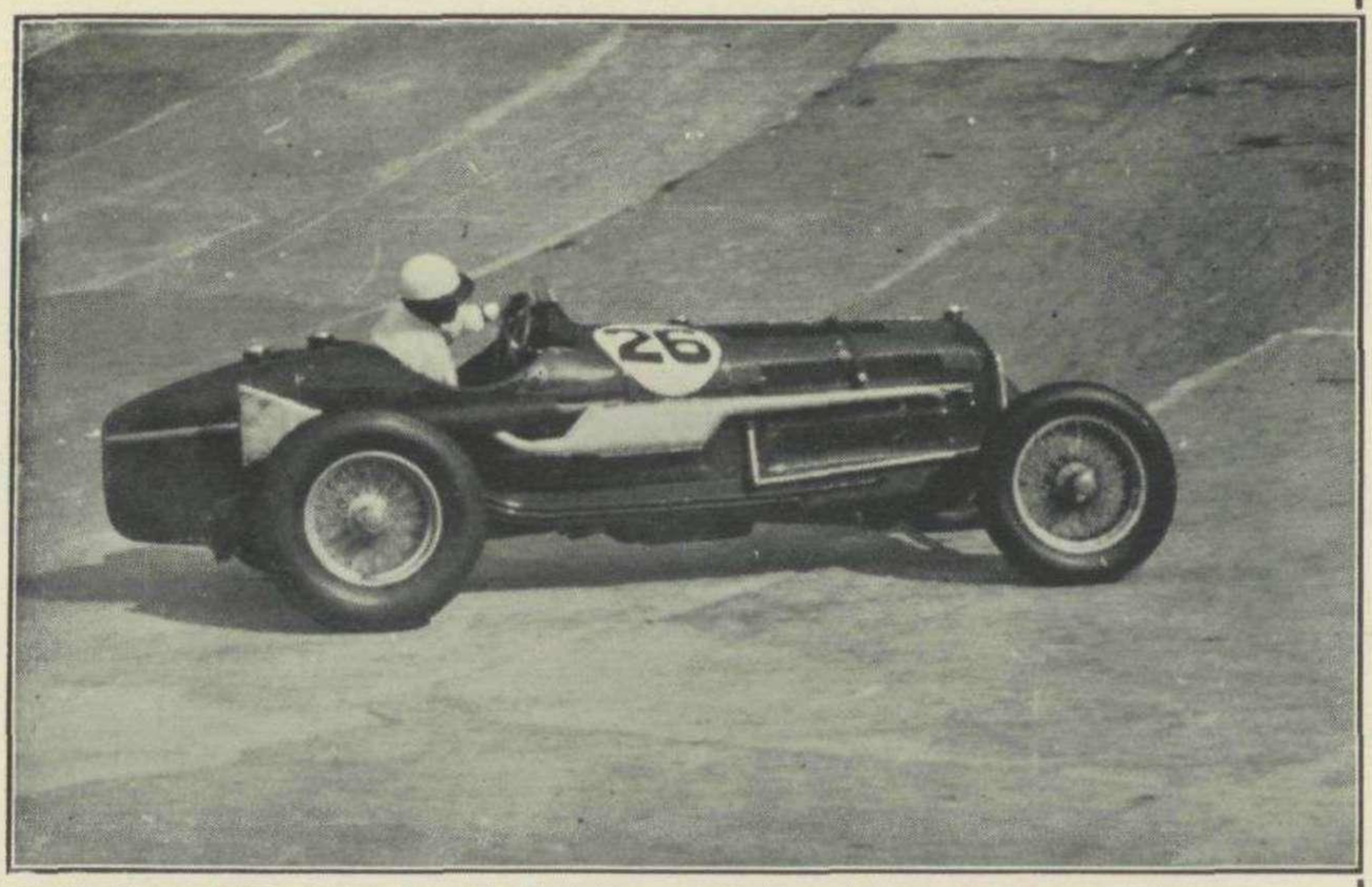
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THE B.R.D.C. BROOKLANDS MEETING, 1938

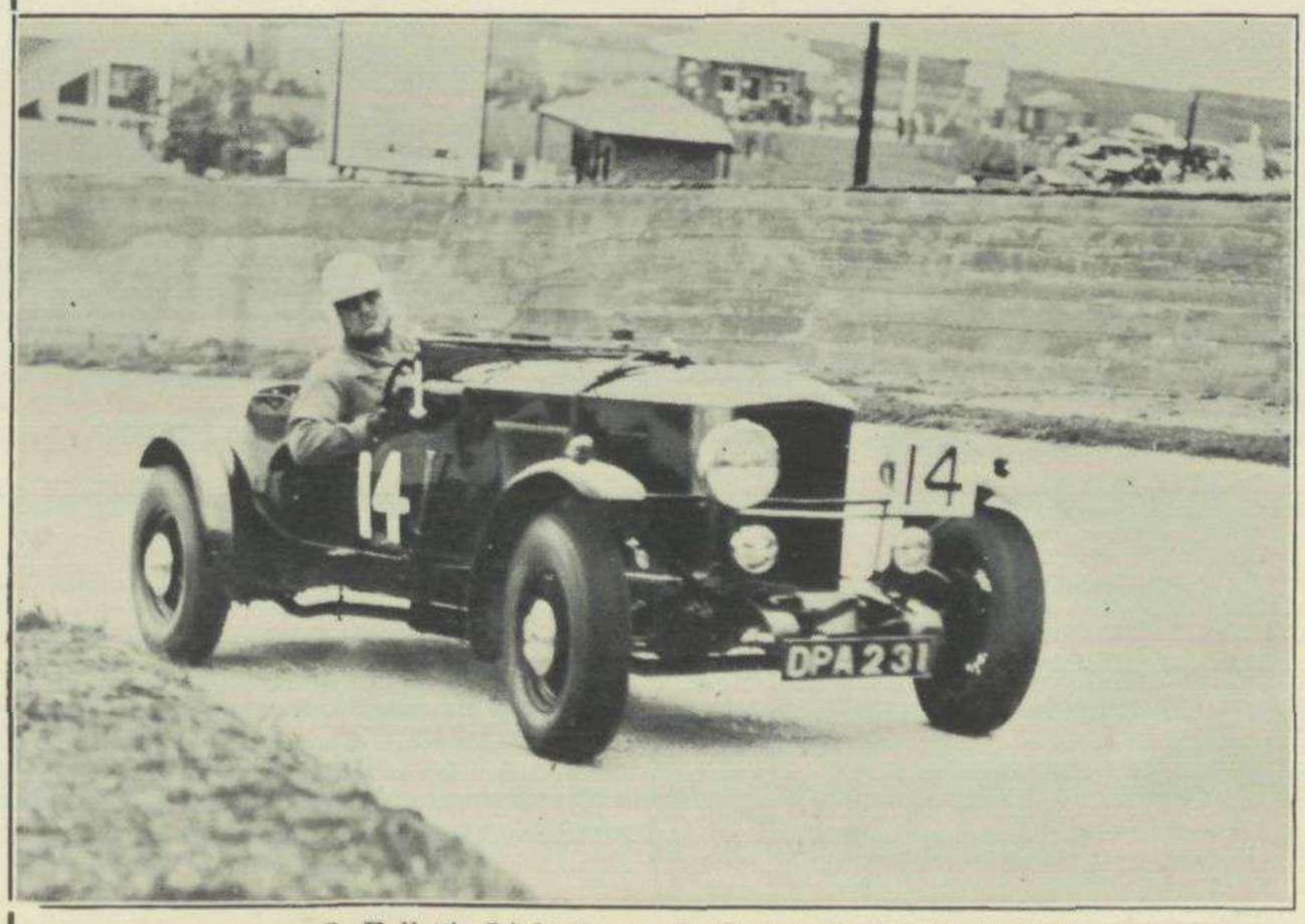
★

WE HAVE MANY PHOTOGRAPHS TAKEN THIS YEAR AT BROOKLANDS, CRYSTAL PALACE, SHELSLEY WALSH, LEWES ETC., WHICH HAVE NOT APPEARED IN "MOTOR SPORT." WRITE TO SEE IF WE HAVE A PHOTOGRAPH OF YOU.



K. D. Evans (Alfa-Romeo) on the Members' Banking after leaving the Road Course.

THE THREE-HOUR SPORTS CAR RACE, 1938



C. Follett's Light Sports Railton at the Motor Bridge.

★

ALL PHOTOGRAPHS OBTAINABLE IN THE FOLLOWING SIZES :—

8" x 6" - - 2/– each

10" x 8" - - 3/– ,,

15" x 12" - - 7/6 ,,

(Cash with order)

MOTOR SPORT, 21 CITY ROAD, LONDON, E.C.1

READERS' SPARE PARTS FOR SALE AND WANTED

FOR SALE

Austin Seven, Zenith vertical carburetter, cylinder head gasket, new swivel pin bushes, 2 pair anti-roll springs.....

,, cylinder head, intake manifold, with Zenith carburetter, wheels and tyres and 1928 normal Austin 7 gearbox...

,, 4-cyl. "Scintilla" Vertex Magneto in new condition.....

,, wheels, two. Complete with 400×19 Dunlop sports tyres and inner tubes. Run 300 miles only.....

,, wheel drawer.....

,, 60 m.p.h. speedo, petrol tank, bucket seat, cycle type mudguards, three pairs, doors, off sports model, 12v. electric hooter .....

Austin Complete Chummy, two-piece windscreens, new safety glass.....

,, Chummy side curtains, set.....

Austin (Ulster) Set of four aluminium mudguards...

A.C. Six cylinder head (approx. 1924) camshaft and crankshaft .....

Armstrong-Siddeley self-changing gearbox, complete with controls.....

Axle, front, cycle type guards, new wheels, large aluminium brake drums, new swivel pins and races.....

Bluemel telescopic steering wheel (unused). Several clockwise Bosch dynamos with distributor (4-cyl.) unused. Back axle (complete with shafts, brakes, and drums).....

Body, ex-racing two-seater, converted to road use, complete with 1931 wings and running boards, one wing dented and split, requires welding, tail of body good, but several splits in the aluminium panels, no screen or seats.....

Batteries, 3 6-volt car .....

Body, Ulster Austin aluminium .....

Bosch headlamps, one pair, 12-volt .....

Brooklands Silencer for M.G. Midget.....

Camshafts and boxes, from Brescia Bugatti.....

Carburetter, Zenith triple diffused horizontal, 36 mm. bore .....

,, Model 36 H.K. Horizontal Flange. 2⅛" between centre of bolt holes. Right-hand float chamber.....

,, (Two) Zenith N type Horizontal 36 mm. top feed float chambers.....

,, R.A.G. suit Riley Nine.....

,, R.A.G. .....

,, Zenith .....

,, S.U. complete (three).....

,, Solex .....

,, (New) racing 36 mm. Amal, with large assortment of spare jets and chokes

Carburetters, S.U.s coupled and matched pair, with all fittings. Two small S.U.s off Morris Minor.....

Crankshaft, con-rods and flywheel, off 1938 Austin

,, balanced for Austin Seven.....

Cylinder head with rocker gear for Riley Nine.....

,, "M" type M.G., with valves, valve gear and camshaft.....

,, 2 port, complete with rockers, etc., for 12 h.p. Meadows.....

,, for blown Lea-Francis, without valves and rocker gear.....

Dissolved acetylene cylinder (6 cu. ft.) with gauge, by Allen Liversidge.....

Duogauge Cartherns (oil pressure) thermometer.....

Engine, 26 or 27 E.W. twin Douglas, complete with clutch .....

Ford wheels, two, with new tyres 18×6.00, retread,

Ford 1936/37 10 h.p. 2 only, 600×16 Dunlop Comp. tyres and tubes used once only.....

,, 2 only 600×16 Firestone covers, used once only .....

,, 2 only 600×16 Silver enamelled wheels.....

,, 1 only, standard size Firestone cover and tube

,, 1 only, standard size, silver enamelled wheel

,, 1 rear seat swab, red leather, never used.....

,, Several cylinder blocks for various types of Anzani s.v. engine .....

Ford V8 two 600×16 wheels complete with 6.50×16 Dunlop sports covers and tubes and one 600×16 wheel complete with Goodyear G3 tyre and tube. With spare metal wheel cover of 1935 V8 coupe.....

Frazer-Nash Wheels. Differential, complete with pinion, steering box and wheel. Front axle and assembly (brakes, etc.). Prop. shaft. Crankshaft (reground). Clutch (complete).....

Frazer-Nash-B.M.W. standard pattern steering wheel, good condition.....

Gearbox, M.G. Midget, 3-speed, with Derrington remote control .....

,, 4 speed, complete with remote control, from 1½-litre Singer.....

Headlamps one pair "Autoroche" chromium-plated, Modified to take British type bulbs...

Lagonda 3-litre, all spares .....

Lancia Lambda 14 h.p. Nine wheels, 765×105, two good tyres. Bonnet, two good rear wings, spare drop arm and draglink and steering arm, petrol tank and gauge fitted with extension for outside filler cap.....

,, Two cutouts (Marrelli) key and switch box (Marrelli), two 8 in. headlamps (Bosch), both mirrors silver plated giving parallel beam approx. 400 yards.....

,, Four 5 in. lamps, rear lamp, two wing lamps (Duco), two way dip switch, 3 switch arrangement for reverse light and horn.....

,, Hood and upholstery. Hood structure altered for lowseating position and lowered steering wheels—steering wheel with special bearing attachment—two steering boxes, dash board to fit altered steering and radiator distance. Hood needs recovering. Seat supports to fit Dunloppillo "Cinema" seats. Triplex glass windscreen (one panel cracked but rest O.K.) opens in halves—folds flat and adjustable to any angle. Scuttle extension for lowered steering and hood, four doors (one needs new hinges) seat squabs, spare set of brand new Ferodo M.R. brake linings .....

Lucas 12 v. Altette horn.....

,, ST 38a chromium stop tail lamp.....

M.G. J.2 brakes and cables, the set.....

,, 1933 radiator.....

,, Marles steering gear complete, spring wheel, needs two hemispheres.....

,, Set bottom timing wheels.....

,, Set (four) front hub bearings, new.....

M.G. Midget, 1933 J.2. Set of 4 pistons with rings and gudgeons, cylinder head oil drain housing, clutch centre floating plate, and 3 clutch fingers.....

Motorcycle speedometer, front wheel drive.....

Morris Minor front axle.....

Morris Minor, 1933, S.V. practically all parts including 3-speed gearbox .....

M.G. Magna cylinder block and sump.....

M.G. one instruction book for J. type.....

M.G. Oil pump. Front timing casing. Distributor and starter. Bonnet. Set of con-rods. Set of pistons 20th over-size. Propellor shaft. Speedometer and rev. counter combined. Radiator complete with shell, and handbrake complete.....

M.G. Parts (Magnette). Rear wheel bearings, axle shafts, Bluemel's spring steering wheel (Marles column) set of con-rods, bearings and pistons (F. type Magna), brake drums, shoes and valve cover for F type, rear Hartford shockers, 12v. pressure pump, combined M.G. switch panel, ammeter and oil gauge, complete clutch and gearbox, with remote control for F type two fuse boxes and cut outs, Rudge hubs and hub-caps.....

M.G. P. Type 1934/5. Outside radiator honeycomb grill. Rudge 42 mm. N/S hub-cap, Ashby "Derrington" flare-screen Oil gauge, aluminium fishtail, four K.L.G.s (831 R).....

,, P Type cylinder-head (new).....

Morgan 4/4 1936/37. Two Dunlop sports competition tyres, 5.25×16, E.L.P. two-seater zip tonneau cover and fixings, green.....

New Zenith horizontal carburetter for 12 h.p.....

Petrol Tank, 5 gallon from M.G. Midget.....

Plugs, 2 brass priming, to fit 18 mm. sparking plug holes .....

Rotex 8 in. dia. headlamp, chrome rimmed and fitted with chromium plated stone guard, fitted Solenoid dipper.....

Squabs, 2 single seat.....

Steering Wheel, from 1936 Morris Eight.....

,, from 1931 Austin.....

Salmson 9.5. h.p. 1928 G.P. One 19×4.50 wheel (well base), one propeller shaft with complete axle-end assembly including pinion, one second gear mainshaft pinion, one second gear layshaft pinion

Screens, one pair detachable "Brooklands," with adaptors to suit Morris Eight. Unused...

Seat covers and cushions.....

Six volt starter with Bendix pinion, for 1½-litre engine .....

Screen, two panel, safety glass, with frame. Supercharger, Powerplus No. 7 with horizontal carburetter.....

Speedometer, Smith's A type .....

Springs, special flattened rear, for Austin.....

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 .....

Starter, Austin 7, complete. 6v. heavy starter, complete.....

Sunbeam 3-litre crankshaft, cylinder-block, pistons con-rods, camshafts, carburetter, magneto and starter.....

Supercharger, Marshall new, complete with all fittings, suitable for Ford Eight or Ten .....

SECONDHAND SPARE PARTS—continued

Supercharger Cozette No. 7 and fittings from hyper sports Lea-Francis.....

,, Murray Jamieson, off works s.v. racing Austin, only been used for a few short races and sprints. Will blow up to 12 lb. pressure.....

,, Marshall, complete with fittings for *Ford Eight or Ten. Only run* 4,000 miles.....

,, Marshall and fittings from 1935 PA type M.G.Midget, 2,000 miles only

Talbot 8 h.p. 1923. 6 v. coil, 6 v. Benjamin electric horn, connecting rod, Zenith carburetter to take ⅞ in. pipe, torque tube, silencer and extension tube, petrol gauge, 5 hub caps, 8 day clock, one piece 2-seater seat squab, celluloid side screens .....

Tyres one pair competition, 19×4.75.....

Tyres and Tubes 17×6.00 Dunlop "90" in good condition .....

30/98 Vauxhall, o.h.v. model, parts available.....

Wheels, racing, one set, 42 mm.....

,, 2 from M type M.G. 29-32 .....

,, set of five, 8.20×120, complete with tyres and tubes .....

,, Disc. 710×90 covers suit A.C. hubs.....

,, 2 Rudge knock-off wheels 18". Good tubes and rather worn tyres, 4.75.....

Wheel three spoked spring steering, fit M.G. model after 1932. Needs welding.....

,, 47 mm. with knock-on hub, suitable for Singer, Wolseley, etc.....

Wheels, enamelled red, and free from rust. Hubs will fit any Bentley model.....

Windscreen with triplex for M.G. Midget M. type.....

WANTED

Austin Seven Chummy body.....

Body complete two-seater sports for Wolseley Hornet, swallow body preferred, condition immaterial .....

,, two-seater T.T. Replica for Frazer-Nash.....

"Ulster" Austin Seven body .....

,, rear springs (flattened).....

,, radiator and bonnet.....

,, Austin Seven 1930, unblown camshaft...

Bugatti. One or more of the following Bugattis; cheap; any condition (minus body would do) but running order preferred :—
Type 13 (1910, 8 valve model);
,, 22 (1914, 16 valve model);
,, 23 (Brescia and mod. Brescia);
,, 37 & A. (G.P.);
,, 39 & A & 40 & A—in order of preference. Also bits.....

Camshaft, block and pistons for 14/40 Sunbeam. Good condition .....

Crankshaft (counter-balanced) for 1932 J.2 M.G....

Crankshaft, one large, for 1929 Austin Seven.....

Chrysler 75 redhead cylinder block.....

Cycle Wings, pair, suitable for N type M.G.....

Cylinder head, high compression.....

Cylinder Barrel (nearside) piston and connecting rod for a 1933 912 c.c. o.h.v. w.c. J.A.P. engine from a 1933 super sports Morgan three-wheeler.....

Chassis, late model Frazer-Nash, complete.....

,, light racing, complete, not over 9ft.....

Carburetters, two semi-downdraught, standard, or 1933, J4, Midget.....

,, Set of twin S.U. (racing), complete with manifold. Top feed 30 mm., suitable for Brooklands Riley 9 h. 1,100 c.c.

Engine, Lagonda, 2-litre supercharged.....

,, F.N. 1½-litre o.h.v. (O.h.c. or pushrod).....

Four-speed engine unit, complete, for Austin Seven...

Frazer-Nash 1929, starting handle flywheel (good teeth), Ricado head, outside exhaust system, pair front wings, reverse pinion and shaft, handbrake and ratchet, fold flat screen, rev. counter and drive, racing camshaft.....

Gearbox, light, for special chassis.....

Headlamp, Lucas P.100, 12 volt.

High Axle ratio bevel and pinion (13/51 or lower to 4.4 to 1) for M type or Montlhery Midget

Louvred Aluminium bonnet, 2' 3", rear 2' 3", front 18" wide .....

Valve Cover for J.2 type Midget.....

O.H.V. O.M. engine, or conversion block etc., from s.v. to o.h.v.....

Morgan, 4-wheeler, Morgan conversion; complete car or conversion parts.....

M.G. J.2. type car hood.....

M.G. set of brakes.....

M.G. Midget, C type cylinder head complete with camshaft and vertical drive.....

Pre-War Car, 8-10 h.p., cheap.....

Fold Flat windscreen for M.G. and Frazer-Nash.....

M.G. J.2 oil and radiator thermometer (dash-board type) and Tapley motor.....

Seats, bucket type.....

M.G. J.2. brake handle with ratchet complete.....

Set M.G. mudguards, similar to J2 but for "P" type. Outside exhaust and system or manifold for "P" M.G.....

Spring wheels.....

Gearbox, 4-speed, for a 1930 O.H.C. Morris Minor.....

Generator and battery charger of German make in aluminium .....

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 .....

Remote control, complete, for 1933 M.G. type J.2 gearbox .....

Seats, two bucket, in good condition to fit M.G. type N .....

Spare Wheel for a 4.50×19 tyre, Frazer-Nash.....

Supercharger, Roots type, for 1936 six-cylinder Frazer-Nash, engine capacity 1,660 c.c., blower to give 5-6 lb.....

Supercharger for Series II Morris Eight .....

Instruction Book for M.G. Midget, 1930.....

Two twin port Meadows, 12 h.p. heads.....

Four con-rods steel, suitable for Meadows engine, Crown wheel and pinion. 10×47.....

Rev.-counter, for Type "C" M.G. Midget and drive

,, and water thermometer (dash board type) for an M.G. Type "N" Magnette .....

,, 3 in.

1,100 c.c. O.h.v., W.C., J.A.P. engine, suitable for 3 speed and reverse super-sports Morgan.

Wheels, two or four 16". To take large section tyres. 42 mm. hubs.....

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ONE-POINT VICTORY FOR CAMBRIDGE

A DIFFICULT COURSE FOR THE INTER-VARSITY TRIAL: ONLY ONE CLEAN PERFORMANCE

A DOWNPOUR of rain on the night before the Inter-Varsity Trial, held as usual in the Hindhead-Peterfield area, made the course so difficult that two hills had to be abandoned, while another was climbed successfully by only one driver out of the forty-five entries.

Cambridge, who last year broke a series of Oxford victories, repeated their success on November 19th, but the margin in their favour was the narrowest possible, the scores being Cambridge University 700 marks, Oxford University 699 marks.

Oxford had a much larger entry than has been the case for several years, particularly of resident or undergraduate members—a welcome revival. By far the strongest contingent, however, was that of the Cambridge Veterans (members who have gone down), who supplied no fewer than twenty-two drivers.

The main issue of the Inter-Varsity contest has always lain between the resident members, and the scoring sides were composed of six resident and two veteran members from each University, the best performance on either side to count. Thus the maximum total of marks possible was 800.

So stiff was the event that only R. E. Tongue, of Oxford, retained his full complement of 100 marks, driving one of the new eight-cylinder Allard-Specials. Only six other drivers retained 95 marks, these being:—

Cambridge (Veterans): K. N. Smith (Frazer-Nash-B.M.W.), N. G. Watson (Ford), F. G. H. Minter (M.G.).

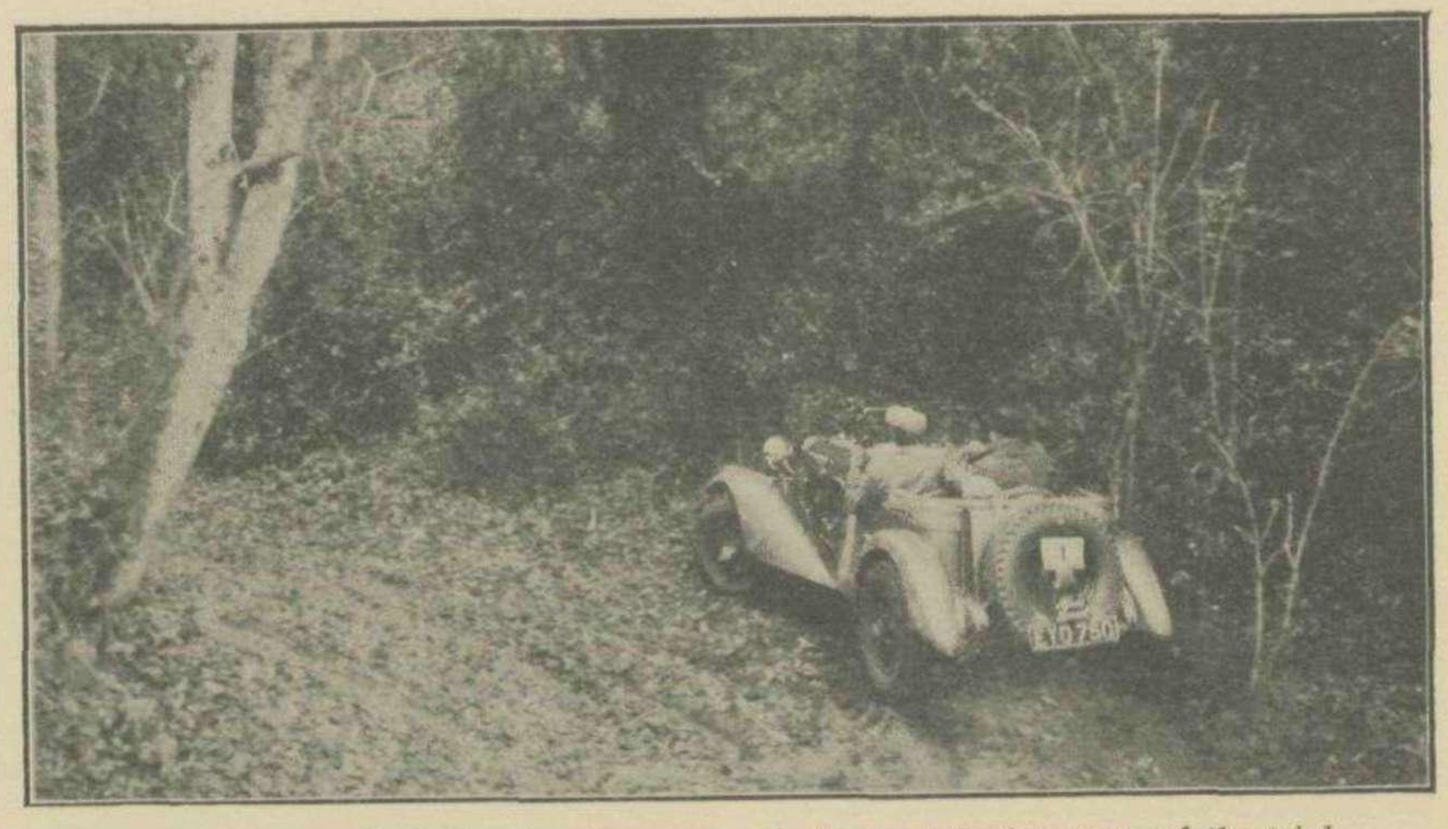
Oxford (Residents): E. N. Bunting (M.G.).

(Veterans): D. H. Tindall (Aston-Martin), H. W. Inderwick (Batten-Special).

Competition tyres and non-standard solid axles were barred, as has been the practice of the C.U.A.C. since 1935, and the muddy hills thus provided a stern test of driving.

The course was arranged on the double-loop or figure-of-eight principle, first used by the Cambridge club. Odd numbers took one circuit in the morning from the start at the Royal Huts Hotel, Hindhead, returning to the same point for lunch. Meanwhile the even numbers were tackling the other circuit, and after lunch the two contingents changed over.

This arrangement is calculated to avoid much delay, by preventing the whole entry from piling up at the foot of one hill, and also allowing a two-minute interval between the competitors owing to the alternate starting order.



R. E. Tongue (Oxford veteran), who made the best performance of the trial, skids into the bushes on Hatchfarm Hill.

R. E. Tongue's success was particularly noteworthy, for although he had the most trials-worthy car in the event, he had had little opportunity to get used to the Allard-Special, the very power of which makes skilful handling necessary to avoid wheelspin. He had huge tyres, which could be run at a very low pressure.

These no doubt helped Tongue to make the only clean climb of Hatchfarm Hill before this morass was cut out. Hatchfarm can be taken in two sections, and even last year, in much drier conditions, only four competitors successfully climbed both. This year, even the downhill sections on the approach to the hill and after leaving the summit were so deep in mud that cars were grounding heavily, and the unique spectacle was seen of cars being towed *downhill*!

The first competitor to try the hill, A. C. Fairtlough (Cambridge Veteran), driving a sports two-seater A.C., came to grief early. Endeavouring to gain speed on the slippery lower stretches, he struck a tree, and then pulled a valve out of one of his rear tyres, so that there was a long pull for the tow-gang till the middle section was reached, where there is a short flat stretch.

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ONE-POINT VICTORY FOR CAMBRIDGE—continued

Here a kind of telephone exchange had been installed, with connections both to the start and to the top of the hill, each about a third of a mile away. Fairtlough changed a wheel and proceeded to the top section, where he pulled off both tyres, and then the car became firmly embedded in the mud on the downward slope after the summit.

No amount of heaving would move the car, and meanwhile other drivers were getting stuck all over the hill, so that the two tow-gangs had to move rapidly from place to place, and soon became exhausted.

The situation became desperate, for even when cars were lugged over the summit, they could not get by Fairtlough's foundered A.C., and were likely themselves to sink in the same bog. With considerable resource the marshal in charge of the top section went off and found a tractor at a neighbouring farm, and by its help the A.C. was at last extricated.

It was therefore decided to abandon the attempts, but before the hill was closed down R. E. Tongue was allowed to try the ascent with the Allard, if he chose to do so. Tongue was undaunted, and stormed through the mud of the lower section. The telephone operators reported his violent arrival at the half-way stage, and then he set out to attack the top part, of even greater difficulty, for the steepest section of the slippery gradient is preceded by a sharp left-hand corner. Tongue slithered into the corner, using the bushes on the outside as a kind of banking, and triumphantly breasted the rise. The tractor was waiting to lend a hand in the bog which followed, but the Allard scorned such assistance, and got through this, too, under its own power.

The Allard had considerably more ground clearance, as well as greater power, than most of the competing cars, and where Tongue had led, it was not possible for others to follow. The Oxonian was thus avenged on Hatchfarm Hill, where last year he struck a boulder at the side of the track and wrecked his car.

The overnight rain had also rendered Abester's Copse impassable, for this hill, lying on private property, has a grassy section at the bottom with a sharp turn through a gate, and it was not possible on the soft ground even to get started properly. It was cut out when only one car had tried it. Abester's Copse is situated near the better known Abester's Hollow, which latter, unfortunately for trials folk, has now been deemed to be a bridle path.

Both these hills were on Circuit A, but their omission was compensated for by the unexpected difficulty of Cotchet Farm. Here cars were made to start on another grassy section, and though by skilful throttle control it was certainly possible to get going, the difficulty was such that twenty-eight drivers lost marks. The remaining hill on Circuit A, Begley Farm, provided an interesting enough climb, but, mercifully, caused only seven failures.

Circuit B was running more to schedule, though here again there was plenty of difficulty. The worst obstacle was the redoubtable Steep Hill, sometimes called Lythe Hanger. This, like Hatchfarm, was divided into two sections, but only Tongue, with the Allard, and P. J. Davies-Cooke (Cambridge Veteran), driving an H.R.G., managed to climb even the lower section. Tongue continued his successful career on the top part, but Davies-Cooke had the bad luck to fail within a few yards of the summit.

Since these were the only cars to reach the top section at all, the marshals and the horses provided had a dull time at this point. All the rest of the competitors reversed down the lower slope into a quarry, where they turned round and, the road being kept clear for them, made their way back again. This certainly saved a great deal of time, for, in spite of the entire entry except one failing, the system, perfected over a number of years, worked so well that there was little delay.



A long pull was the order of the day for most competitors on Hatchfarm Hill. This is A. J. Kilpatrick (Cambridge resident) with his Singer.

M. W. B. May, who was secretary of the C.U.A.C. as long ago as 1928-29, and who has been competing in trials since that time, and even earlier, charged the bank on one side of the lower section, and burst a tyre, and then cannoned off the opposite bank, bursting the other rear tyre. His Alvis, with the 2-litre engine which first saw service in the Double-Twelve, and which has since been run in innumerable races, then came to rest, with the rear wheels spinning *inside the covers*! Amid much laughter, the car was got into the quarry.

D. C. Stenning (Cambridge Veteran), with a Lagonda Rapier, was making a good attempt when one of the doors came open and jammed on the bank, while K. N. Smith (Cambridge Veteran), driving a Frazer-Nash-B.M.W., very nearly got to the top of the lower section. D. H. Tindall (Oxford Veteran), with his Aston-Martin, also made a fine effort.

Unterturkheim also caused many failures, and here only seventeen were successful. Amongst the best climbs were those of Tindall's Aston-Martin, H. W. Inderwick's Batten-Special (Oxford Veteran), N. G. Watson's Ford V8 (Cambridge Veteran), and H. J. Budd's Alfa-Romeo (Cambridge Resident).

There was no rule causing passengers to remain normally seated, and on the tail of Budd's Alfa-Romeo, R. E. A. Mason, the Cambridge Treasurer, had adopted a most uncomfortable-looking position, hanging almost head downwards, so that it looked as though at any moment he might dive off. The passenger on O. M. Williams's Rover (Cambridge Veteran) was seated inside the luggage boot, where he was more secure, but equally uncomfortable. The Rover made a good climb.

G. Kinsey-Morgan (Cambridge Resident), with a Frazer-Nash, just kept going through the observed section, and H. M. Bibby (Cambridge Resident), with an M.G., also cleared the section but subsequently stopped, and marshals had to be despatched to his assistance.

The remaining hill on Circuit B, Oakshott, stopped about half a dozen competitors. At Cosford, on Circuit A, Tongue's Allard and B. D. Acland's M.G. (both Oxford) made the best time, while at Scotland Hill, where Lionel Martin was in charge of the time-keeping, Inderwick's Batten-Special was best.

RESULTS

"The Autocar" Trophy: 1, Cambridge University, 700 marks; 2, Oxford University, 699 marks.

Cambridge Team (Residents): G. Kinsey-Morgan (Frazer-Nash), 90 marks; H. J. Budd (Alfa-Romeo), 90; H. M. Bibby (M.G.), 90; T. E. Llewellyn-Lloyd (Ford), 87; K. R. G. Tomkinson (Hillman), 80; R. B. Collie (Cresta), 73.

(Veterans): K. N. Smith (Frazer-Nash-B.M.W.), 95; N. G. Watson (Ford), 95.

Oxford Team (Residents): E. N. Bunting (M.G.), 95; D. C. Kennedy (Ford), 90; R. M. Witney (M.G.), 85; R. G. Sykes (Rover), 80; E. S. M. Wade (Vauxhall), 79; R. H. N. Smith (Austin), 75.

(Veterans): R. E. Tongue (Allard-Special), 100; D. H. Tindall (Aston-Martin), 95.

Team Prize: R. E. Tongue (Allard-Special), 100; A. C. Fairtlough (A.C.), 90; M. W. B. May (Alvis), 90.

Cambridge Trophies:

May Cup (best Resident): G. Kinsey-Morgan (Frazer-Nash).

Veterans Cup (best Veteran): K. N. Smith (Frazer-Nash-B.M.W.).

Maw Cup (best Resident over 1,500 c.c.): H. J. Budd (Alfa-Romeo).

Fairtlough Cup (best Resident, 1,500 c.c.): H. M. Bibby (M.G.).

Falkner Cup (best Resident, 850 c.c.): not awarded.

Oxford Trophies:

Founder's Cup (best Resident): E. N. Bunting (M.G.).

Evans Cup (best Veteran): R. E. Tongue (Allard-Special).

THE TREND OF RACING-CAR DESIGN

BEING THE ANNUAL SURVEY OF PROGRESS MADE IN THE DESIGN AND CONSTRUCTION OF RACING CARS DURING THE PAST SEASON

NINETEEN THIRTY-EIGHT has been a year of considerable interest in respect of racing-car design progress, because the change in the International Formula resulted in the construction of new road-racing cars of vastly differing type to those which suited the previous Formula. The new Formula was planned to encourage all sizes of engine but it soon became evident that only 3-litre supercharged and 4½-litre unblown engines would be of use, and even this assumed a boost of around 9 lb. per square inch for the smaller unit, which, as some 20 to 22 lb. was actually employed for the 3-litre German cars, left even the 4½-litre unblown cars well out of the running. Nor did the 1½-litre class of car become potent enough or sufficiently near to the permitted weight-minimum to challenge 3-litre Formula cars, although continuing to exist as a very healthy separate entity.

The German Mercédès-Benz and Auto-Union cars have been supreme amongst Formula cars and it is highly satisfactory that these 3-litre cars are only some 10 to 15 m.p.h. down in point of maximum speed over the previous 5 to 6-litre jobs and they are actually superior on the score of acceleration and road-holding, so that lap and race speeds have not materially diminished and have in some instances risen. This has been brought about because, although the German engineers had to build to a capacity reduction of 50 per cent. and a weight increase of over 10 per cent., they have managed a reduction of power of only 25 per cent., instead of 50 per cent., by reason of reducing individual cylinder capacity from 700 c.c. to 250 c.c., increasing peak revs. from 6,000 r.p.m. to 8,000 r.p.m. (a 33 per cent. increase) and bringing up the blower boost from the former 5 to 6 lb. per square inch and later 15 lb. to approximately 20 to 22 lb. per square inch. High revving has been made possible by a short stroke in the region of 70 mm.

In consequence, the b.h.p. per litre is approximately 140, compared to the 90 b.h.p. litre of last year's Formula cars, and maximum speed is in the region of 170 to 180 m.p.h., while both Mercédès-Benz and Auto-Union develop over 400 b.h.p. by popularly accepted estimates. They weigh between 19 cwt. and 1 ton. Maserati claimed 350 b.h.p. for their new 3-litre and Alfa-Corse 306 b.h.p. for their Type 308 straight-eight. The V16 Alfa was first credited with 340 b.h.p. at 7,000 and later with 400 b.h.p. at 8,000 r.p.m. The use of higher-speed engines has not introduced any very vital new problems, but the 1938 cars were no longer completely reliable. Mercédès-Benz experienced valve failures, in spite of sodium cooling the exhaust valves, which, in any case, is difficult with small cylinders and liable to result in valve-sticking, and Auto-Union had carburation trouble, while both engines were harder on plugs and lost much oil, the latter trouble inconveniencing the drivers and, in the case of Auto-Union, of first causing repeated oiling of No. 3 plug on the near side, a trouble which Nuvolari again experienced at Donington. To cure oil loss Mercédès evolved an involved sump shape and pump layout. Another worry was that the V-type engines are harder to cool and Mercédès actually ran at the dangerously high oil temperature of 80°C. at Tripoli. This is partly due to lesser base chamber area and partly because more compact engines encourage lower bodywork and consequently reduced radiator area. Auto-Union have a better radiator position, which is estimated to be worth a 20 per cent. increase in cooling element area. Sefac used an oil-cooler along the body side. Plug appetite was also evident on the new 1½-litre Alfas.

Another problem with the new cars is that of fuel consumption, which has increased from 5 to 2½ m.p.g. Auto-Union retain a central tank, whereby weight distribution is unaffected by contents, and Mercédès now use two tanks, one in the tail and one as a saddle round the scuttle, of which the front one fills first. Both tanks are coupled by big-bore pipes and the latest design ensures that a lowering level shall not affect weight distribution, although driver-controlled rear shock-absorbers were previously used to compensate for the change. Pressure refuelling is used at the pits, operating at the rate of about 5 gallons a second, and inspection windows indicate the tank level. The capacity is approximately 70 gallons, entailing one stop in the course of the usual road race. 1½-litre cars do about 6½ m.p.g., and the 2-litre Alta 5 m.p.g., so that they just go through a 200 mile race without a stop, though this involves having 40 gallons of fuel in the tail at the commencement. The unblown 4½-litre cars scored in earlier races by reason of a fuel consumption of 7 m.p.g.

So far as Formula cars are concerned, rumours of alternative types and newcomer marques came to naught. Mercédès-Benz changed from straight-eight to V12, having built a V12 record car previously, Auto-Union from V16 to V12, and Alfa-Romeo used straight-eight, V12 and a new V16. Maserati had a straight-eight based on the earlier 1½-litre four-cylinder, Bugatti a straight-eight and Sefac a V8. All these were blown 3-litres. Delahaye ran an unblown 4½-litre V12. The Maserati proved faster than the Mercs. on isolated occasions, the Delahaye grabbed two victories before the blown motors got potent, and Auto-Unions found more speed and acceleration than Mercs. for the Italian and British Grands Prix and seemed to have caught up on road-holding as well. Bugatti did 147 m.p.h. on the straight at Cork but, like Alfa, ran intermittently, and was not durable. In other spheres, the E.R.A is still a "six," with no prospect of the rumoured V12 materialising, Maserati ran 1½-litre "sixes" but is going back to the four-cylinder, and Alfa introduced very successful new 1½-litre straight-eights. The Alta remains a "four" in both 1½ and 2-litre forms and the 750 c.c. Austins are "fours." Major Gardner's astonishing M.G. is a "six." America is said to have a six-cylinder Formula Miller on the stocks. Particulars of power output are hard to come by, but in comparison with the 140 b.p.h. per litre of the 3-litre Formula cars, 200 b.h.p. at 8,000 r.p.m is claimed for the 1½-litre Alfa (130 b.p.h. per litre) and the Zoller E.R.A. cannot be far behind. Major Gardner's M.G. gave 193.5 b.h.p. at 6,800 r.p.m. (nearly 179 b.h.p. per litre) and the 750 c.c. Austin is said to give the same efficiency, or 134 b.h.p. at 8,500 r.p.m. Alta claims 325 b.h.p. at 5,800 r.p.m. from the 2-litre, or 160 b.h.p. per litre. The 4½-litre unblown Delahaye gives about 230 b.h.p. at 5,600 r.p.m. (54 b.h.p. per litre) with a prospect of getting the peak speed up to 6,000 r.p.m. next year. E.R.A. uses a stroke of 95.2 mm., the M.G. a stroke of 71 mm., the 1½-litre Alfa one of 70 mm. and Alta a stroke of 100 mm.

Supercharging is universal, apart from the unblown Formula jobs, for road racing. Mercédès-Benz still sucks from the carburetters in conventional manner, using twin Roots blowers at the front and double carburetters. Auto-Union has a single Roots blower at the rear, drawing from twin carburetters. Alfa-Romeo continued to use their double Roots blower beside the block, the 3-litre Maserati had twin Roots blowers, one above the other, and Bugatti a Roots blower. E.R.A. now use the huge Zoller vane-type compressor in the cockpit, drawing from two S.U.s, the new 1½-litre Maserati will have two Roots blowers, and the Alta has a Roots blower turning at one-and-a-half times engine speed. Major Gardner's M.G. has a Centric vane compressor. Pressures are notably high. Mercs. and Auto-Union are believed to blow at 20 to 22 lb., with a possibility that Mercs. went higher for Donington. E.R.A. uses 25 lb. for racing and 40 lb. for sprint work, in place of the former 15 lb., Alta uses 17 lb., and 24 lb., Gardner's M.G. 26 lb. and Harvey-Noble's Brooklands 750 c.c. M.G. 28 lb. The 1½-litre Alfa has a Roots blower beside the block on the near side, with single carburetter beneath. Normally the vane compressor gives better low speed acceleration than a Roots blower and can function at a lower speed. In the case of the E.R.A. this is not so, because the speed of the big Zoller is kept down to two-thirds engine speed, resulting in low torque below 3,500 r.p.m., whereas the Murray-Jamieson Roots blower on earlier cars was run at three times engine speed and gave high torque down to 2,000 r.p.m.—which is why "Bira" uses "Romulus" at the Crystal Palace. Faulty metal has been a worry with the E.R.A. supercharger this year and higher speed may be used in due course. Abecassis's 1½-litre Alta is blown at 12 lb. Compression ratios remain around 6 to 1 to 8 to 1 for blown engines and up to 10.5 to 1 unblown.

Fully inclined valves in hemispherical combustion chambers remain common,

THE TREND OF RACING-CAR DESIGN—continued

but it is extremely interesting that Mercédès-Benz have gone back to four valves per cylinder, while the new 1½-litre Maserati will also have this arrangement. Delahaye use four valves to fill each big unblown pot, and the M.G. has a two-valve pent-roof head with single o.h. camshaft. Otherwise twin o.h. camshafts per block are universal, with gear-drives, although Alta uses a chain-drive. Why multi-valves should be employed in high-temperature small-bore easily fed engines is something of a poser. Rotary valves make no real headway, but Breyer is building a Cross rotary valve J.A.P. engine for 1939 sprint events. Sodium cooling of exhaust valves is used by Mercédès and by Robin Jackson for the 186 m.p.h. M.G., though then it is not easy to keep valve stem diameters small. Auto-Union dropped the central single camshaft operating via rockers and push-rods, in favour of three o.h. camshafts, of which the outer pair actuate the exhaust valves and the central one both rows of inlet valves via rocking levers. E.R.A. has high set camshafts operating via short push-rods and rockers.

Lightweight engine construction is still the vogue. Mercédès-Benz use cylinders machined from solid steel billets and welded in blocks of three, with light welded sheet water jackets. Auto-Union use light alloy blocks and detachable heads. Mercs. have a fixed head. Alta uses alloy block, crankcase and sump, wet cylinder liners, and an alloy head with aluminium-bronze valve seats. E.R.A. has combined block and crankcase in iron and an alloy head and sump. The eight-cylinder Maserati has its cylinders in two blocks of four. So far as head design is concerned, 12 or 14 mm. centrally located plugs are usual, and Merc. and Auto-Union both have twin magnetos. Delahaye has two plugs per cylinder.

Mercédès-Benz and Auto-Union have ball and roller bearing engines, Mercédès with a solid crankshaft running in split roller bearings. One British authority is at a loss to explain the durability of such bearings and suggests re-rollering between each race, but from Germany comes a statement that these bearings give no cause for anxiety. They are lubricated at a pressure as low as 4 lb. per square inch and no oil gauge is used. Delahaye also has a roller-bearing crankshaft, running in seven bearings. E.R.A. uses a four-bearing crankshaft with roller centre bearing and graphited-bronze plain-end bearings and plain lead-bronze big-ends, fed at 110 lb. oil pressure. Lead-bronze stands a higher shock loading than the older white metals, but is not necessarily better as a bearing surface. Alta has a four-bearing crankshaft running in water-cooled plain bearings.

Dry sump lubrication comes into its own on the racing engine, though Alta has no use for it and does not even rib the sump to any extent. Mercédès use a big oil reservoir beneath the engine and E.R.A. a chassis-frame oil tank.

Mercédès and Auto-Union have gone back to five-speed gearboxes, in which the highest ratio is an overdrive for use on 170 m.p.h. straights. It is said that top was not used at Donington, where 7,800 r.p.m. was reached on the indirect ratios. Alta, M.G. and E.R.A. have E.N.V. epicyclic transmission. The 1½-litre Alfa has a four-speed gearbox in the rear axle, where Mercs. and Auto-Union also locate their ratio-chests. To overcome wheelspin the Germans employ the Porsche self-locking differential and E.R.A. also use it, the slip factor before locking being 15 per cent. in the latter case. More gear-changing is done on the new Formula cars. Mercédès use a single dry-plate clutch and the E.R.A. has no clutch. E.R.A. use torque-tube transmission and straight-bevel final drive, the axle having steel tubes and an alloy central housing.

Tubular frame construction is general. Mercédès have frail, oval-shape 4 inch side members in light alloy, tied by four tubular cross-members. They used a lighter frame after the first 1938 races but found it too whippy and went back to the earlier pattern for Donington. Auto-Union retain their tubular frame with the side members formed as water tubes. The latest E.R.A. has box-section side members united by tubular cross-members and braced by drilled transverse stays. The eight-cylinder Type 308 Alfa-Romeo has a box-section frame and the 1½-litre Alfa a tubular frame with tubular bracing. Alta employs simple channel side members very rigidly united by tubular members.

To gain a lower seating position Mercédès introduced on the road-racing car the off-set transmission formerly used for the twelve-cylinder record-car, and the 186 m.p.h. M.G. had a similar transmission layout and the latest 2-litre Alta a double-drive rear axle, for the same reason. Auto-Union, with rear-mounted engine, can sit the driver as they wish, but placed the seat further back this year and shortened the wheelbase. The E.R.A. has a comparatively high seating position. The Merc. wheelbase is about 10 ft. 6 in., and that of the 1½-litre E.R.A. 8 ft. The E.R.A. has a track of 4 ft. 4½ in. front and 4 ft. rear. So far as weight is concerned, the Mercs. weigh about 19 to 20 cwt. (the Formula permits 16.69 cwt.), Auto-Union just over 19 cwt., the 3-litre Maserati 17 cwt., the Delahaye single-seater 17 cwt., the Bugatti 18 cwt. 1 qr. and the record-breaking M.G. about 16 cwt. 1½-litre cars do not appear to approach the 11 cwt. Formula minimum, the latest E.R.A. turning the scales at about 14½ cwt., against the 13 cwt. of the earlier Roots-blower cars.

Tyres are usually changed once at least on one or both pairs of wheels during a Formula race, which tallies nicely with the refuelling stop, refuelling, by the way, taking longer with the increased tankage. Mercédès and Auto-Union used 7 in. × 22 in. rear covers at Rheims (actual section about 9¼ in.), where Auto-Union had 5.50 in. × 19 in. front covers and Mercs. 6 in. × 19 in. covers on the front wheels. At Donington both used 7 in. × 19 in. rear covers. For record work light treads are the vogue and Gardner's M.G. had rear Dunlops of 5.35 in. × 19 in. with 3 mm. treads, designed for 170 m.p.h., while Eyston's tyres had an outside film of thin rubber over the ply in lieu of tread, a very heavy casing, strongly reinforced beads, and special rubber compounds of low heat-generation. Every credit is due to Dunlop for safely carrying the record-breakers at over 350 m.p.h.

Suspension now plays a more important part in road-racing than engine efficiency. Stiff cord-bound half-elliptic no longer rule the roost; indeed, racing-car springing now displays remarkable flexibility. Mercédès, Auto-Union, Maserati, Alfa-Corse, E.R.A., Alta and Riley all employ independent front suspension and Alfa and Alta use independent rear suspension, as did Mercs. and Auto-Union last year. Taking front springing first, Mercédès use pressed-steel transverse wish-bones and four-coil coil springs controlled by hydraulic shock-absorbers. Auto-Union use two 2 in. swinging arms and transverse torsion bars and were said to have used an improved shock-absorber after Rheims. Shortening the swing arms last year materially reduced steering kick-back. At Donington they used Fischtel and Sachs double-piston hydraulic shock-absorbers at the front. The big Maserati has double wish-bones and parallel torsion bars; Alfa Dubonnet coil springs enclosed on a normal stub-axle assembly; Delahaye a transverse leaf spring, conventional stub axle and rearwards extending torque member; E.R.A. transverse torsion bars on the Porsche system with Luvax hydraulic shock-absorber and trailing links; Alta vertically rising wheels controlled by coil springs, and the 1½-litre Alfa a transverse leaf spring. The Alfa Dubonnet system has very low unsprung weight, the Maserati and Merc. layout amply resists side stresses, and the E.R.A. and Alfa designs have good resistance to brake torque. Brooke has used Daimler type independent front suspension with coil springs on his Brooke-Special, Maclure a system with heavy transverse swinging arms and coil springs on his Riley, and Parnell a Lancia coil system for his M.G., while the Morgan coil layout, which originated in pre-war times, is popular for sprint cyclecars. Bugatti remains faithful to a normal front axle and half-elliptic springs. Bugatti has had excellent results from De Ram shock-absorbers, likewise E.R.A. on their all-half-elliptic chassis. E.R.A. modified their i.f.s. for 1938 by using a much larger flange to take the side thrust from the links. Delahaye also use Fischtel and Sachs front shock-absorbers.

Turning to rear suspension, in 1936-7 it seemed that independent springing of the rear wheels would become essential to secure the required wheel adhesion, for Formula cars could spin their wheels at over 100 m.p.h. in top cog. In passenger cars increased comfort derived from elimination of lateral relationship is another consideration, but, though this was of no moment for racing, neither was tyre wear on account of scrub. So Mercs. and Auto-Union used swinging half-axles. Alas, this layout resulted in rolling and in snaking at high speeds. Moreover, the trunnions at the inner end of the half-shaft casings had to take all the torque and brake stresses, and soft springs

THE TREND OF RACING-CAR DESIGN—continued

allowed the frame to roll round the axles. Merc. introduced torque arms running back from the brake back-plate, but breakages occurred at this point of anchorage. So i.r.s. had to go. As additional unsprung weight could not be tolerated, the De Dion axle was introduced, in which a light beam ties the wheels but the drive is mounted on the frame as sprung weight—some fine examples appeared on the Brighton Road on November 20th last! Merc., Auto-Union, and Delahaye use this layout, Mercédès with parallel torsion bars, Auto-Union with torsion bars, and Delahaye with a transverse leaf spring. E.R.A. are believed to have experimented with fully independent rear suspension, having parallel torsion bars, but road-holding was poor and the off-set engine seriously affected weight distribution. It seems they will use half-elliptic springs and a rigid axle for 1939, with De Ram damping in some cases. The V12 Alfa and eight-cylinder Alfa are believed to have full i.r.s., the former with an underslung transverse leaf spring. Bugatti and Maserati (3-litre) use normal axles with reversed quarter-elliptic springs. Alta has the vertical coil spring system of full i.r.s., and the 1½-litre Maserati now uses normal quarter-elliptic springs and normal axle, with torque members running forward to the frame, after reversed quarter-elliptics had effected improvement over the old half-elliptic layout. Early in the season Mercédès had superior road-holding to the Auto-Unions, while the eight-cylinder Type 308 Alfa-Corse was notably excellent in this respect. The increased weight of the 1938 cars has been of material benefit in point of stability.

Hydraulic braking is general, though Bugatti uses cables. E.R.A. changed from a combined Lockheed-Girling actuation to full Lockheed hydraulic operation and also used a two-leading-shoe design to obviate the need for adjustment. This is important for a 1½-litre car which can run non-stop through a 200-mile race, because one stop for brake adjustment may entail a loss of time equivalent to one or two seconds per lap for the entire race. The 1½-litre Maserati falls into line with hydraulic actuation, but has the hand-brake operating the rear shoes only via cables. Its back plates are in three parts, of which the centre one carries all the operating gear. Merc. and Auto-Union used new brake drum layouts later in the season.

Bodywork design does not undergo much change, apart from lowering, though more compact size has its problems, as Mercs. had to bring the exhaust pipes outside the bodies after their drivers had experienced overheating. Mercs. used two lengths of tail and Auto-Union two types of nose cowl. The Auto-Union rear engine position puts about 60 per cent. of the maximum weight over the rear axle. They sat the driver further back for this year and experienced some float at the front end. Steering remains lower geared for the Formula cars than for the 1½-litre jobs. America talks of a Formula Miller for 1939, with blown six-cylinder 3-litre rear-placed engine, four-wheel drive and all round independent suspension by transverse leaf springs. Otherwise, four-wheel-drive makes no headway.

In other spheres than road-racing, high spots have been the speeds of 186 m.p.h. from the 1,100 c.c. M.G., 286 m.p.h. from the 5.6-litre Mercédès-Benz and the 350 m.p.h. runs of Cobb's and Eyston's twin aero-engined cars. Bodywork enclosing the wheels is now employed for these short record runs, but Major Gardner and Caracciola did not have entirely enclosed cockpits, though Cobb sat forwards in total enclosure and Eyston adopted a closed cockpit this year. Cobb's car alone was four-wheel-driven—it is astonishing for how long rear drive and open cockpits have persisted for over 200 m.p.h. work. Eyston overcame the fume-difficulty with a far nicer gas mask than those doled out to you and me during the recent Crisis. It is interesting that Eyston again found the tail-fin of no value but air-flap brakes now seem more effective. Cobb's Railton had ice-water cooling, as did the unsuccessful "Silver Bullet" some years ago, and Eyston dispensed with a radiator for his 357 m.p.h. record run. "Thunderbolt" changed from leaf to coil suspension this year and its triple-axle chassis is quite unique. The Railton used some 2,600 Napier horses to do 353 m.p.h. and "Thunderbolt" approximately 6,000 Rolls-Royce horses to do 358 m.p.h. The respective weights and top gear ratios are: 3 tons and 1.35 to 1; 6 tons 17 cwt. and 1.23 to 1. The respective power/weight ratios are: 2.8 lb. per h.p. and 2.55 lb. per h.p. It seems unlikely that smaller engined cars will take this record in the near future, but do not imagine that the aeroplane motors are unboosted—the Napier "Lion," one of the most efficient aero motors ever, has risen from 900 to 1,300 b.h.p. without going above the former speed of 3,300 r.p.m., and the Rolls-Royce "R" has gone up from 2,300 b.h.p. at 3,200 r.p.m. in 1931 to about 3,000 b.h.p. The respective capacities are 23.4 and 36.6 litres.

In sprint circles racing cyclecars giving over 200 b.h.p. for a weight of 10 cwt. sometimes beat multi-cylinder cars. In this sphere Appleton is experimenting with an Arnott blower giving a boost of 30 lb. per square inch, after dropping his Appleton-Special's blow from 25 lb. to 16 to 18 lb. Air-cooled motor-cycle engines are used alone or in multiples, Waddy using two single-cylinder engines and a driving axle for each in "Fuzzi," John Bolster four V-twin J.A.P.s driving the rear-axle by chains, Richard Bolster four single-cylinder engines and Charlie Martin four blown "singles." Sumner has a blown V-twin in a shaft-driven frame. High mechanical efficiency and elimination of cooling jacket weight explains this apparent insanity.

Maclure has had another good season with his unblown Riley Six, aided by varied engine size and a carburetter per pot. Enclosure of wheels extends to sports-car bodywork and probably accounted for some of the brake failure in the T.T. Discussion on the association between weight distribution and over and under steering in a side-wind took place following Rosemeyer s fatal accident with the record-breaking enclosed Auto-Union on a gusty day.

At Brooklands outer-circuit racing seems to have gained an improved following, and the 8-litre Barnato-Hassan nearly beat the absolute lap record, other typical track cars being the 6½-litre Bentley-Jackson, the 4½-litre Pacey-Hassan, the Bowler-Hofman, the Duesenberg, Dunham's Alvis, the old Hotchkiss and Brettel's Talbot, etc. The Dunlop balloon-sided tyres are still popular for fast outer-circuit lappery.

In the field of individual design development, Staniland's much modified 3-litre Alfa-Romeo, now called the Multi-Union, beat the 3-litre lap record at over 133 m.p.h. and also proved very fast on road circuits and A. F. Ashby applied personal theories relating to port area, head design and con-rod stiffening, etc., to an ex-Ferarri 2.9-litre Alfa-Romeo and gained a convincing win in a short Brooklands road handicap. Sir Herbert Austin's twin o.h.c. 750 c.c. Austins have again run very well and some praiseworthy individual tuning of elderly M.G.s has been seen. The Alta has gained greater reliability and beaten E.R.A. in short races on occasions. France has rather shown us how in sports-car races, with 3 and 4½-litre unblown motors, and the blown Alfa is potent here. As to the doodlebug, it no longer seems to have anywhere at which to "doodle-dice." In conclusion, racing-car design has never been more imbibed with engineering stimulus than to-day and we can look forward to another year of the existing Formula—and to new 200 b.h.p. 1½-litres—with great interest and no small excitement.

THE M.C.C. "EXETER"

The 1939 M.C.C.'s first classic goes over to standard tyres. The date is January 6th-7th and entries close on December 12th—the day this issue is due. Fingle Bridge will not be used, and Simms is an optional climb, success here washing out one failure elsewhere. A special award goes to those who ascend everything, Simms included. Details of the first big trial under the new regime from: J. A. Masters, Bloomsbury Mansions, 26, Bloomsbury Way, W.C.1.

THE E.R.A. CLUB

We are now selling little E.R.A. pin badges at 1/6 each, post free. The profits made on these badges will be added into the fund going to the works each year. Postal orders should be made payable to the E.R.A. club and sent to me at the club address. Remittances to

C. N. S. PRINGLE,
Hon. Assistant Secretary.

The E.R.A. Club,
10 Park Place,
Cambridge.

Continental Notes and News

By AUSLANDER

Faster and Faster

It seems that the days of the old-fashioned road-circuit, set amidst fields, woods and villages, are numbered. Take the beautiful Rheims circuit, for instance. Visitors to the French Grand Prix last July—at any rate those who had been there before—had the shock of their lives when they found that the trees on each side of the long straight had been chopped down, and that the straight itself had been widened and re-surfaced. The result is, of course, that the circuit is losing, if it has not already lost, its character. Motor-races in France have always brought to mind a vision of cars roaring down tree-lined roads such as only France can offer. To-day the trees at Rheims are no more.

As if this were not enough, the organising club have decided to carry out still more "improvements," and it is proposed to demolish the houses on the corner in the village of Gueux. Now, to the best of my knowledge, no car has ever collided with these houses, and they cannot really be called a hazard to the skilled Grand Prix driver. In any case, they are on a slow corner, and their presence lends a picturesque air to that part of the circuit, and it is difficult to see what motive the Club can have in pulling them down beyond making the circuit faster. As the lap record already stands at over 100 m.p.h.—or nearer 110 m.p.h.—further improvements of this sort are merely attempts to gild the lily.

In the case of the trees, on the other hand, I admit that there is something to be said for clearing them away, on the score of safety. The cars can get up to something like their maximum on this straight, and a collison with a tree at that speed, should they leave the road, would certainly be fatal for the driver. But even with its greater width and improved surface, the straight does not permit any passing to be done on it, except when the cars are accelerating at the beginning and braking at the end of it.

One driver, however, has had the experience of skidding between the trees on the Rheims straight and out into a cornfield—and lived to tell the tale. What is more he restarted his car, got back on to the road, and carried on. His name is Whitney Straight, and the incident occurred when he was driving his Maserati in the Grand Prix de la Marne a few years ago. Straight, incidentally, is a driver who is missed by all Continental followers of motor-racing, who could discern in him the driving technique of an *as du volant de la premiere classe*. To them his retirement was a matter of the keenest regret.

The 1939 Grand Prix de l'A.C.F.—French Grand Prix to you and me—will be held on July 9th. Let us hope that it will be attended with greater success than the event of 1938. One thing is certain, the Auto-Union challenge to Mercédès-Benz will be a very different matter. Why, it may even be the other way round, if Nuvolari keeps up the form he showed at Donington, to say nothing of Muller! The race will be held over 51 laps, or 248 miles in all.

It will be preceded by the Sporting Commission Cup Race for 1,500 c.c. sports-cars, an event which has not been too well supported in the past. This will be over 38 laps, or 185 miles.

It seems a long way to look forward in these troublous times, but here's wishing that we shall be drinking champagne again at the Lion d'Or next July.

E.R.A.s for Tripoli?

The question that the motor-racing fans of Italy are all asking at the moment is whether English Racing Automobiles are going to send an official team of cars to the Tripoli Grand Prix, now that this race has been confined to 1,500 c.c. cars. The date is a bit early, May 7th, and judging by past seasons it is unlikely that the British team will be ready for such an important contest by that time. However, the same thing can be said for the Italians, especially the Alfa Corse, who are carrying out fairly extensive modifications to the 1,500 c.c. Alfa-Romeo, notably in its crankshaft, which in future will have roller-bearings.

From the Italian point of view, British competition would be welcomed, not only from such formidable amateurs as "Bira," Dobson, Rolt and company, but also from the "Works" team itself.

The Mellaha circuit, of course, is tremendously fast, and would permit more or less continuous flat-out driving by 1,500 c.c. cars. Engine reliability would be at a premium, and the comparative newness of the Alfas would be against them in this respect, unless the Corse cars achieve this desirable quality during the winter, which is unlikely. The reliability of the Maseratis would depend largely upon whether they ran their latest cars or not. As for E.R.A.s, the marque have Martin's convincing win at the last Avus meeting to their considerable credit, and on form they ought to win.

Incidentally, talking of Martin's E.R.A., Continental fans are finding in the sale of this car to a German amateur (who does not appear to have raced it since) a peg on which to hang their belief that 1939 will see the participation of one or more German teams in 1,500 c.c. races. Learning lessons from successful predecessors is a recognised part of the technique of building a new racing-car, of course, and I know that the E.R.A. is deeply admired and respected abroad. In the province of producing great power from small engines, too, the British are unexcelled.

Contentment

For Tazio Nuvolari the year 1938 has been one of extremes. It began ominously enough with his car catching fire in practice and causing him to leap for life; an experience which shattered him to such an extent that he immediately declared that he had finished with motor-racing.

A trip to America, where he acted as starter for the Indianapolis Grand Prix, completely restored him, both physically and morally, with the result that he returned to Europe to take up the wheel once more as leader of the Auto-Union team. The rest had apparently done him such a power of good that he returned to better form than ever, finishing with his never-to-be-forgotten drive at Donington.

Now the Maestro is as happy as a sandboy (whatever that may be), and has moved house from Mantua to Rome. He is in a completely different frame of mind from what he was six months ago, and is looking forward—not to retirement—but to a full and successful season in 1939. With Indianapolis to be run under the G.P. formula again in 1939, I would not be surprised to see him make the trip—but not with an Auto-Union.

What a great little man he is!

In Italy Now

Other news from the land of sunshine and spaghetti is that, as a result of their achievements in the sports-car sphere, Righetti and Aldrighetti (funny they should rhyme with spaghetti!) have been enlisted by Alfa Corse as junior pilots for the 1,500 c.c. team next year.

Italy is not too well off for young drivers just now, and a determined effort is to be made to ensure that her man-power in the motor-racing field is equal to that of any other nation.

Maserati are hard at work bringing to completion a new and ultra-hot 1,500 c.c. machine, which will probably be entrusted to Piero Taruffi in its early races. It could not be in better hands.

Finally, the title of Italian Champion has fallen for the first time on the worthy shoulders of Dr. Giuseppe Farina, leader of the Alfa Corse Grand Prix team. Farina has been remarkably consistent this year, as I have already pointed out on more than one occasion, and he thoroughly deserves his new distinction. If armament work at the Alfa factory has not interfered with the development of the sixteen-cylinder Alfa-Romeo, I believe we shall see Farina up with the leaders in many 1939 races.

Heil Huhnlein!

Any doubts which people might have had about the utility of *Autobahnen* must be set at rest by the announcement of Korpsfuhrer Huhnlein's remarkable journey from Berlin to Munich recently on the new road between the capital of Germany and Bavaria. His time, including 25 minutes' delay for refreshments and refuelling the car, was 4 hours 32 minutes for the distance of 360 miles, giving an average speed of roughly 80 m.p.h. over the whole journey. The best train connection takes over 7½ hours. Perhaps the best way to bring the significance of this performance—which was not in the least extraordinary—to British

Continued on page 434

THE B.M.R.O.A.

THE newly formed British Motor Race Organisers' Association is one of the most important bodies having to do with motoring sport. Its formation is particularly opportune at a period when British races need every bit of publicity and success that they can achieve. The B.M.R.O.A. was formed early this year following a suggestion by D. J. Scannell, Secretary of the B.R.D.C. At present the Association is composed of seven race-promoting bodies, which represent the leading organisations promoting classic contests in this country. These seven bodies are: the B.A.R.C., which controls Brooklands and runs its own short handicap meetings there; the B.R.D.C., which annually runs the Empire Trophy Handicap and a long-distance Brooklands handicap; the Derby & District M.C., which controls Donington road-circuit and holds our great Grand Prix there, amongst other races; the J.C.C., which is responsible for the International Trophy and 200 Miles Race at Brooklands and almost everything that is best in other forms of contest of a kind appealing to expert and amateur alike; the Midland A.C., which runs the Shelsley-Walsh hill climbs; the R.A.C., as controlling body of the Sport in this country, and the R.R.C., which holds International road-race meetings at the Crystal Palace circuit. That is a very strong team, and doubtless the Southport M.C., Bugatti Owners' Club, the Irish Motor Racing Club, Ulster A.C. and other promoting bodies will join in the fullness of time. It is not difficult to appreciate the fine work which the B.M.R.O.A. should be able to do by getting rival race-promoters together and working for, and making them work themselves, for the common good. The Association has Lord Howe as its chairman and meets at the B.R.D.C. offices at Queen's Gate Terrace, in London. The only reason we did not refer to it in a leading article on clubs and bodies and rules and things last April, when we attempted to discuss in a breezy and interesting way the divers organisations which promote and control motoring sport, while at the same time cataloguing their relative values, was solely due to the modesty or lack of push of the Association's own sponsors. This month we discuss elsewhere some factors affecting the future, and it is to marshal and control just such factors that the B.M.R.O.A has come into being. Its first season's activities have embraced the following good work:—

(*a*) It promoted the Bonus Scheme, whereby popular Percy Maclure received £250 towards his 1938 racing expenses, Cuddon-Fletcher £80 and Arthur Dobson £50. This Bonus Scheme helped materially towards good and numerous entries for our classic races.

(*b*) It has sent out Press publicity of all kinds and started a racing inquiry bureau on which puzzled Pressmen—both scaremonger and technical—can depend for reliable facts and figures.

(*c*) It has introduced inter-change advertising between the leading promoters in their programmes and started the Forecast Prize Scheme.

(*d*) It is now organising a gigantic Boy Scouts' Soap-Box Derby, the value of which is less obvious, though the resultant pedal publicity may possibly do real racing some little good.

Apart from which, the Association has encouraged rival organisers to meet for the purpose of discussing common problems and reaching mutual agreement on many topics, notably that of appearance money for Continental drivers. It rather agrees with the J.C.C. that classic races should be reduced in number and clearly, only by getting all the leading promoters together to discuss this matter, as the B.M.R.O.A. does, can action be taken. The Association is to be congratulated on so representative a membership. We wish the B.M.R.O.A. very well indeed, especially in its publicity campaigns—£1,000,000 to spend on a British G.P. Team may well be a dream which will overshadow ordinary racing problems so that we shall wake to find that we have neither the G.P. team nor healthy British racing as we now know it. But we pray that those who support the Association and those who do its work will never fail to distinguish the essential difference between a body which exists to further the racing drivers' interests and an association which seeks to ease the path of the race-promoter.

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VINTAGE SPORT

BEING THE STORY OF "FROGGY BLEU II"

SOME readers of MOTOR SPORT may remember a description of an old motor-car named "Froggy Bleu," which much to the surprise of all and sundry yielded yeoman service to its owner long after it should have been decently interred. Despite this ample education in the vagaries of vintage motoring, early enthusiasm still remains.

Number II of the series, a French car like its original namesake, began life as a 1926 "Grand Sports" Senechal. No doubt when new this title was well merited, but by the time it got into my hands in 1937 the appellation of "Grand" anything seemed a little out of place. The general appearance rather suggested acute starvation.

The chassis was high, the wings long and flared, the tyre (old high pressure 700×80) looked hardly suitable for a push-bike let alone a sports-car. And to complete the picture a large "V" screen was stuck high up on the scuttle.

However, it undoubtedly went. As it was picked up cheap no test run had been given before purchase, so on taking delivery any and all sorts of trouble was expected. To our surprise, though, the engine started on the third turn of the handle and seemed to have plenty of life, although only firing on three. This proved to be merely an oiled-up plug and once cleaned we had no more trouble in this direction.

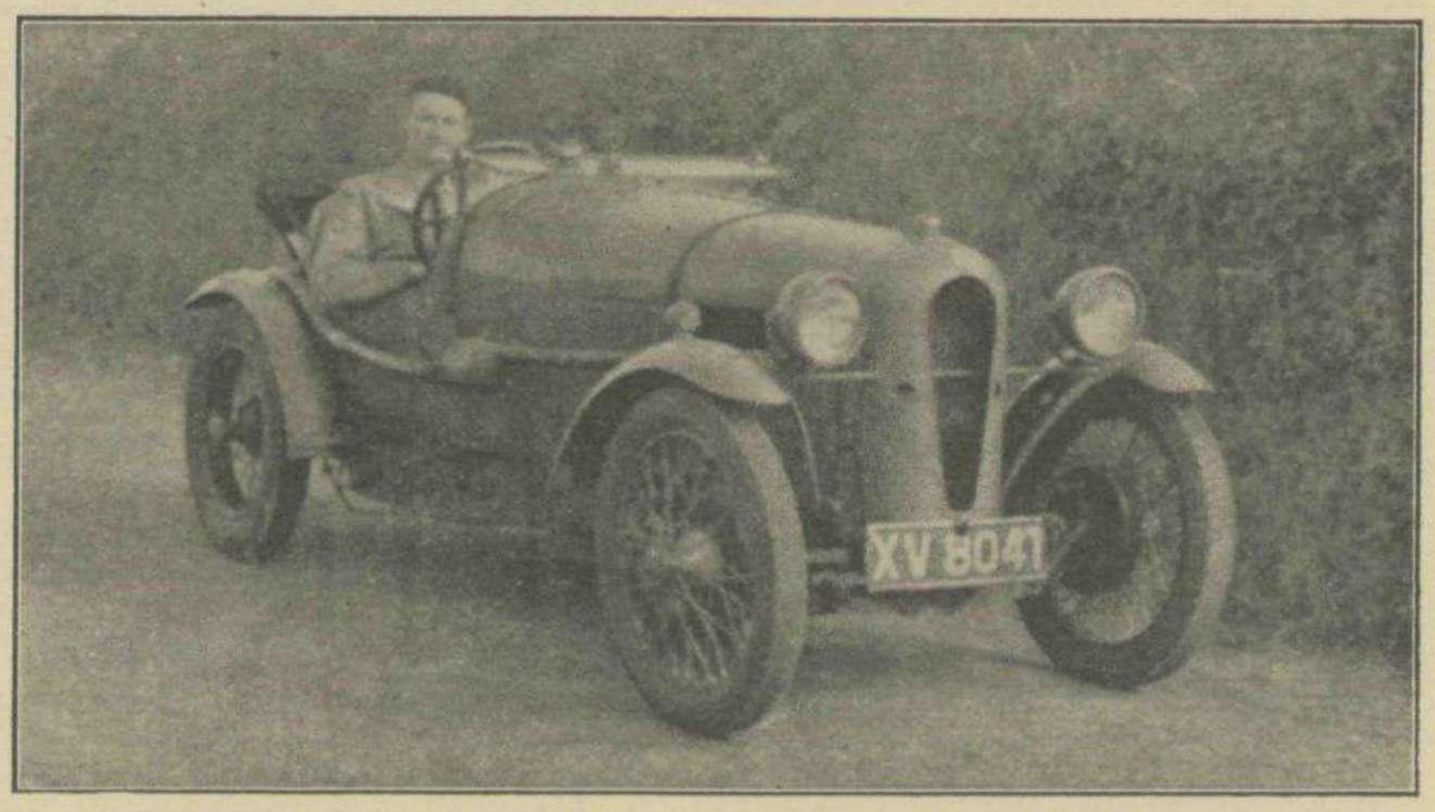
Water, oil and petrol, in respective order of importance, were taken on board and the crew of two embarked, which should have been an occasion for the presenting of yet another medal to the intrepid girl-friend who lends her sanction to these adventures.

However, passing up the heroics, the clutch was engaged instead and, to the accompaniment of chronic back axle whine transmitted through the prop shaft to mingle with power vibrations from the engine, the self-propelled equipage sailed out of the garage and onto the King's Highway, thereby providing full-time employment to the "cop" squad cars of the Metropolitan Police Force.

Still, once top gear was engaged and with an open road in front, the car went quite well. There was a fair amount of play in the steering which, added to the lack of castor action, made 50 m.p.h. distinctly exciting. But the springing was not so bad as it looked, and the general feel was O.K. The foot brakes were, of course, of a somewhat minus quantity as they operated on the two rear wheels only, but the hand transmission brake worked exceedingly well and was smooth enough for a sudden emergency stop.

The top speed was about 55 m.p.h. on the level and about 35 m.p.h. in second. After a little attention to the steering and castor action the car was not touched until the end of September last year.

During the winter it went into dock for alterations and repairs. Firstly, the back axle was taken down and new ball races installed where necessary, which did help to reduce the noise, although, as the crown wheel and pinion have straight bevels, they cannot be quietened very much.



The 1926 "Grand Sports" Senechal in its rebuilt form.

It was next decided that front brakes were an essential fitment, so an Amilcar front axle with 12-inch brake drums was obtained and fitted. This was no easy job, since the Senechal has transverse front springing, and the new axle was designed for a semi-elliptic layout. These brakes were coupled to the foot pedal and the rear brakes transferred to a large outside hand lever, which system works excellently.

A steering box from an Amilcar was also used as the old one was too badly worn to be repaired.

The body was the next item on the programme. The "V" screen was scrapped and a fold flat fitted. The cowling was extended backwards the passengers' side, and a radiator cowl made up and fitted. Pneumatic seats were substituted for the original wire-spring affairs and enabled the occupants to sit in instead of on the car.

As regards the engine, not an awful lot was done, but aluminium pistons were substituted for the original steel ones and an outside exhaust made up, which was a definite improvement since the engine ran much cooler.

The old three-speed gearbox was scrapped and a four-speed installed instead. These alterations have made the old Senechal a very pleasant motor of its type. The engine is much smoother and has a healthy "poke." Speed is now 70 m.p.h. or a little more in top, 55 m.p.h. in third, and 35 m.p.h. in second. The cruising speed is 50 to 55 m.p.h., and the brakes are easily up to their job.

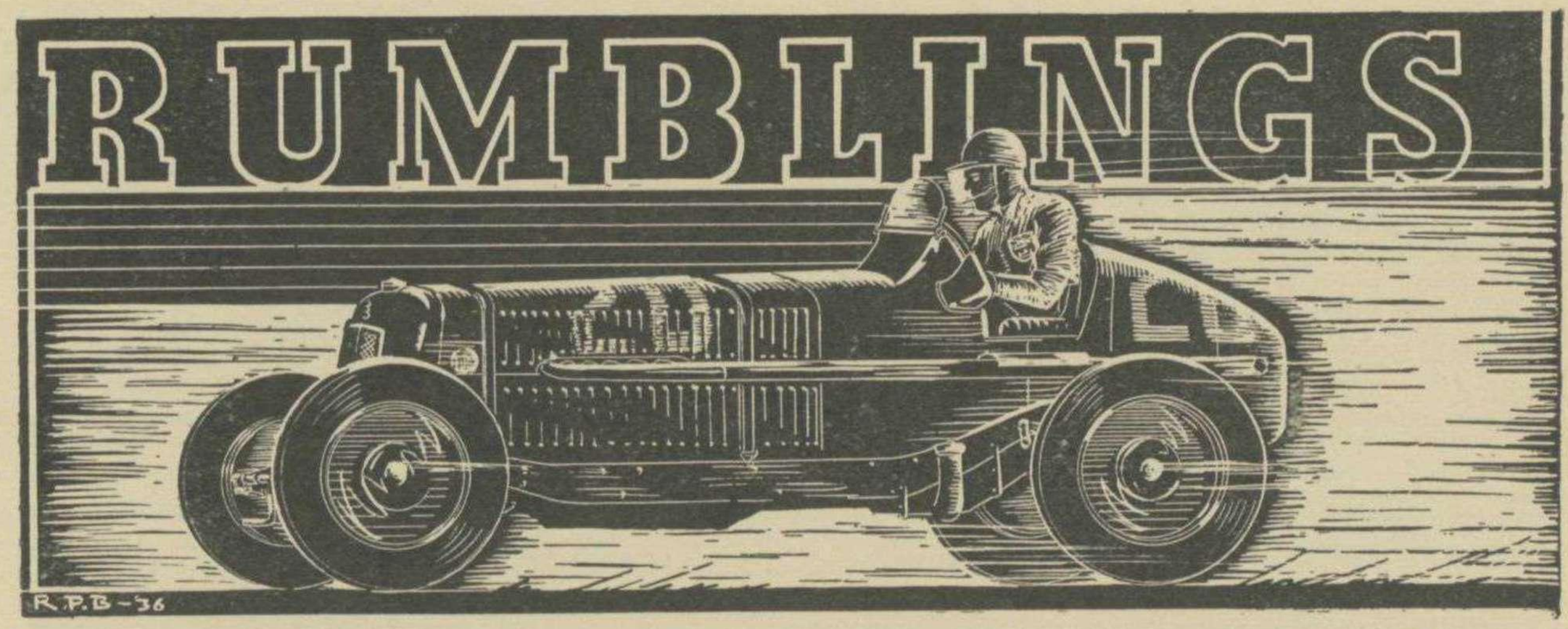
Recently oversize rear tyres were fitted which considerably increased the comfort and also the road-holding, and a hotter engine is now in the throes of construction.

Of course, the motor isn't suitable for even mild speed trials or hill-climbs, and I'm not interested in "mud-slinging," but for its own purpose, which is road work for pleasure only, it's a very attractive little car to run.

THE MONTE CARLO RALLY

The Monte Carlo Rally looks like being a success after all. It is the biggest of winter adventures—see Humphrey Symons's classic book—and one of the most instructive of road events. The 1939 event is, sensibly and commendably, confined to coupé or saloon cars of a type of which at least thirty must have been sold. Large cars must have four or more seats and small cars at least two seats. Bodies must conform to certain minimum dimensions and drop-head coupés must remain closed. Superchargers are barred. There will be three classes: 750 c.c., 1½-litre and over 1½-litre—the new 750 c.c. class is rather curious, but is possibly included to attract some of the new French economy cars. The starting places are Amsterdam, Athens, Bucharest, John o'Groats, Palermo, Stavanger, Tallinn and Umea. Over all routes an average of 24.8 m.p.h. is required, with a last stage in each case of approximately 620 miles at 31.07 m.p.h. Athens carries 500 marks, the highest. John o'Groats carries 496 marks. The final tests, on which so much depends, will this time consist of an acceleration-brake-reverse test and a speed hill-climb—which does not sound unduly "circus." Cars start on January 17th, arriving on January 21st. The tests occupy January 22nd, 23rd, and the Comfort Competition is due on January 24th. Entries close on December 17th and at double fees on December 24th. The normal fee is 1,200 francs for small cars and 1,500 francs for large cars.

Details from: International Sporting Club, Monte Carlo, Monaco.



A Great Campaign

EVER since the German teams ran in this country for the first time, feeling has been running high that this country should put a team of Formula cars into action. Suggestions as to how best this could be accomplished have appeared in print, and when the new Formula, now operative, was announced E.R.A. actually decided to produce a 2½-litre car for 1938 Formula races. The new E.R.A. never came off the drawing board and now Bourne says it never will. In any case, it appears that only 3-litre blown *bolides*, and a team at that, can gain success under the Formula which remains in force for two more seasons. In this field Auto-Unions and Mercédès-Benz stand quite untroubled by the 3-litre Alfas and Bugatti and 4½-litre unblown Delahayes, if a trifle stirred up on occasions by the 3-litre Maseratis. So far as Britain's part is concerned, it has been suggested that E.R.A. be subsidised by the British Motor Industry to put a real G.P. team in the field, a scheme advocated both in the E.R.A. Club magazine and by "Grand Prix" in this paper last month. "The Motor" has recently commenced a great campaign for a British team of Formula cars financed by both industry and Government subsidy, and to be built in a factory erected, equipped and staffed expressly for the purpose. High lights of a leading article which appeared in the issue of November 8th, and which every enthusiast should read, were the estimation of the cost as one million pounds, spread over a five-year programme, equivalent to only twenty bombing aeroplanes or one 5,000-ton naval vessel, and a commendably clear statement of the sales value of racing to Germany, notably in respect of the South African market. It was suggested that Capt. G. E. T. Eyston would make a very able full-time general manager of a National racing-car factory. We wish profoundly that such a scheme would materialise. Having become quite pro-German after witnessing the skill, efficiency and enthusiasm of the German mechanics and engineers who tended the Auto-Unions and Mercédès-Benz at Donington in 1937, we testify to the vast National prestige which success in racing can bestow. And we believe that racing opens up markets and increases car sales, if only because race-keen engineers and designers usually produce highly commendable bread-and-butter cars. But of the value of modern road-racing to technical progress under the existing Formula, we are not so sure. Granted front-wheel brakes, reliable tyres, o.h.v. engines, low frames, aluminium pistons and hosts of other invaluable features have been handed on from racing to utility motoring. But mostly it was the pre-War era which was thuswise beneficial. After the War racing-cars became so specialised as to raise a query as to what benefits they could hand on to you and me. Aeronautical requirements furthered metallurgical research, and engineering progress attributable to the racing-car was only applicable to small-production specialised sports-cars. Even so, lots of British makers then entered for competitions, not necessarily races—Bentley, Sunbeam, Vauxhall, A.C., Aston-Martin, Alvis, G.N., Austin, Calthorpes, Straker-Squire, Wolseley, Leyland, etc. Even those firms which competed but seldom, perhaps building only one racing-car, must have learnt quite a lot about how their particular design liked delivering a high output. These lessons may not have combined to benefit the Industry at large, but to individual firms they must have been invaluable, not merely when it came to supplying a super-performance job to a favoured client, but in improving the model in future years.

Now, if you agree that one Grand Prix winning motor car can materially add to a great nation's industrial and political prestige, surely you must concede that a "dud" marque selling in a foreign market can do incalculable harm to the country from which it originates? Modern cars are very very good, but, now that even our Government officials are ceasing from frowning at three-figure speeds on our highways, a universal call will soon come for more and yet more performance from all types and sizes of utility cars. Those who believe that racing is essential to teach manufacturers just how engines which are very happy now will behave when fed so that their horses are induced to grow really hairy legs can only feel alarmed that, of our big manufacturers, only Sir Herbert Austin now supports racing, and that he races very non-standard cars. So, while hoping

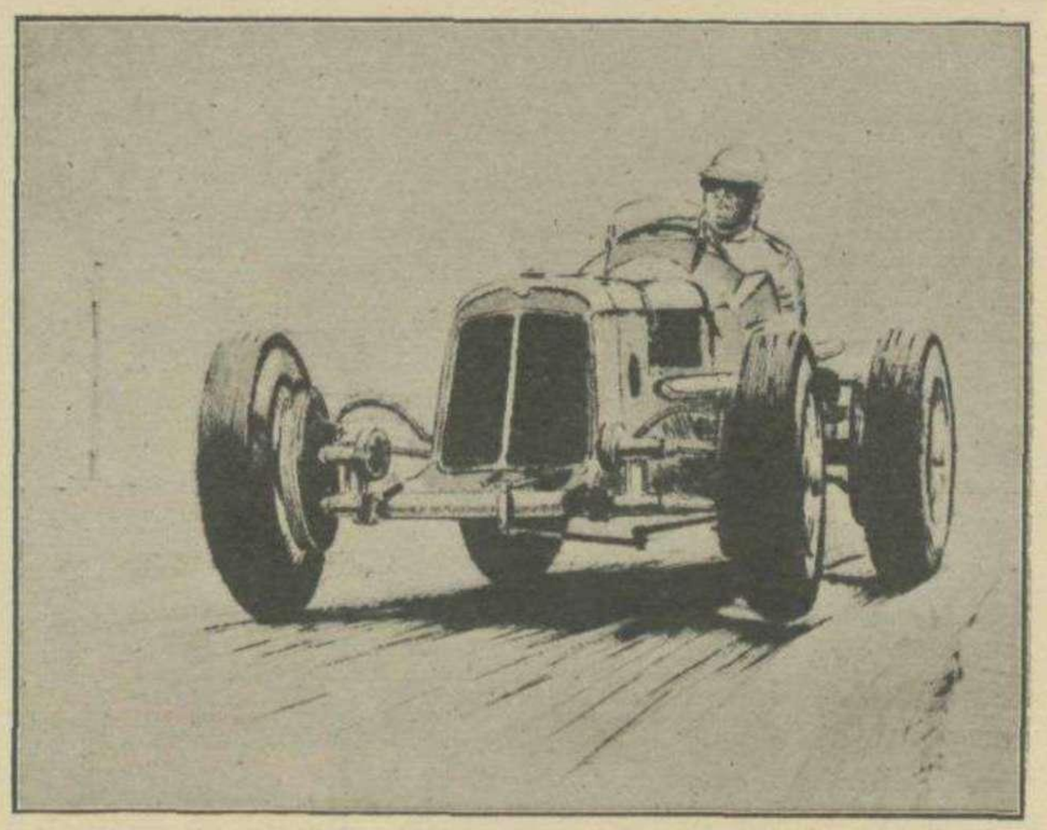
RUMBLINGS—continued

that one day we may send a team of British cars successfully into Formula racing, let us not neglect ordinary racing in this country. Rather, let us hope that the B.M.R.O.A. will, by " swelling " our gates, induce British firms to take an active part in competition motoring of one kind or another.

Reverting to the possibilities of a British G.P. team, the " Motor " emphasises that we have the necessary alloy steels, the necessary knowledge of high pressure supercharging, the necessary brake-linings and brake mechanism and the necessary ability to make reliable plain bearings, etc. We have engineers and technicians of high enough ability. After Major Gardner's 187 m.p.h. records with the 1,100 c.c. M.G. the whole world should have no argument on this score. Capt. Eyston has been suggested as manager of the team and works probably because he has concentrated on the technical side of high-speed motoring for some years with outstanding success, while having had valuable experience as a driver. If he could not consider the position there are other British engineers able to fill it. Reid Railton or Capt. Irving, for example. We agree that an entirely new organisation should be formed to promote the work, because there is no existing racing-car organisation in this country which could tackle the task as it stands. Some people would like to see the subsidy paid to Rolls-Royce, under Government instructions to build the team, and they could unquestionably make as fine a job of the task as any existing organisation. As to drivers, everyone would wish Dick Seaman and Arthur Dobson to be in the team. As to a name for the cars, British Union sounds as well as any if a separate, new concern were to construct the cars, otherwise the cars should bear the name of the company called upon to produce them, as marque prestige would be richly deserved ; Auto-Union and Mercédès carry the colours of Germany, Maserati and Alfa-Romeo those of Italy, Bugatti and Delahaye those of France. Some people believe a National subsidy will end ordinary participation in racing as we now know it. Personally, we hope and believe that there is scope for both.

Buy British

Perhaps we should do better to praise British cars more and have less to say about foreign sports-cars—at all events, a story has come to hand of an enthusiastic young man who placed an order for a Continental coupé costing in the region of £1,300. He placed an order for the chassis at Earl's Court in 1937 and got delivery in June 1938, during which time the firm of British coachbuilders had finished the body. Entering as soon as the car was run in for a classic trial abroad, the owner got as far as Paris and could not start the engine. The makers were just not interested. The magneto maker took the mag. away, put it back unchanged and messed up the timing. After much persuasion the works retimed the ignition the next day in two hours, after demanding two days in which to do the job. The front shock-absorbers had ceased to function and at the makers it was gently explained that only two people could adjust them, one of whom was on holiday and that, anyway, the engine would have to be removed before the shockers could be repaired—a two days' job. Incidentally, the interior of the car filled with oil in less than 2,500 miles motoring. Moreover, the engine pinked badly on 80 octane fuel, although the makers said it should not. Owing to the lack of adhesion under braking the car was beaten in a speed hill-climb which formed one of the tests by a V12 Lagonda, and both this Lagonda and an H.R.G. excelled it on final placings. So let us enthuse over our own great British marques such as the 4¼-litre Bentley, V12 Lagonda, and 4.3-litre Alvis. These cars are essentially reliable and do sell in commercially worthwhile numbers. The Bentley now has a safe maximum of 107 m.p.h., by reason of its new over-drive top gear, and from experience of our John o'Groats run in one of the earlier cars without this overdrive we feel sure that this higher maximum will be found invaluable not only for fast touring abroad, but for

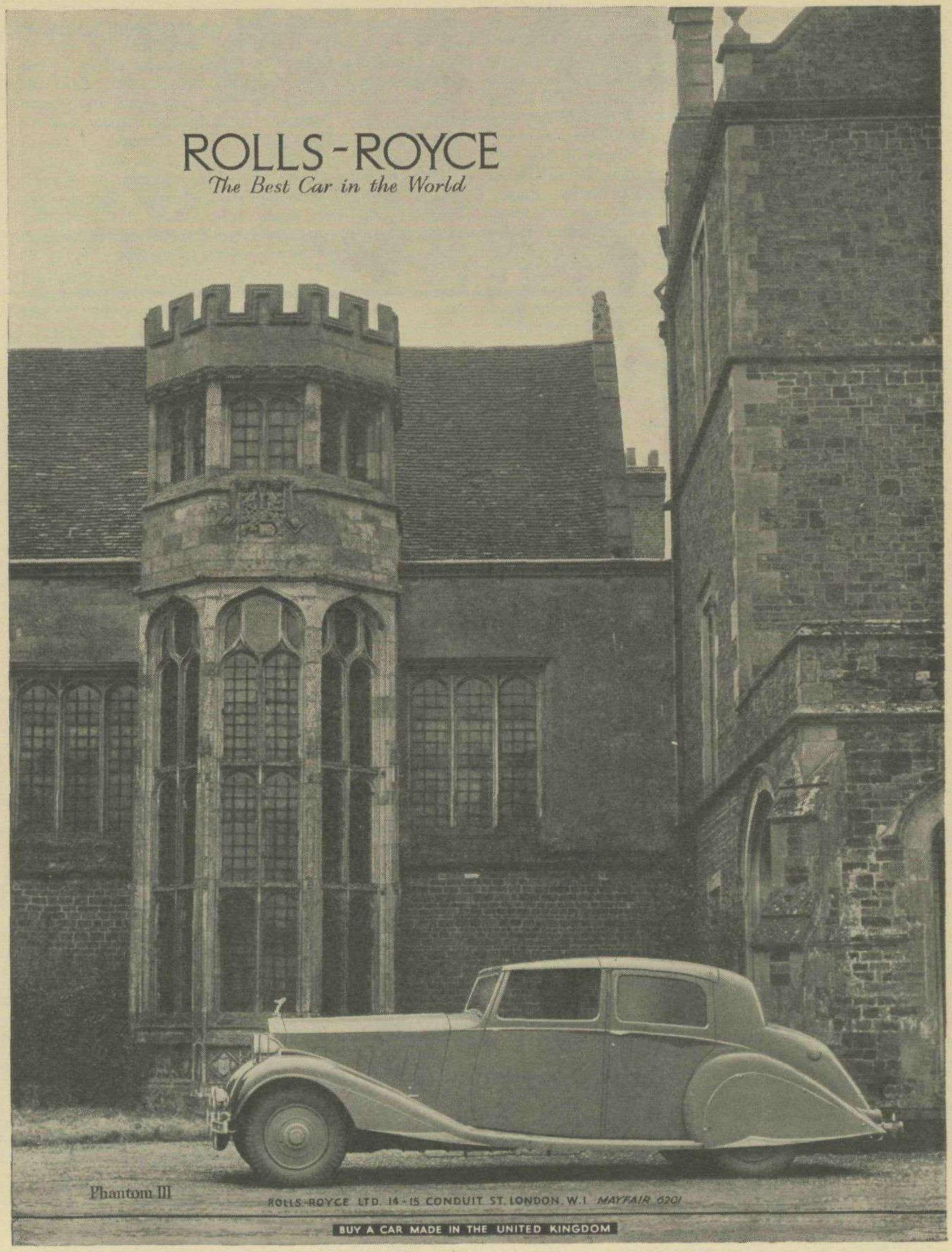


A fine action study of Humphrey Cook and the E.R.A. This is a reproduction of an etching, twelve by fourteen inches, by F. M. Barnicott.

serious motoring in this country—in spite of pessimists there is a lot of British highway on which it is perfectly safe and reasonable to cruise faster than at the 75 to 80 m.p.h. recommended as a safe limit by Bentley's for the 4¼-litre before they introduced the overdrive ; that is, in a car of Bentley calibre.

Tyre Topics

Some interesting matters came to light in the course of a paper on " Tyre Requirements for Modern Transport," read to the I.A.E. by C. D. Law, Manager of the Product Performance Division of the Dunlop Rubber Co. Ltd. There are ten important factors in tyre design, *viz.* :—tread wear ; safety ; riding comfort ; cornering power ; heat resistance ; silence ; weight ; balance ; power consumption ; and electrical conductivity—beauty of tread appearance was not mentioned. Tyre life cannot be prolonged indefinitely by piling on more and more tread rubber, because there comes a stage beyond which additional tread shortens life. Improved car performance, rough " top-dressing " of roads, the use of smaller wheels and extra-low-pressure tyres and the development


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RUMBLINGS—continued

of independent suspension, were mentioned as negativing a fair comparison between tyre life to-day and five years ago. Sometimes a thick-tread tyre which outlasts a thin-tread tyre in the matter of internal break-up is regarded as the inferior tyre by an owner who keeps no mileage records and judges the tyre's life by the appearance of its tread when it has to be scrapped. Dunlop technicians have a method of examining cars in public car-parks and, by noting tyre condition in the case of modern cars fitted with their original tyres and the speedometer readings, of obtaining useful data relating to tread wear on different types of cars. Wear on 1938 cars seems to range from 10,500 miles for a 35 cwt. car of 25 h.p. to 20,000 miles for an 8 h.p. car weighing 15 cwt. Tread wear slows down proportionately as the wear gets worse. Wheel sizes have diminished considerably. In 1933 39 per cent. of the cars on the market had 19 in. wheels and 34 per cent. had 18 in. wheels, but this year 45 per cent. used 16 in. wheels and 17 in. and 18 in. wheels jointly figured on 41 per cent. Generally speaking, on ice or wet wood blocks the absence of tread has very little effect on the tendency or otherwise of a car to slide, but on wet polished asphalt, as frequently encountered in city areas, smooth tyres can double the stopping distance as against that possible with new tyres. Ribbed treads wear evenly and in consequence have a greater resistance to skidding than broken-pattern treads that have worn in "stepped" or "heel and toe" fashion. The ribbed tread is likely to be slightly less efficient when new, but has an advantage over the broken tread for about 90 per cent. of its life. Transverse grooves can achieve equally good results from the ribbed tread even when it is new, but if these grooves are in the wrong positions, wrongly spaced, or too coarse or close, equally rapid and irregular wear will result. Pressure rather than construction governs riding comfort. Increased cushioning capacity is most easily obtained by a decrease in pressure, but as this involves increased deflection for a given load a bigger section is essential to avoid casing fatigue. Comfort is improved by increasing load on tyres and springs and to a much smaller extent by a reduction in tyre pressure. Either method increases the running deflection of the tyres and consequently the rate of tread wear. If pushed too far casing fatigue will set in. A large increase of flexibility by reducing tyre pressure will have a much smaller effect on comfort than a relatively small increase in spring flexibility. Hence supple springs on 1938 cars and low-pressure and "E.L.P." covers, to improve riding comfort. Bigger tyre sections follow, that increase of running deflection will not result in failure of the tyre structure.

Dunlop have been into the matter of silencing treads, necessary when Rolls-Royce, Bentley and Daimler sold truly silent cars. Now the *Autobahn* is showing how racing research is likely to benefit ordinary users in the tyre department. Eyston's tyres had hardly any tread, a very heavy casing, reinforced beads and rubber compounds of low heat-generation type. Tests with 7 in. × 17 in. Dunlops at 50 to 100 m.p.h. on German roads show Dunlop that like features may be needed for ordinary driving at over 80 m.p.h. on the *Autobahn*. Ask Mr. Lycett! The pioneers thanked Mr. Dunlop for tyres; the modern motorist has to thank the same gentleman for remarkable tyres!

Odd Spots

The Type 57C Bugatti has supercharger blowing at 9-10 lb., and the twin o.h.c. straight-eight 3.3-litre engine. With normal saloon body it is capable of over 100 m.p.h., revs. to 5,000 r.p.m., runs down to 7 to 8 m.p.h. in top and does not pink on straight petrol. The saloon is priced at £1,010.

* * *

The Bugatti works employ about 1,600 persons. The compression ratio of the Type 57S Bugatti is 8.7 to 1.

* * *

C. W. P. Hampton is disposing of his rebuilt 1½-litre 95 m.p.h. Targa Florio Mercédès-Benz and his Lancia saloon.

* * *

We recently examined a Rolls-Royce "Wraith" chassis at the premises of the Southern Motor Co. So supple is the independent front suspension that with the car stationary the frame can easily be moved up and down by light hand pressure. Yet at speed automatic and driver-control of the springing gives perfect stability. A wonderful ride results.

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Club News

CHILTERN CAR CLUB

GUY FAWKES TRIAL, OCTOBER 30th, 1938

Drizzle in the morning and intermittent rain during the afternoon made the course for the above Trial in a fairly good condition. There were fifteen starters from the King's Arms Hotel, Amersham, although one of these retired with a broken back axle on arrival at the first hill. This was Rutty Lane, divided into two non-stop sections, the first over nearly level but very rough ground, and the second up a fairly sticky gradient. The first section was not nearly wet enough and failed nobody, but three cars failed on the second. Rignal proved a more difficult proposition, being also very muddy and harder to start on, eight cars failing here. The final non-stop section was Hale Wood, whose slippery surface of chalk, well covered with wet, dead leaves and two acute corners routed all competitors but C. W. Taylor (M.G.).

The downhill acceleration and braking test on Lamkins Folly was definitely exciting to watch. Only one car failed to pull up in the prescribed distance and times were: S. H. E. Thwaites (Ford Ten) 8⅘ secs., R. E. Richards (M.W. Rover Special) 9⅕ secs., equalled by C. B. Ballard (M.G.), and H. H. A. Ironside (Lancia), C. W. Taylor (M.G.), and R. F. Hield (M.G. S/c), each 9⅘ secs. Here C. W. Taylor was compelled to retire with back axle trouble when having a useful margin of marks in hand. The best times on the final stop and re-start test on Hawridge were B. D. Acland (M.G.) 15⅘ secs., R. G. Bradshaw (M.G.) 20⅗ secs., and W. E. Edgar (Alvis 12/50) 20⅗ secs. Three competitors lost marks by failing to re-start without help.

RESULTS

Premier Award : B. D. Acland (M.G.).

First-Class Awards : C. B. Ballard (M.G.), S. H. E. Thwaites (Ford Ten), H. Wood (Frazer-Nash-B.M.W.).

Second-Class Awards : R. G. Bradshaw (M.G.), W. E. Edgar (Alvis 12/50), R. F. Hield (M.G. s/c).

Third-Class Award : M. Zwick (Ford 30).

INVICTA CAR CLUB

Arrangements have been completed for those members who wish to do so to transfer to the Bugatti Owners' Club, at the special annual subscription rate of £1 1 0, up to December 1939—which is undoubtedly a snip. As some sort of peace-offering to the B.O.C., the late Invicta Club paid over £20, a Challenge Cup and twelve badges—but surely from now on members become B.O.C. members and should buy and display the B.O.C. badge ?

E.R.A. CLUB

The annual dinner held at Lysbeth Hall, Soho, was outstandingly successful. Lord Howe took the chair, and S. C. H. Davis handed over the Club's donation of £200 to Humphrey Cook as a token of its enthusiasm—it would be the first to agree that such a sum, in cold fact, cannot very materially assist E.R.A. to extend its racing programme. Actually, critics should blame the luke-warmness of British enthusiasts. Donington drew 60,000 persons to the Grand Prix. If we assume that for every genuine enthusiast present there was one popa and moma, one wife or one girl-friend, that still gives us a gate of 15,000 enthusiasts. If each one of these 15,000 contributed his (or her, but mostly his, because girls only enthuse over racing when allowed to decorate the pits and high places, converse with a speed king or sit in a palatial car *en route* for the course) £1 subscription to the E.R.A. club that would be a subsidy, out of enthusiasm, of £15,000. And such a sum could further British activity in the 1½-litre field quite a lot. In sober and cold fact the membership is about 200 souls. C. N. S. Pringle emphasised this fact in his secretarial address. Other speakers were Mrs. K. Petre, Raymond Mays, Arthur Dobson, Peter Bethron, Tommy Wisdom, Reggie Tongue and Humphrey Cook. Mr. Cook said that E.R.A. had dropped the plan of building a 2½-litre Formula car, as G.P. racing might in future occupy a less important position than it had in the past. Instead, E.R.A. would meet the 1½-litre challenge with cars having the chassis prepared for the Formula car—which we believe is proving a bit difficult over road-holding at present. George Monkhouse then got up and said that as G.P. racing was in a more flourishing state than it had ever been he proposed to show his colour films of G.P. racing. He made certain remarks which have been described as tactless and in bad taste. Monkhouse says what he believes and lots of people cannot stand that, which is probably why some people slang MOTOR SPORT but continue to pay their subscription. Perhaps he showed rather more enthusiasm for the 1½-litre Alfa than suited everyone who was present.

The Club is selling E.R.A. button-hole badges for 1/6 each, to swell the fund, and if you cannot join this Club you should at least support British racing to the extent of eighteen pence. May we suggest car badges at a sum of about 3/6—naturally distinct from the Club's own badge ?

Hon. Secretary: S. H. Green, 591, London Road, Thornton Heath. Badges from · C. N. S. Pringle, 10, Park Parade, Cambridge.

GREAT WEST M.C.

The Thatcher Trophy Trial is a classic event, and the 1938 event attracted seventeen starters. Heavy rain made the course tricky and provided dismal rides for K. N. Hutchison and Mrs. Hutchison in the new V8 Allard-Special, which now boasts a screen but is without hood, and for T. Lush and his passenger, whose 1935-engined Austin Seven had tiny wings, fabric bonnet and no real bodywork at all. Hutchison beat everyone in the timed test, with a clear advantage of 2 seconds. Sloe Gin failed all but three cars and only Penthony (M.G.), Dyer (Riley) and Hutchison (Allard-Special) got up. Devil's Staircase failed only Anthony, as leader of the string of cars in a comp-shod, ordinary and elderly Standard Nine saloon and a Singer driver who failed to put in his lowest cog early enough. Lewknor claimed five stoppages and chalky Crowell, in two sections, stopped six at the restart on the upper section, while Whiddington retired at the foot with his Jensen. Dyer's Riley nearly took a trip over the edge. Only Dyer (Riley) and Penthony (M.G.) returned clean sheets at the finish, Dyer taking the Thatcher Trophy, Penthony a first-class award. Hutchison won the Begg Robertson Cup and ex Gratia Awards went to Wagner's Morris, Cattolico's Singer and Manison's Aston-Martin. We heard of police interest of the wrong kind at Devil's Staircase.

BRISTOL M.C. & L.C.C.

The famous Roy Fedden Trophy Trial was this year a very stern affair. Tin Pan Alley was fairly easy but failed Clark's high-geared 3-litre Bentley, while the E.B. Special ran a big end but climbed clean for all that. The old Hollow stop and restart saw Langley's "Grasshopper" Austin Seven record 23.6 secs., Warburton's Allard-Special 23.8 secs., and Biggs's B.M.W. 24 secs. Hodgecombe failed eighteen cars and at Narkover, where only seven competitors got up, Terry's Ford broke its drop arm and much delay ensued. Warburton, Lawson, Steadman, Dargue and Bastock went up well, respectively mounted in Allard, H.R.G., G.N., B.M.W., and M.G. motor-cars. Twenty-one people vanquished Nailsworth Ladder—wonderful things these modern trials cars—and the police said oh no to the Ferriscourt test.

The Stancombe acceleration test saw Warburton register fastest time in 8.8 secs., with Johnson's B.M.W. and Lawson's H.R.G. as runners-up. In the stop-go-reverse test Warburton did 23.2 secs., and Macdermid (M.G.) 23.6 secs. Only eleven climbed Juniper and Warburton

CLUB NEWS—continued

made an excellent ascent, setting seal to his win for the Roy Fedden Trophy.

RESULTS

Roy Fedden Trophy : G. Warburton (Allard).

Daphne Trophy : L. G. Johnson (Frazer-Nash-B.M.W.).

Committee Cup : M. H. Lawson (H.R.G.).

Alexander Duckham Cup : A. H. Langley (Austin).

Club's Cup (best unsupercharged car): T. W. Dargue (Frazer-Nash-B.M.W.).

Anthony Cup (best supercharged car): J. A. Bastock (M.G.).

Barber Memorial Trophy (best Bristol Club member): P. S. Flower (M.G.).

Team Award : The Musketeers (R. A. Macdermid, J. A. Bastock, A. B. Langley—all M.G.s).

SUNBAC

Alf Langley and his "Grasshopper" Austin Seven, having won the "Experts," walked away nicely with the Vesey Cup. Ken Hutchison with his V8 Allard-Special was equally rapid on the first timed test and the result ultimately depended on the Longville test. In the first test Frost's B.M.W. took 25.6 secs. and Imhof's M.G. 25.8 secs. The timed climb of Longville saw Hadley and Langley put their Austins up in 20 secs. In the stop-go-stop test on Eaton II Imhof and Hutchison tied for best performance in 5.4 secs., and Langley and Bastock (M.G.) both took 5.8 secs. Interesting cars that competed included W. C. Butler's Autosports Singer graced with 30 Ford horses, Woodall's oversize Ford Eight engine riding in a Wolseley Hornet chassis, with Morgan front suspension—this suspension is gaining a considerable following for specials, since the Fry brothers used it on their cars for sprint work—and Povey's special Triumph.

RESULTS

Vesey Cup (for best performance): A. H. Langley (747 c.c. Austin, S.), 0 marks lost; 26⅘ secs. driving test and 20 secs. at Longville.

Carless Cup (for best over 1,100 c.c.): K. Hutchison (3,622 c.c. Allard), 0 marks lost: 26⅘ secs. driving test and 22⅘s. at Longville.

Watson-Gwynne Bowl (for best under 1,000 c.c.): W. H. Scriven (747 c.c. Austin S.), 0 marks lost; 28s. driving test.

Trial-to-trial Trophy (for best performance by one who has not previously won a Sunbac trophy): E. Lloyd-Jones (3,622 c.c. Triangle Special), 9 marks lost; 32s.

Team Prize : Austin "Grasshoppers" (A. H. Langley, W. H. Scriven and C. D. Buckley), 19 marks lost.

Tankard : G. Warburton (3,622 c.c. Allard), 0 marks lost: 66 secs.

Ashtrays : J. M. Toulmin (1,708 c.c. M.G.), 7 marks; 29⅕s. E. Lloyd-Jones (see above). J. E. S. Jones (1,708 c.c. M.G.), 14 marks; 26s. H. K. Crawford (1,711 c.c. M.G.), 14 marks; 30s. A. C. Imhof (1,780 c.c. M.G.), 15 marks; 25⅘s. C. D. Buckley (747 c.c. Austin S.), 19 marks; 29⅕s.

B.A.R.C.

The annual dinner and dance was held at the Dorchester. Baron von Falkenhayn, who had flown over from Berlin for the Earl's Court motor-bicycle Show, was able to give to those present a very fine account of Major Gardner's 186 m.p.h. outings with the M.G. on the Frankfort *Autobahn*—records which have obviously impressed the Germans profoundly. 279 persons attended, over whom Lt.-Gen. Sir Louis Vaughan presided. Professor A. M. Low proposed "the guests," welcoming Lt.-Col. Sir Francis Shelmerdine, Capt. Eyston, Harry Edwards, J. D. Scannell and Fred Craner—which makes one reflect that rival race organisers are on friendly terms even without the good offices of the new B.M.R.O.A. Sir Francis Shelmerdine referred to the aviation side of Brooklands and Vickers' great long-distance record flight. Capt. Eyston paid tribute to Cobb and Gardner as great motor-car record breakers. Incidentally, Eyston used to ride a motor-cycle at Brooklands in the early days under another name. An excellent interview published in a recent issue of "The Bystander," which was quite up to motor-paper standards, reminds us that the fastest man on earth went to Eton and Cambridge, drives motor-boats and aeroplanes besides cars (we believe his last aeroplane was a Robinson "Redwing," about 1933) and that his first car was an A.B.C.

B.T.D.A.

The British Trials Drivers' Association, about which we have not heard much of late, is toying with the idea of a Trials Drivers' Star, to line up with the B.R.D.C. Annual Road and Track Stars—and this is a most absorbingly interesting idea. May it go ahead.

On the subject of matters of moment to trials drivers, R. A. Macdermid has recently suggested that the ban on competition covers is unnecessary from the viewpoint that such tyres destroy road surfaces. A letter writer to one of the weekly motoring papers put the matter in a rather smart nut-shell a long time ago, when he suggested that the R.A.C. sought to ban comps. because a comp.-shod tyre draws attention to itself and to the form of contest to which it is going or in which it is participating. The Ministry of Transport was sufficiently awe-inspiring to move the R.A.C. to frame the new regulations and it seems likely that its attitude has been so awe-inspiring as to make it seem advisable to disguise trials cars as much as possible, even though they are running in events held under Permit and conforming to rules to which the M.O.T. says it approves. But men with expensive hardly-scarred comps. in their garages and R.A.C. Competition Licences in their pockets are more likely to take kindly to the suggestion that comps. destroy road surfaces and are banned as from January 1st for that reason. Anyway, that is an idea put forward in a very well balanced letter written to one of the weeklies.

VINTAGE S.C.C.

When a club attains a really large membership there is an incentive to try to make everyone who is eligible join up, so that a sort of record membership may be declared. It is very much to the credit of the Vintage S.C.C. that, although it can count itself one of the biggest clubs in existence in spite of its age limitation, by reason of a membership between 300 and 400, nevertheless it makes no attempt to enlist everyone and anyone owning a pre-1931 car. Instead, it welcomes those who are confirmed vintage-car enthusiasts and authorities or who feel they will derive some benefit from its ambitious fixture list or from the meetings with enthusiasts of like ideas which membership makes possible. The ever-entertaining Bulletin (printed and really well illustrated) has been issued less frequently of late to conserve capital, but the next issue is due about a week before Christmas—the Bulletins alone are worth associate membership. The Club held its annual Gloucester Trial on November 27th, of which we hope to include a report elsewhere in this issue. The northern-residing members made very merry about November 5th and rather specialise in lively parties. Lots of vintagents figured in the Brighton Run, Clutton riding in Bradshaw's 1898 eight-seater saloon Daimler, S. C. H. Davis driving his Léon-Bollee, Nash a big Panhard, Mills his chain and belt drive 5.9 h.p. Benz, Wike his Mercédès, Hutton-Stott the Lanchester, Fry a Humber, and the Bolster brothers a Panhard. Vintagents tend to compare veteran cars with moderns that they know, rather than wishing to pit them one against another as sacred museum-pieces. The Club is accordingly seeking to arouse more interest in the later Edwardian veterans, of the 1905-15 era. Their sprint events at Prescott and Lewes will embrace classes for such cars next year, as before, but run under Clutton's revised formula. Rallies for such cars are also being seriously considered, which is a truly commendable idea.

Hon. Secretary: Tim Carson, "The Phœnix," Hartley Wintney, Hants.

BUGATTI OWNERS' CLUB

The November issue of "Bugantics"—as usual beautifully produced—contains a report by J. D. Aylward of the September Prescott meeting, illustrated by Klemantaski and Brymer portraits, a test of the blown 3.3-litre Type 57C Bugatti by Col. Giles, and a long account of C. W. P. Hampton's adventures in the Paris-Nice Trial with his 3.3-litre Type 57S Corsica coupé, accompanied by some of Anthony Heal's photography. Three new members have joined: N. S. Brockelbank, R. C. Neville and C. A. Foyster. Up to the closing Prescott meeting C. I. Craig leads on Victor Ludorum marks with 78, from Baron with 68 and Shakespeare with 53. There is included an interesting account of the proposed presentation to Mr. Chamberlain by the French of a chateau, the subscription list for which was opened by M. Ettore Bugatti, who gave a Type 57 Bugatti saloon for auction, which car was painted green, the British racing colours and in France a colour denoting hope. The Night Trial on November 19th-20th attracted thirteen starters. Results had not been worked out by the following day, but we shall endeavour to include them elsewhere if they come to hand in time.

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

Letters from Readers

THE 8/18 TALBOT

Sir,

From time to time in these columns I have noticed reference to that grand little vintage car, the 8-18 Talbot. I therefore thought you might be interested to hear of a rather good example of the type, which I ran until a short time ago. This was a 1924 model two-seater, and when I purchased it for £6 it was in quite reasonable running order. After using the car regularly each day for about a month I decided that I would thoroughly overhaul the chassis and body and restore the car to something like its original condition. There seemed to be amazingly little wear in the main components, and when everything had been thoroughly cleaned up and the body resprayed I had a most interesting little car, oversize pistons were fitted, the suspension stiffened up, a new windscreen and instrument panel made, the upholstery recovered and stronger valve springs fitted. The solid back axle and artillery wheels with small section tyres were however retained.

Cornering, with the high geared steering and solid drive, was really excellent. Suspension was hard but very steady, acceleration was quite good, 40 m.p.h. being normal on second gear of the rather widely spaced three-speed box.

Unfortunately I wrote the car off by somersaulting it when trying to corner too quickly. However, I can thoroughly recommend the type to anyone wanting some fun at minimum cost.

I am, Yours etc.,

A. F. RIVERS FLETCHER.

N.20.

* * *

THE 10/23 TALBOT

Sir,

It is with great interest that I have followed the articles and correspondence concerning "£5 motoring" that have appeared from time to time in MOTOR SPORT.

Being the enthusiastic owner of a vehicle the "Inman Special," I think other readers might be interested in its description.

The vehicle selected for treatment was a 10/23 Talbot of 1923 vintage, being virtually saved from the breakers. The choice was first made because of its cheapness and secondly of it boasting many modern features, such as push rod operated overhead valves, coil ignition, gear pump pressure lubrication and water pump circulation for cooling. The only item lacking was front wheel brakes.

The specification of the car after rebuilding is as follows :—

Engine : Four-cylinder, bore 60, stroke 95, 1,074 c.c. Block of finest grey iron. Aluminium crankcase, detachable cylinder head of cast iron. "Klingerit" high compression gasket, specially made hepolite aluminium pistons. Crankshaft very stiff, carried in three large high-pressure cast white metal bearings. Steel stamping connecting rods. Push rod operated overhead valves. "Terry" extra strong valve springs. Pressure feed lubrication to main bearings and overhead valve gear by means of a gear oil pump submerged in the sump and driven by skew gears from the camshaft which is in turn driven by spur gears off the crankshaft. Oil filler of the quick action type fitted in the aluminium valve cover enabling a quantity of oil to be poured in, the filler closed and the oil allowed to filter through without the usual necessity of pouring in small quantities at a time. Radiator and pump cooling is by a dog driven on the forward end of the dynamo driving pinion. Delco-Remy coil and distributor ignition, Claudel-Hobson carburetter, 12 gallon rear petrol tank, Autovac situated on the bulkhead in an accessible position, pipe line from tank to Autovac is carried outside the frame where it is easy to get at and easily removed in the event of trouble. Dynamo and distributor are tandem driven by a pinion off the camshaft drive and are carried high up in an accessible position well clear of the bonnet sill boards and on the near side of the engine away from the hot exhaust manifold.

Transmission : Single dry plate clutch, three forward speeds and reverse gearbox. Carden shaft is enclosed in a torque tube. Spiral bevel rear axle.

Chassis : The frame is of pressed steel channel section, inswept at the front and upswept over the rear axle. It is braced by six cross members of ample proportions to prevent whip. The rear of the engine crankcase also forms a stiff box section brace. The front axle is of perfectly straight I sections, the stub axles being carried on large king pins. Quarter-elliptic springs, fitted front and rear, controlled by Hartford shock-absorbers, rear fitted, special double type. Steering column is adjustable for rake and carried manual ignition and throttle controls in the centre of wheel together with horn button. Wheels are Magna type wire, shod with 19/5.50 India tyres. The instrument panel is of polished aluminium mounted with Rotax switchboard, Jaeger 80 m.p.h. speedometer, oil pressure gauge, choke control, carburetter flood-control and dash lamp. The radiator shell is of distinctive design, heavy nickel plated with the radiator cap of knock off pattern surmounted by the famous Talbot mascot.

I am at the moment engaged in building a two-four-seater open body which I hope will be considerably lighter than the original coachbuilt coupé.

You might also be interested to know that for two years' work and an expenditure of less than £25 a distinctive little motor car has been produced, mechanically as new, presenting reasonably quick, reliable and economical motoring together with a great deal of fun.

I am, Yours etc.,

E. M. INMAN-HUNTER.

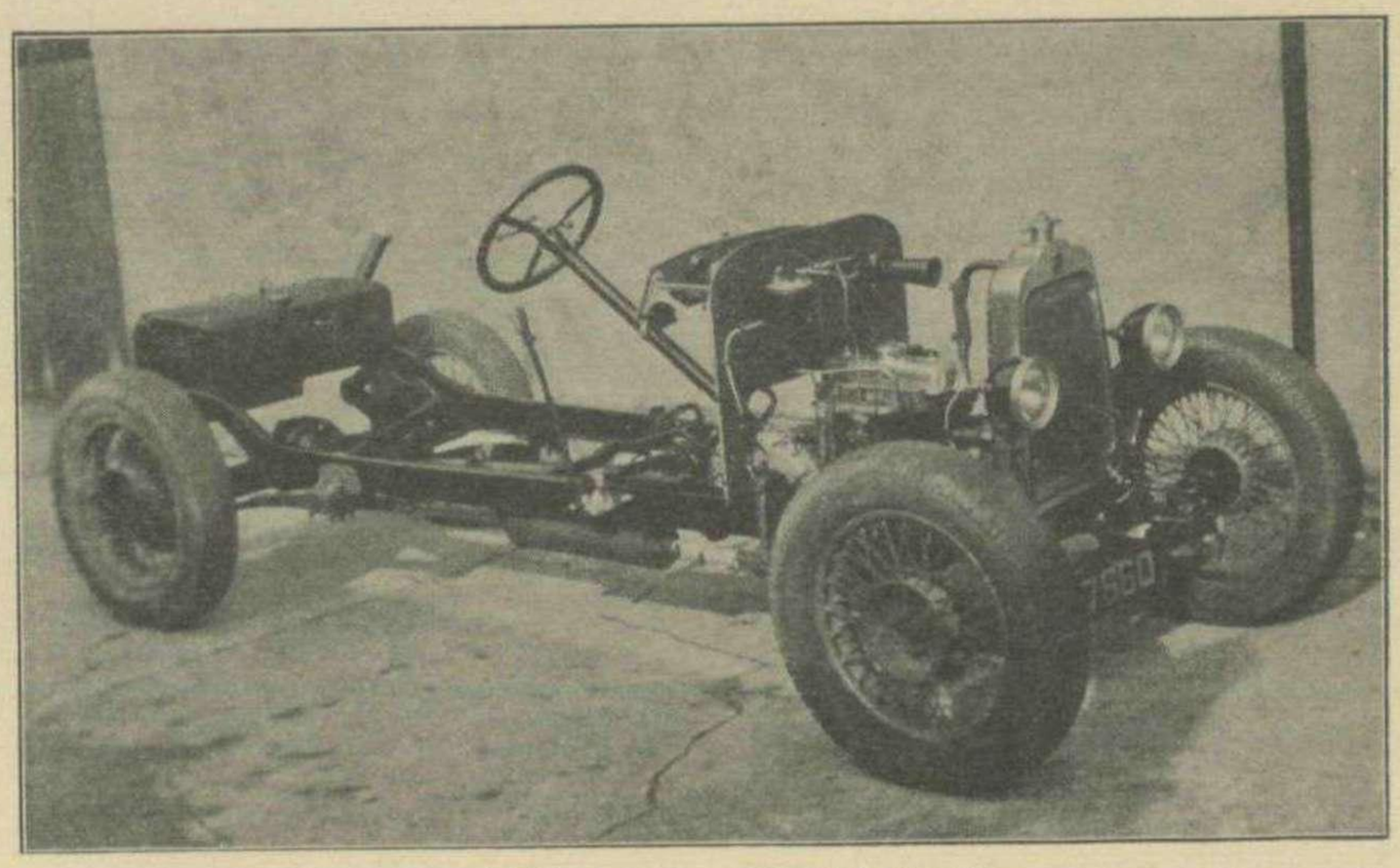
Middlesex.

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THE CASE FOR G.P. RACING

Sir,

The article of "The Case for Grand Prix Racing" in the November issue was very interesting and on the whole very sound. There are one or two things,



The 1,100 *c.c. Inman Special Chassis.*

LETTERS FROM READERS—continued

however, which "Grand Prix" seems to have overlooked.

He ignores the deterioration of Grand Prix as a sport pure and simple, since subsidies were introduced. The independent, such as Whitney Straight, had a good chance up till 1934, but now he is nowhere. It is impossible to get a potent car for love or money. Another aspect, that of orders to "Start and Win" and cars moving off before the fall of the flag, are not pukka sportsmanship.

To compensate for this, of course, G.P. racing has become more spectacular. Personally I would have more sport and less spectacular business.

"Grand Prix" is apprehensive lest by discrimination over entry fees, etc., motor racing should become a political issue. Surely the fascist countries, by their whole attitude to G.P. racing, by their state support (direct or indirect), their sport dictators and their lengthy harangues, have already made G.P. racing into something of a political issue. The whole business is rather nauseating.

I would not say that the German G.P. cars are vaunted beyond their merits, for they are truly wonderful machines; I would say, however, that to justify the colossal expenditure of their production, they, or rather G.P. racing, must have been exalted to a quite false position of national importance. Anyway, no one else seems to think it is worth spending so much money to win a G.P.

The fact remains that originally motor-racing, like fox-hunting, was indulged in as a sport, simply for the enjoyment of the thing. Any commercial value (like the "circulation of money" that one hears as a defence of fox-hunting) was, in the first place, incidental; whereas fox-hunting remains a sport, G.P. racing, owing to the overwhelming presence of the motor industry, has become rather swamped by commercial and political considerations. It is still good fun to follow, but not so good as it used to be.

Finally, having quoted freely from my own article in "Hearsay," I must crave Editor Turner's pardon and subside with the cry "Tantivy, tantivy—vive le sport—and down with the subsidies."

I am, Yours etc.,

JOHN CLASSEY.

N.W.2.

* * *

2-LITRE SUNBEAM

Sir,

I have pleasure in supplying the following details of the 2-litre Sunbeam Grand Prix car, 1924 edition, as requested by "Countryman." Bore 67, stroke 94 mm., cub. capacity 1,988 c.c., wheelbase 8′ 6¾″; front track 4′ 3⅛″, rear 3′ 11¼″. Overall length 13′ 7¼″, tank capacity 29 galls. B.h.p. 135 at 5,000 r.p.m. Cylinders machined from solid billets, with spherical heads. These were welded in blocks of three. Sheet metal water jackets were fitted. Twin o.h. camshafts were gear-driven. "Roots" type supercharger driven direct from front of crankshaft. Multi-plate "wet" clutch drive, via four-speed unit gearbox, and enclosed prop. shaft to straight bevel final drive. Semi-elliptic springs all round, with Duplex shockers. Four wheel brakes, alloy-shoes, were operated by a mechanical servo driven through worm gear off rear of gearbox.

The engine was an improved and blown edition of the 1923 French G.P. winning Sunbeam. During the 1924 race H. O. D. Segrave set up fastest lap 76.25 m.p.h. Sunbeams were also timed fastest over kilo. with "P2" Alfa-Romeo next. At above 5,200 r.p.m. valve trouble set in; new radiator and gearboxes were fitted to the team at Lyons before the race.

I am, Yours etc.,

H. PRATLEY.

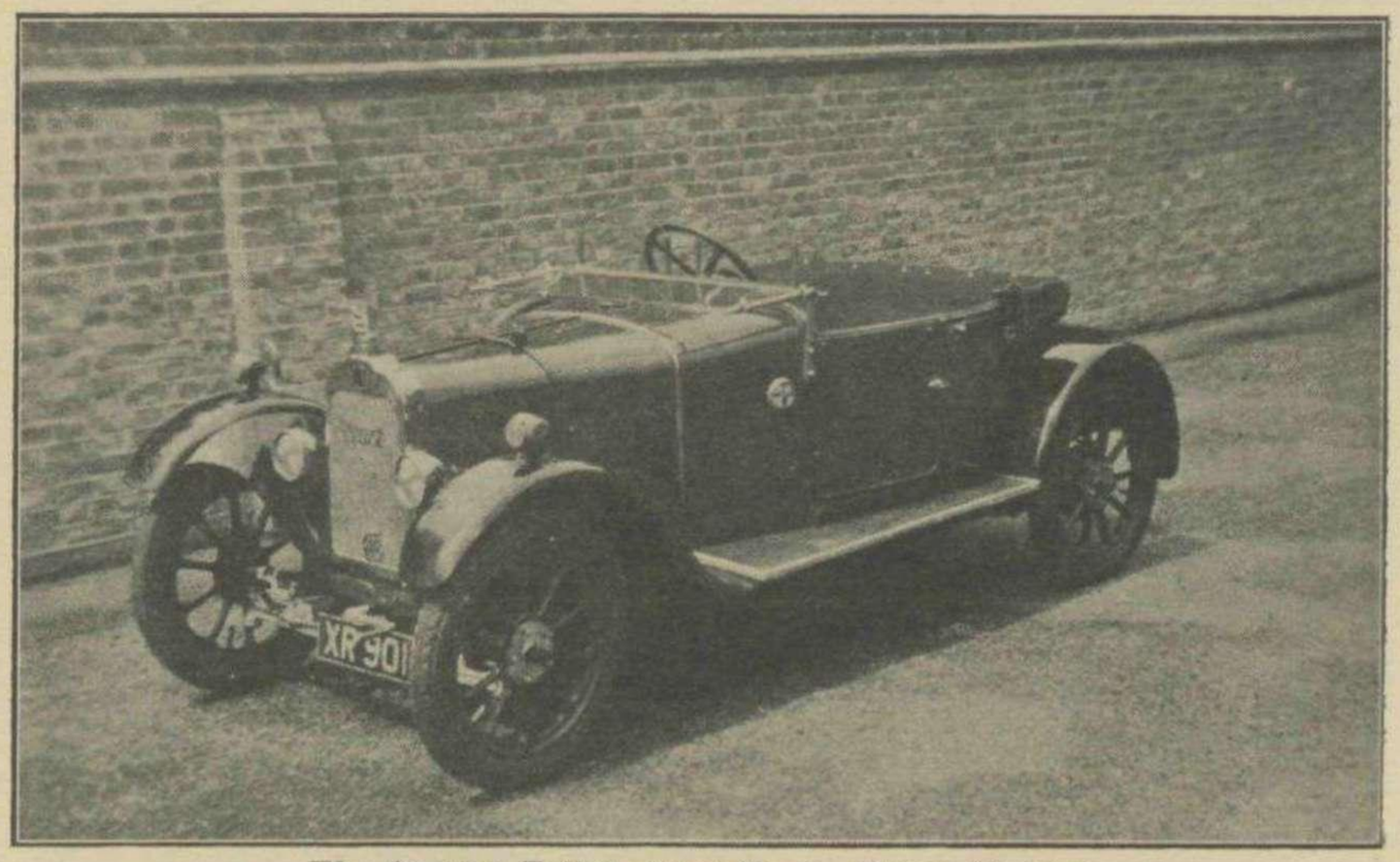
London, E.18.

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TUNING THE AUSTIN SEVEN

Sir,

I have just read your article on "Tuning the Austin Seven" and am looking forward to the next instalment.



The £6 8/18 Talbot owned by A. Rivers Fletcher.

Some of your details appear incorrect and may mislead readers who may be contemplating the purchase of an early Austin Seven.

I have owned most models from 1923 to date, I have not yet met a 1922 model although I know that a few were built in that year, the 1923 job was fitted with open hubs with aluminium caps and small brake drums which were improved in 1927, no self-starter was fitted in '23 nor fan, main crank journals were ⅛″ smaller than later models but apart from this was basically unchanged till 1933.

The 1923 model I had was fitted with Scintilla magneto but I do not know if this was a standard fitting or not, models up to 1926 can usually be identified by open hubs and shape of hood which slanted at extreme back, later models were more square in appearance.

Long ball change lever appeared in 1930 and not 1929, another change in '30 was new type starter with separate starter button on floor, flat-spoked steering wheel with spline fitting appeared in 1929 and coil ignition replaced mag., also oil filler was placed in more accessible place.

1930 models had cubby holes in facia, nickel radiator and heavier gauge wings but retained aluminium body, 1931 saw the beginning of coupled brakes, larger tank with reserve tap, Triplex screen, higher chromium-plated radiator shell and wider steel body. These last few points differ from those appearing in your article.

These details, although small in themselves, are worth knowing as one may quite easily be sold an early model which lacks some of the later refinements.

Quite recently I travelled some fifty miles to a large garage to see an advertised "1932 Sports" which upon examination proved to be of 1928 vintage with rather later type engine, the price asked being reasonable for a '32, but exorbitant for a '28.

If any reader has had experience with a 1922 model I should be glad to have details of its specification as it is the one model which I am not familiar with.

I am, Yours etc.,

Kent. BOB BURGESS.

* * *

Sir,

I would like to get more performance out of my Lancia Aprilia model.

In this connection I should like to know which English firm could supply me with a special carburetter as well as special intake and exhaust pipes for the Aprilia.

I am, Yours etc.,

EMERIK BELLEN.

Poland.

[We shall be pleased to pass on any letters to the above reader.—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.

A WELCOME REVIVAL

WILLING ENGINE POWER A FEATURE OF THE 14 H.P. LEA-FRANCIS

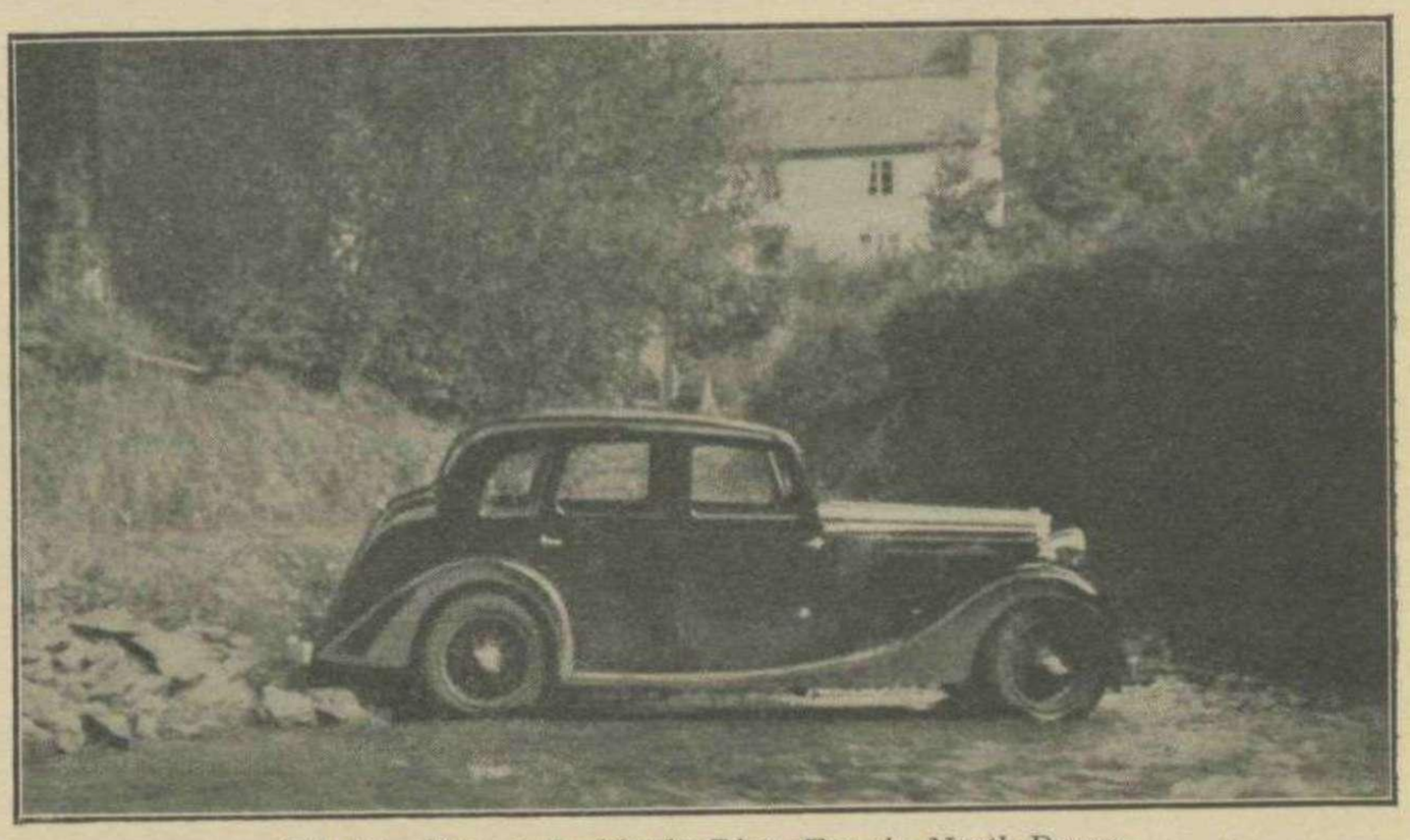
THE sporting enthusiast is a difficult man to please, but once his affection has been captured by a car, it is seldom lost. Lea-Francis cars, some years ago, were in the forefront of machines built to satisfy the discerning motorist. A Lea-Francis won the first Tourist Trophy Race over the Ards circuit, in 1928, and in races of that period they were always to be reckoned with.

Then, for some reason, their manufacture was dropped, and a great number of motorists felt that a gap had been created in the market. It was, therefore, welcome news when the announcement was made, early this year, that the Lea-Francis was to be revived, and that the managing director of the new concern was to be none other than Charles Follett, well known to sporting motorists.

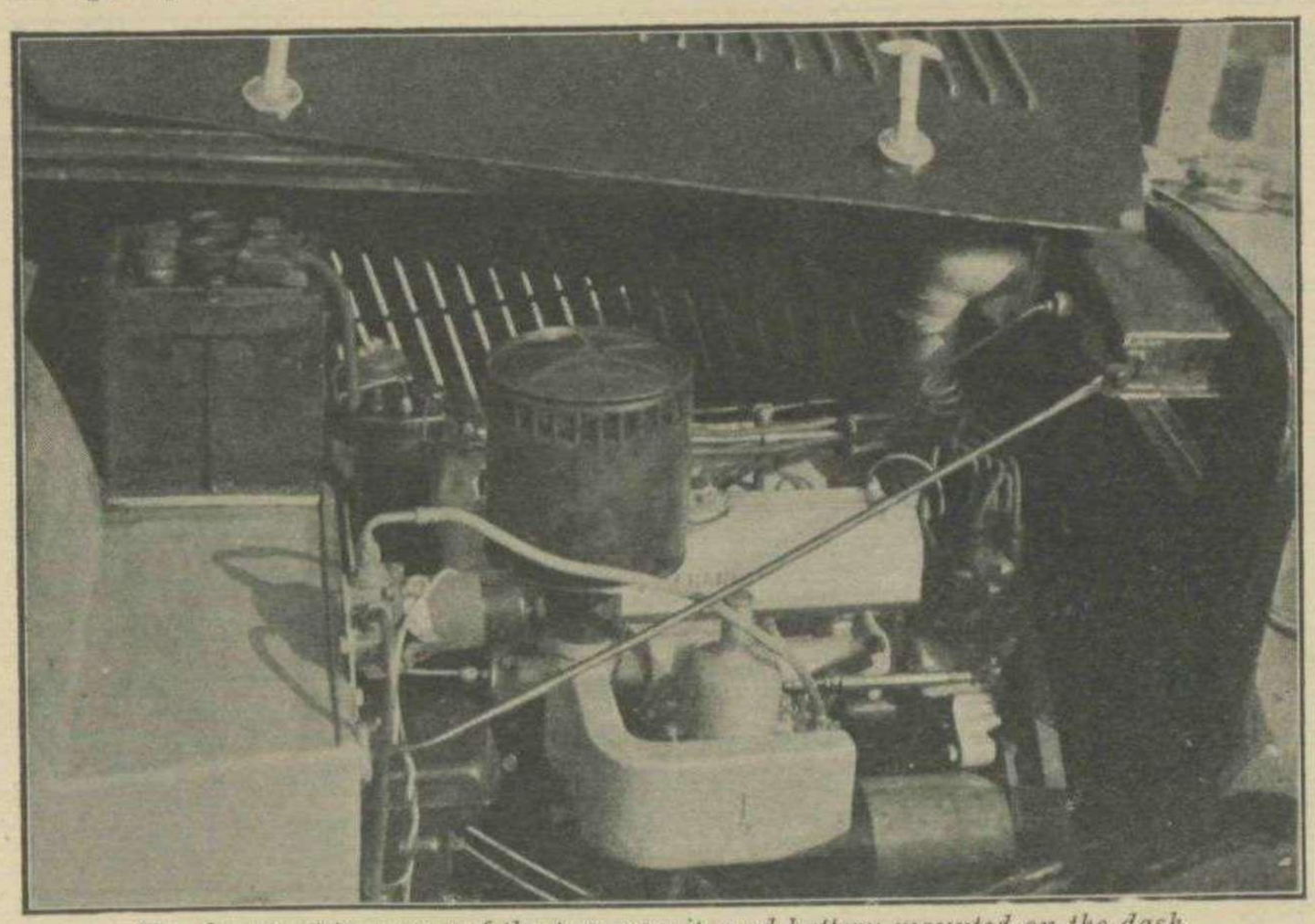
The new models were seen at the recent Earl's Court Motor Show, and the smart two-four-seater sports-car, appearing for the first time, attracted much notice. Unfortunately the sports model was not available on the occasion when the present test, one of the first to appear in any paper, was conducted by MOTOR SPORT, but the six-light saloon, likely to be one of the best sellers in the range, proved itself a worthy substitute, and no sluggard in the matter of performance.

The traditional shape of the Lea-Francis radiator is retained, and the car at once attracted by its handsome coachwork, a saloon body proving of some advantage on this occasion, as it was quite one of the wettest days that the English climate can produce.

The model tested had a four-cylinder 14 h.p. engine of 1,629 c.c., but a 1½-litre 12 h.p. engine is also available at the same price on all models, for those who desire a lower tax, or who wish to keep within the international class limit of 1,500 c.c. for competition purposes. Both engines are of similar design, with high-efficiency type hemispherical cylinder heads, and inclined overhead valves operated by a special system of pushrods. With its two valve chests, enclosed by ribbed aluminium covers, and central plugs, the engine has a most workmanlike appearance, not belied by its performance.



The Lea-Francis beside the River Exe, in North Devon.



Handsome appearance of the power unit, and battery mounted on the dash.

The great feature of the new Lea-Francis is its pulling power. As soon as a hill comes in sight, the car seems to gather itself together, and the longer the slope goes on, the more willing does the engine appear to be. One gets the impression that if the hill went on for several miles, at the top the car would be developing a 100 h.p., and would be going faster than ever!

This feature is particularly noticeable on top gear (5.2 to 1), and leads one to the idea that, in spite of the big saloon body, for the man who does not mind using his gearbox, a higher axle-ratio (fitted on the sports model) might be possible.

Although the top-gear performance is so good, there is no suggestion of fussiness on the level, and indeed a cruising speed of over 60 m.p.h. comes easily to the car. The four-cylinder engine is quite smooth and happy at all speeds.

The gearbox has synchromesh on second, third, and top, and the change is rapid and certain. Indeed, some people are never satisfied, for when one has such a good synchromesh box, one almost finds it too easy.

The car was taken down to the West country, and one of the occasions which showed off its qualities best was in the long, twisting ascent of Dunkery Beacon, taken on second and third gears. This was the only occasion on which it was found possible to make the thermometer rise from its customary 70°, maintained steadily however fast one drove the car. On the Beacon, with a following wind—a test which would tax the cooling capacity of many cars—the thermometer barely rose to 80°, and one would thus set off to climb an Alp with the utmost confidence in the cooling system.

Messrs. Charles Follett Ltd., the London distributors, had said that in their opinion the speedometer on the model tested was a little slow. This is indeed a rare feature of modern cars, and actually proved to be the case, the instrument being *pessimistic* to the extent of about 4 per cent. A speedometer of this kind is actually very satisfying, for one knows for certain that one is actually doing at least the speed shown on the dial, instead of having to make allowances.

A maximum speed of just under 80 m.p.h. over the quarter-mile was reached, in slightly favourable conditions, and the mean speed, in both directions of the course, was 77 m.p.h. At this speed, the speedometer read 75 m.p.h. This is

A WELCOME REVIVAL—continued

certainly very creditable, and well up to Lea-Francis traditions.

The acceleration was also good, and with the aid of the snappy gearchange, the following figures were obtained :—

0-20 m.p.h., 5 secs.
0-30 m.p.h., 8 secs.
0-40 m.p.h., 14 secs.
0-50 m.p.h., 18⅘ secs.
0-60 m.p.h., 26⅘ secs.
0-70 m.p.h., 38⅘ secs.

The maximum speed on third gear was just 50 m.p.h., but actually, if one had had time for experiment, it might have paid to change up a little earlier when attempting the figure from a standstill to 60 m.p.h., since with a quick change at full revs., there was a momentary trace of clutch-slip.

The driving position calls for especial praise, since it is so arranged that drivers of widely differing heights can actually sit at the wheel without altering the position of the seat. This is because an upright position has been adopted, so that the knees are well bent, while the back is firmly supported. If one wishes to move the seat, there is, of course, an adjustment, but it should only be required by dwarfs or giants. A good point is that a view of both wings is possible, in spite of the tall radiator.

The steering is neither particularly high nor particularly low-geared. As one often notices with thoroughbred cars, there is a certain knack about it which one has to realise. This is difficult to describe, but once one has made friends with the car, one finds the cornering excellent. The springing, too, was good, smoothing out the shocks without being too soft.

Without decrying the brakes at all, which were of great power and smoothness, with Girling operation, honesty compels one to put down that on this particular car they tended to pull. No doubt this was merely a matter of adjustment, for the car had covered many thousands of miles.

There is a roomy luggage trunk at the rear, with a conveniently arranged step to make the most of the available space which, considering the graceful lines of the tail, is very generous, and quite surprising when one opens the lid of the boot.

Two cubby-holes are fitted in the dash, and there are both a rev. counter and a speedometer. The instruments have white dials, an unusual feature, pleasing to the eye. The twin screen-wipers have a remote motor, fitted out of the way under the bonnet, and this is quite inaudible. There is also an ignition control, in the centre of the steering wheel, and though one does not *have* to use this very much, it is always a great satisfaction to have a control of this nature, for there is no doubt that if one takes the trouble, performance can be increased by skilful adjustment, to meet varying conditions.

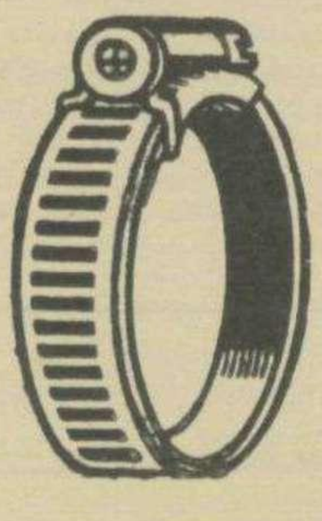
The price of the six-light Lea-Francis saloon is £395, and the address of the manufacturers is Lea-Francis Engineering (1937) Ltd., Much Park Street, Coventry.

DESIGN FOR A BRITISH FORMULA CAR

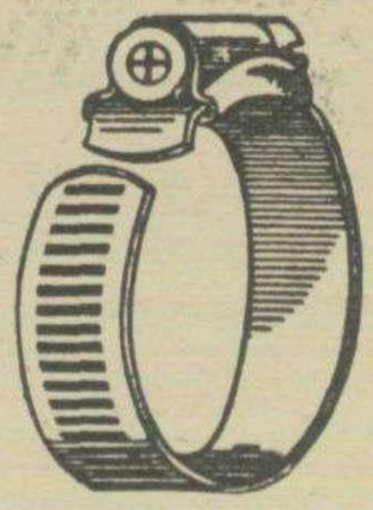
As mentioned in "Rumblings," "The Motor" is putting over a highly commendable campaign for a subsidised team of British road racing cars to compete for world honours in Formula contests from 1941 onwards. It would be unfair to that paper to outline the points raised and discussed, but we would remark, with reference to the proposed design for a 1939 Formula car, that rotary valves still seem to us rather too experimental even for this class of work, while we fail to see how completely enclosed wheels will permit of adequate cooling for the tyres, rapid wheel changes at the pits, and of a check being kept as to the condition of the tyres during a race. The Germans certainly have enclosed their wheels and provided observation windows in the cockpit, but only for the track-racing conditions prevailing at Avus. If a car is sufficiently endowed with hairy horses to enable it to win a Formula G.P. an overdrive top should provide all the top speed required along the straights even with the drag of exposed wheels, if other factors are right. All those concerned with British racing prestige should make a point of reading these issues of "The Motor," of November 8th, 15th, and 22nd. Amongst those whose views are published are : Cecil Kimber, Robin Jackson, L. H. Pomeroy, Snr., Lord Howe, Capt. J. S. Irving, M. A. McEvoy, W. A. Robotham of Rolls-Royce Ltd., C. M. Simpson of Daimler, and S. S. Tresilian of Lagonda.

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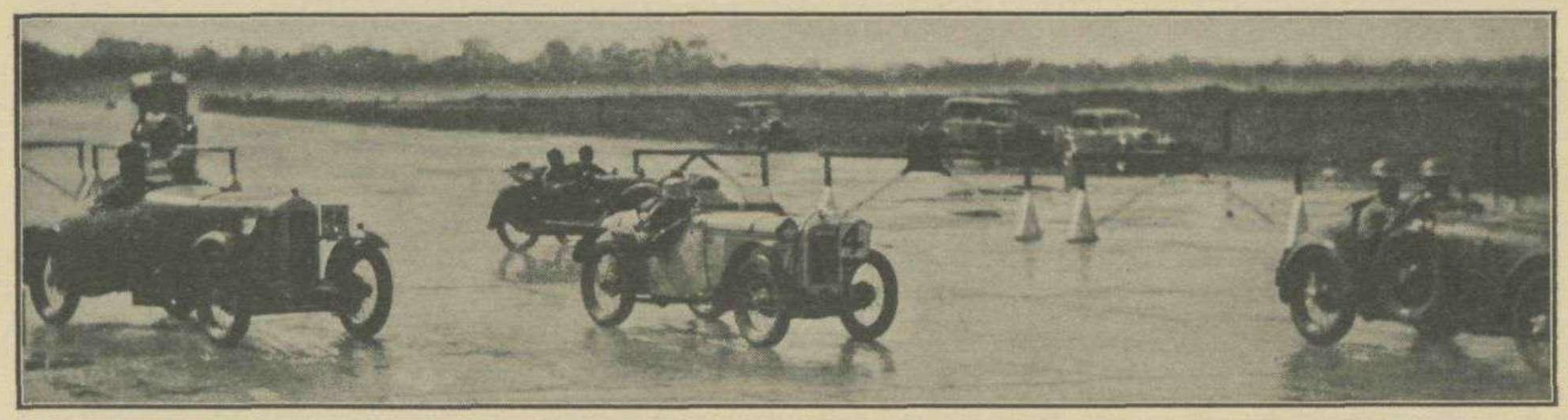
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TUNING THE AUSTIN SEVEN

(Continued from the November issue, in which the modifications made to the standard model since its introduction in **1922** *were described and the "Brooklands" and standard* **1925** *sports models were mentioned.)*

Gordon England was producing his 75 m.p.h. semi-racing "Brooklands" model at this time, with the approval of the Austin Co., and also his "Cup" two-seater, built of fabric on his patented construction he also used for saloons, and having the spare wheel housed in a flat-backed tail. Another special job of this period was the "Bughley" two-seater, with boat-type tail and flaired wings, made by Wilsons Motors Ltd., of Eccleston Street, and priced at £175. The chassis was quite standard. Yet another special job was the B.C. two-seater, made by Boyd-Carpenter Ltd., of Kilburn. The cars had o.h.v. heads of L.A.P. manufacture, the push-rods running up the existing valve guides, and the old ports blanked off. Other modifications included enlarged ports, polished passages, special Claudel-Hobson carburetter, lowered springs, extra spring leaves, lowered and extended steering and remote gear-control. The body had a long tail and cycle wings and in 1930 the price was £197 10s., or £25 extra with o.h.v. head. Tested by MOTOR SPORT (September 1930), the speeds were 50 to 55 m.p.h. on second and 71 m.p.h. on top. Many other specialised sports jobs have been made, notably the Swallow two-seaters and saloons the Arrow, Stadium etc. In 1930 the Austin Co. introduced their own new sports model, based on the cars which were to run so successfully at Brooklands, Ulster and Le Mans. These cars had special pistons, con rods and crankshaft, ratios of 4.9, 7.0 and 12.5 to 1, and the "Ulster" racing tail body, lowered frame with "Ulster" front axle and outside exhaust. The unblown model was capable of 60 to 65 m.p.h. and cost £185, and the supercharged job, with small Roots-blower, gear-driven on the near side of the engine and magneto ignition, did 80 to 85 m.p.h., and cost £225. The spare wheel was carried in the tail. For 1932 these cars were discontinued. The next sports job produced by Austins was the "65," which gave 23 b.h.p. at 4,800 r.p.m. and cost £152 in 1934. It had the short tail, cut-away two-seater body with doors. In 1935 this model became known as the "Speedy," with ratios of 5.25, 7.82, 12.39 and 20.48 to 1. These cars had the "Ulster" type front axle. For 1935 the "Nippy" was introduced, in appearance like the "Speedy," but with ratios of 5.6, 8.38, 13.3 and 21.9 to 1 and giving 20 b.h.p. at 4,000 r.p.m. For 1936 only the "Nippy" was offered, with three-bearing crankshaft and Girling brakes, the speed being 65 m.p.h. and the price £142. For 1938 the sports model was discontinued, and Cooper's of Putney purchased nineteen "Nippy" bodies, which are offered at £20 each, ready to fit, with screen, hood, side-screens, wiper, battery box, wiring, etc. Both "Speedy" and "Nippy" models had Zenith downdraught carburetter, high-compression ratio, special valves and high-lift camshaft. The "Nippy" had slightly modified oilways, but the "Speedy" had 50 lb. feed to big-ends and camshaft. Both had 1 gallon ribbed sumps, machined con-rods with oil leads to the gudgeon-pins, and Burgess silencers. The "Speedy" had a V-screen, the "Nippy" a flat screen and a hinged rear panel concealing the spare wheel, in place of the pointed tail. The "Nippy" weighed 9 cwt. 3 qr. 14 lb. and had 3.50" × 19" tyres. It did 13.44 m.p.h. at 1,000 r.p.m. in top gear as against 14.4 m.p.h. of the normal 1936-7 cars.

As a comparison, the standard chassis of 1937-8 had ratios of 5.25, 8.73, 13.85 and 22.94 to 1 and the two-seater weighed 10 cwt. 7 lb.

There are important differences in the valve timing of the various sports models. The supercharged "Ulster" model had the inlet opening T.D.C., a 220° on inlet and 240° exhaust period and an overlap of 15°. The lift was approximately .030" less than with other camshafts. The unblown "Ulster" had the inlet opening 10° before T.D.C., a 250° inlet and 260° exhaust period and 30° overlap. The "65" or "Speedy" had the inlet opening on T.D.C., a 240° inlet and 250° exhaust period and 20° overlap. The two latter camshafts cannot be used in the standard engine on account of the size of centre bearings and the fan pulley cannot be used with the blown "Ulster" camshaft. So much for variations in the different production models—fuller information on this subject and on care and maintenance of ordinary models up to 1937 will be found in that excellent work of reference: "The Book of the Austin Seven" by Gordon G. Goodwin (Sir Isaac Pitman & Sons, 2/6).

F. WILLIAMS

F. Williams, to whom we are indebted for the accompanying notes on Tuning the Austin Seven, specialises in Austin Seven tuning and modification at Messrs. Auto-Conversions, 2, Belton Road, Willesden, N.W.2; telephone Willesden 3180.

While at the Austin Motor Co. Ltd., Mr. Williams saw possibilities of developing special editions of the famous "Seven."

He spent twelve months on his own, experimenting with chassis-lowering and the construction of a body based on that of the J2 M.G. He then went into business, building the W-Special Austin Seven, supplying a considerable number of these special cars, including two rather extra-special ones to the order of K. C. Jarvis. Williams can supply the J2 body shell in ash, with dummy rear tank, panelled in steel and with beaded edge, ready for fitting, for £10, and can build the complete body on to any Austin Seven chassis for £45, naturally charging extra for any special equipment a client may specify. The photograph shows the modern lines of the W-Special, which has full all-weather equipment and a 3 ft. bonnet.

Williams is a keen sprint enthusiast and builds himself a new racing job every year. This year he ran at Prescott, Dancer's End and Markyate, using an unblown side-valve Austin Seven with "Nippy" carburation layout, coil ignition and an ingenious two-pipe exhaust system to avoid the bottle-neck at the silencer which a three-branch system sometimes involves. This Austin revved to 6,500 r.p.m. and gained two second places at Dancer's End, beating "Ulster" Austins and J2 M.G. Midgets. Williams is now building a single-seater Austin for next year, which has a Cozette compressor and carburetter, "Ulster" copperised head and standard gasket, pump-cooling, and three-branch external exhaust system. Much of the engine is T.T. "Ulster" and the body started life on a racing Maserati. Austin enthusiasts should pay an early visit to Belton Road, where there is much to interest them.

TUNING THE AUSTIN SEVEN—continued

We come now to a consideration of moderate tuning, to improve acceleration and to increase road speed to 60 m.p.h., or for sprint work. For the following information we are indebted to F. Williams of Auto-Conversions, who has tuned a large number of Austin Seven engines of all types.

If speeds of over 60 to 65 m.p.h. or 5,500 r.p.m. are contemplated it is essential to use a 1930 type engine with the larger crankshaft. The 1930 crankshaft can be used in the older magneto ignition engines but this entails changing the back-main bearing. The older crank is liable to snap across the journals if overstressed. The Austin Seven is very sensitive to carburation alterations. The Gordon England "Cup" models had a special manifold with short riser, and horizontal section well clear of the exhaust manifold; it was tubular, with buffer-ends. The existing Zenith layout may be discarded and a 26 mm. or 30 mm. S.U. used with this manifold. An S.U. from an old Morris Minor is 22 mm. and will not suit. Even better results can be obtained by reversing the Gordon England manifold so that the flange is uppermost, when a 26 mm. or 30 mm. downdraught S.U. can be bolted in place. If this is done at least two gallons of fuel must be kept in dashboard tanks to ensure adequate feed, or the tank may be placed under pressure. With this arrangement engine speed can be increased to 6,500 r.p.m. The best carburetter setting must be found by experiment, using standard S.U. needles, and raising and lowering the needle to enrich or weaken the mixture in the ordinary way. The inlet ports in the block can be opened up by $\frac{1}{16}$" all round, which means lots of elbow grease. Care should be taken to line up the inlet-pipe flanges with the ports. The exhaust ports are, in any case, larger than the inlets and there is little point in enlarging them, but the three-branch "Ulster" manifold, or the three-branch external exhaust system made up by Auto-Conversions, effects considerable improvement, in conjunction with the "Ulster" silencer.

Another line of attack is to scrap the inlet manifold and bolt two 26 mm. horizontal S.U. carburetters directly to the inlet ports. If this is done, a $\frac{3}{8}$" balance pipe must be used on the engine side of the throttles. Twin carburetters give an excellent surge of power, but render the engine delicate to control for road motoring. Yet another line of attack is to replace the older exhaust manifold with the 1933-4 type manifold and the horizontal carburetter mounting described earlier on, while the standard 1933-6 manifolds together will give excellent results, especially if the Zenith carburetter is replaced by an S.U.

The maximum speed of the Austin Seven engine is limited by valve bounce to 5,000 to 5,500 r.p.m. This can be overcome by fitting Terry's double aero valve springs, with considerable improvement in speed on the indirect gears. If single Terry aero springs are used 45 to 50 m.p.h. in top is possible before power-loss from bounce is experienced, and with double Terry springs the valves seat properly up to 65 m.p.h.

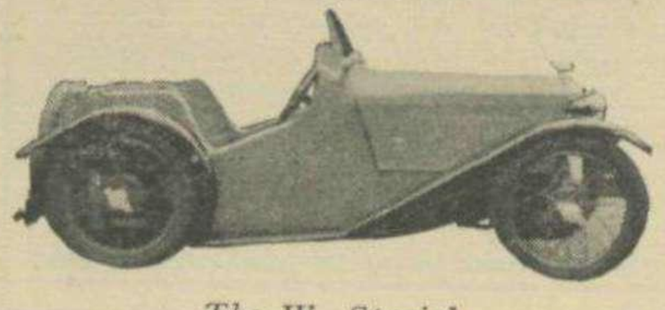
Before doing any further tuning a very careful examination should be made of the main and big-end bearings. If the crankshaft journals have worn oval regrinding is essential, and the big-end bearings should be taken up, or re-metalled if oval or scored. The ball and roller main bearings should be replaced if badly worn—we have heard of Hoffman and Marles bearings being bought for 5/- each for this purpose. It is important to remember that the engine is a high speed unit and to replace worn parts and assemble to approved clearances before attempting to push up speed or power output. Worn bearings cause rough running and loss of efficiency and are liable to sudden failure and worn valve tappets set up a bad rattle—the cure is to grind the heads flush.

Lighter pistons are of advantage and Mr. Williams recommends those supplied by Specialoid, which have dome heads and are made of an alloy which wears extremely well. Three piston rings per piston are advisable, including the scraper ring. The use of $\frac{3}{32}$" rings or 1 mm. rings reduces piston friction.

So far as cylinder heads are concerned, Mr. Williams favours the "Ulster" cast-iron head, which has a machined pocket over the valves, on Whatmough principles. This head gives a compression ratio of 8 to 1 with the standard C of A gasket, and for sprint work it may be used with a $\frac{1}{16}$" Klingerit gasket, which gives a ratio of 8.5 to 1. No detonation takes place if this head is properly copperised—but avoid firms which offer to do the job cheaply and merely copper-plate.

Aluminium heads sometimes distort and they strip their plug threads. The Alta heads with inclined plugs is quite good otherwise; while the writer has run some 3,000 miles with a Silvertop alloy head, in which the plugs are over the inlet valves. A standard gasket was used and no trouble was experienced, but oil-loss occurred via the holding-down studs and the engine would not take any advance. Performance appeared to be improved and quicker warming up resulted.

For increased performance the ignition may be given more advance. The standard magneto timing allows the points to commence breaking at T.D.C. With the hand control in the fully-retarded position the venier-coupling may be advanced half to one notch, after which the driver must *use* the ignition control. It should be two-thirds up the quadrant at speeds below 30 m.p.h. and fully advanced thereafter. With coil ignition it is permissible to increase the advance by 1 inch on the flywheel rim over the standard setting (or a total of $2\frac{1}{4}$ in. to 3 in. before the T.D.C. position), timing with the hand control at full retard. Final adjustments should be made at the distributor in the ordinary way, to suit different fuels and individual requirements, remembering that energetic use should now be made of the hand-lever.



The W. Special.

Weight can be removed from the flywheel, to the extent of 1 to $1\frac{1}{2}$ lb. If more than this is removed, slow-speed running will suffer. Metal should be taken from the back face or bevel, leaving a lip of $\frac{1}{16}$ in.

For sprint work, if more than 65 m.p.h. is craved, the standard camshaft should be replaced by the unblown "Ulster" camshaft on magneto-ignition engines or by a special high-lift camshaft having provision for a rev. counter drive, on coil-ignition units. This necessitates fitting different tappets and tappet-gear. The "Ulster" camshaft is still available from Austins, priced at £4 2 6, and "Nippy" camshafts cost about £6 18 0. Tulip valves are worth fitting, but must be of standard length. Messrs. Auto-Conversions can supply suitable tulip valves. It should be noted that "Ulster" tulip valves have longer stems than those used for the "Nippy" engine, and do not interchange.

The standard lubrication system comprises a vane-pump forcing oil to the camshaft bearings and out of two jets into oilways in the crankshaft webs, from whence centifugal force feeds the big-ends. The tappets and roller main bearings are mist-fed. This seemingly crude system functions remarkably well and there is no point in increasing pressure beyond the normal 2 to 5 lb. per square inch, even with a tuned engine, though this can be done, by adjustment of the crankcase ball-valve, by fitting a stronger spring or an additional spring made from half a standard spring. For racing work it is highly desirable to use the "Ulster" or "Speedy" crankshaft (which is apparently fitted now to a lot of "Nippy" models) which has 50 lb. delivery to the big-ends via the nose of the shaft, which is hollow, ensuring an even oil supply to all bearings. If the standard crankcase is somewhat cleaned up internally it will accommodate the pressure-fed crankshaft, but the work of conversion is considerable.

The standard sump holds only half a gallon of oil, and for fast long-distance journeys it is advisable to use the 1 gallon cast-iron sump, which Austin can supply for about 22/-.

Cooling can be improved by increasing the header tank size to twice standard capacity or, less effectively, by substituting the "Ulster" fan-blade for the standard fan. For racing, pump cooling is advisable and Messrs. Auto-Conversions make a special pump which they fit to those W-Specials exported to warm climates. A drive can be obtained from the dynamo pinion or, if preferred, the pump layout used for the supercharged "Ulster" job may be employed.

Mr. Williams recommends K.L.G. 843 plugs for road work, with the engine tuned in accordance with the foregoing



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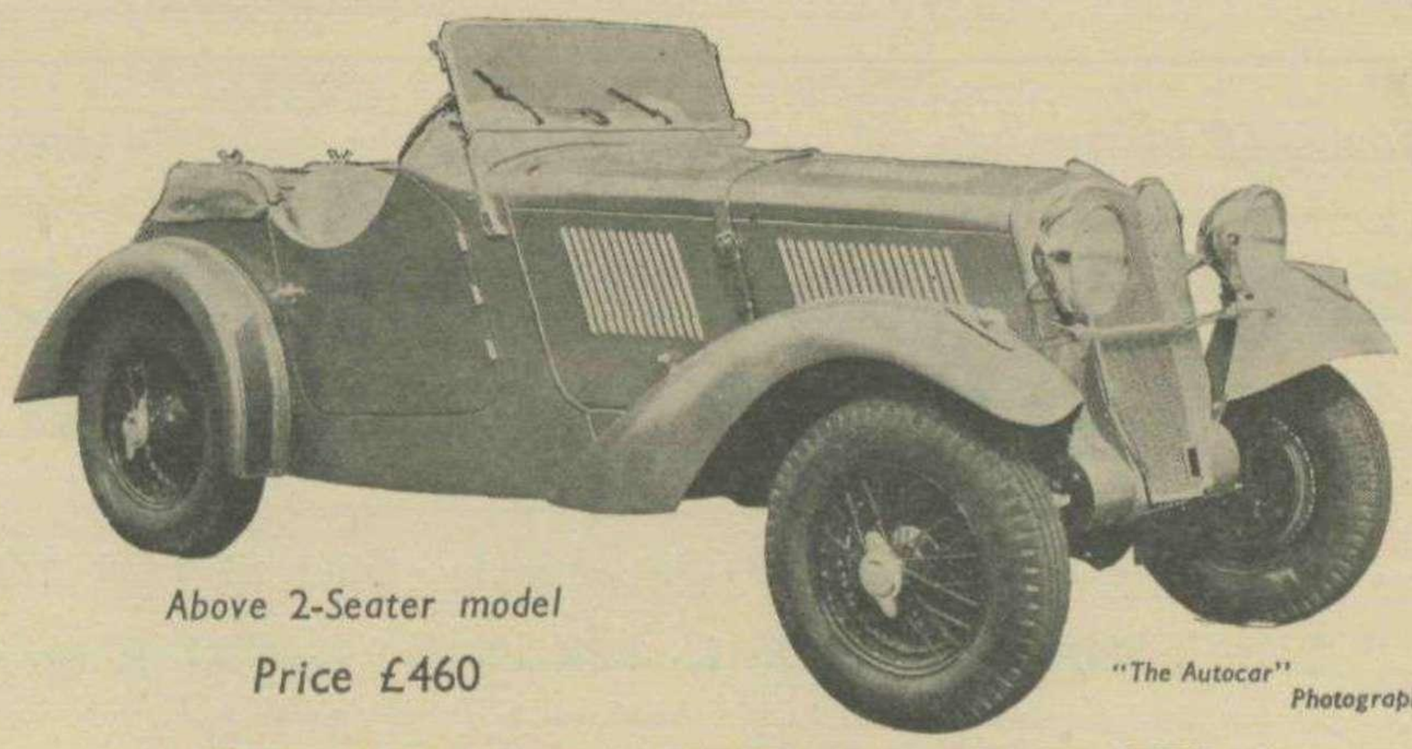
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TUNING THE AUSTIN SEVEN—continued

notes. K.L.G. themselves specify M 30 plugs for the standard Austin Seven engine, M 50 plugs for use with an alloy head and compression-ratio of about 7 to 1, and M 80 plugs for " Ulster " or highly tuned engines.

The later models had a compression ratio of about 6 to 1 as standard. Aero Shell, Castrol XXL and Essolube Racer are recommended lubricants for the sports engines. The correct tappet clearances for sports engines are : inlet .004″ to .006″ and exhaust .006″ to .008″. The recommended carburetter settings for the Zenith carburetters are :— " Nippy " (downdraught) : choke 21, main jet 85, compensator 55, slow-runner 60, capacity tube 2, and progression jet 90 ; for the " Speedy " (downdraught) : choke 25, main jet 120, compensator 40, slow-runner 60, capacity tube 2 and progression jet 90, and for the standard engine (late-type, horizontal) : choke 17, main jet 57, compensator 50, slow-runner 60, capacity tube 2, and progression jet 100. The Austin Seven seldom gives less than 40 m.p.g. and sometimes as much as 50 m.p.g. The writer has obtained 41 m.p.g. from a coupé with Gordon England manifold and updraught Zenith carburetter, Silvertop alloy head and blown " Ulster " camshaft, with the engine in none too good condition. A quite standard 1935 engine with four speed gearbox and the 5.25 to 1 rear axle in an early frame will give 50 m.p.h. cruising and is suitable for trials work ; to fit the engine it is necessary to shorten the propeller-shaft, which a firm like Laystall Ltd. will do for about 30/-.

It is important not to overgear a tuned engine by fitting big tyres. Always use the 5.25 axle, or the 5.6 axle ratio if available. If using the older 4.9 to 1 axle, replace 19″×5.50″ tyres with special wheels and 17″×4.0″ covers.

There are various ways of lowering the Austin Seven chassis. The " Ulster " front axle may be fitted, or the special axle, of rather greater upsweep, which is supplied by Messrs. Auto-Conversions. This axle costs £4 2 6, or £3 2 6 if the existing axle is given in part exchange, and includes long front links to lower the radius arms 2 in. etc. Attempts to mount the spring on extended brackets invariably result in rolling and yawing. The spring can be placed below the axle for special racing assemblies. The rear quarter-elliptic springs can be placed on top of, instead of inside, the frame side members, but this results in lack of rigidity and there is grave risk of the springs swinging sideways. A better plan is to have the leaves flattened. If done by a reliable spring-maker breakages should not be experienced. New wooden discs in the Austin shock-absorbers and binding the springs with window cord will materially improve road-holding. Standard shock-absorbers suit the dropped " Ulster " axle.

The Austin Co. rake their steering in three ways : sports, semi-sports and standard. To convert to sports rake use a metal (*not* wooden) wedge under the steering box, bolted to the chassis. The normal clip at the top of the column will still fit. As an alteration of ⅛″ at the box drops the wheel 1¼″ the wedge is tricky to make. Messrs. Auto-Conversions can supply correctly drilled metal wedges at 7/6 each. Raked steering feels more positive than that of the standard car and at first the driver tends to oversteer, but this tendency will soon be overcome. As the standard ratio gives 1½ turns lock to lock, a higher ratio is unnecessary.

Braking efficiency can be improved by doubling the length of the brake-cam levers. Messrs. Auto-Conversions supply these lengthened arms and can modify the layout on any Austin Seven model at a price of 25/-. They also manufacture a Bowdenex cable system of actuation, which does away with the compensator for the front wheels, providing equal braking on each wheel which the old layout does not, with individual adjustment, and allowing the front brakes to lead over those at the back. This Bowdenex system costs £3 complete, or £4 fitted, and looks thoroughly businesslike.

The application of supercharge to the Austin Seven engine is rather outside the scope of this article, as it verges on tuning for racing results, but in any case it is inadvisable to go beyond a boost of 5 lb. per square inch for road or ordinary competition work. The Austin Roots blower is not very efficient but is worth using if in good order, likewise the Cozette vane-blower. Both were used as standard on the " Ulster " jobs. The Centric No. 4 vane-blower is excellent, also the Arnott, and when supercharging the standard C of A gasket is advised.

A very simple remote gear control can be made by cutting down a four-speed Austin Seven gear-lever and welding the ball-gate thereon, bolting the assembly to the propeller-shaft tunnel and connecting to a quarter of the actual lever by yoke-ends and rod. If welding is out of the question a yoke may be bolted to the tunnel. Old Ariel motor-cycle gear-rods and yoke-ends suit the job admirably.

Reverting to the engine, coil ignition fades badly at 6,000 r.p.m. Williams recommends using a Lucas high-speed coil, which is satisfactory up to 9,000 r.p.m. A less expensive improvement is the use of an American 6 volt replacement coil, as supplied for cars like the Packard, etc. For speeds over 70 to 75 m.p.h. a Scintilla " Vertex " magneto can beneficially replace the coil system. Incidentally, fitting an ignition booster saves trouble with the ignition condenser, which, of course, is applicable to all makes of car.

In conclusion, the writer craves indulgence for any errors or omissions in these notes, pleading that the field is a very wide one. One must congratulate the Austin Motor Co. Ltd., on putting such good material into a little car which dealt the cyclecar proper its deathblow sixteen long years ago. The design is still fundamentally the same and stands a remarkable lot of amateur tuning trickery. Its very size makes the Austin Seven an amusing engine to tune for increased performance, and somehow this car has a fascination peculiar to itself, which is not shared by other babies. It seems that a club for keen owners of standard and converted sports " Sevens " might go down very well and do good work—if sufficient people are interested we believe we can put them onto a scund secretary and trials organiser.

PUBLISHED ON THE 12th OF THE MONTH *LATEST DATE FOR COPY THE 3rd*

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THE MOTOR RACES OF 1938

DATE	RACE AND DISTANCE	CIRCUIT AND DISTANCE	FIRST	SECOND	THIRD	WINNER'S TIME	WINNER'S SPEED
						H. M. S.	
Jan. 1	S. African G.P. 198 miles	E. London, S. Africa	W. Meyer (Riley)	E. Siena (Maserati)	D. C. Richardson (Riley)	2 17 42	86.35
„ 15	Grosvenor G.P. 212 miles	Cape Town, S. Africa	Lord Howe (E.R.A.)	P. Taruffi (Maserati)	L. Villoresi (Maserati)	2 43 9	74.83
Apl. 2	Coronation Trophy Race 30 miles	Crystal Palace 2 miles	"B. Bira" (E.R.A.)	J. P. Wakefield (Maserati)	A. Dobson (E.R.A.)	44 31	57.83
„ 3	Mille Miglia 1,000 miles	Italy	Biondetti-Stefani (Alfa-Romeo)	Pintacuda-Mambelli (Alfa-Romeo)	Dusis-Boninsegni (Alfa-Romeo)	11 59 29	90.62
„ 9	British Empire Trophy Race—250 miles	Donington	C. J. P. Dodson (Austin)	"B. Bira" (E.R.A.)	W. Cotton-W. Wilkinson (E.R.A.)	—	69.62
„ 10	Pau G.P. 172 miles	Pau	R. Dreyfus (Delahaye)	R. Caracciola-H. Lang (Mercedes-Benz)	G. Commotti (Delahaye)	3 8 59	54.64
„ 23	Cork National Handicap 50 miles	Carrigrohane Circuit	G. D. P. Colley (Frazer-Nash)	D. Yule (C.M.Y. Special)	C. H. Manders (Adler)	—	71.03
„ 23	Cork Light Car Race 73 miles	Carrigrohane Circuit	"B. Bira" (E.R.A.)	A. C. Dobson (E.R.A.)	L. Villoresi (Maserati)	47 55	91.53
„ 23	Cork G.P.	Carrigrohane Circuit	R. Dreyfus (Delahaye)	"B. Bira" (Maserati)	L. Gerard (Delage)	2 9 40	92.95
May 7	International Trophy	Brooklands	P. Maclure (Riley)	R. Mays (E.R.A.)	N. G. Wilson (E.R.A.)	2 23 46	84.36
„ 14	Coronation Trophy Races	Donington	R. Mays (E.R.A.)	A R. P. Rolt (E.R.A.)	R. E. Ansell (E.R.A.)	1 35 5	69.59
„ 15	Tripoli G.P.	Tripoli	Lang (Mercedes-Benz)	Von Brauchitsch (Mercedes-Benz)	Caracciola (Mercedes-Benz)	2 33 17	128.79
„ 21	Sydenham Trophy	Crystal Palace	J. H. T. Smith (M.G.)	"B. Bira" (E.R.A.)	P. Maclure (Riley)	38 6	52.77
„ 22	Targa Florio	Italy	J. Rocco (Maserati)	Raph (Maserati)	L. Villoresi (Maserati)	—	—
„ 22	Grand Prix d'Anvers 84 laps	Antwerp, Belgium 4 miles	Mazaud (Delahaye)	Gerard (Delage)	Tremoulet (Delage)	3 48 2	82.40
„ 30	Indianapolis U.S.A. 500 miles		Floyd Roberts (Miller)	—	—	—	117.2
June 5	G.P. des Frontieres	Chimay, Belgium 10.87 km.	Trintignant (Bugatti)	Mazaud (Delahaye)	Mathieson (Bugatti)	1 3 57	—
„ 5	Bol d'Or (1,500 c.c. Sports Class) 24 hours	Montlhery 5 km.	Polledry (Aston-Martin)	Constantin (Bugatti)	—	24 0 0	60.59
„ 5	Bol d'Or (1,100 c.c. Racing)	Montlhery 5 km.	De Burnay (M.G.)	Deval (M.G.)	—	24 0 0	62.65
„ 12	Picardy G.P. Heats 60 m., Final 90 m.	Peronne 9.76 km.	"Bira" (E.R.A.)	Lord Howe (E.R.A.)	Bianco (Maserati)	—	94.1
	(1st Heat)	,,	Mays (E.R.A.)	Wilson (E.R.A.)	Lanza (Maserati)	—	89.07
	(2nd Heat)	,,	Mays (E.R.A.)	Bianco (Maserati)	Soffietti (Maserati)	1 0 33	90.94
	(Final)	,,	C. Pintacuda (Alfa-Romeo)	Arzani (Alfa-Romeo)	M. de Oliveria (Ford V8 Special)	3 33 37	49.06
„ 12	Rio de Janeiro G.P.	Brazil	Chaboud-Tremoulet (Delahaye)	Gerraud-Giraud-Cabantons (Delahaye)	Prenant-Morel (Darracq)	24 0 0	82.35
„ 19-20	24 Hours G.P. of Endurance 1,976 m.	Le Mans	"B. Bira" (E.R.A.)	A. Dobson (E.R.A.)	A. Cuddon-Fletcher (M.G.)	—	55.81
„ 25	London G.P.	Crystal Palace	Von Brauchitsch (Mercedes-Benz)	R. Caracciola (Mercedes-Benz)	H. Lang (Mercedes-Benz)	—	101.07
July 3	French G.P. 311 miles	Rheims 5 miles	"B. Bira" (E.R.A.)	H. L. Hadley (Austin)	A. Dobson (E.R.A.)	2 53 58	72.54
„ 9	Nuffield Trophy	Donington	Pintacuda-Severi (Alfa-Romeo)	—	—	24 0 0	76.44
„ 10	Belgian G.P. of 24 Hours (Over 4 litres) 1,772.56 miles	Spa					
	Albi G.P. 40 laps	Albi 8.9 km.	Villoresi (Maserati)	Soffietti (Maserati)	Plate (Talbot)	2 27 9.2	88.90
„ 16	Leinster Trophy	Tallaght Circuit	St. John Horsfall (Aston-Martin)	C. H. W. Mander (Adler)	J. Elliot (Triumph)	1 57 13	67.76
„ 16	L.C.C. Sports-Car Race 83 laps	Brooklands (Campbell Circuit)	J. Willing-R. Jarvis (Delahaye)	H. J. Aldington (Frazer-Nash-B.M.W.)	A. F. P. Fane (Frazer-Nash-B.M.W.)	3 0 0	63.46
„ 24	German G.P. 331.6 miles	Nurburg Ring 22.8 km.	R. J. B. Seaman (Mercedes-Benz)	H. Lang (Mercedes-Benz)	H. Stuck (Auto-Union)	—	80.61
July 31	Coupe Ciano	Italy	Lang (Mercedes-Benz)	Farina (Alfa-Romeo)	Wimille (Alfa-Romeo)	1 40 35	85.99
„ 31	1,500 c.c. Class	Italy	E. Villoresi (Alfa-Romeo)	Biondetti (Alfa-Romeo)	—	1 5 21.6	82.7
Aug. 1	Limerick G.P.	Limerick	J. D. McClive (M.G.)	R. Campbell (Morgan)	McQuillan (Ford V8)	—	54.0
„ 13	Crystal Palace Cup 30 miles	Crystal Palace	G. Abecassis	A. R. P. Rolt (E.R.A.)	J. Wakefield (E.R.A.)	33 15	56.69
„ 14	Coppa Acerbo 412.8 km.	Pescara, Italy	Caracciola (Mercedes-Benz)	Farina (Alfa-Romeo)	Belmonda (Alfa-Romeo)	3 10 17	82.54
„ 14	Coppa Acerbo (1,500 c.c. class)	Pescara, Italy	L. Villoresi (Maserati)	Pietsch (Maserati)	Barbieri (Maserati)	1 10 40	82.06
„ 21	Swiss G.P. Prix de Berne	Bremgarten	Hug (Maserati)	Bianco (Maserati)	Wakefield (E.R.A.)	1 10 0.5	81.88
	Swiss G.P.	Bremgarten	R. Caracciola (Mercedes-Benz)	R. Seaman (Mercedes-Benz)	M. Von Brauchitsch (Mercedes-Benz)	2 33 11.6	89.44
„ 27	200-Mile Race	Brooklands	J. Wakefield (E.R.A.)	"B. Bira" (Maserati)	Lord Howe (E.R.A.)	2 48 57	70.97
Sept. 3	R.A.C.T.T.	Donington	L. Gerard (Delage)	St. John Horsfall (Aston-Martin)	P. Etancelin (Darracq)	—	67.61
„ 10	Phœnix Park	Phœnix Park	C. Staniland (Multi-Union)	A. R. P. Rolt (E.R.A.)	J. Pollack (E.R.A.)	—	97.45
„ 11	Italian G.P. 420 km.	Monza	T. Nuvolari (Auto-Union)	Farina (Alfa-Romeo)	Caracciola (Mercedes-Benz)	2 41 49	96.76
„ 11	Milan G.P. 175 km.	Monza	E. Villoresi (Alfa-Romeo)	Severi (Alfa-Romeo)	Hug (Maserati)	1 11 4	91.71
„ 18	Circuit of Modena	Italy	Cortese (Maserati)	Hug (Maserati)	Dobson (E.R.A.)	1 43 54.6	63.08
Oct. 8	Imperial Trophy 32 miles	Crystal Palace 2 miles	G. E. Abecassis (Alta)	"B. Bira" (E.R.A.)	E. Minetti (Maserati)	38 27	52.08
„ 22	Donington G.P.	Donington Park	T. Nuvolari (Auto-Union)	Lang (Mercedes-Benz)	R. Seaman (Mercedes-Benz)	3 6 22	80.49

HILL-CLIMBS

DATE	ORGANISERS	VENUE	FIRST FASTEST TIME	SECOND FASTEST TIME	THIRD FASTEST TIME
May 15	Bugatti Owners' Club	Prescott	A. Baron (Bugatti) 50.7 secs.	J. L. Burton (Bugatti) 50.74 secs.	C. I. Craig (Bugatti) 52.90 secs.
„ 28	Midland Automobile Club	Shelsley Walsh	R. Mays (E.R.A.) 38.90 secs.	H. L. Hadley (Austin) 40.09 secs.	A. F. P. Fane (Frazer-Nash) 40.13 secs.
Sept. 10	Midland Automobile Club	„	R. Mays (E.R.A.) 37.87 secs.	H. L. Hadley (Austin) 40.36 secs.	Barry Goodwin (Frazer-Nash) 40.45 secs.
„ 25	Bugatti Owners' Club	Prescott	R. E. Ansell (E.R.A.) 48.91 secs.	G. E. Abecassis (Alta) 49.12 secs.	Lord Avebury (Alta) 49.81 secs.

PRINCIPAL BROOKLANDS RACES

DATE	RACE	DISTANCE	FIRST	SECOND	THIRD	WINNER'S SPEED
April 18	The Campbell Trophy	22½ miles	"B. Bira" (E.R.A.)	A. C. Dobson (E.R.A.)	A. B. Hyde (Maserati)	73.70
June 6	Locke King Trophy	20 miles	F. E. Elgood (Bentley)	R. L. Duller (Duesenberg)	W. M. Couper (Talbot)	106.41
„ 6	Sports-Car Handicap for "The Star" Gold Trophy	16 miles	W. W. S. Bennett (Alta)	G. A. Wooding (Talbot)	"B. Bira" (H.R.G.)	62.21
Aug. 1	Invitation Race for E.R.A. Cars	11 miles	A. C. Dobson	J. P. Wakefield	W. Cotton	72.35
„ 1	British Trophy Race	22½ miles	G. E. Abecassis (Alta)	H. S. Wilton (M.G.)	P. Maclure (Riley)	67.00
Sept. 17	B.R.D.C. 50-Mile Race	Outer Circuit, Brooklands	G. A. Wooding (Talbot)	C. Follett (Railton)	D. Bertram Barnato-Hassan Special	111.17
„ 17	B.R.D.C. 192-Mile Handicap	Campbell Circuit, Brooklands	"B. Bira" (E.R.A.)	R. Mays (E.R.A.)	Hon. P. Aitken (E.R.A.)	83.41
„ 24	Dunlop Jubilee Cup Race	20 miles	W. M. Couper (Talbot)	C. J. P. Dodson (Delahaye)	F. E. Elgood (Bentley)	119.86
„ 24	Second Dunlop Jubilee Trophy Race	23 miles	R. Mays (E.R.A.)	J. P. Wakefield (E.R.A.)	A. C. Dobson (E.R.A.)	64.77
Oct. 15	Siam Challenge Trophy	Road Circuit 23 miles	"B. Bira" (E.R.A.)	A. C. Dobson (E.R.A.)	J. P. Wakefield (E.R.A.)	73.33
„ 15	Mountain Championship	12 miles	R. Mays (E.R.A.)	C. S. Staniland (Multi-Union)	A. C. Dobson (E.R.A.)	80.39

CONTINENTAL NOTES AND NEWS—continued from page 416

motorists is to remind them that the distance was the same as that from the outskirts of London to Edinburgh—in four hours' running time!

It is safe to say that the only danger throughout the whole of that trip was the possibility of mechanical failure of the car, a burst tyre or a broken steering connection. The latter is extremely, unlikely, while the former—with independent springing—need be nothing more than unpleasant.

The astonishing thing about travelling on *Autobahnen*, and the thing that impresses one most when one first uses them, is that one simply sets one's speed at a determined figure and then holds it at that for anything up to 50 or 100 miles—or, in fact, the length of the *Autobahn*. There are no checks or delays whatsoever. The side-turnings only mean that cars either slowly veer away from the main road or else slowly join up with you at a very gradual angle. And with no cyclists, no really slow trucks, and no crossings there is nothing to impede your progress at a steady speed. The resulting restfulness, after ordinary roads, has to be experienced to be believed. Personally, I don't find them boring, because I know I am "getting places." Instead, I am soothed, in contrast to my mood on ordinary congested roads, which is one of ill-suppressed irritation.

Continental Rallyists

And now we come to the high-spot of the winter, the annual Rally to Monte Carlo from all parts of Europe. The first three numbers have already been allotted to Continental drivers, by virtue of their winning various classes last year. Thus, No. 1 is Bakker-Schut, the Rally winner; No. 2 is for Descollas, the Lancia driver who pulled off the 1,500 c.c. class; and No. 3 is for Madame Rouault, the Ladies' Cup winner. As I write, the entries up to date, in addition to those above (presuming they do so), are as follows:—4, J. F. C. Westerman (Ford); 5, E. A. C. Cornelius (D.K.W.); 6, T. Gentili and Mlle. Pappos (Lancia); 7, Jean Trevoux (Hotchkiss); 8, P. A. Collins (Railton); 9, H. A. A. van Nievelt and A. M. J. de Visser (Lincoln); 10, G. W. Wilkin (Triumph); 11, R. J. Boddaert and G. A. M. Baar (Cadillac).

This will be the eighteenth Rally—how time flies! Competitors will start on January 17th from the following controls, whose markings are given in parentheses: Athens (500 marks), Bucharest and Tallinn (498 marks), Stavanger and Palermo (497 marks), John o'Groats and Umea (496 marks), and Amsterdam (468 marks). They will then proceed towards Monte Carlo at an average speed of 24.856 m.p.h. until they reach the beginning of the last 620 miles of their journey, after which they have to average 31.07 m.p.h. At the end of a long journey, and over the Alpes Martimes, this is no mean feat, especially when the average is one to be aimed at, not merely exceeded.

On arrival at Monaco, the cars will be submitted to an elimination test involving acceleration, braking and reversing. The next day they will be thoroughly examined to see whether they comply with the rules, and on January 23rd they will essay a hill-climb, the whereabouts of which will not be revealed until the actual day. On the 24th the Comfort Competition will be held, and the whole affair will finish up with the prize-giving and a gala dinner on the 25th.

A real attempt has been made by the organisers to make this year's Rally a test of standard cars. The competing machines must be one of a series of thirty manufactured before November 1st, 1938, and they must have closed coachwork, which must conform to certain measurements and must be of normal manufacture. Special bodies, i.e. bodies by specialist coachbuilders, are permitted provided thirty similar bodies have been built. In fact, the flimsy construction of some of the previous winners, used in order to obtain an exceptional power-to-weight ratio for the final tests, is no longer countenanced. Supercharged cars are not eligible.

Continental drivers are determined as ever to keep the First Prize, but an overdue success by a British competitor, particularly a veteran of the Rally such as Whalley, would be very popular.

THE GRAND PRIX RACES OF 1938

THE SEASON FINISHES WITH PROSPECTS OF EXCITING EVENTS FOR 1939

THE 1938 season of Grand Prix racing started off with the highest expectations of international competition, then developed into a series of victories for one marque, and, finally, ended with the supremacy of that marque challenged, and with good hopes of some close racing next season.

In spite of the rosy prophecies flying about last spring, this course of events was only what was to be expected in the first year of a new formula. Designs were untried, and new firms were entering the lists. Mercédès-Benz and Auto-Union were bound to have a flying start, through the accumulated experience of their successes during the 1934-37 formula, but the latter firm had received a serious set-back through the untimely death of their star driver, Berndt Rosemeyer, in February, while attempting records on the Frankfurt *Autobahn*.

During the 1937 season Auto-Union had won many victories, but on only one occasion had any other of their drivers except Berndt Rosemeyer scored a success, when Hasse won the Belgian Grand Prix. Muller was still a cadet, recently recruited from motor-cycle racing, and Stuck was already a veteran, more inclined than ever to retire from the hard field of Grand Prix racing.

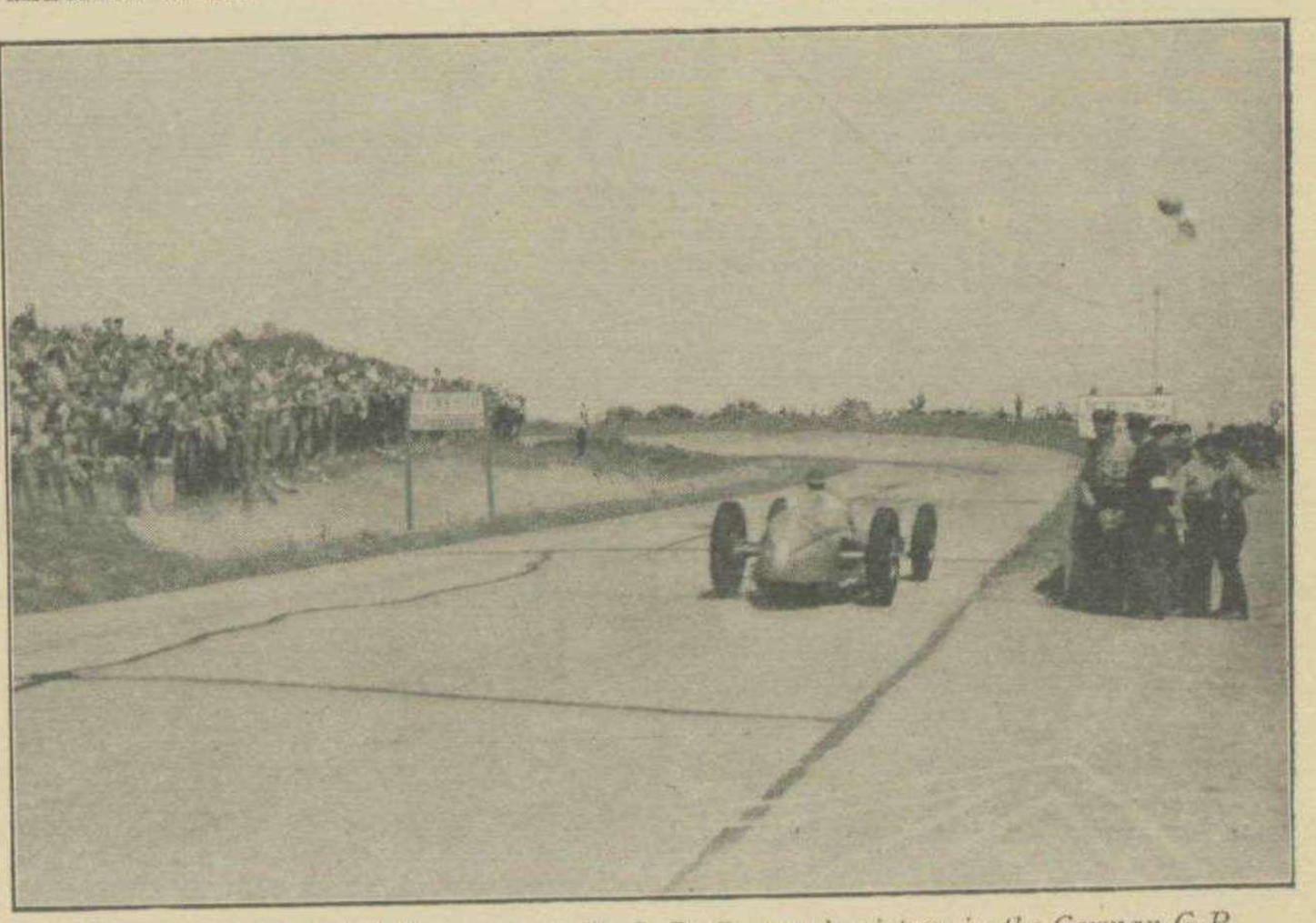
Faced by the experienced team of Mercédès drivers, all quite capable of beating the world's best, and still at full strength, it was no wonder that Auto-Union lagged behind in the first few months of the season.

A real challenge to the German teams was expected from the French manufacturers, once supreme in Grand Prix events, and this was borne out by the result of the first race of the season, at Pau, where Delahaye was the winner, and Caracciola and Lang, taking turns in the first of the blown 3-litre supercharged Mercédès, could do no better than second.

Big hopes rested on the Delahayes, for it had already been proved that the cars had considerable speed through Dreyfus' performance at the close of the previous season in winning the million-franc prize for beating the lap record at Montlhèry, and indeed averaging 91.07 m.p.h. for 100 kms. over the *circuit routiere*. This was a fine performance, but it was not generally appreciated that the record which was broken was one which had stood since the French Grand Prix of 1934, the first year of the old Formula, to the credit of the early type Alfa-Romeos. The German cars, only just produced, experienced much trouble in that race, and never had another opportunity over the unrestricted *circuit routiere*, owing to the introduction of *chicanes* in 1935, and the limitation of the event to sports-cars in 1936 and 1937.

Delahayes followed up their success at Pau by winning the Cork Grand Prix, in which neither of the German teams started, but when they met the full force of Mercédès (Seaman excepted) at Tripoli in May, they were heavily defeated, and throughout the rest of the season could not maintain their early promise.

Discussion continued for some time as to whether the 3-litre supercharged or the 4½-litre unsupercharged cars, ranked equal by the formula, were the better types, but there is now little doubt upon the point. It must be remembered, however, that nothing like the amount of technical research which has been lavished upon the 3-litre supercharged type has been spent upon the unblown engines. The Delahaye racing programme is run by a private concern, the Ecurie Bleu, under the auspices of M. et Mme. Schell, and their resources are in no way comparable to those of Mercédès-Benz and Auto-Union.



The outstanding feat of the year was R. J. B. Seaman's victory in the German G.P.

The Delahaye prospects received a bad blow when the Automobile Club de France refused to allot to them any share of the 1938 national fund for the construction of racing-cars, on the ground that they had scooped the pool in the previous year. Since Delahayes have been the only French firm consistently to support Grand Prix races this year, the action of the French club seems rather hard

As a protest, indeed, Delahayes were not run in the French Grand Prix at Rheims, and a one-sided race resulted in a hollow victory for Mercédès. The new Auto-Unions made a disastrous first appearance, both cars retiring after the first lap. French participation was limited to two sports-type Talbot-Darracqs, the S.E.F.A.C., and a 3-litre supercharged Bugatti. This last, driven by Wimille, had appeared at Cork, and was a real good-looker, of which much was expected. Retiring early at Rheims, it was seen no more in Grand Prix races, and Bugatti's policy remains as Sphinx-like as ever.

The next Grande Epreuve—as the principal races of each country are called—was the eagerly awaited German Grand Prix, and R. J. B. Seaman appeared for the first time in the Mercédès team. His great victory is now a matter of history, and there seems no doubt that next year the British driver will be ranked on a par with Caracciola, Nuvolari, and the other Continental aces.

The German Grand Prix was also notable for the beginning of the revival of Auto-Unions, who had brought in as team leader the great Nuvolari himself. Nuvolari had actually handled an Auto-Union on one previous occasion, at Berne in 1937, but in that event was quite unable to cope with the unfamiliar layout of the rear-engined car. The *maestro* was still not at home in the Auto-Union in the German Grand Prix, and ran off the road on the first lap, but he later took over Muller's car and finished fourth.

Two races in Italy followed, the Coppa Ciano and the Coppa Acerbo. Auto-Unions did not start in the former, and a sensation occurred when von Brauchitsch, who finished first for Mercédès, was disqualified for having been pushed off by the spectators when he skidded into the palisades. This left Lang the winner, and the sole Mercédès finisher, while Alfa-Romeos, with an improved type of car, took second, third and fourth places.

In the Coppa Acerbo again only one Mercédès finished, Caracciola scoring his first victory of the season, and while Alfa-Romeos were again second and third, a new challenger appeared in the 3-litre supercharged Maserati. This car, driven by Villoresi, actually made the best lap of the race, passing the German cars one after another. Thus the new Maserati fulfilled its promise shown in the Tripoli race, when Trossi (not Lang, as reported

THE GRAND PRIX RACES OF 1938—*continued*

at the time) put up the best lap at 135.96 m.p.h. After this early success it had been lying dormant, and is now a recognised "dark horse," with great speed but for the present lacking reliability.

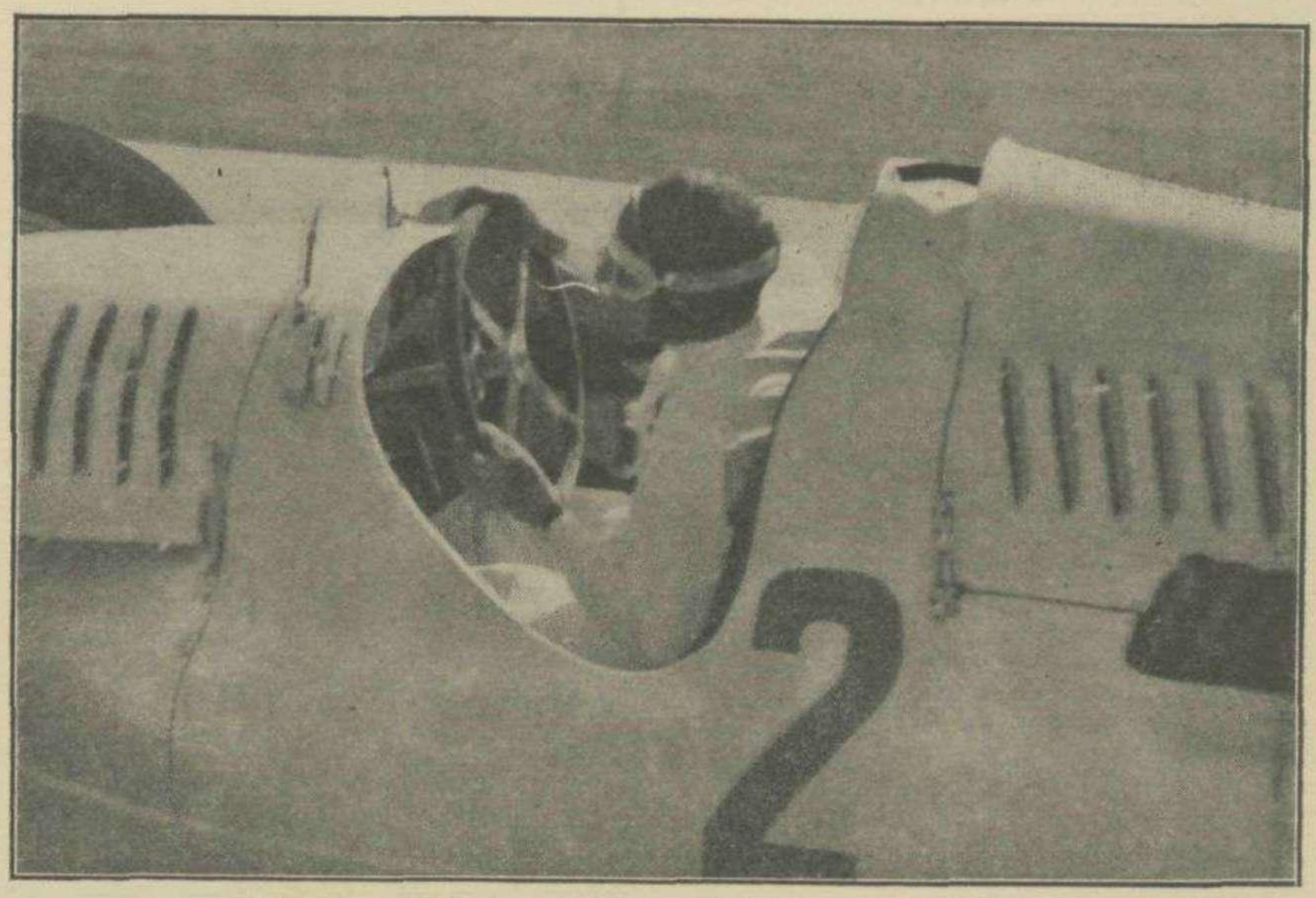
Mercédès returned to all-conquering form in the Swiss Grand Prix, scoring another one-two-three victory, with Caracciola first, Seaman second, and von Brauchitsch third, and Seaman also made the fastest lap. In the Italian Grand Prix, however, Nuvolari had mastered the technique of the Auto-Union, and won the Grande Epreuve of his own country in great style. Four Mercédès and four Auto-Unions started, but only one of each team finished, Nuvolari winning and Caracciola and von Brauchitsch, taking turns, scoring third place. Alfa-Romeos were second and fourth, and Trossi's Maserati, carefully driven, fifth.

Finally, Nuvolari came to Donington, and little more need be said here of his magnificent driving, proving that again, at nearly fifty years of age, he can lay claim to the title of the world's best road-racing driver. Muller, too, showed great promise in this race, and Auto-Unions can now look forward to the 1939 season with far more sanguine prospects than had appeared possible in the middle of the summer. Their cars finished the season with, apparently, greater acceleration than that of the Mercédès, and they have at least two drivers who will not be reckoned amongst the "also-rans."

Mercédès, too, have no reason to lose confidence through their defeats in the last two races of the season, for it was only to be expected that, after a series of unequalled successes, there must come a lull some time. During periods throughout the summer, moreover, Caracciola was not enjoying the best of health. He is still but thirty-seven years of age, however, and will not easily render up his title of "Europameister."

It is unfortunate that Great Britain will not, after all, be represented by E.R.A.s in next season's formula events, but, in the lack of Government or other financial support (not forgetting the efforts of the E.R.A. Club), the wisdom of the decision cannot be doubted.

There is still some hope that the sixteen-cylinder 3-litre supercharged Talbot-Darracqs will assist the Delahaye efforts for France next season, though prospects of a works team of Bugattis do not appear bright. Italy, on the other hand, has excellent prospects for 1939, if the Alfa-Romeos can find a little more speed, and the Maseratis a little more reliability.



Nuvolari's driving has put Auto-Unions on the map again.

To sum up the 1938 season, Mercédès won six races, and both at Pau and in the Italian Grand Prix, though beaten, put up the fastest lap. Auto-Union won two races, and Nuvolari also made best lap at Donington. The remaining two Grand Prix races were won by Delahaye.

AN AMBITIOUS CHRISTMAS TRIAL

An ambitious trial will be held by the Ford Enthusiasts' Club on Bank Holiday, December 27th, on private ground at Camberley if War Office permission to use this area comes to hand in time. The trial is to be divided into five engine-size classes, a saloon class, and classes for 8 h.p., 10 h.p., and V8 Ford cars of late type. Place awards will be given in each category, depending on the number of starters in each class. Saloon and Ford entries will use standard tyres and axles. The engine-size classes will be sub-divided into Novice and Expert categories by the organisers themselves, and thus Allard attempts to introduce a much-needed handicap system into a trial, well known drivers going into the Experts' class while "border-line" cases will run as Novices unless entering really potent cars. The point is that separate awards for Novices and Experts will be given in each capacity class, while only Experts may use comp. covers and solid axles. The hills, moreover, will each be divided into sections and a timed test will be used merely to sort out ties. No strict time limit will be imposed. A first entry in any class costs 10/- and additional entries for any class for which an entrant is eligible, 5/- per class. In addition, special Premier place awards irrespective of category can be competed for on payment of another 5/-. Teams of three will be accepted at 7/6 per team and again Expert and Novice sub-divisions will operate. It seems there will be ample prizes, but we shall be surprised if results come through the same day! The N.W.L.M.C. have accepted an invitation, and K.B.C.C., S.U.N.B.A.C., Southsea M.C., and Maidstone and Mid-Kent M.C. are expected to do so. F.E.C. awards are of known high quality. Spectators can obtain maps of the area on application. Entries close on December 20th, and should go to the secretary of the meeting: W. Boddy, 21, Lucien Road, London, S.W.17. Streatham 5086.

THE 1939 R.A.C. RALLY

The R.A.C. Rally has undergone another change for 1939. Although it is not yet as we would wish it, with trials hills, speed events, special tests and so on split up by long road sections, it is much more sensible than the 1938 event.

On April 25th cars will leave five different starting places and run throughout the afternoon, evening and night to converge on Scarborough early on the Wednesday morning—it is excellent that the night run is again included. The average for this section will be 26 m.p.h. From Scarborough a 200-mile route over the Yorkshire and Derbyshire moors to Buxton will bring competitors to the night stop at Buxton. For this section the average is 24 m.p.h. Checks will be used half-way and at Buxton.

In the morning, a short optional colonial section will be included for which five extra marks will be given—we wonder how many of the entrants for the Coachwork Competition will try this section! Thursday's run to Brighton, where the Rally concludes, will include two stiff hills. Thereafter cars must average 26 m.p.h. into Brighton. There will be a test on arrival and, after being parked in the open for Thursday night, a quick-starting test and two more eliminating tests will be undertaken on the Friday morning of April 28th. All of which seems to constitute one of the most useful and sensible R.A.C. Rallies yet. Brighton deserves the Rally, after its continued hospitality to speed-trial and veteran folk. On April 29th the Coachwork Competition will be held. Regulations are now available from the R.A.C., Whitehall, S.W.1.

THE VETERAN RUN TO BRIGHTON

A RECORD ENTRY AND SPLENDID ORGANISATION

ON November 20th the R.A.C. and the Veteran Car Club again gave us one of the inimitable runs to Brighton for cars built prior to 1905. This event is quite unique and vast entertainment for competitors, who, however, take the run really seriously, as, indeed, it should be taken. It seems to attract as many onlookers as most motoring events, too, from the quite surprising crowd that assembles in Hyde Park from 7.30 a.m., and those lining the fifty-seven mile route, to the very large crowd which watched the arrival on the Madeira Drive at Brighton. R.A.C. Scouts and the police do everything possible to ensure smooth functioning and the organisation is splendid, the lunch park being in a cinema park at Crawley and the Madeira Drive properly fenced off to receive competitors. The weather alone misbehaved, a blustery gale and heavy rain making the run a tough undertaking, for few of the cars had hoods or screens and only two had properly closed bodies. This year 121 entries were received, which is a record and shows that some lucky mortals still manage to unearth pre-1905 motors. Amongst the newcomers were a De Dion with late-type radiator and big single-cylinder engine, a very smart Darracq voiturette, a Panhard Sterling Dog Cart driven by Alan Hess, a Benz, and a truly beautiful 1904 touring English Licence Mors with chain-drive, white-painted front tyres of small section and big Bleriot headlamps.

As a seat seemed unlikely to be forthcoming on a car this time, the MOTOR SPORT representative followed the veterans in modern transport possessed of a much-appreciated lid. At the start H. E. Wood's 1899 Benz got its belts mixed and several times rammed Major Allen's steam Stanley Locomobile. Fotheringham-Parker's 1899 Century seemed to be in trouble in the Park, through which the Locomobile aforementioned sailed amid intermittent steam clouds of gigantic proportions. At Brixton Town Hall E. L. Wood's passenger was seen to alight to assist the Leon Bollée to restart, but Sammy Davis on the other Leon Bollée was going splendidly, able to do some 29 m.p.h. if his official schedule hadn't been a mere 12 m.p.h., and tailed by his Wolseley 25 saloon. Wood stopped at the top of the Croydon By-Pass, probably to adjust *his* schedule. D. Copley, alone in his little 1 h.p. Renault, bearing a notice to announce it as the world's smallest car, overshot the traffic lights at Thornton Heath Pond, to the amusement of a mobile cop, and stopped his engine at the top of the Croydon Aerodrome rise, though he restarted after vigorous flooding of the carburetter and other weird manœuvres. Capt. Wylie stopped his 1897 Hurtu at the same spot, but only to dig out a rug for the Marquis of Donegal, who was his frozen passenger. Incidentally, the car was going really well this time, carried another passenger as well, and was tailed by a Railton saloon. Rowden's Star Dogcart of thirty-nine summers pulled up here as well, and oil from a small bottle was poured into the exposed big-end.

At Merstham we struck the first unfortunate—J. Bradshaw, with Cecil Clutton as one of his passengers, whose astounding eight-seater 1898 Daimler saloon was misfiring thunderously. Shortly afterwards some of the faster stuff began to come through, though Yea's 30 h.p. Mercédès, with very advanced streamlined body, was obviously finding the schedule 18 m.p.h. a distinct bother and we imagine that Charlie Martin and his goat-hair coat, in Shuttleworth's 1903 "Paris-Madrid" bodied De Dietrich, was far ahead of it. Capt. George Eyston, too, was certainly winding up Fedden's big 1903 Mercédès.

F. Jarrett's 1902 White Steamer, with limousine body, took on water at a garage in Merstham, and Hutton-Stott's Lanchester was going as beautifully as ever, with full crew, and the family Lanchester 21 saloon having a job to keep station with it.

In all, twelve cars fell by the wayside, and there had been sixteen non-starters. Kaye Don had his 1903 De Dion die on him, and when we left Brighton Capt. Rolfe's 1903 De Dion was passing Pycombe at about 3.20 p.m. and Lloyd-Jones's 1898 Star was encountered later still, so that the unfortunate occupants must have got the full blast of the cloud-burst which concluded a dismal day. An hour later another car went past on tow. Dick Nash arrived safely in his big Panhard, the rear seat passengers actually protected by a hood, Dick very cheery but not looking too well. The Bolster family got in with their Panhard, John in a grand flying hat, and the polished Panhard from Barnsley was also present. Bergal got Porter's De Dion down so quickly that it was encountered in London again early the same evening and the 1903 Alldays and Onions of F. Harvey was obviously going well and was, we believe, the first arrival.

Shuttleworth's Locomobile steamer, Wisdom's Wolseley and Vernon Balls's Oldsmobile did well. Andrew Leitch drove his 1900 Begot and Mazurie in a Sherlock Holmes hat and Estler had a canvas screen erect on his 1903 Siddeley to afford some measure of protection for himself and his lady passenger. Apparently Richard Seaman (Benz) did not start, but other well known entrants included Fotheringham-Parker's Century, Dunham's Renault, Fry's Humber, and Fairtlough and Oliver Bertram with the 04 Panhard. St. John Nixon rode down on his De Dion tricycle.



A stop on the wayside for repair. J. W. Mills's 5.9 flat twin Benz.

RESULTS

Class 1, 1894-1896 (10 m.p.h. schedule): 1, E. L. Wood (Leon-Bollee).

Class 2, 1897-1900 (12 m.p.h. schedule): 1, F. S. Rowden (Star Dogcart).

Class 3, 1901-1902 (14 m.p.h. schedule): 1, J. Swift (Panhard).

Class 4, 1903-1904 (18 m.p.h. schedule): 1, F. W. Hutton-Stott, Junr. (Lancnester).

The team prize was won by H. G. Adams and C. R. Southall (De Dion), G. H. Eyre (Napier), and J. Goff-A C. Lane (De Dion).

MAJOR GARDNER DOES 187 M.P.H.

ASTONISHING RECORDS SET UP BY BRITISH 1,100 c.c. M.G.

SOME of the most remarkable records ever set up were established by Major A. J. G. Gardner last month, driving his 1,087 c.c. M.G. Using one leg of the Frankfort *Autobahn* in Germany, while the other leg of this famous road was open in the normal way to traffic, Major Gardner returned a record speed of 187.61 m.p.h. for the Class G flying mile and 186.56 m.p.h. for the Class G flying kilometre. On his return run for these records he actually did 194.52 m.p.h., covering the kilometre in 11.5 secs., and the mile in 18.52 secs. For a 1,100 c.c. car to achieve such speeds is a truly historic performance and one which has aroused great interest in Germany and which has materially uplifted British prestige all over the world. Actually, the streamlining of the car proved more efficient than was anticipated, and the car ran in an under-geared condition, actually doing 7,300 r.p.m. on its faster run with a top gear of 3.6 to 1—with Major Gardner lifting his throttle foot to obviate over-revving. Even so, something like 7,700 r.p.m. was reached in top gear before Major Gardner lifted his foot. With a higher gear the M.G. should happily exceed 200 m.p.h.

This great venture was planned by Cecil Kimber, managing director of the M.G. Car Co. Ltd., and backed by Lord Nuffield. The car consisted of the old "Magic Magnette" M.G. chassis with a specially developed K3 type M.G. Magnette engine prepared by Robin Jackson. The body, which enclosed the wheels and had an almost fully covered cockpit, was the work of Reid Railton, built by M.G. and panelled by E. G. Brown under German Jaray licence—this firm holds patents which Railton's plans embraced. The body weighs 228 lb. and the complete car about 16 cwt.—heavier, that is, than the 6-litre Formula G.P. cars. The engine had a bronze head mated directly to the block, with no water passages between. The o.h. valves were actuated by M.G. valve gear and a special Jackson camshaft. The exhaust valves were sodium cooled. The Centric supercharger delivered at 26 lb. per square in., drawing from twin 48 mm. S.U. carburetters. The engine ran up to 7,500 r.p.m., giving over 190 b.h.p.—or very nearly 200 b.h.p. per litre—and a b.m.e.p. of about 340 lb. per square in. Formerly this engine, which Major Gardner used for his former Class G 149 m.p.h. records with the ex-Horton M.G. chassis, gave 162 b.h.p. at 6,500 r.p.m. and this was boosted to 171 b.h.p. at 6,750 r.p.m. before the high-pressure supercharge was applied. No one expected more than 170 m.p.h. from the new car. The drive from the engine goes to an E.N.V. gearbox and via off-set transmission to the rear axle. The car will go out for 1½-litre records in future and may run again with further modifications to the body-shape and a higher top gear, when it should easily exceed 200 m.p.h. in 1,100 c.c. form. Its low build makes it unsuitable for an attack on Brooklands records. We are glad to record that Dunlop tyres and wheels, Lucas electrical equipment, and Shell-Mex and B.P. fuel and oil figured in this historic British achievement. The M.G. is probably the most efficient record-breaking car in existence. One has but to consider the absolute records class by class to reach this conclusion. The 348 c.c. Vitesse has done 77½ m.p.h., the 493 c.c. Nibbio 100 m.p.h., the 745 c.c. M.G. 140 m.p.h., the 1,086 c.c. M.G. 187 m.p.h., the 1,496 c.c. Miller 164 m.p.h., the 1,673 c.c. Derby 147 m.p.h., the 2,991 c.c. Maserati 155 m.p.h., the 4,981 c.c. Auto-Union 219 m.p.h., and the 5,576 c.c. Mercédès-Benz 268 m.p.h. Eyston's 73,391 c.c. "Thunderbolt" did 357 m.p.h. and Cobb's 46,800 c.c. Railton 350 m.p.h. The respective efficiencies expressed in terms of m.p.h. per litre of engine swept volume show some advantage to the racing cycle-cars. For instance, the figure for Lurani's Nibbio comes out at 202 m.p.h. per litre, whereas Gardner's M.G. has a figure of merit of 172 m.p.h. per litre. On the other hand, one has to take seriously into account the fact that wind resistance increases as the cube of the speed and so Nibbio had a far easier task at 77 m.p.h. than did the M.G. at 187. A better measure of efficiency—primarily of body shape but to a smaller extent that of rolling friction, mechanical friction and correctness or otherwise of gear-ratio—is that of b.h.p. to m.p.h. Nibbio probably gave about 40 b.h.p. and the M.G is estimated to have done 194 m.p.h. on 180 b.h.p. (geared below peak revs.). Eyston used some 6,000 horses to do 357 m.p.h. and Cobb about 2,600 horses to reach 350 m.p.h. We do not profess to know what record-breakers in the other categories developed, but probably the Mercédès-Benz and Auto-Union cars gave rather more than the 90 b.h.p. of the road-racing editions, but not a lot more than 100 b.h.p. per litre, or about 500 and 560 b.h.p. respectively. Those of our readers who wield a pretty slide-rule will have all the fun they want grappling with comparative efficiencies, and may like to let us see their findings. But, however you look at it, the 1,100 c.c. M.G. has made sensational history, There is much satisfaction to be derived from remembering that much of the car's design follows that of normal K3 M.G. practice and that the chassis dates back to 1934. Lord Nuffield, Cecil Kimber, Robin Jackson, Reid Railton and "Goldie" Gardner have verily deserved well of all English-speaking enthusiasts.

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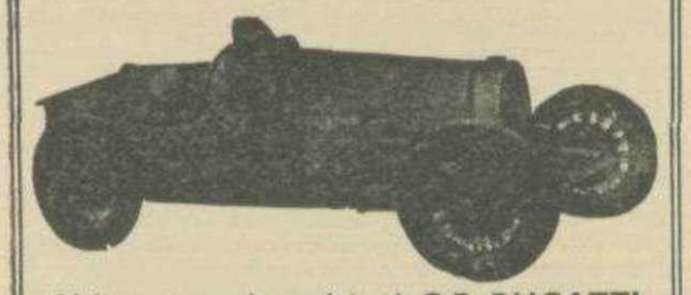
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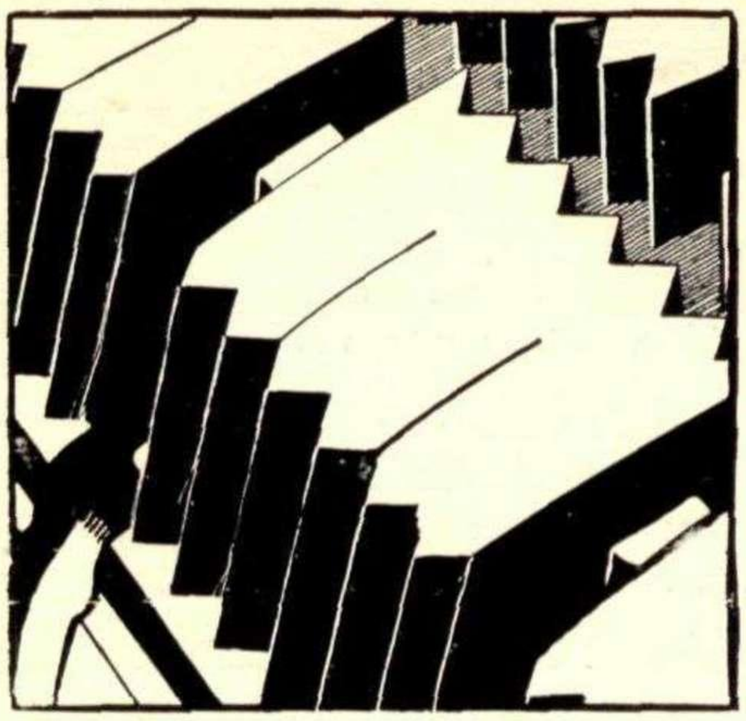
Make of Car	Issue
A.B.C. 11 h.p. 2-cyl., 2-seater	Feb. 1926
A.C. 2-litre, short-chassis, 15.7 h.p. 2-seater	July 1936
A.C. 2-litre, 16.40 h.p., 3-seater	Oct. 1927
A.C. 2-litre, 16.66 h.p., 2-seater	March 1926
A.C. 2-litre, 16.66 h.p., 4-seater	June 1934
Alfa-Romeo 1½-litre supercharged 6-cyl. Charles 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
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 1933
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
BENTLEY 3½-litre, 6-cyl., Vanden Plas, 4-seater	Nov. 1933
Bentley 4¼-litre, 6-cyl., Park Ward saloon	June 1936
Bentley 6½-litre, 6-cyl., long-chassis saloon (1928)	Dec. 1936
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, 1¼-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
DARRACQ 12.32 h.p., Weymann saloon	Sept. 1924
Delage 14 h.p., 2-litre, 2-3-seater	June 1927
Delage 8-cyl., sports saloon	April 1930
Delahaye 3.5-litre "Coupe des Alps" drop-head coupe	Aug. 1936
Derby 16 h.p., 6-cyl., 2-str. (1930)	Oct. 1932
ESSEX Terraplane 8-cyl. 4-seater	Sept. 1935
Excelsior 5¼-litre, 6-cyl., super-sports test chassis	Sept. 1927
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
FRAZER-NASH 6-cyl., 1½-litre (Blackburn) 2-seater	July 1933
Frazer-Nash 4-cyl., 1½-litre T.T. Replica push-rod o.h.v. 2-3-str.	Nov. 1931
INVICTA 12/90 h.p., 1½-litre supercharged 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
Isotta-Fraschini 45 h.p., 4-seater	Oct. 1926
LAGONDA 2-litre 4-cyl., twin o.h.c. 4-seater	Jan.-Feb. 1928
Lagonda 2-litre, 4-cyl., twin o.h.c. supercharged 4-seater	Oct. 1930
Lagonda 4½-litre, 4-seater	May 1936
Lagonda 4½-litre Rapide 4-seater	May 1935
Lagonda 4½-litre, 4-seater	Jan. 1934
Lagonda Rapier 10 h.p., 4-seater	Sept. 1934
Lagonda 16.80 h.p., 6-cyl., 4-seater	Jan. 1933
Lagonda 3-litre, 6-cyl., 4-seater	March 1932
Lagonda 2-litre, 4-cyl., twin o.h.c., 4-seater (1928)	March 1931
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
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., supercharged 2-seater	June 1925
Mercedes-Benz 36.220 h.p. supercharged, 2-4-seater	April 1928
Mercedes-Benz 33.180 h.p., supercharged, 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
NASH 28.9 h.p., 6-cyl. saloon	June 1929
Nomad 350 c.c. (Villiers 2-stroke) 2-seater	Dec. 1926
O.M. 2-litre, 6-cyl., 4-seater	Aug. 1926
O.M. 6-cyl., 2-litre, 4-seater	Oct.-Nov. 1928
PACKARD V12 cyl., 57 h.p. coupe	Feb. 1934
Peugeot "201" 4-cyl., 1,122 c.c. saloon	Sept. 1931
RAILTON Terraplane 4-seater	Oct. 1934
Railton Light Sports tourer	Dec. 1935
Riley Nine "Gamecock" 2-seater	March 1932
Riley Nine "Monaco-Special," two-cars. saloon	March 1931
Riley Nine, 4-seater	June 1931
SINGER 1½-litre, 6-cyl., Le Mans 2-seater	March 1935
Singer Nine, 4-seater	March 1933
Squire 1½-litre, 4-cyl., 2-seater	Aug. 1935
S.S. I special-bodied 2-seater (1933)	Feb. 1934
S.S. I coupe	June 1933
S.S. II coupe	May 1932
Steyr Type XII, 14.35 h.p., Weymann saloon	Aug.-Sept. 1928
Stutz "Black Hawk" supercharged 4-seater	Jan. 1930
Stutz 5-litre, 8-cyl., 4-seater	Dec. 1927
Sunbeam 3-litre, 6-cyl. (twin o.h.c.) fabric saloon	Nov. 1927
Sunbeam 6-cyl., 21 h.p. (push-rod) Speed Six saloon	Dec. 1933
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 (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
WINDSOR 4-cyl., 11 h.p. "Special" 2-3-seater	Nov. 1926
Wolseley Hornet Swallow 2-seater (1933)	April 1934
Wolseley Hornet E.W. "Daytona-Special" 4-seater	May 1932
Wolseley Hornet (12.08 h.p.) saloon	Sept. 1930

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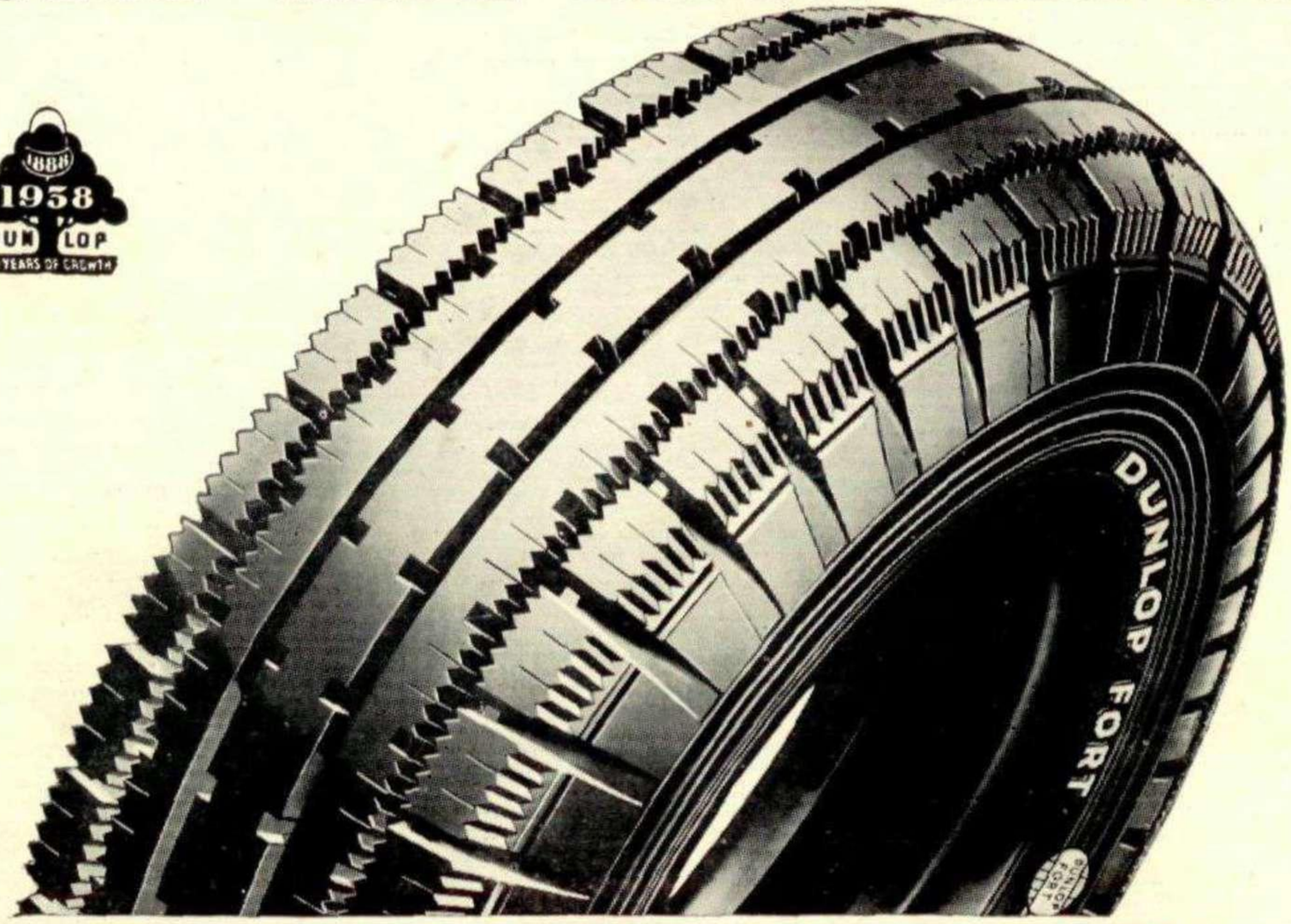
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