Vol. XVIII No. 9. RACING CAR EVOLUTION—1909-1916 September, 1942

MOTOR SPORT

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EMPTY ROADS

ON the Sunday and Monday of August Bank Holiday we had occasion to undertake journeys totalling 180 miles in a two-cylinder, two-speed "Aero" Morgan. The experience was unique. Never before had we seen the road to the West out of London so devoid of traffic. The Government has certainly achieved its objective in getting pleasure motorists off the roads, and it may be significant that the very few cars encountered were mostly large American saloons. This is not to suggest that non-military motoring has practically ceased to be a feature of British roads. A great many cars, plenty of sports models amongst them, are in use on journeys of national importance, especially on week-days, in some cases having to cover long distances in the shortest possible time. The fact remains that on the occasion of this national holiday the main roads were startlingly empty. How dearly the private motorist clings to his right to unmolested travel seemed nicely emphasised by the three-wheelers that were out and about—on the first day, from our own car of this type, we counted four four-cylinder Ford-engined Morgans, a "Family" Morgan, a "Super Sports" Morgan and four B.S.A.s, two of the latter each carrying a man and two girls on the front seat. Otherwise the roads were mainly inhabited by cyclists and pedestrians; already the monopoly of the highways and by-ways they displayed suggests that, not only will some nasty accidents occur when normal conditions return, but that those drivers now motoring fast in the national interest have some nasty moments coming to them. Other disturbing thoughts arise from this contemplation of empty roads. Some overheard remarks, distinctly hostile to civilian motorists, made by a countrywoman who had probably never ridden in a car in her life, made us wonder whether there isn't something amiss with certain of our radio and newspaper propaganda. We wonder what is to happen to those persons who are expected to complete important journeys to schedule, if any and every policeman has a right to stop their cars and question why they get their petrol. We wonder how long we shall go on seeing Army vehicles taking portly officers to public houses and pretty girls to country dance halls. We wonder whether it isn't a reflection on our national railway system that Government officials have been instructed that on no account must they employ private cars for a duty journey which can be accomplished sufficiently quickly by train, but that, if this is not the case, they must restrict the maximum speed of their cars to 40 m.p.h. We wonder how young men, on leave from Service life, will fare when using their cars for pleasure and wearing civilian clothes. . . . There is no doubt that the ordinary motorist is making a great, if compulsory, sacrifice in giving up his car—as witness a full cinema car park in a country town seen late in the evening of July 31st, since when we have not seen a single private car so parked. It is to be hoped that, if he still gets a minute ration of petrol for some special purpose, or stops for a meal a mile or so off the direct route on a long-distance official journey, or takes the car to a garage for adjustment or out on a brief test—it is to be hoped that police and public will forgo petty comment and obstructionism; if they must take action, let them concentrate on the unlawful use of Army vehicles (without easy means of recognition) aforementioned. We are fighting in a World war. Surely we can credit our fellow men and women with the good common sense and decency to put the national effort before their own gain? One gets a thought tired of being critically watched and commented upon because one uses a motor vehicle to that end, by folk who still visit cinemas, theatres, dance halls, who can still cycle, hike, swim, play golf and tennis and follow their normal relaxations, whereas ours are barred. Let such persons remember, if ever they find themselves joining the ranks of those who can only be described as "anti-supplementary busybodies," that Brooklands, Donington and the Crystal Palace are closed to racing cars for their benefit as well as ours. Incidentally, all praise to the tricar manufacturers, who probably never realised that one day their products would give such especial pleasure to their owners.

RACING CAR EVOLUTION
Part II: 1909-1916

By Anthony S. Heal

★ **In the issue of March, 1942, we published a long article by Cecil Clutton dealing with racing car evolution between 1895 and 1908. This contribution was so very well received that it occurred to us to continue this account of the development of the racing car down the years. Articles of this nature involve an immense amount of thought and research, and the author of the original was quite unable to devote further time to the task. However, we have been offered, largely with his assistance and good will, further articles, each by a recognised authority for the period concerned, and have pleasure in presenting a second one herewith, in which Anthony S. Heal covers the years 1909 to 1916. Heal is, of course, well known not only as a collector of historic racing cars, some of them of the vintage covered in this article, but also as a very capable driver of such cars under modern competition conditions. The next article on evolution will deal with the 1919 to 1927 era, and after that the period 1928 to 1933 will be dealt with. Articles on the G.P. races of 1934 onwards were published in MOTOR SPORT during the early part of the war and the voiturette races of 1935 to the outbreak of hostilities were also described. Although these latter articles were rather more a description of individual races than a study of evolution, nevertheless, sufficient technical data concerning the cars was included to carry on the story of racing car development. It is inevitable, with different writers covering separate periods of history, that the style adopted by Clutton cannot be maintained throughout, but the chief purpose of these articles, namely, to give an easily-appreciated picture of technical development down the years, as emphasised by the happenings and results of classic International road races and other contests, is very well preserved. Additionally, this series is a very valuable quick reference to race results and to the specifications and outstanding design details of the better-known racing cars, from the very commencement of racing to the present time. We have only to mention that the next two articles are being contributed by Laurence Pomeroy, Technical Editor of "The Motor," and by Flying Officer John Scafe, R.A.F.V.R., to explain the pride we feel in announcing the continuance of this interesting and instructive series.—Ed.** ★

LIKE many other of man's activities, racing car design has experienced certain periods when it seemed that much further progress would not be possible and that a state of finality had been reached. But these times have always been followed by two or three seasons of intense development. Thus the introduction of the independently sprung Mercédès and Auto Union cars in 1934 came at a time when the then invincible *monoposto* Alfa-Romeo had reached the limit imposed by its chassis design. In 1924, when the 2-litre limit had already been in force for two years, the general adoption of the supercharger increased at one bound the power output of Grand Prix engines by 30 per cent.

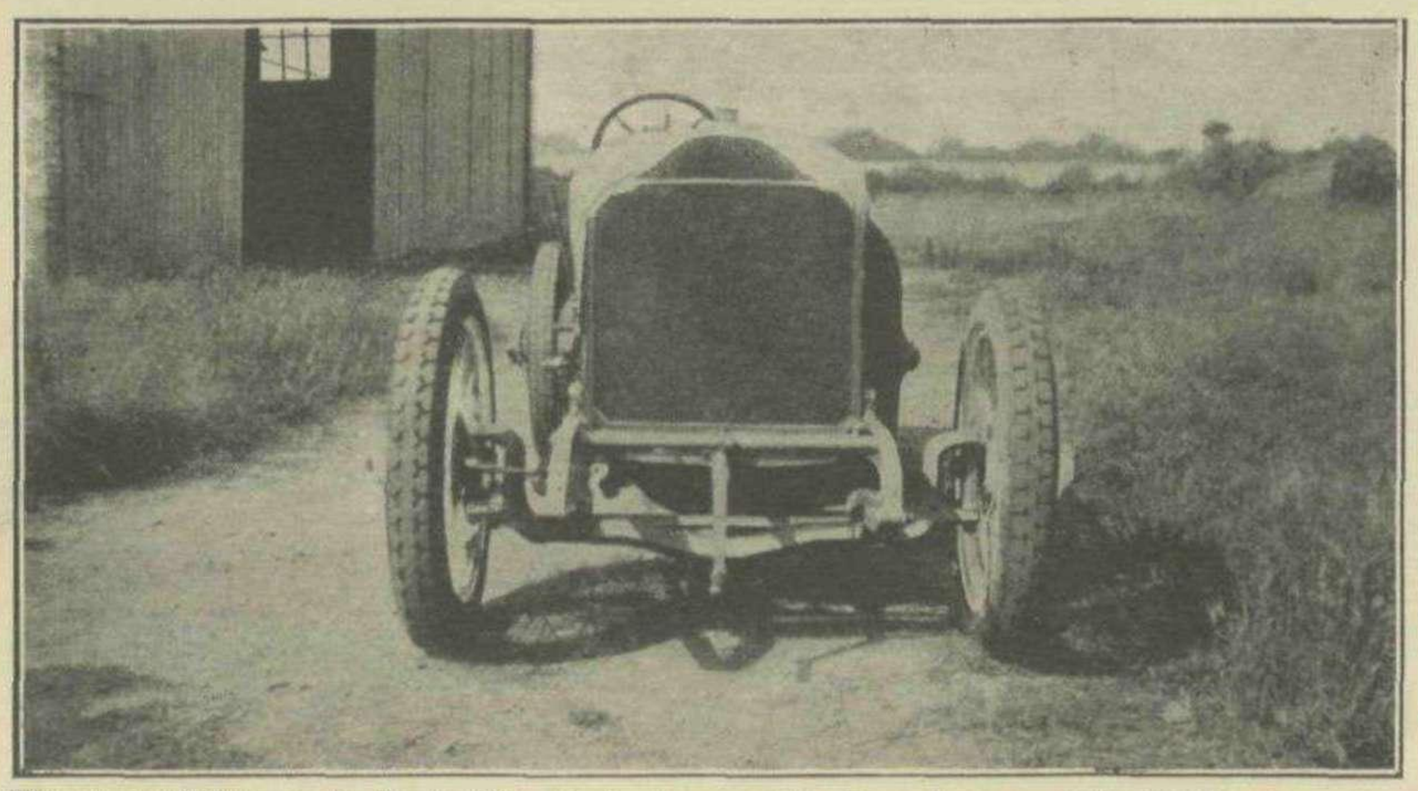
Similarly during the period 1909–1916 the design of racing cars underwent a major change. Designers found that cars could be made smaller but yet faster, and the giant engines developed under the earlier Bore-Limitation regulations could be beaten by smaller faster running power units. Higher engine speed was substituted for long stroke. Lighter valve gear and semi-spherical combustion chambers were made possible by the use of twin overhead camshafts. Four valves per cylinder gave improved volumetric efficiency. Ball and roller bearings enabled shorter and stiffer crankshafts to be used. Dry sump lubrication was developed so that bearings were able to stand up to higher rotational speeds for prolonged periods. Shaft drive finally ousted chains for road racing and four-wheel brakes were used by more than one constructor in the 1914 Grand Prix. "Wind cutting" bodies and long tails showed that designers were beginning to be conscious of aerodynamics. With the reduction in engine size a great saving in weight was gained that made the cars easier to handle and lighter on tyres. The Rudge Whitworth detachable wheel emerged almost in the form we know it to-day to speed up wheel changes and, before "The Great War" put a stop to motor racing for some years, we see for the first time the tactical control of a Grand Prix team by a *chef d'equipe* signalling his orders from the pits.

The first three years of the period under review saw a decline in the popularity of racing and little progress was made. Trade depression and the recollection of the Mercédès win in the Grand Prix of the previous year caused the principal French firms to agree not to produce special Grand Prix cars in 1909. As a result, the A.C.F. had to abandon their Grand Prix. In the Coupe de "l'Auto" race for voiturettes, Guippone's successful Lion Peugeot (100×250 mm.) followed the lead set by Sizaire in previous years by using a single cylinder with a very long stroke. Three inlet valves, three exhaust valves and three plugs were provided. A two-cylinder Peugeot (80×192 mm.) was second. The highest placed car of anything like normal design was the four-cylinder (65×140-mm.) Hispano-Suiza—a newcomer to racing. This voiturette race was the only event of any real importance that took place on the Continent in 1909.

Vauxhall and Singer were quietly developing small high-speed engines at Brooklands during 1910 and the 90×120-mm. Vauxhall achieved a speed of 100 m.p.h.

The supremacy of the single-cylinder engine for voiturette racing was again challenged by Hispano-Suiza in the 1910 Coupe de "l'Auto" with a long-stroke four-cylinder design (65×200 mm.), using a T-head. In spite of this apparent disadvantage, it was claimed that the engine gave 45 b.h.p. at 2,300 r.p.m. Shaft drive was used. Peugeot competed with a V-twin (80×280 mm.) with overhead inlet and horizontal exhaust valves. Final drive, as in the previous year, was by chain. The Hispano-Suiza won the race, scoring the first Coupe de "l'Auto" victory for a comparatively normal four-cylinder car. Hitherto the freak ultra-long-stroke singles had been invincible.

Voiturette racing was the only form of competition which was serving any useful purpose. An attempt to revive the Grand



The year 1912 *saw the last of the "giant racers." Here is one of the* 15*-litre Lorraine Dietrich cars*

RACING CAR EVOLUTION—continued

Prix in 1911 was a complete farce from the development point of view, as it was won by a standard Type 61 Fiat which the concessionnaire had in stock as the result of a cancelled order. On the other hand, the 1911 Coupe de "l'Auto" produced some interesting designs. Bablot's winning Delage was quite a soundly planned machine. The cylinder dimensions (80×149 mm.) were not freakish and the horizontal valves, arranged symmetrically on each side of the head, were a step in the right direction towards the semi-spherical combustion chamber. The gearbox gave five speeds with a geared-up top gear, direct drive being on fourth speed. Final drive was by shaft. The Delage success was due to reliability. The Peugeots, which offered the main opposition, were probably quite as fast as the Delages and, in the hands of Georges Boillot, the Peugeot ace, possibly had a slight advantage. But despite the skill of the Peugeot team, Delage finished first, third and fourth. Boillot's car, which finished second, had four cylinders (78×156 mm.) arranged in the form of a narrow V. The valves were in the head, operated by a single overhead camshaft.

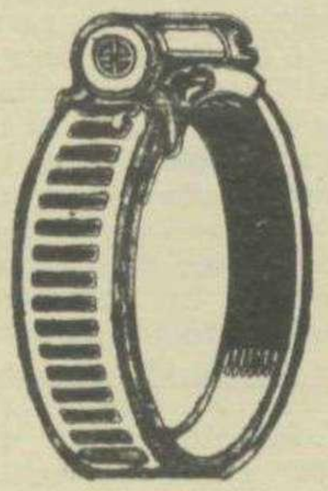
It began to be appreciated that the use of ultra-long-strokes was not the best way of getting maximum efficiency. Bore-Limitation regulations had been to some extent responsible for the concentration of designers' attention on long-stroke engines. The Brooklands Class records, being based on the R.A.C. horse-power formula, were also partly to blame. Thus, before the end of 1911 the Vauxhall Co. had taken records in both the 16-h.p. class and in the 21-h.p. class. The 15.9-h.p. Vauxhall (80×200 mm.) had a capacity of 4,021 c.c., while the car which ran in the 21-h.p. class had a smaller swept volume—3,054 c.c. (90×120 mm.). The smaller capacity machine was the faster of the two. It was obviously an anomalous state of affairs, and in the following year the classes were revised on the basis of cubic capacity.

The year 1912 saw a renaissance of Grand Prix racing and the *Gotterdammerung* of the chain-driven monsters that had dominated the field until the decline which followed the 1908 race. In the Grand Prix de l'A.C.F. at Dieppe the "giant racers" made one final bid for supremacy, but in the course of the very strenuous two-day race over 956 miles they were worn down by the smaller and lighter Peugeot driven by Georges Boillot. It was Peugeot's first attempt at full-scale Grand Prix racing and their cars were designed by Ernest Henry. They were the first of a series of successful designs which were to become a basis for many rival manufacturers both in Europe and U.S.A. The four-cylinders (110×200 mm.) were cast *en bloc*. Two inlet and two exhaust valves per cylinder, inclined at 45 degrees, gave good volumetric efficiency, coupled with something approaching a semi-spherical combustion chamber. The valves were operated by two overhead camshafts, without any intermediate rocker gear. The cams bore direct on tappets, moving in guides, which in turn operated the valves. The camshafts were driven by a vertical shaft at the front of the engine. The crankshaft was carried on three large ball bearings, which not only improved the mechanical efficiency of the engine but enabled a shorter and stiffer crankshaft to be used. Oil was fed under pressure to the main bearings and was carried thence by centrifugal force through oilways in the crank webs to the big-ends of the tubular connecting rods. A hand pump was used to lubricate the overhead camshafts. A disc clutch transmitted the power to the four-speed gearbox. Departing from earlier Peugeot practice, shaft drive was used instead of chains. Rudge detachable wheels were fitted. The engine and gearbox were carried in an elongated, U-shaped sub-frame mounted in the chassis on three ball joints. The idea was to relieve the engine and gearbox assembly from any chassis stresses which might possibly disturb the alignment of the crank and gear shafts. It was claimed that the engine gave 175 b.h.p. at 2,200 r.p.m. With an entirely unstreamlined body, consisting of two bucket seats and the classical bolster tank, Boillot was timed over a measured kilometre during the race at just on 100 m.p.h.

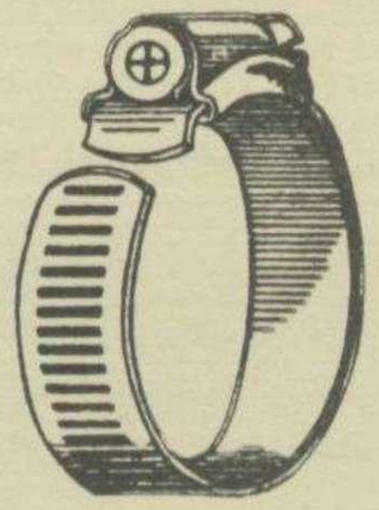
The principal opposition which these 7.6-litre Peugeots had to face was the "odd guard" as represented by F.I.A.T. and Lorraine Dietrich. Both had engines nearly twice the size of Boillot's car. F.I.A.T. had intended to use engines 140×220 mm., which had been specially designed for the race, but, owing to a strike at the factory, they had to content themselves with the 14-litre Savannah Grand Prix type of engine, which was 20 mm. shorter in the stroke but 10 mm. greater in bore. The cylinders were cast in pairs with vertical overhead valves operated by a single overhead camshaft.

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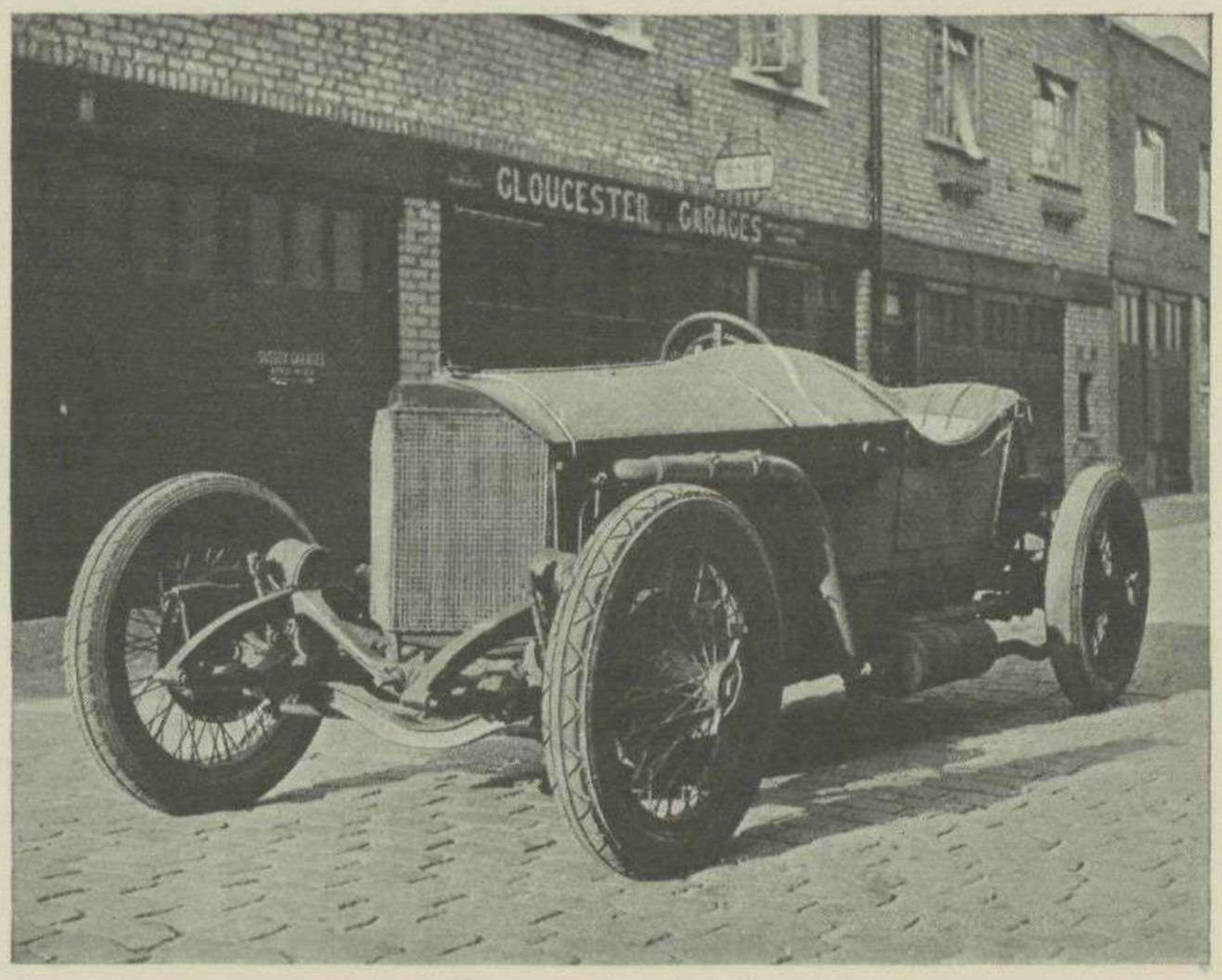
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RACING CAR EVOLUTION—continued

Two plugs, two inlet and two exhaust valves were provided for each cylinder. The crankshaft was carried on three plain bearings and the drive was transmitted through a multi-plate clutch and four-speed gearbox. Final drive was by chains. Michelin detachable rims with 895 × 135 mm. tyres were fitted, and it is interesting to note that a tyre change could be carried out in 45 secs. with these rims. In spite of their enormous engines the Fiat's wheelbase was only 8 ft. 11 in., some 2 in. shorter than the Peugeots. The latter, however, had the advantage of lighter weight, scaling 17½ cwt. as against Fiat's 22½ cwt. The 14-litre engines developed 200 b.h.p. at approximately 1,700 r.p.m.

The battle lay between the huge, compact Fiat and the lighter French car. Each was handled with all the skill, dash and bravura that could be desired. Bruce Brown had a slight advantage on the straight (he covered the kilometre at 101.67 m.p.h., as compared with Boillot's 99.86 m.p.h.) and he skid-cornered by means of a special technique in which the hand brake and ignition switch were used.

Throughout the first day's racing the Fiat held the lead in spite of heavy rain, which must have been a greater handicap to the heavier car. On the second day Bruce Brown and Goux, on one of the other Peugeots, were both disqualified for re-fuelling on the course. De Palma (Fiat) was also eliminated for the same cause. Wagner's Fiat took up the challenge after his team mate had been eliminated, but was unable to wipe out the Peugeot's lead. Two laps from the end Boillot was delayed with a bent selector fork, but he straightened it, although he had to drive the last laps mostly in top gear. He won by more than 12 minutes, having averaged 68.45 m.p.h. for 956 miles. Wagner's Fiat was second at 67.32 m.p.h. Bruce Brown's Fiat put up the best time for the first day's racing and Wagner's Fiat was the fastest during the second day, which he started 27 minutes behind Boillot. By the finish the Peugeot's lead had been reduced to less than half.



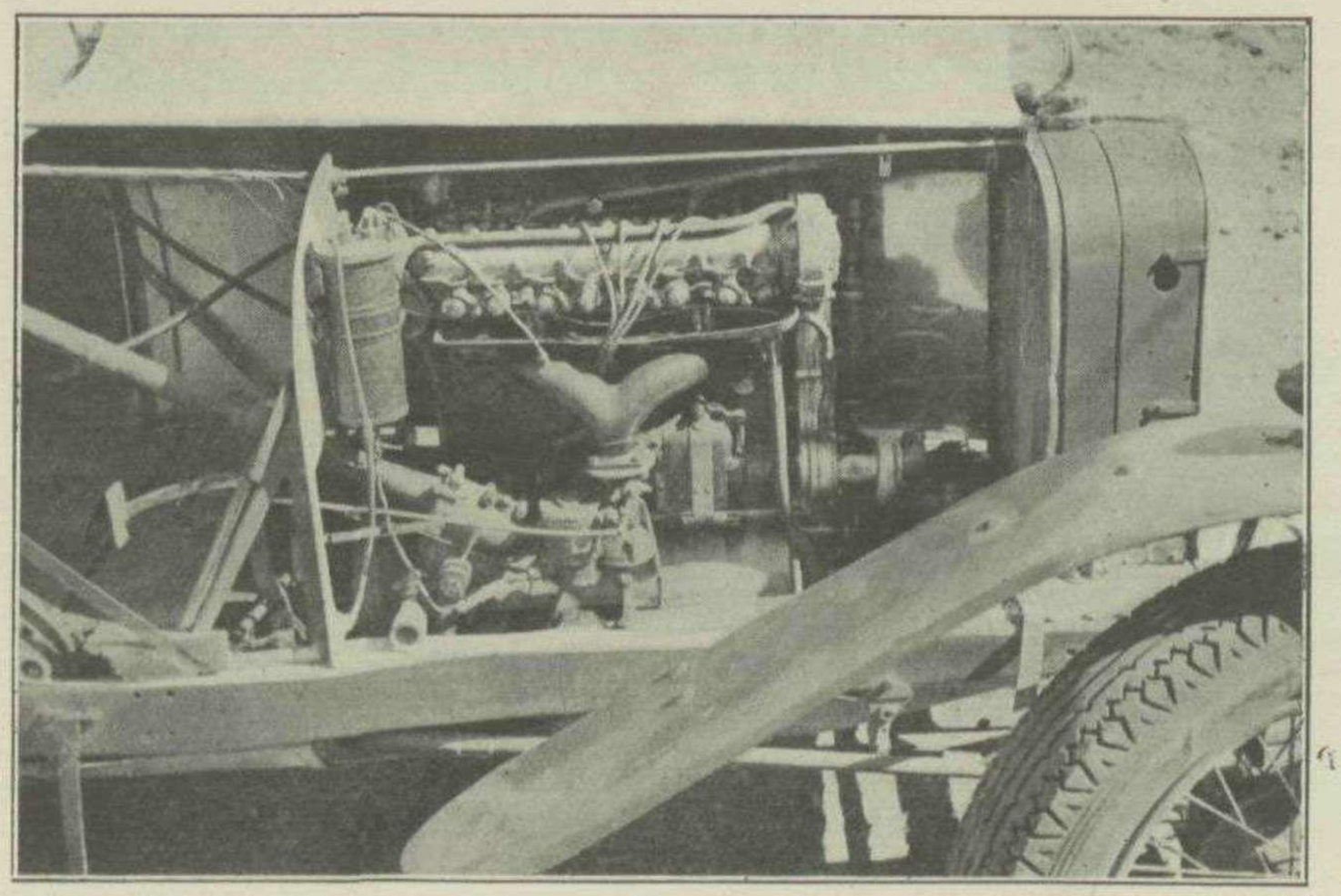
Winner of the most remarkable race in the history of the French Grand Prix—the 1914 *Mercedes, one of which, driven by Lautenschlager, won at an average speed of* 63.35 *m.p.h., followed home by two of his team mates*

During practice Boillot did a lap of the 47-mile course in 35 min. 55 secs. It is interesting to compare this with Nazzaro's fastest lap over the same course in 1907 in 38 min. 16 secs. and Mercédès best in 1908 in 36 min. 31 secs. The previous two-day Grand Prix was in 1906 at Le Mans, when Szisz on his 166 × 150-mm. Renault averaged 63 m.p.h. for 770 miles.

The Coupe de "l'Auto" for 3-litre cars was run concurrently with the Grand Prix and the three basically-standard side-valve Sunbeams astonished everybody (including Louis Coatalen, I expect) by not only walking off with the first, second and third in the voiturette race, but, in addition, finishing third, fourth and fifth in the Grand Prix Race itself and by winning the Team Prize. It was the first victory for England in an important road race since Edge won the Gordon Bennett Cup in 1902.

Many interesting designs were entered for the 3-litre race, but unfortunately I cannot describe them all here. In addition to Sunbeam, Great Britain was represented by Calthorpe, Arrol Johnston, Vauxhall and Singer. All were adapted from standard productions. Singer's had ingeniously utilised a special head with rocker operated overhead inlet valves. The eight side valves were all used as exhaust valves. Vauxhall's had reduced their stroke to 118 mm. to come within the capacity limit. Calthorpe had lightened the reciprocating parts of their standard engine and claimed 68 b.h.p. at 3,000 r.p.m.

The "supreme Sunbeam" cars were basically the 12–16-h.p. (80 × 148.7 mm.) model, with slightly enlarged valves and stronger valve springs. The timing was nothing out of the ordinary; there was no overlap. A peculiar induction manifold, oval in shape, was fitted with a special Claudel carburetter which seems to have borne some resemblance to the famous "triple diffuser"; 80 b.h.p. at 2,800 r.p.m. was claimed. The frontal area of the cars was reduced to the minimum



The engine of the 1914 *T.T. Sunbeam had the twin o.h. camshaft valve operation typical of the period. It bore a close resemblance to the* 1913 *Coupe de "l'Auto" Peugeot and gave the Sunbeams the highest speed of any cars in the race*

RACING CAR EVOLUTION—continued

and the narrow body was fitted with a "streamline" tail, of which the 32-gallon petrol tank formed part. Goodyear steel wheels were used.

The French cars consisted of the Lion Peugeot (78×156 mm.), a smaller and very light edition of the Grand Prix cars; Sizaire-Naudin (78×156 mm.), with horizontal valves (four per cylinder) and independent front suspension; Alcyon (85×132 mm.), with four overhead valves per cylinder, operated by pull rods and rockers; Th. Schneider, who had to use standard 80×140-mm. engines, as their special racing units were not ready in time for the race; and the two-stroke Cote.

The Sunbeam victory was largely due to their regularity. The value of Brooklands in developing the high-speed reliability of these cars cannot be overemphasised. The French constructors were undoubtedly at a great disadvantage in being unable to test their car adequately before the race. The 3-litre Lion Peugeots, in spite of their more advanced design, were slower than the basically standard Sunbeam and Vauxhall cars.

Resta's Sunbeam was the fastest 3-litre car over the kilometre, averaging 84.73 m.p.h. All the Sunbeams were faster than the other Coupe de "l'Auto" competitors, of whom the quickest were Champoiseau's Schneider (81.63 m.p.h.) and Percy Lambert's Vauxhall (80.4 m.p.h.).

Some Continental competitors made only half-hearted attempts at reducing the wind resistance of their bodywork. Others, particularly in the Grand Prix itself, had made no effort at all. Sunbeam, Vauxhall, Singer and Calthorpe, on the other hand, profiting by their Brooklands experience, all adopted some kind of "streamlining." All the British cars, with the exception of the Sunbeams, were fitted with V-fronted radiators.

It is interesting to notice the adoption, in these two Dieppe races, of various features which have subsequently become normal equipment of racing cars. Twin overhead camshafts were used successfully for the first time. Crankshafts carried on ball bearings were proved satisfactory in practice. Oil radiators were tried out by Sizaire-Naudin. Wire mesh stoneguards for protecting radiators were fitted to Peugeot, Fiat, Sunbeam and others. Revolution counters appeared on some cars, no doubt as a result of higher crankshaft speeds then coming into use. That their purpose was only slightly appreciated is shown by a comment in a contemporary journal, who offered the opinion that these instruments were "more for the instruction of the drivers during practice than for use during the race."

Peugeots scored another success at Le Mans later in the year when Goux won the Coupe de la Sarthe with one of the 7.6-litre Grand Prix cars, while Zuccarelli carried off the 3-litre race run at the same time. Early the following year Goux brought the Grand Prix Peugeot to Brooklands. Fitted with a cowling to the radiator and a long streamline tail, it started off by covering the half-mile at 108.5 m.p.h. and doing several laps at over 107 m.p.h. Finally, Goux took the 100 Miles and the One Hour Records at 106.2 m.p.h. The streamline body seems to have added about 15 per cent. to the car's speed.

Goux and Zuccarelli took two special Peugeots to Indianapolis for the 1913 500 Mile Race. The bore was reduced to 108 mm., but otherwise the cars were similar to the 1912 Grand Prix machines. The reduction of the bore was made to bring the cubic capacity within the 450 cub. in. limit. Goux won the race at 77 m.p.h., but Zuccarelli had to retire with bearing trouble.

The regulations for the 1913 Grand Prix, which was held at Amiens on a petrol allowance of just over 40 gallons for 570 miles (14 m.p.g.), forbade the use of streamline tails. The cars had to be fitted with cylindrical bolster tanks into which the allotted quantity of fuel was measured the day before the race. Tanks, filler caps, carburetters and petrol pipes were all *plombes*. Spare wheels might be carried behind the tank, but they must not be enclosed or covered over. Maximum and minimum weight limits of 1,100 kilog. (22 cwt.) and 800 kilog. (16 cwt.) were imposed just to make it a bit more complicated.

The Peugeot racing department, consisting of Goux, Zuccarelli and Ernest Henry, working under the direction of Georges Boillot, considered that somewhat smaller engines than those used in the 1912 Grand Prix would be necessary to eke out the petrol allowance for the 29 laps. Their 1913 engines differed slightly in other ways from those of the previous year. The cylinder dimensions were 100×180 mm. (5.6 litres) and the overhead camshafts were driven by gears instead of by a vertical shaft. The crankshaft was carried on three ball bearings as before, but the rear one was a double bearing. A rather unusual form of dry sump lubrication was employed. The oil was carried in a large tank under the driver's seat. Air pressure in the tank forced the oil forward, through six sight feeds on the dashboard, to the main bearings and other parts of the engine. A single pump returned the oil to the tank and maintained the air pressure. A combined ignition switch and oil tap was provided so that the sump should not be overfilled when the engine was switched off. The engine was set some inches further back in the sub-frame than previously. Large diameter brakes were fitted to the rear wheels and on the transmission. An ingenious worm and nut adjustment was provided so that the brakes could be taken up while the car was in motion. Top gear was 2.3 to 1. In other respects the 1913 Peugeot cars were very similar to those that had run at Dieppe. The appearance was much improved and the finish seems to have been much better. The narrow radiator and tapering bonnet, combined with the smooth undershield, gave the cars a very workmanlike appearance. Although only 138 b.h.p. at 2,150 r.p.m. was claimed (as compared with 175 b.h.p. for the 1912 7.6-litre engines), the maximum speed, as timed over a kilometre during the race, was 97.26 m.p.h.—only very little inferior to the speed of the larger cars the year before.

Georges Boillot won the Grand Prix at 72.2 m.p.h. and finished with some 5 gallons of petrol to spare. His consumption works out at approximately 16 m.p.g., which is very creditable. It was said that the Peugeots were designed to give 14 m.p.g. at full throttle. A water-jacket was provided on the Peugeot's induction pipe to assist vaporisation, but it was not found necessary to use it during the race. In 1907, when the Grand Prix was run on a fuel allowance, Nazzaro's Fiat won at an average speed of 70.5 m.p.h., but his petrol consumption was only 9.5 m.p.g. One interesting innovation was made by Peugeot's for this race which has since been adopted almost universally. The hub caps of their Rudge Whitworth wheels were fitted for the first time with the now familiar "ears" so that the locking rings could be removed by means of a hammer. Previously various kinds of spanners had been employed.

The chief opposition to the Peugeots came from the Delages and the Sunbeams. It was Louis Delage's first attempt at full-scale Grand Prix racing and the cars he presented at Amiens were very similar to the successful 3-litre car which carried off the Coupe de "l'Auto" in 1911. The four cylinders were in a monobloc casting, the bore and stroke being 105×180 mm., very similar dimensions to those of the Peugeot. Four valves per cylinder, placed horizontally, were actuated by push rods and rocking levers in the same manner as on the 1911 voiturettes. The plugs, two per cylinder, were placed in the head along the centre line of the engine. Two Bosch magnetos were provided, but only one was in action, the second was purely a stand-by. This pessimistic attitude towards the products of Robert Bosch A.G. was still current 12 years later when Sunbeams had a very similar arrangement of two magnetos on their 1925 Grand Prix cars. Delage supported his crankshaft on five ball bearings, whereas Peugeot only used three. Cooling was by thermo-syphon. M. Claudel provided one of his then fashionable carburetters. A multi-disc clutch transmitted the power to a five-speed gearbox (in the old Delage tradition) and thence by shaft to the back axle, which had a ratio of 2.4 to 1. (For the first time none of the cars in the Grand Prix had chain-drive.) The wheelbase of 9 ft. was slightly longer than the Peugeots, but the total weight was approximately the same.

Guyot's Delage pressed Boillot's Peugeot at some stages in the race and actually led the field from the tenth to the sixteenth laps. He finished fifth and Bablot (Delage) fourth. Bablot actually put up the fastest lap of the race at 77 m.p.h. His speed over the kilometre, 93.2 m.p.h., was the second fastest recorded. Both Bablot and Guyot finished with nearly 6 gallons to spare.

Louis Coatalen, encouraged by the success of his Coupe de "l'Auto" cars at Dieppe, entered four six-cylinder 4½-litre Sunbeams (80×150 mm.). Their design, as in the previous year, was based on standard productions. The cylinders, in two blocks of three, had side valves slightly inclined. The plugs were not screwed into the valve caps, as was then customary, but were placed in the centre of the head so that the plug bosses could be surrounded by the water-jacket. A

RACING CAR EVOLUTION—continued

Claudel carburetter supplied the mixture through a water-heated induction manifold. The crankshaft was carried on seven plain bearings. "High pressure forced lubrication" was effected at 40 lb./sq in. The engine was mounted in a sub-frame. Clutch and gearbox were of standard design, but the differential-less rear axle was of special design, very much lighter than the production job. The braking and driving stresses were taken through an I-section torque member attached to the bevel casing. The axle ratio was 2.5 to 1. Goodyear steel wheels with 880×120-mm. tyres were fitted as in the previous year. With a wheelbase of 9 ft. 10 in. the Sunbeams were longer and heavier than all the other competitors except the Italas; 100 b.h.p. at 2,750 r.p.m. gave a road speed of 103 m.p.h. Although any attempt at streamlining was prevented by the regulations, the frontal area was reduced as far as possible; the radiator was narrow and the bonnet tapered gradually into the scuttle. The spare wheels, carried behind the tank, were inclined, thus providing a slightly less abrupt finish to the bodywork than on the Peugeot and Delage cars, where they were mounted vertically. Provision was made for adjusting the brakes while the car was in motion and, to assist rapid warming up of the engine after the start, a roller blind, operated by a cord from the mechanic's seat, was fitted in front of the radiator. The petrol allowance encouraged the use of rather weak mixtures and the maintenance of engine temperature was therefore a matter of some importance. Chassagne and Resta finished third and sixth in the race and their speeds over the kilometre were almost identical—88–89 m.p.h. Chassagne was only some 12 min. behind the winner at the end of the race.

Italas entered three large rotary-valve cars of 125×170 mm. (8,344 c.c.). They assumed that the large engine, somewhat underfed, would do better on the limited fuel allowance than the faster-running smaller engines. The engines were designed to run at 1,400 r.p.m. and gave 110 b.h.p. on the rather weak mixture that was necessary for the race. Without the fuel restriction it was claimed that 150 b.h.p. was available. The rotary valves, of which there were two—one for each pair of cylinders—were driven at one-quarter crankshaft speed from the timing shaft on the off side of the engine. The spindles of the valves were vertical and the valves themselves enclosed in the water-jackets. The cars suffered through lack of preparation, due to a strike at the factory, and when they came to be weighed they had great difficulty in finding enough removable parts to take off to come within the weight limit. Eventually by sawing off the exhaust pipe and removing the undershield, and even the hub caps, they scraped through. They were unlucky in the race: H. R. Pope retired in the first lap with bearing trouble, Nazzaro broke a spring on the thirteenth lap, and Moriondo, after turning over in a spectacular manner in front of the grand stands, managed to get the car back on its wheels again and pluckily continued until he was finally eliminated with a broken universal joint in the transmission.

Less than a month after the Grand Prix de l'A.C.F. at Amiens our old friends the Automobile Club de la Sarthe et l'Ouest organised another race at Le Mans, known as the "Grand Prix de France." The course was a good deal longer than the present-day "Circuit Permanent," being nearly 34 miles to the lap. Peugeot, Delage and Mercédès were the principal entries, but Peugeot did not start as the cars were said to have been sold to the U.S.A. The Delage cars were those which appeared at Amiens, but the Mercédès had not been seen before. Four were entered: Pilette drove a four-cylinder (140×150 mm.—9.25 litres), Salzer and Lautenschlager handled "sixes" (105×140 mm.—6.25 litres), while the fourth car (four-cylinder, 130×170 mm.—8.9 litres) was entered by an amateur, Elskamp. The German cars made a good impression. It was Mercédès' first appearance in an International race since their victory in the 1908 Grand Prix. They were light in weight in spite of their large engines. The final drive was by chain, which seemed out of keeping with their otherwise up-to-date appearance. Pilette's car and the two six-cylinder machines were equipped with 895×135 mm. tyres on the rear wheels, and it was noticeable that the Mercédès had far less tyre trouble than the Delages, which had 880×120-mm. tyres. As on their 1908 cars, the chassis frame was upswept over both front and rear axles, the axle movement was damped by means of the traditional Mercédès opposed-cam-type of shock absorbers. The six-cylinder engines were said to have been originally designed as aero engines. Steel cylinders were cast in pairs. Only two valves per cylinder were employed. They were operated through exposed rockers by a single overhead camshaft; 90 b.h.p. was developed at 1,400 r.p.m.

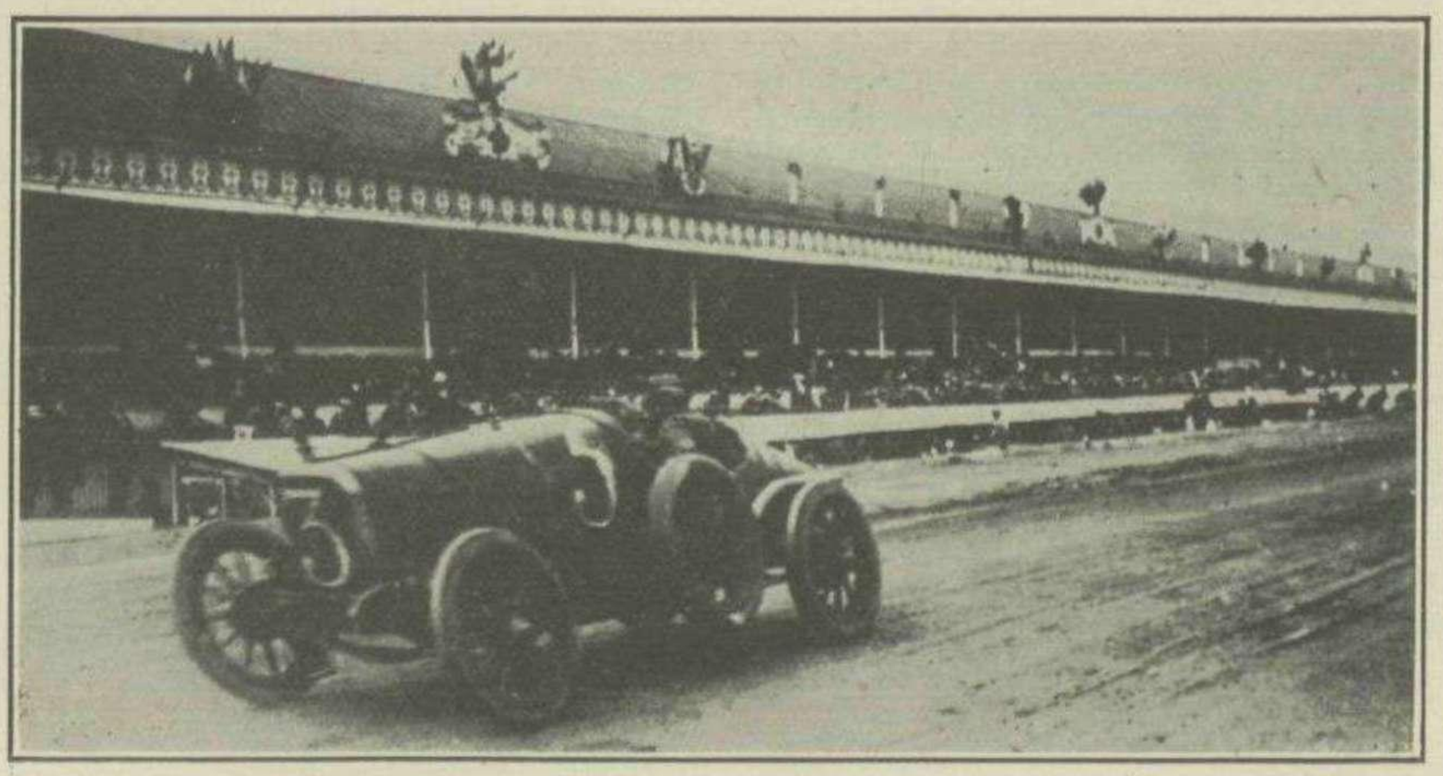
Bablot and Guyot took first and second places with their Grand Prix Delages after a most exciting race. Pilette was third with the four-cylinder Mercédès and Salzer fourth on one of the "sixes." Duray (Delage) just beat Lautenschlager on the second Mercédès "six" for fifth position. Bablot put up the fastest lap at 85 m.p.h. and averaged 76.8 m.p.h. for the race.

The 1913 Coupe de "l'Auto" was run at Boulogne over a twisty, hilly course, which had to be covered 12 times. The total distance was 387 miles. Engine capacity was limited, as previously, to 3 litres and maximum weight allowed was 900 kilog. (approximately 17½ cwt.). The chief contestants were Peugeot, Sunbeam and Vauxhall. Peugeot had produced three new 3-litre cars (78×156 mm.), which were scaled-down versions of their Grand Prix cars. The design of engine and chassis was on the now familiar lines and the cars weighed over 1 cwt. lighter than any of their competitors.

Sunbeams had developed their 1912 cars, but they were still basically the same. Larger bearings, lighter reciprocating parts, higher oil pressure and 5 to 1 compression resulted in higher power output; 87 b.h.p. at 3,000 r.p.m. was claimed and the cars were said to be 6 m.p.h. faster. The differential-less back axle, as used on the Grand Prix racers, replaced the standard axle used in 1912. Radiators were covered with "wind cutting" cowls and the streamline tails of the successful Dieppe machines were retained.

The Vauxhalls, too, were much like the 1912 cars, with detail modifications to increase power. With 5 to 1 compression the 90×118-mm. engines developed 70 b.h.p. Larger valves and careful porting made for greater volumetric efficiency. Special "Zephyr" lightweight pistons with two rings and the minimum amount of skirt were employed. The crankshaft was 2 in. in diameter. Engine and gearbox were set further back in the frame to get as much weight as possible on the rear axle, but this method of weight distribution made the cars difficult to hold on the bumpy course.

In the race the Peugeots were easily the fastest cars, Boillot and Goux finishing first and second at 63 and 62 m.p.h., respectively. Guinness with the Sunbeam finished close behind Goux, while Hancock (Vauxhall) came in fourth. Guinness, who actually lay second from the seventh to the tenth lap, ran the whole distance non-stop. Resta and Chassagne's Sunbeams both retired with cracked rear axle casings. Whether this was in any way



The Coupe de "l'Auto" Sunbeam, quite a straightforward side-valve design, owed its success to extensive development work carried out at Brooklands Track

RACING CAR EVOLUTION—continued

connected with the absence of a differential it is hard to say, for the Grand Prix cars did not experience any trouble.

Shortly after the Coupe de "l'Auto," Goux brought his 3-litre Peugeot to Brooklands. It had been fitted with a single-seater body and streamline tail. He covered the half-mile at 106.19 m.p.h. and ten laps (standing start) at 100.68 m.p.h. It is interesting to compare these speeds with those put up by the 1912 7.6-litre Grand Prix car which Goux brought over to the Track earlier in the year.

The Grand Prix and Coupe de "l'Auto" races of 1913 served to show that the "souped up" side-valve touring engines could no longer compete with the specially designed overhead-valve racing jobs. Mr. Coatalen and Mr. Pomeroy were quick to grasp this and set about designing overhead camshaft units for 1914. The lessons learnt by Mercédès with their experimental cars at Le Mans were fully digested at Untertürkheim, and they set to work with real determination to produce a design with the avowed intention of winning the 1914 Grand Prix de l'A.C.F.

The R.A.C. revived the Tourist Trophy Race in 1914 after a lapse of six years. Just to be different the Club decided on a cubic capacity limit of 3,310 c.c. No explanation appears to have been given as to how this curious figure was arrived at. Why the organisers could not content themselves with 3 litres, which was the commonly accepted capacity limit for all important voiturette races, I cannot imagine. A minimum weight of 21½ cwt. was imposed and it was stipulated, for some obscure reason, that cars should not lose more than 50 lb. in weight during the race. The course was the Isle of Man "Mountain" circuit, 37½ miles round. Eight laps had to be covered on each of two consecutive days, the racers being impounded in an official enclosure overnight.

Several English manufacturers produced special overhead-valve racing engines for the event. Sunbeam, Humber and Vauxhall presented 16-valve engines with twin overhead camshafts. The first two firms had obviously been considerably influenced by Peugeot's Coupe de "l'Auto" machines. Straker Squire brought out a special engine with a single overhead camshaft, but it was not used in the race as their standard side-valve unit was just as fast. Crossley, D.F.P., Hudson, S.A.V.A. and Star were all basically standard designs slightly modified for racing. Minerva entered a team of Knight sleeve-valve-engined cars.

The three Humber cars were designed by F. Burgess, who later collaborated in producing the 3-litre Bentley. The cylinders (82×156 mm.=3,295 c.c.) were cast *en bloc*. The two overhead camshafts were driven by gears from the front. The exhaust ports were on the off side, a rather unusual arrangement. Tubular connecting rods were employed. The engine was mounted in a sub-frame hung below the level of the chassis side members. The gearbox, however, was attached to the central cross members, so that some advantage of the sub-frame seems to have been lost. The drive was taken through the rear springs, which were slung below the axle; 100 b.h.p. at 3,200 r.p.m. was developed, but the designer claimed later that 113 b.h.p. at 3,900 r.p.m. was attained.

Mr. Coatalen, after his side-valve 3-litre cars had been defeated by the overhead-valve Peugeots in the Coupe de "l'Auto" race, decided that imitation would be the sincerest form of flattery. One of the 3-litre Peugeot racers duly found its way to Wolverhampton, and the 1914 T.T. Sunbeams bore more than a family resemblance to Ernest Henry's voiturette.

The late Mr. L. H. Pomeroy was more original and enterprising and produced some very interesting cars (90×130 mm.—3,307 c.c.) which had a much lower stroke-to-bore ratio than most of the other competitors. Two overhead camshafts were driven by a worm wheel from a vertical shaft at the front of the engine. The 16 valves, containing only a slight dihedral angle, were mounted almost vertically. They were operated through rockers. The magneto was driven off the rear end of the inlet camshaft. The monobloc cylinder casting allowed ample water spaces around each cylinder barrel. "Zephyr" steel pistons were fitted as on the Coupe de "l'Auto" cars of the previous year. The crankshaft was counter-balanced, the balance weights being fitted into slots machined in extensions of the crank-webs and riveted in position. Higginson's car shed one of these weights during practice, which made rather a mess of things, but by dint of a lot of all night working the car was brought to the starting line. Crankcase breathing was achieved by means of small ship's ventilators, one facing forward, the other backward, projecting through the top of the bonnet; 90 b.h.p. at 3,600 r.p.m. was claimed. The cone clutch had the lining mounted on the flywheel half, to reduce the weight of the spinning member. A four-speed gearbox was bolted to the front end of the torque tube with a spherical joint, enclosing a universal joint, between the clutch and the gearbox. This unusual arrangement, the object of which I have failed to appreciate, entailed enclosing the transmission brake within an enlargement of the torque tube. Cantilever rear springs were fitted and the rear axle was provided with large ribbed brake drums, quite a departure from the usual Vauxhall tradition. The front springs were passed through slots in the front axle, *à la* Bugatti.

The whole design of these cars bristled with interesting and unorthodox features. A great deal of attention was devoted to saving unnecessary weight and, like the Sunbeams, ballast had to be added to bring them up to the minimum weight. Unfortunately, the Vauxhalls suffered from lack of preparation as they were not ready in sufficient time before the race.

Sleeve valves have not been seen very frequently in racing, although Argyll and later Panhard-Levasseur and Voisin achieved quite a measure of success and managed to break a number of records using engines of this type. Minerva's produced three 90×130-mm. Knight-engined cars for the 1914 T.T., which ran with no little success. The inlet ports were increased in size compared with the standard production. To achieve this increase in size it was necessary to reduce the dimensions of the exhaust ports. Large supplementary exhaust ports were, however, provided on the off side near the bottom of the sleeves. These ports were opened 60 degrees before bottom dead centre at the end of each power stroke. Two motion shafts were fitted on opposite sides of the engine; one operated the inner and the other the outer sleeves. Great care was taken to ensure adequate lubrication of the sleeves. The cylinder bore was enlarged at one point, a horizontal annular groove, 1½ in. wide by 0.02 in. deep, being machined in the cylinder wall. Oil was fed under pressure into the groove on one side of the engine and was drawn off from the opposite side of the engine by a scavenge pump. Thus oil was positively circulated around the sleeves at all speeds. A third oil pump attended to the main and big-end bearings and an oil cooler was mounted behind the water radiator. The engines ran up to 3,300 r.p.m. and had twin carburetters.

As might be imagined, reliability of the sleeve valve was achieved under racing conditions only at the expense of considerable oil consumption. During the practice the dense smoke screen put up by the Minerva cars on certain parts of the course was a great inconvenience and a potential danger to other faster competitors. As a result there was talk of not allowing the Belgian team to start, but after a test the R.A.C. decided to let them compete in the race on the understanding that the mechanics kept a constant look-out for any car wanting to pass. One interesting point was noticed at the start of the second day's racing. Like most competitors the Minervas were pushed from the starting grid to their depot for replenishment before setting off. They had only covered 300 miles during the first day, but they absorbed 10 gallons of oil without any difficulty!

The Sunbeams were the fastest cars in the race. K. Lee Guinness did one lap in practice in 36 min. 45 secs., an average of over 60 m.p.h. Resta was eliminated early in the race, but at the end of the first day K. Lee Guinness led the field at an average speed of 54.7 m.p.h. His brother Algernon lay second with a sister car, only 3 min. behind. Porporato (Minerva) was third. During the second day Algernon Guinness retired with the rear universal joint damaged, but "K.L.G." upheld the Wolverhampton firm's colours, finishing 20 min. ahead of the second man, Riecken (Minerva), at an average of 56.44 m.p.h. for 600 miles. Minervas occupied second, third and fifth places, thus winning the team prize. Witchell's Straker Squire was fourth and W. O. Bentley on the little D.F.P. finished sixth.

The rules for the Grand Prix de l'A.C.F. held at Lyons a month before the outbreak of the last "Great War" permitted a maximum capacity of 4½ litres and a maximum weight of 21 cwt. The race itself was certainly one of the high spots in the history of motor racing. Forty entries, representing England, France, Germany, Italy, Belgium and Switzerland, made the race a really International competition and the design of the competing cars was of great technical interest. Designers all agreed, with one exception, that overhead valves were necessary to

RACING CAR EVOLUTION—continued

get the utmost power from engines of limited capacity. Of the 13 marques entered, five used twin overhead camshafts, six were able to manage with one, while the two Piccard-Pictets from Switzerland had single sleeve-valve engines built under Argyll licence. The Aquila-Italiana was the only six-cylinder car, the rest all having four cylinders. Except for two Italian entries (F.I.A.T. and Aquila-Italiana) and the sleeve-valve Swiss entries, every firm followed the Peugeot tradition of using four valves per cylinder. Plain crankshaft bearings were used by a slight majority, including the winning Mercédès, but ball bearings were chosen by a considerable number of manufacturers, including Peugeot, Delage and Sunbeam. Th. Schneider was alone in selecting roller bearings. The most important innovation made by several constructors was the use of four-wheel brakes, for the first time in an important road race, by Peugeot, Delage, F.I.A.T. and Piccard-Pictet. The use of brakes on the front wheels was no doubt influenced by the very twisty nature of the course, which put a premium not only on powers of acceleration, but also on deceleration. F.I.A.T. and Peugeot were alone in making anything like a serious attempt at streamlined bodywork.

Mercédès, who had the avowed intention of winning the Grand Prix after an absence of six years, had profited by their preliminary canter in the Le Mans race of 1913. The five cars which appeared at Lyons, although quite fresh designs, showed that certain lessons had been learnt from the machines of the previous year and from their experience of making aeroplane engines. The four-cylinder engine (93×165 mm.) had separate steel cylinders with welded steel jackets in the aero-engine manner. A single overhead camshaft, driven by a vertical shaft at the rear, actuated four valves per cylinder through rockers. The valves were inclined at 60 degrees, the valve springs and the ends of the rockers being outside the camshaft casing. Four sparking plug holes were provided, but only three plugs were used in the race, two on the inlet and one on the exhaust side. Two magnetos, one a twin-spark machine, were driven by a cross shaft at the base of the camshaft drive. A single Mercédès carburetter supplied the mixture. The crankshaft was carried on five plain bearings. The lubrication was very completely thought out. The oil pump, which was an affair like a small multi-cylinder steam engine, not only distributed oil to the main bearings, the overhead camshaft and the cylinder walls, but it also drew a fresh supply of lubricant from the reserve tank, thus maintaining the level in the sump. In addition, a small pump, operated by the mechanic, could be used to force an additional supply of cool oil direct from the oil tank to the main bearings, camshaft and cylinder walls. A screw-down lubricator in the cockpit could be used to force grease to the water pump while the car was in motion. The drive was taken *via* a typical Mercédès double-cone clutch to a four-speed gearbox which was supported from an X-shaped cross-member (reminding one of the much-advertised "cruciform construction"). The rear axle was unusual in that two crown wheels and two pinions were used. The drive was taken through a stout tapering torque tube which ended in a large spherical joint just behind the gearbox. The universal joint was lubricated from the reserve tank. The forward end of the chassis was upswept over the front axle. The usual Mercédès pattern opposed-cam type of shock absorbers were fitted both front and back.

Mercédès claimed that the engines developed 115 b.h.p. at 3,000 r.p.m. and this does not seem to be an extravagant claim when it is borne in mind that the cars were capable, without the aid of streamlined tails, of over 110 m.p.h. It seems probable that 3,500 r.p.m. was achieved at maximum speed. Of the five cars entered, three driven by Lautenschlager, Wagner and Salzer took the first three places. Sailer in his duel with Boillot's Peugeot put up the fastest lap, while the fifth car, driven by Pilette, was crashed.

The general arrangement of the Opel engine was rather similar to Mercédès, although the cylinders were cast *en bloc*. The dimensions were 94×160 mm., measurements that were also used by Alda, Delage, Sunbeam and Nazzarro. The Opel cars were higher off the ground than the low-hung Mercédès and weighed 18 cwt., some 2 cwt. less than their compatriots.

Peugeots naturally offered the most serious competition to the German cars, although the Delages had proved very fast in practice. The engine was of the usual Henry type, measuring 92×169 mm.—the longest stroke of any engine used in this race. The most obvious departure from previous practice was the adoption of four-wheel brakes; 15 in. drums were fitted front and back, the former being operated by the foot pedal and the latter by the hand lever. Both axles were underslung and their movement was damped by the traditional Peugeot friction-band shock absorbers. A very neat streamlined tail enclosed the spare wheel, which was mounted fore and aft, instead of at right angles, behind the petrol tank. The Peugeots lacked the speed of their German rivals, but Boillot, by a display of heroics and full use of his superior braking, was able to hold either first or second position right up to the last lap but one, when he had to retire with a valve through a piston head.

The quest for higher r.p.m. decided Louis Delage not only to do away with the comparatively heavy rocker gear and push rods used on his 1913 cars and to follow the general trend by using two overhead camshafts, but, in addition, to experiment with mechanically closed valves, thus eliminating the ordinary valve springs. Th. Schneider also had positive valve operation, but it worked in a rather different manner. The Delages had a monobloc cylinder casting (94×160 mm.) with two overhead camshafts driven by an enclosed vertical shaft at the front of the engine. Each camshaft bore four cams, which were each surrounded by a steel ring. These rings were not truly circular, but D shaped. Each formed a tappet which the cams could alternately press downwards to open the valves or upwards to shut them. Each tappet operated two valves (there were four valves per cylinder) through a T-shaped yoke. The cams lifted the valves against their seatings and held them there through small buffer springs fitted to the yokes. The arrangement was apparently unreliable and, although Delage had promised well during the practice period, only one managed to finish the race. The balanced crankshaft was built up in four parts and was carried by five ball bearings. A single Claudel carburetter was fitted, although experiments were made with one for each cylinder. The gearbox gave five speeds, as previously, but on this occasion direct drive was on third. The first overdrive was for use on the straight and the highest ratio of all was brought into play when going downhill. Perrot-type brakes were fitted to the front axle. Large drums the same size as those at the rear were used. All four brakes were operated together by the pedal.

Sunbeams presented three cars very similar to their successful T.T. design. The engine was, of course, larger (94×160 mm.) and the valve gear differed slightly. Two Claudel carburetters were fitted. The wheelbase was increased to just over 9 ft., which no doubt served to improve the car's directional stability. Although very little practice had been possible on the rather tricky circuit, the Sunbeams showed up fairly well in the race. Either Resta, Guinness or Chassagne was among the first seven on every lap and Resta finished fifth behind Goux's Peugeot. The Sunbeams were actually faster than the Peugeots, but the latter had the advantage of four-wheel braking, which was a considerable gain on the Lyon circuit.

Vauxhalls also produced larger editions (101×140 mm.) of their T.T. cars, but lack of preparation prevented them from showing their true capabilities. The Pomeroy design had the smallest stroke-bore ratio in the race.

The Mercédès were undoubtedly as fast as any of their competitors, possibly faster, and by that meticulous attention to detail which we have witnessed both in racing and warfare during recent years, they made certain of their victory. The cars were directed as a team and controlled by the team manager in the pit, which was quite a new idea.

Within a month of the Lyon race Europe was occupied with war and motor *racing became a thing of the past for most* people. The Sunbeam Company, however, managed to construct two six-cylinder racing cars and ship them to America for the 1916 Indianapolis race. How they managed to do this without awkward questions being asked by the Air Ministry, for whom they were making aero engines, I cannot imagine. The six cylinders (80×156 mm.—4,705 c.c.) were cast *en bloc*. The sides of water-jackets were formed by aluminium plates. Two overhead camshafts operated four valves per cylinder through rocking levers. The crankshaft was carried on ball bearings and dry sump lubrication was effected by two gear-type oil pumps. Two Claudel carburetters were employed. The rest of the chassis followed the same layout as that of the Grand Prix cars. Christiaens

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VETERAN TYPES—XXV

Hutton-Stott's 1903 de Dietrich Paris-Vienna Replica, described by Cecil Clutton

WHEN MOTOR SPORT recently published a list of antique cars which had been seen in different places, the mention of a 1906 de Dietrich did not seem very exciting; but Francis Hutton-Stott had the initiative to go and look for himself, and immediately recognised the car as being much older. It is, in fact, a 1903 model, closely following the lines of the car which competed in the Paris–Vienna Race of 1902. The de Dietrich had not performed with any prominence in the race, but as Farman's winning Panhard was one of the new 13-litre 70-h.p. machines and the de Dietrich was only a 4-litre 16-h.p. machine this was hardly surprising. Their respective speeds were 38.4 and 25.4 m.p.h.

This Paris–Vienna Race was of great interest in several ways. To begin with, the exceptional severity of the 615.4 mile course proved the undoing of most of the heavy cars, leaving Marcel Renault, running in the light car class, to make fastest time of all the competitors on a 120×120 - mm., 5½ - litre, three - speed Renault, averaging 38.9 m.p.h.—half a mile per hour faster than Farman. It seems remarkable that this did not awaken people to the disadvantages of the Giants, but it was not until 1912 that they finally died. The Renault was also notable for possessing a tubular frame and axles.

The race was the first run to the 1,000 kgs. maximum weight formula, and also incorporated the Gordon Bennett Race for the year. This was run over a shorter course, ending at Innsbruck. France anticipated an easy victory, but one by one their representatives dropped out, until at last only de Knyff, on a "70" Panhard, was left, and he had a cracked differential casing. Finally, the outraged pinion gave way, and S. F. Edge was left to win on his Napier. The French were furious and complained loudly, but Edge kept his victory.

The race included many steep gradients and not a few of the cars received manual assistance. A spectator timed the competitors up one 1 in 6 acclivity, the fastest being Teste and de Knyff, on Panhards, who made the grade at 23 m.p.h. But if the motors were reluctant to pull up the hills, the brakes were even less calculated to maintain a controlled descent, and many anxious moments were enjoyed. In particular, one motor-cyclist passed beyond all hope of salvation and sped down one hill, faster and ever faster, crying loudly for help. An English competitor heard him coming, seized him by the coat collar as he passed and miraculously plucked him from the saddle of his careering bicycle into safety.

In 1903 de Dietrich's put a basically similar machine on the market as part of their range of four-cylinder machines of 12, 16 and 24 h.p. respectively, and they achieved considerable popularity by virtue of the reliability, smoothness and silence of the Turcat-Mery-type engine.

The cylinder dimensions were 104×120 mm., giving a capacity of a fraction under 4 litres. The cylinders were cast in pairs, with the then usual very long centre bearing. Ignition was by low tension magneto, the interruptors being operated by an external camshaft. Automatic inlet valves were in cages recessed flush into the cylinders, from which they must have been remarkably difficult to dislodge. It may be assumed that the engine ran at about 800 r.p.m., with a terminal velocity of 1,200 r.p.m., and speed was governed by a device which operated the piston-type throttle. Cooling was effected by pump and a gilled tube radiator, the water tank being disposed at the rear of the engine. From the engine the drive passed *via* a leather cone clutch to a gearbox supported by a separate sub-frame. Final drive was by chain, but, contrary to usual practice, the differential and bevel housing was not integral with the gearbox casing. The chassis was armoured wood.

This particular car was bought when new by Lord Iveagh, and its handsome lines and brightly polished emerald green finish were much remarked upon. The body consists of two front bucket seats and a rear compartment with seats in each of the back corners, facing inwards at an angle of 45°. To this was subsequently added a roof upon four pillars, and attached to the roof were front and back windscreens and canvas side flaps, all of which could be let down at will. Lord Iveagh was married from the car in 1903, and it continued in use until 1912, when it was driven into the garage and blocked up. There it stood until 1940, when a bomb descended upon the garage, after which it stood in the open. Children found it a happy playground and it soon lost the rim of its steering wheel and the gear lever. The coachwork also suffered. It was in this state when seen by Francis Hutton-Stott, and, to be brief, the vehicle shortly changed hands.

Shortly afterwards Laurence Pomeroy, Bunny Tubbs, John Bolster and I attended upon Hutton-Stott to do homage to this latest addition to his already extensive and unique stable of veterans, and the first sight of the de Dietrich, with its gilled tube radiator, was certainly inspiring. Mechanically, the machinery appeared to be in excellent condition and had rusted surprisingly little. Certain modifications had been made for Lord Iveagh, the most important being the substitution of an h.t. for the old l.t. magneto. The governor had also been disconnected. John and I worked out the final ratios, and with the sprocket fitted they were approximately 2½, 3½, 6 and 10 to 1. This would give a top speed of roughly 45 m.p.h. The tyres are 815×105 mm., fitted to detachable rims, evidently another modernisation.

Fired with a desire to see if the engine could be made to work, and Hutton-Stott not objecting, we fixed the much perished h.t. leads to the beautiful blue sparking plugs, primed the cylinders and turned the handle. The engine was perfectly free and the automatic inlet valves emulated a Frenchman drinking soup to perfection. With less than half-a-dozen turns of the handle the engine broke into life for the first time in exactly 30 years; it was a great moment. To begin with there were a good many squeaks and clatters, but as the oil got circulating it smoothed out marvellously, running perfectly evenly and with amazing silence. It even throttled down to an entirely funereal tickover.

The next move was to set the vehicle in motion, but this was not so easy, owing to a jammed clutch and the lack of a gear lever. However, the stub of the lever was fixed into second gear notch on the quadrant, the writer installed in the seat of driving and a push start executed. Rapidly the speed rose down the gradient of the Hutton-Stott drive, approaching the very small turning circle at the end. The minute spokes of the steering wheel proving quite insufficient to operate the much stiffened steering joints a disaster seemed somewhat imminent, but at the last moment the clutch freed, the circle was negotiated and the hill reascended in fine style.

The motor certainly gives very good value for its accredited 16 h.p. and should be a most potent performer in the veteran or Edwardian fields in due course.

In the meantime Hutton-Stott can be relied upon to get the de Dietrich back into first-class contemporary condition; so another worthy veteran is saved.

RACING CAR EVOLUTION

—continued from page 183

finished fourth at Indianapolis behind two Peugeots and a Duesenberg. He drove in a number of races, but Resta's 1914 Peugeot always had the advantage. The best the Sunbeam could manage was a second (behind the Peugeot) on the Sheepshead Bay Track, at an average speed of 104 m.p.h.

With the entry of the U.S.A. into the "Great War" racing ceased in America, as it had in Europe, and thus came to a close one of the most interesting periods of development in the history of motor racing. Although the cubic capacity of Grand Prix cars had been reduced from 14 to 4½ litres, between 1912 and 1914, the smaller cars were 10 per cent. faster in maximum speed and, with their lighter weight and improved braking, their average speed on a twisty course was immeasurably superior.

LETTERS FROM READERS

—continued from page 196

Sir,

I was much interested in the mention of the Norton W.D. combination met on the Ox Drove, as I know the road and we have a great deal of fun on those same machines out here.

Regarding the 500-c.c. class, I shall certainly be interested in this as soon as I return. I was proceeding, very amateurly, with making a 600-c.c. touring machine (Scott-powered), but that was hoped to be merely the starting point.

So roll on the finishing lap of war and let us get on with something useful! As regards Berlin "Victory Parade" (if deemed at all *necessary*), surely a demonstration of our successful fighting vehicles would be more in keeping with the occasion. Anyway, is any "circus" desirable?

I am, Yours etc.,

By Air Mail M. MANSBRIDGE, Sgmn.
from the Middle East.

A THOMAS-SPECIAL IN RETIREMENT

SOME light on what has become of the 1½-litre Thomas-Special racing cars which the late J. G. Parry-Thomas designed and built has been given by a letter written to us by Sgt. G. Easterbrook-Smith, of the Royal New Zealand Air Force, whom readers will remember as a great Ansaldo enthusiast. His letter leaves little doubt that one of the Thomas-Special cars which Thomas raced in 1925 and 1926, and which resembled the Leyland-Thomas cars in outline and general design, has been saved from an ignominious fate and given a good home in New Zealand, where it went, it seems, about a year after its celebrated driver-designer was killed at Pendine. Douglas Kay is to be congratulated on saving it, and it is pleasing that the present owner appears to have taken some steps to correctly ascertain the car's history and status, and that he has no exaggerated ideas as to its original capabilities. This car, known to the initiated as a Hooker-Thomas, we believe, was never very adequately described in the motoring Press, and it is curious that we should have had to wait until some 16 years after its retirement to glean reasonably comprehensive details of its specification. We are not certain whether Thomas built more than one of these cars, but, if he did, no trace, with the possible exception of some engine parts still at Thompson and Taylor's, of another exists. He won the 1925 President's Gold Plate Race with the single-seater Thomas-Special at 96¾ m.p.h. and the "News of the World" 100 Mile Handicap the same year at 98.23 m.p.h. In 1926 he captured the Class F One Hour record at 112.78 m.p.h., so that the maximum speed (remember, the car was unblown) must have been around 115 m.p.h. or more. Easterbrook-Smith's letter, which gives a very good idea of the design of the car (which must not be confused with the later, straight-eight "flat iron" cars, both of which are believed to be at breaker Bradleys, at Edgware), follows :—

Sir,

I have recently come into possession of one of the late J. G. Parry-Thomas's racing cars. The car has been in New Zealand since as far back as 1928, I believe, but most details of its history are lacking.

The engine is a four-cylinder unit and bears the legend "Hooker Thomas Special" cast in the aluminium camshaft cover. A brass plate riveted to the cover says "Type 1½ L, Engine No. 5," and a second plate : "Manufactured by Peter Hooker, Ltd., Walthamstow, London, England."

I have reason to believe that the car originally had two crankshafts, giving swept volumes of 1,100 and 1,500 c.c., but the 1½-litre shaft has vanished. [As originally raced, the capacity was 1,847 c.c.—Ed.] Valves, two per cylinder, are operated by an overhead camshaft, one cam only being provided for each cylinder. Multiple leaf springs are set transversely across the head, the valves are well and truly inclined and the camshaft is driven in the same manner as that of a 3-litre Bentley. Ignition is by coil, the generator being on the right-hand side of the engine and a similar drive on the left-hand side turns the water pump. By the use of adaptors, 14-mm. plugs have been fitted. A single Zenith carburetter is mounted on the right-hand side of the head, but there is a spare manifold with provision for two carburetters. Four separate exhaust outlets blend into a 2½-in. dull-chromed pipe on the left-hand side. The flywheel is exposed, as is the drive to the separate gearbox, with its very short lever mounted centrally in the cockpit.

A comprehensive set of instruments includes a Jaeger rev.-counter, calibrated up to 6,000 r.p.m., oil temperature gauge, water temperature gauge, oil pressure gauge, ammeter and fuel pressure gauge.

Fuel is carried in a large tank amidships, pressure being provided by a hand

Details of one of the four-cylinder cars now in New Zealand

pump operated by the "riding mechanic." Oil is carried in the large, heavily ribbed sump.

The wheelbase is 8′ 4″ and the track 4′ 2″, suspension being by torsion bars. The chassis is extensively drilled and is set particularly low ; 21″ wheels are held on by four nuts each to 11″ brake drums. [If the wheels are disc and only rear brakes fitted, this sounds like the single-seater car.—Ed.]

An aluminium body in deplorable condition is fitted. The tail is very short, the differential and rear axle being fully exposed. I believe the car originally had a long tapering tail, but it climbed a tree at Henning's Speedway at Auckland and wiped it off.

The car was discovered by Douglas Kay, who promptly bought it, under a pile of bedsteads and old iron in a shed and, as he was unfortunately posted to a station to which it would be impossible to take the car, it has come into my care until the day comes when it will be possible to spend on fast cars the time now used in keeping aircraft up in the air.

It is in really deplorable condition, having been in the hands of one vandal who was going to use it for a dirt track car and another who intended using the engine for a launch; but with a lot of loving care it should be possible to restore it to somewhere near its original condition. I believe its maximum speed in Parry-Thomas's hands was in the region of 107 m.p.h. and its fastest speed in New Zealand has been 97 m.p.h., so it is a car with distinct possibilities.

If you or any of your readers could forward any particulars concerning valve and magneto timing settings, or, in fact, any information about the car, I would be very grateful.

A recent spot of sick leave led to a visit by Ansaldo to my friend Errol Ansell at Carterton, some 50 miles out of Wellington. Due to the use of unsuitable plugs, three cylinders only would play, which resulted in mounting the Rimutakas, a 1,000 ft. high climb, in low gear, a rather tedious business. At the summit I transferred my wife and that future female dicer, three months old Susanne Easterbrook-Smith, to Errol's car, succeeded in persuading all four cylinders to work at once and then had a grand dice to Carterton. The car now has the 31″×4.50″ tyres and wheels of the 1923 2-litre sports Ansaldo fitted in place of the Model "A" Ford wheels at the rear only. This gives a much more reasonable gearing, bringing 70 m.p.h. within reach at 4,000 r.p.m.

Unfortunately, the magneto packed up well and truly, so I was forced to leave the car at Carterton and return to Wellington by train. The car is still up there, having new piston rings and the Arnott carburetter fitted, which should result in a useful increase in performance.

Two very interesting cars were seen while on this leave. The first was a very beautiful 3½-litre Alvis saloon owned by a most enthusiastic gentleman, who entertained us with descriptions of racing at Donington and Brooklands. The second was a very ancient Kissel, about the first American car I have ever found interesting. Its chief attraction was a very well-proportioned 2-seater sports body, left-hand steering plainly showing its American origin. The gear lever, amazing for a Yank, was short and stiff and the driving position felt very comfortable. The engine was a big six-cylinder side-valve unit and appeared to be of some 4 to 5 litres capacity. Unusual in an American car, the inlet and exhaust were situated on opposite sides, the carburetter bolting directly into the side of the block. I believe this car was originally bought on the conditions that it could climb both sides of the Rimutakas in top gear and cover a measured mile at 85 m.p.h., both of which conditions it fulfilled.

Another good car in the Wairarapa district is a 4½-litre Bentley saloon, unfortunately in the hands of a rather unsympathetic owner. It is amazing how frequently good cars seem to gravitate to people who handle them unmercifully. Another example is the 1919 Indianapolis Stutz, which drags a harrow round a Taranaki farm.

I trust the particulars of the Thomas will be of some interest to you.

I am, Yours etc.,

G. EASTERBROOK-SMITH,
Sgt., R.N.Z.A.F.

Wellington,
New Zealand.

RAID—PRE-1939

ONCE upon a time, long, long ago, it used to be customary for Englishmen to celebrate the obsolete festivals known as "summer holidays" in strange ways: some of them used to visit a British colony north of London known as "Hampstead Heath," and some used to go and sit in little wheeled boxes on a crowded strip of asphalt reputed to lead to Brighton. But the real big noises adopted an even more costly form of torture: after paying out large sums of money, they suffered their beloved automobiles to be wafted through the air and deposited in the nether regions of little ships, then following them aboard, so that, after undergoing agonies such as make the Blackpool Switchback pale into insignificance, they might arrive at Calais members of that super *élite* class, the Continental Motorists.

Well, despite the subtle indignities inflicted by s.s. "Forde" and her many rivals, and despite the incredibly rough *pavée* which greeted new arrivals at Calais, there was quite a lot of joy to be had from Continental touring, not the least being the frequency with which the unexpected happened; it probably happens even more frequently now to those who still tour Europe on Official Business, but that is beside the point.

The particular incident I have just been reminded of happened one very hot August, when I found myself progressing in leisurely fashion through the upper stages of the Rhone valley in a Singer "Bantam." I suppose quite a lot of folk had the doubtful pleasure of touring Scotland at the time when, probably at the instigation of a local spring-repairer, the local councils removed the surface from a vast length of road along Glencoe and the Caledonian Canal before apparently finding the wherewithal to finish the job. If any other such unfortunates wonder where the idea of this wholesale road-breaking came from, I can assure them that it is of Continental origin. I raise no objection to normal rough going, and I might even say that an inability to read "Unsuitable for Motors" signs is a family weakness, but there are times when my patience is exhausted. I have never appreciated the logic of the Indian toughs who make a hobby of sitting on the business ends of nails, and no more do I appreciate driving all day over beds of large flints which are carefully arranged point upwards by (presumably) labourers employed by tyre manufacturers.

Well, I will merely say that the road from Martigny up the Rhone valley was under repair. So when we came to the point on the so-called road where the Simplon Pass diverged south in the direction of Italy we decided to go up for air; at least the surface was intact, and though our fanless and lidless baby would undoubtedly boil, as it had done on every previous pass from the 9,000-ft. Iseran downwards, it is always said that an engine runs at its best at 95° C.!

In the course of time, after periodic use of the one-gallon water-tin we carried, we reached the summit, finding ourselves in the midst of fortifications such as we had encountered periodically everywhere from Luxembourg to the Alpes Maritimes. We also encountered a party of English tourists emerging from the Dennis coach which had brought them all the way from New Cross, S.E.! This vehicle, which seemed quite happy under these conditions, apparently did a 13-day Alpine tour from London every fortnight, receiving negligible attention for months at a time and giving no trouble whatever.

Having had a spot of sun, and a spot of food and drink, we decided to go on down the south side of the pass towards the Italian frontier; not that we intended to visit the Land of Wop that day, but it was nice weather and we liked the view.

Being unskilled in astrology, I can't say whether Venus was in osculation with Mars or something equally strange, but it certainly seemed to be our unlucky day as regards roads; yes, you've guessed right, the south side of the Simplon Road was being rebuilt—with dynamite.

On the way down, at a place where the road is cut through some pretty steep and rocky bits of Alp, we noticed various gangs at work, but nothing occurred to impede our progress until we rounded a bend and found a sort of Italian bandit advancing towards us with a red flag. Needless to say, neither I nor my passenger could understand a word the "bandit" said, but his sign language left no doubt that we should retire promptly before his mates blew away a chunk of cliff.

In the circumstances, we turned round with a rapidity seldom equalled in rally tests, only to find, bearing down on us from our direction of retreat, what appeared to be the full cast of "The Pirates of Penzance": yes, more blasting. Well, we were quite fond of "Nanki Poo," for all its boiling habits, but it was obvious that two lots of fuses were already burning, so there was really no choice. We abandoned ship at the double and dived for a hollow in the rocks into which the last roadman was just disappearing.

Crouching in the primitive shelter, we listened with trepidation to a series of explosions which, though perhaps mild compared to what we heard at home three years later, were thoroughly alarming at the time, and as we listened to the ensuing patter of falling debris outside we made unhappy calculations as to how to get home without the car. . . .

Emerging to the light of day, we blinked with incredulity at the sight that met our eyes: surrounded by stones there stood an apparently undamaged "Nanki Poo"! For once there was no argument as to route, and by general consent we departed rapidly along the road by which we had come—at least they did not do their road building with H.E. in that direction!—J. L.

AT THE CINEMA

A NEW motor-racing film, "Blonde Comet," probably the last we shall see until the end of the war, is now going round the cinemas of the country. It is very short.

The film opens with newspaper headlines announcing that an intrepid girl driver, known as the Blonde Comet, is returning to the States after winning two European Grands Prix. We are then introduced to her driving her estate-car with the racer on a trailer (all very dirt-track to look at and not at all European Grand Prix) and accompanied by her only visible staff throughout the film, a large blonde Swedish girl secretary.

After a refreshing encounter with the hero, who has closed two miles of the main highway and is testing his racing car on it, the two appear in a race at Ascot Speedway. This is described on the poster as 100 laps and 100 miles, but this changes to 500 miles in the subsequent loud-speaker commentary and dialogue. Here news-reel shots of a large number of hair-raising crashes are introduced. It is easy to tell when they are coming, as the photographic quality of the film changes suddenly to harsh, grainy, news-reel style and then goes back to normal after the crash. Apart from a few towed shots of the cars of hero and heroine, it is doubtful if any of the rest of the film was staged specially for the production, and in the long shots of cars racing it is never possible to identify those of the leading players because they are not there! Barney Oldfield appears as motor-racing's Sid Walker, with a heart of gold and a travelling shop full of plugs and tyres, which he gives away to deserving cases, while dunning the tough guys for their outstanding accounts.

From Ascot we go to what is billed as the 36th Indianapolis 500 Mile Race. As the race of last year was the 31st of the series it will be seen that the film dips into the future. Here the Blonde Comet fits the hero's father's new carburetter, unbeknown to said hero, and gives up her car to him in the last few laps to leave him to win the race. It is all very naive. There are strange scenes at the pits including a refuelling stop in which the filler-cap has to be unsealed before opening—probably a relic of the fuel-restriction period of some ten years ago at Indianapolis. News-reel shots are freely used once more and all the crashes of a decade are crammed into the condensed record of this one race. Occasionally the track becomes changed to a dirt surface when animated shots of the stands are required! The cars also vary in type. The hero and heroine drive single-seater dirt-track machines, while the rest of the field have typical Indianapolis cars of a few years ago, mostly 2-seaters of pre-1938 type, as run before the race went on to A.I.A.C.R. rules and riding-mechanics forsook their suicidal calling. This is especially noticeable in the crashes, where in a number of cases two men are thrown from one car.

The film, made last year by Producers' Releasing Corporation and distributed by Pathé, is directed by William Beaudine, stars Virginia Vale and Robert Kent, and was photographed by Mervyn Freeman, who also acted as co-producer.—E. S. T.

CARS I HAVE OWNED

C. R. Farquharson recalls his motoring experiences and enthuses over the Bugatti and Aston-Martin. Further contributions under this heading, amateur and "professional," are cordially invited.—Ed.

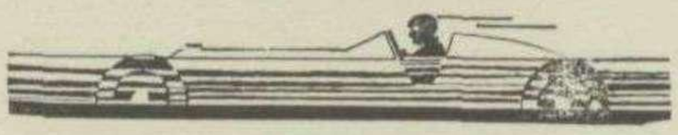
WITH some temerity I set forth the experiences which I have enjoyed — frequently suffered — since I owned my first car, the inevitable Morris-Cowley 2-seater, incidentally of late vintage, being a 1929 model.

Previously I had graduated from two wheels, starting with a 172-c.c. Francis-Barnett super sports, later re-engined with the Villiers "Brooklands" motor and used for grass-track racing with moderate success. A 350-c.c. o.h.v. Douglas, a Velocette K.S.S., a 350-c.c. Big Port A.J.S. (a very fine machine), and, finally, a 500-c.c. o.h.c. A.J.S. followed, from all of which a tremendous amount of fun, trouble, knowledge and genuine comradeship were obtained on grass, on the cinders and on club runs.

The Morris was bought at a time when there seemed to be quantities of wild oats clamouring to be sown, and was therefore caned everywhere with no thought for the morrow or the mechanism. Naturally, it did not last very long and was finally exchanged for an Austin Seven "Chummy," which gave admirable service for a time, until it was found that both chassis side-members were broken at the centre cross-member. After a little deliberation, I decided to rebuild this Austin with a body of my own, and a new frame was bought from a convenient breaker's. As no doubt better men than I have ruefully discovered, the Austin chassis does not lend itself to coachbuilding, and after struggling and redesigning for a period, I laid the work aside and purchased a 1927 Talbot Fourteen (Model "A.C."). Yes, the one with the diabolical cylinder head studs inside the induction ports! This car was extremely heavy and used incredible quantities of petrol, but handled and rode beautifully, although lacking any real performance. However, during more sowing of oats, the crankshaft chucked it during enthusiastic second gear work one night and the car was sold for scrap.

Having now been deprived of transport, work on the Austin was perforce recommenced and eventually completed. The chassis was not lowered at all, but the radiator was attached by plates in an inclined position slightly further forward, the body being built of aluminium sheet and metal-faced plywood in M.G. "J2" fashion, so easy to carry out. Engine modifications were made with a view to getting more urge, and a rev.-counter drive fitted to the timing case, engaging the camshaft nose, which was slotted to suit. The rev.-counter was a large-dial aircraft instrument reading to 2,600 r.p.m., so that by repainting the readings exactly double the original figures, and running at half engine speed, a satisfactory arrangement obtained.

I never could stop this Austin from boiling when it was put into commission, probably due to the fact that the fan was too far away from the honeycomb, and the new valve timing and other modifications probably caused greater heat flow to the cooling water, but it went magnificently and a "Brooklands" exhaust system gave a truly inspiring note at high engine speeds and on the over-run; 5,000 r.p.m. was obtained in top gear on



one or two occasions under favourable conditions, and I would say that the maximum speed was something in excess of 70 m.p.h. Somehow, after all the body difficulties had been overcome and the painting had been executed to give a beautiful finish, I lost interest and had no inclination to tackle the boiling trouble. Whoever got that car bought an Austin that would stop, however, as I scrapped the old brake cross-shaft and fitted a heavier one in solid bearings on the underside of the frame members, having forged levers to pick up the rear cables and put a compensating bar on the centre lever, coupled to the front wheels by rods, and not cables. Finally, a hand-brake lever from a 3-litre Bentley was fitted to the offside end of the cross-shaft (I know it was sacrilege), and the car stopped so well that one could almost feel the chassis arch its back as the two axles were drawn towards each other!

A twin camshaft Grand Sport Salmson followed, but was not in good condition. This car must have had the world's fiercest clutch and the getaway was a succession of hops. A three-speed gearbox rather spoilt the performance, but, taken by and large, it was a good little car, having no end of character, holding the road well and having high-geared steering, which gave good control at any speed up to its maximum of about 72 m.p.h. Cornering was very satisfactory and the solid rear axle rendered sliding very easy and pleasurable. Like so many light Continental sports cars, it had all the qualities which vintage enthusiasts appreciate, yet withal selling at a very reasonable price. The Salmson was also remarkable for its low speed torque and would climb most hills in top gear with the loss of very few r.p.m.

Then a friend offered me an Armstrong-Siddeley 12-h.p. fabric coupé for £8, and I bought it as the Salmson was getting too far gone for good service. This Armstrong had no top speed beyond about 50 m.p.h., but would whine along at this speed for hours and was quite economically minded towards petrol. No shock absorbers were fitted and cornering was rather frightening to the uninitiated, due to the not inconsiderable roll.

About this time I had the opportunity of obtaining a unique car which had not been used since 1928, only four years after its construction. The North-Lucas Radial was designed by Mr. O. D. North, now the well-known and brilliant engineer who has been responsible for the many unconventional and successful designs incorporated in Scammell lorries of recent years and under whom I was privileged to serve for some time. (My poor imagination boggles at the thought of Bugatti–North collaboration in design, but we would be sure at least of a practical lubrication system!) The car in question had a radial engine mounted horizontally in the rear end, driving through the unit clutch-gearbox-differential assembly, and thence by universally jointed shafts to the independently sprung rear wheels. All four wheels were independently sprung and were carried on arms mounted on special suspension cylinders, which were in turn attached to the body structure. These suspension cylinders were about the size and shape of a Dewandre servo unit as fitted to a medium-sized lorry and each was a self-contained unit. There was no chassis and the car was probably the first chassisless car made. The suspension was phenomenal and I have never experienced its like, either before or since. Never having been developed, the North-Lucas had certain weaknesses which made it unsuitable for regular use, and I sold it for scrap eventually. I regret this course, as I would like to have the car now to demonstrate some of its sterling qualities to certain gentry who have drivelled in the popular Press, at the same time emphasising its year of construction. [1921–22?—Ed.]

A 1932 Rover "10/25" followed and this was a very pleasant little car, with limitations; it served very well for a year until the old urge for hairy horses re-asserted itself, coincident with the discovery that the gears in the Rover were finished. The car that I had dreamed of for years was then found in London in the form of a very late Type 40 Bugatti, with the hip-bath 2/3-seater body. After suitable (prolonged) negotiations with the parental financiers, I became a member of the *Bugattisti*.

Never since my first right and left at snipe have I had a greater kick out of life than from the run home in this Bugatti. Such steering as seemed hitherto fanciful, lightning cog-sorting and a wonderful taut feeling about the whole car was truly magnificent. The first job seemed to be a thorough study of the construction, and I recall the question very soon asked with reference to the engine: "How does it come to pieces?" Which question was, alas, soon to be answered, willy nilly. One evening not long after I bought her she dropped an exhaust valve most inconsiderately into the moving parts, to the great detriment of the latter. However, after I had located a second-hand block and had new exhaust valves made in KE965 steel, during which time I had incautiously enquired the price of new valves ex-Brixton, a new piston was fitted and the engine reassembled.

By this time the wild oats had become almost exhausted and, strangely enough, from this seed began to spring a deeper appreciation of a good car. Many long runs followed, with no particular objectives in view, and I seem to have developed an outlook rather like Mr. Lycett's on long-distance motoring for pleasure only. Naturally, Prescot and Donington were regular ports of call (and how my mouth watered to see Types 43s and 55s carelessly littered about at the former venue!) The Type 40 properly tuned

CARS I HAVE OWNED—continued

and *left alone* was a most reliable car worthy of the label "Molsheim Morris Cowley," giving quite a lively performance, a cruising speed of 65 m.p.h., and consumption never worse than 28 m.p.g., frequently better. Probably the reliability of this old car was ensured by a vivid memory of Bugatti spare parts prices (someone had to pay racing expenses, I suppose), and a natural abhorrence of any form of "pasting" as applied to a mechanical contrivance.

One run from Watford to Prescot was done in 2 hours 40 minutes, including a stop for ale, yet never was 70 m.p.h. exceeded nor any absurd engine speed indulged in. There are other runs more or less incidental, but one stands out which proves the Bugatti, in my estimation, the most stable car ever.

Returning from the 1938 Grand Prix at Donington with two friends along the Hinkley–Weedon Road, we were being pursued by a "Red Label" 3-litre Bentley, but the Bugatti seemed to have the legs of the larger car. A railway bridge hove in sight and we surmounted this at about 65 m.p.h., only to be petrified by the discovery that the road fell away on the other side, quite deeply. We took off. . . . A telegraph pole on the nearside loomed like Nelson's column and the steering wheel seemed to be quite an unnecessary attachment. After a seeming eternity, we landed squarely and solidly, but a fearful clatter ensued during the stopping process. On dismounting, we found that the rear axle under such stress had ascended and struck the floorboards of the tail, thereby overturning the battery and smashing the toolbox. The rear wheels had hit the cycle wings so hard as to shear the stay bolts in the frame. It needs some load to deflect Bugatti rear springs 6", but the whole incident shows the marvellous stability of the car and its robust construction.

The 4.50"×19" rear tyres wore out very quickly on this car and were replaced by 5.50"×19", which did much better.

Owners of Type 40s are advised to see that the rockers receive their fair share of oil and, providing decently fitting valve guides are fitted, no oiling-up need be anticipated. Suitable plugs were Champion 16, but, for harder driving, I found Bosch DMT295 very good, although liable to oiling in my own engine in traffic. Incidentally, always replace the aluminium plate between the cambox and cylinder block every time the engine is decarbonised, otherwise a water leak either into the sump or down the valve guides will result and the latter may give rise to the mistaken diagnosis of a cracked block.

Another interesting car followed, in the shape of a 2.3-litre six-cylinder H.E., first registered in 1932. I have reason to believe it was the last chassis ever built. Certainly it was the cheapest car I ever bought, being in absolutely showroom condition, and a gift at £12 10s. It resembled very closely the 3-litre Bentley with fabric Van-den-Plas body, being about the same size generally. The large side-valve engine had an aluminium head to Whatmough design. The cylinder block was quite shallow, but the skirts of the bores, like the "Silver Eagle" Alvis, extended deep into the crankcase; a beastly thing to replace without heavy ring casualties. A really nice four-bearing crankshaft was fitted, machined all over, and duralumin con.-rods transmitted the tramplings of the not too hairy legs. Three S.U. carburetters fed into Siamesed inlet ports. The clutch was externally almost identical with the old multi-plate Bugatti, but Caversham had out-contrived Molsheim so well that one could engage gears quietly from standstill without the usual firm movement on the gear lever usually associated with the latter car. Gearbox layout similarly resembled the Type 40 and changes were absolutely lightning-fast, of necessity—otherwise the gear was missed. Maximum speed seemed to be just under 80 m.p.h., with an indefinite cruising speed of 70–73 m.p.h. Braking was Westinghouse servo-assisted *via* mechanical operation, with a peculiar skew-gear drive to the front brake cams, operated by cables transverse to the chassis. Here lay the main weakness of the whole car, heavy braking from any speed over 50 m.p.h. causing her to swing badly, due, I think, to insufficient rigidity at the front end of the frame.

Very soon after buying the H.E. it was borne upon me that the petrol consumption was rather heavy, and a run from Liverpool to Watford showed that the car's thirst for petrol rivalled its owner's thirst for ale. This was the reason for my parting with her, as by no means could I get the m.p.g. above 15, and the instability under braking also helped to sever us. If anyone has this car, GY1567, I would like to hear from them. With modifications to the chassis and another engine of greater potency, the H.E. would have been a really excellent motor-car.

I was next tempted to revert to the respectable, and a 1934 Austin Ten was acquired, which soon proved to be a glutton for oil and quite lacking in performance. If, after winding itself up to 50 m.p.h., there was room, it would cruise at this speed quite nicely and long distances were covered quite quickly, but to the accompaniment of a screaming engine. When rationing started the Austin was laid up and only recently recommissioned; it is now to be sold.

After being car-less for some months, I heard of an Aston-Martin "International" for sale, and after visiting the owner, a well-known Northern enthusiast, I bought it reasonably cheap, to find later that the car was far from being in good condition. Only a few days after collecting it I used it for a journey to Watford, and soon found that the engine was very rough, so that I limited the r.p.m. to 3,000. On the return run the water pump gland packed up, allowing water to enter the sump. This was emulsified with the oil and hoisted by the scavenge pump into the tank, which soon filled, until the pressure lifted the filler cap off and the nearside of the car was literally plastered in black sludge on arrival in Manchester.

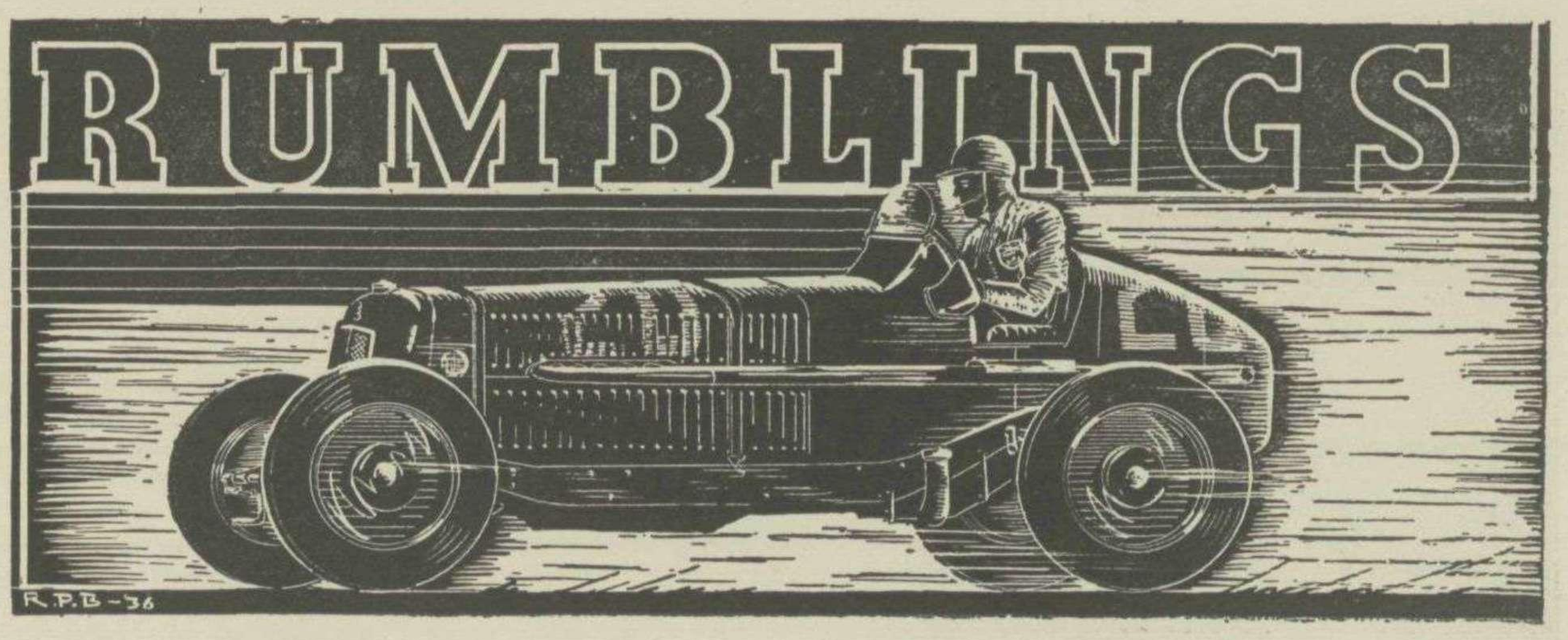
The engine was promptly removed and completely overhauled, with new bearings and reground crankshaft and rebored block. A thoroughly cleaned and painted chassis assisted it to look really distinguished with its drophead coupé body by Bertelli (brother to the better-known Bertelli). A painful grinding sound on the overrun was traced to a wormshaft thrust bearing of the "square-ball" variety, so this was replaced, together with universal joint parts, and the Aston was then in first-class mechanical order. Aston-Martin, Ltd., though rather stiff at first, soon thawed out and wrote me some very kind and helpful letters, and most of their suggestions were carried out. Having in mind the weight of the "gin-palace" body, I removed the heavy front wings and running boards and fitted very light and rigid cycle-type wings, as befits an Aston-Martin. Later I fashioned an outside exhaust manifold (with no little difficulty when it came to pipe bending). The car was originally fitted with close-ratio gears, but seems to have had wide-ratios substituted, and I am now trying to obtain the close-ratio type. Two 1½" S.U. carburetters, ex-4½-litre Bentley, have recently been obtained, and I hope to fit these for trial when the car is brought into service again. With these various modifications I hope to exceed 80 m.p.h. fairly comfortably. Incidentally, a Simms automatic advance was fitted to the magneto and has proved very convenient for low speed traffic work, although not quite correctly calibrated. With this the car is very flexible at low speeds. I shall be very grateful to receive advice from anyone who can offer any on "International" Aston-Martins.

After overhaul, with engine and exhaust standard, my example had a maximum of about 74 m.p.h. (the engine is still rather tight) and it cruises at 3,600 r.p.m. indefinitely (63–65 m.p.h.). A run of 180 miles has been regularly covered in four hours, door to door, and the car runs with the regularity of a pre-war train. Petrol consumption, with standard E.4 needles, is about 27 m.p.g. on a long run, and with the economy-80 (fatter) needles 30 m.p.g. is easily returned, although accompanied by a marked decrease in power. Steering and road-holding are excellent, but the former is rather heavy at low speed, due, I think, to the fact that 5.25"×18" wheels were fitted by a previous owner, in place of the original 4.50"×21", which may upset the swivel and castor arrangements. A low speed wheel wobble also obtrudes occasionally, for which no cure has yet been found, except tightening the front shock absorbers. The cause has not been traced.

I intend to remove the present heavy body and build a new one of great lightness, which will no doubt give the car much more lively characteristics, as the present acceleration is by no means bright. Any previous owner of GN4897 is invited to recount his experiences.

Whilst I am still an incurable *Bugattisti*, the Aston-Martin comes nearest to Le Patron's creations and will serve me well until my ultimate ambition can be achieved. I have recently met, through the good offices of MOTOR SPORT, a fortunate owner of two side-valve Aston-Martins and entertain hopes that he may one day part with one of them.

On this note of optimism I will close. This effusion may not prove sufficiently technical for some of your readers, but this strain was intentionally adopted to give, if possible, some idea of the characters of the cars mentioned, rather than a bald catalogue of their specifications.



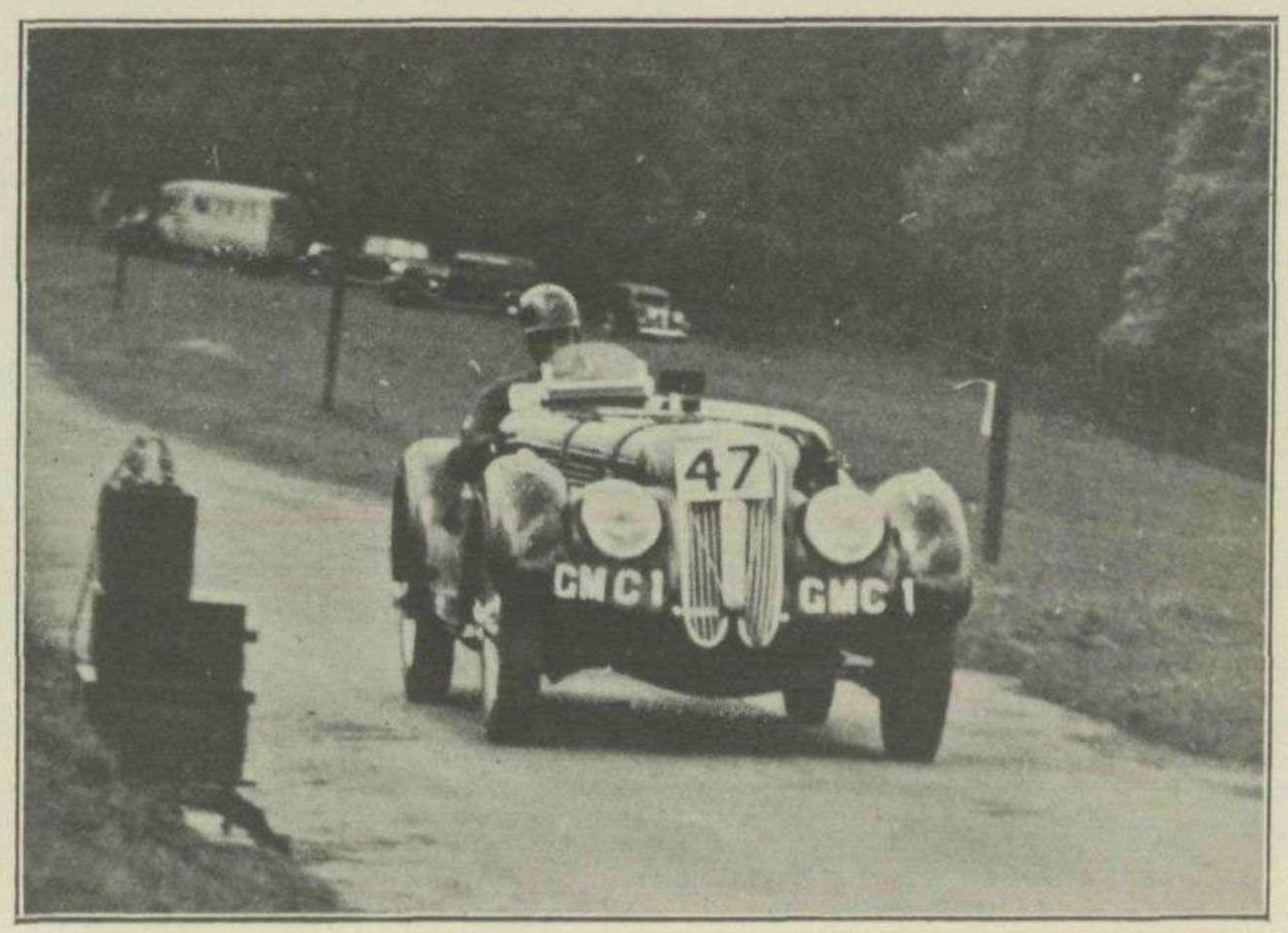
Sixteen-valve Aston-Martin

IT is really rather astonishing how Bamford and Martin-type Aston-Martins have been coming to light recently and changing hands. Ever since Mr. Ellis of Stockport wrote to say he was hoping to acquire Johnson-Ferguson's 2-seater side-valve car to keep his other two side-valvers company news of these cars has continued to come in. Grosscurth bought a s.v. clover-leaf in London and recently found another near his home town of Maidenhead, and Farmer saved a Powerplus-supercharged Anzani-engined example from destruction and has it stripped down in Farnborough—it will very likely turn out to be one of the two 1922 Strasbourg G.P. cars. Then someone has taken the remains of "Razor Blade," the sixteen-valve track car, off Breen's hands. Now my friend Bunny Tubbs has come upon a sixteen-valve Aston-Martin chassis and, floating a limited company with Marcus Chambers, has bought it for use after the war—as Anthony Heal says, we may expect to read of Aston-Martin shares in the Stock Exchange news in future. Bunny's car was first registered in 1929 (UL1945) and he would be grateful for its history. It seems likely that it was raced, apparently constituting G.P. engine and axles mated to an s.v.-type frame, and if this is the case, it defeats the Editor's pessimism last month that no more ex-racing machinery remained to be discovered. The car is in very good trim and sounds as if it might be one of the 1922 200 Mile Race cars, for two of these used the sixteen-valve engines in the 1921 chassis, although, if this is the case, the Rudge wheels and front brakes have been added subsequently. It only remains to find the most famous of all the side-valves, "Bunny," and to receive news regarding the car which Lambert rebuilt for Forbes, and of yet another side-valve, a 4-seater, which "E.R.A." Green's brother used to run, and a vintage Aston club might almost be mooted. With Mr. and Mrs. Lionel Martin as joint presidents, of course.

* * *

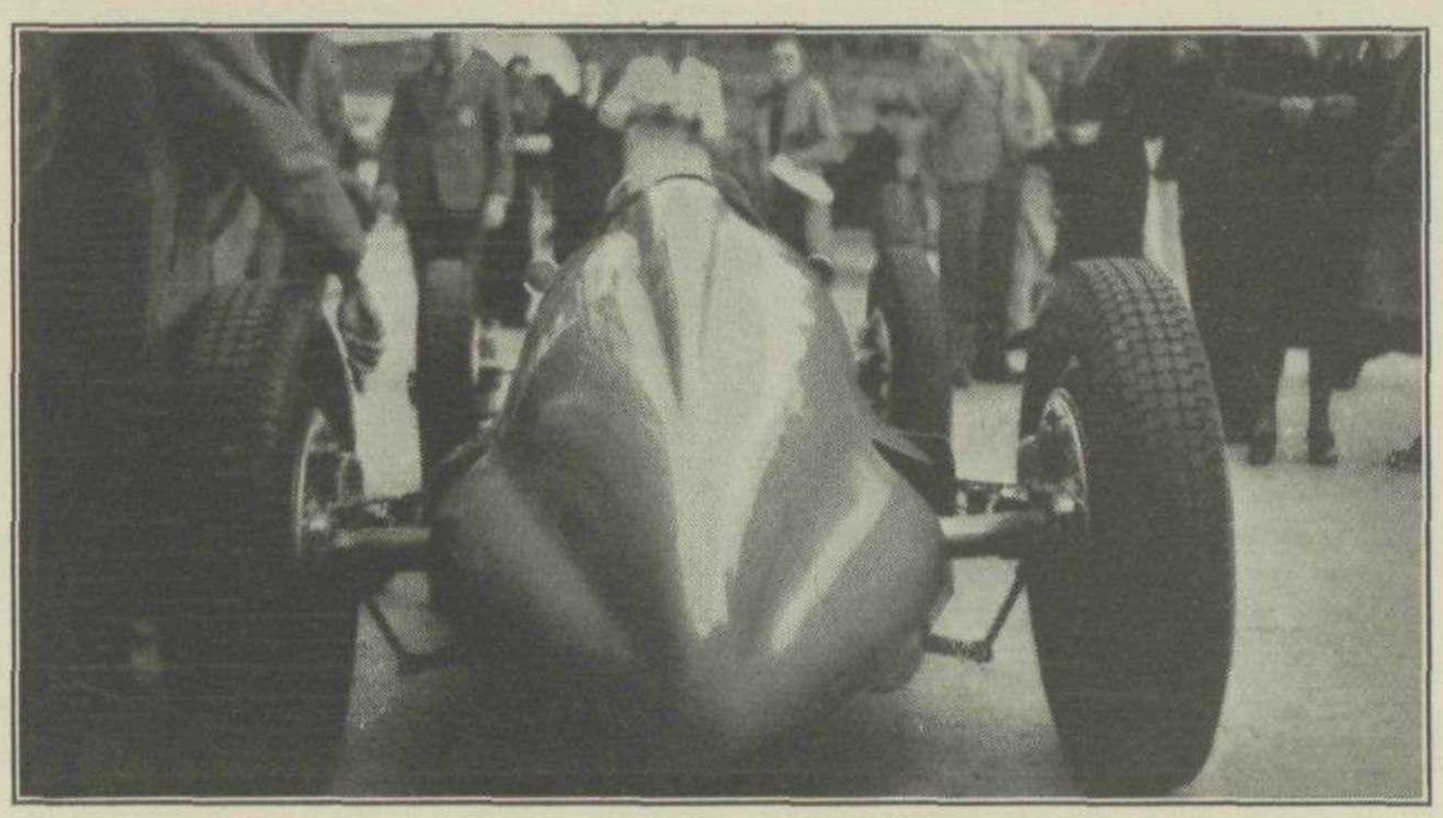
Obituary

Fane's death, victim of a flying accident, is terrible news, of the sort which we have to endure these days. Fane had reached the rank of Flight-Lieutenant in the R.A.F. and was killed flying on active service. Tall, very handsome, addicted to loud sports jackets and fantastic hats, yet quiet in speech, Fane and his tall, athletic wife belonged so evidently to modern motor-racing meetings. And he was a very fine driver indeed, rated higher, on the German B.M.W. Company's authority, than Seaman himself. Commencing his racing career while still at Cambridge, Fane never handled a real racing car of Grand Prix calibre. His



The late A. F. P. Fane on the upper reaches of Shelsley Walsh in his 328 B.M.W.

RUMBLINGS—continued



British hope after the war? A rear view of the latest "all-independent" 1½-litre E.R.A.

fame is the more richly deserved. As A. F. P. Agabeg he ran a twin-cam G.P. Salmson at Brooklands in the nineteen-thirties, winning the Easter, 1931, Mountain Racing Handicap, during which race he lapped the Mountain course at 61.94 m.p.h. Later he joined up with the Aldington brothers and competed outstandingly in Alpine trials, the T.T. and other important events with Frazer-Nash and B.M.W. cars. At Brooklands in 1935 he opened this new period of his motoring career by winning the Whitsun Senior Short Handicap with a Frazer-Nash, lapping at nearly 106 m.p.h. The following year he took a Frazer-Nash round Brooklands at over 120 m.p.h. and finished third in the Tourist Trophy Race with a B.M.W. At Shelsley Walsh hill climb he was at his very best. In 1935 he established fastest sports car time with a Frazer-Nash in 45.6 secs. and in 1937 took the record for the course in 38.77 secs., driving the twin-blower "Shelsley" Frazer-Nash single-seater. With a German B.M.W. he also broke the sports car record for the difficult Grossglockner hill climb. Verily, the motor-racing world is paying very dearly in the crushing of the Nazi regime.

* * *

Cornering Qualities

I have been thinking recently that a whole lot still remains to be written about cornering qualities and the "feel" of different cars when they are violently changing direction. When I have reason to feel not displeased with the manner in which my present car has swept through an open S-bend or rounded a fast curve, I try to picture how other types would behave and feel under the same circumstances. My car has vintage stiffness about its construction, but a certain neglect of the independent front suspension has rendered the action of the front springing somewhat supple, as one expects of a modern i.f.s. car. The steering is reasonably light at speed, and without the springiness characteristic of old school types, yet it is high-geared. The central, stubby gear lever is very light to operate if an upward or downward change is elected during the swervery. Now I don't suppose the car corners as fast as a Bugatti or an Alfa-Romeo and it certainly doesn't feel so satisfactory. A modern saloon would doubtless be as rapid through a given corner, but would howl its rear tyres more and roll a great deal, inducing more movement of lower-geared, but silk-smooth, steering. A car of old-school Bentley type would probably make less tyre noise, if it made any at all, and would not dip down at the front, but, in trying to substitute it for my own car at such times, the mind's eye pictures the need for more muscular effort and less casualness of judgment. Are these impressions incorrect or are they hopelessly out of focus? I enjoy certain sorts of corners in my present car because it goes about the job easily without calling for especial skill and attention. But can it really corner as fast as the Bentley-type with ultra-stiff suspension all round and steering that translates front wheel movement inch by inch? Is the softly-sprung modern only as safe at such speeds given a skilful driver, or does the "feel" imparted make it seem unstable to the sports car driver, when there is no just cause for apprehension? If we come to a conclusion on these troublesome issues and then assume a sharp shower of rain, do said conclusions hold firm or does a fresh set of conditions, car-to-car, prevail? In conducting road-test reports I have always found cornering qualities amongst the most difficult of all the handling characteristics to report. I like the feel of the old-type sports car and must admit to having some contempt for the suppleness of cars like the Mark V Bentley and V12 Lagonda, which results in dipping of the front end, a sliding tail and tyre protest when cornering really fast. Yet, looking at—but not driving, mark you—a closed 8-litre Bentley the other day I wondered if this class of car really *is* safer, more satisfying, or even as fast, as modern *equivalents over narrow, twisting roads.* Of the difference in handling "feel" there is no question. But remembering how Rolls Bentleys and Lagondas hold their 70 m.p.h. everywhere, round bends and over narrow going, cruising at 80 and 90 m.p.h., dropping back, and then rapidly regaining the higher gaits as the foot is again crammed down on the accelerator, and especially recalling how fiercely they tackled bends and corners at such speeds, one is—left wondering. If you can come to a satisfactory decision on these debatable points you are a better man than I. Again, can we be dogmatic about tyre protest? Will a car which corners well with low-pressure tyres howl its boots before a car which corners badly on old high-pressure tyres, and which will make the greater noise? Does excessive roll which results in protest at low speeds necessarily imply slower cornering than rigid suspension which results in tyre

RUMBLINGS—continued

screech and slide at higher speeds? Condensed thus, these queries may seem hopelessly unscientific, but I believe they are worth closer consideration than they have yet been given, and better-handling cars might well come into being if manufacturers could be induced thus to pass some idle moments. One point seems fairly obvious. In a road car pleasant "feel" is more important to most drivers than actual speed in corner-ability, but in a racing car the opposite holds good, albeit a car able to corner faster than its rival is usually, but not necessarily, better to control. On the other hand, in a long race, such as one of the early Grands Prix or a modern Monaco, small irritations might quite well result in accelerated driver-fatigue and loss of speed from this cause, heavy brake operation and a restricted cockpit being points now in mind, apart from the less definable aspects which we group under the heading of "feel."

* * *

Census

To see just how empty the ban on "basic motoring" has rendered our roads we spent some time one Sunday last month taking a census on a main road out of London which, in peace time, used to pass, we understand, something like 200 cars every five minutes. The result is of some interest, if only as showing the percentage of human to mechanically propelled vehicles on our roads. Even so, it must be admitted that there is still sufficient of motor interest out and about to enable a young enthusiast to take a quite effective makes-census, especially if motor bicycles are included—incidentally, this used to be a popular hobby at one time and the weekly *motoring* Press published readers' findings. We included only vehicles which actually passed us, and judging by the number which turned off at the junction where we were parked, the actual flow on this road would seem to be around 350 an hour. On a week-day the figure would doubtless be considerably greater.

CENSUS TAKEN ON LONDON–OXFORD ROAD AT DENHAM (A40) ON SUNDAY AFTERNOON, AUGUST 9TH.

Cyclists (132 per hour)—		
Men	61%	
Women	38%	
Tandems	1%	
Motor vehicles (100 per hour)—		
Solo motor-cycles	30%	(60% of motor-cyclists carried pillion passengers).
Civilian cars	20%	(Average size: 14.4 h.p.)
Motor-cycle combinations	12%	
Local omnibuses	12%	
British Forces vehicles	8%	
Civilian lorries	6%	(66% of civilian lorries carrying "hitch-hikers")
Allied Forces vehicles	6%	(All U.S. Army: two cars, one "Peep")
Long-distance coaches	4%	(Journeys of approximately 100 miles)
Tricycles	2%	

Makes of cars and lorries (Service and civilian)—	
Ford	15%
Austin, Bedford, Humber, Packard, Rover, Standard	each 10%
Daimler, Dennis, Morris, Rolls Royce, Willys	each 5%
Makes of motor-cycles or three-wheelers (solos and combinations)—	
B.S.A.	28%
Norton	23%
Matchless	14%
A.J.S., Brough, James, P. & M., Triumph, Velocette, Vincent-H.R.D.	each 5%



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A fifty-six page magazine of absorbing interest to all model builders, with many plans and full building instructions, etc. The premier model aeronautical magazine of the British Empire with a special appeal to ALL model builders.

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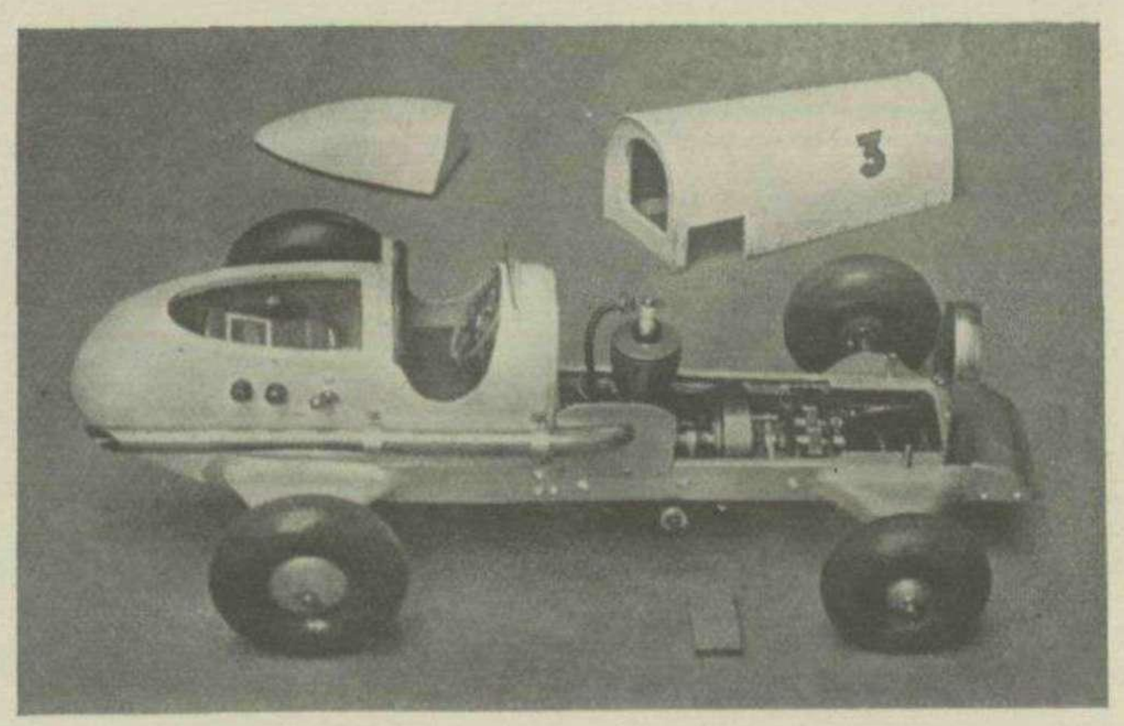
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THE AERO MODELLER, ALLEN HOUSE, NEWARKE ST., LEICESTER

Club News

J.C.C.

The Junior Car Club continues to issue its "Gazette" quarterly, and from the April–June issue some interesting news-items come to hand. We learn, for instance, that Noel Rees holds an appointment with Hawker Aircraft, Ltd., and has a son in the R.A.F., and that Derek Loader is a Flight Lieut., R.A.F. Miss P. M. Lambert is in the F.A.N.Y., Fotheringham-Parker is a Lieut. in the R.A.S.C., and the Duke of Richmond and Gordon has become an R.A.F. Pilot Officer. Humphrey Cook holds an appointment in the Admiralty, the Rt. Hon. the Earl Howe is a Commodore, R.N.R., and D. J. Scannell is in the R.A.F. T. Bushell-King is an R.A.F. Sqdn. Ldr. and Miss M. M. Webb recently married L. G. Eckett. We regret that the following J.C.C. members are reported missing or killed on active service: P/O. R. W. V. Smith, Lieut. M. J. Major, R.N., and Major Peaty. An interesting article on the first J.C.C. 200 Mile Race, held at Brooklands on October 22nd, 1921, appears in this issue of the "Gazette," and the starters are worth repeating. They were:—G.N., 1; A.V., 1; Deemster, 1; Baby Peugeot, 1; Morgan, 1; Singer, 1; Coventry Premier, 1; Bleriot Whippet, 1; Temperino, 1; Salmson, 1; Aston-Martin, 4; A.C., 5; Marlborough, 2; A.B.C., 1; Lagonda, 2; Hillman, 1; Alvis, 2; Horstmann, 3; Enfield-Allday, 1; Charron-Laycock, 2; Bugatti, 2; Talbot-Darracq, 3. What a field! Segrave on a Talbot-Darracq came in to win at 88.82 m.p.h. from Guinness and Campbell on sister cars, and "Archie" Nash's G.N. won the 1,100-c.c. class from Lombard's Salmson. Segrave, Guinness, Nash and Phillips (Deemster) ran right through without a stop.

The Club continues to hold Council luncheons, and at the end of 1941 had a surplus on subscriptions from London members alone of £30 10s. 8d. and investments remaining at the pre-war total of £4,780 0s. 9d.

Secretary: H. J. Morgan, 14, Lime Grove, Ruislip, Middlesex (Pinner 3693).

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THE LEA-FRANCIS OWNERS' CLUB

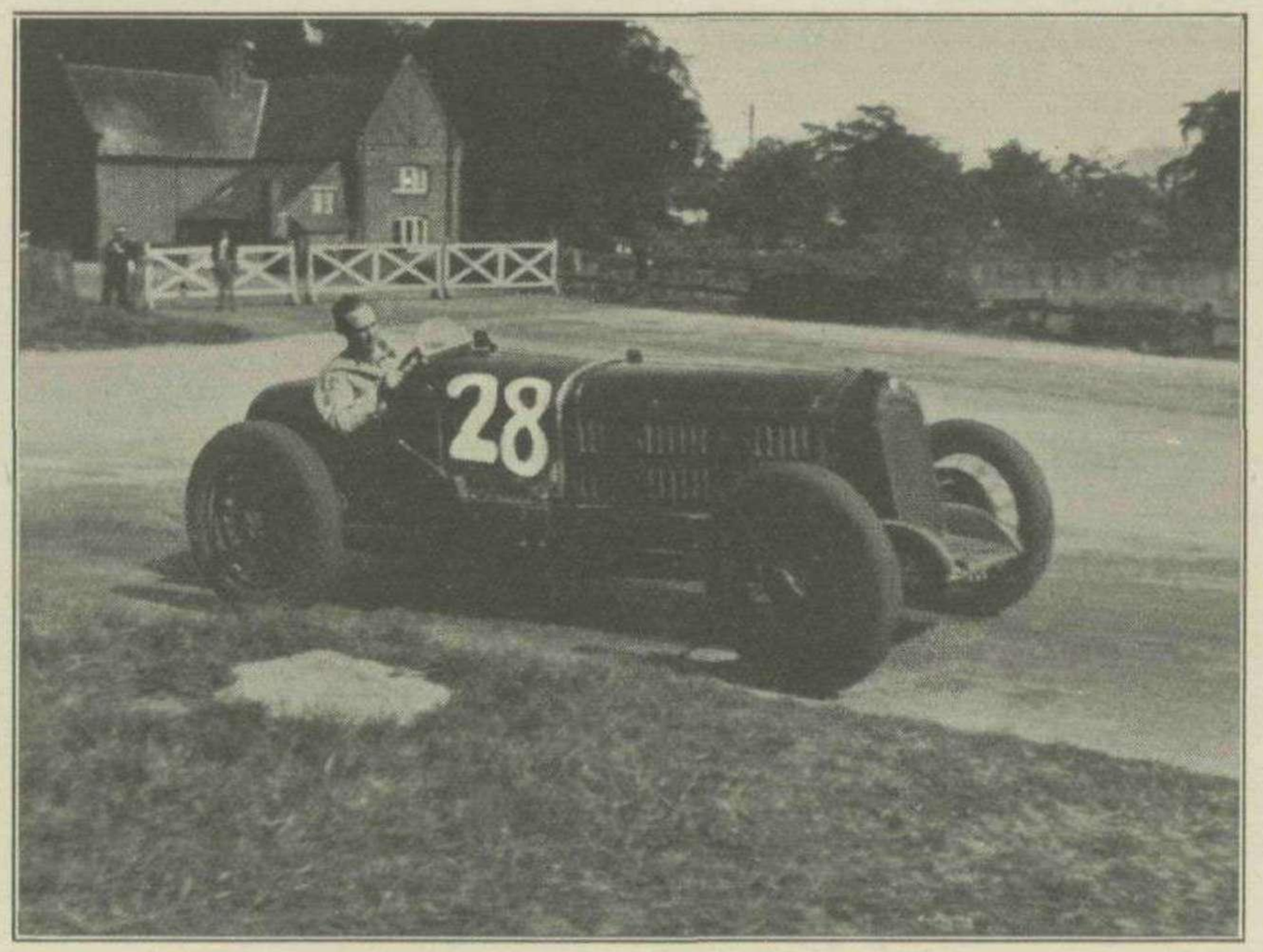
The club for Lea-Francis owners is developing well, there being about 40 members to date. A "Bulletin" is issued which contains members' names and addresses, notes on their cars, lists of spare parts available amongst them, and technical notes, the last-named being devoted to the different types of Lea-Francis gearboxes in the second issue of the "Bulletin." This is an altogether admirable idea, which the Bugatti Owners' Club did so much to further in peace time with its excellent issues of "Bugantics." Amongst notable cars owned by members is W. H. Ellis's supercharged "Hyper" 4-seater, C. H. Wagstaff's 1928 ex-track car, also blown, and the same owner's four-cylinder prototype of the "Ace-of-Spades" Six. A further issue of the "Bulletin" is due now. The subscription rate is 10/6 per annum for ordinary members and 5/- for Service members.

Hon. Sec.: Leonard Potter, Oatwood House, Wilmslow Road, Cheadle, Cheshire (Gatley 2934).

★

WE HEAR . . . .

Leonard Potter, Secretary of the Lea-Francis Owners' Club, owns two T.T. Lea-Francis, a Lancia "Atena," a 4½-litre Bentley, a 1908 sleeve-valve 39-h.p. Minerva tourer (late the property of Lord Egerton), a 500-c.c. Sunbeam, a 500-c.c. Rudge "Ulster," a push-bicycle and a pair of roller skates. As he says, he only lacks a "Spitfire"—and a drop of petrol. J. C. Wrigley has three Lea-Francis cars, a 3-litre Bentley, a bull-nose Morris-Cowley and a Swift, and can claim to be an exponent of the veteran cult, having a 1913 13-h.p. Benz in storage. It is sad to learn that G. L. Baker, who competed very frequently at Brooklands in outer-circuit events with a sports Minerva, and also with a Graham Paige, passed away recently. MacLagen, who recently bought Kenneth Neve's G.N. Special with two dirt-track Douglas engines, has also acquired Breen's touring G.N. and Statham's Austin Seven, the last-named having a works "Ulster" engine with 10 to 1 compression ratio, Alvis remote control gear change and a lowered chassis. The Austin went North on a 5-ton Thornycroft and the G.N. was taken up in similar state. It seems that a Cottin Desgouttes, probably the sports job which L. G. Hornsted renovated some years ago, after it had run at Brooklands, is receiving new pistons and linered cylinders at a small garage at Harrogate. A 1½-litre 4-seater Bugatti has been seen in this town. The Bentley described in this column last month as being probably a 4-litre, turns out to be a 6½ or 8-litre fabric close-coupled coupé, rusty but all complete, even to tyres, and equipped with an interior heater. It could presumably be bought for a small sum; you will find it, unless too late, at a garage at Windlesham, on the Sunningdale–Camberley road. A Swift Ten chassis at breaker's price is reported in Leeds, and we believe that the remains of a rear-engined Carden-J.A.P. cycle-car lie at Hull; all the parts of an experimental chassis of the latter make, with forward-placed M.A.G. engine and three-speed gearbox, are for sale in Taplow. Birkett is very industriously contriving an Austin Seven-engined Reliant passenger three-wheeler, with a view to having a really economical conveyance which he and his wife can use for their veterinary



In this issue Anthony Heal contributes to the "Evolution of the Racing Car" series. He is here seen driving his **1919** *5-litre Ballot at Donington*

CLUB NEWS—continued

surgeon practice. An enthusiast in the Midlands has acquired a "Red Label" 3-litre Bentley which has twin rear wheels and is reputed to have been in course of preparation for Shelsley Walsh; it is to be methodically rebuilt. The big-port "12/50" Alvis at Epsom has been acquired by a London enthusiast who is using a twin-carburetter "12/60" Alvis 2-seater for long-distance official journeys. Interesting motor-cycles seen on the road recently have included an Austin Seven-engined, twin rear wheel Brough-Superior combination and an early three-speed Scott combination belonging to the British Two-Stroke Club. Mrs. Cowell, wife of Bob Cowell, the Alta exponent and now P/O., R.A.F., has christened her daughter Anne Elizabeth. Sports cars seen in use since the end of the basic era include four in two days at a certain aerodrome—a Meadows-Frazer-Nash, a 328 B.M.W., Type 37 Bugatti and a short-chassis 2-seater Aston-Martin—and, on the road, a 3-litre Bentley. Geoffrey Robson, who recently wrote-up the Lancia "Lambda" so effectively, while keeping his old coupé "Lambda," has recently purchased a very beautifully preserved 8th Series tourer, which has only done 38,000 miles since new. He was able to run it for a month before laying it up for the duration, and one run of 27 miles over very twisty roads, including nearly 5 miles of town, took 36 minutes—incidentally, with no back shockers and without exceeding about 63 m.p.h. He lives in a caravan and various "12/50" Alvis, an E.S.2 Norton and a sports Austin Seven are frequent visitors. B. H. Davies, who wrote on light car matters in *The Autocar* in the early nineteen-twenties as "Runabout," has had many of his early records destroyed in an air raid. We regret to record the death of P/O. Peter Sadd, owner of a Type 30 Bugatti, on active service. An Erskine-engined Marendaz-Special is believed to be available in London for £30. A. S. Heal has acquired a 3-litre Sunbeam fabric saloon, with the intention of rebuilding it after the war as a touring car that will be in keeping with his racing stable. The Bainton-Special has turned up in Chalfont. The 3.3-litre G.P. Bugatti which graced a recent 750 Club meeting belongs to J. C. Lawrence and not, as stated, to Harmer. Gilbert, who is now with M.A.P., has sold his well-known H.R.G. and is running a Standard Eight saloon, and Dick Caesar has been getting about his business in an old Standard van, but is renovating a "12/60" Alvis to use on these journeys.

Two unblown 4½-litre Le Mans Bentleys have come to light. One is Marcus Chambers's car, now in the care of Joan Passini, and the other is in the possession of Ian Metcalfe and carries imposing engravings of past successes on the radiator. Incidentally, at the former stable are also a "Dilambda" Lancia, Eighth Series Lancia "Lambda," several 3-litre Bentleys, a lowered "30/98" O.E. Vauxhall, a Type 30 Bugatti 2-seater, a Bugatti chassis and the remains of an early touring G.N. Scott-Moncrieff now motors economically in a 1929 Humber Nine and Garry Adams uses a Morgan three-wheeler. In Birmingham, Chris Southall has a 1911 A.C. Sociable in commission as everyday transport and thinks nothing of 30-mile jaunts in it. David Gandhi has a 1931 Meadows-Frazer-Nash for sale at around £80, or he would exchange it for a "Brooklands" Riley Nine, and Miss Worthington is contemplating selling her twin o.h.c. Anzani Frazer-Nash. George Browne has acquired the single-seater Buick from Metcalfe, swopping a blown Mercédès-Benz coupé for it. Further light is thrown on the car at Southampton that was thought to be an Aster; it turns out to be an early Century, priced at £50. The Tamplin at the same address is for sale at £10. An immaculate 8-h.p. Talbot-Darracq of about 1923 vintage has been seen in a Weybridge showroom, but is not for sale. At Byfleet, Rowland has the ex-Soames racing Morgan and the ex-Hunter Alta. Robertson-Rodger's blower 4½-litre Bentley is coming along nicely under Shortt's expert ministrations, dry-sump lubrication and special cooling and exhaust arrangements being planned in addition to the modifications we mentioned some



time ago. Peter is now flying for A.T.A. and has had some rapid long-distance motoring in his B.M.W. in consequence. Michael May has recently added a 1,000-c.c. H.R.G. "Rapide" to his stable and has bettered 100 m.p.h. on it. An early Frazer-Nash and a V-twin G.N. engine have been seen in a Weybridge garage and Orlebar has a 1909 55-h.p. Mercédès for disposal at around the £20 figure. Rodney Clarke has left A.T.A. and is running a "pub." at Horndean.

★

GENERAL NOTES

By dint of a run or two undertaken before the end of the "basic" era and by going about on three wheels since, there is still a little that can be talked about in these notes. For example, the Lancia did a number of brief local journeys before the end of July, clearing up things which would afterwards involve breaking the law and then, on the very last evening when such things were possible, following a fast duty journey in hot sunshine in the Lancia, we remembered that an Austin Seven saloon must needs be got out of storage and returned to its rightful owner in Kent. With a minimum of delay an "eleven-hundred" H.R.G. was got out, the Austin roped to it, a few items of equipment that might be needed on such an undertaking thrown in, and the Lancia's petrol turned off—and we were away. For a last "free" expedition it was reasonably satisfactory. Out through the village, stopping to change a duff front tyre at a local garage where bits of aeroplanes adorn the rafters and where once a Frazer-Nash lay derelict, we waited while a goods train of seemingly interminable length was shunted back-and-fore over a level crossing, and then took the winding road to Guildford. Little of incident occurred, save the unexpected entanglement of the tow rope with the steering arrangements at a sharp left-hand bend and the knowledge that the front brakes of the Austin were still sticking on after each application of the handle, judging by the number of times the H.R.G. needed third gear, with its accompanying business-like exhaust note. The sprawling garage by the pond, where lives a 1909 Singer shooting brake, came and went, and soon the two cars were parked in the car-park at Guildford and we were walking up the steep High Street in search of sustenance. Thereafter we proceeded, quite without incident, through some truly beautiful scenery, turning right off the main road and climbing up to Newland's Corner and thence through Dorking, Reigate—where a cinema car park was full of cars, for the last time for many a moon—and Redhill, to Godstone. By this time failing light, a falling petrol gauge and a very stiff neck, coupled with a tendency to sleepily observe the rear parts of the Herg, the back of its driver's head and the passenger's bright scarf and then to grab wildly for the handbrake, bade us stop the party before disaster overtook us. For old times sake we sought "The White House" and partook of a snack and there was some satisfaction in contemplating the long run back into Hampshire, when, a couple of years earlier, we should have only had to make for London, this being a run we frequently undertook at that time, black-out or no black-out, for relaxation from A.R.P. ardours. This time, with only about half-an-hour's daylight remaining, we did not try the trials hill up beside the house or dally at the summit to admire the view out over Surrey and Sussex. Instead, the Austin was put to bed at the "Clayton Arms," where the veterans used to congregate before assaying Tilburston, and the homeward journey commenced. Soon the sidelights were needed, banks of cloud merging with the hills until it was difficult to define one from the other, and then darkness came down and we motored behind an effective masked headlamp, thoughts idly reviewing a hundred of such runs, when more exciting objectives were sought and the constant menace of a falling petrol gauge was quite unknown.

Came August Bank Holiday and as strong a desire to motor as ever. On the Sunday a motor-cycle dirt-track meeting had to be seen, involving a journey to Hoddesdon and, although we could have gone on four wheels without wrongfully using the petrol allocated to us, it was both more amusing and more economical to accept a seat in a Morgan three-wheeler with Anzani-made, o.h.v. Summit engine. When the rain eased up we made a start and had the roads almost entirely to ourselves. In London—and we elected to

CLUB NEWS—continued

drive right through the West End—there was some evidence of the holiday spirit, but the roads were still so empty that we had no compunction about parking wherever we wished, a proceeding that at one time would have disorganised the 'bus stops and inevitably incurred the wrath of London's wonderful policemen. After a snack luncheon at one of the help - yourself - and - pay - at - the - end of-the-line establishments we pushed on. Weak carburation made it inadvisable to employ much throttle, and we seldom exceeded a modest 30 m.p.h. However, we had plenty of time in hand and on damp tramlines the passenger was quite content not to exceed this speed, albeit the " Moggy " slid but once and that in braking for some traffic lamps. After an entertaining but not especially exciting taste of cinder shifting on wood-alcohol fuel we were joined by an R.A.F.V.R. friend in a Ford Eight-engined Morgan, and the two three-wheelers ran line ahead into the town to seek tea. The opportunity of an " old/new " photograph was too good to miss, after which we went our respective ways, coming into London along the road down which—seemingly centuries ago now—we had once had an initial and exhilarating run in a blown T.T. Austin Seven, immediately after taking delivery. The Bank Holiday crowds displayed an especial interest in the Morgan, especially when the tail was lifted casually into the kerb after parking, a front wheel padlocked as proof against any particularly optimistic paratroop and—finding that food was unattainable, the " Corner Houses," in particular, being crammed with members of the Chosen Race—the engine wound up from the side by a handle inserted under the tail. Right through the West End again and along the Bayswater Road, the food problem solved itself nicely when we remembered the " Linden " restaurant at Notting Hill Gate, run by the Nockolds brothers. It is the same as ever, although apparently shutting now at 8 o'clock, at all events on a Sunday, and from certain posters on the walls we suspect that the Nockolds are now politically-minded, in a pleasingly anti-Nazi manner. Next we decided to visit an enthusiast and see his cars, only to discover that a Londoner is the worst possible person to approach for directions when you are lost and that London mews have a curious habit of being re-named and their former name given to a similar place very differently located. So after some unprofitable milling round we recalled our absence of lighting and came home, the Morgan still running as well as ever, as ardent cyclecarists would wish. On the morrow, there still being a little petrol left, we decided to go, after lunch, cross-country, on by-roads and down lanes that is, to a breaker's yard in search of useful spares. Setting off over empty roads with a light rain falling in spite of the presence of a watery sun, we might well have been back in a past age. The vee-twin rapped out its war song and the whisper of chains came from behind the just-adequate seat, while on the dash oil drips fell steadily behind the glass sight tube of a drip-feed set at 45°. We almost expected to encounter a two-stroke Carden or a rear-engined A.V. monocar, or to have to speed up to keep pace with a belt-driven Bleriot Whippet. Even the local motor 'bus had broken down to lend strength to the illusion. Actually, the picture was not really complete, for the driver observed that the roads would have been much worse in the early twenties—the Morgan is actually a 1928 model—and the girl cyclists encountered round every bend would certainly have surprised us 20 years ago. But it was an enthralling thought while it lasted. As it was, the whole crew of a 4-seater Morgan three-wheeler gleefully thumbed us as they passed us, the first car encountered for miles, and we fell to discussing our own tricycle, debating how practical it would be on crowded roads, the owner inclining to the view that the brakes might be inadequate, albeit the car was presumably used before the war; the real Morgan boys seem to motor fast enough under any conditions, and there is unquestionable fascination about the whole thing, especially at a tax rate of 27/6 a quarter. We found another dog and sprocket for the Morgan at the breakers, where the proprietor arrived in an exceedingly smart trap, but the price was steep and we went on rather sadly to Henley, to find the old Squire works devoid of motoring interest. Tea in that town, following a glimpse of the river, reminded us that it was Bank Holiday, as did torrential rain. When it eased up we uncovered the engine and seats of the Morgan and scuttled for home. A brief spell at the wheel was most interesting. Stability is quite reassuring and would probably be even better if there were a shock absorber to prevent the rear wheel from hopping sideways on rough going. The steering answers the helm very well and, kept down to 30–35 m.p.h., the engine felt and sounded rather like that of an elderly Jowett driven recently, although undoubtedly there is more life. Once one has got used to the long travel of the right-hand gear lever and lifting it over a notch in the quadrant before moving it, the alteration of ratio from high speed to low or *vice versa* is quite fascinating and the dogs engage surprisingly sweetly. The foot brake did little, and it was necessary to haul on the long central brake lever to get any quick retardation, so that, at the innumerable minor cross-roads on our route, I qualified for an L-plaque and was, even so, grateful for the foot throttle conversion. Nevertheless, Morganing is growing on me and I must confess I should appreciate a run in an 80-m.p.h. version of the device handled by an experienced exponent. Even now our motoring was not over for, calling on a friend to see a rather more ambitious three-wheeler in the making, we were whisked into a sports 4-seater Austin Seven, holding on to all manner of veterinary equipment, and motored rapidly over main roads and, after feverish demolition of some fencing, nearly as rapidly over a decidedly " trials " course at the edge of a wheat field, to attend on an injured dog. What time the British Public showed undisguised disgust at the sight of a sports car, screen folded flat, Motoring in a basicless age. Life, then, is still tolerable.

READERS' SALES AND WANTS

To meet the repeated demands for something on the lines of the old Spare Parts Announcements, we have instituted a system of inexpensive advertisements. Each announcement must be limited to **twelve** words, plus the advertiser's sufficient postal address, and the charge will be 1s. 6d. per announcement, payable at time of posting. The system will be governed by the following rules :—

(1) Each announcement to cost 1s. 6d. and be limited to twelve words and the advertiser's address. Box Numbers cannot be used.

(2) The publishers accept no responsibility for loss of advertisements, non-publication, late publication, or incorrect wording, but will endeavour to insert announcements in the next issue, if posted within eight days of the publication of the previous issue.

(3) No advertiser may submit more than **two** announcements per issue and each must apply to a separate article. Only spares for sale, spares or cars wanted, or **really cheap** cars for sale, should be announced. Prices should normally be quoted.

(4) The proprietors of MOTOR SPORT offer this scheme for the mutual benefit of enthusiasts and can take no responsibility of any sort whatsoever. All transactions must be made to the published addresses and no correspondence can be entered into in respect of announcements, transactions or any other matters arising from the scheme.

(5) Announcements should be sent within eight days of the publication of the current issue of MOTOR SPORT, accompanied by stamps or crossed postal orders to the required amount. Cheques or coin cannot be accepted.

FOR SALE

ROOTES Supercharger (Riley Nine, crankshaft driven) with carburetter, blow-out valve, mounting brackets. £20. L. F. E. Baker, 4, Barrs Road, Harlesden, N.W.10.

WANTED

DUMMY Radiator Shutters or stoneguard for "P.B." M.G. Midget. H. L. Fisher, 10, Revesby Road, Woodthorpe, Notts.

Spares Section,

MOTOR SPORT,

21, CITY ROAD,

LONDON, E.C.1

Letters from Readers

Sir,

Intense joy has been caused recently by the delivery of the April and May issues of MOTOR SPORT, and my delight at establishing touch with things motoring again compels me to rush into print.

There is very little scope for the vintage enthusiast over here, indeed most motorists seem to be completely soulless. There are, of course, innumerable varieties of early Model "T" Fords, *circa* 1920–24, but it is extremely doubtful if the owners realise the "vintage" value of same.

My enthusiasm must be expended in a few lines to your excellent magazine. Have certainly been very homesick for all the motoring papers since I began my enforced exile over here. Have not discovered any parallel publications in this country; indeed, interest in cars is at such low ebb that the editors would have a devil of a job finding material for same.

Still, I manage to exist on the memories of great doings which happened before I left home.

Our green 3-litre Bentley has been overhauled since last summer. Almost under our very noses we discovered a 3-litre Bentley 2-seater, body and chassis of which would serve admirably for our 4½-litre. All other mechanical parts were taken out, the gearbox, engine and propeller shaft installed in our own 3-litre; thus we now have a good mechanically quiet engine with 3 mm. off the block, a dead quiet gearbox and a back-lash-free propeller shaft. (The bronze blocks were almost new.)

There followed, of course, lots of hard labour, and the usual profanity, but a major achievement was the lowering of the cylinder block, entirely single handed, and using one pulley, a rope, a girder and the garage doors, in one afternoon. Pardon me if I commit the banality of asking if this is a record? Or do Bentley experts always replace blocks single-handed? We also had the carburetters done up at Burgess's place at Acton, and now she is doing a regular 20 m.p.g. on "Pool."

The general performance was much improved, including acceleration, because the new gearbox had the B ratios. One misses the high third of the "A," but the getaway from a standstill repays any loss.

Needless to say, our speedometer is now 6 per cent. slow owing to the speedometer drive being geared for the 4.16 to 1 axle and, to save us working out mathematical problems in transit, we installed a rev.-counter, pinched from the 4½-litre. Thus we know that 1,050 r.p.m. or so keeps us within the law. . . . One aspect of the rev.-counter reminds me how seldom it is necessary to go up to the peak. Even now I cannot remember ever exceeding 2,900 r.p.m. in the gears.

Thus our bare frame was scraped and cleaned and painted, and it did not take long to fit up the springs with the new bushes and shackle pins which had already been made, with the consumption of much midnight oil. This job also included the steering gear and aluminium bulkhead. We could not at first decide whether to use a 3-litre bulkhead and a new bonnet to fit the 4½-litre radiator, or use a 4½-litre bulkhead and have the scuttle of the body rebeaten. We eventually decided on the latter, because we imagined that the narrow 3-litre bulkhead would not match very well with the square 4½-litre radiator.

After this we were brought to a stop by the condition of the engine, which had been full of water and needed new bearings (as mentioned in a previous letter), and we were restricted to fitting the axles and renewing the wiring. We managed, after gentle persuasion, to find a kindly soul who would grind the crankshaft and re-metal the bearings, and that's how it stood when I left home.

Letters from home, however, have informed me that my brother, after diligent search, had discovered a fitter who would scrape up the bearings for us.

Electric drills must be worth their weight in gold. All attempts to procure one have so far been fruitless. Maybe the owners are scared of the toughness of the steel in a Bentley chassis.

An episode which caused a lot of harmless amusement occurred last November, when we heard of a 1926–7 "Blue Label," *sans* tyres, out at Harlington, on the Great West Road.

Accordingly we set out one sunny morning, in the 3-litre, loaded with spare wheels and a nice strong rope.

En route we encountered a very nice green 3-litre in dire trouble; it was rather a hybrid, with a smart speed model body, "Blue Label" single carburetter engine and a stone-guarded "Red Label" radiator. It was piloted by an army major and a naval officer. Cause of bother was total absence of sparks, and inspection revealed one contact breaker rusted up and the other with a broken spring. We broke the news gently and said that there was nothing to be done, thereby preventing the exhaustion of an excellent battery and the waste of lots of petrol through the Smith carburetter. We left them to it, and sincerely hope that they got the necessary assistance.

It is to my regret that it never occurred to me to pinch one of the mags. from our own car; if I had thought of it I should have certainly done so. If those good folk see this article I should like them to note said regrets.

Our arrival at the breaker's yard was unheralded, because all except one had gone to lunch. We were able to inspect the chassis, which had a cab and doors, but no petrol tank, water jacket pipe, carburetter or tyres. However, its main *raison d'etre* was 1926-7 engine, as mentioned, with big sump and alloy rockers. Unable to resist the possibilities of our 3-litre with a late bottom half, we bought it and got to work on the wheels. Three wheels were changed quite rapidly, but the nearside front refused to budge. No attempts with crowbars would move it and we were forced to fit up its decrepit cover with one of our tubes.

We attached rope and set off in fine style, with my brother in the rear, sitting on a pile of tyres. From the very first he seemed to be having slight difficulties, and a stop along the road confirmed that the brakes were non-existent. When he let the steering go to pull the hand brake on with two hands the car showed a regrettable tendency to mount the near-side kerb.

However, we got home with no mishap, except for one or two anxious moments up Hanger Hill, where we followed an enormous motor launch on the back of a lorry; there was a queue of traffic behind, but since visibility over the hill was non-existent we took no notice of the tootings of the ignorant ones. There was also one occasion when I could have sworn the "Blue" was trying to pass me; maybe I was mistaken.

We dumped her at the back of the house and have been raiding her for spares ever since. We had to blush one day when it was discovered that the wheel we had left on was *smaller* than the ones we fitted, hence awkward steering!

Our latest exploits have been concerned with a nephew; he had seen a 1926 Salmson for sale. I knew nothing of this marque, and on inspection it proved to possess a double-cam engine and four-speed gearbox. Performance seemed quite reasonable and on our first corner a scuffling noise told us of the presence of a solid rear axle. The body had the long-tailed G.P. style, all complete with number space. The nephew was completely captivated and looked upon it with loving eyes. Needless to say we upheld his enthusiasm, to the utter despair of sundry relatives. . . .

Several odd spots of bother were removed, including a set of mixed spark plugs which had gaps as wide as the Grand Canyon and carbon deposits of years and years. A set of "K1s" snaffled from the 3-litre worked wonders, and we had her ticking like a clock.

Petrol consumption seemed to be around 30–35 m.p.g. I made a clock reading of 63 m.p.h. one day on our local autobahnen, but since it was an S.S. speedometer, the internal gearing may have been wrong, giving a false reading.

I fear I have taken more space than I should have done, so will now close with my usual gratitude (more profound than ever) at being able to read a really interesting magazine in these difficult days. I am, Yours etc.,

R. BAWDEN.

R.A.F., Canada.

Continued on page 184

★ *Book Review*

Bits and Pieces, by PRINCE BIRABONGSE OF THAILAND. (Foulis, 7/6.)

The first book ever written by "Bira" is something of an event. It runs to 192 pages and 20 chapters, each chapter having a single word caption, for the book is just what the title suggests, *i.e.*, random recollections by "Bira" of his racing career. Indeed, it goes rather beyond that, describing a visit to the speedway and his State visit to Thailand, where his E.R.A. "Romulus" was displayed at a garden party for all to see. There is, of course, a Foreword by H.R.H. Prince Chula Chakabongse of Thailand. "Bira" devotes chapters to Seaman, Fairfield and Mays. Of Seaman: "Before I realised what had happened, Dick drew alongside me at the end of Starkey Straight. We both went into the corner at about the same speed. Actually being on the inside of the road and in front I had the right to swing out in order to take the corner, but if I had done so I would have collided with Dick's car. I took a quick glance at his face and saw that he was determined to have that corner, so I pulled up to let him cut in. . . . If some stubborn person had been driving my car there might have been a crash, because Dick's way of getting round that corner was somewhat rough . . . I thought Dick was rather a tough guy in this respect." You learn much more of "Bira" from this book than from watching him race, and some of it is quite dramatic. Of the reason for his accident at Cork in 1937 he writes: "I usually had a nightcap, a glass of hot milk, which was to send me to sleep. Everything went off as usual and, having drunk up a whole glass, I turned out the light to go to sleep. . . . In a short time I began to have violent bad dreams. Then I was conscious I was comfortable in bed instead of fighting lions and tigers. I realised that I had not been asleep very long, as the people in the bar downstairs were still enjoying themselves. At that same moment I had a violent pain. It made me double up with agony and as Chula was still talking at the bar I had no one to call for help. I managed to ring for a waiter and asked him to fetch Chula up. . . . He wanted to call a doctor, but I said that I would stick it out awhile and if it got worse then I would see a doctor. . . . After a careful checking up on the food eaten by me that day we came to the conclusion that nothing could have put my stomach out except the last glass of milk. . . . Anyway, whatever it was it was being a nuisance, I do not remember having slept until six o'clock in the morning. . . ." Chula, too, seems to have had his bad motor-racing experiences, for, describing how he tried the course at Le Mans during the night practising spell, when visiting the race in his 3½-litre Rolls Bentley in 1935, "Bira" writes: "Chula was slightly put off by the unusual exhaust note of the Bentley, but he soon got used to the noise" (the cut-out had been opened). "I hardly had done three short curves when Chula became very silent and I knew at once that he was not feeling so comfortable. In fact, he admitted to me afterwards that he had never been so frightened in all his life. . . . we could see the lights of the pits quite a distance off and we approached them slowly. Chula asked me to stop the car, then he promptly jumped out, saying he could not stand the pace. He would rather watch from the firm ground." One gets, too, fresh and unexpected pen-pictures of famous drivers: "I just caught a glimpse of his (Nuvolari's) hair, which was well plastered down with Anzora, or its equivalent, which one could buy in Italy. He was not old to look at, yet he had a sprinkle of grey hair on his temples. His chin was very prominent, and when one saw him in a racing car he looked like a determined dragon." "It was funny to think that the first time I saw him (Charlie Martin) was at Eton, where he was three years my senior. I used to see him coming past the school library nearly every day and somehow he always managed to have more books under his arm than anybody else. Of course, I did not dare to speak to him then. . . ." "Obviously he (Rudolf Caracciola) was a very shy person and with a slight limp, owing to a bad crash at Monaco one year, he looked almost pathetic, but I am sure this was not the case." "Bira" also gives his personal impression of many famous officials, and of Percy Bradley we learn that going to see him in his office at the Track was like an interview with the headmaster, until Bradley's charming manner put the Prince quite at ease. Of Fred Craner: "When I first met him he seemed rather abrupt and fierce, but after getting to know him I found that this was just his mannerism and it was due to a slight nervousness, which made him curt at times. . . . During a meeting one could usually pick out the Clerk of the Course at Donington by his cream-coloured loose jacket and he usually wore a pair of dark grey flannels. He spoke little, but when he spoke his voice was so piercing and strong that he could be heard from the other side of the track quite plainly." Apart from these sketches of the more passive side of the game, there is plenty of action. Thus: "I remember completely soaking my blue overalls with sweat when I had a slight tendency to skid in a B.M.W." "The morning of the race was not bright; in fact, it showed signs of being 'sticky-wicky.' . . . I had made up my mind that I would be content just to follow him (Mays) for a bit longer, but now there was a chance in a million for me to take the lead, so I patted 'Romulus' ' sides and told him that now he was actually in the lead!" "Prang-prang-prang - prang - five - four - three - two - one—the flag began to flicker and I had caught my 'peak revs.' beautifully; I was off like a flash!" "Bira" certainly gets the spirit of the thing and his next effort might well be a motor-racing thriller for school boys. "Bits and Pieces" is well illustrated with a coloured frontispiece and 33 excellent photographs, many of which were taken by "Bira" himself or by Chula and not previously published; ardent collectors of racing pictures may well buy this book on that count alone.

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THE second Enthusiasts' Luncheon will be held at the Rembrandt Rooms on Sunday, September 27th, commencing at 12 noon.

The event is being organised by A. F. Rivers Fletcher and S. H. Capon.

Apply for tickets, price 10/- each, to A. F. Rivers Fletcher, 25, Warwick Road, New Barnet, Herts, or to S. H. Capon, 156, Upper Tulse Hill, S.W.2.

FOR SALE

LANCIA Augusta Pillarless Saloon, late property of the Hon. Brian Lewis, recently overhauled throughout by makers. £130 or offer. Stuart Wilton, 40, Brent Street, London, N.W.4. Hendon 8742.

LATE 1930 "Speed Six" Bentley, open Vanden Plas, sealed engine, good condition, overhauled Bentley's 1937. £100. "Villette," Byfleet Road, nr. West Weybridge Station, Surrey.

12/50 ALVIS Tourer, 1926, good tyres. requires new dynamo and battery. Offers. 32, Linaker Street, Southport.

SINGLE-seater Buick Special, built by Arthur Baron, in fine fettle, all good tyres, pressure fed, racing instruments, has won various events on hill climbs, etc., including two firsts and three second places. £65.

DIS. Delage open 4-seater Continental, torpedo body, gunmetal and red, many instruments, including height and air-speed, two spares, 14 h.p. £50.

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BUGATTI 57 SC 2-seater coupé, 1938, show model. Recently converted and overhauled, costing £447, including new block. Coachwork overhauled, costing £175, including chroming wheels, new carpets, etc. Car laid up in Sussex. Full particulars, price and photos to genuine enquirers. D. Griffiths Hughes, 26, Glenthorne Avenue, Yeovil, Somerset.

BROOKLANDS Riley, first registered 1929, twin S.U. Carbs, cycle type mudguards and full road equipment. Until recently used daily. Extremely well maintained. £55. L. M., Ecclesbourne, Chapel Street, Duffield, Derbyshire.

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WANTED by genuine purchaser single-seater racing or sprint car. Must be very fast and reasonably reliable. Write giving full history of car and details of races entered and times on any speed trial courses. Over 3-litre class preferable, but not essential. Good price paid for suitable car. Box No. 108, c/o MOTOR SPORT.

WANTED for medium chassis, a single-seater racing body. Would suit if incomplete. Box No. 109, c/o MOTOR SPORT.

8/12-H.P. Sports Car, 1930–35, such as M.G., Aston-Martin, Alvis, Riley; must be sound. Full particulars, Beryl Jackson, 87, Northfield Way, Retford.

McKENZIE'S GARAGES LTD.
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We wish to thank our large clientele of Bentley and Rolls Royce owners who have supported us so wonderfully since the War, but regret to inform them that owing to Government requirements no further repairs to private cars can be undertaken by us for the duration of the War.

RECENT MOTOR SPORT ROAD-TESTS

IN the issue of May, 1937, we published an Index of all the road tests conducted by this paper since it was founded, as *The Brooklands Gazette*, in 1924. From this Index we have been publishing extracts, but these did not embrace the tests published during the last five years. In order to make good this omission, we give below a new Index, of tests published from May, 1937, to the present issue. Read in conjunction with the Index in the May, 1937, issue it provides a reference to all the MOTOR SPORT tests—251 in all. Readers' accounts of their cars and technical descriptions of new models, moreover, are not included in this Index. Many of the issues concerned can still be supplied, at the prices given below. Please quote date of issue when ordering.

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. 4-seater	June 1934
A.C. "Ace" 16/80 h.p. 2-seater	July 1937
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
Alfa-Romeo 2900B, Type 8C supercharged 2-seater (1937)	Jan. 1942
Alvis 4-cyl., 12/60 h.p. 2-seater	July 1931
Alvis 6-cyl., "Silver Eagle" 4-seater coupé (1929)	Aug. 1931
Alvis 6-cyl., "Silver Eagle" 4-seater	June 1930
Alvis 3½-litre saloon	Feb. 1936
Alvis Speed Twenty 4-seater	June 1932
Alvis 12/70 h.p. saloon	July 1938
Ansaldo 2-litre, 4-cyl., o.h.c. 4-seater	Sept. 1924
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 11.9 h.p. 2-seater	Jan. 1930
Aston-Martin 1½-litre Ulster racing 2-seater	Aug. 1937
Aston-Martin 2-litre Speed Model 2-seater	May 1938
Aston-Martin 1½-litre Mark II, long-chassis 4-seater (1934)	Aug. 1940
Aston-Martin 2-litre streamline saloon	June 1942
Atalanta V12 saloon	March 1939
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 4½-litre, 6-cyl., Park Ward saloon	June 1936
Bentley 6½-litre, 6-cyl., long-chassis saloon (1928)	Dec. 1936
Bentley 8-litre "Special" 2-seater (1931)	April 1938 & Dec. 1940
Bentley 4½-litre drophead coupé	Aug. 1938
Bentley 4½-litre Mark V saloon	Feb. 1941
Bentley 3-litre "Blue Label" "Special" 2-seater (1928–9)	Feb. 1939
Bentley 4½-litre "Le Mans" 4-seater (1928)	Jan. 1942
Bentley 4½-litre Estate car (1928–9)	Sept. 1941
Bugatti 3.3-litre 8-cyl., Type 57 saloon	May 1934
Bugatti 2.3-litre 8-cyl., Type 43, supercharged 4-seater	May 1930
Bugatti 3-litre, 8-cyl., Type 44 saloon	July 1928
Bugatti 3.3-litre Type 57 saloon	May 1939 & June 1939
Bugatti 3.3-litre Type 57C supercharged saloon	June 1939
Bugatti 5-litre Type 46 saloon (1929)	April 1942
CITROEN Twelve f.w.d. saloon	July 1938
Crossley 20/70 h.p., 4-cyl., s.v. 4-seater	Nov. 1925
Crossley Ten, 1,122 c.c. 4-seater	April 1932
CrouchAnzani 12/30 h.p. 2-seater	Aug. 1924
DAIMLER 2½-litre 18 h.p. saloon	June 1940 & Nov. 1941
Darracq 12/32 h.p., Weymann saloon	Sept. 1924
Delage 8-cyl., sports saloon	April 1930
Delage D8/180 drophead coupé	May 1938
Delahaye 3.5-litre "Coupé des Alps" drophead coupé	Aug. 1936
D.K.W. "Special" saloon	Feb. 1938
Dodge 25.3 h.p. "Custom Six" saloon	May 1938
EXCELSIOR 5½-litre, 6-cyl., super-sports test chassis	Sept. 1927
FIAT "Balilla" saloon	May 1934
Fiat "Balilla" 10 h.p. 2-seater	Jan. 1935
Fiat 6 h.p., Type 500 coupé	March 1937
Fiat "Balilla" 1,100-c.c. saloon	March 1938
Ford Eight "Anglia" saloon	Aug. 1940
Ford V8 "30" Estate car	Oct. 1938
GEORGES-IRAT 2-litre f.w.d. 2-seater	May 1940
HILLMAN Fourteen saloon (1939)	June 1941
Hotchkiss 3½-litre "Grand Sports" saloon	July 1939
H.R.G. 1½-litre, Meadows engined 2-seater	June 1937
H.R.G. 1½-litre Le Mans racing 2-seater	Dec. 1939
INVICTA 4½-litre low chassis 4-seater	March 1931
Invicta 4½-litre saloon	Dec. 1929
Invicta 4½-litre Estate car	June 1941
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 4-seater	Jan. 1934
Lagonda 2-litre, 4-cyl., twin o.h.c. 4-seater (1928)	March 1931
Lagonda 4½-litre, 6-cyl. saloon	Sept. 1939
Lagonda V12 saloon	Oct. 1940 & Sept. 1941
Lanchester Eighteen saloon	Feb. 1938
Lancia "Aprilia," Type 238 saloon	June 1938
Lea-Francis 1½-litre supercharged T.T. 2-seater (1929)	June 1934
Lea-Francis Fourteen saloon	Dec. 1938
Leyland Eight 2-seater (1927)	Feb. 1938
MERCEDES-BENZ Type 540K, 5.4-litre, 8-cyl., supercharged 2-seater	April 1937
Mercédès-Benz 12/40 h.p., supercharged 2-seater	June 1925
Mercédès-Benz 36/220 h.p., supercharged 2-4-seater	April 1928
Mercédès-Benz 33/180 h.p., supercharged 4-seater	Aug. 1927
Mercédès-Benz 2.3-litre saloon	April 1938
Mercédès-Benz 1.7-litre, Type 170V 2-seater	Feb. 1939
M.G. Midget "J3" supercharged 2-seater	May 1933
M.G. Midget Double-Twelve racing 2-seater	June 1930
M.G. Midget "J1," 850 c.c. 2-seater	Sept. 1932
M.G. Midget "T" 2-seater	Jan. 1937
M.G. 14/40 h.p., 4-cyl., super-sports 2-seater	May 1927
O.M. 6-cyl., 2-litre 4-seater	Oct.-Nov. 1928
PEUGEOT "201" 4-cyl., 1,122 c.c. saloon	Sept. 1931
RAILTON 8-cyl. Cobham saloon	Sept. 1938
Riley Nine "Monaco-Special," two-carb. saloon	March 1931
Riley Nine 4-seater	June 1931
Riley 16 h.p., 4-cyl., "Kestrel" saloon	June 1938
Rover Ten "Special" 2-seater	Aug. 1939
Rolls Royce Twenty, all-weather (1927)	March 1942
SINGER Nine 4-seater	March 1933
Squire 1½-litre, 4-cyl. 2-seater	Aug. 1935
S.S. I coupé	June 1933
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
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-seater	Oct.-Nov. 1936
Talbot "105" Vanden Plas 4-seater	Nov. 1932
Talbot Ten tourer	June 1938
Terraplane 29 h.p., 8-cyl. 4-seater	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-seater	Dec. 1929
Triumph "Dolomite" 14/60 h.p. saloon	June 1937
VALE-SPECIAL 832 c.c. 2-seater	Aug. 1933
Vauxhall "30/98" O.E. 4-seater (1924)	Dec. 1930
Vauxhall 20/60 h.p. "Hurlingham" 2-seater	Feb. 1930
Vauxhall 17 h.p., 6-cyl., "Cadet" saloon	Sept. 1931
Vauxhall Twenty-five saloon	Aug. 1937
WINDSOR 4-cyl., 11 h.p., "Special" 2-3-seater	Nov. 1926
Wolseley Hornet Swallow 2-seater (1933)	April 1934
Wolseley Hornet (12.08 h.p.) saloon	Sept. 1930

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