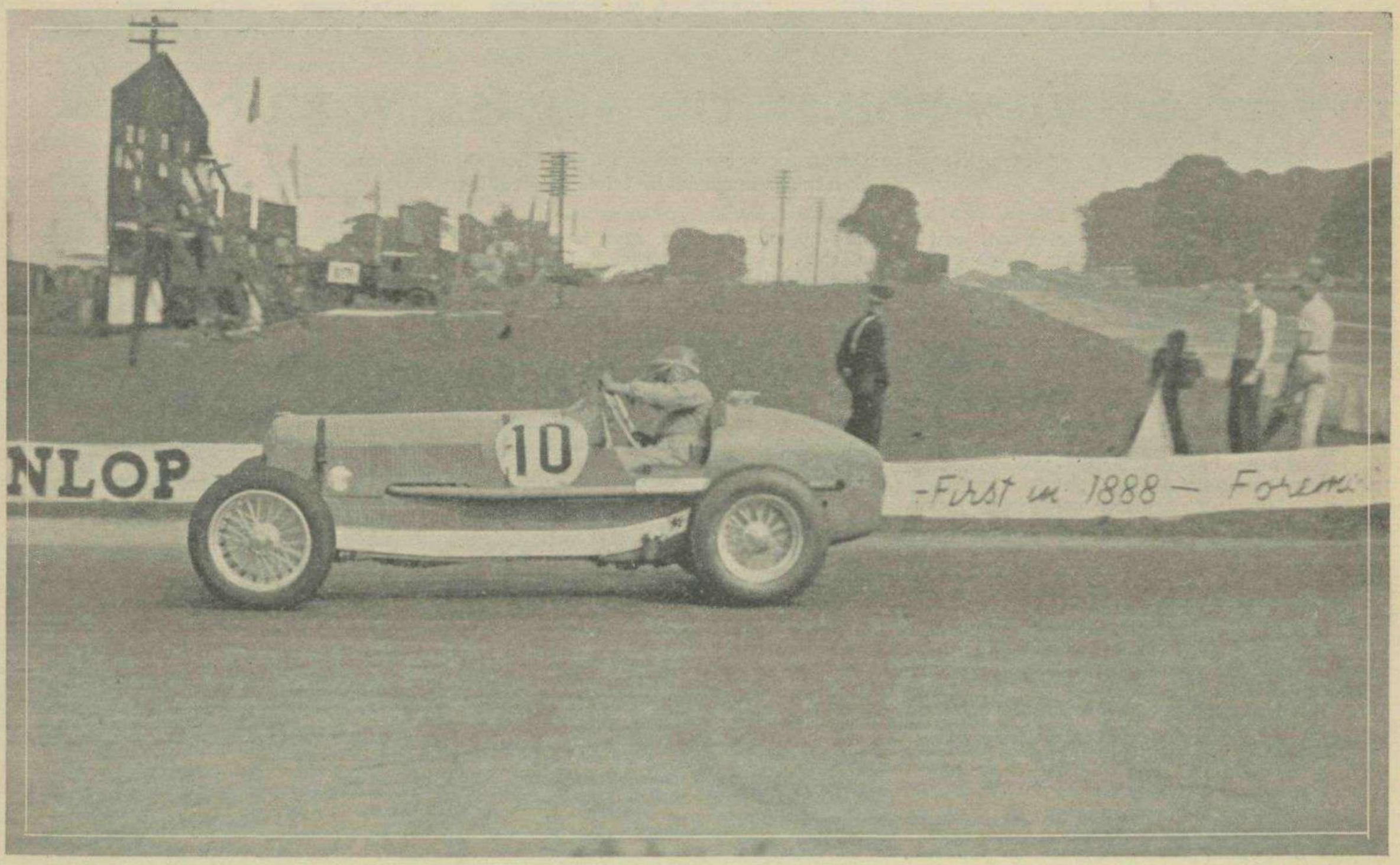
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MOTOR SPORT

INCORPORATING

Speed

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VIEWPOINTS OF A PASSENGER

Mrs. Kitty Hutchison looks back to the days when she rode beside her famous husband in trials and rallies

IT is true that the onlooker sees most of the game, and, when it comes to motoring events, that the passenger sees least of all, yet it might not be altogether amiss to record how the herculean struggles of men and machines affect those who get none of the glamour of being a Speed King, but quite as much of the discomfort and worry. Sometimes, of course, in Real Speed Events, one is degraded even lower and becomes a mere bringer of spare wheels, petrol cans, sandwiches and cigarettes. . . .

My chief recollection after any event, no matter of what kind, was a feeling of relief; one no longer felt responsible for every difficulty that occurred and every near disaster one had failed to foresee and avert. The Guardsman who dropped it has just nothing on the Passenger who forgot the tyre-gauge, or some other vital implement. In addition to route-finding and time-keeping one has, of course, "driven" every inch of the way, so that, even if not physically tired, one always found the strain of being keyed-up for several hours pretty exhausting. However, given the right kind of weather and pleasant companions, there is no doubt that trials and rallies and hill climbs and, best of all, practice days can be great fun.

We ran all the earlier Allards in one trial or another, the first time being when Allard lent us his original "CLK5," which Guy Warburton subsequently bought, for a Wye Cup Trial, whilst we lent him our white Ford-"Special." This latter was the last and best of a series of "Special" Fords which we built; originally it was a coupé belonging to C. G. Fitt. After pulling the body off and adding a little here and subtracting a little there and muttering a few magic spells, a remarkably efficient motor-car appeared. So efficient, in fact, that we took it up to the Southport 100 Mile Race and it romped along magnificently, working its way up to second place by three-quarters of the way through. Alas, it was a question of which would come first, the end of the race or the inevitable blow-up—needless to say, it was the latter . . . ! As for "CLK5," nobody has ever explained to us satisfactorily how to stay in it. Not knowing quite when one was going to part company with the machine was rather worrying for the passenger and definitely inconvenient for the driver. Allard's black car, which followed, and which was contemporary with our white twelve-cylinder Allard, we took on a Lancashire and Cheshire A.C. Trial, which started from Wildboarclough Farm. There were some really good hills in this trial, including Washgates, Cowlow (which I like) and Flash Bottom. We found the black car not very fast and extremely draughty, chiefly, I think, because the body waggled loosely and it was impossible to cure a set draught with the whole contraption folding and unfolding like a concertina, and held together by string and Christian Science. Of all our trials cars I liked our white twelve-cylinder Allard best. It looked fairly normal and had doors, a hood and side screens (though these were never up during a trial, they made the journeys to and from much more comfortable). The heavy square back, which had room for suitcases forrard of the 45-gallon tank and spare wheel, was very convenient, and when the screen was flat and twigs were slashing around it was easy to slither down under the scuttle and take cover. Not that I was really so very fond of it; we had frequently to make journeys of around 200 miles after six o'clock at night and as quickly as possible, and that happened to be *very* quick, much, much too quick for me.

I have never got over my horror of cars without running boards, nice solid fender ones, that will to a certain extent soften the blow of anything that decides to charge at you sideways, and I hate to have merely a thin sheet of metal—"don't tread on it or it'll buckle"—between me and any missiles.

For the other Allards, Silcock's car, finished just before the war, beat them all for looks, but I should imagine that it would get pretty knocked about on a trial, whereas our last Allard was probably the best for rough work; all I can say is that if I could possibly persuade anyone to take my place in it I did!

I cannot pretend to know anything about racing, not having seen much of it for a good many years, but when it comes to trials I have accumulated a lot of prejudices. Let there be no mistake about it, I disliked M.C.C. events intensely, though fated to be involved in a good many. They were invariably too long and had too many competitors, and too much red tape brought about, presumably, by the unwieldy size of the events. Frankly, I think that no greater disservice could be done to the cause of motoring sport in this country than to impede the normal bank holiday pleasure of the man-in-the-street, on whom most of our fates depend, with a lengthy procession of cars across the face of the country, waiting in solid blocks outside checks or at the foot of hills. The bungling of novices or the hearty swagger of "ricers" on their first trial, complete with little white helmets, does not impress John Citizen favourably. . . . *If* a trial is to be brought unavoidably before the public, let it be one of quality rather than quantity, as regards hills, cars and drivers. An outsider of reasonable intelligence and outlook would have more respect for, say, Macdermid on Picked Stones, than for some family saloon taking the wrong course up Beggar's Roost. Perhaps someone is saying that, with Allards, you like tough trials, but *all* trials involve artificial conditions, and for maximum efficiency comfort must be sacrificed—whether it is a matter of weight, because the trial will be won on special tests, or good ground and wing clearance, because of rough going; given these artificial conditions one might as well go the whole hog, for the car has yet to be invented that can take one comfortably and cosily to the theatre in "frillies" and also climb Widlake. Anyone who wishes to compete in and do well in trials *must* keep a car

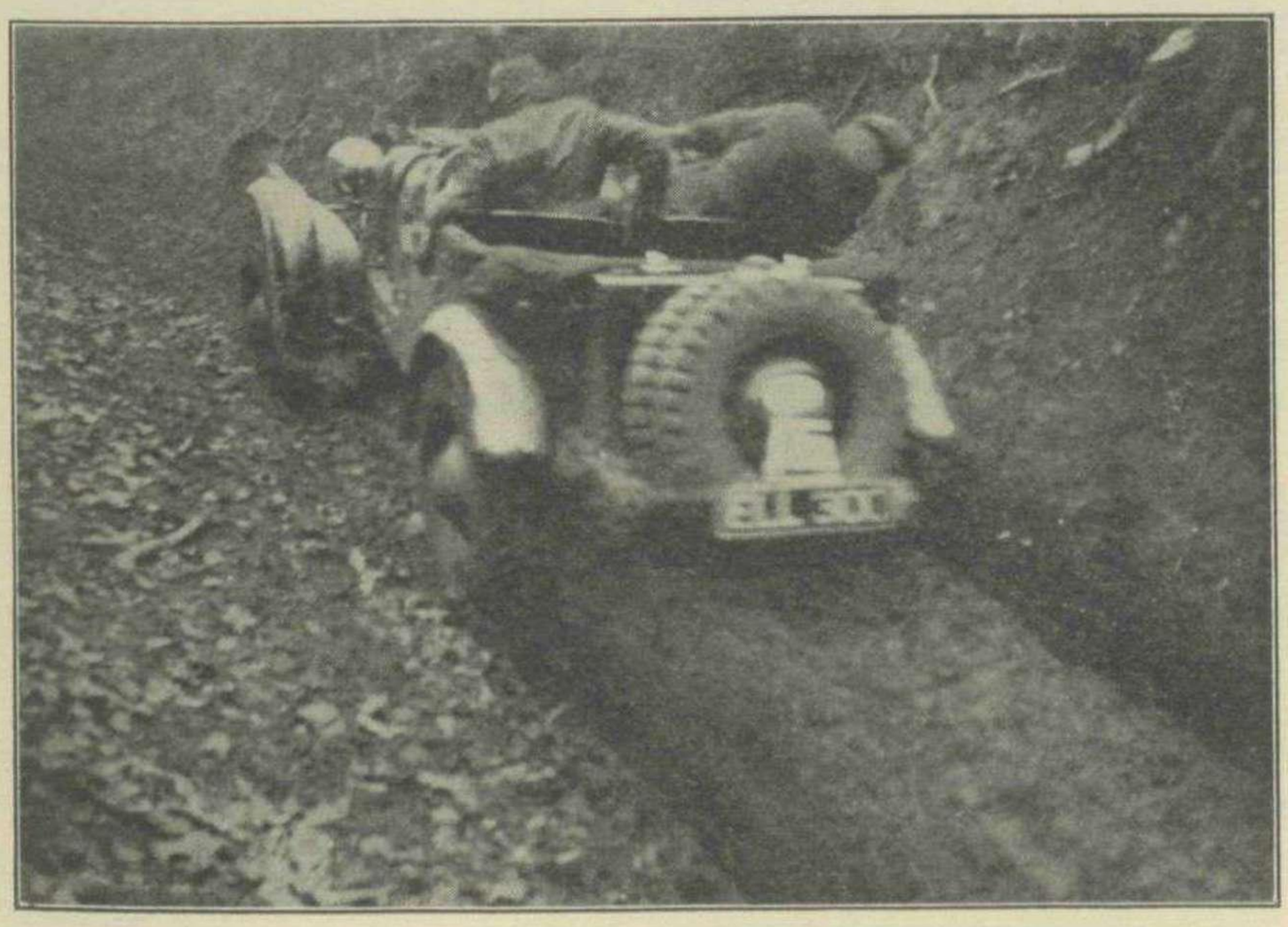
VIEWPOINTS OF A PASSENGER—continued

for that purpose and sacrifice other qualities. Even small sports cars, such as M.G. and Singer, which considered themselves normal, were of little use for giving the more elderly and inflexible members of the family a lift up to town, and most of us have tasks like that to consider. Therefore, one might as well have a trial that is worth getting one's teeth into and compete in a special car, which can be a supertuned Godhelpus or a sawn-down Riley Nine (the latter a vehicle not to be sneezed at).

The Colmore is admittedly one of the toughest trials of the year, and for me at least seems to consist of Mud—horizontal Mud and vertical Mud, bottomless Sloughs and Mud full of submerged rocky reefs. From this Mud arise, at strategical points, gateposts, large trees, small but effective trees, and bushes bound together with ferocious brambles. The only way, it seems to a mere passenger, to tackle the observed sections is to get on as much as possible and hope, by a lot of quick thinking, to avoid the more substantial uprights and reach the other end somehow, not necessarily front end first. In view of this, I consider the Colmore sections the passenger's nightmare. Not only is it essential to keep out of the way of the driver's whirling elbows and to remain in the car, but one must be able to defend oneself effectively when passing through odd bushes or swishing branches. If you are lucky it will rain or snow hard enough to wash the mud off, but if it just mizzles, which is more usual, an even coating spreads itself all over you, with paler nigger minstrel effect around the eyes where goggles have kept it off. The most memorable Colmore, to me, is the one when Edward Wooley drove one of K.N.H.'s Ford V8s, and we accompanied him. It was a 1933 model with a three-ply tray fixed in place of a body and many spare wheels massed over the rear axle. As a matter of fact, he did very well and collected one of the major awards, whilst I, due to a small tree which we both told him not to hit, collected a bald spot in one eyebrow and a cracked thumb joint. However, our digression to the Stroud Boots to get these fixed did not waste much time, but after that the front axle was very cock-eyed and the steering in consequence best described as "approximate." That night we drove down through the snow to Petersfield for the Southsea Club's trial, which was to be held next day. This we won, though on the final hill K. N. H., who was driving this time, managed to hook a tree with a rear wheel whilst at full pelt, giving himself such a whack with the steering wheel that he promptly fainted, which was much more dignified than my damaged nose and black eye. We had "Father" Chappell, who used to drive in a team with Allard and ourselves, dashing up and down the snowy slopes with brandy and thermos, and then, kind man, tucking us into his capacious saloon, mud and all, to bring us home in real comfort. As for Wooley, I have not seen him since the start of the war, but tales have reached us of him surrounded by magnetic mines and George Medals, and, if he has collected some kind of award, it is most gratifying. So many of one's friends these days figure in the list of "Missing, presumed killed in action."



Kitty Hutchison passengering her husband in the white V12 Allard "Special"



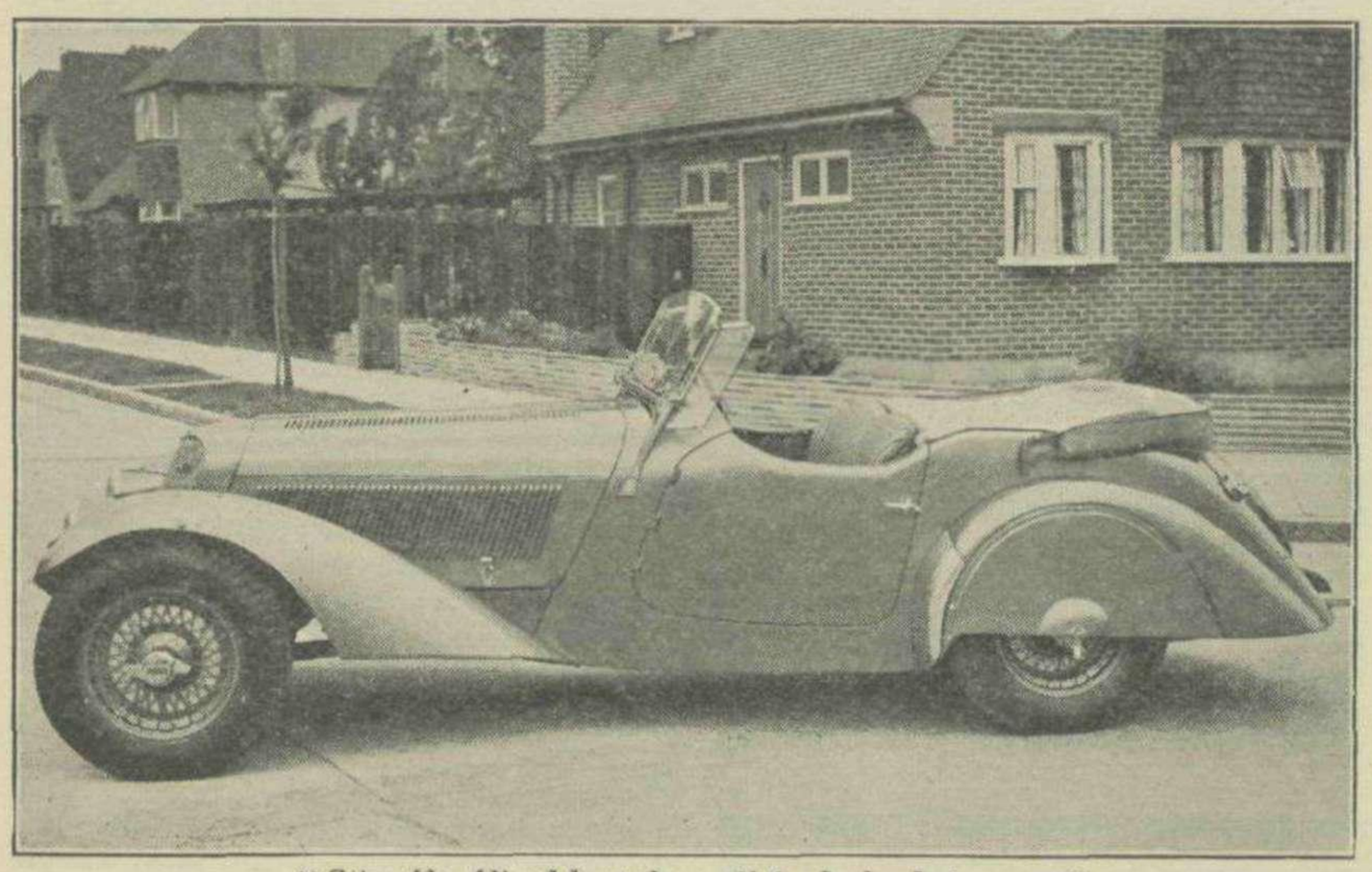
The passenger does *count—S. H. Allard and his navigator working together*

In the long, long ago we had a Jensen Ford, of which we had Great Hopes, doomed to early disappointment. This automobile was noted for its inability to climb anything but the most simple sections, and even then it always boiled. We took it on the North-West London M.C. Team Trial, which started at Hartland and consequently had some pretty good sections in it. Guy Warburton was there with his "30/98" Vauxhall, Allard had one of the T.T. Fords and Fitt the 2-seater Ford which subsequently became our pride and joy. We, as was only to be expected, climbed practically nothing and ended by tearing off a tyre on Cunliffe Lane, owing to the fact that we had reduced the pressure to more or less nil in a vain hope of getting to grips with the hill. The Jensen may have been a good-looker, but when it came to business it was too wide, too low, the weight was too far forward and the radiator much too small; we soon got rid of it. My chief recollection of this trial is of R. H. Newman, perched on the gatepost at the foot of Cunliffe Lane, looking the irrepressible imp of mischief that he was. He subsequently came on a good many trials with us and passengered on many rallies, managing to see the bright side of the most trying conditions. Even in those fearful hours before the dawn he could be heard "boop-boop-a-

VIEWPOINTS OF A PASSENGER—continued

dooping" the more sickly sentimental of the song hits of the moment, with variations all his own. We found "Young Newman" great fun and never quite knew what his latest enthusiasm would be. He gave up racing motor-cycles because, he said, it was too dangerous, and then took to mountaineering, dancing competitions and flying. He said it was great fun popping in and out of the clouds; but, alas, he came out of one at the wrong moment, last February. . . .

Even longer ago we had a Bugatti, fearful and temperamental, and the first "fast car" I ever drove myself. I was asked to fetch it from Papworth's in Fulham and to take it over to Merton. Foolishly I agreed, and found it was to be collected at about 11.30 on a Saturday morning. Ask yourself honestly, experienced and enthusiastic reader, would you really have liked to cope with a super-tuned Bugatti for the first time in your life under such circumstances? However, despite sheer fright, fearful noise, traffic blocks (I seemed to spend hours on Putney Bridge in a slight drizzle) and gaping onlookers, I got it to Merton with no unseemly incidents. We took it out in the snow next day and it promptly caught fire. Nevertheless, it was a highly successful car and put up the best performance at the first two Donington meetings. It was when being taken round the course on one of the practice laps that I was more utterly terrified than I have ever been. All I can remember is an incredibly sharp turn fenced by mammoth trees, and then, ages after, the blessed sight of the paddock at the foot of the hill. To my horror I realised we were going straight by it and on for another lap. When we eventually came in, my sole remark of "Thank God. What on earth did you want to go round a second time for?" was considered most ungracious. That Bugatti was an utter nuisance. K. N. H. not being in London at the time, H. A. Billinghurst and I were told off to deliver it at different places each week-end. There are many places now which to me will always be "Where we pulled the Bug. to bits for hours." Surprisingly enough, it invariably kept fine for us, though we frequently had quite long journeys in it to Donington, Southport, Shelsley, etc.



"Silcock's Allard beat them all for looks, but . . . ."

Sometimes we towed it, and this was even more hazardous, especially when the back of the towing car was so full of wheels and petrol cans that it wasn't possible to see the Bugatti behind. On one of these occasions, somewhere on the Pennines, the various odd noises of cans and wheels settling down was followed by quite a loud jolty noise. Bill and I, chatting happily in the Ford, said, "Those cans have made up their minds at last," and reverted to our previous topic. It was only about five miles later that Bill suddenly cried: "Help! Where's Nonie?" and there we were on the moor tops with a piece of broken tow-rope and no Bugatti. We scurried back anxiously, only to find K. N. H. having a pleasant chat with a most picturesque tramp, whom he seemed loath to leave. This Bugatti is the only car I have ever been up Shelsley in, and my memories of passengering are very vague, being completely overshadowed by recollections of my own efforts with it, when I seemed to take three-quarters of an hour to the broadcasting caravan and after that to do a series of cannons off bank after bank, resulting in the Grand Total of about 80 secs. K. N. H., for whom the banks mysteriously receded, put up quite a respectable time, despite the car being far too highly geared for the hill, nor did I find myself preparing to leap out in sheer terror, as he did when riding up with me. . . .

Shelsley, of course, brings to mind Raymond Mays and the Villiers Supercharge, and also the white Invicta which he ran about the same time. I never rode in the Invicta when practising on an actual course, but remember very clearly an unexpected meeting in it with a milk cart straggled across a narrow road. As for the Villiers, one-time apple of my eye, Ray took me round the Mountain at Brooklands in this car a few days before he broke the Shelsley record. Though this was an exhilarating experience, it was not in the least frightening, as the Villiers sat so firmly on the Track, even round the hairpin, that one had not a single uneasy moment. Nevertheless, the time recorded was considered satisfactory by Peter Berthon and Murray Jamieson. Of later day speed trials and hill climbs and racing generally I know very little; Lewes is just a narrow strip of road with a cross wind, which seems to be at its worst at the combined dip and bend; as for Prescott, I once walked as far as the first corner, saw Anthony Heal's old Fiat in the hollow, and decided that was quite enough of that, thank you. I stuck firmly to the paddock in future.

Despite Mr. Boddy's opinion, I am not, and never will be, an enthusiastic motorist. But a lot of very pleasant people seem to be, and I do enjoy their company. The only snag I can see is that, when things get going again, some of the nicest will not be there.

LETTERS FROM READERS—continued from page 63

British automobile design as our own complacent population, and it would be disastrous indeed if the parade of Vintage vehicles were mistaken for a display of the new British post-war models.

I have no wish to be entirely destructive and I suggest that a great deal more good would be served by trying to organise, at a proper interval after the cessation of hostilities, a run for modern cars to Moscow. We have been kept in ignorance about modern Russia far too long.

To turn to other matters, it is probably inevitable, knowing the difficulties under which the Editor works, that a few items should get by which were better left out. Few people can have been instructed by the trivial revelations of one who confessed to tampering with the silencer of his M.G., not, so far as one could discover, in a search for improved efficiency, but because he liked the noise. Nor were we thrilled by his story of how he exceeded the speed limit in a built-up area in order to provoke the police into following him. That sort of thing got us into the state where every sporting conveyance of interesting aspect had a more or less permanent police escort just before the war.

And for heaven's sake spare us further deadly drip from those who, to quote one correspondent, "hope to have fun and games just as soon as everyone loses interest in the war and it stops." Too many people haven't yet got interested in it at all.

By omitting such things you may avoid the accusation of purveying a mere opiate for escapists and be spared to provide us all with our very welcome monthly ration of entertainment and instruction.

I am, Yours etc.,

GORDON WILKINS.

Westbury-on-Trym, Glos.

RACING CAR EVOLUTION 1895-1908

[Cecil Clutton's historical surveys are widely respected for their interest and accuracy, and we have great pleasure in presenting this account of racing car evolution over a period which, up to now, has been given very meagre attention.—Ed.]



LIKE "1066 and All That," motor racing design has moved in waves. The first wave, from 1895 to 1901, marked the experimental stage: the gradual standardization of design. 1902 to 1907 was the period of brute force, when monsters reigned supreme. 1908 to 1912 may be described as a transition period, in which the relatively small, high-efficiency design gradually ousted the giant from the field. The 1908 Grand Prix, although still a race of giants, showed great advances in design, while the T.T. race developed the high-efficiency engine of some 5-litre capacity to hitherto unheard-of outputs. In 1910 the tiny Type 13 Bugatti (1,200 c.c.) ran second in the Grand Prix (such as it was) to a 10-litre Fiat, and in 1912 a 7.6-litre Peugeot beat a field of 15-litre giants for first place. In the meantime, the Coup de l'Auto series of races, which ran from 1910 to 1913, for cars of 3-litre capacity, had been started and high speeds were being attained.

Thus, at the end of 1912, the stage was all set for the next wave, which continued from 1913 until 1927. During this period current formulæ demanded successively smaller engines, while performance remained fairly constant. Chassis design and ease of handling also improved out of recognition. 1928 to 1933 saw a period of desultory "formule-libre" racing, during which design advanced but slightly and performance not a lot. Finally, we have the current era, 1934 to 1938, which saw the tremendous advance of streamlining, light alloys and fantastic performance achieved by Mercédès-Benz and Auto-Union.

Design can, therefore, be fairly well divided into six waves. Unfortunately, no continuous history of racing design has yet been penned, though one is even now unfolding itself before us in the *Motor*, in the enthralling series entitled "Milestones of Speed"—a triumph of erudition on the part of the author, Mr. Pomeroy, and hardly less of Mr. Cresswell, whose masterly drawings have combined artistry and accuracy to an extent hitherto almost unknown. When complete, this series must undoubtedly be published in book form, for it would be a book unique in the bibliography of motoring.

Mr. Pomeroy took 1908 as his starting point, for the perfectly sound reason that it was in this year that modern design may be said to have started. The racing machines of 1902 to 1907 had no perceptible influence on what came afterwards. Nevertheless, the picture is not complete without at least a sketch of this extremely romantic period of racing, and the present article seeks to provide a rapid survey of a necessarily superficial nature.

By dividing racing up into these six "waves" it becomes much easier to judge the respective merits of the great drivers down the years, and this is of some interest because so much ink has recently been spilt on this subject. I suppose it will be conceded that the formative period, up to 1901, produced no great drivers in the modern accepted sense, but the strain on drivers was, nevertheless, very intense, especially before the adoption of wheel steering. Steering gear of those days absorbed no road shocks and any serious bump practically tore the tiller from the driver's grasp. Wheelbases were generally less than 6 ft. and centres of gravity were inordinately high. Add to this the delicacy and attention which were necessary to keep the engine in action and it will be seen that to average even 20 m.p.h. over a distance was a considerable feat of skill and endurance.

The period from 1908 to 1934 I should regard as that demanding the least skill from the drivers. The 1908 G.P. machine was eminently controllable, and each succeeding year the cars became easier and easier to control, although but little faster. This leaves the two periods, 1902–1907 and 1934–1938, both of which, interestingly enough, were ushered in by a weight formula: a ton in 1902 and 15 cwt. in 1934. Each was supposed to limit power and performance, and each, paradoxically, instantly evoked an unparalleled increase in both. No one denies that the post-1934 Grand Prix machine calls for skill and judgment such as have never before been demanded of a racing driver, and it is with only a little less force that the same applies to the previous weight-formula cars. Engines of 16-litre and 17-litre capacity were crammed into chassis of the flimsiest proportions with suspension systems fitted for nothing faster than a perambulator. The engines were inflexible, brakes non-existent, tyres narrow and unreliable, roads deep in dust—it was indeed a race of giants that drove the cars. Few names are predominant, but Théry, Szisz and Nazzaro stand out, while Gabriel's drive in the "Paris–Madrid" of 1903 at 65 m.p.h. average surpasses the imagination.

Racing proper started with the Paris–Bordeaux Race in 1895, for the Paris–Rouen performance of 1894 had not been a race, but primarily a reliability run. Incidentally, Levassor's drive in the "Paris–Bordeaux" is hardly less remarkable than Gabriel's epic, and as a feat of endurance it can never have been surpassed. Driving single-handed throughout, he took his 4-h.p. Panhard to victory at an average of 15 m.p.h. for the total distance of 732 miles, having driven continuously for two days and 48 minutes. This, of course, was a car with tiller steering and a maximum speed of 18½ m.p.h.

Going back even further for a moment, it is noteworthy that neither Benz nor Daimler had any direct influence on early racing. Benz was the father of the industry, in that he sold his first car in 1887 and by 1889 had a factory employing 50 men on the manufacture of motor-cars. But beyond his championing of electric ignition, Benz contributed nothing else to automobile design. To Daimler we owe the evolution of the vertical, relatively high-speed motor, and as early as 1883 or 1884 he had attained 900 r.p.m., whereas Benz did not for several years contemplate more than 300 r.p.m. Daimler built an experimental motor-cycle in 1885 and an equally crude car in 1886, but he did not start the serious manufacture of cars until some time after Benz. In the meantime, Panhard and Levassor had come on the scene, and in 1890 they took over the Daimler rights in Paris. It was the early Panhard which first incorporated the essential features of all subsequent design—namely, a vertical engine under a bonnet in front, clash gears and rear differential, with final drive by chain. The 1894 Panhard, which earned such acclamation in the Paris–Rouen run, had a 15° twin, 75×140, 1,200-c.c. engine, developing 3½ h.p. at 750 r.p.m., which is equal to the modest m.e.p. of 39 lb./sq. in. There was no throttle and the engine speed was controlled by a trip gear on the exhaust

RACING CAR EVOLUTION 1895-1908—*continued*

valves—a feature which Panhards retained until well past the turn of the century. The carburetter was of the surface variety with a three-way air inlet, controlled at the discretion of the driver, who could thus supply the engine with a normal, super-rich or ultra-weak mixture. Ignition was hot tube and the drive was taken *via* a double cone clutch, four-speed gearbox (except that there was no actual box and the gears were all exposed) and a single chain to the back axle, which carried the differential. Later models had two chains and a differential on the countershaft. The back axle was always located by radius rods.

The contemporary Peugeot (the only other make of importance in these very early years) adopted a rear-mounted Daimler-Panhard type of engine and a tubular chassis.

The racing Panhard for 1895, such as Levassor drove in the Paris–Bordeaux Race, had a basically similar engine to the 1894 car and the capacity was the same, but the bore and stroke were changed to 80×120. It developed 4 h.p. at 800 r.p.m. and weighed some 182 lb. The compression ratio was 2¾ to 1 and the pressure in the cylinders was given as 45 lb./sq. in. The carburetter was of the constant-level spray type, in which petrol from a jet impinges on a cone, although it may be noted that Daimler had made a fairly normal jet type carburetter as early as 1889. The gear wheels, of steel and bronze, were enclosed for the first time in a box and gave speeds of 5½, 12½ and 18½ m.p.h. at the engine's running speed of 800 r.p.m. Some of the other competing Panhards had four forward speeds. The overall weight was 12 cwt. The Panhard double cone clutch was designed for the purpose of taking up the drive more smoothly, the inner cone, which received the power first, being connected to the outer cone by cushioning springs, somewhat reminiscent of those which form part of the modern Borg & Beck clutch.

In 1895 the Comte de Dion first turned his attention to petrol motors, although he continued to manufacture larger steam carriages, and produced his marvellous little tricycle, with a single cylinder, air-cooled engine of 140 c.c. (50×70). It produced ½ h.p. and had electric ignition. Later editions had more powerful engines, and in 1897 to 1899 the motor-tricycle was actually faster than the racing cars, although it was so unstable, especially on corners, that the average speeds of the cars were higher. De Dion ran his air-cooled engines at remarkably high speeds which were not generally surpassed for another 15 years, and they would attain 3,000 r.p.m., although not for long, as the automatic inlet valves would soon collapse. All cars prior to 1901, and many later, were fitted with automatic inlet valves, operated solely by the suction of the engine.

In 1896 Panhards appeared upon the scene with a four-cylinder motor of 8 h.p. They still adhered to tiller steering, combined with a wheelbase of 5′ 7″; but in 1897 they and other competitors first began to design cars specifically for racing. The 1897 Panhard had a gilled-tube radiator, and aluminium was introduced for certain components, such as the carburetter, gearbox and lubricators. In the 107.7-mile Paris–Trouville Race the Panhard averaged 25.2 m.p.h. and a Bollée 28.2 m.p.h.

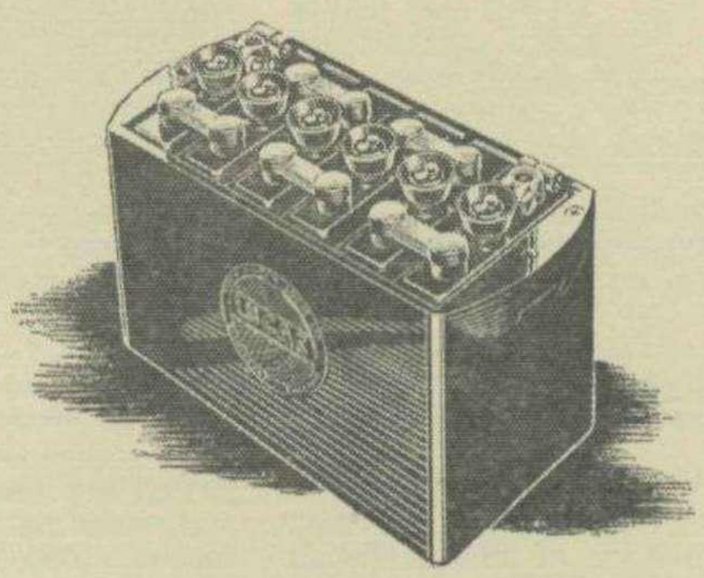
The 1898 Panhard was at last fitted with wheel steering and a four-cylinder 2½-litre engine, 80×120. People began to complain about "Special racing giants." Mors, which was to threaten Panhard supremacy from 1900 onwards, first took the racing field in 1898, with a four-cylinder, 70×110, belt-driven machine.

The Panhard motor normally ran at 700 r.p.m., but by cheating with the governor it could be allowed to run up to its "terminal velocity" of 1,200 r.p.m.

Most early books of reference give bores and strokes, but very rarely cubic capacities. To work these out precisely would be an interminable business, and for the purpose of comparison in this article I have only worked to the nearest fifth of a litre.

The year 1899 saw a much greater advance in specialised racing car design. Panhards still adhered to their four-cylinder, 2½-litre motor, but Peugeots

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RACING CAR EVOLUTION **1895-1908**—*continued*

appeared with a two-cylinder, 6-litre unit with 140×190 cylinders. An unsuccessful freak in this year was the Vallée, with a four-cylinder, 7-litre engine and final drive by a single, 10″ wide, belt! Electric ignition now gained general approval, though most people still had the hot tube as a stand-by. Mors had a four-cylinder 16-h.p. racer on basically Panhard lines. Average speeds were up to 37 m.p.h.

The year 1900 was the first in which Mors first seriously threatened Panhard supremacy, and they were racing with a four-cylinder, 119×165, 7-litre engine, against Panhard's 110×140, 5-litre; but the well-tried Panhard was more reliable, and in the 210-mile Circuit du Sud-Ouest Race de Knyff won at the useful average speed of 43.8 m.p.h. on his Panhard, which was described as 16 h.p. It had a chassis of wood reinforced with metal plates and the front axle was greatly dropped in the centre—a feature general in racing cars for many years to come. Road wheels were rapidly becoming all the same size and Daimlers appeared with a honeycomb radiator, though the old gilled tube continued to hold the field till as late as 1904. Overall weight was now up to 20 or 24 cwt. on an average. The racing tricycles of 1900 were formidable projectiles with 6 or 8 h.p. engines, capable of 60 m.p.h. in the hands of anyone sufficiently intrepid or skilful, and after 1901 they were discontinued altogether.

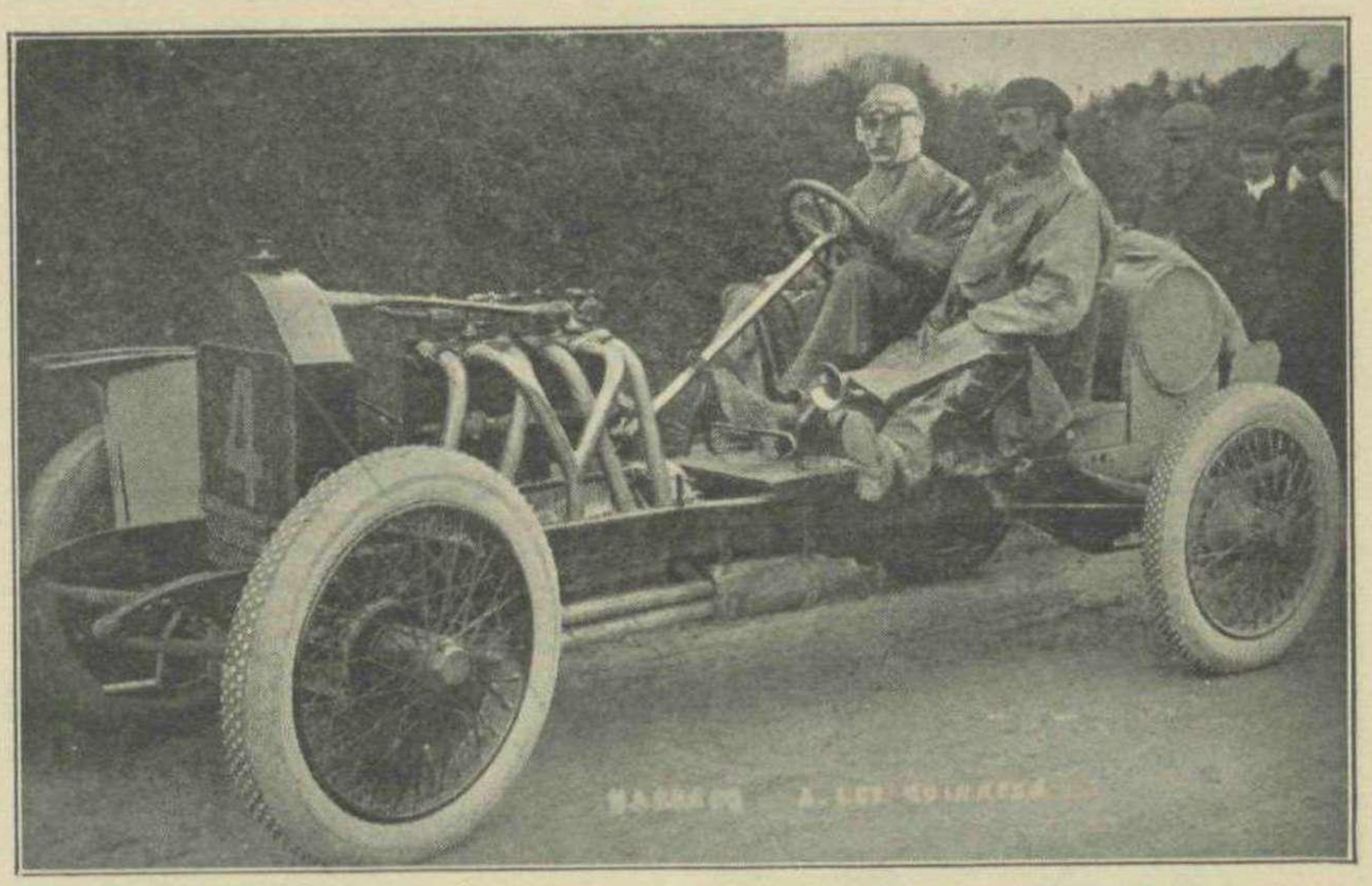
The year 1901 saw further marked increases in performance and was the last year of "formule-libre" racing. Panhards increased to 7¼-litre engines, 130×140, and Mors 10-litres, 130×195. The Panhard was generally described as a 40-h.p. machine, equal to 5½ h.p. per litre, and the Mors as 60 h.p., equivalent to 6 h.p. per litre. In this year was constructed the 13-litre Napier (160×185), which covered 5 miles at an average of 37 m.p.h., but was impracticable for long-distance racing owing to tyre greed. It ran at 1,200 r.p.m., the speed of the engine being controllable only by the spark lever. It was generally considered as the fastest thing awheel.

Important newcomers in 1901 were Gobron Brillie and Mercédès. The Gobron used opposed pistons, converging upon a central combustion chamber, the upper piston being connected to the single crankshaft by a beam. This arrangement was calculated to neutralise the thrusts otherwise imposed upon the crankshaft, and also had the merit of reducing piston speed. This make was also a pioneer in the use of solid fuel injection, which was effected by a metering pump. The Gobron Brillie was a very nice car to drive and raced very consistently between 1901 and 1905, though not with outstanding success.

In 1901 the Daimler firm changed its name to Mercédès to avoid anti-German prejudice in the foreign market, and produced the epoch-making 35-h.p. machine. This was far more advanced than anything else in point of design, though not, as yet, in performance, owing to its relatively small engine. Nevertheless, it scored a win in the Paris–Nice Race at 36 m.p.h. Novel features included a pressed-steel frame, honeycomb radiator, mechanically operated inlet valves and gate change. Final drive was by chain. This was the first fairly large engine to combine genuine flexibility and silence with performance, and the general appearance of the car was also some years ahead of its time and distinctly handsome.

Average weight in 1901 was up to 28 cwt. and the highest winning speed was returned by Fournier, on a Mors, in the Paris–Bordeaux Race, which he won at 53 m.p.h.

The year 1902 was the first of formula racing, weight being limited to 1,000 kilogrammes or 1,007 for cars fitted with magneto ignition. This is equivalent to about one ton. As an attempt to limit performance this formula was as great a frost as the 750 kg. formula of 1934; for whereas the 1901 Panhard had weighed some 28 cwt. and developed 40 h.p., the 1902 machine developed 70 h.p. within the prescribed limit of a ton! Not every manufacturer, however, went all out for power; Mors concentrated more on



Algernon Lee Guinness with one of the "4-inch" Darracqs which showed up well in the 1908 T.T.

staying power and Mercédès pinned their hope almost entirely on reliability.

The Panhard had an armoured wood frame and a transverse front spring with underslung shackles and a very light axle. The springs possessed only four leaves, each 75 mm. thick, and were undamped; they were not really strong enough to meet their commitments. There is no evidence of the "Panhard rod" now a good deal spoken of in connection with transverse springs.

The engine was bolted direct to the frame, instead of being carried in a subframe, as previously, and had a capacity of 13½ litres (160×170). At 70 h.p. it will be seen that the power per litre of this larger engine was less than the 7¼-litre engine of 1901. In the interests of lightness each cylinder was separately cast and surrounded by a 1 mm. thick copper water jacket, brazed on, and corrugated to allow for expansion and contraction. The inlet valves were three port, automatic, with a total diameter of 130 mm. and a lift of 4 mm. The three valves were contained in a single detachable cage. The multi-tubular radiator had nine rows of 20 tubes each. Ignition was by four separate coils; lubrication was splash; the steering had no castor action. The Panhard was, in fact, an out-moded design, relying on brute force, as it continued to do with decreasing success until its disappearance from racing after 1908. Nevertheless, a Panhard won the Paris–Belfort Race at the respectable speed of 54.4 m.p.h.

The Mors carried a 9.2-litre, 140×150 motor, with direct drive on top and a dog-clutch device for locking the cone clutch at will. Despite its fairly small engine, the Mors was very fast and was timed over a flying kilometre at 77 m.p.h. It was the first car to be fitted with shock-absorbers, carrying two on the front axle and four on the back. These shock-absorbers were of dashpot pattern and exerted a notable influence upon the stability of the cars.

Mercédès had an even smaller engine, of only 6.8 litres (120×150). The cylinders were cast in pairs with the heads and water jackets integral. As before, all valves were mechanically operated and disposed in a "T" head. The axles were steel tubes, ignition was by low-tension magneto, the clutch was of the Mercédès coil variety, which was very nice as long as it was "just so." Four brakes were provided, all operating on the rear wheels, and water-cooled.

An interesting, but not very successful, model of 1902 was the eight-cylinder, 125×130, 16¼-litre Dufaux, which also had chrome-nickel axles. Underslinging made its first appearance in the very low built Wolseley "beetles," which had horizontally opposed four-cylinder engines.

An interesting thing happened in the Paris–Vienna Race of 1902 when a Renault (100×120, 3.85 litres), running in the

RACING CAR EVOLUTION 1895-1908—*continued*

Voiturette Class, had the indecency to come home in front of all the "Real Racers," at an average speed of 38.9 m.p.h. This was, indeed, a flash in the pan, but, nevertheless, a forewarning of the eventual supremacy of quite small machines over the giants, some 10 years later. The Renault was interesting as having shaft drive, but it was not until after some years that most manufacturers were willing to transmit much power through a live axle, Renault being the pioneer champions of this form of drive.

Compared with the great advances of 1902, the designs of 1903, 1904, 1905 and 1906, the remaining years of the 1,007 kg. formula, are not so revolutionary or generally interesting.

The year 1903 is principally remarkable for the fatal Paris–Madrid Race, which put an end to the long, inter-town races. In it there were two epic drives—that by Gabriel, the winner, on a Mors, at the tremendous speed of 65.3 m.p.h., and, no less remarkable, that of Louis Renault, who won the Voiturette Class and was second on general classification at 62.3 m.p.h. The Voiturette Class had a 650 kg. (about 13 cwt.) limit and the Renault was described as 30 h.p.

Panhard's at last adopted the pressed-steel frame and had a five-bearing engine (which made it possible to employ a lighter crankshaft), slightly canted in the frame so as to give the flywheel more clearance. For the first time, too, their inlet valves were mechanically operated and the cylinders had "T" heads. The connecting rods and pistons were drilled for lightness. The engine was 13½-litres (160×170), and a strange feature of design lay in the three-speed gearbox, of which the back end was on the counter-shaft and the front end was hung from the sub-frame by rods and coil springs. The engine of the 70-h.p. type weighed only 680 lb. and ran at 950 r.p.m. The pistons in the racing engines were slightly domed and very long. For front suspension the makers had reverted to semi-elliptic springs. The carburetter was a Krebs, variable choke type, working against a spring tension.

The year 1903 saw the last appearance of the valiant Chevalier René de Knyff at the wheel of a racing car; for eight years he had been the almost undisputed doyen of motor racing.

Mercédès had found it necessary to increase power, though their just mechanical scruples clearly found them ill-at-ease with the weight formula, and it was not until after its removal that they really came into their own, in 1908. Their 60-h.p. machine was a 9.2-litre (140×150), running up to 1,000 r.p.m., with the familiar scroll clutch. The carburetter was a multi-jet device. The inlet valves were now overhead, in the centre of the head, and of annular type, which, with valves of very large diameter, increases their effective opening area without resorting to an excessively high lift. The tubular axles of 1902 had given way to conventional "I" section. Even by modern standards, the touring edition of this model is genuinely flexible and silent, and a pleasure to drive.

Mors turned out with 11½ litres under the bonnet (145×175), and the little Renault, so phenomenally successful in the Paris–Madrid Race, had a 6¼-litre (124×130) engine.

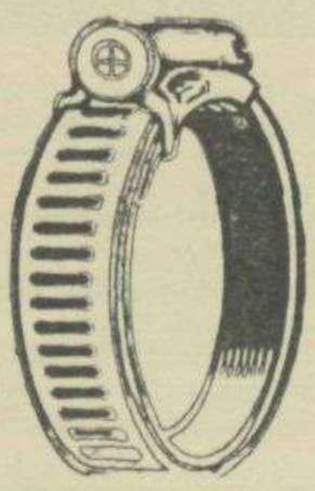
An important event in 1903, though not directly connected with racing, was the first appearance of a successful production six-cylinder motor-car, Napier's marketing such a machine of some 4¾-litre capacity, which made an altogether new record in silence and flexibility. Yet another important British innovation was the Maudsley, which was the first production car to possess an overhead camshaft.

Generally speaking, the springs and frames of 1903 were stronger than in 1902, though, of course, they were still very flexible. Piston speeds ranged from 700–1,000 ft. per minute. The cars were now pretty fast and the speeds evidently created a powerful impression upon beholders, as witness the following exquisite outpouring by a writer in the *Autocar* in 1903, after seeing C. S. Rolls traverse a flying kilometre at a little over 80 m.p.h.:—"Hurling the air to each side, so that it struck the face like whip-lash, the car tore past in one blinding flash, while the ear was rent by the shriek of the driven demons within. The car seemed veritably to spurn the road behind it as it came on with steering wheels lashing under it, as though the myriad strokes of its engine maddened it to mighty leaps."

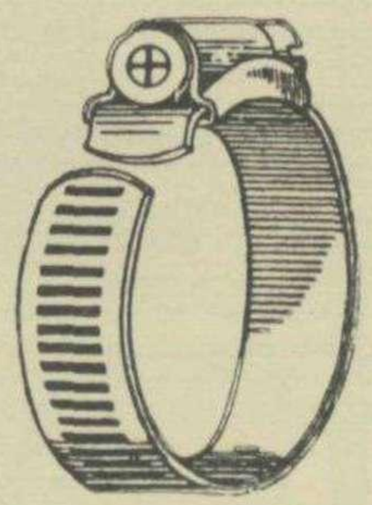
In 1904 the Richard Brazier came into the picture and Thery steered one to

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RACING CAR EVOLUTION 1895-1908—*continued*

victory in the Gordon-Bennett at 54.5 m.p.h. The engine was a 10-litre (150 × 140), running at some 1,200 r.p.m. The chassis was fitted with shock absorbers. The increasingly archaic Panhard scored its last wins of importance in the hands of Heath, at Ardennes, and in the Vanderbilt Cup. In 1905 the best he could manage was two seconds. It now carried an immense engine, 170 × 170, whose 15 litres were accredited with an output of 90 h.p. To squeeze such an enormous power unit into a vehicle weighing no more than a ton was a truly remarkable feat, especially when aluminium was the only light metal available; yet we were all quite astonished, 23 years later, that Auto-Unions, by extensive use of light alloys, were able to power their 15-cwt. racers with 6-litre engines.

Mercédès had 12-litre (165 × 140) engines and deserved better than they fared. They still used rubber snubbers instead of real shock-absorbers.

In this year Dufaux scored a record in bores, with a machine which was apparently intended for sprints. This time it was a four-cylinder, with the immense bore of 225 mm. A stroke of 166 gave a capacity of 26½ litres. Chrome-nickel axles were again used. This engine comes close to the four-cylinder record capacity of the 1911 300-h.p. Fiat, which was 28½ litres, given by 190 × 250 cylinders.

In this year a Darracq traversed a flying kilometre at 104 m.p.h.

The year 1905 saw very diverse engine capacities, some manufacturers still pinning their faith on huge engines and others realising that tyres were the limiting factor, so that smaller engines were likely to succeed. Both schools of thought met with some measure of success. The Gordon-Bennett Race of this year was over a very twisty course, and to improve cornering stability Renaults had introduced an underslung chassis with a 13½-litre (166 × 150) engine. By contrast, the de Dietrich had a monster engine of 17 litres (190 × 150), and Italas won the Brescia Race on a machine of the same capacity and 185 × 155 cylinders. This car, which is still in existence, is one of the most imposing spectacles imaginable. The cylinders are in two blocks and have overhead inlet valves. Ignition is by low-tension magneto. It also has shaft drive, which is remarkable with so large an engine at so early a date. The carburetter has a spring tension, variable choke device and, in general, the design is remarkably similar to the 1908 Grand Prix machine.

The Richard Brazier which won the Gordon-Bennett Race had a 10½-litre, side valve, 160 × 140 engine, with the cylinders cast in pairs, and an L.T. magneto. Darracq's also realised the advantage of a moderate engine capacity, being content with 10 litres (150 × 140), while in the light car class they provided their quite successful machine with a solid rear axle.

The standard of design had advanced most noticeably in 1905 and the ability of Italian engineers first came to the fore. Besides the excellent Itala, the Fiat was undoubtedly the car of the year, having a 16-litre (180 × 160) engine, with push-rod operated valves, inclined in the head, at an angle of 90° to each other. Fiats were brilliantly driven by Lancia during this year and he was robbed of victory by exceptional bad luck on two occasions. Another car with inclined valves was the Pipe, which had dual ignition, by coil and magneto.

The year 1906 was more than ever governed by tyres, for speeds had increased considerably. Renault, Fiat and Itala gained a marked advantage by the use of detachable rims; several other competitors, such as Panhard, would have liked to use them, but were unable to do so without exceeding the 1,007-kg. weight limit. The Grand Prix, at Le Mans, was an exceptionally hard one for men, machines and tyres, and Szisz won at an average speed of 63 m.p.h. for the 770 miles—a fine performance. Generally speaking, racing during 1906 was somewhat desultory and lacking in competition, for the weight formula had now quite outstayed its welcome, but there were a few interesting designs, nevertheless.

Mercédès were experimenting with a six-cylinder o.h.c. engine, but relied mainly on the four-cylinder push-rod engine as the first line of defence. Piston speeds had risen in some cases to nearly 1,500 f.p.m., notably in the long-stroke Clément-Bayard.

Experiments had started on front-wheel brakes, although it was some years later that Argyll and Isotta Fraschini put them on the market and not until 1914 that they appeared in racing.

F.I.A.T.'s produced a most interesting 10¾-litre machine, not primarily a racer, with a bore and stroke of 145 × 165, whose crankshaft revolved at the remarkable speed of 1,800 r.p.m., giving a piston speed of more than 1,900 f.p.m.

The best of the Grand Prix machines were now capable of better than 90 m.p.h., while Marriott, on a Stanley Steamer, had covered a flying kilometre at 121.52 m.p.h.

The Americans had been making interesting experiments with multi-cylinder engines of various shapes and sizes, and also air-cooling, but their products never really came into the class of European Grand Prix performance.

The following table gives a certain amount of data about four of the most interesting Grand Prix machines of 1906. The b.h.p. claimed for the Bayard is probably optimistic:—

Make	*Bore and Stroke*	*C.C. (litres)*	*R.P.M.*	*B.H.P.*	*M.E.P.*
Clément-Bayard	160 × 160	13	1,350	125	92
F.I.A.T.	185 × 150	16	1,300	135	85
Mercédès	175 × 150	14¼	1,300	125	86.5
Renault	165 × 150	13	1,200	105	87

Tourist Trophy racing was beginning to become interesting and the winning Rolls Royce had a 4-litre (101 × 127) engine, giving 22 h.p. at 1,000 r.p.m., which is only equal to 70 m.e.p. It had an 8′ 10″ wheelbase, dual ignition and gear ratios of 6.4, 3.85, 2.65 and 1.89 to 1, direct drive being on third gear.

For 1907 Germany proposed a minimum weight limit of 1,175 kg. (about 23 cwt.) and a maximum engine capacity of 8 litres, and had their suggestion been adopted racing design might have advanced very much faster during the following six years than it actually did. The Grand Prix formula actually adopted worked on a fuel consumption basis equivalent to 9.4 m.p.g. Other races, however, adopted different formulæ, which must have been very confusing and expensive for manufacturers, who, notwithstanding, turned up in force for every race. The Targa Florio had a rather tiresome maximum bore and minimum weight formula, which failed to produce very interesting results, but for the Kaiserpreis Race the Germans imposed the regulations which they had suggested for the Grand Prix. They also stipulated a minimum wheelbase of 9′ 10½″.

The Grand Prix was held at Dieppe and a Fiat came home in first place at 70.5 m.p.h., driven by Nazzaro. It had a 16¼-litre (180 × 160) engine, and he had enough petrol left over at the end of the race to cover another 30 miles. For such a huge machine to average better than 9½ m.p.g. under racing conditions is really remarkable. Szisz was a close second on a Renault at 69.4 m.p.h., with a much smaller engine of 13 litres (166 × 150). As he had more than 20 gallons to spare it would seem that he might have won had he pushed along rather more eagerly. There was also a Voiturette Class in the Grand Prix, the cars being invited to average 18.8 m.p.g. The winner was a 5½-litre (120 × 120) Darracq, at 55 m.p.h.

In the Brescia Race, Cagno won on a 15½-litre (175 × 155) Itala, at 65.2 m.p.h. and a fuel consumption of exactly 10 m.p.g.

The Kaiserpreis Race produced a most interesting crop of entries, and the capacity limit began to make people think carefully about the most advantageous bore-stroke ratios. Generally speaking, 140 × 130 was a favourite arrangement, but Mors had a six-cylinder, 114 × 130 engine. Fiat and Pipe ran first and second, and both had hemispherical heads with inclined valves.

But far the most instructive race of the year was the Circuit des Ardennes, in which both Kaiserpreis and G.P. cars competed on comparable terms, to the marked advantage of the former. The event was a runaway for Minervas, who took first, second, third and sixth places, although they had not performed with any distinction in the Kaiserpreis event—evidently the interval of time had permitted the snags to be overcome. The actual winner was Moore-Brabazon. The fastest G.P. car was a Mercédès, which averaged 57.3 m.p.h., as against Moore-Brabazon's 59.5 m.p.h. Having regard

RACING CAR EVOLUTION **1895-1908**—*continued*

to this, it is remarkable that 12 and 15-litre machines continued to appear in Grand Prix racing until 1912. The overall weights of the Grand Prix and Kaiserpreis machines were almost identical, so that there was no advantage held by the Kaiserpreis cars even on that score.

The year 1907 was indeed very instructive and successful, and with it this survey might really stop, since the *Motor* series commences with 1908. Nevertheless, as 1909, 1910 and 1911 produced no serious Grand Prix racing, it seems worth extending the present article to the end of 1908, as marking the end of a great series.

For 1908 Germany had proposed a maximum bore restriction of 135 mm. for four-cylinder cars, but the figure eventually decided upon was 155 mm., with a minimum weight of 1,100 kg., equal to about 22 cwt.

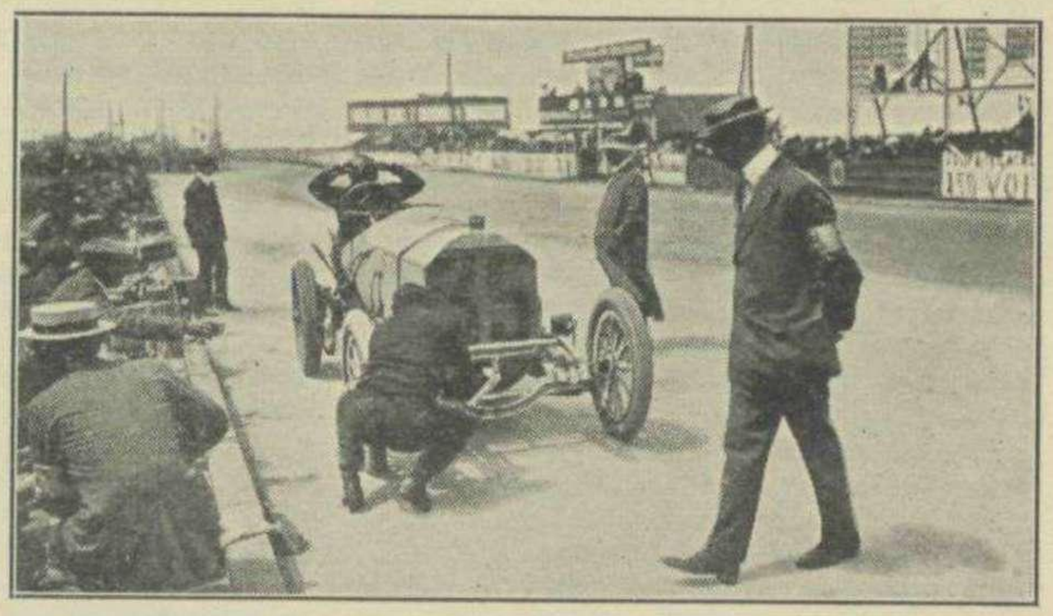
The limitation upon bore naturally turned designers' attention to the best means of increasing power in other ways. Obviously, increased stroke and r.p.m. were the answer, and so piston speeds went up with a jump; 155×160, giving 12-litre capacity, was a usual figure, but Mercédès used both 155×170 and 155×180, the latter giving 13½ litres. The largest car was the Clement-Bayard, with 14½ litres (155×185). It normally ran at 1,566 r.p.m., giving a piston speed of 1,900 f.p.m., but a usual figure was nearer 1,750 f.p.m.; b.h.p. was not generally divulged, but Lorraine Dietrich, with a 13-litre (155×175) engine, was commonly accredited with 123 h.p., the Mercédès with 120 h.p. and the Itala with 115 h.p. With the increase in r.p.m., mean effective pressures were lower than in 1906, 75 being a general figure, although, of course, power per litre was substantially up, averaging 9 to 9½, as against 8 to 9 in 1906.

Many cars now had inclined valves, but Itala adhered to inlet over exhaust, combined with a hemispherical head and low-tension magneto ignition. Panhard's and one or two others still retained the old "T" head, with steel cylinders and copper water jackets. Itala had a three-bearing crankshaft with mechanical feed to the main bearings and splash to the big-ends; the bearings were a very soft species of white metal. The extra piston speed raised all sorts of cooling and oiling problems, and the cars were freely lubricated in all directions. Cylinder head and valve seat cooling also received far greater attention than previously. Metallurgy also began to come to the fore as a factor in design, and the quality of the available steels was much improved. Gear ratios were generally closer than before, those of Itala being 1.8, 2.3, 2.8 and 5.3 to 1.

Most of the cars came fairly close to the minimum weight of 1,100 kg., but the otherwise excellent Italas burdened themselves quite needlessly with an overall weight of more than 1,400 kg.—an extra 6 cwt. above par.

Napier's entered a most interesting and effective-looking six-cylinder machine, which, however, was excluded by the organisers on the totally unreasonable grounds that it had detachable wire wheels and was therefore unsafe.

In the Grand Prix tyres were once more the limiting factor, for 100 m.p.h. was commonly attained on the level and as much as 120 m.p.h. was mentioned on the downhill stretches. Lautenschlager won the race on a Mercédès at an average of 69 m.p.h. and probably owed his victory as much as anything to nursing his tyres on the corners. One of the Mercédès team cars still exists, in excellent condition, in America.



"In the Grand Prix tyres were once more the limiting factor. . . ." Lautenschlager at the depot with the Mercedes that ultimately won

The Voiturette Class in the Grand Prix permitted cars of one, two, three or four cylinders, with maximum bores of 100, 78, 68 and 62 mm., respectively, and a minimum weight of 600 kg., or some 12 cwt. This formula, unfortunately, ignored the higher frictional losses of the four-cylinder engine of such dimensions, so that the really more retrograde singles had the advantage, and the event was won at the useful speed of 50 m.p.h. by a 1.2-litre (100×150) Delage. This car had six-volt ignition and no fewer than four sparking plugs. It also had two flywheels. It was estimated to evolve 13½ b.h.p. at 1,977 r.p.m., giving a mean effective pressure of 85 lb./sq. in. Sizaire Naudins also had a single cylinder with both automatic and mechanically operated inlet valves, the speed of the engine being controlled by varying the lift of the mechanical inlet valve. They also had an effective system of front independent suspension by transverse leaf spring; 2,000 f.p.m. was an average piston speed, but the Gregoire and Alagon went to 2,213 f.p.m. The highest crankshaft speed was attained by the four-cylinder, 1,000-c.c., 62×84 Martini, which exercised itself at no less than 3,300 r.p.m. and developed an estimated 16 b.h.p., equivalent to an m.e.p. of 65. The piston speed at 3,300 r.p.m. was the quite modest one of 1,850 f.p.m., and altogether the Martini must have been a most advanced, interesting and commendable little machine. The greatest freak of the Voiturette Class was the Corre-la-Licorne, which had a 2.2-litre single-cylinder engine with a stroke of no less than 300 mm., and the record bore-stroke ratio of 3 to 1.

From the point of view of improving design, the 1908 T.T. Race was even more interesting than the Grand Prix and Coup des Voiturettes. The formula stipulated a minimum weight of 14¼ cwt. and a maximum bore of 4 in. (100 mm.). Even more than in the Grand Prix did this stress the importance of putting up piston speeds, and designers also found that a long stroke was a useful means of raising the compression ratio without resorting to awkward-shaped combustion chambers.

The winning car was a s.v. Hutton of 6½-litre capacity (4″×8″ and, therefore, over 200 mm. stroke), which ran up to 2,000 r.p.m., giving a piston speed of 2,700 f.p.m.—a great advance over the G.P. machines; 70 b.h.p. was claimed for it, equal to nearly 11 per litre and 70 m.e.p. The most successful team as a whole was Darracq, who used a 160 mm. stroke, giving a capacity of 5.2 litres. These cars cruised at 1,000 r.p.m., giving a piston speed of 1,050 f.p.m. One of the Hutton team exists to-day and, although it looks a most agricultural machine compared to the 1908 G.P. cars, it is certain that a great deal of care and expense went into its preparation and that it well deserved its win. Compression ratios in the order of 4½ to 1 were current.

After 1908 the T.T. was dropped until its re-appearance in 1914, and light car development was carried on during the intervening years in the French, 3-litre maximum, Coup de l'Auto races, which deserve a special article to themselves.

Curiously enough, even higher engine efficiencies were being obtained in 1908, in the more advanced cars entered for the 2,000-mile R.A.C. Reliability Trial, outstanding being the 3-litre Vauxhalls, which ran up to 2,500 r.p.m., at which they developed at first 40 and later 52 h.p., equal to no less than 17 per litre and the quite modern m.e.p. of 88 lb./sq. in.

The year 1908 was, in fact, a bumper one, and it is curious that it should have been followed by a period of such relative stagnation. And so closes an epic period of motor racing—not to mention this apparently interminable article. . . . .

CARS I HAVE OWNED—*continued* *from page* 55

attractive car and in comparison, I think, offered more performance and room for the money than anything else. When in France in 1939 I tried one of the later 20-h.p. six-cylinder models, which were an improvement on the four-cylinders in every way and had a sparkling performance.

So we come to the end, and I am now reduced to a "Clubman Special" Matchless 350-c.c. motor-cycle. Long live MOTOR SPORT and the happy memories that go with it.

CARS I HAVE OWNED

[Capt. Leslie Seyd, who was co-driver to the late Humphrey Symons on his record run to Timbuctoo, recalls a wide variety of cars and an active competition career.—Ed.]

MY motoring days started at the age of 18 when I was living in France. My first car, purchased in Reims in 1926, at francs 240 to the £, was an 11-h.p. Panhard-Levassor open 4-seater, which had done about 1,500 miles and was, therefore, almost new.

This was a most peculiar car, and I do not think many were sold. It had a four-cylinder engine of 1,480 c.c., with sleeve valves, a cone clutch and a four-speed gearbox. Brakes were fitted on all four wheels and were rod-operated; rear springing was by reversed quarter elliptics *a la* Bugatti.

The whole construction was massive in the extreme, the chassis weighing just over a ton, which was rather too much for the tiny little engine, which took up about a quarter of the available space under the bonnet.

The oil consumption was prodigious, and the makers must have made a fortune selling "Huile Speciale Panhard pour moteurs sans soupapes." They even went so far as to supply a special gadget consisting of a pin and cork float, which one was recommended to insert in the oil delivery pipe to restrict the flow when driving in Paris, where a regulation was then in force forbidding cars with smoky exhausts. In spite of several shortcomings, the Panhard went quite well and I did some very good runs with it. During the 1926 Boulogne Race Week I took it round the circuit and averaged 39.8 m.p.h. by stop-watch, of which, at the time, I was extremely proud. I also brought it over to England and ran it in the 1926 "London–Exeter," my first trial, but with no success, the sleeve valves taking a dislike to any oil except "Huile Speciale Panhard," causing a failure on two of the hills with a partial seizure.

Incidentally, I built a one-valve radio and carried it in this car, which worked quite well off a short aerial.

On returning to France I started looking around for something with more speed and acceleration, a Bugatti being my great ambition; but the prices of good Bugattis in 1926 were too high for my purse and I had to give up the idea. Eventually, in January, 1927, I met a gentleman who owned a Salmson "Special," with which, as the French say, he had become embarrassed, owing to an increase in his family. For better or for worse I arranged a level swop with him for the Panhard and we each departed with our new steeds.

The Salmson was one of a few built and had a four-cylinder engine of a little over 1,200 c.c. with twin overhead camshafts and the three-bearing crankshaft. Special stabilisers, consisting of small reversed quarter-elliptic springs, and known as the "S.G.D.G. patent," were fitted. The front axle was fitted with 12" Perrot brakes. The body of this particular car was a fabric 4-seater, with only one door, made by a Paris firm. Painted fawn with maroon flared guards and Rudge wheels it looked very smart. On its maiden journey to Bordeaux the cast-aluminium steering box disintegrated, fortunately when I was going slowly over some rough pavé, but a 'phone call to the works at Billancourt produced, in a matter of two hours, a fitter in a G.P., with new steering box, which he fitted by the roadside. The charge—nothing!

The Salmson was a joy to handle after the Panhard. The steering was direct and accurate, the brakes excellent and the acceleration very good indeed. She would cruise all day at 55–60 m.p.h. and on two occasions I went from Bordeaux to Paris in the day, four up.

When in Paris I paid a visit to Montlhèry and did several laps of both the outside and the road circuit with the resident nurse as passenger. She was a nice girl, but I did not like the way she would point to one spot after another and say, "Yes, here poor So-and-so was killed."

I also visited the Salmson works and had the car overhauled. While there I was allowed to see the Straight Eight 1,100-c.c. racing job which was then being built—it looked most promising and I often wondered what happened to it.

I brought the Salmson to England and entered it for the London–Barnstaple Trial in August, 1927. Unfortunately a plug cooked up on Beggar's Roost, due to excessive speed in first gear, and deprived me of a Premier Award.

On returning to France I went South and spent a week in the Pyrenees, climbing most of the well-known passes, then on into Spain and Portugal. While in Portugal, which at that time boasted some of the worst roads in Europe, the back axle sheared, but in three days the Portuguese Rolling Stock Company of Oporto made a complete spiral bevel and pinion for a charge which was a good deal less than if I had sent to Paris for spares.

From Portugal I went South again into Spain and visited Gibraltar, and then returned to France *via* Madrid. Eventually I sold the Salmson to a friend in Bordeaux, not without regret. Apart from the two failures mentioned it never let me down in thousands of miles over some of the worst roads in Europe; a very wonderful car for 1927.

Back in England, I was faced with the problems of hard work and little cash, and I eventually purchased an Austin Seven "Cup" model from Gordon England. In its original state it was a most disappointing car, with no turn of speed and a bad vibration period, inherent in most "Sevens" of that era, at about 46 m.p.h. About this time I met Boyd-Carpenter, whose exploits with the racing Austin Seven "Mrs. Jo Jo" will be known to your readers. Over a period of some weeks we gradually got the "Cup" model into shape. The springs were flattened and bound and the steering lowered. The ports were opened up and polished, special K.E. valves and double springs fitted and also a new induction pipe and horizontal Solex carburetter. I was also lucky in obtaining a cylinder head from a "Brooklands" model Austin. The acceleration and speed were greatly improved by these alterations, rather at the expense of smoothness and slow running but that was of minor importance.

I ran the Austin in this form in the London–Land's End and London–Edinburgh Trials of 1928 and gained Premier Awards in both events. By contrast, my effort at Shelsley Walsh of 85.4 secs. was pathetic, largely due to unsuitable gear ratios and lack of real power. The Supercharged Austin Sevens appeared at this meeting for the first time and clocked 62.4 and 62.8 secs., respectively.

The rather hectic life began to tell on the car, so I sold it privately and rather rashly bought a 2-seater A.B.C. from Phillips, Boyd-Carpenter's head mechanic, who had completely rebuilt it. This car had some excellent features and also many very undesirable ones. The engine was a horizontally opposed, air-cooled two-cylinder of 1,250 c.c., with push-rod overhead valves. The drive was taken through a plate clutch, with clutch stop, to a separate four-speed gearbox. Steering was by worm and nut, and exposed as far as the mechanism was concerned. There was no starter and only rear wheel brakes. The car had a most attractive dummy radiator, complete with filler cap, this causing some confusion at garages on filling up, as it was actually the filler cap of the petrol tank! The gear change was highly amusing, being on, so to speak, two levels. For first gear one pushed the lever down and forward, pulling it back into second, then into neutral. A spring moved the lever up, whereupon you pushed forward again for third and pulled back for top. Starting was always a problem, as to get over the compression of one of the cylinders required a superhuman effort. This particular car had two Brooklands-type silencers and on acceleration through the gears gave a good imitation of a machine-gun, which caused some trouble with the police. I believe that these cars would have been quite fast had the valve gear been redesigned, the limiting factor being terrific valve bounce, which often resulted in the push-rods flying out altogether. This happened at exactly 50 m.p.h. in top. I had some good fun with this car, but one day, after a series of upsets, one cylinder blew off complete, so after effecting repairs I sold it.

Next on the list was a "12/40" Lea-Francis open 4-seater, which had done 6,000 miles. This car was made up largely of proprietary parts and proved fairly satisfactory, although it had several shortcomings. The engine was the usual four-cylinder Meadows, with push-rod overhead valves. The gearbox was Moss and in its original form had rather wide ratios. Second and third I therefore changed for close ratios, as fitted to the "12/50" "Brooklands" model, and this effected a great improvement, giving a comfortable 50 m.p.h. in third gear. The rear springs were quarter elliptic and were responsible for very erratic braking on uneven road surfaces. The brake pedal would go in and out according to the deflections of the rear axle. Apart from two broken axle shafts I had no trouble

CARS I HAVE OWNED—continued

with this car, but I never really liked it. I secured a "Gold" with it in the 1929 Land's End Trial and also ran it at Shelsley, clocking 77 secs., which was very bad. I sold it to a friend, who ran it for two years and spoke highly of its qualities.

Money being short again, the next acquisition was a 1927 "Chummy" Austin Seven, which was obtained as a means of transport. However, with the aid of Boyd-Carpenter, numerous alterations were carried out more or less on the lines of those already mentioned for the "Cup" model. We also tried some experiments, and eventually found that by enlarging the ports to an absurd size and fitting a pump-type Schebler carburetter off a 30-h.p. Chrysler quite amazing acceleration could be obtained. We also fitted bicycle-type front mudguards, which gave the car a rather comical aspect. The 1930 Land's End Trial saw me again a competitor, but the clutch seized on Porlock and put paid to that.

The 1930 "Double Twelve" saw the advent of the "Double Twelve" M.G. Midget, and finance being on the upgrade I placed an order for one of these cars, which was to be specially prepared for competition work. The great day came when I sallied forth to Abingdon to collect the M.G. Midget, which looked very smart in all-black finish and outside exhaust bound with white asbestos string. The car was supposed to be run in, but it was apparent that, in fact, it was extremely tight and the slightest hill brought it down to second gear. I think I must have been the only "sucker" that bought one of these cars, as it really had nothing to recommend it at all. Even when run in it was no faster than a good M-Type M.G. and there was no acceleration; further, I had endless trouble with oil leaking from the rear main bearing into the clutch housing and turning the under tray into a veritable oil bath. Never have I so much regretted spending £260 on anything. The 1931 Land's End Trial brought an ignominious "No Award," after which I determined to palm the car off on to someone else.

One day in May, 1931, when motoring from the North, I stopped in Biggleswade and parked next to a Supercharged Austin Seven, which at that time was quite new. While inspecting the Austin the owner came along and offered me a run, which I readily accepted. I was very impressed with this car, which handled just like a miniature racing machine with performance to match—60 m.p.h. in second gear and 75 m.p.h. in top whenever you liked and really sparkling acceleration. This car belonged to Crowther, and I made up my mind from that moment to sell the M.G. and have a blown Austin. This I accomplished by arranging a level swop with Norman Black for a practically brand new example which had done 1,132 miles. I was overjoyed with my new acquisition, which was in perfect condition and had a good deal better performance than Crowther's.

At that time I made the acquaintance of Vernon Balls, who had an ex-works blown Austin, and we arranged to enter his, Crowther's and mine in the 1931 Relay Race. The cars were all duly stripped and tuned by Vernon, and many amusing evenings were passed in that small workshop he had at Fulham. Apart from carefully dismantling and reassembling everything, we fitted a Solex carburetter in place of the Cozette and Luvax hydraulic shock-absorbers instead of the normal friction type. The great day came when we took the cars to the Track for a try-out. It was my first experience of Brooklands. The results were extremely satisfactory, Balls's car being the fastest, with a lap speed of 89 m.p.h., mine second with 85 m.p.h. and Crowther's third at 82 m.p.h. In fact, on handicap it looked as though we had a good chance. On the day of the race it rained "cats and dogs" and the whole track was flooded. Vernon opened the ball and completed his 30 laps at an average of over 80 m.p.h. Crowther went next, but after a few laps it was apparent that all was not well, and he was forced to retire after six laps with a broken gasket, leaving me 54 laps to go. I shall never forget that drive in the pouring rain and, although it was short-lived, actually nine laps before I had to retire with the same trouble as Crowther, the Austin averaged over 80 m.p.h. and did its best lap at 83.7 m.p.h.

In the same year I made fastest time for sports cars in the Bugatti Owners' Club hill climb at Chalfont and was second in the racing class up to 1,100 c.c. at Lewes. In the M.C.C. High Speed Trial in September I averaged 68.5 m.p.h. for the hour and won the Alban Brown Trophy (and, incidentally, £5) for a two-lap handicap at an average of 70.64 m.p.h. Although I sold the car before 1932 I borrowed it for the Bugatti Owners' Club hill climb that year and knocked 1½ secs. off the 1931 time. I have nothing but praise for the Austin and think it represented the finest sporting value that has ever been offered at the price. It was not an easy car to maintain for normal running, but if you knew its tricks it was possible and I used mine every day for running around. Owing to the system of lubricating the blower by a gravity tank and valve connected to the throttle, oil used to accumulate in the blower casing and produced a veritable smoke screen for about 30 secs. after starting up. One also had to remember to use Castrol "R" in the engine, Castrol "XXL" in the blower tank and Castrol "XL" mixed with the petrol—quite a problem!

I was sorry to part with the Austin, but glad to sell it privately to one, T. B. Rahan, who gave it a good home for two years.

In 1931 I formed a team with Vernon Balls to drive Vernon Crossley cars in Brooklands races, but in spite of much work and talk the cars were never a success and nothing came of it.

The Bugatti Owners' Club was now in full swing and, having been elected to the Council, it seemed only right to have a Bugatti.

Eventually I bought a supercharged 2-litre Type 38A, of which only three were imported into this country; I think Dennis Evans had one of them. Briefly, it was the 2-litre Type 38 fitted with a Type 37A blower and a body similar to the 2.3-litre Type 43 3-seater. It was supposed to be the worst car that Bugatti ever made, which may be true, but I had a lot of fun out of mine and not a moment's trouble. It was very fast and would do 90 m.p.h. any time, the limiting speed being 4,500 r.p.m., at which engine speed the big-ends gave up. The previous owner, who had had this happen twice in Mountain races, kindly passed on the information, so that I profited by his experience. I had the whole car overhauled by the late L. G. Bachelier and I can truthfully say that running on Champion R.3 plugs I never once oiled up.

The year 1932 saw me at the start of the Land's End Trial again, together with Faulkner and Bear on "2-3" Bugattis and Giles on a 3.3-litre Bugatti. All four ran as a team and gained Premier Awards, and there was quite a stir in the motoring Press, as hitherto it was generally considered that Bugattis were too unreliable for trials. Incidentally, Faulkner ran his "2.3" in a Mountain race the following Monday and tied for first place with Whitney Straight's 2-litre G.P.

With summer, 1932, came a longing to get abroad again, so I sold the Bugatti and bought a Morris "Minor" side-valve 2-seater, which was then obtainable at £100 new. In this car a friend and I motored through France, Switzerland and Austria, climbed the Arlberg and the Stelvio, then into Italy to Genoa and along the Corniche to Nice and back home again in 10 days. It was one of the best holidays I have ever had. The outstanding feature was the Stelvio, and on our return I made up my mind that 1933 should see me at the start of the Alpine Trial. The remainder of the year I ran the Morris and also had the loan of a friend's 5-litre Bugatti saloon, which was a very attractive car indeed.

January, 1933, saw plans in progress for the 1933 Alpine Trial with a 2-litre O.M. belonging to W. W. Blackstone. It was agreed we should share all expenses of preparation, and this was carried out by the O.M. Concessionaires, R. C. Rawlence.

The car was one of a few specially built and had a six-cylinder engine with push-rod overhead valves and three R.A.G. carburetters. The o.h.v. head was, I think, designed by W. H. Oates and made in England. The chassis was lower and smaller than the normal 2-litre and the radiator narrower. This particular car had a small fabric 4-seater body by Corsica. It was a joy to drive and just the car for the event, as it revelled in hills, never boiled, and had a useful turn of speed, just over 80 m.p.h.

The start was at Merano and, after sundry excitements, we were soon in the thick of a good old road race, which the Alpine always turns into. Disaster overtook us on the first day on the Falzarego Pass above Cortina. I was driving at the time and hit a boundary stone to some purpose, breaking a dumb iron and an engine bearer and knocking a hole in the sump. It was only by amazing ingenuity by a small garage at Cortina that we were able to return under our own steam, but the trial was over as far as we were concerned. While in Italy we visited the O.M. Works and Blackstone bought a supercharged 2-litre. This had a six-cylinder side-valve engine and a Roots

CARS I HAVE OWNED—continued

blower driven off the front of the crankshaft. It was a disappointing car and never went very quickly.

On our return I sold the Morris and started to make plans for the 1934 "Alpine," the idea being to enter, if possible, an English car with a real chance of success. In the meantime I bought a Seventh Series Lancia "Lambda" 2-seater, which I liked enormously in spite of the noise and peculiar steering, which kicked at certain speeds on uneven roads.

My first thoughts were towards another blown Austin Seven for the "Alpine," as a supercharged car seemed to have a great advantage on the passes, and having seen an advertisement for one, "partially dismantled," I duly paid a visit to a small North London garage and towed away a chassis and various bits of engine, etc. These were removed to Bachelier's garage at Wimbledon, where I proceeded in my leisure hours in the evening to rebuild the Austin from stem to stern. A special built-up crankshaft was made by Laystalls at a cost of £18, and every part was machined and fitted with scrupulous care. All steering rods and arms were chromium plated, and when completed the car looked very smart. Funnily enough, however, the performance was nowhere near as good as that of the other Austin and, after extensive trials in hilly country, I decided that it was not a suitable mount. I duly exchanged it privately for a "J.2" M.G., which was again exchanged with some cash for a very nice supercharged "Montlhéry" M.G. Midget belonging to Norman Black. This was really a delightful little car in spite of its small capacity of 746 c.c., and was, I thought, just the machine to put up a good show in the "Alpine" provided it was possible to obtain 100 per cent. reliability. The car was taken to Thompson & Taylor and the situation duly explained to Mr. Taylor, for whom, both as a craftsman and an individual, I have great admiration. The car was stripped and rebuilt regardless of cost, certain small alterations being effected in order to obtain reliability. After two months Taylor rang up and I went down to Brooklands and collected the car. I shall always remember Taylor's parting words: "She should be all right if the back axle stands up to it." They certainly made a wonderful job of the car and a great deal of thought must have gone into the preparation. The engine ran like a sewing machine and gave off plenty of horses so that it would do 90 m.p.h. in top, 70 m.p.h. in third, 50 m.p.h. in second and 40 m.p.h. in first gear. She would start first press of the starter button, brakes and steering were first-class and running on Champion R.3 plugs, no plug trouble was experienced. I don't suppose any car was better equipped than these little machines, which had dual petrol pumps, dual coils, brakes and shock absorbers adjustable from the driving seat, every conecivable instrument and separate switches for each lamp. Apart from one or two runs to test her out with Blackstone, who was to be co-driver, we kept the M.G. in cotton wool until August.

The 1934 "Alpine" was organised by the Germans and the start was at Nice. On the way down we decided to have a shot at Galibier, which was the plum of the timed passes and reputed to be impossible to climb in the times allotted. Being supercharged we had to do all timed tests in 10 per cent. better time than normal cars.

The old Galibier Pass is nothing more than a narrow track and pretty steep at that, but the Midget roared up in terrific style, leaving a small margin on our set time. It was here that I first met the late H. E. Symons, who was driving one of the first "N" Type M.G. Magnettes, and with whom I subsequently became very friendly.

The start was terrific as usual and soon we were dashing over the passes in great form. Unfortunately, owing to an avalanche, the Galibier was cut out, for which I was very sorry.

The Midget behaved marvellously and would pass the "Le Mans" Singers—of which there was a team, amongst whom were Kay Petre, Norman Black and Reggie Tongue—with great ease. The front-drive Adlers also presented no difficulties going up hill, but, owing to their superior springing and braking, required some holding going down. On the Stelvio we clocked 25 minutes, which was the fastest climb by any car up to 1,100 c.c. The M.G. attained 60 m.p.h. in third on the lower reaches. After covering 1,600 miles with no loss of marks disaster overtook us on the sixth day on the Turracher Hohe in Austria when, with a noise like an explosion, the back axle deposited itself in the under tray. For some moments I just sat and thought of Mr. Taylor. . . . We left the car at a farm and continued to Munich in a German official car, a large left-drive Fiat, which I drove as the officials were dead beat. Even the Germans tire sometimes! Eventually I had the M.G. sent to Salzburg by train and Capt. Atkins, of Autocheques, brought it home on his Carter Paterson lorry. Apart from the disappointment, it cost £50 to get the car back. In the meantime, Blackstone and I returned to London with Tommy Wisdom and Mike Couper in the "110" Talbots, paying a visit to the Nurburg Ring *en route*.

With only very short time to obtain and fit a new axle, I entered the Midget for the M.C.C. High Speed Trial in September and averaged 79.36 m.p.h. with no further preparation.

The M.G. seemed to have exhausted its possibilities now and with the 1935 season in view I decided to have a stab at racing proper. Accordingly, I exchanged the Midget and much cash for Norman Black's K.3 M.G. Magnette, with which he had won the Mannin Beg Race. I again visited Thompson & Taylor and left the machine in their charge for a complete refit for the next season. Unfortunately, the handicappers knew only too well what capabilities the car had, and although it went very well it never went sufficiently fast to win, and further alterations necessary to gain the odd few m.p.h. were impossible as finance had already been stretched to the limit. In the first Brooklands meeting of the year I entered for a Long Handicap, but in spite of one lap at 113 m.p.h. I was not in the picture.

In April I accompanied Symons on the record run to Timbuctoo from London in seven days in a Series II Morris Ten. This was a most interesting trip and has been so fully written up that I will say no more than to praise Symons's organisation and his amazing energy. The record still stands, I believe, unless it has recently been beaten by the Germans on their way to Dakar!

On my return I entered for the British Empire Trophy Race with Mike Couper as co-driver—"Bira" and E. R. Hall also entered M.G. Magnettes for this event. At half distance we were leading the 1,100-c.c. class in front of the late Pat Fairfield's E.R.A. and Hall's M.G. Magnette, but a broken air-pressure connection to the petrol tank played havoc with the average. As it was, I drove the whole distance, averaging 65.77 m.p.h. and finishing only 50 secs. outside the time limit. I ran in all the B.A.R.C. meetings for the rest of the season and obtained a third in one Mountain race; the only one I have ever driven in.

So ended the 1935 season; unsatisfactory from the point of view of awards, but rich in good fun. I sold the Lancia and bought a Ford V8 saloon, which must have been one of the very first models. In appearance it looked like the "14.9," with a high body and very short wheelbase. Handled loosely it was a very dangerous car, but it had a better performance than more modern V8s.

Early in 1936 I disposed of the M.G. privately, after running it on the road for a month, which was a most exhilarating experience. Taking it all round it was a good car and the engine was very smooth up to 6,000 r.p.m. The steering was doubtful on corners, but I think this was due to a certain nose heaviness caused by the blower being in front. The self-change gearbox never gave any trouble.

The outlook for 1936 was doubtful. However, I drove a Morris "25" coupé in the Scottish Rally and later in the year got married, which temporarily put paid to fast motoring, so I bought a new Austin Ten saloon from Mike Couper, after selling the V8, now almost a wreck, for £15.

In 1937 I accompanied Couper in his "110" Talbot on the R.A.C. Rally and, next to the K.3 M.G., I think this was one of the most exhilarating cars I have driven on the road. We started from Harrogate and finished sixth in the final placings.

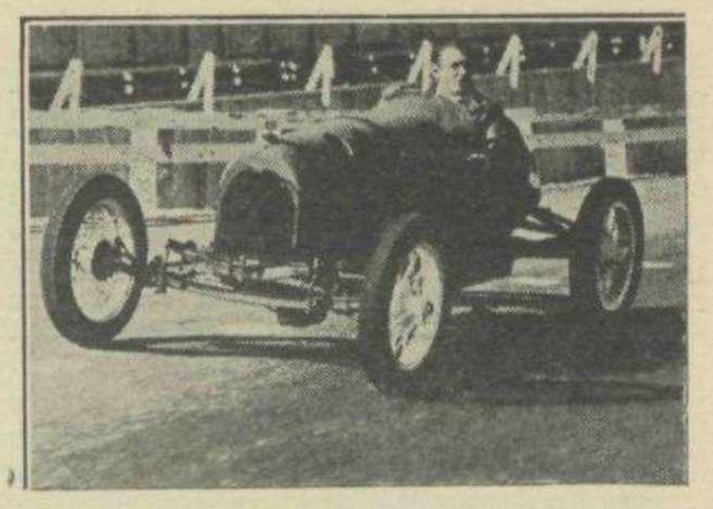
In August the lure for foreign travel again persisted and my wife and I took a Morris "14" to Iceland, where we covered over a thousand miles on the most appalling roads, but had a very enjoyable time. The Morris was rebuilt on our return, as most of the underneath had been written off on boulders and crags. I then ran it for nearly a year, including a three weeks' trip to the South of France in 1938. It had excellent steering and would cruise all day at 60 m.p.h.

In 1938 I sold the Morris and bought a Fiat "500," which I ran in the Fiat race at Brooklands with no success; it was too small for a family car and it was duly disposed of. My last car before the war was a Citroen "Big 15," which I sold about six months ago. It was a most

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FRONTENACS

H. L. Biggs recalls interesting memories of "Special" Model "T" Fords



THE name of Henry Ford in connection with motoring sport calls to the mind of the average enthusiast in this country thoughts of modified V8s used in trials of the "slime-storming" variety, or possibly some of those "Special" four and eight-cylinder cars which did so well in the Swedish Winter Grands Prix. In American racing circles, however, they think of Arthur Chevrolet, who, in the early 1920's, realising that the excellent power/weight ratio of the Model "T" made it a suitable basis for the construction of a dirt and short-distance track-racing car, set about the design and manufacture of parts to convert the standard product to one capable of putting up a high performance.

The Chevrolet Bros. Mfg. Co. of Indianapolis (later known as the Arthur Chevrolet Aviation Motors Corpn.) produced first a special cylinder head for the standard "T" Ford. Known as the Fronty Model R, this was a flat head with push-rod-operated overhead valves of $1\frac{7}{8}$" dia., single induction port and carburetter, three exhaust ports, and a compression of 85 lb. In May, 1922, two Fronty Fords, using motors fitted with this Model R head, qualified for the Indianapolis 500 Mile Race and completed the whole distance at an average of over 80 m.p.h. In short speedway events similar cars lapped the half-mile tracks at speeds over the 60 m.p.h. mark and the longer $1\frac{1}{8}$-mile tracks at 92 m.p.h. These cars, of course, embodied additional modifications to engine and chassis, which left little of the original Ford design unchanged.

The next head was the SR, a logical development of the R, having two induction ports and carburetters, two plugs per cylinder and increased compression of 100 lb. At Indianapolis in May, 1923, a "Fronty," running under the name of the "Barber Warnock Special," driven by L. L. Corum and using a unit with this SR head, qualified at 86.92 m.p.h. and finished fifth in the race, defeating, as the current account says, "all foreign cars, such as Mercédès and Bugatti." On the half-mile tracks that year the SR distinguished itself by making fastest lap, driven by none other than the great Frank Lockhart himself.

For both the R and SR push-rod heads there was available an overhead camshaft conversion, with a single camshaft of $1\frac{1}{4}$" dia., drilled for pressure oil feed to cams and bearings. The cams gave a lift of $\frac{3}{8}$" and the camshaft drive was by chain from the crankshaft, tension being maintained by an idler sprocket.

The ultimate development of the "Fronty" head was the Type DO, built to special order under the personal supervision of Arthur Chevrolet. This was a 16-valve head, using double o.h.c., driven through an idler straight-cut gear wheel meshing with straight-cut gears on each camshaft; the idler wheel carried a triple sprocket, which was driven by a triple roller chain from the crankshaft, the whole drive being enclosed and lubricated by surplus oil from the camshaft feeds and the chain tensioned by a similar method to that used for the single-camshaft drive. The valves were inclined at 60° to the vertical, being $1\frac{9}{16}$" in dia. with $\frac{3}{8}$" stems; the cams operated directly on special valve collars, which were screwed to the valve stems and provided adjustment for clearance. Great attention was paid to the design of the water passages in this head, as the compression was as high as 120 lb., and a special water pump was used to ensure a good flow, this pump being driven, in tandem with one or two magnetos, by a special front gear set, which also carried the oil pump on its cover. Inlet and exhaust ports were of $1\frac{5}{8}$" dia., there being four of each, and one, two or four carburetters were used. Owing to the drag always present with the planetary transmission of the old Model "T" Ford, Chevrolet made a special crankcase and flywheel housing, which enabled "Fronty" owners to convert their older cars to use the "A" Type sliding gear transmission and clutch. The whole conversion could be made with hand tools only and be fitted regardless of the type of head or crank; it was, of course, essential when dry sump lubrication was used for the longer events.

In conjunction with the special "Fronty" heads were other essential parts of Chevrolet manufacture. For instance, several crankshafts were obtainable; that used in units fitted with the 16-valve head was of disc web pattern, perfectly balanced, with $1\frac{5}{8}$" main and $1\frac{3}{8}$" big-end journals, an increase of $\frac{1}{8}$" over the standard dimensions. It was drilled for the "Fronty" oiling system. A standard dimension, balanced and drilled crank was also supplied, this being used in many cases with the R head. Special star-sectioned con.-rods, in chrome vanadium, were invariably fitted when the oversize crankshaft was used. Twin or single magneto sets, 3-gallon sumps, special camshaft gears, ball-bearing end caps and countless other aids to speed could be obtained; in fact, most parts could be fitted either singly or in conjunction with others, enabling drivers to "soup up" their power units as fancy and finance dictated.

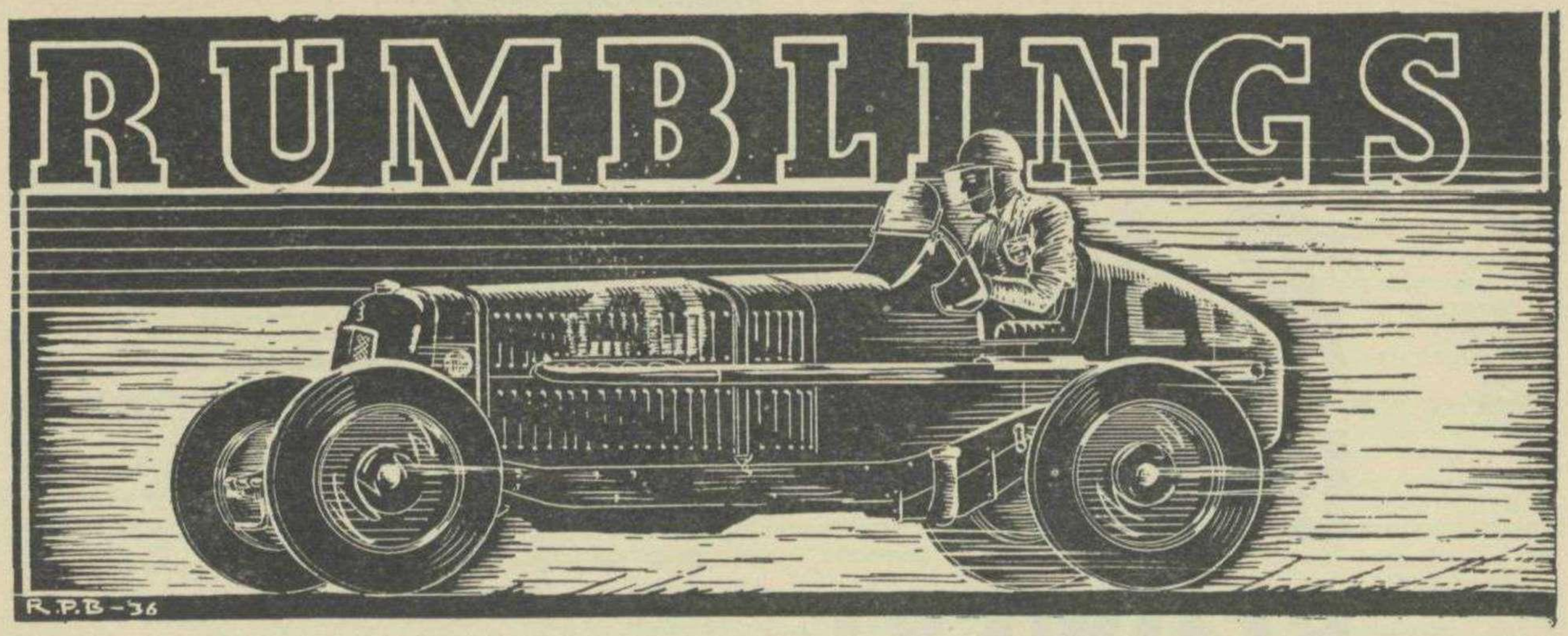
"Fronty" chassis modifications were on sale to the driver who wished to build up his own track car. Flattened springs (and suitable brackets to mount these underslung), light double radius rods for both axles and a special ball-bearing back axle assembly with oversize half-shafts obtainable with five optional ratios (3, 3.25, 3.63, 4, 4.2 to 1) were supplied for use on long-distance speedway, $\frac{1}{2}$-mile dirt and $\frac{1}{4}$-mile dirt tracks as required. Special cam and lever steering gear, chrome vanadium steering arms and stub axle assemblies (on which ran 28"×4" wellbase wheels with Rudge pattern hubs) gave a feeling of security as regards directional control. A narrow, deep-block, bull-nosed radiator was commonly used and bodywork made to suit the driver's requirements.

The practical value of Chevrolet's scheme to the American racing driver seems to be that he could start with a standard "T" Type Ford with, possibly, an "R' Type head, and, if he did well at the home-town dirt track, could step up his speed and the possibility of "getting in the big money" by purchasing "Fronty" extras whenever cash prizes allowed.

The "Fronty" was also sold as a complete car, ready for the track, fitted with a narrow all-steel single-seater body, not unlike the early E.R.A.s, the short tail carrying a double tank containing 10 gallons of fuel and 3 gallons of oil; wheelbase was optional, but was usually 8'. The body was so narrow that when using the 215D motor with the double camshaft head the whole of the inlet manifold and carburetter stood outside the bonnet; no doubt readers may have noticed this in some of the early films which were made showing incidents on American tracks, such as "The Crowd Roars." The price of the "Fronty" Ford in 1929 varied from $2,000 with the 215 engine, which had the R Type head and planetary transmission, to $2,700 with the 215D motor, which had the 16-valve double camshaft head and sliding gear transmission. In all, there were five types of "Fronty" Ford racing motors, and comparative peak speeds are interesting:—Type 215 with R head, single carburetter and planetary transmission, 3,600 r.p.m.; Type 215A, which was the same unit, but with the single overhead camshaft and sliding gear transmission, 4,200 r.p.m.; Type 215B, with the SR head, two Zenith carburetters and planetary transmission, 4,000 r.p.m.; Type 215C, as the 215B, but with the o.h. camshaft and sliding gears, 4,800 r.p.m.; Type 215D, 16-valve head, sliding gears and one 2" downdraught Winfield, 5,600 r.p.m. These speeds are for the standard motors as sold. Individual drivers no doubt obtained higher speeds by their own modifications; I heard only recently, from a mechanic who was with Millers in those days, that Frank Lockhart used a DO head cast in bronze on his 215D motor for $\frac{1}{4}$-mile tracks, with considerable success.

Many American drivers well known today ran "Frontys" in the 1920's—Wilbur Shaw, "Wild" Bill Cummings, Howard Wilcox, "Dutch" Baumann, Louis Schneider and many others. In 1928 "Dutch" Baumann, driving a "Fronty" (Type 215D motor), made 52 starts and won 43 firsts. I think this is a record for short track racing. He also lapped the

Continued on page 64



Grand Marques

CECIL CLUTTON'S comprehensive article on the evolution of the racing car from 1895 to 1908, which appears in this issue, will be digested with interest by those who study the history of racing, and will be found a compact source of reference in connection with the early development of the racing car. As a sequel to his painstaking compilation, Clutton has drawn up an analysis of racing successes over the years which his article embraces, and from this one learns that during the period the marques Panhard and Fiat stand out from the rest. Panhard was in the ascendant from 1895 to 1904 and Fiat in 1907 and 1908, although in the latter year Mercédès certainly won the Grand Prix. The only serious challenger to the long run of Panhard victories was Mors, from 1899 to 1903. Richard Brescia, Darracq, de Dietrich, Itala and Renault stand out above the remainder during this chapter of history. Panhard, however, ran in 37 races from 1895 to 1904 and occupied the first three places on no fewer than 62 occasions. Mercédès were somewhat in a class by themselves, performing consistently, but seldom spectacularly, from 1901 onwards and exercising a markedly greater influence on contemporary and subsequent design than their successes suggest. The "scores" of the various marques which raced during the period which Clutton is considering make instructive reading:—Panhard, 22 wins, 23 seconds and 17 thirds; Fiat, 6 wins, 5 seconds and 4 thirds; Mors, 7 wins, 6 seconds and 3 thirds; Richard Brescia, 3 wins, 1 second and 0 third; Darracq, 3 wins, 3 seconds and 0 third; de Dietrich, 1 win, 2 seconds and 3 thirds; Itala, 3 wins, 1 second and 3 thirds; Renault, 2 wins, 1 second and 0 third; Mercédès, 3 wins, 2 seconds and 1 third; Peugeot, 1 win, 4 seconds and 6 thirds; Bollée, 1 win, 0 second and 1 third; Clément-Bayard, 0 win, 2 seconds and 2 thirds; Minerva, 1 win, 1 second and 1 third; Isotta-Fraschini, 2 wins, 0 second and 0 third; Benz, 1 win, 3 seconds and 2 thirds. All that, my masters, was centuries ago, centuries ago. . . .

Sans Gasket

Querico, who has prepared cars for W. B. Scott, Charlie Martin, Austin Dobson, Shuttleworth and others amongst the "big boys" and whom lots of you will remember as a serious little man in a beret, with an old O.M. 4-seater, is working hard in the national effort. In his spare time he has thought out, perfected and rather comprehensively patented, a novel cylinder head which maintains a sound gas and water seal at the block without any form of gasket and without grinding the joint faces. He hopes to see it used, later on, for highly supercharged racing engines and aero-engines. Meanwhile he proves that it is quite practical for ordinary cars by using such a head on his 1932 Rover Ten saloon. The Ford Motor Company, Ltd., is interested. We met "Query" recently and it was not at all difficult to get him going on Bugatti and Alfa-Romeo reminiscences, embracing British and Continental events and the doings of the Ferrari organisation. He echoed the wish of us all when he wistfully observed: "If only it could all start happening again." He is likely to relaunch Whincop on his racing career as soon as such a state of affairs comes about, with the ex-Shuttleworth twin o.h.c. 2.3-litre Bugatti. Mrs. Whincop has recently had a complete racing outfit in Bugatti blue made for her by "Uncle Lewis" against that happy time, which is enthusiasm indeed.

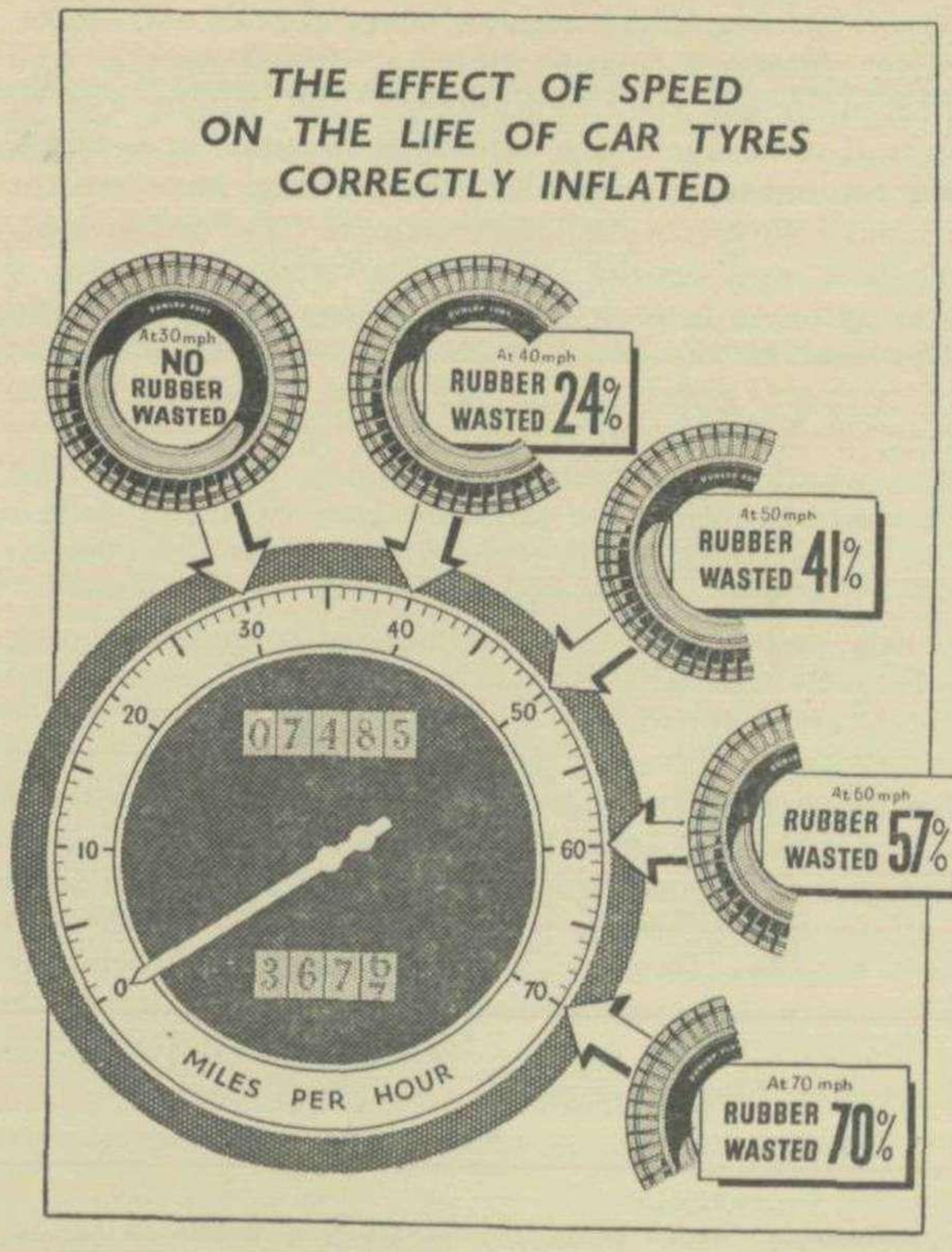
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Sporting Gesture

When the late Barbara Bolster took her supercharged Morris Minor up Shelsley Walsh in 45.8 secs. she beat Mrs. Petre and was not herself beaten by 2 secs., as we wrongly stated last month. On this occasion the Morris did a very poor first run due to magneto trouble. No spare was available, but Mrs. Petre, who on her second run had made fastest time by a lady up to then, very sportingly lent the Scintilla magneto from the Austin. It was adapted to the Morris engine with difficulty, being wired down and the drive being considerably out of line, but it enabled

Save Rubber—

DRIVE SLOWLY!



DUNLOP TYRES last longer

2H,113

Barbara to do the best ladies' run that day, wresting the Ladies' Prize from the donor of the magneto! The leaders of our Motor Industry are supposed to be singularly indifferent to the Sport, but in this instance Lords Austin and Nuffield, who were both present, derived much amusement from this extremely sporting gesture.

* * *

If the Cap Fits . . . .

(*With apologies to Robert W. Young*)

There's a roar from on the roadway—Oh, listen, Honey, listen!
Do you hear it, do you fear it, you're a-holding of *me so?*
You're a-sobbing in your sleep, dear, and your lashes how they glisten;
Do you hear the revving engines all a-begging me *to go?*

* * *

All a-begging me to leave you, day and night they're sighing, zooming,
From Donington, from Brooklands, from Shelsley, and from Lewes,
Night and day they never leave me—do you know what they are saying?
"He was ours before you got him and we want him back again."

* * *

Yes, they're wanting me, they're haunting me, the large and little motors;
They're whining and they're whispering, as if each had a soul;
They're calling from the Stelvio, the Continental hill climbs,
From Monaco and Tripoli: "When shall we race again?"

* * *

They miss my jet black brake marks, the reek of Castrol R,
In the heart of motor racing, where was never man so small;
Where motorless I sought them, driving mad, daring, dreaming,
Where they hailed me as a driver and they loved me ever more.

* * *

And now they're all a-crying, and it's no use me denying
The spell of them is on me and I'm helpless as a child;
My heart is aching, aching, but I hear them sleeping, waking:
It's the roar of revving engines, it's the spell of Motoring.

* * *

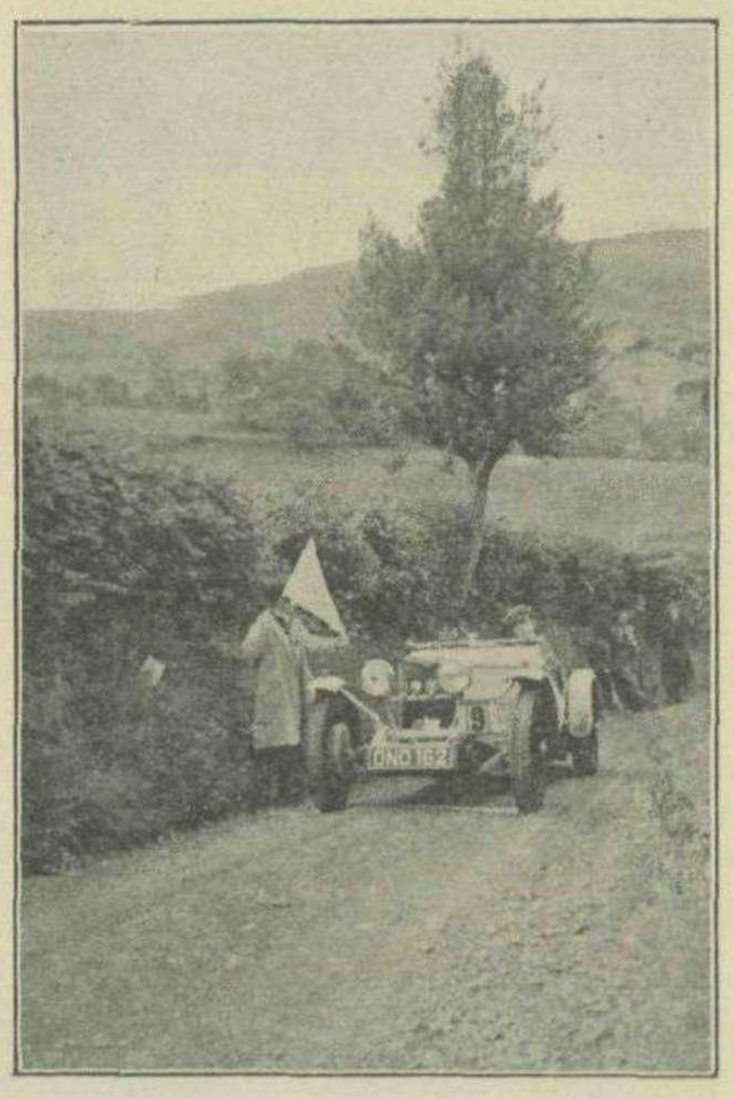
I'm afraid to tell you, Honey, I can take no bitter leaving,
But softly in the sleeptime from your love I'll steal away.
Oh, it's cruel, Honey, cruel, and it's God knows how I'm grieving,
But the God of Speed is calling and he knows I must obey.

T. A. J.

Club News

WE HEAR . . . .

John Cooper, of Scuderia Impecuniosa, has added a fabric 2-seater F.W.D. Alvis, of the blown four-cylinder variety, to his stable. He drove down a distance of 100 miles from Leicester at 42.1 m.p.h. average to collect it, in his immaculate twin-carburetter, big port "12/50" Alvis with two friends and quite a party resulted, as he was met by Partridge's 1929 4-seater unsupercharged F.W.D. Alvis, Lowrey's 1,100-c.c. H.R.G. and vendor Kipps in the ex-Radley M.G. Magnette 2-seater, boasting magneto ignition and no fewer than six external drainpipe exhausts. Partridge has put in a lot of work on his Alvis, which now has a single S.U. carburetter. It is the car which Ken Farley once raced at Brooklands, and the present owner also has a fabric 2-seater F.W.D. Alvis. In a recent 400 miles duty-journey to the West Country and back about the only unusual cars noted were a 4-seater Marendaz "Special" Six, old and new Crossley Ten saloons, and early Morris Six of rather rare type, an old gentleman in a beautifully preserved, if very touring, 3-litre Bentley, and a very smart cream Riley "Gamecock" 2-seater. A "14/40" "Brooklands" Lea-Francis 4-seater was seen in use in Hampshire recently. In order to relax from Army life, Gerald Sumner bought himself a 4¼-litre Bentley while on leave not long ago; he has also acquired the ex-Esplen "R" type M.G. Midget for future dicing engagements and has been running an Isotta-Fraschini 2-seater. Sydney Allard has been indulging in a spot of rationed slime storming, using a Gould "Greyhound" Ford V8 4-seater with a late 30-h.p.engine having special heads with o.h. exhaust valves, Scintilla magneto ignition and 16"×7" comp. covers all round. S. G. Cummings is reported to have been killed in an air crash. Lieut. John Cumming, the Australian Maserati driver, is trying to acquire an Indian combination, American Army pattern, and John Bolster is riding an ex-racing "Red Hunter" Ariel. R. G. V. Venables has a B.M.W. solo and Leslie Seyd rides a 350-c.c. Matchless "Clubman Special," but Lowrey has sold his Square Four Ariel, replacing it with a 1928, water-cooled s.v. J.A.P.-engined two-speed Morgan. In the same village a really early "Family" Morgan is in regular use. Monica Whincop now motors in a "D" Type M.G. 4-seater, but has, in addition, a "P" Type M.G. with J2 engine, a Renault Twelve drophead coupé, a four-speed Austin Seven 2-seater—and, of course, her husband's Bugattis. The Bugattis are not for sale! Capt. L. Roy Taylor, whose address is "Gainscott," Breton Heath, Shrewsbury, is putting a Riley Nine engine into a modified Amilcar and would like to acquire a twin carburetter manifold for an early Riley Nine and to receive hints and tips on tuning. He is trying to find a sound 1934 short-chassis Aston-Martin or similar 4-seater 1½-litre sports car, up to £250, and has for disposal a 1934 Van den Plas drophead coupé Alvis Speed Twenty. He reports finding a Flanders "20" and a two-cylinder Riley tourer in a Ross-on-Wye breaker's, and he would be glad to meet enthusiasts in Staffs, Shropshire, Hereford, Radnor or Montgomery; he was responsible, incidentally, for modelling the "Newsome" and



"Monro" trophies, and is now working on a model of Monro's Invicta. Cleland's well-known Ford V8, a 1932 30-h.p., with which he won a Welsh Rally, has been considerably blitzed, but it is still working, hauling farm machinery. Apparently "Chitty II" is *not* in America; she is reported to be still in Dover, still owned by Mr. Hollis, and available at around £35. Pte. D. Izod, R.A.M.C., has purchased a 1930 G.P. Salmson with dismantled engine and seeks information, c/o R.A.M. College, Millbank, S.W.1. A 1935 Alfa-Romeo 1¾-litre drophead coupé is reported to be at a Canterbury breaker's, and C. W. Densham, of "The Cottage," Ashley, Dover, wants to part-exchange two "Brooklands" aero screens for a pair of Lucas "Mellotone" horns or special bits for his 1935 Riley "Imp." Denyer has his Lea-Francis cars and various motor-cycles carefully stored and is busy with fire-prevention duties, for which he has evolved a very imposing Bentley fire engine. There was a Lagonda "Rapide" 4½-litre tourer with very nice lines (the pre-i.f.s. model) at a Surrey garage for £125, and we know of a 1936 M.G. Magnette 4-seater with spare engine, rear axle and E.N.V. box, at £200. Then B. Fitzpatrick has the ex-P. R. Monkhouse M.G. Magnette for sale, with road equipment, at £175; he badly wants a 1935 1¾-litre unblown Alfa-Romeo instruction book. The veteran Alldays & Onions mentioned recently has been given a home in Croydon, whither it went on a 5-ton lorry, and someone in Bristol is trying to win a bet by running an A.C. Sociable. In Somerset a 1900 Gladiator and a Daimler dogcart are reported, but *not* for sale, and the only coupé H.R.G. lives that way; it has, incidentally, a Triumph engine, not a Meadows as a contemporary recently stated.

LEA-FRANCIS OWNERS' CLUB

The very recently formed Lea-Francis Owners' Club deserves every credit for getting off well in these trying times. Nearly all the famous cars of this marque of recent years have turned up and members embrace Wrigley, Molyneux, Currie, Wagstaff and Cliff McCulloch, the last named with Delaney's "Special Hyper." The following announcement has reached us and we wish the Club well:—

It is proposed that a Lea-Francis Owners' Club be formed for the benefit of owners of all Lea-Francis cars, in particular vintage types. The primary object of the club at present would be quite unambitious, but would certainly include the following:

(1) Keeping enthusiasts in touch with one another and issuing to all members a complete membership list, which, as well as giving names and addresses, will include details of members' experience, cars owned, spare parts available and any other details likely to be of interest. People will then be able to correspond with each other on matters of mutual interest.

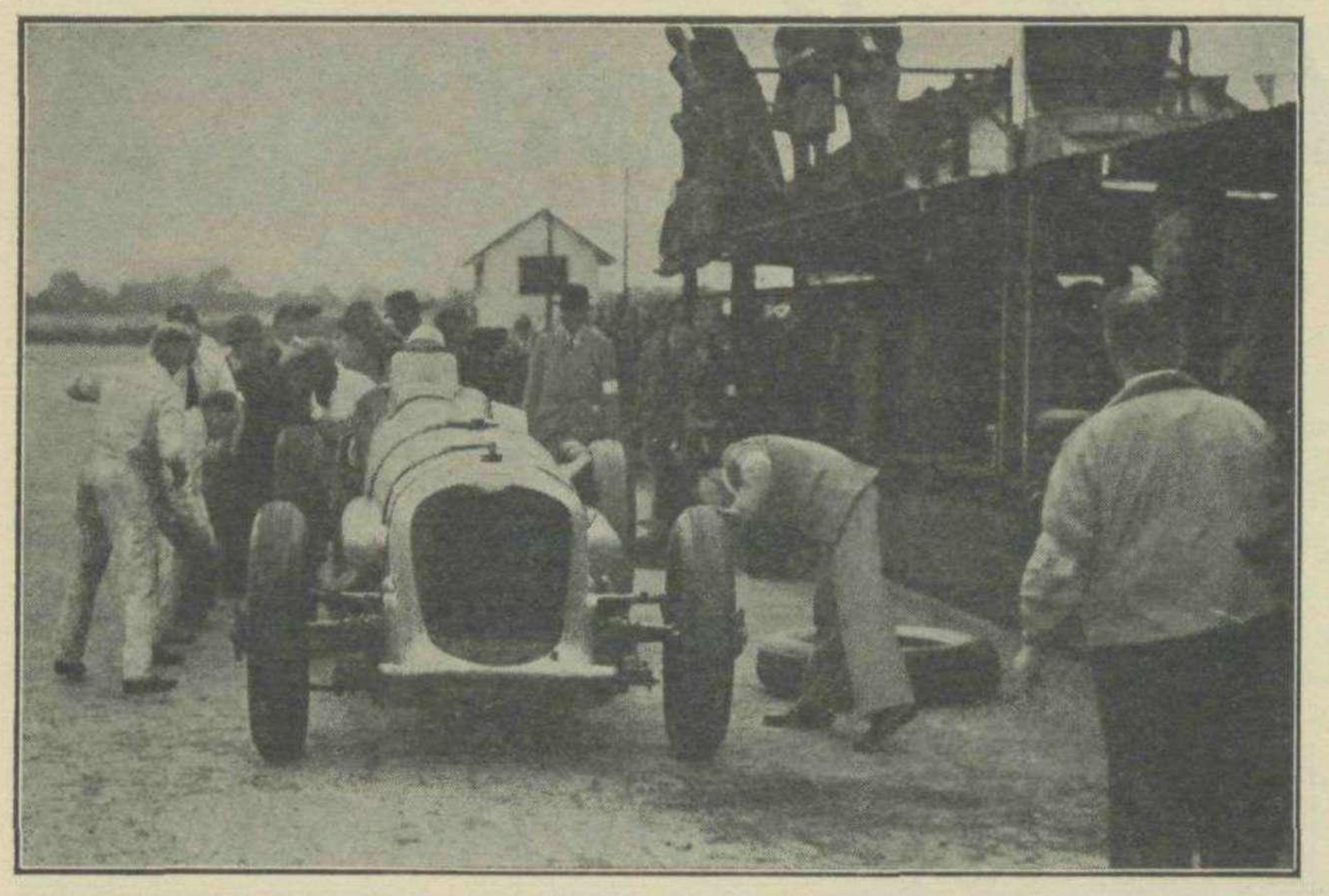
(2) Keeping a Register of spare parts available, both new and second-hand, so that those having cars undergoing repair or reconstruction will be able to lay their hands on parts required.

It is suggested that the above activities should commence forthwith, and, in order to facilitate this, you are asked to send in to me full particulars *of past and present cars owned of all makes, together* with a list (with prices) of spares and accessories available and any other details that will be useful in compiling the Register. If you will also enclose a stamped addressed envelope, a copy of the Register, together with any news of the Club, will be forwarded in due course. Your opinion is earnestly desired on any other activities, present or future, in which you would like the Club to indulge: whether you are in favour of a periodical being produced (which would necessitate a subscription, but enable the Club to be put on a more formal footing), etc. The Club is open to anyone interested, whether they have a car or not, and I shall be delighted to hear from you shortly as above so that we may get under way. Hon. Sec., Lenard Potter, Outwood House, Wilmslow Road, Cheadle, Cheshire (Gatley 2934). London members are invited to telephone H. Ashwood at Streatham 3193 and arrange a visit.

750 CLUB

The March 1st lunch went off with the swing one has come to expect under Capon's organisation. H. L. Biggs brought some toy cars in his Fiat "500," including one of those excellent P2 Alfa-Romeos; Tubbs regaled his friends with

CLUB NEWS—continued



Rubber is becoming scarce . . .

his usual excellent stories and went for rides in Jenkins's very beautiful D.I.S. Delage and Merten's 4½-litre Bentley, and a number of M.G.s, with the inevitable blondes, came along. Childs (Austin), Birkett (Austin), Ballamy (B.M.W.), Capon (Riley), Hunter (A.E.W. Austin), Klemantaski (Fiat), Mallock (Austin), Boddy (Gwynne), Grosscurth (Morris 8), George Foxlee (Triumph) and Lowrey (H.R.G.) were also present, as were a "Nippy" Austin, a Wolseley Hornet and a "12/40" Lea-Francis, so that the gathering was pleasantly comprehensive. Williams, in his pretty Austin Seven, gave a demonstration of decent getaway, if not such decent cog-swopping, and Kipps, Frost, Birkett and Capon held a committee meeting after lunch. Ashwood, Potter and Merrilees exuded Leaf lure, and a very fine Excelsior "Manxman" represented the motor-cycling fraternity. The next meetings will probably be of a rather different character, and it is hoped to stage a film show on April 5th—these race-starved days we could appreciate a showing of George Monkhouse's Mercédès films, however many times we have already seen them. Whatever it puts over, certainly the 750 Club merits your enthusiastic support. While basic rations are issued, no criticism from outside sources need be feared. Hon. Sec., S. H. Capon, 159, Upper Tulse Hill, S.W.2. (Tulse Hill 6426.)

SOUTHERN AMATEUR M.C.C. ELITE CUP TRIAL

The event held on Sunday, February 22nd, on Pirbright Common, consisted of 10 sections, which had to be covered twice, mostly tricky climbs and descents, as the ground was too hard for mud sections. Some 59 starters tackled the first test, a timed run over a rough course approximately ¼ mile long, fastest time being put up by S. M. Berry in 27.4 secs., followed by E. French and J. H. Ford in 28 secs. and 28.1 secs., all mounted on 350-c.c. Triumphs. A very steep descent with a right-angle bend at the bottom followed and a very small percentage managed to reach the bottom safely and fewer still got round the bend. Competitors then tackled a steep climb up a narrow gulley. After a cross-country dash, the riders had another observed section, which was mainly a test of steering lock and brakes, with plenty of ground clearance a premium. Two more tests were climbs through small copses, and then there was a plunge through a small stream with lumps of ice everywhere. A further cross-country run to a couple of twisty sections on the side of a hill and a tricky descent through a wood brought competitors back to the start. Good performances that were noticed, while wandering around the different sections, were put up by R. Petty, S. M. Berry, G. F. Robertson and S. E. Cunningham, while a very early Sunbeam, ridden by R. T. Viney, did remarkably well.—D.S.J.

Elite Cup: G. F. Robertson ("350" Royal Enfield) lost 31 marks.

250-c.c. Cup: R. J. Petty ("250" Triumph) lost 92 marks.

350-c.c. Cup: J. Blackwell ("350" B.S.A.) lost 38 marks.

500-c.c. Cup: J. Botting ("500" Sunbeam) lost 80 marks.

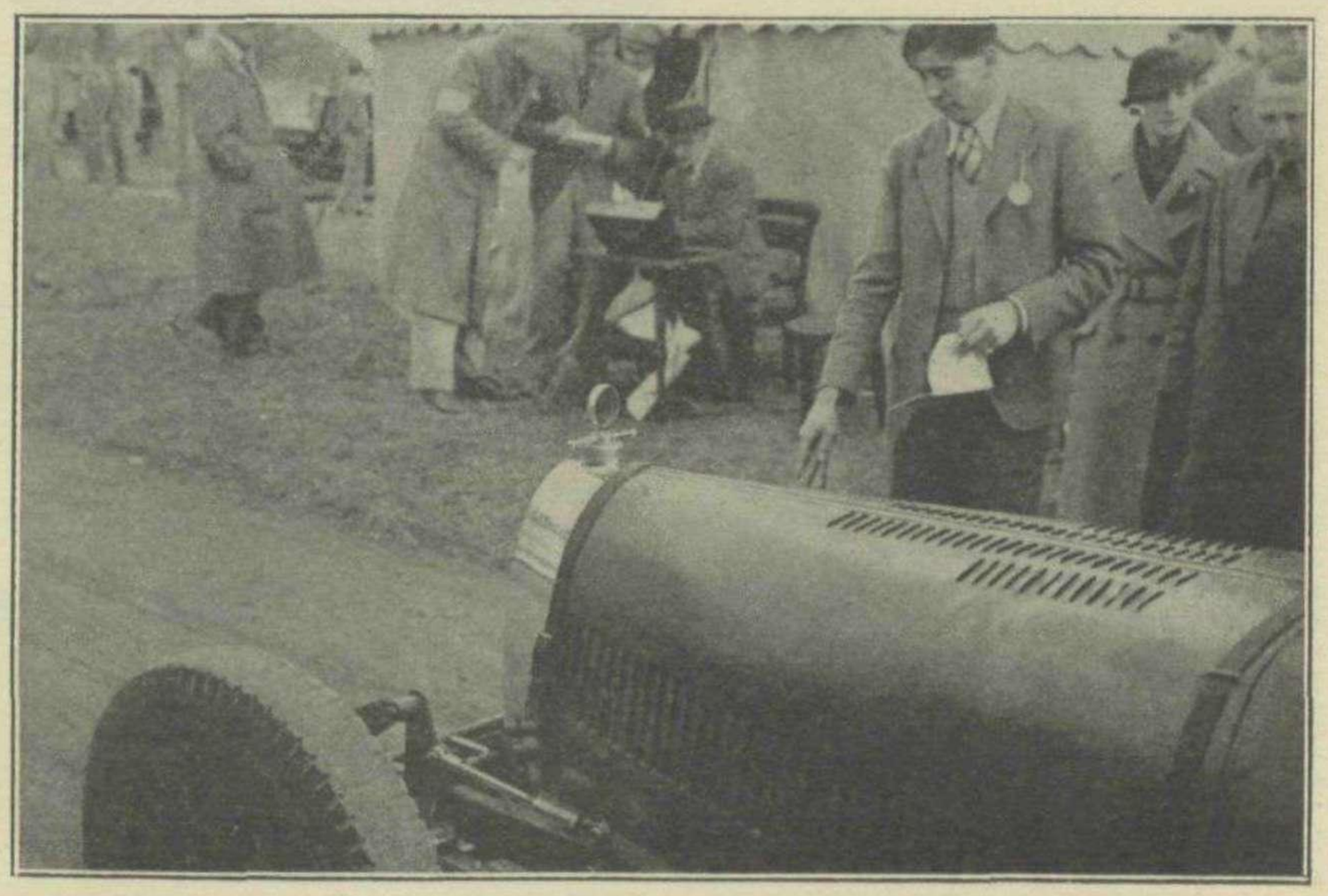
Service Cup: Cpl. Thoroughgood ("350" Ariel) lost 69 marks.

Home Guard Cup: F. Boggett ("350" Triumph) lost 81 marks.

Novice Cup: S. Cox ("350" Sunbeam) lost 111 marks.

GENERAL NOTES

Quite a quantity of water has flowed under bridges and what not since anything appeared under this heading, and it seems ages since three of us spent Christmas Day journeying rapidly to Nailsworth and back in wintry sunshine, that an 1,100-c.c. H.R.G. could try the Ladder, Ferriscourt and suchlike acclivities; incidentally, smooth rear tyres defeated it on the first named. The snow found the Gwynne undertaking certain official journeys, when its lofty c. of g. did not impair the confidence it somehow inspires, in spite of having no real road-holding qualities, while its remarkable easy starting propensities were doubly appreciated. Sundry veteran hunts resulted in the inevitable droll adventures, stories of a Salmson used as a "garden car" on an estate leading to inadvertent penetration of army-commandeered quarters, but no car, while a gypsy who had a "fleet of two-cylinder Renaults" had apparently taken the road long since. In bitter cold a sketchy Austin Seven 2-seater was persuaded to function and the veteran

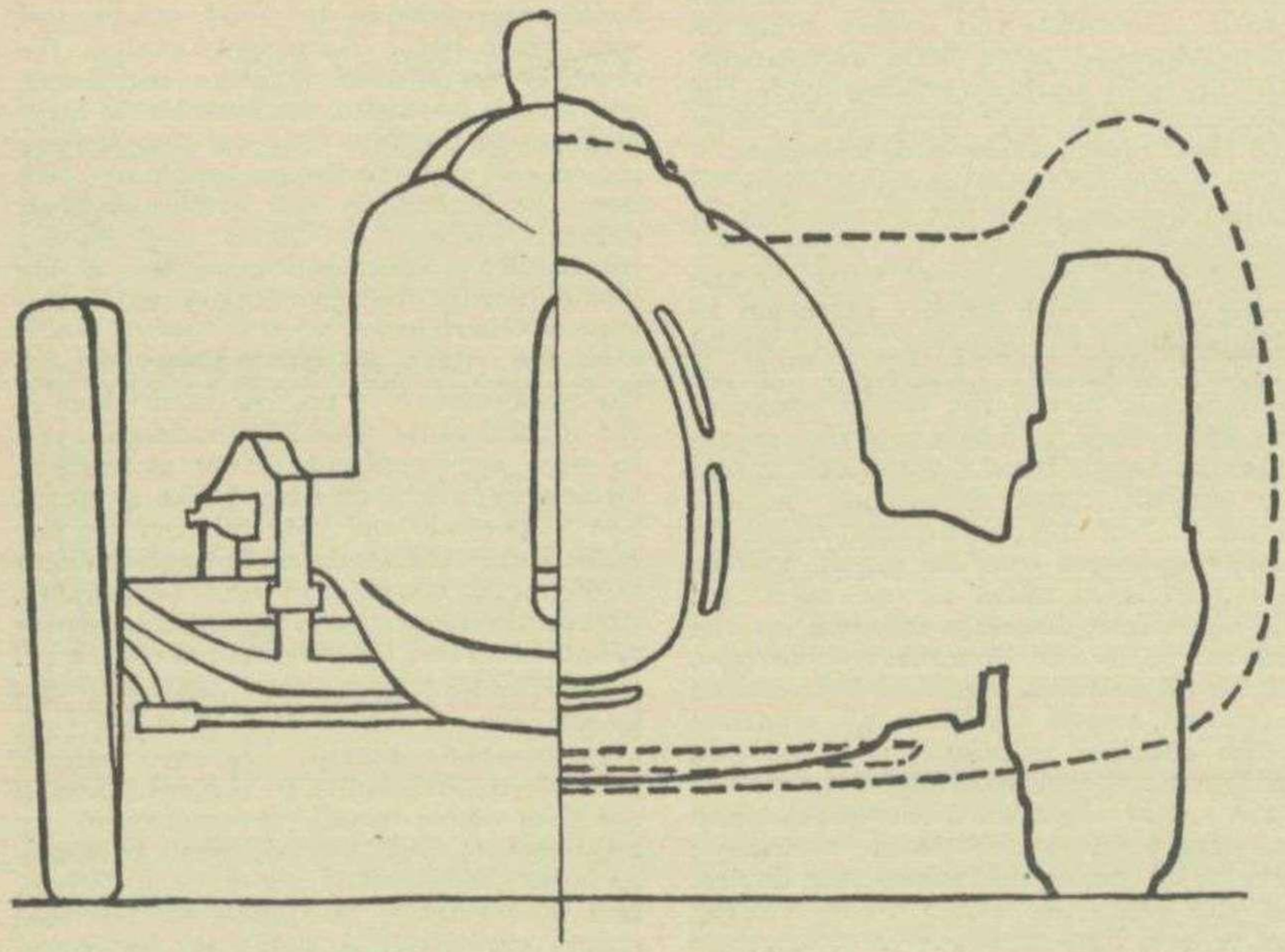


"On the line we have . . ."

CLUB NEWS—continued

Delage towed spiritedly to London, doing entirely all the braking down hills, if swaying precariously hither and thither on the rope when the towing car was coaxed up to 40 m.p.h. All that had to be packed into a half-day's leave and nearly wasn't, first because ice defeated us up hills out of the village, and later because of darkness and cold so intense that the driver in the Delage could barely operate the push-forward handbrake. The old car was hastily given a temporary home in a large cinema car park, and this was one of the few occasions when we welcomed a return by train, which, most unusually, left to time, arrived punctually and was quite reasonably warm and inhabitable. Many routine towing jobs of newly acquired or unwell vehicles have happened, often using a 1,100-c.c. H.R.G. which, driven for a short spell, proved very light on all the controls, delightful to handle and a most convincing performer. It was this car which took us to a breaker's yard where a V8 Apperson, a V12 Cadillac, an Alpine Steyr, a Flanders, a La Zebre and a pre-1914 Rolls Royce were located and, if they were hardly in condition to enter in the Register, it was significant how much better the Rolls Royce had withstood the elements than any of the others. Four days much-needed leave was spent seeing many interesting but unmentionable things at various aerodromes, for which a war model Austin Ten saloon covered some 400 miles most satisfactorily, although the gear-ratios seem singularly badly chosen. One lunch hour there was a brief but tonic trip in search of new tyres, preparatory to taking its owner west on night-flying duties, in the twin o.h.c. Anzani-Frazer-Nash, one of the more notable "locals," which cruised at some 56 m.p.h. (2,800 r.p.m.) and went momentarily over 60 m.p.h., with no apparent effort, the camshaft gears rumbling in a curiously remote way, the exhaust quite silent. The H.R.G. went to one very snowy motor-cycle scramble (postponed) and then up to the 750 Club Meeting, and for the next meeting the elderly and most certainly comic Gwynne was used—it has done some 1,600 miles since being re-bearinged and, as far as can be ascertained, cruises at 45–50 m.p.h., averages 35 m.p.h. about the place and does its 40 m.p.g. on long runs, using 80 main jets in the twin Amals. One afternoon, too, we became cyclecarists for a brief spell, with a 1928 s.v. water-cooled Morgan-J.A.P., which the Gwynne could barely hold on a circular dice over well-known roads, the Moggy being superior on acceleration from rest. Inevitably, this variety motoring that has meant so much for many years must now ease up; but, despite pessimistic newspaper items concerning basic rations, it seems impossible that it can cease altogether for, at any rate, a few months to come.

STREAMLINING IN A NUTSHELL



Reproduced herewith is the line drawing referred to in the concluding paragraph of Cecil Clutton's article, "The Development of Streamlining," printed in our February issue. Considerations of space compelled us to omit it from the article, but so much interest has been shown in the subject that we have decided to insert it this month. The drawing shows half the 1909 Vauxhall against half an Auto-Union, the outline of the record-breaking Auto-Union being indicated by dotted lines.

READER'S 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.

WANTED

SET of Easychange Wire Wheels, Alvis "Silver Eagle" 1933, 20". James Gordon & Co., St. Andrew Street, Castle Douglas.

CROWN Wheel and Bevel Pinion, "9/47," Morris "15/6," 1935, open propeller shaft. James Gordon & Co., St. Andrew Street, Castle Douglas.

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

". . . LATE PROPERTY OF TITLED OWNER"

Cecil Clutton Samples a "Twenty" Rolls Royce

IN advertising certain makes of cars particular clichés are considered essential to a profitable sale. For instance, it is indispensable for a Frazer-Nash to have "deflector head; 88 m.p.h. in third." A Bentley should have "close-ratio box; mfrs'. seals intact." A Bugatti cannot expect to change hands unless it does "115 m.p.h.—de-tuned for road work." The high spot in Rolls Royce advertising, however, is undoubtedly "late property of titled owner."

I was recently instrumental in buying and delivering such a car for a friend, in the shape of a 1927 20-h.p. Rolls Royce, with all-weather coachwork. Like most readers of MOTOR SPORT, I am more accustomed to cars with at least a modicum of sporting propensities, and I found the experience so interesting and enjoyable that I make no excuse for writing a short description of the vehicle; to broaden one's outlook is always salutary.

Most luxury cars have also some pretence to performance, but the 20-h.p. Rolls Royce was unusual in having none whatever; the manufacturers devoted their whole attention to comfort and refinement. This particular example was in really superlative condition throughout, even the outside of the beautifully finished engine was immaculate. Available evidence indicated that the car had only travelled some 8,000 miles during its 15 years of life.

On taking delivery I had the 33"×5" tyres blown up to 35 lb./sq. in. all round, which seemed a likely figure for a car which probably weighed little short of 2 tons. The engine started instantaneously from cold, on the starting carburetter, switching over on to the main carburetter in about a minute and gradually reducing the latter to "weak" on the mixture control. In some three minutes the engine was warm enough to pull properly, and under the influence of the entirely hand-operated radiator shutters, the water soon attained a convenient running temperature of 70° C.

Once thoroughly warm, the tickover could be cut down to a negligible speed, at which the engine was genuinely inaudible. The accuracy of the Rolls Royce controls is uncanny. One click makes just so much difference and no more—never a trace of play or lost travel. To use the spark control is an epicurean pleasure in itself. The instruments, too, work in a most convincing way, and while there was no attempt to standardize the dials, the needles and calibrations all exhibited the highest degree of accurate workmanship. The needle of the A.T. speedometer was completely steady and showed no tendency to float vaguely to and fro over the speed range.

Driving through traffic two things are particularly noticeable. One is the phenomenal politeness of the police force. The other is that where most cars will pull up in traffic on an apparently level road and stand still without the brakes, the Rolls Royce always supposes itself to be on a steep hill and starts to run away—a tribute to the freedom of the wheel bearings and transmission. In this particular case it was rather a tiresome habit, because the hand brake—an immense lever—severely barked the knuckles unless applied back-handed. The gear lever, by contrast, was very short and somewhat remotely situated from the driver; it has light spring tensions towards the centre of the gate. It is a pity it is not longer (even if ingress and egress would have been made more difficult), because it is the sort of lever which is a pleasure to use and moves in that indescribable manner which is peculiar to Rolls Royce products.

The clutch is very positive, but sweet nevertheless. Upward changes are normally of the slow, double-clutching kind, but quite a noticeable degree of clutch stop action is available when required, and this would be invaluable for upward changes on an up-gradient. The clutch action is only reasonably light. The foot brake (in the centre) operates the four-wheel brakes *via* the well-known Rolls Royce mechanical servo system, and the complicated linkage system had developed a certain amount of play, which exhibited itself in a mild clatter when the pedal was released. The very skimpy, unribbed drums promoted no anticipatory confidence, but they do, in fact, pull the car up in a very convincing manner, without any tendency to wander. The pedal operation is light and sensitive. But if a real emergency stop is undertaken, the front axle winds itself up most wonderfully and the car rushes hysterically from ditch to ditch. Albeit, a stop from 30 m.p.h. in as many feet can be accomplished. Doubtless this vagary could be much improved by a little adjustment, and the front brakes certainly gave the impression that they were doing more than their proper share of deceleration.

The engine will pull smoothly down to a smart walking pace, but on acceleration from low speeds in top a very slight clank suggested the pressure of wear in the timing gear. With further attention to carburation and ignition this would probably disappear altogether. From 20–40 m.p.h. in top the engine produces very fine torque, and this probably represents the range from 1,000–2,000 r.p.m. The car will cruise delightfully at 40–45 m.p.h., but engine vibration begins to become apparent over 50 m.p.h. and at 60 m.p.h. is as much as one cares for. The equivalent absolute maxima on the gears are 20, 30 and 40 m.p.h. respectively, but for all practical purposes bottom can be ignored, and 20 and 30 m.p.h. regarded as the effective maxima on second and third gears. Largely owing to the silence of the engine, downward changes demand considerable judgment and accuracy; there is, of course, no foolproofing device, and the gears are straight-cut, voicing that refined hum which is so pleasant to hear. In this particular car, third seemed a trifle noisier than usual or than one would have expected after so little use. For getting away from rest it becomes habitual to glide away on second, at little more than a tickover.

Acceleration from 10–30 m.p.h. in top can be accomplished in a trifle less than 15 secs., but this could doubtless be improved upon. To advance from rest to 50 m.p.h., using the gears and rapid changes, took 30 secs. on an average, but this might be reduced with practice and experience, and the speedometer certainly erred on the side of slowness, if at all.

Despite several such acceleration tests in a run of some 25 miles, including getting out of London, the petrol consumption worked out at a little better than 20 m.p.g., which, for such a large car on "Pool" petrol, is remarkably economical.

The driving position is delightful, though definitely of the upright variety, giving splendid visibility. The steering wheel kicks a good deal, but this might be due in part to unbalanced wheels or incorrect tyre pressures; in any case, it was by no means disagreeable. The lock is almost taxi-like, despite which the steering wheel only moves through $1\frac{3}{4}$ turns in all—an exceptionally high ratio. The steering is highly sensitive, with no play, and the cornering capabilities of the car are altogether remarkable. The castor action is quite pronounced and the reverse castor action when travelling backwards has to be watched quite attentively.

Contrary to expectation, the springing is by no means spongy, yet both front and back passengers enjoy a degree of genuine comfort which no amount of transatlantic suspension has ever attained; added to which, there is no need for the back passengers to be good sailors and wear crash hats. As already stated, the stability on corners is quite surprising, and this is no doubt attributable in large measure to the fact that the rear springs are set out right to the brake drums. Nor does the high body roll in the slightest degree, while slight skids are always beautifully balanced—genuine dicing would hardly be in keeping with this type of carriage!

In fact, the most noticeable thing about the performance of the car as a whole is the mental state which it produces, even in such an impatient driver as myself. Ordinarily, when driving, I like to go as fast as possible and hate talking. In the Rolls Royce the tendency is to glide along at 40 m.p.h., converse with the passengers, admire the scenery and regard the owners of sports cars with good-natured contempt.

This, indeed, is the best proof that the manufacturers achieved their object to a very complete extent. It was, indeed, possible to find faults in the car (though most of these could be minimised by adjustment), but the indifferent performance cannot be put forward as a criticism, and it is strange how little an habitual sports car driver is annoyed by it, so soothing is the general behaviour of the car. The 20-h.p. Rolls Royce does, indeed, combine personal comfort, mechanical refinement and safe and sensitive handling in a degree seldom, if ever, achieved in a motor-car, and which in 1927 was certainly something quite out of the way.

Letters from Readers

Sir,

May I comment on the following points from your January issue ?

(1) Mr. Green should get into touch with Mr. F. H. Hambling, 20, Greyshiels Avenue, Headingley, Leeds, who will tell him all about the Vauxhall-Bugatti. Mr. Hambling fitted the 1922 Vauxhall T.T. 3-litre engine into the "4.9" Bugatti chassis—very neat job, too.

(2) I would chide Mr. W. G. S. Wike for the statement that the 1,100-c.c. H.R.G. does as much as 3,000 r.p.m. at 60 m.p.h. This would be O.K. for the 1,500-c.c. Meadows job, but the standard 1,100-c.c. geared 4.8 (?) would do about 48 m.p.h. at 3,000 r.p.m., and 60 m.p.h. is about 3,750 r.p.m.

(3) Engine design in 1909. The mounting of the airscrew on the camshaft was used quite extensively in 1914–18 on the R.A.F. (Royal Aircraft Factory) 90 h.p. (a V8) and 140 h.p. (a V12) (cast-iron air-cooled cylinder, side inlet and overhead exhaust), the design being "cribbed" from the 20-h.p. Renault and made by several motor-car makers—I remember seeing one by Austin's.

(4) Remarks in "Rumblings" on desirable cruising speeds, etc. Taking the accepted safe piston speed of 2,500 f.p.m. for cruising, I have worked out a few examples (approximate figures, but near enough for comparison) :—

Car	Stroke mm.	R.P.M. at 2,500 f.p.m.	Gear Ratio	M.P.H.
"T" Midget	102	3,750	4.8	60
1½ H.R.G.	100	3,800	4	78
1½ Brescia Bug.	100	3,800	3.5	86
1½ Aston-Martin	99	3,800	4.66	68
1,100-c.c. H.R.G.	95	3,900	4.8	63
"TB" Midget	90	4,200	5.2	60
Lancia Aprilia	83	4,400	4	88

Therefore it would appear that, apart from vintage cars (which are pretty good at high-speed cruising), there are only two moderns under 1,500 c.c. capable of the desired performance, *i.e.*, 70 m.p.h. cruising.

Ossett, I am, Yours etc.,
Yorks. J. A. FAWCETT.

[A letter from Mr. Hambling is published in this issue ; the 4½-litre Vauxhall Villiers engine is involved, not the 3-litre T.T. engine. We believe the 1,100-c.c. H.R.G. makes about 51-52 m.p.h. with 4.55 to 1 axle ratio and 4.75 × 17" tyres.—Ed.]

* * *

Sir,

I have recently purchased a Brescia Bugatti, which I rescued in a somewhat rusty state from a farm at Hunts Cross, just outside Liverpool. The owner of the car knew very little of its history, and I wonder whether any of your readers know anything of it ; registered 1924, No. XU9855 ? I have carried out only a few alterations, fitting aero screens and replacing the 710 × 90 tyres by 5.5" on an old set of Riley wheels. This car has an amazing turn of speed and I have touched 80 m.p.h. on more than one occasion (this was the speedometer reading, so cannot be taken as accurate).

I have found this car exceedingly easy to handle. In spite of its steering, which is rather direct, it can be cornered with the greatest of ease.

I am very anxious to obtain performance figures for these cars, and any information concerning their peculiarities.

I have been a consistent reader of MOTOR SPORT for about 2½ years now. I look forward to the articles on the Veterans and also any news of Austin "Specials." You are doing a grand bit of work keeping the Sport going under such trying circumstances.

I am afraid that, owing to war conditions, the Sport at Cambridge cannot flourish, but when the time comes again I have little doubt that one or two startling "Specials" will appear.

I am, Yours etc.,
Cambridge. A. HOWARD BATESON.

* * *

Sir,

Your reader, Patrick Green, asked for information regarding the ex-Mays' Vauxhall Supercharge. After being raced successfully by S. G. Cummings and finally hitting a tree at Wetherby, it was purchased by a friend of mine. The chassis being badly out of line, I suggested buying the Kaye Don "4.9" Bugatti chassis and installing the Vauxhall engine, complete with clutch and gearbox, but using the Bugatti rear axle. This work was done, and the first time out at Wetherby the owner, J. Hanson, who had no previous trial run, only a practice run before the event, managed to clock 32 secs. for the course in first speed only, the Bugatti axle being far too high for sprint work, *i.e.*, 2.6 to 1, as used by Don in the Outer Circuit at Brooklands in the 500 Mile Race. It was all the more credit to Hanson that he was able to get off the line without burning the clutch out.

At the outbreak of war the car was purchased by Tony Brooke, of Frazer-Nash and "30/98" Vauxhall fame, and we hope that some day it will appear again.

Headingley, I am, Yours etc.,
Leeds 6. F. H. HAMBLING.

[A letter from Anthony Brooke, on this subject, appeared last month.—Ed.]

* * *

Sir,

Being a reader of great enthusiasm and having profited from your "Club News" on several occasions, I would like to inform you of a good snip which I have come across. I hope this will bring to some enthusiastic reader many miles of real motoring

The snip takes the form of an Alvis "Speed Twenty" open tourer, which I am informed is a 1935 model and belonged to a young man now serving in the R.A.F.

The car is in good shape and is fitted with three S.U. carburetters, dual ignition, good batteries (two 6-volt) and has, I believe, been rebored. Telecontrol shockers are fitted, as are speedo, rev.-counter, oil and water thermometers, in addition to the usual instruments. Lucas P.100 lamps are fitted and numerous extras in the shape of pass lights, etc. Bodywork is aluminium and in good condition, colour green ; weather equipment is good and side screens are *in situ*. Two brand new and unused covers are fitted to the rear wheels, whilst the remainder are serviceable.

Definitely an enthusiast's car, there does not seem to be much demand for 3-litre jobs in this locality, and it seems a shame that she should be idle, standing on her own four-wheel jacks, as she has been for the better part of the war.

I have just bought a 3-litre Lagonda or I should have purchased her myself. I believe she is expected to fetch somewhere around £150, but no doubt would go for considerably less. I would be genuinely pleased to place any interested party in touch with her owner.

Here's wishing you every success in your endeavours to keep the vintage enthusiasm strong, and I, for one, will do all I can in seeking out likely models.

All good wishes to MOTOR SPORT.

I am, Yours etc.,
Stroud, Glos. D. A. NORTH.

[We can, of course, take no responsibility in respect of cars mentioned as being for disposal. Such announcements are published in good faith as a means of locating interesting cars and must be accepted as such.—Ed.]

* * *

Sir,

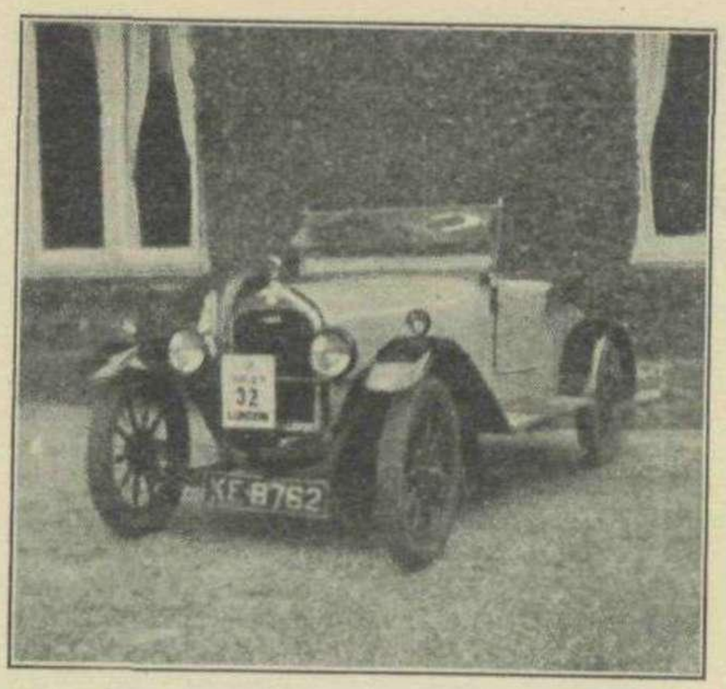
I intended to write offering congratulations on your "Bad Journalism" (*vide* S/Capt. Hess) in relation to the preposterous proposal for a Victory Run to Berlin by Vintage cars, but Forrest Lycett has said everything very adequately.

Many people forget that in this war we have Allies who are tired of seeing their civilian populations strung from trees in public places, and when victory is achieved they may well have far more control than ourselves over what happens in Berlin. The programme is unlikely to include social events for young men on mobile museum pieces.

During the 20 years Armistice it amused us to be called the "Mad English," but the events of this war have so far showed that foreign opinion had a large basis in fact. This Victory Run would set the seal on our reputation as a nation of lotus eaters, the pampered children of a fleeting prosperity.

If one did not know more of the people backing the proposal one could dismiss it as the frothing of frivolous and stunted intellects, but any manufacturer who is tempted to back such an event should bear in mind that the ignorant foreigners do not take nearly such a high view of

Continued on page 46



REGISTER OF THE UNIQUE

A MINISTRY of Supply Bulletin stating that the scrap-metal drive is going forward vigorously and that scrap would be collected to the tune of 40,000 tons a week from January 21st, the country being combed county by county, prompts us to publish the results of our plot to save the unique, which we outlined last December. Briefly, the idea was to draw up a Register of veteran and vintage cars of unique character and so give those persons seeking to restore and save such cars an opportunity of acting before it is too late. Quite a large proportion of enthusiasts has a desire to own, and to operate in post-war events, a veteran car, and many more wish to restore unusual vintage cars to road-worthy condition. To do this inexpensively it is necessary to acquire a vehicle in rough condition, and it is just such that will fall victims of the drive for scrap metal. Whether these cars are of historic significance or merely a source of intrigue to enthusiasts, one would like to see them saved; they cannot, even collectively, influence the tide of war if rescued from the scrap-dealer's hammer. The response to our appeal for information relating to the whereabouts of such cars has been fairly reasonable and has been supplemented by our own researches carried out during the last few years. We refrain from publishing the full addresses of owners and vendors of these cars, as in few instances have they been approached for permission; for this reason we would request that enquiries be made tactfully on this understanding. We can take no responsibility for the information which follows. Mostly the cars and spares listed are of less than "advertisable value." They may not still be available, although most of the information has come in since publication of our appeal and in extreme instances the cars in question have been seen within the last four or five years. If anyone is anxious to save one or more of the cars listed, address *and stamp* a postcard, put the reference number or numbers of the Register entry concerned in the top right-hand corner of the card, and post to W. B., 129, Fleet Road, Cove, Hants. The fullest available location will then be sent as soon as possible; *no correspondence can be entered into*. Some cars of which we have heard have already changed hands, and if a car is taken over we should like to be notified, so that it may be crossed off the Register, which may be of further use when the war is won and the demand for cars eligible for Veteran Car Club and Vintage S.C.C. veteran contests begins to grow. We should also like to hear of further finds, for inclusion in future "We Hear" notes and entry on the Register. The Register is published in brief below, as it stands at March 1st, 1942. We need hardly emphasise that once the cars concerned are taken as scrap nothing can replace them. Only cars for disposal or having reasonable likelihood of being for disposal are included. Vintages and prices are approximate only. Place names in brackets concern the whereabouts of the cars, most of which lie rotting in the open.

(1) **AUSTIN,** 1911, 12-h.p., tyres fair, in use almost to war. £10. (Bedfordshire.)

(2) AUSTIN, 1910, 20-h.p., "T" head landaulette. (Essex.)

(3) A.C., 11.9-h.p. coupé, balloon tyres, one piston broken and bent valve. (*Devonshire.*)

(4) ALVIS "12/40" side valve tourer, rough, running order. (Berkshire.)

(5) ALVIS "12/50" 1929 sports tourer, small port engine, rough. (Berkshire.)

(6) ALVIS "12/50," various, for spares, 6.200 engines. (Berkshire.)

(7) ARROL-ASTER sleeve valve saloon, rough. (Berkshire.)

(8) AUSTRO-DAIMLER 1922 V-radiator saloon. (Berkshire.)

(9) **BENTLEY** 8-litre, for spares. (Staffordshire.)

(10) **CROSSLEY** "Shelsley," 1913–14, 15.9-h.p. chassis, never been run, 4-seater body, as new. £75. (Lancashire.)

(11) **DE DION,** 1911, two-cylinder, 7-h.p., 2-seater, condition, including tyres, as new. £25. (Surrey.)

(12) DE DION, one-cylinder, 1910, poor condition, Morris body. (Hampshire.)

(13) DE DION, two-cylinder tonneau, low-slung, gilled tube radiator, no tyres. (Berkshire.)

(14) DE DIETRICH, Type 8, four-cylinder Roi de Belge, rough, no tyres, big engine, chain drive. (Surrey.)

(15) DELAGE "10/12," four-cylinder, 2-seater. Sold to Monte Carlo owner, 1913. Running order, rough. (Essex.)

(16) **HILLMAN** light car, 1914, perfect order. £25. (London.)

(17) HISPANO-SUIZA "Alphonse" chassis, 1912. Raced at Brooklands by R. F. Fuggle. Very good order, spares. £30. (Herts.)

(18) HUMBER, 1903, one-cylinder. "Brighton" competitor. £40. (Hampshire.)

(19) HUMBER, 1903–4, one-cylinder, good order. £25. (Kent.)

(20) H.E. Six 2-seater, rough. (Berkshire.)

(21) HUMBERETTE V-twin, 1912, 2-seater, poor tyres, good generally, hood and acetylene lamps. £7. (Bedfordshire.)

(22) **JOWETT** long-chassis 1927, 4-seater complete, running order. (Hampshire.)

(23) JOWETT 1914 tiller-steered 2-seater. £15. (Yorkshire.)

(24) **LEA-FRANCIS** "12/40" drophead coupé, exposed to weather, very rough. (Hampshire.)

(25) LEA-FRANCIS "12/40" 2-seater, engine needs assembly, spare engine available. £10. (Hampshire.)

(26) **METTALURGIQUE** 14-h.p. 2-seater, 1909. rough externally, fair order. £10. (Hampshire.)

(27) METEORITE 11-h.p. 2-seater, about 1919, as new throughout. (Berkshire.)

(28) MERCEDES 42-h.p., V radiator, 1912 chassis. (Berkshire.)

(29) MAYBACH-MERCEDES "Chitty II." £35. (Dover.)

(30) **NEW CARDEN,** 1913, rear axle with fittings. (Middlesex.)

(31) **PANHARD** 1909 21-h.p. "T" head chassis, used as lorry to 1927, parts missing, tyres good. (Middlesex.)

(32) P. & M. 1912 3½-h.p. motor-cycle, two-speed chain drive, full equipment. (Kent.)

(33) **RENAULT** 1912 two-cylinder 2-seater, very fine order, good hood and tyres. £40. (Surrey.)

(34) RENAULT 1909 two-cylinder 2-seater, very fine condition, quite good tyres. £30. (Surrey.)

(35) RENAULT two-cylinder chassis, mechanically sound, one wheel missing. 25/- (Lincoln.)

(36) RENAULT two-cylinder 2-seater, mechanically sound, no tyres, externally rough. £10. (Kent.)

(37) RENAULT two-cylinder 2-seater, seized engine. (Cambridgeshire.)

(38) RENAULT one-cylinder, 1904–7, mechanically passable, bodywork poor. £20–£25. (Essex.)

(39) RENAULT large pre-1914 landaulette. (Hampshire.)

(40) RILEY "Redwing," 12-h.p. side-valve chassis, suitable spares only. (Hampshire.)

(41) RILEY V-twin, round radiator, 2-seater, rough externally, sound tyres, could be made to run. (Berkshire.)

(42) RILEY two-cylinder tourer. Under pile of bedsteads. (Ross-on-Wye.)

(43) **SINGER,** 1909, shooting brake, 12-h.p., four-cylinder, "T" head engine, dual ignition, one sound tyre, very good mechanical order. £7. (Surrey.)

(44) SINGER Ten, 1914–20, 2-seater, rear axle gearbox, excellent order, decent tyres. £10. (London.)

(45) STELLITE 1914 10.8-h.p. flat-twin 2-seater, now very rough. (Middlesex.)

(46) STAR 1926 12-h.p. tourer, sound, good hood, etc., needs tyres. (Warwick.)

(47) **TALBOT** "10/23" tourer, useful for spares. (Surrey.)

(48) TALBOT "10/23" tourer, spare engine, chassis frame, etc., good order. £30. (Herts.)

(49) **VULCAN** 1912 tourer, fine order, sound tyres. (Wiltshire.)

(50) **ZUST** 1913 12-h.p. 2-seater, needs new crown and bevel, no tyres. (South Wales.)

FRONTENACS—continued from page 56

½-mile track in 24.2 secs.! In most short track races in the 1920's "Frontys" appeared in the first three, and in 50 and 100-mile races they often finished in first place ahead of Millers and Duesenbergs, cars *costing in all probability several times* as much.

One interesting photograph I have is that of Henry Ford himself, sitting at the wheel of the "Fronty" Ford which finished fifth at Indianapolis in 1923—he looks extremely uncomfortable! I do not think that any of the Type 214 cars ever came to England, although the Conan Doyles had a 2-seater which was driven by them at Lewes [and with which A. E. Moss won a 1925 B.A.R.C. Handicap at 80.93 m.p.h.—Ed.] and by Dick Nash at Skegness. It was the subject of an article in MOTOR SPORT at the time and was not, I believe, the last word in "Fronty" design. Had Greenford progressed as "Spike" Rhiando hoped, we might have seen more of these most interesting cars.

SOME NOTES ON A 1910 26-h.p. BOLLEE

ONCE upon a time there was a Noble Lord, who dwelt on his magnificent estate in the fair county of Cheshire. The estate was so large that within its bounds it actually included the Baronial Church, which was, from all accounts, in full working order.

Now the Noble Lord realised that his aged mother was a most ardent church-goer, so one day when the horses which drew the family landau were down with the staggers, or glanders, or were being decoked, or something, he decided to buy her a motor-car instead.

This was in 1910. In 1924 the road to the church became public, so, gnashing his teeth, the Noble Lord had to licence his motor-car for the first time.

And so after a lapse of time the car was sold to its present owner, Mr. Morgan, of Stockport, by whose courtesy the writer was able to glean a few notes. If any readers have further details they would be most welcome, as it is a model which the writer has not previously met.

On arriving at the Morgan abode we were taken into the cellar, where we at once saw that we had come to the Right Place, what with pieces of motor-car strewn right and left, and a partially dismantled example of Abingdon's efforts in view. As we had previously inspected with pleasure the owner's 4½-litre Bentley coupé, fitted with a 3-litre engine for war-time economy, we were prepared for a good day. Outside the cellar, which had by now mysteriously become the garage, there also stood a worthy old "13.9" Rover.

Towering above these was the Noble Lord's machine itself. Over 7 ft. high, it was a 1910 26-h.p. Bollee landaulette. This last word raises visions of a sort of bloated taxi, but the narrow body and low bonnet, combined with a long wheel-base, gave it a certain raffish air, which will be even more evident when its present colour of "invisible green" is changed for white with red wheels and lining-out.

The engine is a "T"-headed four-cylinder, the cylinders being cast in pairs. The bore is 102 mm., but the stroke is unknown. On the off side is the induction pipe, of the usual 1910 length, from which, at the end of a long vertical riser, depends a Zenith carburetter. The reason for the long pipe is not, as some would think, to deposit as much fuel as possible on the walls, which, running back into the carburetter, could be used twice over, thus resulting in fuel economy. The fuel tank is under the driver's seat, and gravity fuel feed is employed, so the carburetter has to be pretty low down. The plugs are fitted over the inlet valves. The fan, of the six-bladed variety, is driven by a flat belt from a pulley which has a separate shaft emerging from the timing case, which also provides for a dynamo drive; the dynamo is a Brolt.

On the near side is the Simms magneto and an unusual exhaust system; a separate pipe runs from each pair of cylinders to the silencer, and a sheet-metal jacket is fixed to these manifolds by screws, to protect the bonnet-sides from heat; no asbestos enters into this argument, air being recognised as a non-conductor of heat. The blocks have separate return pipes for water to the radiator, but the water pump is interesting, consisting of an eccentric vane fitting into a slotted driving member, which extends the full width of the pump casing; the only disadvantage of this very positive system of circulation would be that in the event of the pump drive failing, thermo-syphonic action could not occur.

The gearbox has four speeds and, except that reverse is through first, the gears are in conventional order. There are no selector locks in the box itself, these being embodied in the gate; one can insert a gear at will, but to withdraw same first calls for depression of the reverse catch. The foot brake works on the transmission, and the hand lever, of most imposing size, actuates internally-expanding brakes in very large drums on the rear wheels.

The rear axle is of bevel type; the ratio is not known. Transmission is by open shaft with Hooke joints, and the axle is located by radius rods.

The dashboard bears ammeter and space for voltmeter, a mag. switch suitable for a power-station, and the lubrication system, consisting of four sight-feeds, supplied from a cylindrical tank on the off side of the chassis, which lubricator, incidentally, is the only part of the car bearing the name of Bollee (so far as could be seen). The speedometer is mounted outside the frame of the wind-screen, where a driving mirror would be fitted to-day, and the flexible drive goes vertically downwards outside the car, to disappear under the chassis to meet its driving-pulley. The actual instrument is a Cowey, reading to 60 m.p.h., and the mileage recorder shows a little over 7,000 miles, which, in view of the car's history, is probably the total mileage. Yes, in 32 years.

Electric lighting has been fitted. The headlamps are fairly early Lucas; the sidelamps are missing.

The body is tastefully upholstered in grey Bedford cord, with comfortable face-backward occasionals, and is beautifully clean inside. Luggage rails surround the non-openable part of the roof and astern is a very small locker, in which the present owner found an *Evening Standard* dated 1920.

The wooden wheels have Warland dual rims, and there are eight excellent tyres, the front wheels having 815×120 and the rear 880×120.

We were unable to road-test the car, but there were four extremely healthy compressions and the only mechanical faults detected were wear in the universals and oil in the rear brake drums Otherwise, it is in the most beautiful condition.

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1928 T.T. Lea Francis, actual car driven by Capt. Eyston, without supercharger. Engine and chassis completely overhauled, 5 new wheels, good tyres 5.50"×18", 2 axle ratios, various ratios for gearbox, H.C. head, 2-port head, roller bearing camshaft, etc. Needs some attention by an enthusiast. £50. Clifford, 11, Euston Place, Leamington Spa.

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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.

A SELECTION OF MOTOR SPORT ROAD TESTS

THAT HAVE APPEARED IN PAST ISSUES

If you do not see the road test that you require write us a letter. We may have it in stock, but not published below.

Make of Car	Issue
A.B.C. 11 h.p. 2-cyl., 2-seater	Feb. 1926
A.C. 2-litre, short-chassis, 15.7 h.p. 2-seater	July 1936
A.C. 2-litre, 16.40 h.p., 3-seater	Oct. 1927
A.C. 2-litre, 16.66 h.p., 2-seater	March 1926
A.C. 2-litre, 16.66 h.p., 4-seater	June 1934
A.C. "Ace" 16/80 h.p.	July 1937
Alfa Romeo, 1½-litre supercharged 6-cyl. Charles 2-seater (1929)	March 1934
Alfa-Romeo 1½-litre supercharged 8-cyl. "Zagato" 2-seater (1932)	July 1934
Alfa-Romeo 2.3-litre supercharged 8-cyl. "Zagato" 2-seater (1933)	Aug. 1936
Alfa-Romeo 2.3-litre supercharged 8-cyl. 4-seater (1931)	Aug. 1932
Alvis 11.9 h.p., 4-cyl., "Firefly" saloon	Feb. 1933
Alvis 4-cyl., 12.60 h.p., 2-seater	July 1931
Alvis 6-cyl., "Silver Eagle" 4-seater coupe (1929)	Aug. 1931
Alvis 6-cyl., "Silver Eagle" 4-seater	June 1930
Alvis 3½-litre saloon	Feb. 1936
Alvis Speed Twenty Vanden Plas saloon	Feb. 1935
Alvis Speed Twenty Charlesworth saloon	Feb. 1934
Alvis Speed Twenty 4-seater	June 1932
Alvis 12/70 4-door saloon	July 1938
Ansaldo 2-litre, 4-cyl., o.h.c., 4-str.	Sept. 1924
Armstrong-Siddeley 20 h.p., 6-cyl. 4-seater	July 1933
Aston-Martin Mark II, 11.9 h.p., 2-4-seater	Jan. 1935
Aston-Martin Ulster 11.9 h.p., T.T. 2-seater	Oct. 1935
Aston-Martin Le Mans 11.9 h.p., 2-4-seater	June 1933
Aston-Martin International 11.9 h.p., 4-seater	Aug. 1932
Aston-Martin T.T., 11.9 h.p., racing 2-seater	Dec. 1931
Aston-Martin 11.9 h.p., 2-seater	Jan. 1930
Aston-Martin 2-litre Speed model	May 1938
Aston-Martin 1935 Ulster	Aug. 1937
Auburn 30 h.p., 8-cyl., supercharged 2-seater	June 1935
Austin Seven Boyd Carpenter 2-str.	Sept. 1930
Austin Seven "65" 2-seater	Jan. 1934
BENTLEY 3½-litre, 6-cyl., Vanden Plas, 4-seater	Nov. 1933
Bentley 4¼-litre, 6-cyl., Park Ward saloon	June 1936
Bentley 6½-litre, 6-cyl., long-chassis saloon (1928)	Dec. 1936
Bentley 4¼-litre Vanden Plas coupe	Aug. 1938
Bentley 8-litre sports 2-seater	April 1938
Bugatti 3.3-litre 8-cyl., Type 57 saloon	May 1934
Bugatti 2.3-litre 8-cyl., Type 55, supercharged, 2-seater	July 1932
Bugatti 2.3-litre, 8-cyl., Type 43, supercharged 4-seater (1930)	Dec 1932
Bugatti 2.3-litre 8-cyl., Type 43, supercharged 4-seater	May 1930
Bugatti 3-litre, 8-cyl., Type 44, saloon	July 1928
CITROEN, Twelve f.w.d. saloon	July 1938
Crossley 20/70 h.p., 4-cyl., s.v. 4-str.	Nov. 1925
Crossley Ten. 1½-litre "Regis" saloon	Jan. 1936
Crossley Ten, 1,122 c.c. 4-seater	April 1932
Crouch Anzani 12.30 h.p., 2-seater	Aug. 1924
DARRACQ 12.32 h.p., Weymann saloon	Sept. 1924
Delage 14 h.p., 2-litre, 2-3-seater	June 1927
Delage 8-cyl., sports saloon	April 1930
Delage D.8 120, drophead coupe	May 1938
Delahaye 3.5-litre "Coupe des Alps" drophead coupe	Aug. 1936
Delahaye 3½-litre drophead coupe	Dec. 1937
D.K.W. "Special" saloon	Feb. 1938
ESSEX Terraplane 8-cyl. 4-seater	Sept. 1935
Excelsior 5¼-litre, 6-cyl., super-sports test chassis	Sept. 1927
FIAT 20.70 h.p., 6-cyl., 2-4-seater	April 1933
Fiat "Balilla" saloon	May 1934
Fiat "Ardita" 17 h.p., 4-cyl., saloon	Feb. 1934
Fiat "Balilla" 10 h.p., 2-seater	Jan. 1935
Fiat 6 h.p., Type 500, coupe	March 1937
Frazer-Nash 6-cyl., 1½-litre (Blackburn) 2-seater	July 1933
Frazer-Nash 4-cyl., 1¼-litre T.T. Replica push-rod o.h.v. 2-3-str.	Nov. 1931
INVICTA 4½-litre low chassis, 4-str.	March 1931
Invicta 4½-litre Weymann saloon	June 1929
Invicta 4½-litre saloon	Dec. 1929
Isotta-Fraschini 45 h.p., 4-seater	Oct. 1926
LAGONDA 2-litre, 4-cyl., twin o.h.c. 4-seater	Jan.-Feb. 1928
Lagonda 2 litre, 4-cyl., twin o.h.c. supercharged 4-seater	Oct. 1930
Lagonda 4½-litre, 4-seater	May 1936
Lagonda 4½-litre Rapide 4-seater	May 1935
Lagonda 4½-litre, 4-seater	Jan. 1934
Lagonda Rapier 10 h.p., 4-seater	Sept. 1934
Lagonda 16/80 h.p., 6-cyl., 4-seater	Jan. 1933
Lagonda 3-litre, 6-cyl., 4-seater	March 1932
Lagonda 2-litre, 4-cyl., twin o.h.c., 4-seater (1928)	March 1931
Lancia Aprilia, Type 238, saloon	June 1938
Lea-Francis 1¼-litre supercharged T.T. 2-seater (1929)	June 1934
Lea-Francis 1¼-litre supercharged special T.T. 2-seater	Sept. 1933
Lea-Francis 1¼-litre supercharged "Hyper" 4-seater	Aug. 1930
Lea-Francis, 14 h.p., 6-light saloon	Dec. 1938
Leyland Eight (1929), 2-seater	Feb. 1938
MERCEDES-BENZ Type 540K, 5.4-litre, 8-cyl., supercharged, 2-str.	April 1937
Mercedes Benz Type 500, 5-litre, 8-cyl., supercharged, 2-seater	Nov. 1934
Mercedes-Benz 12.40 h.p., supercharged 2-seater	June 1925
Mercedes-Benz 36.220 h.p. supercharged, 2-4-seater	April 1928
Mercedes-Benz 33.180 h.p., supercharged, 4-seater	Aug. 1927
Mercedes-Benz 2.3-litre, saloon	April 1938
M.G., 6-cyl., Mark I, 4-seater	May 1931
M.G. Magna, "L" 2-seater	Nov. 1933
M.G. Midget "P" 2-seater	Aug. 1934
M.G. Midget "J3" supercharged, 2-seater	May 1933
M.G. Six Mark I, saloon	Aug. 1930
M.G. Midget Double-Twelve racing 2-seater	June 1930 & Aug. 1930
M.G. Midget "J1" 850 c.c. 2-str.	Sept. 1932
M.G. Magnette "N" 4-seater	Feb. 1935
M.G. Midget "PB" 2-seater	April 1936
M.G. 14/40 4-cyl., 3-speed, 4-seater	Oct. 1925
M.G. Midget "T" 2-seater	Jan. 1937
M.G. 14/40 h.p., 4-cyl., super-sports, 2-seater	May 1927
O.M. 6-cyl., 2-litre, 4-seater	Oct.-Nov. 1928
PACKARD V12-cyl. 57 h.p. coupe	Feb. 1934
Peugeot "201" 4-cyl., 1.122 c.c. saloon	Sept. 1931
RAILTON Terraplane 4-seater	Oct. 1934
Railton Light Sports tourer	Dec. 1935
Railton Cobham 28.8 h.p. saloon	Sept. 1938
Riley Nine "Monaco-Special," two-carb. saloon	March 1931
Riley Nine, 4-seater	June 1931
Riley 16 h.p., Big-four Kestrel saloon	June 1938
SINGER 1½-litre, 6-cyl., Le Mans 2-seater	March 1935
Singer Nine, 4-seater	March 1933
Squire 1½-litre, 4-cyl., 2-seater	Aug. 1935
S.S. I special-bodied 2-seater (1933)	Feb. 1934
S.S. I coupe	June 1933
Steyr Type XII, 14.35 h.p., Weymann saloon	Aug.-Sept. 1928
Stutz "Black Hawk" supercharged 4-seater	Jan. 1930
Stutz 5-litre, 8-cyl., 4-seater	Dec. 1927
Sunbeam 3-litre 6-cyl., (twin o.h.c.) fabric saloon	Nov. 1927
Sunbeam 6-cyl., 21 h.p., (push-rod) Speed Six saloon	Dec. 1933
TALBOT "90" Brooklands-bodied 2-4-seater	April 1931
Talbot "105" sports saloon	April 1934
Talbot 3½-litre saloon	March 1936
Talbot Ten "Rally" 4-str.	Oct.-Nov. 1936
Talbot "105" Vanden Plas 4-str.	Nov. 1932
Talbot "90" 4-seater	Nov. 1930
Talbot Ten sports coupe	June 1938
Tatra 4-cyl., 1,154 c.c., coupe	Dec. 1932
Terraplane, 8-cyl. 29 h.p., 4-str.	July 1935
Triumph 2-litre "Vitesse Six" saloon	April 1935
Triumph 10 h.p. "Gloria Southern Cross" 2-seater	June 1935
Triumph 10 h.p. "Gloria" saloon	Jan. 1934
Triumph Nine "Southern Cross" 4-seater	June 1932
Triumph Eight "Gnat" 2-seater	Aug. 1931
Triumph Eight, supercharged 2-str.	Dec. 1929
Triumph Dolomite 14/60 saloon	June 1937
VALE-SPECIAL 832 c.c. 2-seater	Aug. 1933
Vauxhall 30.98 O.E. 4-seater (1925)	Jan. 1936
Vauxhall 30.98 O.E. 4-seater (1924)	Dec. 1930
Vauxhall 20/60 h.p. "Hurlingham" 2-seater	Feb. 1930
Vauxhall 17 h.p., 6-cyl., "Cadet" saloon	Sept. 1931
Vauxhall 14 h.p. "Stratford" 4-str.	Sept. 1933
WINDSOR 4-cyl., 11 h.p., "Special" 2-3-seater	Nov. 1926
Wolseley Hornet Swallow 2-seater (1933)	April 1934
Wolseley Hornet (12.08 h.p.) saloon	Sept. 1930

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