

THE AUTOCAR

A Journal published in the interests of the mechanically propelled road carriage.

EDITED BY H. WALTER STANER.

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Notes.

A Plea for Accessibility.

On another page in this issue we publish an article by one of the oldest motorists in this country, who is by no means a hypercritical writer. He calls his article "The Complaint of the Owner-driver," and it is a plea for accessibility devoted entirely to pointing out some of the many ways in which owners are given trouble in keeping their cars in running order by the way in which accessibility is ignored when the cars are designed. He wishes it to be understood, and we are equally desirous that it should be quite clear, that he does not infer that every car has all the bad features he mentions, but there is no question about it that a

very great many have several of the inaccessible features he names if not all of them, while some have even more. To take one of his first points: Our contributor wants to know why an undershield should be fitted to the engine; it is quite unnecessary and usually interferes very much with such an operation as draining the sump. So far as we can see, the need for an engine undershield has never existed, as properly designed the engine will form its own undershield: if the bearer arms and side extension of the upper half of the crank case of the engine do not provide a filling between the engine and the frame this opening can always be covered by a sheet steel plate on each side, and there is no need for any shield till we come to the flywheel. From and including the flywheel aft as far as the gearshaft brake an undershield is required, and its design must vary with the design of the car. In many cases this undershield is so made that it is impossible to get it off and on readily, but in a few instances it is easily attached and detached. Yet the fact remains that cars are still being turned out in numbers which have great clumsy shields running from the radiator to the gearshaft brake, and, so far as our experience goes, they are not only a nuisance on the score of accessibility, but they tend to keep the engine oil in the base-chamber hotter than it otherwise would be. We admit at once that there are certain designs which require an undershield, but we are not referring to them at the moment, and are only dealing with conventional designs of cars which do not require them.

Why should these Things be?

There is no need for us to go into the question of inaccessibility in detail, as so many common troubles in this respect are clearly dealt with in "The Complaint of the Owner-driver," but it is not without interest to ask why these things should be, and we think the main reason is that the majority of manufacturers and designers do not look after their own cars: they may use them a great deal, but the replenishment, adjustment, and necessary attention to keep the cars on the road are given by the mechanics in the running shed of the works day after day. Consequently, neither the maker nor the designer really knows what it means to keep the car on the road, and either can truthfully say that he never has the least trouble with his car on the score of inaccessibility, and he therefore makes no improvements in this respect, as he does not recognise that they are necessary.

In the case of the larger coachbuilders the same reasons apply; that is to say, they may use cars quite a lot, but they do not look after them. Consequently, they do not realise how with their bodywork they have rendered many parts of the chassis needlessly inaccessible. So far as the smaller coachbuilding firms are concerned, the ignorance is really more excusable for the simple reason that the designers do not own or drive cars; their ignorance proceeds not from neglecting opportunities but from the absence of opportunities. The result, however, is equally unsatisfactory

Notes.

to the customer. We say without hesitation that if we did not personally attend to each car we owned we should know very little of the comparative merits of the various makes. We confess we do not find time often to wash a car or change a tyre; but we go in for both exercises occasionally because we find out a good many things we should otherwise miss. For instance, we find that if wire wheels are really well enamelled they are no worse to clean than wooden wheels, but if they are poorly or roughly enamelled they are far more trouble than wood wheels. But for actually doing the job ourselves we should accept without reservation the frequently repeated contention that wire wheels are more trouble than wood. The only way to know the merits and demerits of a car is to keep it in running order one's self, and to do everything required to keep it on the road.

Importance of Accessibility to both Master and Man.

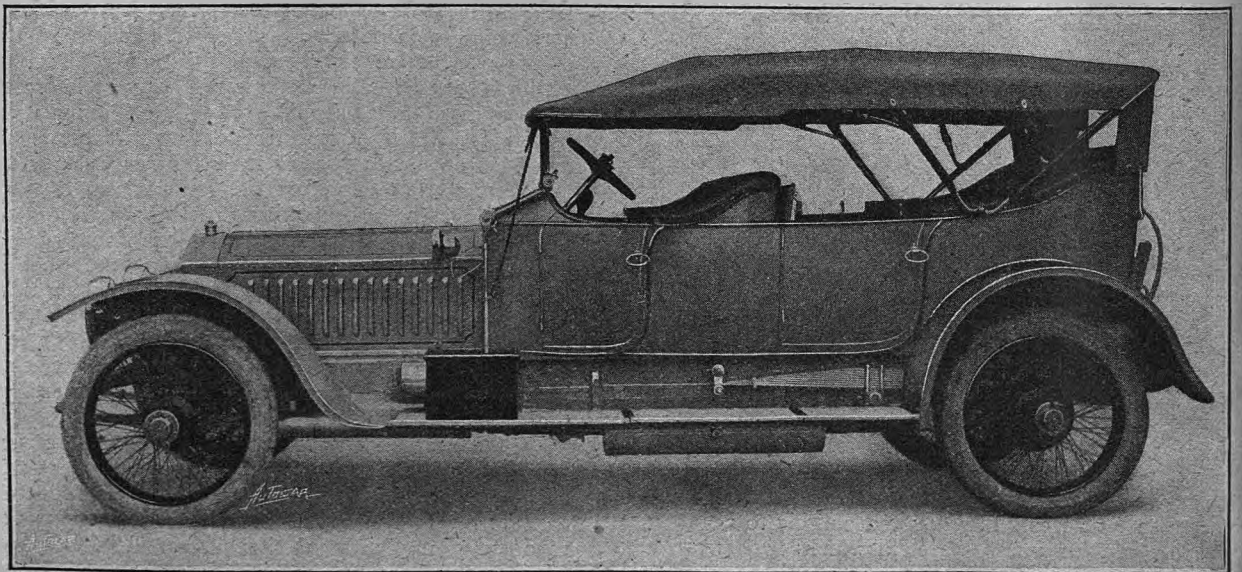
There is one point not touched upon in "The Complaint of the Owner-driver" which is well worth more consideration than it receives, both on the part of the manufacturer and the owner. Undoubtedly, there is a tendency in both cases for it to be assumed that if the car is looked after by a paid driver it does not matter whether it be accessible or not; it seems to be assumed that a little inaccessibility is not a bad thing, as it will keep the driver well occupied and in good contortionist fettle. This appears to us to be a most short-sighted view; it is just as important that a car should have those parts which require regular attention accessible whether it be looked after by the owner himself or by his man. In the majority of cases when a chauffeur is employed it is because the car is to be used frequently and regularly. Now, directly a car is in hard daily use inaccessibility becomes a very serious matter. The driver may have considerable periods almost every day when he is not using the car and when he can be looking after it, but he rarely or never gets any very long non-driving periods at a time,

and the consequence is that he cannot undertake many a little job which he would undertake if accessibility had been studied. The final result of inaccessibility is that the car may and often does suffer by reason of neglected adjustments.

In the Interests of the Car Itself.

The difference between accessibility and inaccessibility is enormous so far as time on a job is concerned. Take one instance alone, that of removing valves for cleaning and grinding. A chauffeur whose car is kept busy finds it most difficult to do this at one attempt simply because the car is not idle long enough for him to take out and grind all the valves, so he does them one by one as opportunity offers, and, perhaps, spreads the work over intervals of two or three days, doing a valve at a time. This is quite easy on a car which has accessible valves, but if he has to take off his carburetter and cast loose his induction pipe, as is the case with a number of cars, before he can touch the valves on the two middle cylinders, he may not have an opportunity for doing this till the valves have reached a state that is really bad, and then, probably at some more or less inconvenient time, he has to ask for a full half day to do the necessary work.

We might go right down the chassis and mention similar items, but we have said enough to justify our claim that accessibility is equally important to the owner whether he looks after the car himself or not. Then, again, chauffeurs are not so blind as some people seem to think them: all the more intelligent thoroughly appreciate the advantages of accessibility, and when their employers are contemplating the purchase of a new car the drivers very properly urge upon them the claims of cars which they know they can keep thoroughly roadworthy with the greatest ease. Whatever may be thought to the contrary, the smart chauffeur is just as keen as the owner-driver on having a car which he can keep in the best trim easily though his plaint may not be so loudly voiced.



A body by Messrs. Maythorn and Son, Biggleswade, on a Rolls-Royce chassis, supplied for use in Australia. The body is made to carry either two or three people on the rear seat, and two on folding chair seats, which can be placed in almost any position. The finish is grey, with darker grey mouldings relieved by fine white lines, and the upholstery is of grey enamel leather. A one-man hood is fitted, and a triple jointed wind screen.

Useful Hints and Tips.

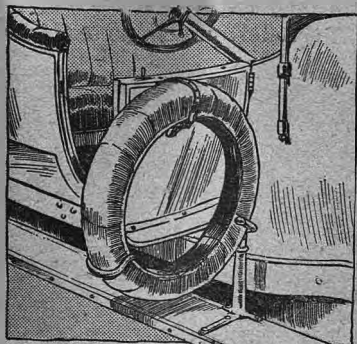
Removal of Tar Splashes from Clothing, Paintwork, etc.
THE Roads Improvement Association, of 15, Dartmouth Street, Westminster, S.W., has issued the following practical advice on the subject of removing tar splashes:

"Tar stains can be best removed from clothes by softening the tar with any form of grease, such as butter, and afterwards removing with benzole. Tar stains on the hands or skin can be removed with benzole; a very convenient soap for dealing with tar stains on woodwork or paintwork consists of equal parts of soft soap and benzole. The mixture, however, tends to separate, and must be frequently beaten up together into a cream.

"Benzole is now fairly generally obtainable from motor spirit dealers. Small quantities of 'benzole,' 'benzene,' or 'benzene-collas'—as usually used for cleaning gloves, etc.—can be obtained from almost all druggists, and is equally good, and probably better than the 'motor spirit benzole,' for removing tar. Benzole is highly inflammable, and similar precautions as are used with petrol should be taken against fire."

Carrying the Spare Tyre.

Those motorists who have two-seated or four-seated cars with an off-side entrance to the driver's seat have doubtless, like the writer, experienced some difficulty in finding a position where the spare wheel or tyre can be fixed without interfering with the off-side entrance.

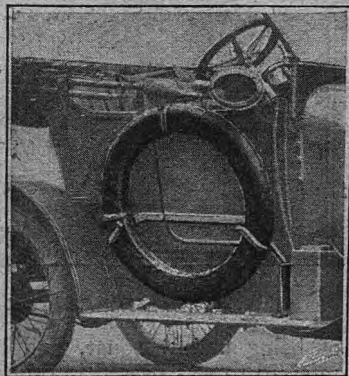


Sketch showing the suggested method of carrying a spare tyre so as not to obstruct the off side entrance.

Determined to overcome this difficulty in a satisfactory manner, I have devised the arrangement shown in the accompanying sketch and photograph.

Bolted to the door is a piece of round steel flattened except at the ends, and hooked at each end so as to carry the tyre, as shown in the sketch.

One end of this member has what I may term a hinge pin integral with it, this pin being in alignment with the hinges of the door, and rotating, when the door is moved, in a tubular socket bolted to the running board of the car. On the hinge pin is a stout steel collar which takes the weight of the tyre by pressing upon the top of the socket as shown in the sketch; thus the door hinges are relieved from carrying the extra weight. The top of the tyre is merely held over towards the



The tyre carrying arrangement suggested by Mr. E. A. Anderson, with the off side door closed.

door by one strap. There is nothing unsightly or abnormal about the arrangement, and it is obvious it can be applied to a four-seated car if desired. The whole arrangement is quite simple and cost me merely a few shillings to make.—E. A. ANDERSON.

Spare Wheel Clips.

Among the most satisfactory methods of carrying spare wheels is the very prevalent one of having two upright standards which grasp the tyre in much the same way as would a couple of hands; the weight of the wheel tends to make it bed down into the clips, so that there is never any fear of it coming adrift, nor does the tyre get rubbed. However, the very fact that the wheel tends to bed down into the clips makes one little precaution necessary. From time to time the careful driver always puts the pressure gauge on to his spare wheel tyre to see that it is up to the right pressure and ready for use, and if it be not sufficiently inflated he pumps it up at once. His labour will be expended in vain if he does not lift the wheel out of the clips, as when the pressure goes down at all the wheel naturally settles in the clips, and subsequent inflation makes it so firm that it cannot be removed without letting out nearly all the air. Therefore, when inflating the spare wheel tyre one should see that the wheel is eased out of the clips if they be of such a nature that any jamming action can take place through inflation of the tyre.

Leaky Acetylene Gas Tubing.

It is very rarely that owners take much trouble to ascertain whether their acetylene piping is all in order, with the result that much gas is wasted and serious trouble liable to be experienced at an awkward time. In nearly every pipe line there are one or more short lengths of rubber tubing which perish and crack in the course of time, and call for periodic renewal. If metal tubing be used, this is liable to chafe through at points where it rubs; a leak may also occur at the point where the burner screws into its socket. To test for leakage, smear the parts with soapy water and turn on the gas; the formation of bubbles will indicate weak points.—W.E.

Poor Acceleration.

A few days ago a friend who drives a sister car to my own complained of poor acceleration and asked me to try his car. A run of a quarter of a mile confirmed his complaint that the engine failed to "take hold" properly when the throttle was opened, for intermittent coughing noises occurred in the direction of the inlet pipe and carburetter. These were not usual backfires in the inlet pipe, and might have passed unnoticed by anybody who had not been listening carefully. I immediately stopped the car in order to examine the magneto, and exposed the distributor. As I expected, I found lines of carbon connecting the brass segments together, and forming electric conductors from one segment to another. The distributor plate was cleaned and the car again tried, when everything was found to be in perfect order. Apparently the magneto current had been leaking idly away to one or more sparking plugs of those cylinders not on the firing stroke, instead of doing its work properly in each cylinder in turn.—E.W.

"COMPLETE HINTS AND TIPS FOR AUTOMOBILISTS." Under this title "Useful Hints and Tips" have been reprinted from *The Autocar* in booklet form. The fifth edition now on sale has been thoroughly revised and brought up to date. The book can be obtained from *The Autocar* Offices, 20, Tudor Street, London, E.C., post paid 2s. 10d.

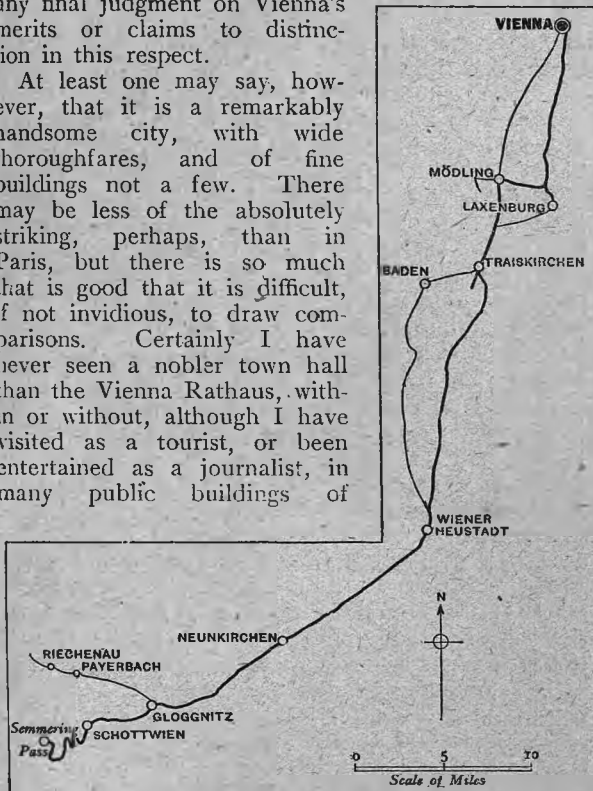
Over the Semmering.*

A Popular Hill-climb. Sweeping Corners and a Splendid Surface.

By Chas. L. Freeston, F.R.G.S., Author of "The High-roads of the Alps," "The Passes of the Pyrenees," etc.

"THERE is only one capital," say the Viennese; and which one they mean is obvious. Local pride is everywhere the same, and needs to be discounted in the case of Englishman, Frenchman, German, and Austrian alike. As for the verdict of the impartial outsider, that, of course, is to some extent a matter of individual opinion, and far be it from me to attempt to pass any final judgment on Vienna's merits or claims to distinction in this respect.

At least one may say, however, that it is a remarkably handsome city, with wide thoroughfares, and of fine buildings not a few. There may be less of the absolutely striking, perhaps, than in Paris, but there is so much that is good that it is difficult, if not invidious, to draw comparisons. Certainly I have never seen a nobler town hall than the Vienna Rathaus, within or without, although I have visited as a tourist, or been entertained as a journalist, in many public buildings of

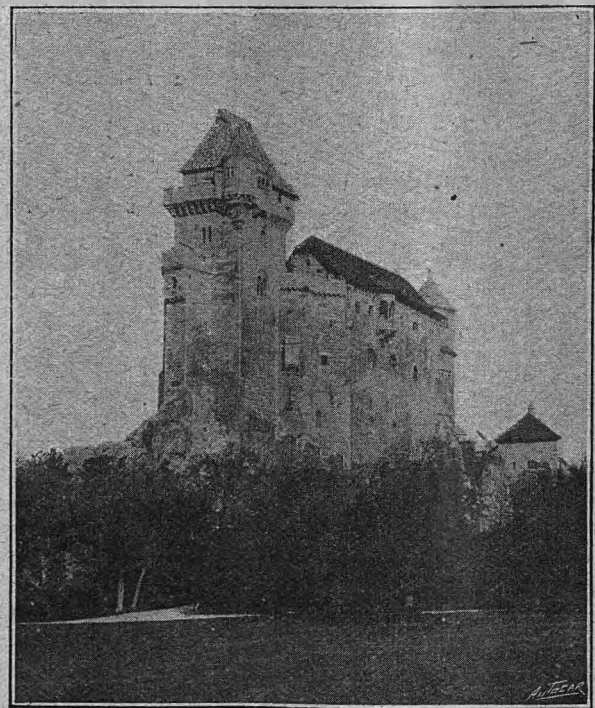


this type in various European capitals. Generally speaking, moreover, the city is singularly free from architectural extravagances on the one hand, or eyesores on the other; it is harmonious, in fact, without conveying the impression of having been made so by design.

Two features only that are not agreeable call for mention. To my thinking the pleasing effect of the fine thoroughfares and handsome buildings is greatly impaired by the tramway system which is allowed to run riot over the whole city. Unfortunately, this is a disability which Vienna shares with many other capitals, and which only London and Paris have escaped; there are "trams" in each of the latter, it is true, but so far they have not been allowed to run down Regent Street or Piccadilly, or along the incomparable Champs Elysées. In Vienna, however, even the Ringstrasse and other principal streets in the Innere Stadt, or centre of the town, resound all day long to the clang of the tramcar driver's gong, while one needs to keep one's weather eye open all the time, whether driving a car or attempting to cross the roadway as a pedestrian.

The other unwelcome factor is the absence of first-class hotels with reasonable tariffs. There are a number of establishments which claim, of course, to be first-class, and if their scale of charges be accepted as a criterion of excellence they must be accounted the finest hotels in the world! Never at any time or place have I had to pay so much for bed or board as in Vienna, the cost of an ordinary room being fully double that which I have been asked at some of the leading hotels in Europe. As for the food, that, too, was charged for on the same exalted scale, and the next time I find myself in Vienna I shall in self-defence have to seek out some modest establishment in the hope of meeting with more reasonable treatment.

So far the only theory which anyone has expressed for a state of things which savours of extortion is that, owing to a municipal regulation, it is not worth any capitalist's while to run up an hotel of the first order. It is forbidden to erect buildings in Vienna above a certain height, and the contention is that this embargo prevents investors from securing a fair return upon their outlay where ground rents and bricks and mortar are concerned. As for this, I can only say that the buildings generally most certainly present no semblance



Prince Liechtenstein's Castle at Mödling.

of being unduly squat, and if the regulation above referred to was passed in order to prevent an invasion of sky-scrapers à la New York or Chicago it was an eminently salutary proviso. Possibly the line may have been drawn somewhat too finely; but, whatever the cause may be, the fact remains that the tourist who drives to Vienna must not expect to live cheaply during a temporary stay in that otherwise delectable capital.

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It would be a work of supererogation to descant here on the sights of Vienna generally, which may be found fully described in the ordinary guide-books. Suffice it to say that, as a centre of music and art, Vienna is in the very front rank, and its opera house, art galleries, and museums are among the most noteworthy in Europe. It is deservedly famed, moreover, for the beauty of its women; to my thinking they eclipse in statuesque grace those of any other capital, not even excepting Rome itself.

To the good people of Vienna, motorists and non-motorists alike, the chief objective in the way of an excursion is the Semmering Pass, and since the intro-

to follow a nearly parallel road, further east, and then swing round at right angles to the west when on the same latitude as Mödling.

For a like reason, if the tourist happen to strike Wiener Neudorf for the first time when approaching Vienna, he must take particular care to avoid keeping straight on through the town, but must turn instead to the right, and thus reach the best road into Vienna when about two kilometres out from Wiener Neudorf. The consequences of doing the wrong thing I know to my cost; for whereas on the outward journey I had simply to follow the lead of the cars taking part in the Austrian Alpine contest of 1912, on the return

Over the Semmering.



Panoramic view of the Semmering Pass, with the Raxalpe beyond.

duction of "winter sports" it is almost as popular a rendezvous in winter as in summer. The distance by road is fifty-four miles, but the rail journey is some fifteen miles longer, and the road traveller scores in every way; in fact, though it is usual for the non-motorist to make a day of it, the car-owner may comfortably start after lunch, take tea at the summit, and return to Vienna before dinner.

The prime essential to the motorist bound for the Semmering is to find the right way out of Vienna itself. The first place of any importance on the route is Wiener Neudorf, but to make a bee line for that town is only less fatal, by reason of the shorter distance, than to take the straight road from St. Pölten to Vienna, as was described in a preceding article. The direct road to Wiener Neudorf is laid with *pavé* of the most horrible kind, to drive over which is a purgatorial experience; and the correct thing to do is

journey, not being in touch at the moment with other cars, I omitted to note the necessity for getting off the main route on entering Wiener Neudorf, and then had the disenchanting experience of several kilometres of *pavé*, as already referred to. The only satisfaction to be derived from an error of this kind is that one may at least extend a warning to others to be more careful. Perhaps I may as well add that it is of no use to trust to gleaning any information from persons in the streets as to the best exit from Vienna; the only safe course is to seek advice from the Austrian Automobile Club in the Kärntner-ring or from the nearest garage.

It is possible that there may be an alternative route on the west, leading directly to Mödling, which lies, as the map will show, a short distance to the left of Wiener Neudorf. Now Mödling is a very attractive spot, and it is worth while to enquire whether the

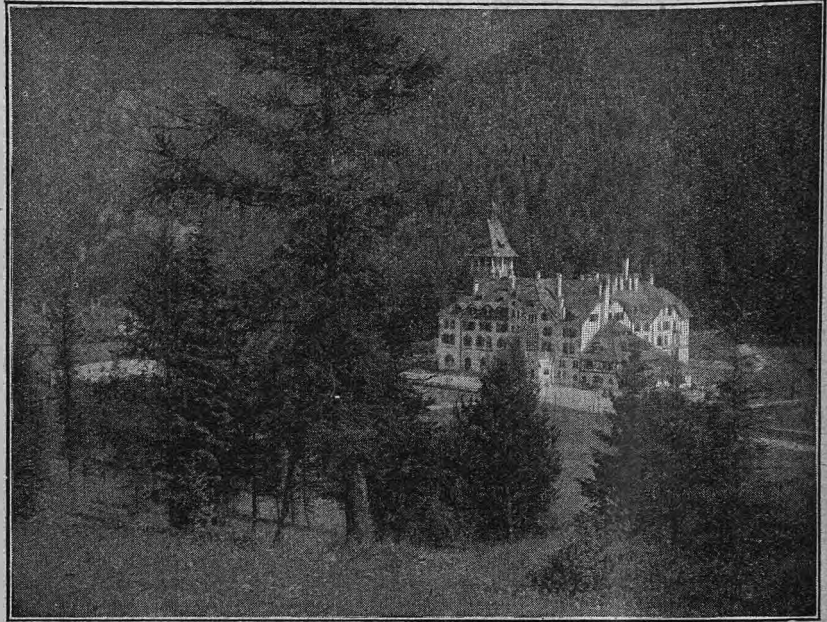
Over the Semmering.

direct road thither from Vienna is *pavé* or may reasonably be chosen. If the advice received be in favour of the road on the east, it would then pay to cross over to Mödling from Wiener Neudorf before turning southwards for Wiener Neustadt, as the first-named town is picturesquely situated, and is a favourite suburb of the Viennese. At the top of the Klause ravine is the ruined castle of Mödling, almost buried in trees, as shown in the illustration below. On another hill in the neighbourhood is the ancient castle of Liechtenstein, belonging to the Prince of that name, with a modern château in the immediate vicinity.

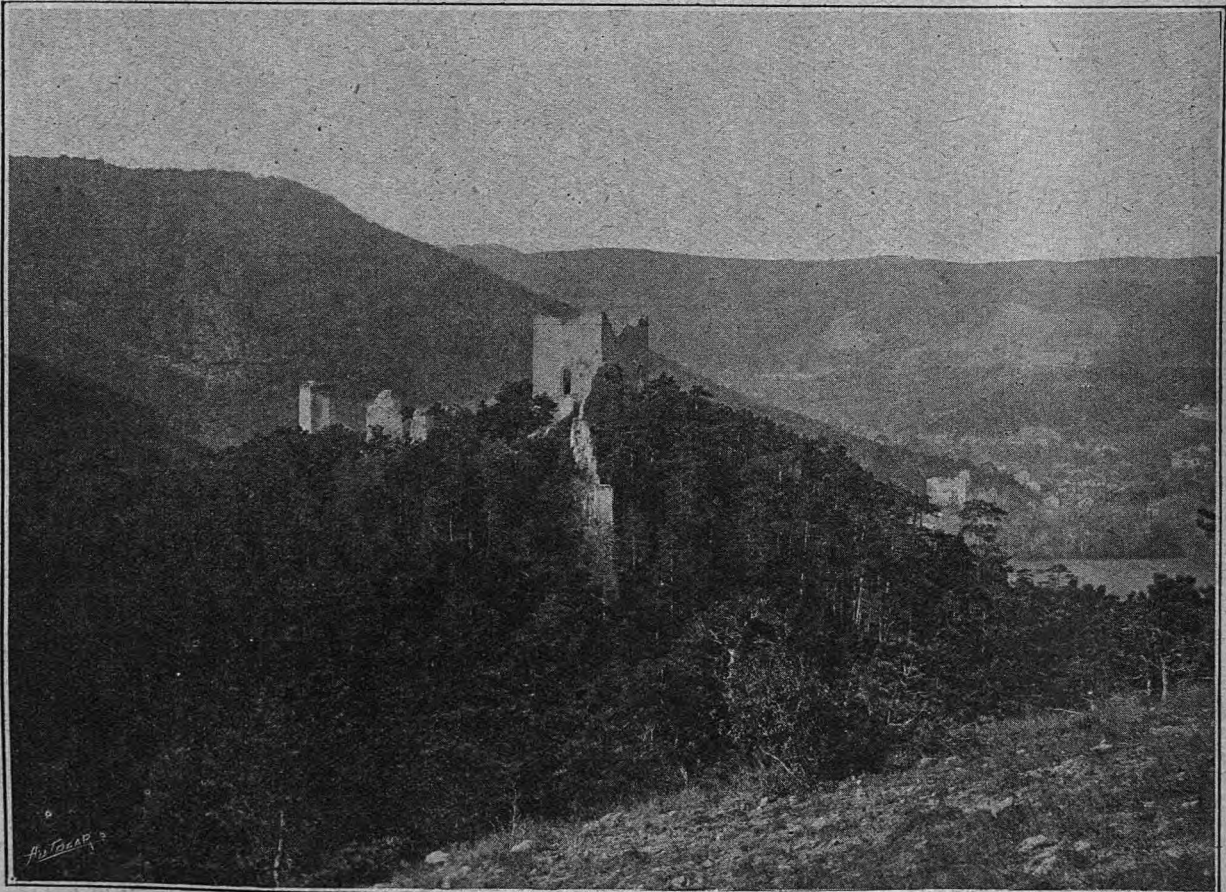
On the other side of Wiener Neudorf, not far from the point where one swings round after driving out from Vienna, lies a much-visited village, that of Laxenburg, where there is one of the finest artificially created parks in Europe, as well as an imperial château.

A straight run of eight kilometres from Wiener Neudorf brings us to Traiskirchen, a little to the west of which lies the popular health resort of Baden, famed for its sulphur springs, which attract 30,000 bathers annually, and for its pleasant surroundings.

After winding through Traiskirchen, the southward journey provides good running for another 23 kilometres, and then we enter Wiener Neustadt, familiar by name, at all events, to motorists all the world over as the place where the famous Austro-Daimler cars are

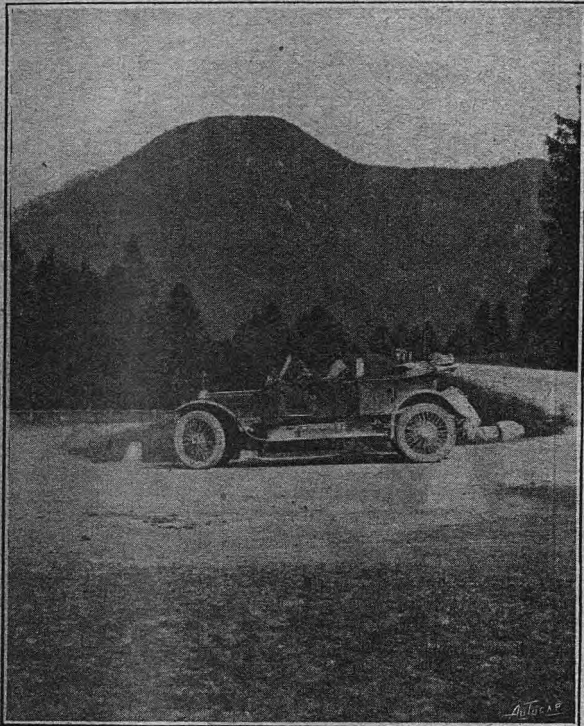


The Hotel Erzherzog Johann at the Semmering summit.



The ruined castle of Modling.

built, at the works of the Daimler Motoren-Gesellschaft. Historically the town is chiefly known as the birth-place of the great Emperor Maximilian I.; but, as it suffered a great fire in 1834, the majority of its build-



A typical corner on the Semmering Pass.

ings are modern. The chief mediæval remnant is a military academy, which was formerly a castle of the Dukes of Badenberg.

The finest stretch, perhaps, of straight running in Austria now follows, the 16½ kilometres from Wiener Neustadt to Neunkirchen being closely akin to a section cut out of a *route nationale* in France, save that the trees by which this smooth, broad highway is fringed are of divers kinds, and therefore do not present the unpleasing uniformity of poplars. An exhilarating spin, therefore, may be enjoyed to Neunkirchen, another manufacturing centre, by which time one has begun to realise that, though the highway itself is flat, it is leading up to Alpine territory, as the neighbouring hills are gradually growing higher and higher.

In another 13 kilometres Gloggnitz, a small market town, is reached, with a castle-crowned hill on the left; and here we are in touch with the Semmering Pass, for though the ascent does not begin as yet the place is the starting point of the Semmering railway. In its way this line is notable, for it was the first to be built over an Alpine highway, and it cost over ¼ millions sterling in the making. It is one of the few mountain railways, moreover, which compete on almost equal terms with the road

itself, so far as the height attained is concerned, for the summit of the Semmering Pass is only 3,215 feet, and the line runs up to 2,935 feet. The Brenner Pass, the Col de la Croix Haute in France, and the Brunig in Switzerland may be mentioned in passing as other routes which are served by road and rail alike. But though the train traveller may reach an equivalent height to that which the car driver attains—as compared with passes like the St. Gotthard, Arlberg, Albula, and Simplon, where the train dives into a long tunnel while the road winds gloriously up to a summit several thousand feet higher—the journey by rail is inevitably more limited in its outlook than the road itself, and, as a matter of fact, the Semmering line runs through fifteen tunnels.

Whenever a mountain road is superseded as a through route, from the point of view of the ordinary traveller, by a railway, the result to the automobilist is either wholly good or wholly bad. The removal of general traffic leaves the way clear for his speedy car, and, as in the case of the Simplon, may even lead to the opening of a route which was previously closed entirely to the motoring tourist. But when a railway is built where formerly only a road existed, the governing authorities may choose in their unwisdom to regard the latter as no longer of any account, and the surface suffers accordingly; one could adduce many examples in point.

Let it be said at once, however, that the Semmering is not among the number. The road is splendid; one could hardly wish for anything finer. It is broad throughout, well-graded, and of excellent surface, while the corners are rounded in curves of most sweeping radius that can be found on any Alpine pass. Indeed, as a climb, or a driving experience where "hairpins" are concerned the crossing of the Semmering is entirely negligible, and is scarcely more difficult than driving over Hindhead in Surrey; although it attains a greater altitude, the former is, in fact, in some respects the easier journey of the two.

None the less, one can well understand the great popularity of the Semmering with the motorists of Austria. It provides a first-class venue for hill-climbing competitions, for though the corners are excep-



A bird's-eye view of Schottwien.

Over the Semmering.

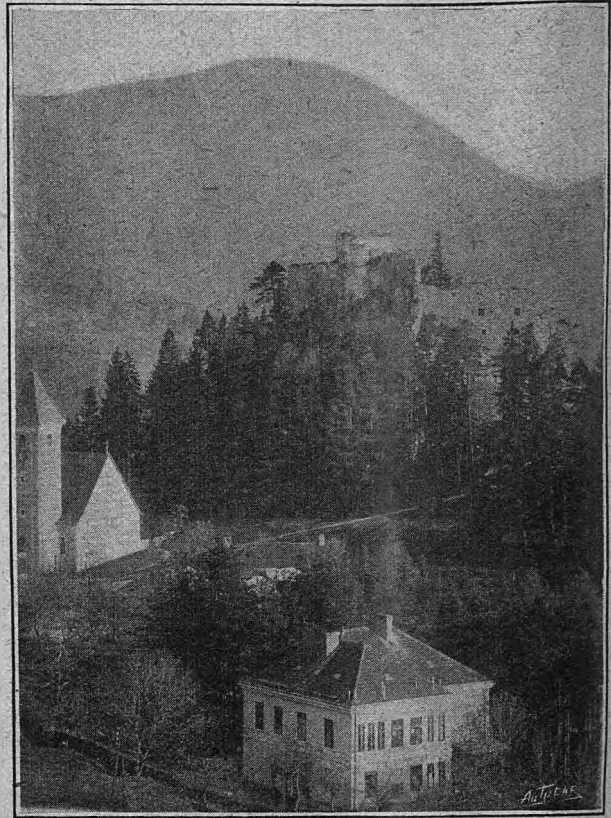
tionally liberal, *quā* corners, they require judgment, of course, when the driver is endeavouring to take them at the highest possible speed, while the ascent, though in not the remotest degree formidable if judged as an Alpine pass, is another matter altogether when "fastest time" is the end in view.

The actual foot of the Pass is at Schottwien (1,895 feet), and from there to the summit is a distance of ten kilometres, with an average ascent of 220 feet a mile. One soon reaches the first corner, and its liberal radius may be taken as an indication of the character of the others which are to follow. This particular turn, by the way, was protected on the inner curve in June, 1912, by wooden rails, to prevent drivers from cutting in too closely and damaging the road; but whether this barricade was temporary or permanent I cannot say. The second corner comes into view shortly afterwards, and is found to be paved! The granite setts, however, may ensure permanence of surface, but undoubtedly promote skidding, especially in wet weather, so that a car driver must not be misled by the width of the curve, but needs to go more carefully than would be required by considerations of the usual road surface. The third corner is also paved, but the remaining bends are normal, and the climb is over before one realises that one has done any particular climbing, save when speed pure and simple is the prime motive. The 38 h.p. Daimler on which I made the ascent went up on the top speed all the way, and its total time was only twelve minutes, but the pace was not forced at any point.

A good idea of the Semmering road, and the liberality of the curves, is afforded by the photograph on the preceding page, which I took about half-way down when crossing the Pass in the reverse direction, on my return to Vienna after travelling over practically the whole of Austria. I do not remember at which of the corners the car was pulled up, but should say that it was probably the fourth from the foot, and in any case the radius is typical of them all. The quality of the road surface may be seen at a glance.

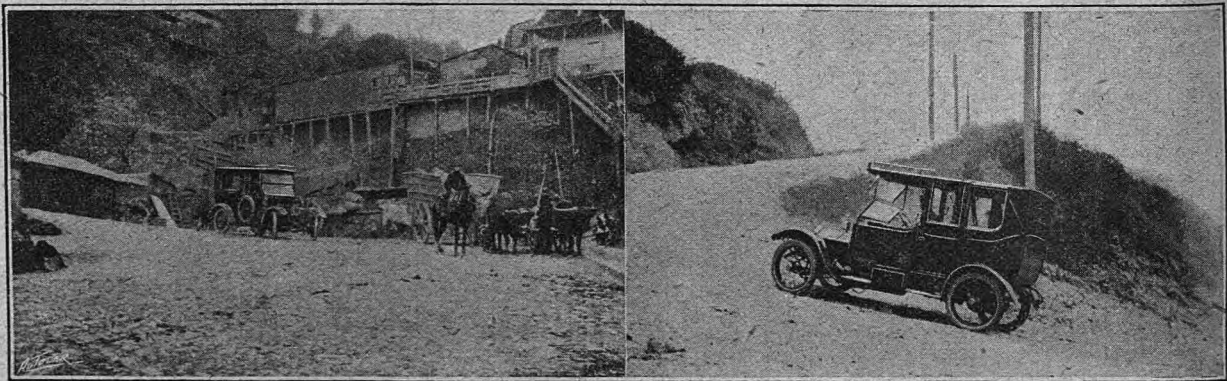
There are various hotels in the neighbourhood of the summit, but the favourite resort for motorists is the Erzherzog Johann, which adjoins the roadside, backed by a luxuriant wood of pines. On a fine Sunday afternoon one may see as many cars here as

at any of the well-known houses of call on the Portsmouth or Brighton roads. The Hotel Erzherzog Johann also represents the finishing point of the annual Semmering hill-climb.



The Castle of Klamm, near Schottwien.

Schottwien, by the way, at the foot of the Pass, is a very pretty summer resort, with attractive surroundings. There is a fine modern road from here, moreover, over the Kreuzberg (3,550 feet) to Payerbach-Reichenau, which affords a striking bird's-eye view of the village, as well as of the picturesque ruin of the castle of Klamm.



MOTURING IN CHILI. On the left is the commencement of Las Zorras Hill, and on the right, half way up the same hill, is a 17-25 h.p. standard Armstrong-Whitworth car, with body built by Sir William Angus Sanderson and Co., of Newcastle. The hill road is about two miles long and is a mass of stones, sand, and holes. The car has to climb this on an average of three to four times a day. The owner says that in spite of all the hard work the car has had, it is as good as new, and the engine has never failed. Although the body has gone through much pitching and tossing, there is not a crack or strain visible in the panelling or in any other part. The doors open and shut as easily as when the car left the works.

Open Competitions in South Wales.

The Caerphilly Hill Climb and the Porthcawl Speed Trials on the Sands.

THESE two events, which were run off respectively on Thursday and Saturday last week, were organised, as last year, by the South Wales Automobile Club and the Cardiff Motor Club. The hill-climb has considerable importance attached to it in Welsh motoring circles, and is always certain to attract a large entry. The hill is 1,194 yards in length, and has a total rise of 387.03 feet. The average gradient is 1 in 18.6, and at the steepest part the gradient is 1 in 6.2.

The weather outlook on Thursday morning was anything but promising, but by twelve o'clock the sky cleared, and in the afternoon ideal weather conditions prevailed. All the events were started promptly and run off without the slightest hitch, in the presence of several thousand spectators gathered on the hill and mountain side.

It would be difficult to find a better hill than Caerphilly for a hill-climbing competition, as the contour of the road, and the three difficult bends are exceptionally suitable for testing the hill-climbing abilities of the cars and the skill of the drivers. The road at each of the corners is cut through the hillside, making a grassy bank on either side of the road several feet high, which provides an excellent position for spectators. At the start at the bottom of the hill the road has a slight downward gradient for about eighty yards. This allows the competing cars to make a fast start, enabling the engines to gain their maximum revolutions. The first upward gradient rises about 1 in 9, and continues through a sharp S

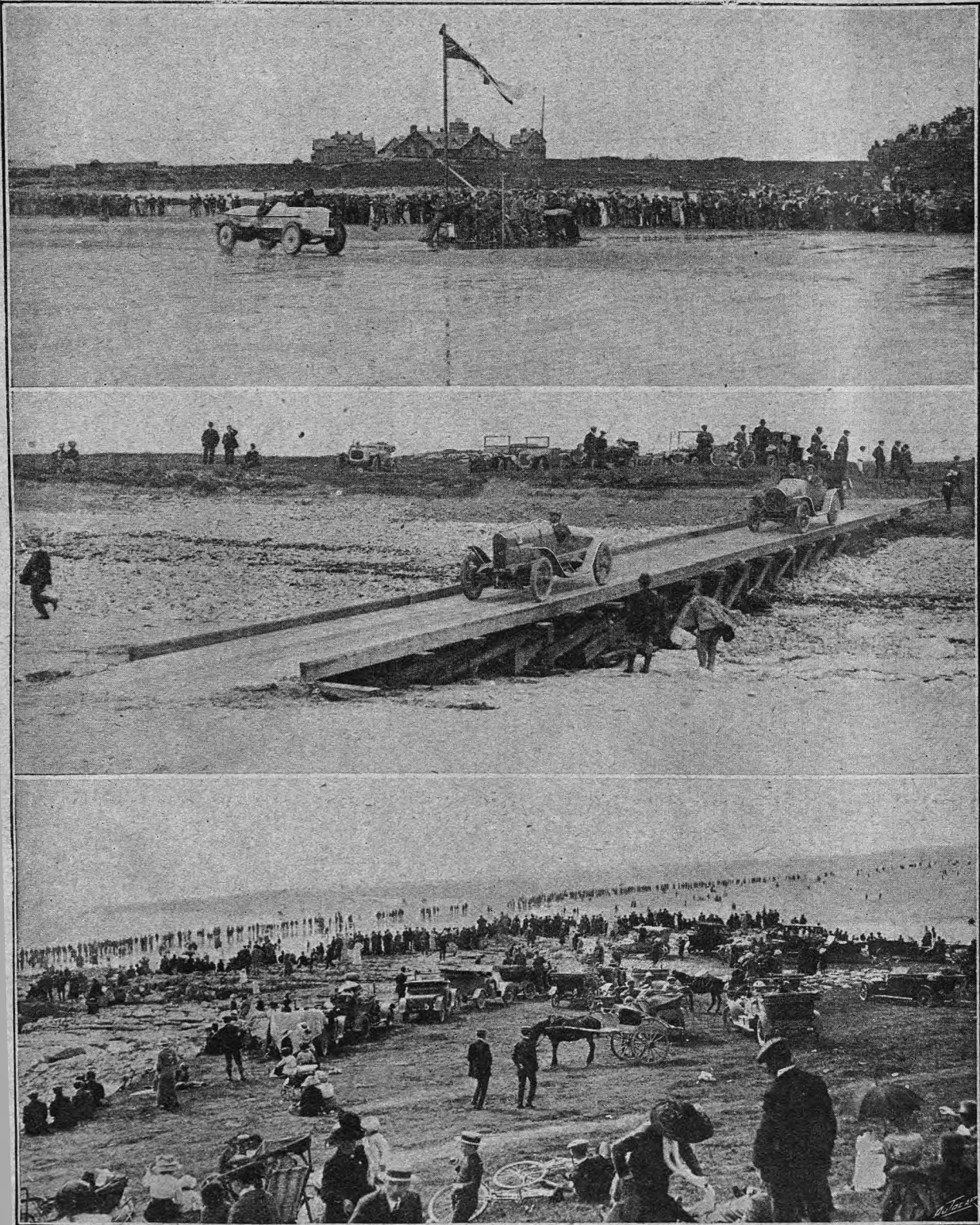
bend at about 1 in 8. The road then continues straight for about 100 yards, leading up to the most difficult bend of the course, which puts a very effective check on the competing cars and provides thrills for the spectators. It was at this point that several of the motor cyclist competitors left the course, one causing



THE CAERPHILLY HILL-CLIMB. The upper view shows Mr. W. G. Tuck on the 11 h.p. Humber, taking one of the corners. The car was first on time and third on formula in Class I. Below is seen Mr. P. C. Kidner on the 16-20 h.p. Vauxhall, which was third on time and second on formula in Class IV. This illustration gives a good idea of the nature of the surrounding country.

The Porthcawl Speed Trials.

Nearly Seventy Miles an Hour on the Sands.



At the top is seen Mr. W. Stokes on a 25 h.p. Talbot, in Class VI., which made the fastest time of the day and beat the record for the course, covering the measured mile at a speed of 69.76 m.p.h. In the centre illustration cars are seen running down the gangway on to the sands, while below some of the cars and part of the crowd of spectators are visible.

considerable sensation by leaving the road and charging a photographer, who dropped his thirty-guinea Goerz camera and just succeeded in gaining a refuge on the banking and avoiding a nasty mix-up. If he has succeeded in obtaining a snapshot of the incident it should prove a thrilling photograph.

Another motor cyclist gave a fine exhibition of how to fall, and finished up with three somersaults over the banking through taking this bend at much too high a speed.

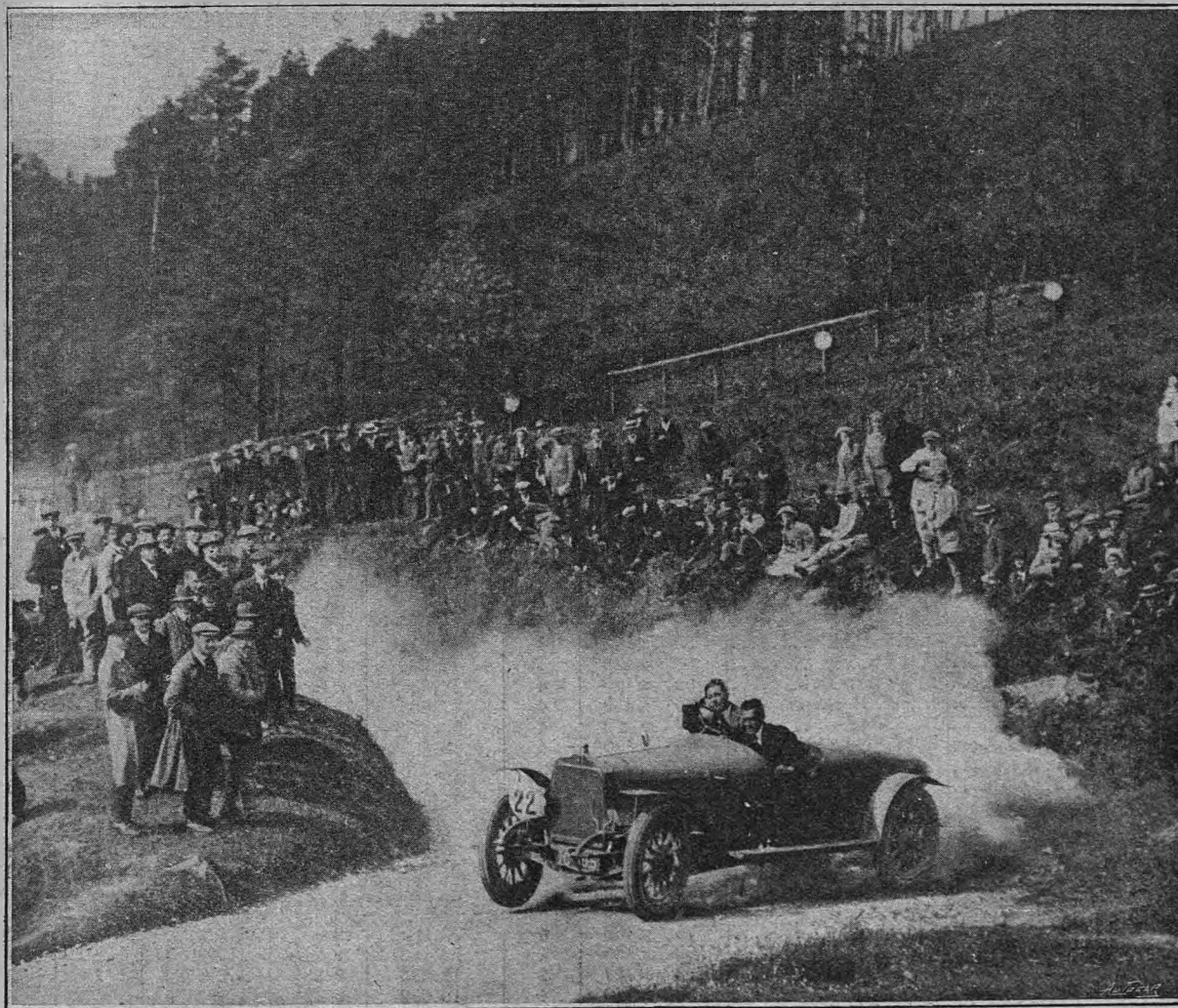
Mr. L. Hands, driving the 25 h.p. Talbot, gave a most sensational exhibition of skilful high-speed cornering at this bend, and nearly turned over on the banking, as a back tyre burst owing to the violence of the skid, but he finished on the rim. Mr. Hancock took the bend in his usual masterly way, and although he appeared to be travelling at a higher speed than Mr. Hands he hardly skidded at all, and very cleverly took his Vauxhall completely round the inner edge of the bend. The road from this corner continues straight and at a steep gradient for about 150 yards to the last bend, which is situated just before the finish, and which gives an excellent position for witnessing the contest, and also provides a view of practically the whole of the course.

Open Competitions in South Wales.

Lord Ninian Crichton-Stuart's challenge cup for the best figure of merit on formula in Class I. was secured by Mr. J. Thomas on a 69 x 120 mm. Arrol-Johnston. His time was 1m. 32 $\frac{3}{5}$ s., and figure of merit 2.292380. Mr. F. W. Burgess's 12-15 Calthorpe was second, while Mr. W. G. Tuck gained third place with his 11.9 h.p. (69 x 130) Humber.

In the second class Mr. Tuck, with his 14 h.p. 75 x 130 Humber, was successful in winning the silver challenge cup and souvenir cup presented by Mr. R. F. Wakley for the best figure of merit in the class. Mr. Tuck's figure was 1.862415, and time 1m. 36 $\frac{4}{5}$ s. Second and third places were also secured by 14 h.p. Humber, Mr. H. K. Neale (second) making the ascent in 2m. 6 $\frac{1}{5}$ s., while Mr. J. Thomas was placed third. It is worthy of note that in this class the positions of all the competing cars were the same on time and formula.

The Park Hotel Challenge Cup for the best figure of merit in Class III. was won by Mr. H. G. Day with his 12 h.p. Talbot, while Mr. R. F. Wakley succeeded in winning the Sunbeam Cup, presented by the Sunbeam Motor Co. for the car showing best on formula in Classes VI., VII., and VIII. Mr. Wakley was driving an 11.9 h.p. Arrol-Johnston, his figure of



THE CAERPHILLY HILL-CLIMB. Mr. L. Hands on the 25 h.p. Talbot taking one of the sharp turns on the hill. It will be noticed that the right-hand front wheel is off the ground and that the car is skidding violently. This car was first on formula and second on time in Class V.

Open Competitions in South Wales.

merit being 2.326121, as against the score of Mr. J. Cross, who was driving a similar car of 1.630515.

Mr. H. G. Day also succeeded in winning Miss Starkey's silver chronograph and the Cardiff Exchange Challenge Cup (subscribed for by the members of the Cardiff Exchange) for the best figure of merit in Classes I. to V., with a 15 h.p. 90 x 140 mm. Talbot, his score on formula being 2.654932.

The shield subscribed for by the South Wales Motor Traders, to be awarded to the entrant of the car making the best performance on formula in Class IX., was keenly contested for, Mr. H. B. Jones, 14 h.p. Humber (driven by D. Howells), securing it with a figure of merit of 1.570770.

The fastest climb of the day was accomplished by Mr. A. J. Hancock, who was driving a 30-98 h.p.

Vauxhall, 98 x 150 mm., he making the ascent in 4³/₅s., thus winning the Royal Automobile Club's special medal offered to the entrant of the car, irrespective of class, ascending the hill in the fastest time.

The special event for cycle cars having engines not exceeding 1,100 c.c. was won by Mr. G. W. Hands on his 10-12 h.p. Calthorpe in 2m. 25²/₅s. (formula .0000498), Mr. F. G. Willmot on an 8 h.p. Morgan being second.

The success of the Talbot cars was an outstanding feature of the meeting, for it will be noticed that they were placed first on formula in every open event in which they competed, as well as being first and third in Class VII.

The following are the results of the car events:

CLASS I. (OPEN).—FOR FOUR-CYLINDER CARS, BORE NOT EXCEEDING 70 MM.

H.P. and Car.	Driver.	Bore and Stroke.	No. of Cyls.	H.P. on Formula.	Time.	Figure of Merit.	PLACING.	
							Formula.	Time
		mm.			m. s.			
11.9 Arrol-Johnston	J. Thomas	69.5 x 120	4	11.08	1 32 ³ / ₅	2.292380	1	2
12.15 Calthorpe	F. W. Burgess	69.5 x 125	4	11.55	1 45 ¹ / ₅	2.154226	2	3
11.9 Humber	W. G. Tuck	69 x 130	4	11.688	1 26 ³ / ₅	2.019402	3	1
10 Bugatti	P. O. Serek	65 x 100	4	8.709	1 48 ¹ / ₅	1.871988	4	4
10 Morris-Oxford	W. R. Morris	60 x 90	4	6.95	2 24 ³ / ₅	1.727415	5	6
12 Gladiator	N. W. Nash	70 x 110	4	10.763	2 23	1.431348	6	5

CLASS II. (OPEN).—FOR FOUR-CYLINDER CARS, BORE NOT EXCEEDING 75 MM.

14 Humber	W. G. Tuck	75 x 130	4	13.8228	1 36 ¹ / ₅	1.862415	1	1
14 Humber	H. K. Neale	75 x 130	4	13.8228	2 6 ¹ / ₅	1.585038	2	2
14 Humber	J. Thomas	75 x 130	4	13.8228	2 10	1.495857	3	3
14 Hurtu	J. R. M. Stanfield	75 x 120	4	13.102	2 16 ¹ / ₅	1.039511	4	4

CLASS III. (OPEN).—FOR FOUR-CYLINDER CARS, BORE NOT EXCEEDING 80 MM.

12 Talbot	H. G. Day	80 x 150	4	17.28	1 23 ¹ / ₅	2.429582	1	2
12-16 Sunbeam	E. Genna	80 x 150	4	17.28	1 20 ³ / ₅	2.372254	2	1
12 Talbot	G. Kemshall	80 x 120	4	14.81	1 34 ³ / ₅	2.148426	3	3
12-16 Sunbeam	Miss Starkey	80 x 150	4	17.28	1 43 ³ / ₅	1.923799	4	4

CLASS IV. (OPEN).—FOR FOUR-CYLINDER CARS, BORE NOT EXCEEDING 91 MM.

15 Talbot	H. G. Day	90 x 140	4	20.89	1 18	2.654932	1	1
16-20 Vauxhall	P. C. Kidner	90 x 118	4	18.64	1 31 ³ / ₅	1.890008	2	3
18 Minerva	J. H. Jones	90 x 130	4	19.89	1 23	1.725757	3	2

CLASS V. (OPEN).—FOR FOUR-CYLINDER CARS, BORE NOT EXCEEDING 102 MM.

25 Talbot	L. Hands	101.5 x 140	4	26.621	1 13 ³ / ₅	1.733896	1	2
30-98 Vauxhall	A. J. Hancock	98 x 150	4	25.94	1 4 ³ / ₅	1.374331	2	1
26-60 Métallurgique	Mrs. W. G. Morel	102 x 150	4	28.088	1 48 ³ / ₅	1.252968	3	4
20 Ford	H. W. Lewis	95 x 102	4	18.798	1 34 ³ / ₅	.824387	4	3

CLASS VI. (CLOSED TO MEMBERS OF THE ORGANISING CLUBS).—FOR CARS WHOSE EQUAL BORE AREA DOES NOT EXCEED 70 MM

11.9 Arrol-Johnston	R. F. Wakley	69 x 120	4	11.08	1 31 ¹ / ₅	2.326121	1	1
11.9 Arrol-Johnston	J. Cross	69 x 120	4	11.08	2 22 ¹ / ₅	1.630515	2	2

CLASS VII. (CLOSED).—FOR CARS WHOSE EQUAL BORE AREA DOES NOT EXCEED 80 MM.

12 Talbot	G. Kemshall	80 x 120	4	14.81	1 32 ¹ / ₅	2.204350	1	1
12-16 Sunbeam	Miss Starkey	80 x 150	4	17.28	1 42 ¹ / ₅	1.938770	2	3
12 Talbot	B. Davies	80 x 120	4	14.81	1 43 ³ / ₅	1.837589	3	4
12-16 Sunbeam	Dr. W. N. Davies	80 x 150	4	17.28	1 36	1.704765	4	2
14 Humber	H. B. Jones	75 x 130	4	13.8228	1 54 ³ / ₅	1.699837	5	5
14 Humber	H. K. Neale	75 x 130	4	13.8228	2 6 ³ / ₅	1.582530	6	6
12-18 Riley	J. Cory, jun.	102 x 127	2	12.475	2 38	1.207478	7	7
14 De Dion	Miss M. Morel	75 x 130	4	13.8228	3 47 ¹ / ₅	1.073394	8	8

CLASS VIII. (CLOSED).—FOR CARS WHOSE EQUAL BORE AREA IS OVER 80 MM.

26-60 Métallurgique	Mrs. W. G. Morel	102 x 150	4	28.088	1 48 ³ / ₅	1.250663	1	1
15 Napier	F. J. Schroeter	82 x 127	4	16.47	3 18	1.092589	2	2

CLASS IX.—FOR CARS DRIVEN BY PAID DRIVERS AND OF UNLIMITED CAPACITY.

14 Humber	D. Howells	75 x 130	4	13.8228	2 3 ³ / ₅	1.570770	1	2
26-60 Métallurgique	E. M. Saul	102 x 150	4	28.088	1 44 ¹ / ₅	1.298400	2	1
12-18 Riley	J. Cory, jun.	102 x 127	2	12.475	2 38 ³ / ₅	1.204429	3	3
15.9 Arrol-Johnston	J. A. Gibbs	80 x 140	4	16.502	3 12 ³ / ₅	1.135439	4	4

It is difficult to understand the wording of the limitations of Classes VI., VII., and VIII., but we presume it means in the case of Class VI., for instance,

that other than four-cylinder cars were eligible, but the total area of the cylinder bores was not to exceed that of a 70 mm. four-cylinder engine.

Porthcawl Speed Trials.

The beautiful weather and the great interest always evinced in such events in South Wales doubtless accounted for the record number of people, who on Saturday witnessed the open speed trials on the sands at Porthcawl. Some clever driving was witnessed, and thanks to admirable management the event was unmarred by any accident of consequence. The sands were in excellent condition, the course selected being absolutely straight and about one mile long. The Earl of Shrewsbury's Talbot cars were greatly in evidence, and carried off the chief honours in the four largest classes. The fastest time of the day and a record for the course was also scored by a Talbot.

Mr. W. G. Tuck, with his 11 h.p. 69 x 130 mm. Humber succeeded in winning both the R. E. Jones challenge cup and the silver vase presented by Humbers, Ltd., his times being 1m. 15²/₅s. and 1m. 16s. in Classes I. and II. respectively.

Mrs. C. H. Bailey's silver cup in Class III. was won by H. G. Day, driving a 12 h.p. Talbot (80 x 150 mm.) The same driver also secured Mr. R. F. Wakley's silver cup in Class IV. with a 15 h.p. 90 x 140 mm. Talbot, his time being 1m. 3⁴/₅s., and average speed 57.14 m.p.h.

Mr. E. Stokes, with the 25 h.p. Talbot (101.5 x 140 mm.), won the challenge cup (Class V.) presented by the Porthcawl Chamber of Trade in 53³/₅s.

In Class VI., Mr. Stokes, driving a 25 h.p. 101.5 x 140 mm. Talbot, succeeded in making the fastest time of the day and a record for the sands. His time was 51²/₅s., and average speed 69.76 m.p.h. Mr. Stokes was therefore awarded the R.A.C.'s special medal.

Second and third places were both obtained by 27-80 h.p. 105 x 165 mm. Austro-Daimlers, Mr. J. R. M. Stanfield being second in 1m. 2¹/₅s.

In Classes VII., VIII., and IX. the driver of the car making the best individual average performance was to have received the C. H. Bailey Trophy, which is at present held by Miss L. B. Starkey. There were two protests, however, and consequently the award was not made.

The following are the complete results:

CLASS I.—For four-cylinder cars, bore not exceeding 70 mm. (open).

Driver and car.	Bore and stroke. mm.	Time. m. s.	Speed. m.p.h.
1. W. G. Tuck (11.9 Humber) ...	69x130	1 15 ² / ₅	47.74
2. J. Thomas (11.9 Arrol-Johnston) ...	69x120	1 17 ¹ / ₅	46.63

CLASS II.—For four-cylinder cars, bore not exceeding 75 mm. (open).

1. W. G. Tuck (11.9 Humber) ...	69x130	1 16	47.37
2. J. Thomas (11.9 Arrol-Johnston) ...	69x120	1 18 ² / ₅	45.80
3. J. Thomas (14 Humber) ...	75x130	1 20 ³ / ₅	42.85

CLASS III.—For four-cylinder cars, bore not exceeding 82 mm. (open).

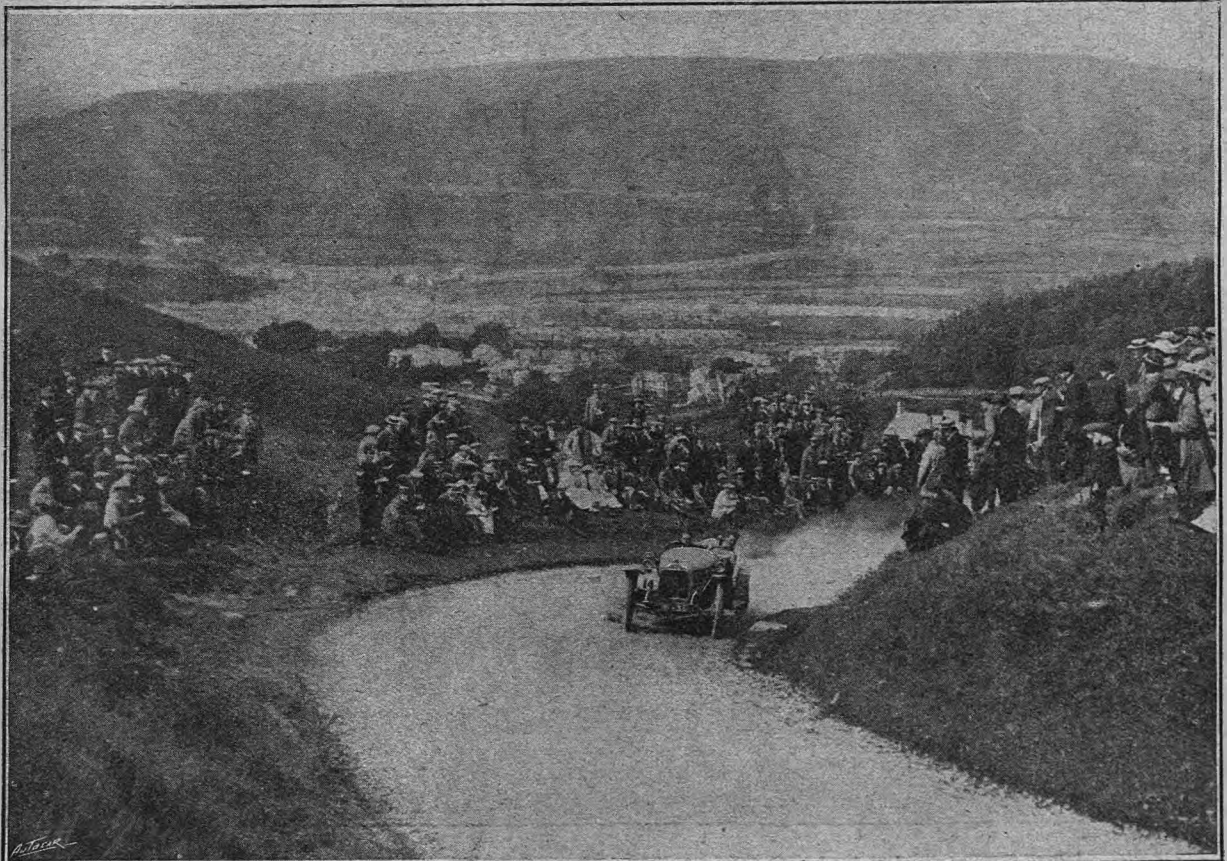
1. H. G. Day (12 Talbot) ...	80x150	1 3	57.14
2. E. Genna (12-16 Sunbeam) ...	80x150	1 5 ² / ₅	55.04
3. R. H. Collier (12 Talbot) ...	80x120	1 16	47.37

CLASS IV.—For four-cylinder cars, bore not exceeding 91 mm. (open).

1. H. G. Day (15 Talbot) ...	90x140	1 3 ⁴ / ₅	57.14
2. J. H. Jones (18 Minerva) ...	90x170	1 10 ² / ₅	51.13
3. P. C. Kidner (16-20 Vauxhall) ...	90x118	1 13 ⁴ / ₅	48.78

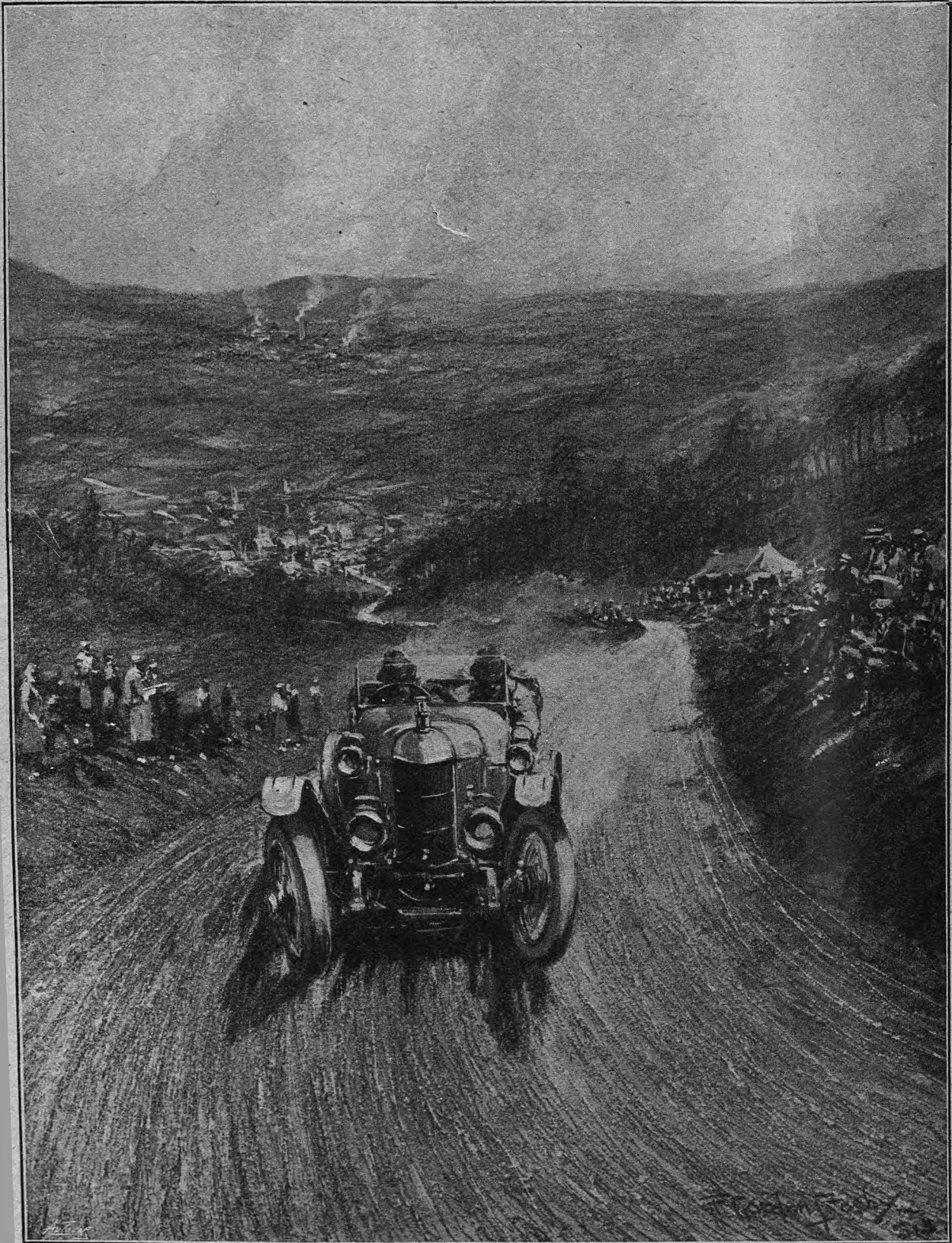
CLASS V.—For four-cylinder cars, bore not exceeding 102 mm. (open).

1. E. Stokes (25 Talbot) ...	101.5x140	0 53 ³ / ₅	68.44
2. P. C. Kidner (20 Vauxhall) ...	98 x 150	0 55 ¹ / ₅	65.21
3. H. W. Lewis (20 Ford) ...	90 x 102	1 17	46.75



THE CAERPHILLY HILL-CLIMB. Mr. H. G. Day on the 12 h.p. Talbot which was first on formula, and second on time in Class III.

Caerphilly Hill Climb.



A view of the hill from the last bend near the summit from whence Caerphilly and the starting banner at the foot can be seen. The car is a little Morris-Oxford, one of the competing cars, driven by Mr. W. R. Morris, and the smallest in Class I., the four-cylinder engine being 60 x 90 mm.

CLASS VI.—For cars of unlimited capacity (open).

1. E. Stokes (25 Talbot) ...	101.5×140	0 51 $\frac{3}{4}$	69.76
2. J. R. M. Stanfield (27-80 Austro-Daimler) ...	105 ×165	1 2 $\frac{1}{2}$	57.88
3. E. H. Lewis (27-80 Austro-Daimler) ...	105 ×165	1 4 $\frac{1}{2}$	55.9

CLASS VII.—Cancelled; no entries.

CLASS VIII.—For cars not exceeding 80 mm. bore (closed).

Heat 1.

1. Miss L. B. Starkey (12-16 Sun-beam) ...	80×150	1 17 $\frac{1}{4}$	46.27
2. Bernard Davies (12 Talbot) ...	80×120	1 20	45.00

Open Competitions in South Wales.

Heat 2.

1. H. B. Davies (14 Humber) ...	75×130	1 22 $\frac{1}{2}$	43.69
2. G. W. Kenshole (12 Talbot) ...	80×120	1 30 $\frac{1}{2}$	39.82

Final.

1. Miss Starkey (12-16 Sunbeam) ...	80×150	1 18	46.15
2. Bernard Davies (12 Talbot) ...	80×120	1 19 $\frac{1}{2}$	45.34
3. H. B. Davies (14 Humber) ...	75×130	1 21	44.44

CLASS IX.—For cars exceeding 80 mm. bore (closed).

1. E. R. Insole (15 Straker-Squire) ...	87×120	1 24	42.85
2. J. D. Mewton (15 Austin) ...	89×114	1 30 $\frac{1}{2}$	39.82

The cycle car event was won by Mr. H. Morgan on a Morgan at 49.58 m.p.h., Mr. G. W. Hands on a 10-12 h.p. Calthorpe being second at 43.26 m.p.h.

Conference of the Roads Improvement Association.

Paper on "The Trend of Modern Road Construction."

ON the eve of the great international road congress which opened on Monday at London, the Roads Improvement Association in a smaller way met at the Royal Automobile Club to consider the all-absorbing question of roads. The occasion was the first conference of the Association, and a paper prepared by Col. R. E. Crompton (the Road Board Engineer) and Mr. H. Percy Boulnois on the subject of "The Trend of Modern Road Construction" was read.

The authors pointed out that because of the damage to roads by mechanical traction it had been suggested that all mechanically-propelled vehicles should be heavily taxed in order to pay for this damage, but the unfairness of confining this taxation to only one class of vehicle was obvious, and could only have the effect of retarding the progress of modern development and crippling the industries of this country. The mechanically-driven vehicle has come to stay, and it should be to the interest of the road owner and constructor to make the roads suitable for the altered conditions of the traffic, and for the road user to take all the care he could not to injure unnecessarily the surface of the roads. In this connection it had been frequently urged that wheels of larger diameter should be used for the heavier class of motor waggon than that generally adopted, which was only about 41in. What, then, should be the method of construction of the road of the future? Rubber was too expensive, and they must therefore look elsewhere for some material which could be substituted for rubber, and the nearest approach, apart from slipperiness, to such a pavement would be sheet asphalt. Such a road surface appeared to be almost ideal, but the cost of this material would be too great for general use, and the surface had been condemned as unduly slippery for horse traffic under certain climatic conditions. A compromise has, however, been arrived at, in the form of what may be termed artificial asphalt, used as a "carpet," and consisting of graded sand and a small proportion of limey matter mixed with the purer bitumens. This has been used with great success on the Thames Embankment and elsewhere.

In the evening a dinner was given at the Royal Automobile Club. Mr. Robert Todd (Chairman of the Association) presided, and among those present were Mr. Rees Jeffreys (Secretary of the Road Board and Hon. Secretary of the International Congress), Mr. Wallace E. Riche (Secretary Roads Improvement Association), Colonel R. E. Crompton, Mr. H. Percy Boulnois, Mr. John T. Campbell, Alderman Jessop, Captain H. P. Deasy, Dr. H. Vallance, and Dr. J. G. McLanahan.

The Chairman, in proposing success to the movement for improved roads, expressed the opinion that the traffic would be always ahead of the roads. Some of the roads made 2,000 years ago were bad to start with, and just as there never had been, so he was very much afraid there never would be, roads to satisfy the traffic. At the time when something really effective was being done to improve the roads throughout the country there came the railways and the work was stopped. In fact he knew of one road in Durham on which an improvement, started seventy or eighty years ago, was only now about to be completed. Long before motorists and motor cars were thought of, the Roads Improvement Association, by its educational work, had begun to pave the way for the establishment of the Road Board. The idea all through had been that there should be one central road

authority, as it was felt that it was only by having a central authority that roads could be properly dealt with.

Mr. Rees Jeffreys, in reply, said when he became a Government official he had to sever his connection with the Roads Improvement Association, which had made much greater progress in its work than many bodies with a much larger membership and better financial backing. (Cheers.) To the tar-laying experiments undertaken by the Roads Improvement Association in 1907 in Surrey, Middlesex, and Berkshire, was to be traced the movement for the treating of the roads with bituminous material which was finding expression in the substitution of tar-bound roads for water-bound macadam roads. The result was that the roads in this country were now stronger and better than the roads in any other country of the civilised world. But though the English roads were better adapted to carry the traffic put upon them, he admitted that they were not yet capable of carrying the heavy motor omnibuses and lorries. The Road Board now had at its disposal invested funds to the amount of a million and a quarter annually, and though it had no desire to hoard the money the procedure to be adopted must be settled before any local authorities could be authorised to carry out the work with which they were anxious to proceed. Three questions would have to be considered by the International Road Congress, firstly, by the engineers, how the roads should be constructed; secondly, by the administrators, how the money was to be raised with which to pay for the roads; and, thirdly, who should spend the money when it had been raised. From the deliberations of the Congress he hoped good results would follow.

A Standard Specification for Benzole.

On February 8th, when dealing with the work of the then just formed Petrol Substitutes Joint Committee, which is composed of representatives of the Royal Automobile Club, the Automobile Association and the Society of Motor Manufacturers, we said, "It is also desirable that the petrol commission should get out a standard specification for benzole for motor cars, as there is no doubt that a good deal of benzole which has been bought and used by motorists experimentally has been quite unsuitable, not only freezing at quite high temperatures but producing all sorts of objectionable results in engine, carburetter, and tanks, simply and solely because the fuel was not properly washed and rectified 90's benzole, but more or less unrefined stuff which was quite unsuitable for the purpose. Even experts' opinions vary at the moment regarding the proper proportions of benzole and toluol."

Of course, we claim no credit for making the above suggestion, as it was so obviously what a committee specialising upon the subject would be likely to do, and we merely mentioned it as showing one of the directions in which its activities would have to specialise. None the less, it is interesting to observe that the Petrol Substitutes Joint Committee has now officially announced through its secretary that it is carrying on investigations to enable it to fix a definite standard of quality for benzole.

The Third International Road Congress.

Opening Address by the Chancellor of the Exchequer.

THE third International Road Congress, which last met three years ago in Brussels, was opened in the Central Hall, Westminster, on Monday, Mr. Lloyd George presiding over the opening session. Among the accredited representatives are delegates from thirty-nine Governments, no civilised country in the world being unrepresented. Mr. Lloyd George first suggested that a telegram conveying loyal and respectful greetings to the King and thanks for the invitation to Windsor Castle should be sent. Before the session closed a reply was received from His Majesty wishing the Congress every success.

In his opening address Mr. Lloyd George referred to the revolution which has come about in the use of roads through the development of motor traffic and to the expenditure of the Road Board on road improvements. He did not think this was a matter to be deplored, for the more communication was improved the less was spent on distribution, and the more was available for production. Bad roads meant a horse taken away from the plough and attached to a cart.

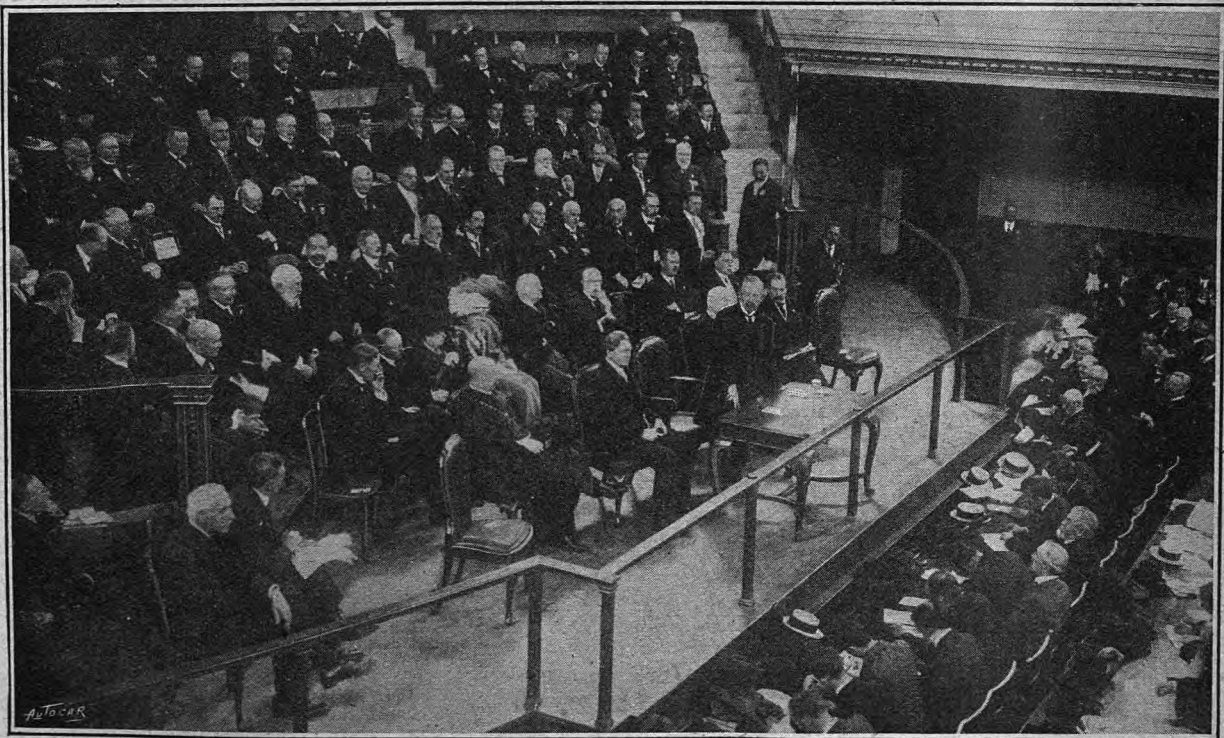
Sir George Gibb (Chairman of the Road Board), who is also Chairman of the Council organising the Congress, delivered an address, in which he said one of the most remarkable features of the road problem was the number and scope of the unsettled questions. Addresses, mainly of a complimentary character, were given by foreign delegates, and the Congress accepted an invitation to hold its next meetings, three years hence, in Munich.

An exhibition was afterwards opened in the Royal Horticultural Hall by Earl Beauchamp, who said he was very glad that the Congress had accepted the Government's invitation to hold this year's meetings

in London. He warmly congratulated the promoters of the exhibition, which co-ordinated the researches and the inventions of the engineering and chemical sciences.

In the evening the Lord Mayor received the delegates at the Guildhall, the occasion being a *conversazione* given in their honour by the Corporation of London. There were two thousand four hundred guests. The Librarian, Mr. Bernard Kettle, placed on view a selection of books pertaining to roads, including "The Carriers' Cosmographie of 1637," by John Taylor, the water poet, a volume of considerable interest, inasmuch as it gives an interesting picture of the City of London in pre-railway days; the original work of John Loudon MacAdam on the making and repairing and preserving of roads, dated 1820; and many interesting maps of roads.

The business portion of the Congress was commenced on Tuesday, the members dividing themselves into sections and meeting respectively at Caxton Hall, the Institution of Mechanical Engineers, and the Surveyors' Institute. In the first section Professor Adshead presented a *précis* on reports from various nations as to the planning of new roads and streets, and resolutions embodying the suggestions were adopted. The chief of these were that new main roads should be constructed to pass outside rather than through towns, and that the planning of main road communication outside towns should be at once undertaken, the initiative resting with a central state authority. The subject of road surfacing was considered at the afternoon sitting, and certain recommendations were agreed to, particularly as to bridges. On these structures wood block paving was generally



The third International Road Congress. Mr. Lloyd George delivering the opening address at the Central Hall, Westminster. Thirty-nine Governments, including every civilised country in the world, were represented.

accepted as an ideal surface, while asphalt was regarded as excellent for bridges with easy gradients.

The lighting of roads was considered by the second section, over which Mr. S. F. Edge presided. He said it was quite clear that country villages and urban districts could not light the roads in a way adequate for modern traffic. Therefore the road user must carry his light with him, though the local authorities should be expected to look after the lighting of unexpected obstructions, such as excavations, road repairs, and moving cattle. Motor lights should be proportionate to speed and should enable the driver to see an obstruction at least twice as far off as the distance in which his brakes could pull him up. Resolutions were adopted that in inhabited places the head light should be limited to the illuminating power of an ordinary lamp, and that one colour should be adopted as a danger signal.

The third section dealt with the question of highway administration, the discussion being opened by Mr. W. Rees Jeffreys (Secretary to the Road Board), who said the reports from the different nations showed a general tendency towards greater centralisation. The task of constructing roads should be placed in the hands of larger units than the local authority. A Belgian delegate advocated the state control of all roads. A French representative described the practice in France, where there is greater centralisation than here. In America, it was pointed out, each state controlled its roads, but in Canada local authorities constructed the roads. The conclusion arrived at was that it was difficult to make one rule for all countries.

A Grand Prix Guide.

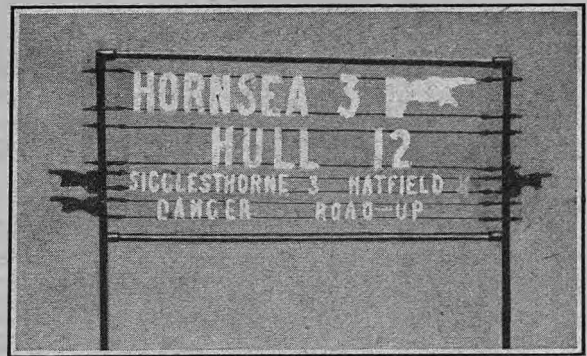
In connection with the forthcoming Grand Prix the Dunlop Co. has issued an attractive and informative folder which should be studied with interest by all motorists. An introductory page summarises the history of the race since its commencement, including a list of winners of the Gordon-Bennett Cup, and of the Grand Prix since the Gordon-Bennett was dropped in 1906. The course, a triangular one, slightly in excess of nineteen miles, is described, and can be followed by the eye on a map of understandable dimensions. The names of the competing cars and the order of the start are given, together with the prices of seats, and the cost of garaging cars at the starting point. A lot of useful information is compressed under the heading "Facts and Figures for Tourists," and elsewhere the steamship rates for cars, and time table of boats (outward and return) are tabulated. Copies may be obtained from the Dunlop Rubber Co., Birmingham, or at any of the company's depots.

The North British Rubber Co., Ltd., announce a substantial reduction in the prices of their Clincher motor tyres.

* * *

Too late for inclusion in the list of tarring operations now in progress we have received from the county surveyor of Warwickshire (Mr. John Willmot) an intimation that work of this kind is in progress on the following roads in his county: Birmingham-Coventry, near Hatchford Bridge, till July 3rd; Birmingham-Warwick, at Knowle village, till July 9th; Coventry-Tamworth, from Coventry City boundary to Keresley Church, till July 3rd; Castle Bromwich-Stonebridge, about one mile north of Stonebridge, till July 3rd.

On Saturday last, prior to the Congress, the Kent A.C. invited the delegates to a tour of inspection of the roads of the garden county of England, and incidentally entertained them to luncheon at Canterbury, Sir David Salomons (president of the club) being in the chair. Various toasts were proposed, and some very complimentary things were said about the excellence of the Kent roads. The occasion was seized for the presentation of a piece of Georgian plate on behalf of the members of the club to Mr. Granville Kenyon, who, after ten years' service, is retiring from the office of hon. secretary, his successor being Mr. P. H. Ashton, of Bromley.



A new model signpost which is being shown at the Road Congress Exhibition at the Horticultural Hall. It is interchangeable, and possesses the advantage of being very easily read against the sky line.

Benzole v. Petrol at Brooklands.

Major Lloyd has been good enough to furnish us with the speeds for the flying laps accomplished by four competing cars in both the 100 m.p.h. Long Handicap and the Benzole Race, for the purpose of comparing the performances of the same cars on the two fuels. The speeds were as follows:

	With benzole.		With petrol.	
	Speed m.p.h.	Speed m.p.h.	Speed m.p.h.	Speed m.p.h.
23.8 Vauxhall	102.06	101.43	103.33	101.85
17.9 S.C.A.R.	75.57	75.12	76.97	76.85
35.7 Berliet	70.84	68.5	79.81	76.97
18.8 Straker-Squire	81.64	83.42	88.94	88.3

It will be seen from these figures that none of the competitors accomplished a better speed on benzole than on petrol, and in some cases the speed fell off very considerably. It would, perhaps, not be right to assume from this the inferiority of benzole, as it must be remembered that all the other races were run on petrol, for which doubtless the carburetters were better suited and specially adjusted.

We understand that the 1914 model Ford cars are to be equipped with wire wheels and electric lights, the latter to be run off the flywheel magneto, which is to be modified in design somewhat to enable current from both lighting and ignition to be generated.

* * *

Thirty cars competed in the Lancs A.C. reliability trial and hill-climb. An N.B. car, driven by Mr. J. Newton, was first in the class for cars up to 20 h.p. Mr. A. Lomax, on a 20 h.p. Vauxhall, won the amateurs' cup, and Mr. E. Mercer (Vauxhall) the trade cup. The fastest time in the hill-climb was made by Mr. W. Jones on a 25 h.p. Vauxhall, cars of this make being also second, third, and fourth.

The I.A.E. Visit to America.

A Strenuous Time Visiting Various Factories. By J. L. Mackle, B.Sc.

Buffalo, Tuesday, June 10th.

THE first American visit of the Institution of Automobile Engineers has virtually ended here, this evening, for though there is an interesting three days' tour through the Eastern machine shops of New England on the programme, quite a few of the members have had to leave hurriedly for New York in order to secure a quick passage home on the *Mauretania*. Others of the party have decided to stay in this district in order to study more fully the many local automobile plants, and in this they are wise, for in the limited time so far available, it has been almost impossible to obtain any adequate idea of the scope and variety of the specialised manufacturing processes, and all that has been done is more or less to take a rough general view of the American automobile industry as a whole.

Saturday night saw the party on the water again, *en route* from Detroit to Cleveland. Much sympathy has been tendered to the British members in regard to the inclusion of so much water travelling during their stay over here, but this hardship, if any, has been quite neutralised by the benefits gained, firstly, in the opportunities for constant debate and intercourse offered by the combined session on Lake Huron, and also by the time-saving nature of these pleasant night journeyings by water. These Lake Erie steamships are well-constructed and comfortable; they are really a great boon to the travellers between Detroit, Toledo, Cleveland, and Buffalo.

Cleveland is always anxious to impress upon everyone its position as "sixth" city of U.S.A., though how any American, individual or corporation, can be satisfied with any except the premier title passes comprehension. In the automobile industry Cleveland rivals Indianapolis for second place, Detroit, of course, being well ahead for first place. Such well-known vehicles as the Sterns, White, Winton, Peerless, and Baker Electric are some of the Cleveland products, while the manufacture of component parts, machine tools, and raw materials gives employment to many thousands of skilled workers. Cleveland and Buffalo share between them practically the whole of the supplies of iron and copper ore which come down the Great Lakes from the Canadian districts of the North-West.

Considering that the business part of the stay in Cleveland was limited to twelve hours, it is really surprising that so much ground was covered, and great credit is due to the local committee for their painstaking efforts on behalf of the visitors. The members of the committee were up with the lark on Sunday morning, and met the boat at the dock with a fleet of cars shortly after 7 a.m. A short halt was made at the hotel, and then the procession wended its way through the immense park system of Cleveland. These huge parks and well-shaded avenues are the crowning glories of the large American cities, and a similar remark may be made concerning the Country Club, the centre of the outdoor social life of each city. The Cleveland club had extended the privilege of membership to the British visitors, and a very pleasant afternoon was spent there in the inspection of the well arranged grounds.

Monday morning saw the members up at six o'clock, for the cars were at the door at 8 a.m., and no mercy was shown to stragglers. The first plant visited was the Foote Burt Co., makers of specialised automobile machine tools. This factory alone was worthy of a full day; half an hour was all that could be allowed, and therefore the members who wish to study the machine tool manufacturing end of high speed motor car production will have to visit the Foote Burt Co. again. This firm is one of the chief sources of supply for those automobile firms who do such great things in the way of big output, such as Ford, Overland, and Buick.

The Cleveland Automatic Machine Co. is well known on both sides of the Atlantic for its medium-sized automatic lathes, and the present examples would seem surely to represent the limit of high speed accurate work, for the production rate attained seems little short of wonderful. The same remarks apply to the machines turned out by the National Acme Manufacturing Co., which makes automatic machines of the smaller type for screw-cutting.

A new side of the industry was seen at the plant of the Ferro Machine and Foundry Co., located away over on the eastern side of the city. Here there are 1,500 men employed in the production of roughly machined and finished engine parts for those automobile firms which prefer to do the

assembling and testing for themselves. There are many concerns supplying completed components of all kinds, and, of course, quite a few of the well-known American cars are merely an assembly of such parts purchased from these outside makers. But this Ferro Co. is probably the only example of the supply of machined parts. The degree of accuracy and of workmanship is excellent, and, naturally enough, the big quantity production, together with the comparatively small number of parts to be supplied, enable many specialised machine tools to be used. The jig and tool work here is worthy of very close study.

In the afternoon the majority of the visitors sped off to Akron, some twenty miles away, in order to inspect the huge rubber factory of the Goodrich Company and allied interests. There is something in the nature of a rubber tyre trust in the United States, and Akron is the chief producing centre. The Goodrich plant alone finds work for 15,000 men, and the shops cover seventy-two acres—a huge expanse. Practically every form of rubber goods is manufactured here, though automobile tyres constitute the chief branch of activity. As may be imagined, the productive machinery has been developed to the highest possible stage of efficiency, and every conceivable type of labour-saving device is in use, not only in order to ensure economy, but also to give greater uniformity of the product. This visit to Akron was made specially attractive by the provision of a special Pullman train, which carried the visitors to the siding right alongside the main factory wall.

The other section of the party remaining in Cleveland spread themselves over the various automobile factories previously listed, in addition to the plant of the American Ball Bearing Co., makers of transmission gears and axles, and also of other components manufacturing plants. Altogether, it proved a very strenuous day, and few possessed any surplus energy on their arrival at the boat at 8 p.m.

On reaching here this morning, the gradual progress to the East was made apparent by the necessity of advancing watches one hour, to agree with standard Atlantic coast time—to many a welcome sign of the commencement of the homeward journey, for all are becoming somewhat tired, despite the unflagging interest of the various factories and the indefatigable energy of the various local committees who look so well after the comfort of all the party.

Here in Buffalo there are many iron and steel plants, but only one factory of close automobile interest. This is the Pierce-Arrow Motor Car Co., one of the oldest firms in the industry, and at the same time the highest priced producer of American cars to-day. The three big six-cylinder models are all listed in the vicinity of £1,000, and over 2,500 of these are produced each year; hence it will be realised that it is not only runabouts which have a sale in the United States. The Pierce-Arrow is the third of the three "P's" which are usually quoted as the shining examples of high-priced American productions—Peerless and Packard, of course, being the others. Oldsmobile and Locomobile must also be included in the ranks of producers of \$5,000 cars.

The Pierce-Arrow plant has particular interest for British visitors, in that two Britishers are shining lights there—Mr. David Fergusson being chief engineer and Mr. H. Kerr Thomas the head of the commercial vehicle section. But, in any case, the factory would stand out by itself, for in size and equipment it ranks with the best in the industry. The number of workers is 3,500, and all the men are specially chosen for their skill. Practically every branch of the work, except that of the foundry, is practised here, and in particular the spacious and well equipped body-building shops stand out for special mention. The Pierce-Arrow people have always been in the happy position of being able to sell more cars than they could produce, and this same state of affairs is being realised in the motor truck line, where the Pierce 5 ton vehicle is holding a pre-eminent position. About 300 a year is the present output of trucks—this will be increased to 400 in 1914.

After throwing open the factory and providing lunch, the Pierce-Arrow Company completed their kindness by providing a fleet of luxurious cars to take the visitors to the Niagara Falls, twenty-five miles away—incidentally giving the party an instance of the vileness of some American suburban roads. This journey proved to be a fine finish to an interesting day, and now the members of the party are breaking up to go their respective ways. Those who are making the New England trip will reach New York on Saturday next, and will mostly travel back on the *Olympic*.

The Complaint of the Owner-driver.

Specially Recommended to the Attention of Chassis Designers and Body Makers.

IF there are any two members of the motor industry with whom the owner-driver—I mean the owner-driver who does all but serious repairs to his own car—has a long account to settle, they are the chassis designer and the motor body builder. How much wasted time, spent energy, and bad temper and how many bruised knuckles are not these twain responsible for?

Some day—but let it be soon—some day, those charged with the designing of chassis and the building of bodies will be given, and caused to drive and care for in every detail, really inconveniently and exasperatingly fitted cars, with matters so arranged that mishaps shall be numerous, and the adjustments shouting for adjustment many and various. Then will that happy time be at hand when the lord of the drawing board and the T square, the straight-edge and the hair-dividers, to say nothing of that dour worker in wood, the body maker, will give serious attention to real accessibility of the essential parts of a car.

Then no longer shall we have magnetos sunk beneath the level of the frame on one side of the engine, and the carburetter similarly positioned on the other. No longer shall we have a tangle of inlet and exhaust pipes blocking the way to the valves and requiring to be dismantled and all their joints broken before the valve can be got at. No longer shall we have engines without compression taps, so that when the moment of stubborn starting comes, and nothing remains but to inject petrol into the combustion chambers, the sparking plugs have to be taken out for this purpose. Then may the designer believe that blessings are called down manifold on his head by the owner-driver.

Then, too, may we expect an oil filler to the crank chamber placed so that oil can be conveniently and cleanly poured into it from the usual beak-spouted oil-can, and no crook-necked funnel required. Also level cocks so set that, while they are operated from within the bonnet, the unhappy owner has not to provoke apoplexy by bending down floor-low to see if oil is running out through the apron. Or better, much better, something in the shape of an easily accessible gauging rod or a really viewable float indicator, and also a wash-out cock placed at the lowest point of the sump, operated from within the bonnet and discharging outside the apron. Though why the crank chamber should not be its own undershield in all cases as it is in some the writer fails to understand.

Then the designer, even in his aloofness from the practical driver, might bear in mind that even the engines of his designing do sometimes require a gentle titillation of the carburetter, and that the owner-driver is not consumed with joy, and does not sing him pæans of praise, when he has to open the bonnet, frequently equipped with knuckle-barking clips and fastenings, to perform what is at times an imperative operation. The mention of bonnet fixings also recalls many exasperating devices of the kind, which either permit rattle or require the strength of a Hercules to manipulate them. Surely this designer, who maybe has all his bonnet-opening done for him, might give some thought to us poor folk who do our own work, and provide something in this wise, simple, effective, and easy to manipulate.

The carburetters generally fitted to-day are proprietary articles and their design does not often come

within the province of the car designer, who, however, should take care that an inaccessible example is not selected. The jets of any carburetter should be withdrawable by simply undoing an accessible nut, and no other part of the carburetter should require to be dismantled for this purpose. Water unions and petrol unions should be really accessible; it is the exception to find them so even to-day.

How seldom if ever can it have occurred to a designer that cars fitted with leather-faced clutches do occasionally require anointment with some soothing emollient like collan oil, and when it comes to the part of the owner-driver to do this, he frequently has a hard job. The clutch must, of course, be held out when the leather is being treated, and sometimes to save trouble an attempt is made to do this with one hand while the clutch is revolved and the collan oil injector manipulated with the other. Of course, if one has a chum who will sit in the driver's seat and make play with his foot all is well, but I am writing of the woes of the single-handed man. Why cannot the designer arrange for a form of catch which attached to the footboard can be slipped over the clutch pedal when this job is to be done? I note that in this matter Gamage has stepped in where designers have feared to tread, and now sells a little rocking clip which can be fitted to fill the bill.

It is not too much to say that in connection with the gear box, the conscientious owner-driver who has compassion for machinery likes to make an inspection of the condition of his gears and their lubricant from time to time, and in the performance of this he is hindered, as a general rule, by gear box covers secured by innumerable nutted studs. To remove the gear box cover from my present car, I have to undo twelve small fiddling nuts, while on the car previously owned there were twice this number to dally with. I know small oil or grease fillers are provided, but the real level of the lubricant cannot be gauged or observed through these apertures, and unless the cover is removed as aforesaid one is really in ignorance as to the condition of one's gear box.

And seldom, indeed, is any wash-out cock or stud found in that part of the gear box which would permit it to drain the box effectually and completely, and when there is such provision it is usually made to discharge into instead of through the under cover.

The forward universal joints of propeller-shafts should, of course, have regular attention, but when fitted with lubricators the body maker generally takes care that these shall be as inaccessible as possible. In my own present case, the bottom of the front side of the tool space beneath the front seat has to be taken out and away before this particular lubricator can be got at for replenishment. I admit that this is not up against the car designer, it is the stupidity of the body maker which is the trouble here.

Come we now to the back axle, an important unit of the mechanical entity which the designer would appear to think should never be visited after it has left the works. Certainly the task of attending to it is frequently made as difficult as possible for the owner-driver, particularly when access thereto is complicated by a petrol tank fitted in the rear of the frame. It is not good that the first dose of lubricant should be used in the back axle for over 1,000 miles, even if, indeed, it ought not to be changed before this mileage.

The Complaint of the Owner-driver.

Certainly the axle should be cleaned and redosed after the first 1,000 miles, even if thereafter it run longer distances. Now let any owner-driver just go out to his car and see what facilities the designer and the body maker between them have left for this job. The writer has just done this, to find that the lubricant cannot be drained from the differential gear case unless the whole back cover is detached, there being no wash-out plug provided, while the stud closing the opening by which lubricant can be introduced is not accessible unless the floorboards of the tool space under the back seat are taken up by unscrewing. As a matter of fact, a pit is really necessary to do this job properly.

Again, body builders, if not carefully instructed and watched, will fit the mudguards or the valences between the side members of the chassis and the running foot-

board so that it is impossible to unscrew, much less to get at, the screw-down lubricators to the rear shackles of the front springs. This actually happened in the case of the writer's present car.

Lest I should be misunderstood, let me conclude by saying that I do not infer that all cars have all the vices I have mentioned, though some have them all and more besides. But the really all round accessible cars are very few and very far between. One may have an engine that is all one could reasonably desire on the score of accessibility, but the chances are that the back axle, the gear box, or the universal joints are as bad as possible to get at for necessary attention. In short, many cars have all the vices I have enumerated, most have some of them, and very few indeed are entirely above criticism.

THE AUTOCRAT.

Camphorised Petrol.

By Harry Ferguson, A.F.Ae.S., A.M.I.A.E.

A GREAT many motorists have claimed increased power from the use of camphor in their petrol, others say they have tried it and found no difference whatsoever. I have been told by some others who have tried it that they believe it actually causes a loss of power. To obtain some definite data on the subject some of my friends and I made the following tests.

We found a long fairly steep incline, and for this we took two cars, one a little 10 h.p. Star and the other a 25 h.p. Vauxhall. There is a wide difference between these two cars in power and weight, and I thought they would represent the majority of cars in use at the present time. I thought it better to have a small car and a large one so that the tests would cover a wide field.

At the bottom of the incline we made a mark, and at the top of it another. The incline was just sufficiently steep to make both engines labour when picking up on top gear. The bottom mark on all our tests we passed at a fixed speed on the speedometer, and we noted the speed of the cars when passing the mark at the top. It will be obvious that this as a test of power with different fuels was an almost perfect arrangement. If camphorised petrol really makes an engine develop more power, then we should have been travelling faster past the mark at the top of the hill when using camphor than when running on ordinary petrol.

My first series of tests were carried out on the 25 h.p. Vauxhall.

POWER.

First Test.—Using Pratt's No. 2 petrol in the 25 h.p. Vauxhall, we passed the mark at the bottom of the incline at a speed of ten miles an hour exactly, and accelerated until we passed the mark at the top at 30 m.p.h. To make sure that the test was correct in every way, we repeated it and the result was the same.

Second Test.—The second test was made with the Vauxhall, using the same fuel, but with the petrol camphorised to the extent of $\frac{1}{2}$ oz. per gallon. There was no difference whatsoever in the car's accelerating powers on the hill, and there was no difference in the engine's slow running or in its tendency to knock when the spark was advanced.

Third Test.—In the third test with the Vauxhall, with the petrol camphorised to the extent of $\frac{1}{2}$ oz. to the gallon, the results were exactly the same, the camphor making no difference whatsoever to the car's running.

All the above tests were carried out in the same manner on the Star, the car showing no difference on any one point when using camphorised petrol.

ECONOMY.

First Test.—Using the Vauxhall car with camphor in the proportion of $\frac{1}{2}$ an oz. per gallon to Pratt's No. 2 spirit. Distance covered on one pint, $3\frac{2}{10}$ miles = $26\frac{2}{10}$ miles per gallon. Average speed, 23 m.p.h.

Second Test.—Using the Vauxhall and Pratt's No. 2 spirit without camphor, we ran 100 yards further than on the first test, the average speed being as near as possible the same. This demonstrated clearly that camphor made no difference to the petrol consumption.

SPEED.

First Test.—Using the Vauxhall and the same petrol without camphor on a half-mile stretch of level road, the car accelerated to 60 m.p.h., and held that speed comfortably.

Second and Third Tests.—Using the same spirit camphorised to the extent of $\frac{1}{2}$ oz. per gallon and $\frac{1}{4}$ oz. per gallon, no difference could be found in the car's speed.

We did not think it necessary to repeat the economy and speed tests with the 10 h.p. Star.

The main things to watch in making tests of this description are:

Quality of the camphor.

Air locks.

Proper mixing.

I used the best camphor I could buy; it is known as Japanese camphor, and is exactly the same as is claimed by a number of motorists to increase the power of an engine.

Air locks. It would not be possible for many reasons to use the car's ordinary tank, and so we used a special tank for the purpose. The bottom of this special tank is pear shaped, and the feed pipe goes right from the bottom to the carburetter, so that no air locks could possibly be created.

Mixing of the petrol. The petrol was mixed in proper measures with the camphor, and after every trial the carburetter was drained off, not a trace of the old fuel being left in it.

The carburetter on the Vauxhall was a White and Poppe fitted with one of my own controls; that on the Star was a Zenith.

I may say that the results we got did not surprise me in the least, as I did not expect to get any more power. Surely it would be interesting if some of the camphor enthusiasts would make tests on similar lines and let us know results. Motorists using camphor at 3d. per oz. and diluting their petrol to the extent of one ounce to four gallons should bear in mind that they are paying almost 1d. more per gallon for their fuel; a thorough and definite test is therefore surely worth the making.

The Spanish Grand Prix.

A British Victory in this Road Race for Fully Equipped Touring Cars.

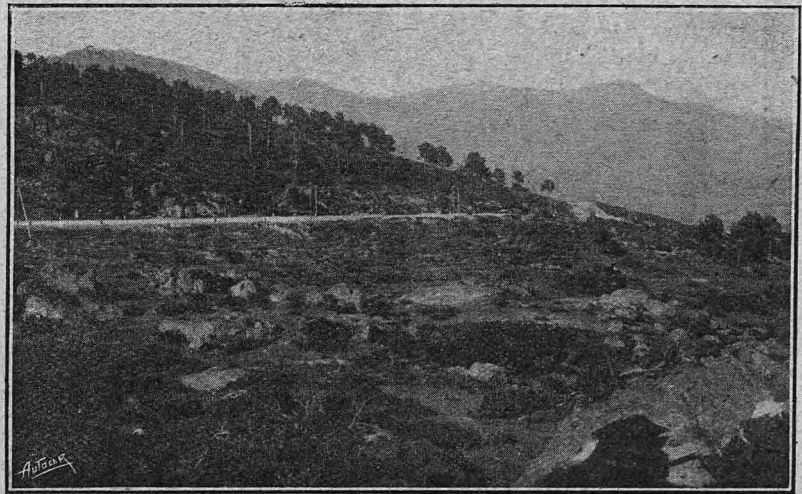
FIRST and third places were secured by Rolls-Royce cars in the Spanish Grand Prix Race which was held over a most difficult course of 192 miles on June 15th. The second car was a Lorraine-Dietrich.

The complete list of entries and a few other particulars were given in *The Autocar* of the 14th inst. Out of a total entry of twenty, seventeen started and eleven finished. There were one or two slight accidents, which considering the difficult—and in places somewhat dangerous—nature of the course is not surprising, but fortunately nobody was seriously hurt. Rigal, who would have driven a Sunbeam, was injured whilst practising, and he was one of the three non-starters. Many complaints were made that for some unknown reason the modern high speed engine was handicapped unfairly. There was a minimum weight for each car according to its horse power, and the latter was arrived at by a formula which included the r.p.m. of the engine at its maximum power. As a result of this the Talbot, for instance, was severely handicapped, as it had to carry nearly as much as each of the Rolls-Royce cars. The Hispano-Suiza, we learn, was not entered because of this handicap.

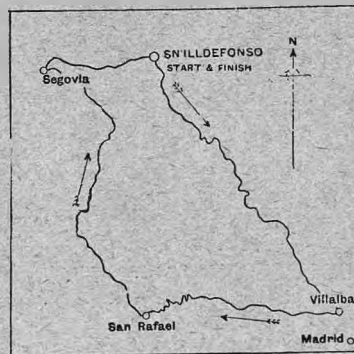
There is every indication of the event assuming greater importance next year, but in many quarters it is asserted that the formula must most certainly be altered before the next race if it is to be a success. The King of Spain, who was present, took a great interest in all the proceedings, and stated at the con-

clusion that the race must become an annual affair.

The course was a most difficult and trying one, embracing as it did the Guadarrama Mountains, which had to be negotiated twice on each of the three circuits. Once round the course was 64 miles, and as



A view of the course over the Guadarrama Mountains approaching Madrid. This illustration shows the hilly and forbidding nature of the country through which the race was run.



The summit of the Alto di Leon Pass (4,980 feet above sea level), where a control station was established.

this was covered three times the total distance was 192 miles. Bends and sharp corners were the rule, the only satisfactory feature from the competitors' point of view being the road surface, which on the whole was very good. One of the ascents of the Guadarrama Mountains (at the Navacerrada Pass) meant climbing 1,886 feet in a distance of eight miles, and the second climb meant rising 2,460 feet in 10 1/2 miles. Added to this, the heat was terrific, as when the race started at 10 a.m. it was already 90° in the shade; notwithstanding this, tyres appear to have given comparatively very little trouble.

Competitors had to drive fully equipped four-seated touring cars with hood, lamps, and two spare tyres. All bonnets were sealed before the race, the petrol carried being previously measured. No cooling water could be added to the radiator when once the race had begun, as a consequence of which, after climbing at full speed such lengthy gradients in such a heat, overheated engines were very common, and not more than half a gallon of water remained in the radiator and pipes of one car which finished the course.

The Talbot appears to have done remarkably well, in spite of being

The Complaint of the Owner-driver.

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Again, body builders, if not carefully instructed and watched, will fit the mudguards or the valences between the side members of the chassis and the running foot-

board so that it is impossible to unscrew, much less to get at, the screw-down lubricators to the rear shackles of the front springs. This actually happened in the case of the writer's present car.

Lest I should be misunderstood, let me conclude by saying that I do not infer that all cars have all the vices I have mentioned, though some have them all and more besides. But the really all round accessible cars are very few and very far between. One may have an engine that is all one could reasonably desire on the score of accessibility, but the chances are that the back axle, the gear box, or the universal joints are as bad as possible to get at for necessary attention. In short, many cars have all the vices I have enumerated, most have some of them, and very few indeed are entirely above criticism.

THE AUTOCRAT.

Camphorised Petrol.

By Harry Ferguson, A.F.Ae.S., A.M.I.A.E.

A GREAT many motorists have claimed increased power from the use of camphor in their petrol, others say they have tried it and found no difference whatsoever. I have been told by some others who have tried it that they believe it actually causes a loss of power. To obtain some definite data on the subject some of my friends and I made the following tests.

We found a long fairly steep incline, and on this we took two cars, one a little 10 h.p. Star and the other a 25 h.p. Vauxhall. There is a wide difference between these two cars in power and weight, and I thought they would represent the majority of cars in use at the present time. I thought it better to have a small car and a large one so that the tests would cover a wide field.

At the bottom of the incline we made a mark, and at the top of it another. The incline was just sufficiently steep to make both engines labour when picking up on top gear. The bottom mark on all our tests we passed at a fixed speed on the speedometer, and we noted the speed of the cars when passing the mark at the top. It will be obvious that this as a test of power with different fuels was an almost perfect arrangement. If camphorised petrol really makes an engine develop more power, then we should have been travelling faster past the mark at the top of the hill when using camphor than when running on ordinary petrol.

My first series of tests were carried out on the 25 h.p. Vauxhall.

POWER.

First Test.—Using Pratt's No. 2 petrol in the 25 h.p. Vauxhall, we passed the mark at the bottom of the incline at a speed of ten miles an hour exactly, and accelerated until we passed the mark at the top at 30 m.p.h. To make sure that the test was correct in every way, we repeated it and the result was the same.

Second Test.—The second test was made with the Vauxhall, using the same fuel, but with the petrol camphorised to the extent of $\frac{1}{2}$ oz. per gallon. There was no difference whatsoever in the car's accelerating powers on the hill, and there was no difference in the engine's slow running or in its tendency to knock when the spark was advanced.

Third Test.—In the third test with the Vauxhall, with the petrol camphorised to the extent of $\frac{1}{2}$ oz. to the gallon, the results were exactly the same, the camphor making no difference whatsoever to the car's running.

All the above tests were carried out in the same manner on the Star, the car showing no difference on any one point when using camphorised petrol.

ECONOMY.

First Test.—Using the Vauxhall car with camphor in the proportion of $\frac{1}{2}$ an oz. per gallon to Pratt's No. 2 spirit. Distance covered on one pint, $3\frac{3}{8}$ miles = $26\frac{1}{2}$ miles per gallon. Average speed, 23 m.p.h.

Second Test.—Using the Vauxhall and Pratt's No. 2 spirit without camphor, we ran 100 yards further than on the first test, the average speed being as near as possible the same. This demonstrated clearly that camphor made no difference to the petrol consumption.

SPEED.

First Test.—Using the Vauxhall and the same petrol without camphor on a half-mile stretch of level road, the car accelerated to 60 m.p.h., and held that speed comfortably.

Second and Third Tests.—Using the same spirit camphorised to the extent of $\frac{1}{2}$ oz. per gallon and $\frac{1}{4}$ oz. per gallon, no difference could be found in the car's speed.

We did not think it necessary to repeat the economy and speed tests with the 10 h.p. Star.

The main things to watch in making tests of this description are:

Quality of the camphor.

Air locks.

Proper mixing.

I used the best camphor I could buy; it is known as Japanese camphor, and is exactly the same as is claimed by a number of motorists to increase the power of an engine.

Air locks. It would not be possible for many reasons to use the car's ordinary tank, and so we used a special tank for the purpose. The bottom of this special tank is pear shaped, and the feed pipe goes right from the bottom to the carburetter, so that no air locks could possibly be created.

Mixing of the petrol. The petrol was mixed in proper measures with the camphor, and after every trial the carburetter was drained off, not a trace of the old fuel being left in it.

The carburetter on the Vauxhall was a White and Poppe fitted with one of my own controls; that on the Star was a Zenith.

I may say that the results we got did not surprise me in the least, as I did not expect to get any more power. Surely it would be interesting if some of the camphor enthusiasts would make tests on similar lines and let us know results. Motorists using camphor at 3d. per oz. and diluting their petrol to the extent of one ounce to four gallons should bear in mind that they are paying almost 1d. more per gallon for their fuel; a thorough and definite test is therefore surely worth the making.

The Spanish Grand Prix.

A British Victory in this Road Race for Fully Equipped Touring Cars.

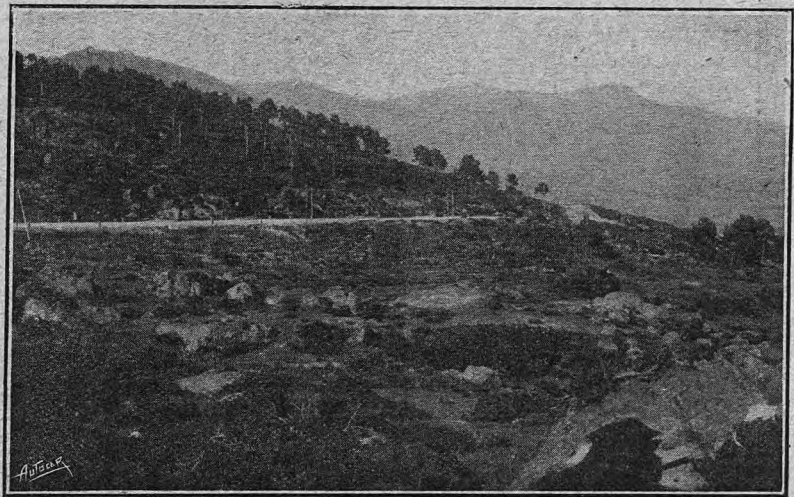
FIRST and third places were secured by Rolls-Royce cars in the Spanish Grand Prix Race which was held over a most difficult course of 192 miles on June 15th. The second car was a Lorraine-Dietrich.

The complete list of entries and a few other particulars were given in *The Autocar* of the 14th inst. Out of a total entry of twenty, seventeen started and eleven finished. There were one or two slight accidents, which considering the difficult—and in places somewhat dangerous—nature of the course is not surprising, but fortunately nobody was seriously hurt. Rigal, who would have driven a Sunbeam, was injured whilst practising, and he was one of the three non-starters. Many complaints were made that for some unknown reason the modern high speed engine was handicapped unfairly. There was a minimum weight for each car according to its horse power, and the latter was arrived at by a formula which included the r.p.m. of the engine at its maximum power. As a result of this the Talbot, for instance, was severely handicapped, as it had to carry nearly as much as each of the Rolls-Royce cars. The Hispano-Suiza, we learn, was not entered because of this handicap.

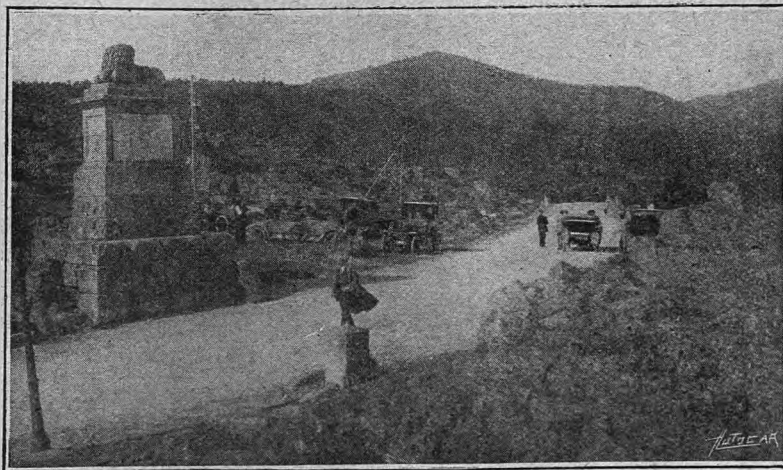
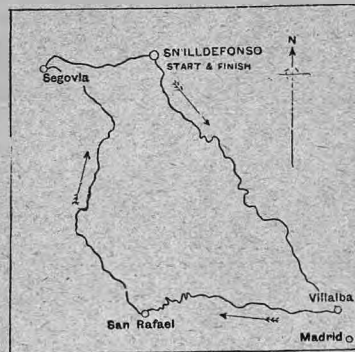
There is every indication of the event assuming greater importance next year, but in many quarters it is asserted that the formula must next certainly be altered before the next race if it is to be a success. The King of Spain, who was present, took a great interest in all the proceedings, and stated at the con-

clusion that the race must become an annual affair.

The course was a most difficult and trying one, embracing as it did the Guadarrama Mountains, which had to be negotiated twice on each of the three circuits. Once round the course was 64 miles, and as



A view of the course over the Guadarrama Mountains approaching Madrid. This illustration shows the hilly and forbidding nature of the country through which the race was run.



The summit of the Alto di Leon Pass (4,980 feet above sea level), where a control station was established.

this was covered three times the total distance was 192 miles. Bends and sharp corners were the rule, the only satisfactory feature from the competitors' point of view being the road surface, which on the whole was very good. One of the ascents of the Guadarrama Mountains (at the Navacerrada Pass) meant climbing 1,886 feet in a distance of eight miles, and the second climb meant rising 2,460 feet in 10½ miles. Added to this, the heat was terrific, as when the race started at 10 a.m. it was already 90° in the shade; notwithstanding this, tyres appear to have given comparatively very little trouble.

Competitors had to drive fully equipped four-seated touring cars with hood, lamps, and two spare tyres. All bonnets were sealed before the race, the petrol carried being previously measured. No cooling water could be added to the radiator when once the race had begun, as a consequence of which, after climbing at full speed such lengthy gradients in such a heat, overheated engines were very common, and not more than half a gallon of water remained in the radiator and pipes of one car which finished the course.

The Talbot appears to have done remarkably well, in spite of being

The Spanish Grand Prix.

so severely handicapped, until it had to retire owing to engine lubrication trouble. The little Humber reared owing, it is stated, to one of the wheels becoming loose, though this reason hardly seems credible.

The following was the order of finishing and the times of the cars that completed the total distance of 192 miles:

Driver and car.	Time.
	h. m. s.
D. Carlos de Salamanca (Rolls Royce) ...	3 34 12
Marques de Aulencia (Lorraine-Dietrich) ...	3 37 4
G. Eric Platford (Rolls-Royce) ...	3 39 56
Marques de Ugena Th. Schneider) ...	4 7 51
Conde de la Patilla (Minerva) ...	4 8 22
Marques de Ugena (Th. Schneider) ...	4 7 51
Conde de la Patilla (Minerva) ...	4 8 22
D. Angel Santibanez (Panhard) ...	4 18 19
Duque de Zaragoza (Mercedes) ...	4 19 57
D. J. Román Manzona (Opel) ...	4 55 42
D. Juan G. Ocana (Delaunay-Belleville) ...	5 2 26

The times do not include the periods occupied in traversing the neutralised portions of the course; as the distance of these controls is unknown, it is impossible to give the average speeds.

The driver (Platford) of the third car is an Englishman, and will be recognised by many of our readers as the driver of one of the Rolls-Royce cars in the famous 2,000 miles trial of 1908.

The following table shows the engine sizes of the cars entered, together with the number of revolutions of the engines at their maximum b.h.p. As already mentioned, this was taken into account in determining the load to be carried by each car, and it pressed very hardly upon the high speed engines:

TABLE SHOWING ENGINE SIZES OF CARS ENTERED FOR THE SPANISH GRAND PRIX RACE.

No. of car.	Make.	No. of cyls.	Bore and stroke.	R.P.M. at max. h.p.
1.	Sunbeam	4	80 x 148.5	2,400
2.	Th. Schneider	4	110 x 160	1,800
3.	Rolls-Royce	6	114 x 121	1,850
4.	Excelsior	6	85 x 130	1,860
5.	Humber	4	75 x 130	2,600
6.	Talbot	4	101.5 x 140	3,000
7.	Mercedes	4	100 x 130	1,800
8.	Panhard	4	100 x 140	1,800
9.	Opel	4	90 x 135	1,500
10.	Delaunay-Belleville	6	85 x 130	1,700
11.	Panhard	4	100 x 140	1,800
14.	Lorraine-Dietrich	4	125 x 160	1,800
15.	S.C.A.R.	4	85 x 140	2,000
16.	Rolls-Royce	6	114 x 121	1,850
17.	De Dion	8	94 x 140	1,500
18.	De Dion	8	75 x 130	1,650
19.	De Dion	4	100 x 140	1,700
20.	Minerva	4	124 x 150	1,600

Nos. 1, 4, and 15 were non-starters.



On the left Don Carlos de Salamanca, the winner of the Spanish Grand Prix, passing over the Alto di Leon Pass in the second circuit on his Rolls-Royce car. On the right the Rolls-Royce No. 3, driven by Mr. G. E. Platford into third place, overtaking the Schneider No. 2 at a point about 150 yards before reaching the Alto di Leon Pass control station.

The De Dion in the Targa Florio Race.

The eight-cylindered De Dion Bouton car which finished fourth in the race for the Targa Florio proves to have been a 35 h.p. 1912 touring chassis, perfectly standard in every respect. It was entered by its owner, a wealthy amateur giving his name as "Berra," without the knowledge either of the De Dion Bouton Co. or their Italian agents, Messrs. Nagliati, and was tuned by Signor "Berra" himself—a fact which makes all the more interesting its having performed so creditably, when one considers that it was competing against up-to-date cars of the most celebrated racing marques, tuned and driven in the majority of cases by expert racing men. This 35 h.p. engine is of the same dimensions as this year's 50 h.p. model—94 x 140 mm., but not so efficient, as in 1912 the eight-cylinder engine was a new introduction of the De Dion firm, and was not then so highly developed as it is at the present time.

Open Speed Trials at Colwyn Bay

As we announced in our issue of the 7th inst., the Mersey (Liverpool) Motor Club is organising a series of speed trials which will be run off on the promenade at Colwyn Bay, North Wales, on Saturday, July 5th. When originally announced the permit of the R.A.C. had only been obtained for cars with engines up to 2,000 c.c., but we are now informed that the permit has been varied and is without limitation. Four classes have, therefore, been arranged as follows.

- 1, maximum engine capacity, 1,639 c.c.;
- 2, 2,458 c.c.;
- 3, 3,769 c.c.;
- 4, unlimited

We learn from the secretary of the meeting that a good entry has been received in spite of the fact that the Saltburn speed trials are down for the same day. Entries close to-day (Saturday), June 28th. The course will be over half a mile, in addition to 350 yards over which to acquire speed for a flying start and 785 yards in which to pull up

Road Tarring Operations.

Official Information Supplied by County Surveyors.

FOLLOWING on the particulars relating to tarring operations which, by the courtesy of the County Surveyors of England and Wales, we were enabled to publish last week, we now give a further list of main roads which have just been tarred, are now undergoing the process of tarring, or are to be tarred in the near future. Of course, as we pointed out last week, it does not necessarily follow that because a road has recently been tarred a car cannot be driven over it without risk of tyres or bodywork

being splashed with tar, but there will be many, who, like ourselves, having suffered once or more, are unwilling to take risks again, and who will avoid newly-laid tar when possible. To such the particulars we now publish (and which we propose to continue to publish weekly while road tarring is in progress) will appeal. It is almost unnecessary to add that the process of road tarring is greatly dependent upon the weather; heavy or continuous rain may postpone the work indefinitely.

Roads Under Treatment at Present or in the Near Future.

BRECKNOCKSHIRE.

BRECON-HAY.—At Felin-fach from June 28th till 30th.

BRECON BOROUGH.—July 1st till 5th.

SWANSEA VALLEY.—Near Abercrave till July 10th.

BRYNMAWR.—Till July 15th.

TALGARTH.—Till June 27th.

HAY ROAD-BUILT.—At Llysven till June 27th.

BUCKINGHAMSHIRE.

AYLESBURY, WENDOVER, AMERSHAM, AND UXBRIDGE.—Between Wendover and the London and Oxford Road, near Redhill, till about July 7th. The roads are being tarred half width at a time.

CAMBRIDGESHIRE.

CAMBRIDGE - ROYSTON ROAD.—At Harston till June 28th.

SAWSTON.—Till June 28th.

CAMBRIDGE-NEWMARKET ROAD.—Till June 28th.

CAMBRIDGE-HUNTINGDON ROAD.—Till June 28th.

SWAVESY.—Till June 28th.

HISTON.—Till June 28th.

CARMARTHEN.

CARMARTHEN - LLANELLY.—Near Carmarthen, till June 28th.

LLANELLY - PENBREY ROAD.—Till June 28th.

PONTYBALES.—Till June 30th.

CARMARTHEN (WESTERN DIVISION).

CARMARTHEN-ST. CLEARS ROAD.—Till July 12th.

DENBIGHSHIRE.

WREXHAM-LLANGOLLEN ROAD.—Till about June 28th, weather permitting.

DENBIGH (WESTERN DIVISION).

ABERGILE - LLLANRWST ROAD.—Through Llangerniew village, till July 5th.

DORSET.

At Corfe Castle, Sandford, Bere Regis, and Lytchett Minster till June 28th.

At Blandford, Spettisbury, Kinson, Longham, and Broadstone till June 28th.

DORCHESTER-WEYMOUTH ROAD.—At Upway and Broadway till June 28th.

WAREHAM - LULWORTH ROAD.—At Wool from June 30th till July 1st.

FLINTSHIRE.

CHESTER-ST. ASAPH ROAD.—The road between Northop and Holywell, a distance of about six miles, will be under reconstruction for the next few months.

GLAMORGAN.

BRITON FERRY.—Till June 28th.

CAERPHILLY.—Till June 28th.

LLANBRADACH - TAFFS WELL - NANTGARW.—June 28th.

FFORESTFACH - PONTARDULAIS.—June 28th.

HEREFORDSHIRE.

HEREFORD-ROSS-ON-WYE ROAD.—At Llandinabo, halfway between Hereford and Ross, till July 7th.

ISLE OF ELY.

CHATTERIS - WARBOYS ROAD.—At Chatteris till July 1st.

CHATTERIS - SOMERSHAM ROAD.—At Chatteris, July 2nd till July 10th.

CAMBRIDGE-ELY ROAD.—At Stretham June 26th till July 3rd.

CHATTERIS-MARCH ROAD.—At Doddington till July 2nd.

ISLE OF WIGHT.

FRESHWATER-CHALE ROAD.—Brightstone, Shorwell, and Chale till June 27th.

SANDOWN-BEMBRIDGE.—At Bembridge till June 30th.

NITON-NEWPORT ROAD.—At Niton, till June 27th.

VENTNOR-NEWPORT ROAD.—At Whitwell, till June 28th.

KENT.

SANDWICH-DEAL ROAD.—Till July 14th.

CANTERBURY-DOVER ROAD.—Till July 7th.

MAIDSTONE-SEVENOAKS ROAD.—Till July 1st.

SARRE-BIRCHINGTON-MARGATE ROAD.—Till July 7th.

CANTERBURY-SARRE-RAMSGATE ROAD.—Till July 15th.

DOVER-DEAL ROAD.—Till July 21st.

WESTERHAM-SUSSEX ROAD.—Till July 31st.

FAVERSHAM - CANTERBURY ROAD.—Near Boughton-under-Blean till June 28th.

QUEENBOROUGH-SHEERNESS EAST.—Near Queenborough till June 30th.

MAIDSTONE - CHATHAM ROAD.—Till July 12th.

HYTHE-ROMNEY ROAD.—Till June 30th.

GRAVESEND - WROTHAM ROAD.—Near Meopham, till July 12th.

LONDON - MAIDSTONE ROAD.—Near Wrotham Heath, till June 28th.

MAIDSTONE - TONBRIDGE ROAD.—Near Wateringbury, till July 12th.

TONBRIDGE - TUNBRIDGE WELLS ROAD.—At Quarry Hill, completion expected June 26th.

LONDON - TONBRIDGE ROAD.—Near Riverhill, Sevenoaks, till July 5th.

HYTHE-NEW ROMNEY ROAD.—At Dymchurch till July 6th.

ASHFORD - CANTERBURY ROAD.—At Kennington and Wye till July 6th.

ASHFORD - TENTERDEN ROAD.—At Great Chart, from June 30th till July 16th.

LONDON-DOVER ROAD.—Between Dunkirk and Harbledown, till June 30th.

KEY STREET-BOBBING ROAD.—Till July 19th.

QUEENBOROUGH - SHEERNESS ROAD, *via* Minster Halfway House.—Till June 30th.

MAIDSTONE - SEVENOAKS ROAD.—At Wrotham Heath, till July 12th.

ERITH-CRAYFORD ROAD.—Till June 30th.

LANCASHIRE.

LANCASTER - KENDAL - MILNTHORPE ROAD.—Till June 30th.

LANCASTER-PRESTON.—Till June 30th.

PRESTON-WIGAN.—Till June 28th.

ORMSKIRK - LIVERPOOL.—Till June 30th.

PRESCOT-WARRINGTON.—Till July 5th.

WARRINGTON-WIGAN.—Till June 30th.

LINCOLNSHIRE (HOLLAND).

SPALDING - GRANTHAM ROAD.—Till June 30th.

SLEAFORD-KING'S LYNN ROAD.—July 1st till July 4th.

LINCOLNSHIRE (KESTEVEN).

GRANTHAM - STAMFORD ROAD.—Till June 28th.

MERIONETH.

TOWYN - DOLGELLY ROAD.—Llwyn-gwrit till June 28th.

BARMOUTH - PORTMADOC ROAD.—Talsarnau and Llanbedr till June 28th.

HOLYHEAD ROAD.—Tar macadamising at Corwen Town till July 26th.

TOWYN-DOLGELLY ROAD.—At Arthog till June 28th.

BARMOUTH-PORTMADOC ROAD.—At Llanbedr till July 5th.

BLAENAU FESTINIOG.—Tar macadamising till July 19th.

MONTGOMERYSHIRE.

OSWESTRY-LLANFYLLIN ROAD.—In the villages of Llanymynech and Llan-santffraid till July 8th.

WELSHPOOL-NEWTOWN ROAD.—Tar macadamising is expected to commence in July and to be continued for some considerable time.

OXFORDSHIRE.

OXFORD - HENLEY ROAD.—Between Huntercombe and Nettlebed, June 23rd till June 30th (Tarmac).

OXFORD - HENLEY ROAD.—Benson village, July 1st till July 5th (Tarmac).

OXFORD-HIGH WYCOMBE ROAD.—Between Oxford and Wheatley, June 21st till July 10th (tar-grouting).

OXFORD-BANBURY ROAD.—Between Oxford and Deddington, June 21st till June 30th (tar-painting).

OXFORD-STRAFORD-ON-AVON ROAD.—Between Enstone and Chipping Norton, June 23rd for about three weeks (tar-grouting).

STAFFORDSHIRE.

STAFFORD-STONE ROAD.—At Yarlet Bank, four miles from Stafford (Tarvia), till June 27th.

STAFFORD-NEWPORT ROAD.—At Haughton, 4½ miles from Stafford, till June 27th.

STAFFORD-WOLVERHAMPTON ROAD.—One mile from Stafford, July 3rd and 4th.

BARTON-UNDER-NEEDWOOD.—Till June 28th.

UTOXETER-NEWCASTLE ROAD.—Tean village, till July 9th.

LICHFIELD DISTRICT.—Brettell Lane till June 27th; Enville till June 28th.

BARTON VILLAGE.—Till June 30th.

ALREWS VILLAGE.—Till July 2nd.

STAFFORD ROAD.—Near Tamworth boundary, July 3rd and 4th.

STAFFORD-STONE ROAD.—Four miles from Stafford, June 28th till July 4th (Tarvia).

STAFFORD-NEWPORT ROAD.—At Gnosall, 7½ miles from Stafford, till June 28th.

STAFFORD-NEWPORT ROAD.—At Haughton, 4½ miles from Stafford, June 30th till July 2nd.

BURTON-ABBOTS BROMLEY ROAD.—Top of Henhurst Hill, 2½ miles from Burton-on-Trent (Tarvia and loose metal), till June 28th.

STONE-NEWCASTLE-UNDER-LYME ROAD.—Between Tittensor village and Darlaston Inn, June 27th to July 3rd.

CHEADLE.—June 30th till July 4th.

BURTON-DERBY ROAD.—Two miles from Burton-on-Trent, July 1st till July 15th (Tarvia).

EAST SUFFOLK.

WRENTHAM-LOWESTOFT ROAD.—Between Kessingland village and Kessingland Dam till June 28th.

IPSWICH-NORWICH ROAD.—Between Thwaite and Scole till June 28th.

NEEDHAM MARKET-STOWMARKET ROAD.—Till June 28th.

DISS-BURY ROAD.—Till June 28th.

SUFFOLK (WEST).

BRANDON.—July 2nd till July 7th.

RICKINGHALL.—July 1st to July 3rd.

BURES.—June 30th till July 5th.

EAST SUSSEX.

Between Brighton Boundary and Newtimber; Pyecombe and Burgess Hill; Newtimber and Rice Bridge, Bolney; Ringmer and Dicker; Lewes and Hallands; Lewes and Uckfield; Newhaven and Rottingdean; Hailsham and Hurstmonceux; Five Ashdown and Crowborough; Crowborough and Boars Head; Easons Green and Possingworth; at Buxted; at Hadlow

Down; Broad Oak, and Burwash. During the week ending June 27th.

WILTSHIRE.

MALMESBURY-TETBURY ROAD.—At Sherston, Luckington, Corston, Crudwell, and Somerford till June 28th.

RAMSBURY-HUNGERFORD ROAD.—At Chilton, Ramsbury, Aldbourne, and Bedwyn till June 28th.

TISBURY-SHAFTESBURY ROAD.—At Ludwell and Tisbury till June 28th.

TROWBRIDGE.—At Southwick, Bradley, Yarnbrook, Hilperton, and Semington till July 6th.

WORCESTERSHIRE.

REDDITCH-EVESHAM ROAD.—Commencing at Crabbs Cross, and continuing for a distance of four miles towards Evesham. Till July 7th.

STOURBRIDGE-BROMSGROVE ROAD.—Commencing near Stourbridge, and continuing for a distance of about 4½ miles towards Bromsgrove. Till July 2nd.

YORKSHIRE (EAST RIDING).

YORK-HULL ROAD.—One and a half miles adjoining York city boundary, till June 30th.

YORKSHIRE (NORTH RIDING).

THIRSK-YARM ROAD.—Work in progress near Thirsk, which may last for several months.

YORK-MALTON ROAD.—Work in progress near Barton Hill, which may last for several months.

Royal Automobile Club Trials.

Morris Paraffin Carburetter.

A Morris paraffin carburetter fitted to a 10-12 h.p. (11.8 h.p. R.A.C. rating) Belsize car was entered for a non-stop run from London to York and back, and the test took place on May 23rd and 24th. From the certificate of performance we extract the following:

The weight of the carburetter and vaporiser was 18 lbs. 14 oz., of which the vaporiser weighed 12 lbs. 3 oz. The dimensions of the vaporiser were 8½ in. x 4½ in. x 4 in.

[A description of the carburetter was given on page 625 of *The Autocar* of October 5th, 1912, on the occasion of a 2,000 miles trial.]

The following are the particulars of the Belsize car used: Weight, front axle 8 cwt. 3 qrs., back axle 10 cwt. 3 qrs. 8 lbs.; total weight, 19 cwt. 2 qrs. 8 lbs.; average weight of load during trial, 3 cwt. 1 qr. 14 lbs.; average running weight during trial, 22 cwt. 3 qrs. 22 lbs.; bore and stroke of engine, 69 mm. x 130 mm.; number of cylinders, four; gear ratio on top gear, 4.58 to 1; approximate engine revolutions on top gear at 20 m.p.h., 971; size of tyres, 810 mm.

The cubical capacity of the compression space of a cylinder of the engine was 130 c.c., and the cubical capacity of the volume swept by the piston was 486 c.c., giving a compression ratio of 4.3.

The paraffin and the petrol used for starting were fed under pressure to the carburetter, which was fitted in the usual place.

The total distance covered was 395 miles, which was run at an average speed (running time only) of 20.0 m.p.h. The engine was momentarily stopped once upon declutching at 128 miles. With this exception it ran continuously throughout the trial for 20h. 22m. 30s., during a total of 37m. 12s. of which time the car was stationary. The engine ran upon paraffin, except when being started, and for 17m. during one car stop (the longest) when the paraffin tank was being refilled at York. Petrol was then used, as the entrants had made no arrangements for running the engine upon paraffin while the paraffin tank was being refilled.

The paraffin consumed was 12.87 gallons, being a consumption of 30.69 m.p.g., or 35.21 ton-miles per gallon.

Lubricating oil was put into the engine at 114 miles, and again at York 197½ miles. The radiator was filled at York and again at ninety-two miles from London. During the trial, the pressure system leaked continuously and the pressure had

to be maintained by hand. The pressure was kept between 5 and 6 lb. per square inch. At the time of the engine stop mentioned above, the pressure was 5½ lb. per square inch.

The fuel was changed to paraffin three and a half minutes after starting at the commencement of the trial. After the engine stop it was started upon paraffin. During the trial the hand-controlled air valve was in constant use. The sparking plugs were examined after the trial and found to be clean.

Zip Puncture Sealer.

Samples of "Zip" puncture sealer were submitted for test by the Zip Agency, of 2, Ormond Yard, York Street, Jermyn Street, London, S.W., on June 5th and 6th, and a certificate of performance has been issued in connection with the trial.

The material, a greyish powder (says the certificate), was mixed with warm water in the proportion of 6½ ounces to 21 fluid ounces of water. This quantity of mixture was injected, through the valve, with a special syringe, into each tyre. Four tyres (810 mm. x 90 mm.) were treated, the tubes being new and sealed as received from the makers. The compound was injected (after the tyres had been fitted to the wheels) in an average time of 44s. per tyre. The valves of the tyres were then cleaned. After being treated and inflated the tyres were punctured in three places—twice with a 3 mm. bradawl and once with a wire nail of the same diameter. The wire nails were left buried in the tread of the covers. The wheels of the car were jacked up prior to puncturing the tyres, and immediately after the puncturing the wheels were spun. After standing all night the car was run upon the road, two of the tyres being re-inflated.

The following table gives details of the test:

PRESSURE IN LBS. PER SQUARE INCH.

Tyre No.	Before puncturing.	After puncturing.	After standing approx. 16 hours.	Re-inflated to	After running 51 miles.*
1	Not taken	60	16	57	53
2	62	61	59	—	55
3	60	59	26	60	58
4	57	57	57	—	55

* These pressures were taken 1½ hours after the car had completed the distance.

Brooklands Midsummer Meeting.

Good Finishes. Interesting Benzole Race Results.

FOR some peculiar reason the midsummer meeting at Brooklands never seems to be so well patronised as other meetings, thus last Saturday, although the sport was good both on land and in air, and although the weather was ideal, the gate must have been quite a small one, and there was probably not half of the array of cars usually seen.

Touching the weather, we say "ideal" purely and simply from the spectators' point of view, for Major Lindsay Lloyd was far from happy and was very obviously afraid of rain. To us, however, the absence of any direct sunlight and the consequent freedom from glare from the track made a hot day much more tolerable than usual.

The track has always had a pseudo-horsey atmosphere, due more than anything else, perhaps, to the particular form of "number board" used and the persistent employment of the word "sovs." in the programme, and therefore one has mentally compared it to better equipped racecourses. It was consequently exceedingly gratifying last week to find the new "grand stand," a thing that has been very badly needed in the past, and it has naturally leapt into immediate popularity. It is not an edifice—at present—that can be properly compared with the grand stands at Epsom or Ascot, or even many minor courses, but it is certainly an immense improvement upon standing on hot concrete and leaning against spiked railings; also it enables one to see the finish of the fast races which take place right down the straight. The position the new stand occupies is between the number board and the press stand, and it takes up most of the frontage of the paddock to the track. We understand that at future meetings the stand is to be divided up into private boxes, which will let to members at a rental of a guinea a year. Underneath the staging the space is divided into a number of compartments with windows facing the straight, and these should be decidedly useful in wet weather.

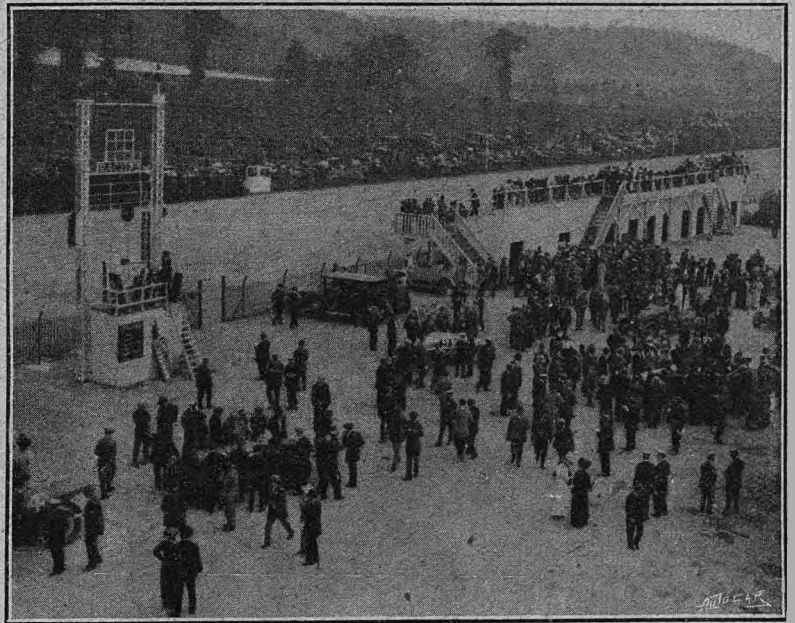
Another thing for which we must be profoundly thankful is that it is now possible to get a really decent lunch in the paddock; the price may be (and was) regarded by some as a trifle on the "steep" side, but the food and the way it is served make it seem more than good value compared to previous catering arrangements. It now only needs the track itself to be repaired and a satisfactory method of car identification to be hit on for everyone to be pleased.

Perhaps the most interesting features of last Saturday's meeting were the two benzole races—one for motor cycles and one for cars. In both cases the results were remarkably good, the winner of the former showing greater speed than he had ever done with petrol.

In our report of the last Brooklands meeting we suggested that a simple system of colouring might be used so that cars could be more easily recognised even

at distant points of the track. That this suggestion is a perfectly practical one was sufficiently proved on Saturday by Mr. Coatalen's Sunbeam car, which by the mere fact that it had green disc wheels was everywhere immediately distinguishable, although the rest of its appearance was such that it could easily have been confused with several other cars.

Taken as a whole there seem to have been somewhat fewer changes in the well-known cars since the Whitsun meeting than were made between the latter and Easter. Naturally, of course, the more that is done to improve the speed of a chassis the less remains still



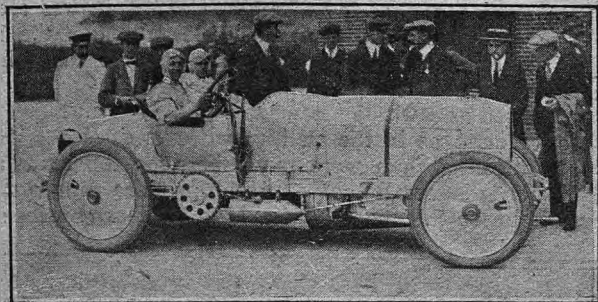
A view of the paddock showing the new grand stand abutting the finishing straight.

to be done meeting by meeting. A noticeable feature of each meeting this year has been the greatly increasing number of cars with really well-made streamline bodies, and last Saturday there were extremely few plain stripped chassis or semi-stripped touring cars. At Whitsun we remarked that the racing Straker Squire had an especially well-made single-seated body, and this had been improved still more by the removal of some transverse beads which formerly encircled the bonnet and the tail.

Like some of the racing Singers the Straker has a single enormous inlet valve in the head of each cylinder, both the ordinary valves being used for exhaust, and during the tuning up last week the experiment of fitting four separate carburetters was tried. We believe, however, that it was found impossible, with the time available, to get all four instruments to work steadily together, but that exceptional power was produced several times. As lack of certainty seems to have been the trouble it will be interesting to watch to see if any others try the same scheme. As it is, the Straker has a very fine turn of speed for the engine capacity. This leads to the suggestion made several times already, but one worth repeating, that an occasional race should be run with a formula or simple capacity handicap. If the entries could be arranged to exclude the exceptionally fast cars of the record

breaking class it should be a most instructive event, and the giants might have another tussle themselves.

This season has so far been rather noticeable for the numbers of quite little cars which are capable of



Mr. F. W. Brown on Mr. Gordon Watney's 48.6 h.p. Mercedes, winner of the 100 m.p.h. long handicap.

from sixty to seventy miles an hour, such as the Hillman, the Marlborough, the D.F.P., the Humber (which was successfully occupied elsewhere), and several others. This is a very good thing from the sporting point of view, because it is far less costly to run a small car and many more competitors may come forward.

Amongst these little fellows, too, there are few special constructions either of engine or transmission. Usually a standard chassis is taken and simply tuned up till each part is doing the best it can. Many of this class, however, could do much better with narrower bodywork and fewer "humps."

Another change which has come slowly but surely is the great improvement in the cooling of engines. One sees very few cars—speaking comparatively to a couple of years ago—come in after a race with their cooling water boiling furiously. Cooling for track work is rather tricky because plenty of water is needed while waiting at the starting point for the flag to drop, and much less when the race has begun. Therefore, the ideal is to cut down the radiator till it is just and only just sufficiently large.

The scheme for giving extra water to the valves which was a part of the Napier design last year seems to be proving itself valuable. Toop's Sunbeam last week was noticed to have a second aluminium casting just like the usual jacket top only smaller, completely covering all the valve caps so that the water round the ports could rise straight to the radiator. This, of course, is not exactly a scheme to find favour on a touring car, but it indicates the value of preventing any chance of the formation of steam pockets adjacent to the valve chambers. The Talbot, which beat the one hour record, had also copper pipes, not enclosing the valve caps, but leading from the pockets somewhat after the fashion of the old Kaiser Cup Daimlers. Results of the racing:

First Race

THE JUNE PRIVATE COMPETITION HANDICAP. Distance, 5½ miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
R. Robertson-Shersby-Harvie (30.0 Rolland-Pilain)	110 x 165	6,272	scr.
Paul Mayer (59.6 F.I.A.T.)	155 x 160	12,076	0 14
R. H. Townshend (48.4 Sheffield-Simplex six cylinders)	114 x 114	6,982	0 18
O. D. Pollak (17.9 S.C.A.R.)	85 x 140	3,178	0 48
G. N. Cadbury (18.8 Straker-Squire)	87 x 120	2,853	0 48
W. M. Dickson (20.1 Vauxhall)	90 x 120	3,054	0 54

McL. N. Staight (17.9 S.C.A.R.)	85 x 140	3,178	0 54
The Hon. Ralph Beckett (23.9 Grégoire six-cylinder)	80 x 120	3,619	0 54
J. W. Read (15.7 Calthorpe)	79½ x 150	2,978	1 2
The Hon. R. Westenra (15.9 Hispano-Suiza)	80 x 180	3,619	1 12
Tom Faulkner (24.8 Mercedes)	100 x 130	4,084	1 12
Donald Cohen (15.9 Grégoire)	80 x 160	3,217	1 34

This race proved rather a surprise. At the end of the first lap Mr. Cohen's Grégoire was still in front, with Pollak's S.C.A.R. lying fourth, and rapidly gaining on the leaders, so much so that he had every appearance of being a winner. The scratch man, however, developed speed, and worked his way right through the field in practically the last half lap, with the Sheffield-Simplex a tolerably good second.

1. Mr. Robertson-Shersby-Harvie's Rolland-Pilain.
2. Mr. R. H. Townshend's Sheffield-Simplex.
3. The Hon. Westenra's Hispano-Suiza.

Speed, 91 m.p.h.

Second Race.

A motor cycle event, described in *The Motor Cycle*.

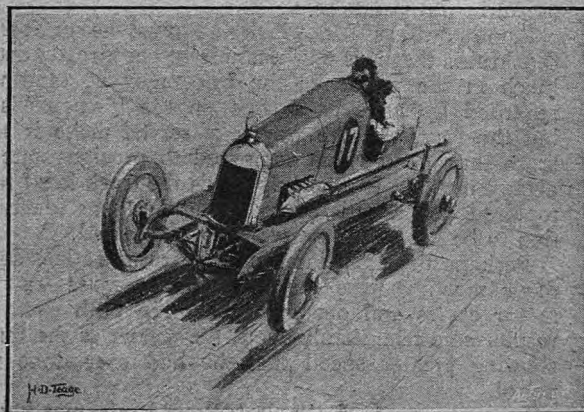
Third Race.

THE ELEVENTH 100 M.P.H. LONG HANDICAP. Distance, 8½ miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
P. C. Kidner (23.8 Vauxhall)	98 x 150	4,526	scr.
R. Robertson-Shersby-Harvie (30 Rolland-Pilain)	110 x 165	6,272	0 6
L. R. L. Squire (18.8 Straker-Squire)	87 x 120	2,853	0 33
Percy E. Lambert (15.9 Singer)	80 x 142.6	2,867	0 33
C. A. Bird (15.9 Sunbeam)	80 x 149	2,996	0 51
Gordon Watney (48.6 Mercedes)	140 x 150	9,237	1 0
W. R. McBain (52.8 Lorraine-Dietrich)	146 x 180	12,054	1 0
N. S. Hind (35.7 Berliet)	120 x 140	6,334	1 21
O. D. Pollak (17.9 S.C.A.R.)	85 x 140	3,178	1 36
G. T. Cain (15.7 Calthorpe)	79½ x 150	2,978	1 45
Tom Faulkner (24.8 Mercedes)	100 x 130	4,084	2 12

The 35 h.p. Berliet "Black Beetle" was much fancied for this event, and at the end of the first lap had passed the 24.8 Mercedes and got in front of everybody except Pollak, with Brown on Watney's Mercedes some distance behind. The Straker-Squire and the Singer had a splendid "scrap" down the railway straight. Starting from the same handicap mark, these two cars, though of different dimensions, have practically the same cubic capacity, and it is interesting to note that their speeds are likewise almost exactly the same. The Singer is perhaps 1% the faster. Behind the aeroplane sheds Watney's Mercedes overhauled the Berliet and ran into second place, with the Vauxhall lying fourth and sweeping along high up the banking at a fine speed. It was quite evident, however, that nothing could hold the old Mercedes, and it romped home an easy winner by 120 yards, with the Vauxhall second, and the S.C.A.R. third by about thirty yards. Speed, 83½ m.p.h.

1. Mr. Watney's 48.6 Mercedes.
2. Mr. Kidner's Vauxhall.
3. Mr. Pollak's S.C.A.R.



Mr. H. Nelson Smith on the Hillman light car which won the 75 m.p.h. short handicap.

Fourth Race.

THE FIRST 75 M.P.H. LONG HANDICAP. Distance, 8½ miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
O. D. Pollak (17.9 S.C.A.R.) ...	85×140	3,178	scr.
G. N. Cadbury (18.8 Straker-Squire)	87×120	2,853	scr.
W. M. Dickson (20.1 Vauxhall) ...	90×120	3,054	0 9
McL. N. Staight (17.9 S.C.A.R.) ...	85×140	3,178	0 9
S. N. Beattie (17.9 S.C.A.R.) ...	85×140	3,178	0 9
Hon. Ralph Beckett (23.9 Grégoire six-cylinder) ...	80×120	3,619	0 9
K. Yano (15.9 Hispano-Suiza) ...	80×180	3,619	0 18
E. Herington (15.9 Ariel) ...	80×150	3,016	0 18
W. O. Bentley (12.1 D.F.P.) ...	70×130	2,001	0 30
A. B. E. Cheeseman (13.6 Vermorel)	74×120	2,064	0 30
Hon. R. Westenra (15.9 Hispano-Suiza) ...	80×180	3,619	0 36
Harold Lambert (15.9 Crossley) ...	80×130	2,614	0 45
T. L. Edwards (22.4 Buick Bedford)	95×95	2,694	0 45
Ivor M. Bellairs (13.9 Mass) ...	75×140	2,474	0 57
S. G. Cummings (13.9 Cummikar) ...	75×150	2,651	1 18
H. Nelson Smith (8.9 Hillman) ...	60×120	1,357	1 30
R. A. Keith Mason (8.6 Marlborough)	59×100	1,094	1 51

It will be noticed that the maximum speed of this class of race has been now raised from the previous 70 to 75 m.p.h., with the natural result of promoting a rather larger and more diversified field. The Marlborough was painfully slow at the start and was soon out of it. Nelson Smith, on the little Hillman, a very promising newcomer to Brooklands, led at the end of the first lap with Mr. Cheeseman (of the A.A.) on the Vermorel close behind, and the Hispano-Suiza catching up from a good distance in the rear. The second lap found the positions much the same, except that the Hispano had overhauled the Vermorel, and was now lying second and looking very much like a winner. A bunch of the faster cars, headed by Pollak's car and the D.F.P., came all together down the straight, and the former travelled so well that he was able to work his way through the whole field, and just managed to "pip" the Hispano-Suiza on the finishing line by not more than half a bonnet's length. Strangely enough, the latter seemed to be easily the faster up the straight, and the general impression was that had the race been prolonged for another five or six yards it would have won. Scarcely a couple of lengths separated the winner from sixth place, the close finishers being Mr. O. D. Pollak, the Hon. R. Westenra, Messrs. W. M. Dickson, McL. N. Staight, W. O. Bentley; and H. Nelson Smith in the order named.

1. Mr. Pollak's S.C.A.R.
 2. Hon. Westenra's Hispano-Suiza.
 3. Mr. Dickson's Vauxhall.
- Speed, 75¼ m.p.h.

Fifth Race.

THE TWELFTH 100 M.P.H. SHORT HANDICAP. Distance, 5¾ miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
P. C. Kidner (23.8 Vauxhall) ...	98×150	4,526	scr.
R. Robertson-Shersby-Harvie (30.0 Rolland-Pilain) ...	110×165	6,272	0 4
L. R. L. Squire (18.8 Straker-Squire)	87×120	2,853	0 22
Percy E. Lambert (15.9 Singer) ...	80×142.6	2,867	0 22
Gordon Watney (48.6 Mercedes) ...	140×150	9,237	0 32
R. H. Townshend (48.4 Sheffield-Simplex six-cylinders) ...	114×114	6,982	0 34
C. A. Bird (15.9 Sunbeam) ...	80×149	2,996	0 34
N. S. Hind (35.7 Berliet) ...	120×140	6,334	0 54

This was a most exciting event, as all those are if the scratch man is exceptionally fast and works his way through the field in very quick time. Mr. Hind led at the first time past the fork, but by the time the railway straight was reached had yielded his place to the Sheffield-Simplex, which appeared to be travelling extremely well, as also was Watney's Mercedes, which had got into second place at the Byfleet banking. There was no stopping the Vauxhall, however, which kept high up the banking, and travelled at a huge speed, finally coming home a winner by about 50 yards, with the same distance between second and third, these places being taken by Mr. Townshend's Sheffield-Simplex and the 48.6 Mercedes respectively.

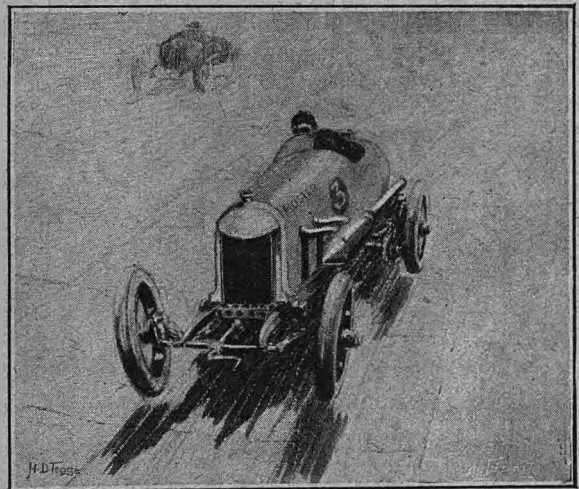
1. Mr. Kidner's Vauxhall.
 2. Mr. Townshend's Sheffield-Simplex.
 3. Mr. Watney's Mercedes.
- Speed, 97¼ m.p.h.

Sixth Race.

THE FIRST 75 M.P.H. SHORT HANDICAP. Distance, 3 miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
O. D. Pollak (17.9 S.C.A.R.) ...	85×140	3,178	owed 2
W. M. Dickson (20.1 Vauxhall) ...	90×120	3,054	0 3
G. T. Cain (15.7 Calthorpe) ...	79¼×150	2,978	0 3
McL. N. Staight (17.9 S.C.A.R.) ...	85×140	3,178	0 3
S. N. Beattie (17.9 S.C.A.R.) ...	85×140	3,178	0 3
Hon. Ralph Beckett (23.9 Grégoire six-cylinder) ...	80×120	3,619	0 3
W. O. Bentley (12.1 D.F.P.) ...	70×130	2,001	0 10
A. B. E. Cheeseman (13.6 Vermorel)	74×120	2,064	0 10
H. E. S. Huth (22.4 Ford) ...	95×102	2,896	0 15
T. L. Edwards (22.5 Buick Bedford)	95×95	2,694	0 15
Ivor M. Bellairs (13.9 Mass) ...	75×140	1,474	0 19
S. G. Cummings (13.9 Cummikar)	75×150	2,651	0 26
H. Nelson Smith (8.9 Hillman) ...	60×120	1,357	0 30

That in a race of this kind it is quick acceleration which counts was evidenced at the start, where the little Hillman shot away from the mark just as fast as cars with much greater ultimate speed. Mr. Pollak also got away finely, thus neutralising at once the effect of a handicap harsher by a couple of seconds as a result of previous success. The



The 30 h.p. Rolland Pilain, driven by Mr. R. Robertson-Shersby-Harvie into first place in the private competitors' handicap.

Hillman, which would probably be much faster with a more nearly streamline body, romped home an easy winner, second place going to Mr. Pollak's S.C.A.R. and third to Mr. Staight's S.C.A.R.

1. Mr. Nelson Smith's Hillman.
 2. Mr. Pollak's S.C.A.R.
 3. Mr. Staight's S.C.A.R.
- Speed, 60¾ m.p.h.

Seventh Race.

THE JUNE SPRINT RACE. Distance, 2 miles. Runners:

	Bore and stroke.	c.c.	Start. m. s.
P. C. Kidner (23.8 Vauxhall) ...	98×150	4,526	owed 1
L. R. L. Squire (18.8 Straker-Squire)	87×120	2,853	0 8
R. H. Townshend (48.4 Sheffield-Simplex six cylinders) ...	114×114	6,982	0 10
Paul Mayer (59.6 F.I.A.T.) ...	155×160	12,076	0 10
Gordon Watney (48.6 Mercedes) ...	140×150	9,237	0 12
L. Coatalen (15.9 Sunbeam) ...	80×120	2,413	0 16
N. S. Hind (35.7 Berliet) ...	120×140	6,334	0 20
O. D. Pollak (17.9 S.C.A.R.) ...	85×140	3,178	0 23
S. N. Beattie (17.9 S.C.A.R.) ...	85×140	3,178	0 26
McL. N. Staight (17.9 S.C.A.R.) ...	85×140	3,178	0 26
W. O. Bentley (12.1 D.F.P.) ...	70×130	2,001	0 31

In these short sprint events it is almost impossible to see what is taking place until the finish. Mr. Bentley's D.F.P. got away so well that it seemed rather unlikely it would be caught, the S.C.A.R.'s appearing for once to be rather slow. Hancock had evidently got the Vauxhall in perfect tune,

Brooklands Midsummer Meeting.

however, and coming down in perfect style from the banking into the straight he won by a mere fraction of a second, beating Hind's Berliet practically on the post. The D.F.F. was a close third. Speed, 85½ m.p.h.

1. Mr. Kidner's Vauxhall.
2. Mr. Hind's Berliet.
3. Mr. Bentley's D.F.F.

Eighth Race.

A motor cycle event, described in *The Motor Cycle*.

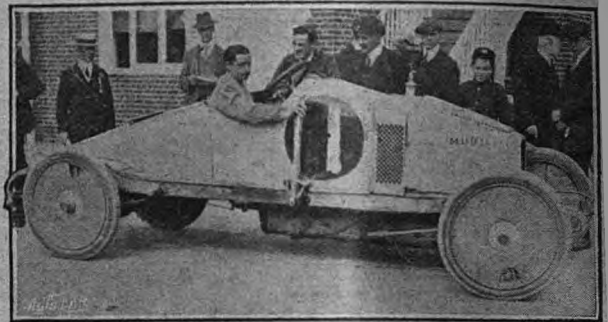
Ninth Race.

THE 100 M.P.H. BENZOLE HANDICAP for the R.A.C. 100 guinea cup. Second and third prizes presented by the S.M.M.T. and the A.A. and M.U. conjointly. Runners:

	Bore and stroke.	c.c.	Start. m. s.
P. C. Kidner (23.8 Vauxhall) ...	98×150	4,526	owed 6
L. R. L. Squire (18.8 Straker-Squire)	87×120	2,853	0 33
W. R. McBain (52.8 Lorraine-Dietrich) ...	146×180	12,054	1 0
L. Coatalen (15.9 Sunbeam) ...	80×120	2,413	1 6
N. S. Hind (35.7 Berliet) ...	120×140	6,334	1 21
O. D. Pollak (17.9 S.C.A.R.) ...	85×140	3,178	1 30

In spite of its increased handicap, the Vauxhall was "expected" for this event, but it scarcely seemed to be so consistent as on petrol. With the good lead he had it was only natural Mr. Pollak would take a deal of catching, especially as he seemed to run very well on benzole. The first lap found Pollak in front, with Hind closely following. At first these cars seemed to be actually faster than the Sunbeam, but the moment this last got going thoroughly it

lost no time in overhauling the leaders. At the second time past the fork it had gained a place, and eventually ran home a winner by 70 yards from Kidner's Vauxhall. The



Mr. O. D. Pollak on his 17.9 h.p. S.C.A.R., winner of the first 75 m.p.h. long handicap.

S.C.A.R. of Mr. Pollak was third, having led until half-way up the straight. Speed, 80½ m.p.h. Distance, 8½ miles.

1. Mr. Coatalen's Sunbeam.
2. Mr. Kidner's Vauxhall.
3. Mr. Pollak's S.C.A.R.

After the car races a capital aeroplane handicap was run off over a distance of twelve miles.

On the Track.

Comment on the Midsummer Meeting. The Possibilities of a 500 Miles Race.

THE time has gone by when we were wont to commence these notes by eulogising the handicappers or—otherwise! We are now so used to the Brooklands handicapping that we let it pass—it is taken for granted with all the other advantages that we British motorists possess at Weybridge. But on arrival at the track on Saturday one could see that the speeds of all the competing cars had been calculated to a nicety, for the usual prophets, generally so ready with their tips, were all at sea and looking quite puzzled.

As things fell out, however, it was found that some cars had been very much improved since Whitsun, and in the very first race Mr. Shersby-Harvie was getting just on 100 m.p.h. out of his Rolland-Pilain, "Buster," an improvement of quite five miles an hour on the previous best. In the 100 m.p.h. Long, however, he was hard put to it to do 80 m.p.h., but in the 100 m.p.h. Short he picked up speed again, although, being penalised twelve seconds for his earlier win, he failed to get a place.

We look to the new Vauxhall for an ultimate speed of quite 110 m.p.h., if not more, and good progress towards this figure was made on Saturday. It was seen at its best in the 100 m.p.h. Short, and must have been lapping at close on 105.

But the car which showed the greatest improvement on its form at Whitsun was Mr. Watney's Mercedes, "the dear old 'bus" doing quite six miles an hour more. If this is, and it should be, a criterion of what can be accomplished at Mr. Watney's new factory, it will soon need enlargement.

Mr. Pollak's series of wins recalls the day when Mr. Selz carried all before him on his Vauxhall. The car was doing nothing exceptional, but it was obviously doing just that little bit more than its handicap speed and thus able to get cup after cup.

Newcomers, and amateurs too, are seldom so fortunate as the Hon. R. Westenra, who made his *début* on Saturday, and secured a prize in both the races he

ran in—a second and a third—on his Hispano-Suiza.

The new grand stand in the paddock was voted a huge success, but in spite of this Major Lloyd received many suggestions for altering it and improving it. One of these suggestions may perhaps take shape, and at the next meeting we may see private boxes, each holding three seats, and reserved for the use of subscribers. Three would-be subscribers have, it is said, already asked to have the first three boxes if it be decided to carry out the scheme. The small rooms below are intended as depots for motor cycle firms and others who wish to have a small lock-up in the paddock, but on Saturday one well-known car owner booked one for his private use at meetings, while another is to be in future the sanctum of the representative of a well-known daily journal.

Following so soon after the Indianapolis meeting, it was not surprising that there was much talk in the paddock *apropos* of the feasibility of holding a 500 mile race on the track. Looked at from every point of view, we should be the first to welcome such an event, but we cannot be anything but pessimistic concerning the support likely to be received from English manufacturers for it. We cannot be anything but pessimistic, too, as to the provision of the prize money. The B.A.R.C. cannot be expected to find it, for they could not hope to get it back in gate money, and the proprietors have done enough and to spare for the industry already. If we were Chancellor of the Exchequer, with hen roosts to plunder, we might cast hungry eyes on the accumulated funds of the S.M.M.T., which might well be drawn upon for such a race and would be well able to stand the strain. At Indianapolis £40,000 is said to have been taken at the gate, and this not because they have a better track, a more advanced or prosperous home car industry, or because they are near a bigger city than London. They have none of these advantages, but track racing appeals to the American public, and while Brooklands scores off them in all other respects it loses here.

The Austrian-Alpine Contest.

The Weighing-in. List of Starters from Vienna. By C. L. Freeston, F.R.G.S.

VIENNA, Saturday evening, June 21st.
THE weighing in for the great Alpine contest took place to-day in torrents of rain. If only it clear up by to-morrow the downfall will not have been unwelcome, but if the bad weather continue the roads will be very greasy, and travelling conditions generally will be the reverse of pleasant on the higher altitudes.

It is already clear that the sporting interest of this year's event will be considerably greater than was the case last year, and for the simple reason that the bulk of the competitors are amateurs. The Austrian and German manufacturers alike tried to "scotch" the contest altogether, with the result that only one trade entry from Austria—and that not a direct one—and two from Germany are recorded. A big influx of private entrants, however, has entirely upset the calculations of the malcontents, who are now sorry that they did not enter officially on their own account. They are either wholly unrepresented or else in the position of having their reputation depend on the driving and mechanical skill of amateur owners.

Far better would it have been, from the manufacturers' point of view, if in addition to the large amateur showing there had been a number of "team prize" entrants from the trade. What better opportunity could they have for displaying the merits of their cars than a contest of this kind, which offers the finest testing ground to be found in Europe, or even the whole world? As a matter of fact, I believe that the Alpine contest will become a classic, for nowhere else except in Austria could a route be chosen nowadays which would be sufficiently formidable to make a touring competition anything but a picnic.

The Rolls-Royce team looks very workmanlike, and attracts universal attention. Extra petrol tanks, of course, have been fitted in consideration of the enormously long daily journeys, but virtually the cars are the standard continental model. This differs from the English type in having greater road clearance, four speeds instead of three, and larger radiators. Mr. Radley is hugely pleased with his own car. On the journey hither he drove it to Paris on the first day and reached Turin on the second! Personally, I always regret that Radley was not to the fore in the early days of automobile racing; he is essentially the man for that class of work, being possessed of superabundant vitality and "go," as I first realised some five years ago when we were *compagnons de voyage* on a tour in the French and Italian Alps.

If a further example be needed, by the way, of his prowess and that of his car, other than the two days' run to Turin, I may mention an incident that occurred here during the week. A discussion arose at a *café* in the early hours of the morning, and one of the company offered to wager Radley a thousand crowns that he would not drive to Klagenfurt and back between sunrise and sunset. The challenge was immediately accepted! Radley waited for daylight and set off, with some of the company as passengers, on his 400 miles journey. He not only stopped for lunch and dinner, but had also to wait an hour because one of his passengers became indisposed. Nevertheless, the car was back in Vienna in thirteen hours, and the wager was won hands down.

It is needless to say aught of the competing cars generally at this juncture, save that they are provided,

of course, with tanks of liberal size and every available means of keeping things going from the driver's seat. I may mention, however, that the R.A.F.-Knight, which was originally described to me as of Hungarian origin, is made in Bohemia. The starting list is ready, and is arranged, as last year, according to the power of the respective cars, the largest being placed first, and the others following in declining ratio, in order to reduce the amount of passing. The Rolls-Royce quartette will lead the way, and then come four Minervas, followed by Herr Schild's English Daimler and the Horch team of three. There are twenty cars in all with more than four litres capacity, ten of over three litres, and the remaining thirteen are under three. Prince Elias von Parma's Austro-Daimler measures only 80 mm. x 110 mm., or 2.21 litres.

The starting hours are five o'clock for the first three mornings, six o'clock for the next three, and five again on the closing run.

Sunday morning.

The following is a complete list of the starters in order of starting from Vienna:

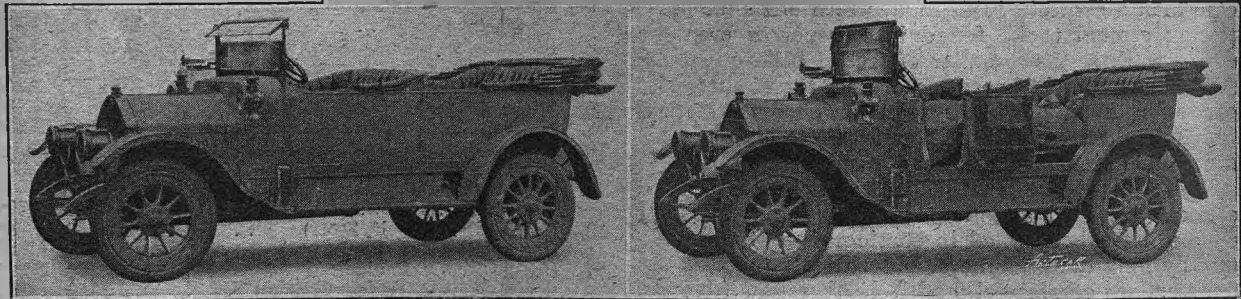
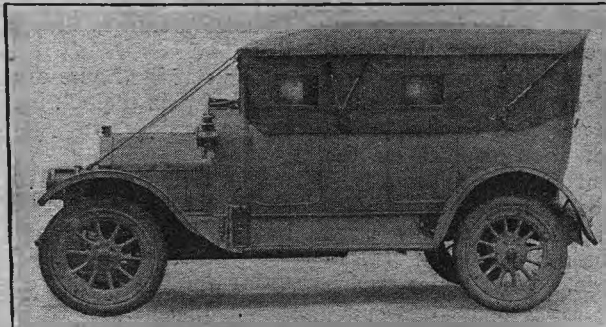
No.	Car.	Entrant.	Bore and stroke.	c.c.
1.	Rolls-Royce	(Rolls-Royce, Ltd., driver Friese)	114 x 121	7,410
2.	Rolls-Royce	(Rolls-Royce, Ltd., driver Hives)	114 x 121	7,410
3.	Rolls-Royce	(Rolls-Royce, Ltd., driver Sinclair)	114 x 121	7,410
4.	Rolls-Royce	(James Radley)	114 x 121	7,410
5.	Minerva-Knight	(Minerva Motors, Ltd., driver G. de Jong)	124 x 150	7,240
6.	Minerva-Knight	(Karl Klinkosch)	124 x 150	7,240
7.	Minerva-Knight	(Franz Quidenus)	124 x 150	7,240
8.	Minerva-Knight	(Dr. Bernhard Bleichröder)	124 x 150	7,240
9.	Coventry Knight-Daimler	(Ludwig Schild)	124 x 130	6,280
10.	Horch	(Dr. Rudolf Stöss)	100 x 150	4,710
11.	Horch	(Heinrich Paulmann)	100 x 150	4,710
12.	Horch	(Georg Paulmann)	100 x 150	4,710
13.	R.A.F.-Knight	(Hans Suppan)	100 x 150	4,710
14.	W.A.F.	(Franz Fuchs)	94 x 160	4,440
15.	Delannay-Belleville	6-cyl. (Robert Dolfus)	85 x 130	4,430
16.	S.C.A.T.	(Josef Piwonka)	100 x 140	4,440
17.	Laurin and Klement	(Count Alexander Kolowrat)	95 x 150	4,250
18.	Laurin and Klement	(Count Alexander Kolowrat, driver Hieronimus)	95 x 150	4,250
19.	Laurin and Klement	(Count Paul Draskovich)	95 x 150	4,250
20.	Mercedes-Knight	(Karl von Guillaume)	100 x 130	4,080
21.	Benz	(Walter Delmar)	95 x 140	3,970
22.	Raba	(Hungarian Waggon Works)	90 x 150	3,820
23.	Hansa	(Karl Köhler)	96 x 130	3,760
24.	Hansa	(A. Sporkhorst)	96 x 130	3,760
25.	Audi	(August Horch)	90 x 140	3,560
26.	Audi	(Heimann Lange)	90 x 140	3,560
27.	Audi	(Alexander Graumüller)	90 x 140	3,560
28.	Audi	(Louis Ohruba)	90 x 140	3,560
29.	Renault	(S. Schreiber)	90 x 140	3,560
30.	R.A.F.-Knight	(Heinrich Luksch)	90 x 130	3,310
31.	Puch	(Archduke Josef Ferdinand)	85 x 125	2,840
32.	Puch	(Archduke Heinrich Ferdinand)	85 x 125	2,840
33.	Puch	(Miss Helene Mocariu)	85 x 125	2,840
34.	Puch	(Count Karl Eugen Lamberg)	85 x 125	2,840
35.	Puch	(H. E. Quofka)	85 x 125	2,840
36.	Fischer valveless	(Dr. E. E. Lehweiss)	85 x 120	2,720
37.	Fischer valveless	(Fischer Motor Co.)	85 x 120	2,720
38.	Fischer valveless	(Fischer Motor Co.)	85 x 120	2,720
39.	F.I.A.T.	(Martin Schneeweiss)	80 x 130	2,610
40.	F.I.A.T.	(Hans Freiherr von Malberg)	80 x 130	2,610
41.	Hansa	(O. von Schmeling)	88 x 104	2,530
42.	Hansa	(J. R. Parys)	88 x 104	2,530
43.	Austro-Daimler	(Prince Elias von Parma)	80 x 110	2,210

Nos. 25, 30, 43, and 47 were non-starters.

On the Road.

French Roads. Road Tarring. The 19th and 20th Centuries: A Comparison.

PERHAPS the only fly in the ointment of my foreign spring tour is the probability that in reply to my account of its joys there will come a sour letter from some Englishman in France. This year he has signed himself "Rochet." Doubtless he is correct, even if he is uninteresting, but his strictures remind me much of the criticisms of the clothes in the *Tailor and Cutter's* annual article on the Royal Academy. I visit so many places and see so many things that, even had I the brain power, it would be impossible for me to have super-knowledge of each particular one. I do not object to being corrected, but I do most strongly take offence at correction which is supercilious and a mere conflict of opinion. "Rochet," after hawking up my old cars of five years ago and discussing my epithets on them, tells me I can know nothing of French roads to write as I do about them. He asks me if I know the roads around Lyons—



A 19.9 h.p. Valveless car, the body of which has been specially adapted for camping by Mr. Dodson, of Messrs. Dodson Motors, 34, Old Bond Street, London, W., who is about to tour South Africa and Australia. The body is specially designed so that the back of the front seats can be dropped down flat, and a spare cushion slipped in, to provide a wide and comfortable bed. The top photograph shows the car hooded and sheeted up to provide a night's shelter for the two passengers. The left-hand photograph shows the car in ordinary touring trim, and on the right, through the open doors, can be seen the two occupants of the car resting on the bed formed as mentioned above.

have I been on five separate ones in and out of that city, *i.e.*, Grenoble, Auvergne, Touraine, the North, and the "unspeakable" Alpes Maritimes? My answer is that I have motored in all those districts, and I adhere to my expressed opinions. He should also remember that I only compared the badness of one particular route to the condition of those others that are not highways of traffic to pleasure parts, and he should not forget that the poor author of the stuff he takes exception to is only doing his best, and does not try to defame his country vicariously by making up fairy stories.

To write too much on this dull and personal subject may bore my readers; may I end by pointing out that my corrector's concluding remarks bear out exactly my contention that only the main arteries of traffic are in shocking state, while the locally-used highways are as good as ever? Perhaps I may even venture to criticise his local geography. He refers to the main road from Lyons to Grenoble (R.N. No. 6) "as a villainous route and one which any pace over 12 m.p.h. runs a risk of breaking the springs or loosening

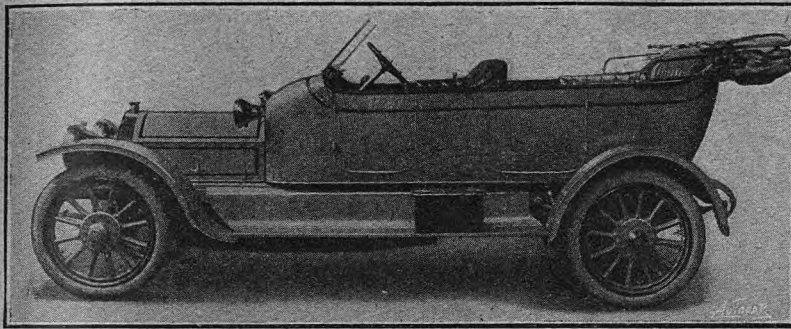
the bolts of his car." Now the main road from Lyons to Grenoble is a combination of R.N. 6, R.N. 75, and R.N. 85—according to my new maps—and undoubtedly the R.N. 6 part of it is the main route into Italy, and consequently exactly the type of road I wrote down as naturally bad for a very good reason. In conclusion, may I ask "Rochet" to apply for leave of absence—possibly his work will not suffer—and come and test our roads. He may also note that there are a dozen "chars-à-bancs, lorries, and covered vans" in England for every one in France, and also that the London-Holyhead Road has not, throughout, the surface depicted in the same number of *The*

Autocar as my remarks which appear so to have upset him. He must give me credit for some sense, for, doubtless, to himself he is not the authority he likes to pretend to be to the world in general. I hope he will come and see me during his tour of inspection.

A fortnight ago I mentioned the fact that Cassis—a little seaport near Marseilles—was not mentioned in the *Guide Michelin*. Prompt as ever, to-day I find a new 1913 edition of that work containing details of it. But also I find—"Rochet" with his carpings was the cause of my looking—that it has a new map of France in it which is not half so large or so useful as the old one. This is sad. For years the map in the *Guide Michelin* has been my only guide and indicator. It was on a large scale, clear, and nearly faultless. The new one is much smaller in every way, leaves out all forests and rivers, and takes very little interest in the countries that border France. M. Bibendum, I grieve for you; your guide is not what it was. It is provincial; it might be the product of a mere motoring club or association. I love your book, and I admire nearly as much your English guide. But its map was never, until now, on a par with its French brother. Hence these tears.

In the course of my wanderings I have come across—as I mentioned last week—a great deal of road-tarring of late. I say nothing of the damage it does, as it is

usually performed, to one's carriage work; I will not dilate on the absurd manner in which it is very often carried out. But I will take this opportunity to remark that, from the point of view of a ratepayer, it very often seems a shocking waste of public money, because all our best authorities seem to have come to the conclusion that road-tarring or road-squirting with tar is merely a temporary palliative and by no means anything more permanent.



A car similar to the standard 15-20 h.p. Star shown above has been purchased by His Imperial Highness Prince Oldenburg, a brother-in-law to the Emperor of Russia, from the Star Engineering Co., at the St. Petersburg Motor Show.

The ordinary surface that is tarred this summer will be a sticky, black, slimy morass next winter, and will stand in need of a fresh dose next year. Local surveyors, and more especially county specialists, know this perfectly well, but I suppose their councils kick at the idea of any expenditure of a larger order. Therefore the farce continues and the road is treated just as an old car body is painted up to sell or to pass muster temporarily.

These days are supposed to be scientific times, and certainly some one is an authority on everything. But what is the good of any number of experts if their expert knowledge is not fortified with power to prevent inexperts from doing the wrong thing? There is, I understand, a congress of road experts taking place in London this week. Undoubtedly our British experts can show that they know all, but unfortunately our British roads will show the rest of the congress that we do not, and cannot, practise what we preach, consequently the whole business will be as practically useful as the proceedings of the Lower House of Convocation. Which will be a great pity, and may tend to foster the notion that, after all, the English race is not as wonderful as it is supposed to be. I feel sure that resolutions will be passed in favour of one central authority for all main roads, but I feel equally sure that our present system of a thousand or more separate authorities will be continued for years after the Captains and the Kings have departed from amongst us.

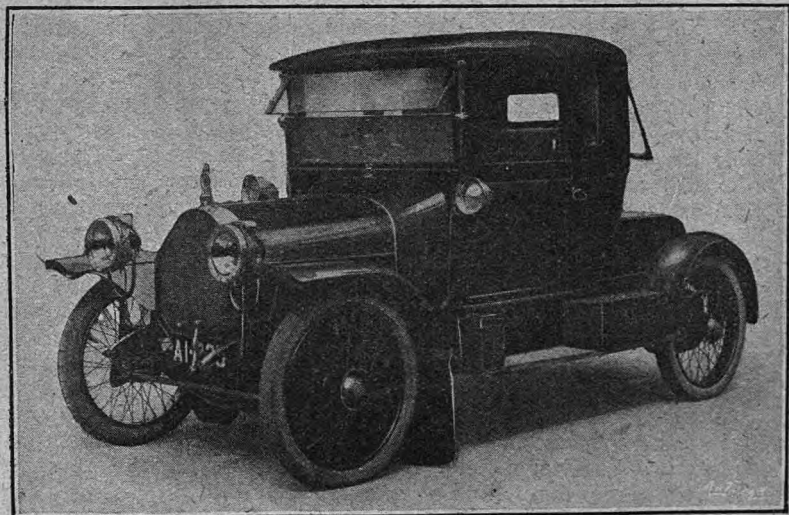
Since I wrote the few last lines I have been running about in Oxfordshire, and if anyone wants to know how badly roads can be tarred let him drive a car between Henley and the University town. I know the surface is originally rotten and

never has been made anything else. I know that the local flints are the cheapest form of metal. I know that the traffic that plays Old Harry with the highways is purely an exotic one, and that not one car in five that passes over it has anything to do with the district. But sharp broken shingle makes cruel running, and when it is tarred it is even more wicked on tyres. In places, chosen apparently haphazard, quite good work has been done, but why other parts should be trifled with at useless expenditure beats me altogether. Oxfordshire is a comparatively poor and sparsely inhabited county. Many main routes to the west pass through it, and if ever there is a district in England that requires State assistance for its roads, this is the one.

I have been often told that I "harp" on subjects, by which is meant that I go for the same topic over and over again. I confess it is boresome in the extreme—it is as bad for me as for you—but I have come to the belief that it is only by constant reiteration that any good is ever done. "Nagging," said a wise man, "is the eternal

repetition by a wife of unpleasant truths"; may this be my excuse for urging that roadmen should either be taught their business, or, if they know it, be allowed to exercise their knowledge unfettered to some degree by financial restrictions of their ignorant masters.

I have lately been reading a book by John Ashton called "The Dawn of the Nineteenth Century in England," and although it has been published for many years, the articles in it on our roads and their uses are perhaps even more interesting now than they were twenty years ago. Of the highways themselves there are very good accounts, of the bye or "occupation" roads nothing too bad can be said. This extract from *The Times* of January 17th, 1803, shows that it was a progressive age, and undoubtedly the reason of the improvement lay in the fact that by the improvement of the road surface horse-riding was giving place



A three-seated coupé body which has been built by Messrs. Humber, Ltd., Coventry, to the order of Mr. Taylor, The Cedars, Sunderland, upon the chassis of a 12 h.p. 1910 Humber car, which was originally fitted with an open two-seater body.

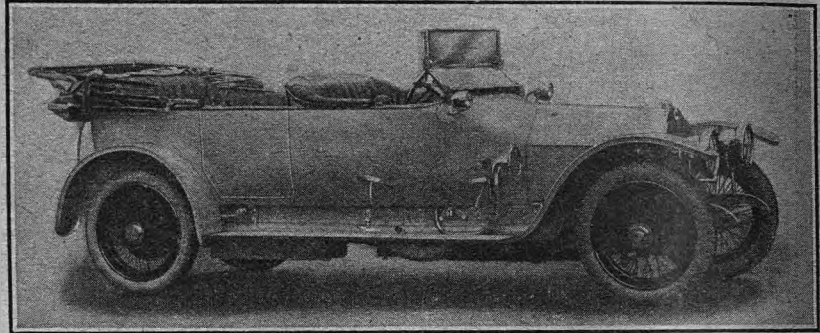
On the Road.

everywhere to horse-driving as a means of getting from place to place. "Many alterations," says *The Times*, "have lately taken place in the building of carriages. The roofs are not so round, neither are the bodies hung so low. Circular springs have given place to whip springs; the reason is that the first are much more expensive and are not so light in weight as the other. Barouche boxes are now the *ton*. During the last summer ladies were much oftener seen travelling seated on the box than in the carriage. . . . To show the difference between the carriages of the present day and those built ten years ago it is only necessary to add that in the year 1793 the weight of a fashionable carriage was about 900 pounds; a modern one weighs from 1,400 to 1,500."

But the costume of the early nineteenth century "nut" was the marvel. We jeer at our goggled and furred Continental drivers, we make fun of our disguised motor cyclists; what should we remark on the Portsmouth Road on such a get-up as this? "A light drab colour cloth coat made full, single breast, with three tiers of pockets, the skirts reaching to the ankles; mother-of-pearl buttons about the size of a crown piece. Waistcoat, blue and yellow stripes, each stripe an inch in depth. Small-cloths corded with silk plush, made to button over the calf of the leg with sixteen strings, and rosettes to each knee. The boots very short and finished with very broad straps which hung over the tops and down to the ankle. A hat three and a half inches deep in the crown only, and the same depth in the brim exactly. A large bouquet at

the breast." This at least is the description given of the get-up of a "nut" of the period in the *Morning Post* of 9th June, 1808.

To-day our amateur road-coachmen content themselves with boxcloth coats and white top hats, but even in this businesslike turn-out one can detect the ghost of the old far-off forgotten coaching dandy, who drove a team because it was the fastest thing on earth,



A 20 h.p. Lancia with a smart four-seated torpedo body by Maythorn, of Biggleswade. It is fitted with Captain wire wheels and detachable rims, Rushmore dynamo lighting outfit and Klaxon horn. The body is finished in light grey, the upholstery being in dark green.

and whose descendants have been legislated against and trapped for a dozen years because they, like their ancestors, want to be getting along.

Of the forerunners of our taxicabbies a little book called "The Stranger's Guide to London" is illuminating. "Hackney coachmen," it says, "are in general depraved characters, and several of them have been convicted as receivers of stolen goods." The paragraph concludes with the suggestion that they should be licensed. *Coelum non animum mutant!*

OWEN JOHN.

The Imperial Motor Transport Conference.

A Most Representative Gathering.

THIS conference, which takes place next month at the Royal Automobile Club, promises to be of very great importance indeed; nothing like it has ever been held before, and it is an interesting demonstration of the tremendous importance which motor transport has assumed. A list of the representatives of the Dominions, Commonwealths, Colonies, and Dependencies of the British Empire who will attend the conference would occupy more than two solid pages of *The Autocar*. However, strong as the representation is in numbers, it is even stronger in weight of authority. For instance, India's list of representatives is headed by the Marquis of Crewe, Secretary of State for India; in addition we find the names of representatives of all the great Indian railways and the leading chambers of commerce. For Canada Lord Strathcona, the High Commissioner, heads the list, which is just as representative of the various interests in transport as is that for India. Sir George Reid, High Commissioner for the Commonwealth of Australia; Sir Richard Solomon, High Commissioner for South Africa; the Hon. Thomas Mackenzie, High Commissioner for New Zealand; each stand at the head of an equally representative list for their own slice of the Empire. We find also the Secretary of State for the Colonies, the Secretary of State for War, the Postmaster-General,

and the President of the Board of Trade; indeed, the list of distinguished names is most impressive, and the President, H.R.H. Prince Arthur of Connaught, will be able to welcome one of the most representative gatherings of those who rule the destinies of our Overseas Empire that has ever gathered together in this country.

The chief subjects which will be discussed at the conference were given in our issue of May 3rd, but we may recapitulate them to save reference by saying that they include the question of fuel supply and the possibility of creating adequate supplies within the Empire; Imperial military motor transport, particularly with reference to those types of vehicles which will be useful both for military and industrial purposes in the Dominions and Colonies; the organisation of motor transport systems; the relations between British manufacturers and buyers overseas; road transport in cities; motor fire fighting, ambulance and postal services; rural transport, and the use of motors from the agriculturist's point of view.

The honorary secretary of the conference is the senior editor of *Motor Traction*, Mr. Horace Wyatt, and all communications relating to the conference should be addressed to the Honorary Secretary, the Imperial Motor Transport Conference, the Royal Automobile Club, Pall Mall, London, S.W.

Correspondence.

EDITORIAL NOTICES.—No letters from members of the motor industry will be published when they deal with subjects which may be regarded as advertisements for the writers, or their business interests. At the same time as many of the most practical suggestions come from those engaged in the motor industry, their letters will be inserted when possible, though the names of the firms they represent may be expunged, and the initials of the writers substituted.

Letters of a personal nature will be withheld.

The Editor, although accepting no responsibility for the opinions expressed by correspondents, reserves the right to publish a portion of a letter, and to omit any part which he does not consider interesting or essential.

All communications under a *nom de plume* should be accompanied by the name and address of the writer, not necessarily for publication, but to assure the Editor as to good faith.

Enquirers who ask for the experiences of private owners with specified cars, parts, or accessories, are requested to enclose a stamped addressed envelope, so that replies which space will not permit us to publish may be forwarded to them. Circulars or letters from interested parties will not be forwarded.

THE MOTORING ORGANISATIONS.

[19687.]—After reading "On the Road" in your issue of the 21st inst., I feel very doubtful whether I ought to pen anything without first asking permission from "Owen John." True, I ventured to write upon a subject which I freely grant he has made particularly his own, but, "in ignorance I offended." I can only plead that I did not know it was holy ground and that trespassers would be prosecuted. My sincere apologies are due to "Owen John," and they are hereby tendered.

At the risk of further castigation—since I find I have even dared to venture thus far—I would suggest that it is rather left-handed treatment to severely criticise "supine" motorists and their organisations (apparently intending to galvanise some of them into life), and then take exception to the, at all events well meant, efforts of a proselyte.

But it has occurred to me—has "Owen John" got something more up his sleeve? Is he merely whetting our appetites? Were his denunciations of the 31st ult. only the *hors d'œuvres* of the feast that is to come? He spoke of a "half guinea touch" (to use his own picturesque phraseology) and of a perfect society which would do just what every intelligent motorist should be pining for, always and at all times. Now, on the 21st inst., it rather appears as though something had gone wrong with the fish or the joint—it seems very doubtful whether we shall get our feast, or else it is that the *chef* is offended at the lesser fry, and the banquet is to be tabled later.

Anyway, to get down to business. If a half guinea organisation is to mature, even my small intellect can grasp that this must come about either by existing societies reconstituting themselves, or by a fresh one being established. Vague statements, occasional platitudes, and inconsequent reasonings will accomplish nothing, and are out of place. The wants of motorists are too real to be used merely as a target for sniping purposes, and if they are to be really considered, strict business only must hold the field. Now let me say I have no sovereign remedies, no imagination beyond the terms of my letter of the 7th inst. [19610]; all that I want is to try and translate preaching into practice. I am perfectly willing to do anything or nothing, am distinctly not anxious to undertake responsibilities, but desire to see something done and an end put to the perpetual "talkee-talkes" of the last few months. If anyone will lead, if "Owen John" will do so, I will only too gladly follow or stand aside and help with my mite—anything, anyhow, so long as we can obtain an organisation of which we can be proud; whether it be erected on the foundations of the existing ones or whether it be a totally new one, I care not.

Will "Owen John" tell us what to do, or is he going to be content with diatribes against the disease, and shirk prescribing his remedies? Has he any remedies?
Devonshire Club, S.W. A. W. FARNSWORTH.

DAMAGE BY TARRED ROADS.

[19688.]—I have read with great interest the article "Tarred Roads and Surface Tarring" in *The Autocar* of June 14th.

May I say that on the 12th inst. I motored from here (Upton-on-Severn) to Shrewsbury via Ludlow and Church Stretton. For four miles at Church Stretton the roads were covered with wet tar with cinders on the top. There was no escape, as the whole of the road was done with it, and heaps more of the disgusting mixture were ready piled up by the side. The smell, of course, was sickening and the effect was as if we were driving through deep shingle. But the worst, of course, was the injury to the car, which, when we started, was a smart Napier landaulet in perfect order with white wheels. When we came back, the car bonnet, wheels, every part except the inside of the body, was encrusted with this stuff (sample enclosed). It took my chauffeur four hours with another man to get it off.

It had to be simply chipped off. The white paint it ruined; the man's coat, etc., was all splashed with it, and the effect on the tyres can easily be imagined. Some ladies who were behind us with a cream Rover car had their paint damaged equally badly of course. At intervals a notice "Wet Tar" was displayed, but as all the road was in the sticky condition I describe the notice was merely adding insult to injury. A lady can hardly be expected to go alone into a fight with the officials, but if other car owners or the A.A., of which I am a member, feel able to take any steps in getting redress from the Shropshire County Council, I shall be glad to join. This stuff was more or less over a great part of the roads between Ludlow and Shrewsbury. L. GRICE-HUTCHINSON.
[The sample referred to, although more than a week had elapsed since it was chipped off the car, was still sticky, and looked as though it would remain so indefinitely.—Ed.]

THE ROADS IMPROVEMENT ASSOCIATION.

[19689.]—It is with very great pleasure I read in your issue of June 21st the paragraph in your Notes under the heading "R.I.A." on road tarring. I can endorse every word you say regarding the R.I.A.; it is simply wonderful what this Association has done for motorists, considering its small income. In fact, it is the only motor association that I have come across that does anything for the improvement of the road crusts from a motorist's point of view, and it certainly should be more patronised by the motoring public. I sincerely trust that the publicity which you have given in your columns to the excellent work done by the R.I.A. will result in a large increase in membership, when motorists may rest satisfied that such financial support would be used wisely and for their true benefit.

ALAN BRADBURY.

POLICE AND THE PRODUCTION OF LICENCES.

[19690.]—I notice on page 1153 of your issue of the 21st inst. particulars of the Selly Oak case. "Owen John's" somewhat sarcastic and amusing remarks concerning motorists' associations are surely well merited when it is possible for cases of this kind, and which are perpetually occurring, simply to fade into oblivion. There may be particulars not made known to the public, but if not, then a matter of this kind ought to be followed up with the utmost energy, and then, if necessary, taken to the House of Lords. The whole thing is simply an outrage, if the facts are as stated in your paper. According to this a mere twopenny official, probably suffering from a bad attack of swelled head in consequence of elevation to the force before he has come to years of discretion, might claim to be admitted into one's bedroom in the middle of the night to ask to see a licence! In this instance the official ought to be separately sued for damages and the return of the costs. I am not concerned with questions of law, and am quite prepared to be told that appeals to higher court are impossible in certain circumstances. In that case, all I can say is that they ought to be, and the associations ought not to rest until the law has been altered.

The whole trouble is that none of our associations have honestly the interests of motorists at heart; the whole object of their officials being to pet and pamper their members. If they were to bring a more broad minded spirit to bear upon every day affairs, they would have many more members. Personally, I have ceased to throw my money away on them.

G. VON STRALENDORFF.

RUNNING ON BENZOLÉ.

[19691.]—I was very much interested to read letter No. 19643, over the name of C. H. Stephenson, in your issue of June 14th. My experiences have been very much the same, except that the carburetter has not been attacked to the extent of your correspondent's. The car I drive is a 40 h.p.

Correspondence.

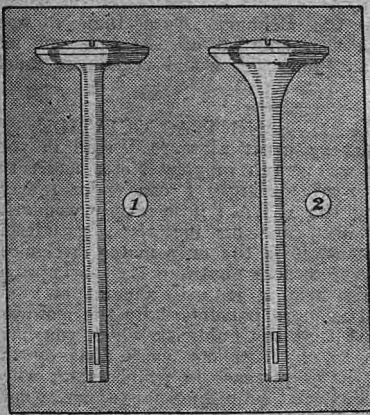
Crossley, fitted with low-tension ignition and Polyrhœ carburetter.

When first using benzole the car ran very well, doing nearly four miles more to the gallon than on petrol. Speed, hill-climbing, and starting the engine were about the same, but the engine seemed much quieter. After using about thirty gallons the engine ceased to pull at slow speeds on top gear, and on four occasions when hill-climbing the engine backfired into the carburetter, blowing the air slide clean off. The throttle then began to cause trouble, sometimes sticking three parts of the way open. I took down the carburetter and found the inside covered with a thin deposit, including the throttle and vacuum chamber. I then took out the valves and found the stems and guides choked up with deposit and soot, having great difficulty in withdrawing the valves from the guides. After cleaning and replacing the parts the car ran as well as ever, but after another two or three hundred miles the same troubles are starting again. CHATEFEUR.

VALVE STEMS AND TAPPETS.

[19692.]—In reference to the adjustment of valve stems and valve tappets, your correspondent, R. Blood [letter 19679], is wrong as to the equal expansion of the cylinder and the valve.

The cylinder is water-cooled and its mass never reaches the temperature of the uncooled solid exhaust valve. The latter, therefore, expands more than the former, and allowance must be made for this, otherwise the valve will not seat when the tappet is on the lowest radius of the cam, and power will be lost and an inefficient charge will be drawn in, burnt products coming in *via* the unseated exhaust valve.



Two designs of exhaust valves, one of which, No. 2, it is suggested, elongates more than the other in use.

The adjustment should be made when the engine is hot after running for, say, five minutes. Under such conditions there should just be clearance between the valve and the plunger or tappet when the valve is on its seat. With modern valves shaped as in fig. 2, the elongation is greater for a given rise of temperature than with the older style of valve, fig. 1; due to the greater mass of metal over a greater length of the valve. F. HALL BEAMLEY.

THE STONEBRIDGE-COLESHILL ROAD, WARWICKSHIRE.

[19693.]—I wish to draw the attention of all motorists to the shocking and deplorable state of the road between Stonebridge and Colehill, Warwickshire. I came over it the other day, and the shaking and vibration was so great through the very large holes in the road that my speedometer was smashed, and there may be other small injuries which I have not yet discovered. It is almost impossible to imagine that any county council or urban district council could allow a road to remain in such a terrible state. PICKWICK.

[This is the road to which we referred on June 7th (page 1048), when we gave a map showing how to avoid the bad stretch.—Ed.]

TRAPPING AT KINGSTON.

[19694.]—My son was summoned for exceeding the legal limit in the well-known trap on Esher Common, and was fined £2 at Kingston.

I do not complain of this, in spite of the fact that my son knew the trap was in operation and carefully kept within the limit by his Cowey speedometer, and handed in a certificate from the makers certifying the instrument to be correct.

It is notorious that the authorities are out for "blood," and that a mere speedometer, however accurate, is not accepted as evidence against the cheap chronometers and time-keeping methods adopted by the police when they are on "trapping duty."

I beg you to publish my protest against the utterances of the Bench at Kingston, who told my son and other criminals, when he attempted to make his statement, "that he would only do himself harm." This is equivalent to saying that, if you attempt to show an error has been made, if you attempt to obtain justice, if you attempt to prove that you knew of the trap and were doing your utmost to keep within the law, the mere fact of your doing these outrageous things will land you in a heavier penalty; in other words that the justices (save the mark) have already made up their minds having heard one side only of the question, and are determined to punish you more heavily if you show courage enough to do otherwise than pay and look pleasant.

Surely justice cannot be travestied further. I make no comments on the rights or wrongs of the case. I merely submit that this system of terrorising is neither justice nor British. HUBERT HENRY, M.I.M.E.

THE RULE OF THE ROAD.

[19695.]—In the days of horse traffic, now fast disappearing, it used to be an understood thing that a carriage coming down hill gave place to one coming up, because of the stress on a horse compelled to pull up in the middle of a steep hill. Does this, however, apply to a motor, and if so, ought it to? I contend that, inasmuch as it is far easier for a car going up hill to slacken speed than for one coming down, the upcoming motor should give place to the other. It would be interesting to hear readers' views on the matter. R.W.

A WELSH POLICE TRAP.

[19696.]—Driving an old car (1902 make) the other day I was caught in the 10 m.p.h. limit trap at Dinorwic, between Carnarvon and Bangor. The car's top speed is about 25 m.p.h. I was aware of the timing, but I had no speedometer. One police constable checks the time for a short measured distance below the railway bridge into the village. I was on second speed, which gives with this car 10 m.p.h. R.S.

SO-CALLED OBSTRUCTION BY MOTORISTS.

[19697.]—In the interests of motorists in general and for the benefit of Southend in particular, I would ask you to publish the following extract from the *R.A.C. Journal* of June 20th.

"The word 'obstruction' is at all times a fairly comprehensive term, but when the police give their attention to the matter it becomes practically all embracing. From time to time in various parts of the country—if we remember rightly, Godalming was a brilliant example—motorists have suffered many things at the hands of over-zealous officers for venturing to leave their cars in the roadway outside shops in which they have been making purchases. Summonses for 'obstruction' of this nature, although they may temporarily benefit the ratepayers to the extent of fines inflicted, are two-edged weapons which may easily inflict a nasty wound upon the hand that wields them. We do not suggest for one moment that motorists should be permitted to cause genuine obstruction of the traffic by leaving their cars for hours together in narrow and busy thoroughfares, but we do submit that the tradespeople of any town are bound to suffer if the local police indulge in a campaign of persecution against car owners who leave their vehicles unattended five or ten minutes while they enter shops for the purpose of getting tea or making purchases of a non-edible nature.

"Towns in which the police act in this manner inevitably get a bad name, and motorists go elsewhere to supply their needs. We believe that in Godalming this has already been realised, and that the constabulary are at last exercising a wise discretion as to what does in fact constitute obstruction, but, as prosecutions in Godalming have decreased in number, so those in Southend appear to be on the increase. Quite recently the R.A.C. solicitor has had to defend several members and associates for leaving their cars unattended outside pastrycooks' shops, summonses having been issued without a word of warning to the defendants. In order to bring the local authorities to their senses, we strongly recommend our readers for the time being to avoid Southend and its shops. If they are compelled to make purchases in the town, they should be exceedingly careful to be as quick as possible in transacting their business. A little gentle boycotting, unpleasant as it will no doubt be to the tradesmen, will, we think, soon mend matters."

The Essex county police appear to have obtained a notoriety as regards the motoring fraternity second only to Godalming. However, the police doubtless only carry out what, after all, they consider their duty. The responsible people are in reality the magistrates, who by their judg-

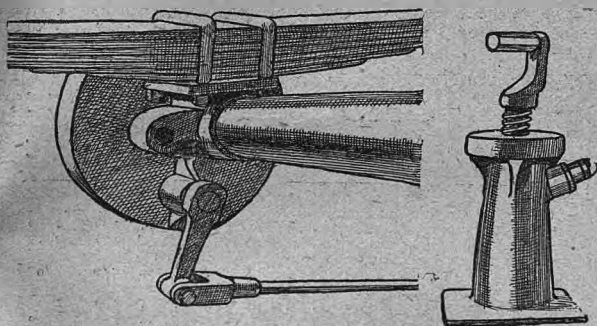
ments endorse, or the reverse, the actions of the police. Magistrates and police are a national institution for the protection of the public, and it behoves both to take care that the powers given to them are not exercised for the annoyance of the public. The latter is undoubtedly often the case as far as the motoring section of the public is concerned.

ONE OF THE VICTIMS.

INADEQUATE JACKS AND THEIR DANGERS.

[19698.]—With reference to your recent comments on the use of jacks (*The Autocar*, June 7th, page 1017), I agree entirely with you that proper provision should be made in the design of both front and rear axles for the accommodation of a jack head. It seems to me an extremely important thing, too, as you point out, that the table, or whatever it may be against which the head of the jack is to be placed, should be normally the same height from the ground of both the rear and the front axles. The principal trouble with the majority of rear axles is to put the jack in such a place that it will rest against a solid portion of the axle without interfering with the tie-rod, and, to my mind, an obvious way out of the difficulty is to carry the jack platform rearwards on the rear axles and forwards on the front axles. On some cars the bracket which carries the fulcrum and the expanding cam for the rear brake is enclosed entirely in the same casing as that which prevents entry of mud into the brake drum; in other cars this bracket is partially external to such casing. This need not, however, affect the suggestion I am about to make, because the bracket, being almost invariably a casting, it could easily be altered to suit the idea, whatever the method of assembly may be.

The notion I wish to suggest is briefly that the brake bracket should have a rearward protuberance in the same plane as the horizontal centre of the axle case; it would be quite easy to arrange a similar projection on the front axle, either by bolting on a stamping or by forging a projection as part and parcel of the axle. A further detail improvement would, I think, be to drill a hole about five-eighths of an inch in diameter horizontally through each protuberance and to supply with the car a jack having, what might be called, a "hook head;" that is to say, instead of the ordinary leather-faced head, the cap of the screw of the jack would consist of a cross pin which would just fit into the hole in the axle bracket. In order to use the jack, this pin would be pushed in the hole and the car then raised by the ordinary ratchet action, or it would be quite possible in most cases to open the jack by hand by the pin head in the hole and then, by pushing the car, roll it up on the top in just



A suggested form of jack with a special axle anchorage.

the same way as a car customarily is rolled off a jack; at the same time the danger of the car leaving the jack would be reduced very greatly. Of course, if the axle fitting were so made that only a special jack could be used upon it, half its usefulness would vanish, but with an extension to the bracket, such as that I have suggested, it would be possible to use the jack with the pin head or an ordinary jack, and the ordinary jack would, of itself, be more easy to apply than is usually the case.

I shall be very interested to hear the opinions of a few car manufacturers on the subject, if you are able to extract them. The cost of providing such brackets could not be more than a shilling or two per chassis, if so much as that.

While on the subject of jacks, I should also like to make one other suggestion, and this is that there should be a considerable demand for a folding jack having a much larger foot than those supplied normally. It is easy enough to jack up a car when a fairly smooth and hard surface is obtainable, but, on a rather soft road, jacking up may be a

most difficult undertaking. There are a great many roads in this country where it is quite an advantage when a tyre repair is to be undertaken to run the car a little off the road on to the grass. The Great North-Road for almost the whole of its length is an example of this. Only here and there is there room for more than two vehicles to pass, and, on a motorist settling down for twenty minutes' tyre work, it seems only fair to other users of the road to get on to the grass wherever such is available. Of course, it would not be easy to stow a jack with a larger foot than the usual kind possesses; but it would be quite easy to carry a good big metal disc—I should suggest an aluminium casting—recessed on the top to take the ordinary jack foot and, itself, of not less than twelve inches in diameter. This should sustain the weight of an ordinary car, even on rain sodden turf.

THE EDITOR "INTERNAL COMBUSTION ENGINEERING."

INCONSIDERATE DRIVING.

[19699.]—I should like to draw your attention to an experience which I was unfortunate enough to have of the road manners of the driver of car No. LF—recently.

While ascending the hill past Finchley Cemetery at a pace of about 18 m.p.h. on my motor cycle, occupying the near side tram track, I was startled to hear a blast from a horn about three yards behind me. As the road to my right was quite clear, and a group of pedestrians waiting for a tram encroached on the left-hand side of the road in front of me, I did not leave the track; indeed, I had no time to do so before the car (a large black Renault, I believe) passed me at about 30 m.p.h., and although the road to the right was quite clear the driver deliberately swung the car right across the lines in front of me, my front wheel being about level with the centre of the running board, he meanwhile grinning inanely. Only by a violent swerve, and swiftly cutting out and braking, was I able to save myself from being hit broadside on by the side of the car. Quickly accelerating, I overtook the car, noting the number as I did so, and rode up alongside the driver, who was obviously somewhat surprised to see me again. However, he only replied to my remonstrance by a kind of supercilious cachinnation, presumably indicating his contempt for the lives of those who were fools enough to risk their necks on single track vehicles.

Perhaps, on reflection, the driver of car No. LF—may feel desirous of making an apology for his conduct. If so, he can make it through the columns of *The Autocar*: I have been reading a great deal lately about cyclists swerving into cars, but I trust that in those cases the "swerve" has not been of the kind I have described.

R. E. DEWBERRY.

[We suggest that our correspondent should communicate the number of the car to the R.A.C. and the A.A. with a view to a remonstrance or other action being taken against the driver.—Ed.]

[19700.]—May I appeal through your columns to owners to instruct their chauffeurs to keep on the proper side of the road when turning corners? During a ride on Sunday, June 15th, with a motor cycle and sidecar, I narrowly escaped accident twice, and the third time was not so fortunate; a big brown car, coming up from Eastbourne to Beachy Head, about 3 p.m., was so far over that it had to make almost a right angle swerve, with the consequence that I ran into the hedge, scratched my face, bruised myself, and had the frame of my machine badly twisted. Probably the driver did not see that anything had happened; at all events, the car was off like a flash.

It is quite easy to keep on the left when turning corners at a moderate speed, and owners ought to prohibit their chauffeurs from taking corners, especially blind ones, at a pace that prevents them keeping well to their own side of the road.

A. J. NEWTON.

[19701.]—I saw in a recent issue of *The Autocar* a complaint of a motor driver overtaking and passing slow traffic when an approaching car has all but closed up his proposed course. I live close to and am frequently on the London-Brighton Road, and find this extremely dangerous habit so common that a protest should be made. I often have to apply my brakes very hard to avoid the collision of an ignorant road hog with

BOOBY.

TYRE SIZES.

[19702.]—Permit me to point out that in dealing with the question of the relative value of tyres in your editorial comments on your very useful tyre price list, you omitted to mention that some honest makers of tyres supply goods up to the nominal sizes and in accordance with the dimensions marked on them.

Correspondence.

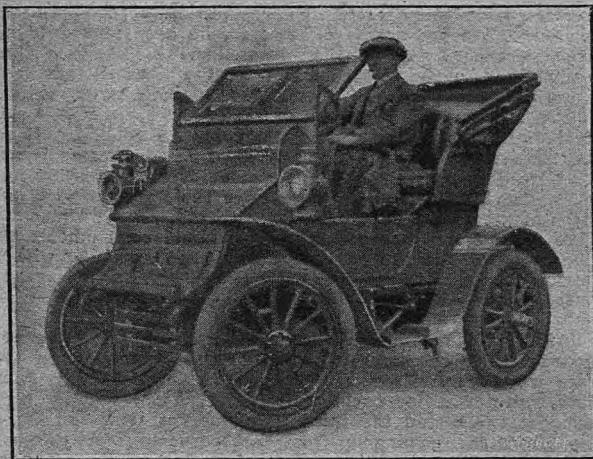
Time was when an English manufacturer of any kind would have scorned to stoop to such illicit methods of trading as are now employed in tyre making, and it is a great question if absolute fraud is not employed when tyres are marked, say, 105 mm. and only measure a bare 95 mm. after several weeks' use.

I have recently had a shock in finding that 100 mm. — tyres are no bigger than 90 mm. Victors. If the question of undersized tyres is raised with the makers, no satisfaction can be obtained. A lot of "hot air" is talked about, "moulds," etc. Surely if a firm supplied tyres to the standard sizes which were honest goods they would reap the benefit.

I unearthed another "get-rich-quick" dodge the other day. A car was advertised second-hand at a certain price in *The Autocar*. When you get up to see it you are told there was a mistake in the price, and it should have been £20 higher. It would be a fine legal point (like undersized tyres) to see if one could not compel delivery at the price advertised.

REJUVENATING AN OLD CAR.

[19703.]—I have, at different times, seen in *The Autocar* illustrations of old-fashioned cars whose owners have made some attempt to modernise them in appearance. I enclose a photograph of a 6 h.p. De Dion, which has probably been on the road twelve years or thereabouts, and which has been modernised. Originally built to carry four, a seat being bolted to the top of the box in front with a footboard hung to lugs attached to the bottom of the body in front, I discarded the front seat and built up the front to carry a wind screen as shown, and also put in the side doors. The engine is at the back, driving direct on differential with spur wheel and pinion. The water tank is in front, behind the perforated plate which carries the number and radiator under-



The 6 h.p. De Dion referred to in the accompanying letter.

neath. This car is on the road for business purposes most days, and is doing its work as well to-day as when first turned out of the works. The engine gives no trouble, and is a ready starter. I have had magneto fitted, and discarded the accumulators and all wiring. It runs on benzole without any alteration to the carburetter, and I find it gives increased power and starts without difficulty.

THOS. W. YOUNGMAN.

A CURE FOR POPPING BACK.

19704.—Referring to your contributor's remarks under "Hints and Tip" on the above subject, he says that by fitting plugs with a longer reach into the pockets he overcame the trouble of late ignition, but it appears to me that he would have obtained an equally effective and more convenient cure had he advanced the magneto slightly, in which case it would have been both quicker and cheaper.

J. F. COCKERILL.

MOTOR SPIRIT MADE AT HOME.

[19705.]—In reply to Mr. Higgins [letter 19665] on the question of motor spirit made at home, the letter from the Customs authorities deals only with stills used for the sole purpose of producing distilled water. What I should like to know is: Does he have to pay a still licence for the still he is using at present? The restrictions on the dis-

tillation of alcohol are very harassing, but there are restrictions—more moderate, it is true—in the case of the petrol manufacturers in Scotland. Mr. Higgins makes out a case for the local use of by-products; what we want to get rid of is the prospect of stringent regulations.

H.O.

PERPETUAL MOTION (?)

[19706.]—I am really sorry for Mr. Charles H. Hole [No. 19628] that he persists in attributing to Dr. Sandor's spring motor system a distinct flavour of perpetual motion. I have done my best to explain that Dr. Sandor's invention has no more to do with perpetual motion than an ordinary everyday watch. For anybody not interested in mechanical inventions not capable of assimilating other people's conceptions it would certainly be a waste of time to discuss Dr. Sandor's spring work system either in the columns of *The Autocar* or anywhere else.

As I do not think that either of the afore-mentioned cases apply to Mr. Charles H. Hole, I can but renew the cordial invitation I extended to him in my last letter, to come to our offices (6 and 8, Surrey Street, Strand, W.C.), where Dr. Sandor will be very pleased to go into all technical details with him.

JAS. W. FERROTT.

A NEW GOSPEL OF LUBRICATION.

[19707.]—Mr. Smith in his letter No. 19669 says that I am right in saying that "the graphite does not settle in the oil." He then says that Oildag (which, I presume, is graphite) will sink to the bottom if the car is left standing. I have just cleaned out the oil sump and filter on my engine after using Oildag for over two months, and, although the car sometimes stands for nearly a week without the engine being run, there was no sign of clogging on the filter, which proves that the Oildag does not settle. Besides this, I have had some Oildag mixed with oil standing in a test tube for over a fortnight, and, so far, there is not the slightest trace of the Oildag having settled. I would like to add that the oil taken out of the sump was much cleaner and in better condition than previous to using Oildag.

R. KIRKE, JUN.

THE ST. TROPEZ-BORMES ROAD.

[19708.]—On page 1068 "Owen John" says that no one advises the shore road from St. Tropez to Bormes (or rather to Le Lavandou). Allow me to do it. The road is certainly narrow, twisting, and its surface is not always good; but it is well worth it, as the scenery is as beautiful as anything, and it is as yet almost unspoilt.

D. YZELEN.

If the motorist driving a Unic coupé on Sunday, June 15th, who left at Mr. E. J. Gale's shop, High Street, Sawston, Cambs., a box wrench (for Captain rim), would communicate with Mr. Gale he will recover the tool in question.

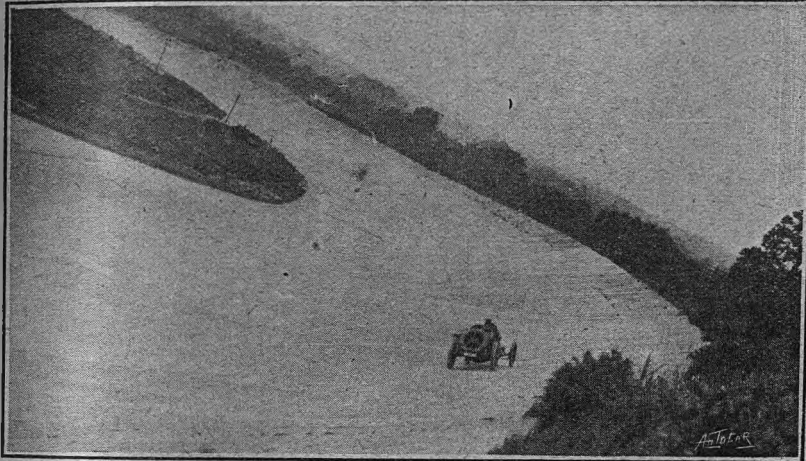
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Flashes.

The hon. secretary of the Aston Hill-climb informs us that the accidental transposition of a figure in the time sheets led the tabulated results to announce that Mr. Leslie Munro's Vauxhall No. 30 was eighth on time and twelfth on formula. This should have read fourth on time and sixth on formula.



How the Brooklands track looks to a driver travelling at high speed on the top of the banking. The car seen is one of the Grand Prix Sunbeams.

With the object of making the motor car better known in Morocco, it is proposed to organise a touring competition in the country in September next, the places to be visited including Casablanca, Rabat, Mechra-ben-Abbon, Marcakesch, Mazagran, and back to Casablanca.

* * *

Last year, Mr. George Heath caused some sensation at Shelsley Walsh by gliding to the summit of the hill on a 24-30 h.p. Siddeley-Deasy. This was dubbed the "Yellow Peril" by the onlookers, though its owner called it "Très Moutard." This year he used a car of the same power and make in full touring rig, but enamelled in pure white, with a plate glass bonnet and an engine which was as clean as the bonnet windows. This was christened "The Aquarium" by the irresponsible critics of the hillside.

* * *

On the afternoon of Wednesday, July 2nd, the Birmingham and District Cripples' Union has been invited by Mr. and Mrs. George Cadbury to the Manor Farm, Northfield. The committee trust that motorists will assist in adding to the cripples' enjoyment by providing cars to take the children from the Town Hall, Birmingham, to Northfield, via Alcester Road, Alvechurch, and Barnt Green. A hundred to a hundred and fifty cars will be required, and any motorists willing to co-operate will be sent full particulars by the Automobile Association, Central House, New Street, Birmingham on furnishing their name and address.

So far only six entries—three Sava and three Fab cars—have been entered for the Belgian Grand Prix Race, which was to have been run off next month. At a meeting of the Sporting Commission of the Belgian Automobile Club last week it was decided to postpone the event to the 24th and 25th August, and to hold it on a circuit near Spa instead of near Ansaremme. The date of closing the list of entries has also been postponed until July 31st. In addition to the King of the Belgians Cup for the best team performance, the Belgian Automobile Club is offering a special cup to the individual winner

* * *

We are asked by our contemporary *L'Auto* to remind our readers that the Coupe de l'Auto, which was last year run in conjunction with the Grand Prix of the Automobile Club of France, will this year be carried out independently on the Boulogne Circuit on September 21st. The race is for cars with engines not exceeding 3,000 c.c., and details were given in our issue of March 15th. The total distance to be covered will be 386 miles. Any one firm may enter four cars. The entry fees are as

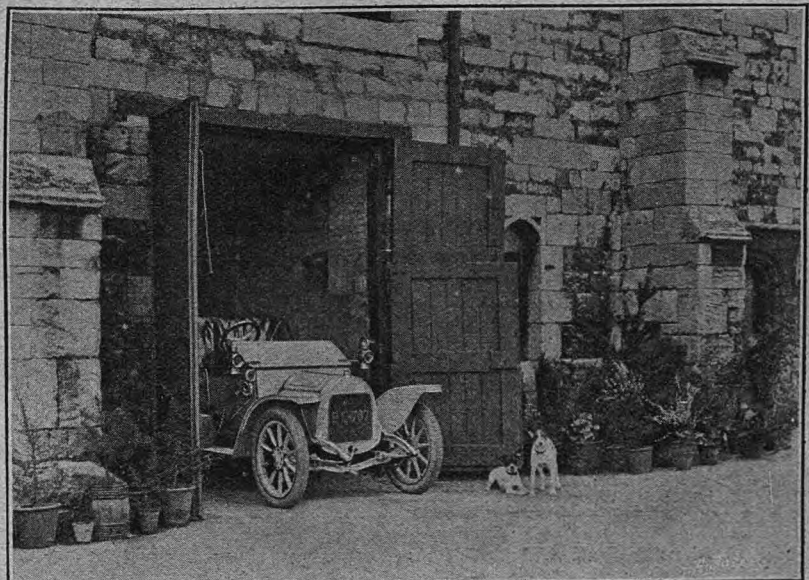
follows: One car £40, two cars £72, three cars £100, four cars £120. Entries will close at the fees mentioned on July 31st next, and must be sent to *L'Auto*, 10, Faubourg Montmartre, Paris.

* * *

At the Brooklands Motor Cycle Racing Club's fourth 1913 monthly meeting, Haywood, on a Singer, was placed first of the three entrants in the Three-lap Cycle Car Scratch Race at 57.34 m.p.h.

* * *

The French Automobile Club announces that the Stelvio Pass, in the Tyrol, is now open to motor traffic.



A 9 h.p. Grégoire car which has for a garage a fourteenth century tithe barn in Lincoln.

Flashes.

The county surveyor for Lancashire announces that his committee are preparing a scheme and estimate for the reconstruction of the roads between Rawtenstall and Bury and Accrington and Burnley.

* * *

Whilst practising for the forthcoming Grand Prix Race, Zucarelli, the well-known driver of Peugeot racing cars, collided at high speed with a farmer's cart which emerged suddenly on the course from a cross road. Zucarelli was killed instantly, and his mechanic is lying seriously injured at Nonancourt, about four miles from the scene of the accident, which occurred between Tivoli and Thomer. It appears that the driver of the cart, who escaped with a few bruises and a severe shaking was aged and deaf.

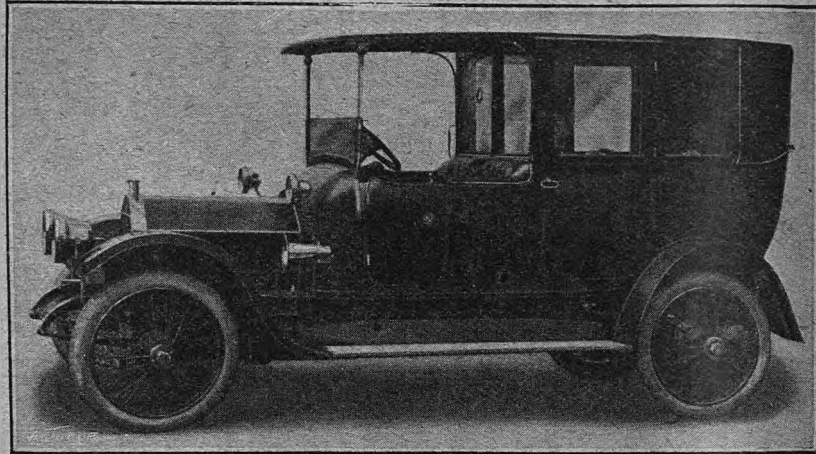
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In the course of a discussion at the joint meeting of the British and American Institutions of Automobile Engineers in the United States, Mr. T. C. Pullinger, of the Arrol-Johnston Co., remarked that what is most needed in motor factories is men who will operate the machines as the management wish them to be operated. "It is not a bit of good," remarked Mr. Pullinger, "taking a lot of engineers to work machines in your factory, because it is the most difficult thing to teach them how to operate them as they should be operated; they all think they know more than the factory manager. In Scotland, I looked round for time-expired soldiers and sailors who were ready to go to work, and I found them willing to learn what I wanted to teach them."

* * *

The inmates of the Home for Crippled Children, Gosforth, recently had a glorious run to Rothbury through the kindness of Mr. Claud Palmer and other members of the North-Eastern Automobile Associa-

tion. Some twenty-five cars were placed at the disposal of Mr. Hodgkin, the hon. secretary of the Association. A substantial dinner was provided by the Association at the County Hotel, and in the afternoon sports were held, followed by tea and a pleasant drive home by way of Cragside grounds by kind permission of Lord Armstrong.



A ROYAL CAR. A 15 h.p. Napier fitted with a special flush-sided limousine landaulet body by Messrs. Mann, Egerton and Co., Ltd., of Norwich and London, to the order of H.R.H. Princess Henry of Battenberg. It will be noticed that large frameless glasses are used, and also inside hood irons.

A steady increase is taking place in the number of motor tourists passing over the Simplon Pass. A record has been kept for some years, from which it appears that in 1912, 1,177 cars travelled over the Pass, as compared with 940 in 1911.

* * *

In order to give additional clearance for use on colonial roads, the Daimler Co., Ltd., has, we learn, informed its New Zealand agent by cable that in future the 20 h.p. Daimler cars for the Dominion will be fitted with the overhead type of worm drive. The vehicles are also now being built with a wheel track of 4ft. 8in.—a feature which renders them still better adapted for service in the colonies.

* * *

At the monthly council meeting of the Roads Improvement Association on the 19th inst., it was reported that a number of appreciative notes had been received from road surveyors concerning the Association's new leaflet entitled "Notes upon Tar Treatment of Road Surfaces," and that a large number of applications had been received for quantities for distribution. The question of altering the rule of the footpath to correspond with that of the road was again discussed, in connection with a report received from the Road Users' Conference, and the council unanimously resolved, as hitherto, to recommend the alteration, which necessitates pedestrians facing approaching traffic, and forces upon them the need to take care before stepping off the footpath.



A B.S.A. car in South Africa. The photograph was taken on a farm belonging to Mr. John Hobens, at Hammans Kraal, some thirty miles north of Pretoria. The car is crossing the Penaars River, and the road which it has to ascend is even steeper than the one seen in the background.

Some Queries and Replies.

Readers seeking the experience of users of specified cars, parts, or accessories are invited to insert their queries in these columns, and their fellow readers are invited to reply.

Querists are asked to enclose a stamped address envelope, so that replies may be made direct if the subject is not considered of sufficient general interest to publish.

Letters should be addressed to the Editor, "The Autocar," Hertford Street, Coventry, and replies to queries should bear the number of the query to which they refer.

Editorial advice is at all times willingly given to our readers.

REPLIES.

No. 2695.—Removing Carbon from Cylinders.

I have had the Cycleclean process used on my 20 h.p. Crossley, but found after 350 miles the engine knocked as badly as ever, and had to be cleaned by the usual process of dismantling.—**F. M. COLEMAN.**

I have recently had the cylinders of a 14.20 h.p. Siddeley-Deasy with White and Poppe engine, 80×130, cleaned by this process. The result, so far, seems entirely satisfactory, but I would warn anyone having engines cleaned in this manner to see that any paint work in the vicinity of the engine is covered over, as the carbon deposit is blown out of the plug holes in an incandescent state and burns into the paint wherever it falls. My car being painted in a light colour is badly marked from this cause. The cost in my case was 23s. and the time taken about 1½ hours, and the improvement in the running of the engine is most marked.—**G. F. MOLLER.**

No. 2696.—Dodson Valveless Car.

I have driven a 25 h.p. valveless Dodson for the past two years, and have nothing but satisfaction to express with regard to it. It is fairly quiet (the later type, 19.9 h.p., is a great improvement in this respect.) The petrol consumption is 14.15 m.p.g. on bad Irish roads. The car is well sprung and light on tyres, and does not carbonise quickly. It is a good hill-climber, and the manufacturers are very satisfactory to deal with.—**CHAUFFEUR.**

No. 2713.—15-20 h.p. Krit Gear-changing.

I have a Krit car (September, 1912), 15-20 h.p., and at the start experienced the same difficulty, often taking two or three minutes to engage my first gear, but I managed to get over this very easily. If you will throttle your engine down as slow as you can, at the same time holding your clutch out for about a minute, you will find that your first gear will engage very easily and without the slightest sound. With regard to the engine becoming too hot, I have not noticed this, except sometimes after a long pull on low gear, but the engine is such a good one that you very rarely have to change into that. I have gone from Redhill to Bath and *vice versa* without resorting to the first gear and only three times into second. This with five heavy passengers.—**D. KEVIL.**

No. 2715.—Floor Board Coaling.

Referring to your correspondent who is having trouble through the high temperature of his floor boards, I suffered from this in South Africa, where I was driving for many hours of the day under an almost vertical sun of great intensity. The car in question had a torpedo body and enclosed front, which, of course, is not good from a cool point of view in hot climates, but still people seem to like such. I had asbestos sheeting fastened underneath my floor boards, and in that particular car I saw that all the apertures through which the

pedals went were most closely fitted so that there was practically no space for air to come through. The result of this was that I kept the floor boards reasonably cool and quite different from the way they were without the asbestos. On my latest 30 h.p. six-cylinder Napier, the makers have carried the exhaust pipe forward close to the radiator, then down and then back. The result of this is that the exhaust pipe, prior to its arriving near the footboards, has become, comparatively speaking, cool, and this, I find, is a most excellent arrangement for keeping the floor boards comfortable in very hot weather.—**S. F. EDGE.**

In reply to query No. 2715, I cured a similar trouble, but on a different make of car, by wrapping the exhaust pipe, where it is near the floor boards, with asbestos string (wire centre), and fitting a bonnet with louvres. Before this was done, the passenger, in warm weather, often opened the door and put his feet outside to cool them.—**CC 449.**

QUERIES.

No. 2727.—8-10 h.p. Phoenix.

I SHALL be much obliged if users of the 8-10 h.p. Phoenix will give me their experience as to its power, general reliability, petrol consumption, etc.? Information as to the good and bad points of the car will be appreciated.—**TYRO.**

No. 2728.—Varnish Stains on Aluminium.

THE aluminium plates on the running boards of my car were returned from the coachbuilder splashed with varnish and very badly stained. My chauffeur has tried everything likely, but has quite failed to remove the stains—naphtha, petrol, methylated spirits, soft soap, turpentine, and sand have all failed. If any of your readers can suggest a remedy I shall be greatly obliged.—**SURGEON-MAJOR.**

No. 2729.—Paraffin Carburettors.

I AM looking into the question of fitting paraffin carburettors to my cars, which include two Fords, a Minerva, and a Daimler, the two latter with slide valve engines of the Knight type. I should be glad to hear from any of your readers who have had experience in the use of paraffin and the type of carburettor they have used, with details of any modifications they have made thereto, if such were necessary.—**R.M.**

No. 2730.—Two-seaters.

WILL owners give their experiences of the 69×130 mm. Belsize 10.12 h.p. two-seater, the 95×95 mm. Buick 16 h.p., or Bedford 15-18 h.p. two-seater cars—either the 1912 or 1913 model—after having covered 10,000 miles, as to reliability, general wearing qualities, petrol and oil consumption, tractability, lowest and highest comfortable speeds on high gear, hill-climbing, acceleration, quietness on first and second speeds, gear changing, whether satisfactory on low grade fuels and benzole, tyre mileage.—**ELBON.**

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- 1912 15 h.p. **SCAT**, two-seater, dickey seat, detachable wheels, 4 speeds, spare wheel and tyre, hood, screen, 5 lamps, horn, mirror, speedometer, and kit of tools. Excellent order **£285.**
- 1913 27-80 h.p. **AUSTRO DAIMLER**, two-seater. Most luxuriously fitted up with every conceivable accessory. Cost £1,250. Hardly used, better than when new **£750.**
- 1913 16-20 h.p. **ADAMS** coupe, shop-soiled only, self-starter. List price, £530. Will accept **£450.**
- Sept., 1911, 12-16 h.p. **WOLSELEY**, touring body, detachable rims, hood, screen, lamps, etc. **£265.**
- 1910 16 h.p. **ADAMS**, touring car, epicyclic gears. Completely fitted up for the road, excellent order. **£150.**
- Late 1909 15 h.p. 6-cylinder **DELAUNAY BELLEVILLE** Limousine, beautifully equipped, perfect condition **£300.**
- August, 1912, 15 h.p. **CHARRON** Three-quarter Landaulette. Ready to drive away **£300.**

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Some Queries and Replies (Continued).

No. 2731.—Ford Cars.

I CONTEMPLATE buying a Ford car to do the work of one horse and two carriages. Can any of your readers answer the following queries? (1.) Is a Ford suitable for this? (2.) What is the probable life of a Ford, averaging 5,000 miles per annum? (3.) What are the running costs likely to be?—M.L.F.C.

No. 2732.—Carburetter for 1907
30 h.p. Daimler.

I WOULD be very much obliged to hear if any owner of a 1907 30 h.p. Daimler landaulet can suggest an improvement in petrol consumption on ten miles town and twelve miles in country. This car has been put in thorough order and is likely to give some years' service, as it is in the hands of the original owner. One hears much of improved carburetters. Has anyone tried a better than the original?—J.B.P.

QUERIES AND REPLIES.

No. 2733.—15 h.p. Napier Carburetter.

I SHOULD be glad if any of your readers would give me their experiences of the carburetter on a 1910 15 h.p. Napier. I can only get an average of 14½ to 15 m.p.g. on a 120 mile run. The carburetter, I believe, is Napier's own, fitted low down on the offside of the engine, with a single jet, pressure feed. I have rather a trouble at starting up in the morning when the engine is cold. Bosch dual ignition, magneto just overhauled, and accumulator recharged. I should be glad to know if the position of the carburetter has

anything to do with either of the above, and, if so, a remedy. I find the clutch spins a lot at starting, making it rather difficult to get into first without a certain amount of scraping on the gear. I should like to hear of a remedy for this also.—O.D.

A proof of the above letter was sent to Messrs. Napier Motors, Ltd., who make the following reply: "It would appear that probably the carburetter is not the one originally fitted to the car, but should it be so, the following hints would probably be useful: The bore of the jet should be 45/1000ths of an inch in diameter, the choke tube 11/16ths of an inch, the lift of the air valve on the induction pipe 3/32nds of an inch. If these points are all in order, and the tension spring on the air valve is properly adjusted, there should be an improvement in the petrol consumption. Regarding the starting difficulty, this could be due to many reasons. The most important point is to see that the shutter for increasing the suction of the jet is operating on the carburetter; also see that means are provided for holding the air valve shut until the engine is started. Needless to say, your correspondent must satisfy himself that all points in connection with the engine are in order. A spinning clutch is usually caused through the use of too thick a lubricant, but if your correspondent will communicate direct with us, and give us the number of the car, we shall be pleased to give him any useful information we can, both in reference to this particular point and the other matters mentioned in his letter.

Catalogues and Booklets Received.

We have received from Messrs. Jarrott, Ltd., 35, Sackville Street, Piccadilly, W., a handsome portfolio entitled "Concerning Famous Motor Cars and Accessories." As may be gathered from the title, the book deals with the well known makes of cars and accessories which may be obtained through Messrs. Jarrott, Ltd.

Messrs. Peugeot (England) Ltd., 10, Brompton Road, London, S.W., send us a copy of their catalogue of the 1913 Peugeot cars, which is quite a *multum in parvo* in the matter of catalogues. It is well illustrated and well produced, and gives all the salient particulars of the thirteen models put out by the well-known Peugeot firm.

Messrs. Panhard and Levassor have just issued a most interesting and well-prepared work, entitled "Excursions in the Environs of Paris and Visits to the Cathedrals." This is a handy guide to Paris and the district, and Messrs. W. and G. Du Cros, of Acton Vale, London, W., say that our readers can obtain copies gratis and post free upon request to them.

We recently referred to the fact that the Austin Motor Co., Ltd., had sent a representative to Canada. Since then they have forwarded us a copy of a general catalogue which they have prepared specially for Canadian use. This is a very convenient book, as it gives the leading particulars of all the models turned

out by the Austin Co., and also deals briefly with their marine motors and electric lighting installations. Where necessary the technical terminology has been altered to agree with Canadian usage, and, of course, the prices are given in dollars. This catalogue is only a preliminary one, and while, for the time being, the British full catalogues are available, it is proposed shortly to issue a special Canadian catalogue giving full details of each model, as is the case at home.

The Alldays and Onions Pneumatic Engineering Co., Ltd., Birmingham, forward us an interesting catalogue devoted to the description and illustration of their Midget and Expresso-del cars, these being three-wheeled delivery vehicles. The catalogue also includes a description of the Expresso-del motor cycle delivery carrier, which should be very useful to small provincial tradesmen delivering goods at considerable distances from their establishments.

A well-produced leaflet has been issued by J. B. Brooks and Co., Ltd., containing illustrations of typical Brooks car equipment specialities and a selection of opinions received from satisfied users. It does not profess to be a complete catalogue, but it gives one an idea of the luggage trunks, tool cabinets, etc., that are made by the Brooks firm and why they have a good name amongst users.

Week-end and Touring Notes.

North Derbyshire and the High Peak.

By A. J. S. Graham.

(Continued from page 1159.)

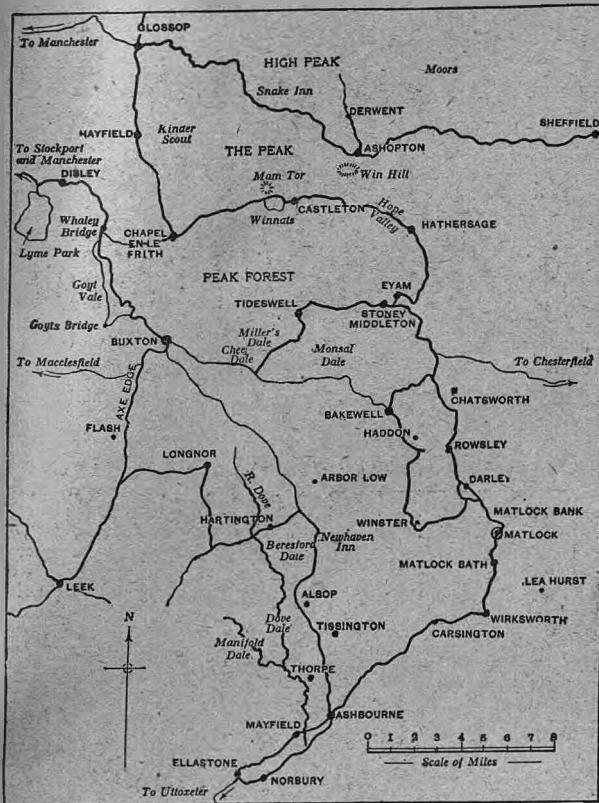
The descent to Dovedale is along a wide and rocky ravine, glistening limestone rocks ranging on either hand, and leading down to a broad and fertile portion of the valley. For some three miles the dale then extends along the river brink, densely wooded slopes rising precipitously on either bank of the crystal stream. Here and there the masses of verdant greenery are broken by patches of grey rock in every fantastic shape. Grottoes, caves, bastions, pinnacles, and towers greet the eye in every direction.

There is little of the grand and majestic about Dovedale, nothing

Tissington, connected to the main high-road by a magnificent avenue of trees about half a mile in length. At this idyllic village, for several centuries, the annual custom of well-dressing has been observed on Ascension Day. Its origin is lost in antiquity, but local tradition asserts that in bygone times, when the country generally was suffering under a long drought, the wells of Tissington continued to pour forth their life-giving streams without failing. Tissington, too, is said to have escaped the awful Black Death which swept over the country in the fourteenth century, and the natives ascribed their

blessed immunity to the purity of their wells. Well-dressing, however, is a very ancient custom; it was common to both Greeks and Romans. It is, in short, a survival of paganism, when flowers were thrown on wells and streams as an offering to the presiding deity. Being a pretty custom, it has survived, fortunately, under Christianity, and is still observed in many places, but at few is it made so important a festival as at this little Derbyshire village. Tissington Hall is a fine old Elizabethan mansion. For four hundred years it has been the home of the Fitzherberts, who garrisoned the house on behalf of the King during the Civil Wars.

Ashbourne is reached by a rolling road which ends in a steep descent into the town. The place is an agreeable country town, neither ancient nor modern, and only lacks a river to appear complete. In coaching days it was a town of great importance, as it formed the meeting place of several main roads. Its first appearance of any note in historical events was in 1644 and 1645, when Charles I. visited the town at the head of his forces. In February, '44, a battle was fought between the rival armies, when the Royalists were defeated with great loss, but in the next year the situation was reversed, the Roundheads being the losers. King Charles attended service at the church to give thanks for his victory. His army consisted of about three thousand men, and they were afterwards marched through the Peak on the way to Doncaster. A hundred years later, Charles's great grandson, the unfortunate Charles Edward Stuart the Pretender, passed twice through Ashbourne, first on his



austere or awe-inspiring. Its unrivalled fascination consists of many delights compressed into a small compass. Little wonder that Izaak and his companion found it irresistible and sang its praises in prose and song. It is the Eagledale of "Adam Bede," the place where Arthur Donnithorne sought to banish the spell cast over him by the seductive Hetty.

At the south end the dale broadens out into a wide open vale, guarded on either hand by the twin heights of Thorpe Cloud and Bunster Hill. Here the waters of the Manifold join with those of the Dove, and the valley through which the former flow, before losing their separate identity, is second in beauty only to the peerless Dove. It is more open, more pastoral, and less rugged, but none the less full of delight.

Thorpe village possesses a tiny Norman church covered with ivy; two miles away lies the more important and charmingly situated village of

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- DELAUNAY BELLEVILLE**—15 h.p. 6-cylinder Delaunay Belleville landaulette, seating 5 persons inside, beautifully fittedprice **£390**
- DAIMLER**.—15 h.p. Daimler, 1911 model, fitted with torpedo body, in excellent condition.....price **£325**
- HISPANO SUIZA**.—15 h.p. Hispano Suiza, 1912 model, 4-seater, racing type body, disc wheels, windscreen, very fast carprice **£420**
- SIDDELEY**.—30 h.p. Siddeley, fitted with handsome limousine body, beautifully upholstered, engine and body work perfect, a real bargain.....price **£275**

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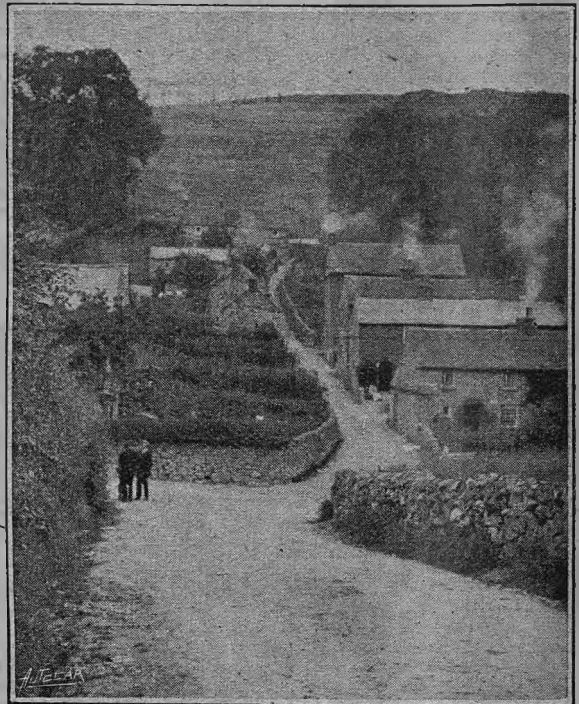
Week-end and Touring Notes (Continued).

way to, and then during the retreat from, Derby His hopes were finally extinguished at Culloden. When in Ashbourne, he proclaimed his father, King James of Great Britain, from the market place. Charles and his officers made their headquarters at Ashbourne Hall, turning out the owner with little ceremony. This building is now an hotel. Ashbourne was also intimately connected with the great Dr. Johnson, who frequently visited the place when wanting a change from the delights of Fleet Street. Fortunately for posterity, Boswell sometimes accompanied the lexicographer on these visits.

Ashbourne Parish Church, with its lofty spire, 212ft. in height, well deserves the name of the "Pride of the Peak" bestowed upon it. Boswell considered its merits worth recording in his diary, and George Eliot gave it high praise.

On the way to Ellastone, the River Dove is crossed at Mayfield. This village, on the county boundary, was where Tom Moore lived when writing "Lalla Rookh," almost a century ago. Here he was visited by that eccentric banker poet Samuel Rogers, who refused the Poet Laureateship in favour of Tennyson. Beautiful and extensive views of pastoral scenery are enjoyed from here to Ellastone, famous for all time as being the Hayslope of "Adam Bede," that masterpiece of George Eliot's. The Bromley Arms is the Donnithorne Arms of the story, the inn

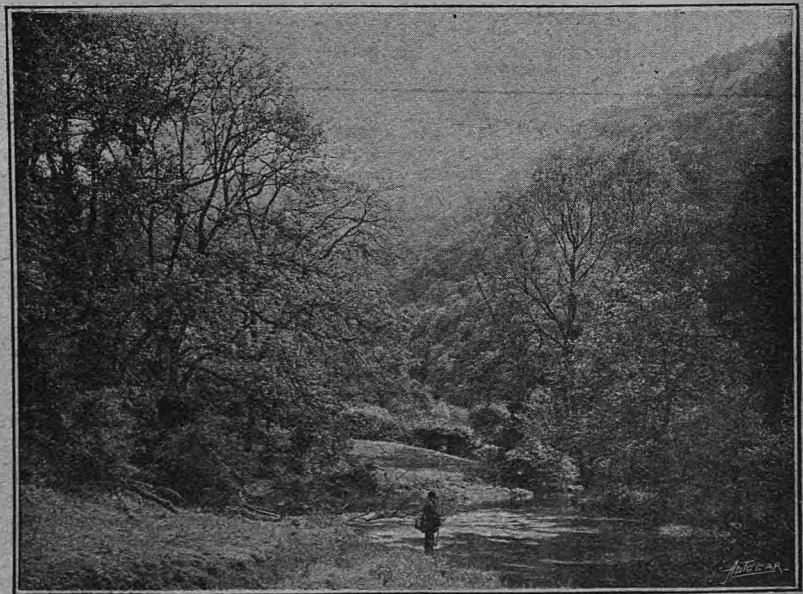
kept by the self complacent one time butler, where the village wiseacres used to meet to discuss the parish politics. In these surroundings Hetty Sorrel lived her peaceful and uneventful life.



A view of Carsington, showing a typical Derbyshire village and hillside.

Poor Hetty! The thought of her tramping along the hard and dusty roads, to reach the only one in whom she could confide, and then to fail, is enough to touch a heart of stone. Wootton Hall was the home of the well meaning, but weak and impulsive Arthur, and it was here that Rousseau lived when he began to write his "Confessions."

(To be continued.)



A scene in Dovedale.

Flashes (Continued).

We are informed that all the Sunbeam racing cars for the approaching Grand Prix in France are fitted with Goodyear detachable steel wheels. This is the second year that Goodyear wheels have been selected.

The goodwill and assets of the Dorking Garage Co., Ltd., have been acquired by Messrs. Warne and Co., Ltd., Myrtle Road, Dorking, who will carry on the business at the same address under their own name.

Mass Cars, Ltd., 1, Bloemfontein Avenue, Shepherd's Bush, London, W., inform us that owing to their increasing business they have taken much more commodious premises at the above address.

Harrods, Ltd., whose motor department has so much increased in its scope of late, have been granted the Royal Warrant of Appointment to Her Majesty the Queen. The firm already hold a similar appointment to the Queen of Norway.

In order to facilitate prompt despatch of accessories and spare parts for Napier cars, orders for these will be dealt with from the Napier works direct, and, therefore, letters connected with accessories and spare parts should be addressed to Napier Motors, Ltd., Acton, London, W.

Mr. Sydney A. Lamplugh informs us that he has joined Mr. W. H. Wood under the style of Wm. H. Wood and Lamplugh, Ltd. The firm are makers of motor and electrical accessories and machine-made brass work of every description, the factory being in King's Road, Tyseley, Birmingham.

Mr. Sydney G. Cummings, who holds the agency for Great Britain for the English-built Sirron car, has just entered into partnership with Mr. G. E. Wright, M.I.E.E. The business will in future be carried on under the title Sydney G. Cummings and Wright, and for the present will be located at 71, Britannia Road, Walham Green, London, S.W.

The Universal Motor Engineering Co., of 18, Down Street, Piccadilly, W., has taken up the West End agency for the Marnet shock absorber. It will be remembered that we described and illustrated this device in *The Autocar* of January 18th after it had gained first prize in the open competition organised by the Belgium Automobile Association. The Marnet shock absorbers are sold at £3 10s. a pair.

The Sunbeam Motor Car Company wish to contradict a rumour to the effect that the directors are "unloading" their shares. How the rumour originated it is impossible to state, but it has had the mischievous effect of reducing the price of the shares of the company, and it has no foundation in fact. So far from "unloading" the directors have been actually buying shares, and at figures considerably in excess of the present market quotation. The sales of the company to the end of April were within a few pounds of being double those of last year, and it is confidently anticipated that the returns for the financial year will be at least 75% more than last year.

Among recent purchasers of Vauxhall cars are Sir Horace Avory and Sir Aubrey Brocklebank, who have become possessors respectively of a 25 h.p. landaulet and a 25 h.p. Prince Henry Vauxhall.

We are in receipt of the first number of the monthly Gazette of the Middlesex County A.C. dealing with the doings of the club. We are asked to announce that Mr. H. Wilkins Norman, 89, Pall Mall, London, S.W., the hon. secretary of the club, will be pleased to send a copy monthly to any motorist in the county on application.

The Southern Automobiles, Ltd., Westcombe Hill, Blackheath, S.E., inform us that they have been appointed sole agents for Kent and Surrey for the Chenard-Walcker cars. They have special facilities for repairs to this particular make of car, and spare parts may be obtained on receipt of a telegram or telephone message.

Rushmore Lamps, Ltd., of 46, Brewer Street, London, W., have recently established a special department for the repair of motor lamps of any type or manufacture, oil, acetylene, or electric. Only skilled workmen are employed, and, no matter how badly a lamp may be damaged, it is nearly always repairable at the cost of a few shillings, and the work, we are assured, seldom occupies more than forty-eight hours.

At the Royal Agricultural Show, which is to be held at Bristol early in July, the Electric and Ordnance Accessories Co., Ltd., are exhibiting Timken roller bearing axles. An interesting point is that these axles are intended for horse-drawn vehicles in all sizes, ranging from light traps to heavy team waggons. This is indeed an invasion of motor car practice into the late enemy's camp. It would appear that the users of horse-drawn vehicles are beginning to realise the necessity for easy rolling wheels.

At the Ghent International Exhibition, in the British Machinery Hall, a varied and interesting exhibit is being shown by Messrs. Vickers, Ltd., including a large number of machines actually at work, driven by Vickers motors of various sizes. Vanadium drills are shown working at high speeds, the Vickers adjustable reamer and the forced lubricator, and samples of the new metal Duralumin. The Wolseley Tool and Motor Car Co., Ltd., which is a branch of Messrs. Vickers, Ltd., has a fairly representative exhibit. The principal item is a 24-30 h.p. six-cylinder chassis, fitted with the Wolseley engine-self-starter, similar to the chassis which attracted so much attention at Olympia. Another exhibit is a four-cylinder Wolseley motor car engine, which has been cleverly sectioned to show the working parts, and is kept in motion by a small electric motor. One of the Wolseley Co.'s aero motors is also shown, a 60-80 h.p. of distinctly unusual design, the cylinders being air-cooled and the exhaust valve boxes water-cooled. This engine is of the Vee type, with eight cylinders. A complete Wolseley marine set is also staged, ready for installation in a motor boat, the engine being a six-cylinder Wolseley, developing 30 b.h.p. on petrol fuel.

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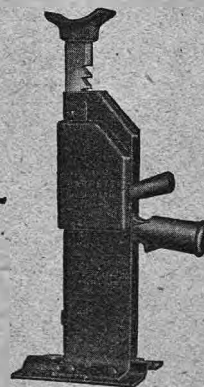
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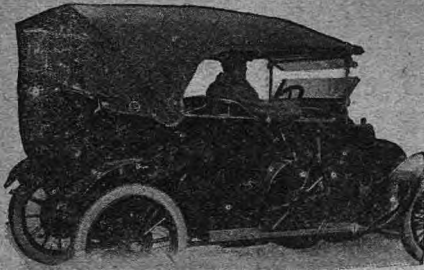


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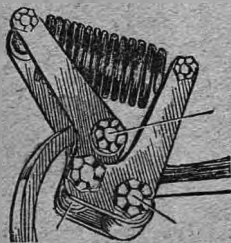
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"The Autocar" Share List.

The following table of some of the companies connected with the motor, motor cycle, and allied trades, is not published for the benefit of speculators, but for the information of investors. The speculative buyer is referred to the daily financial press.

Issued Capital.	Amt. of Share	NAME OF COMPANY.	Present Prices.	Last Year.		This Year.		Last Div.	Div. Payable
				Highest	Lowest.	Highest	Lowest.		
£ 2,520	1/-	Abingdon-Ecco, Ltd.	2/6 3/6	3/-	2/3	3/6	3/-	%	Nov.
45,000	£5	Alldays & Onions (£3 paid)	3 1/2 sellers	4 1/2	3 1/2	3 1/2	3 1/2	%	Ap/Dc
50,000	£5	6% Cum. Pref.	5	5 1/2	5 1/2	5 1/2	5 1/2	%	Ap/Dc
209,802	10/-	Argylls, Ltd.	5/- 6/-	6/-	4/-	6/-	4/9	%	Dec.
150,000	£1	Belsize Motors, Ltd.	25/- 26/-	28 1/4	25/-	27/6	26/-	%	My/Nv
100,000	£1	Cum. Pref.	20/-	20/-	20/-	20/3	20/-	%	Fb/Au
44,771	£1	Bowden Brake, Ltd.	4/- 5/-	7/-	3 1/4	5/-	3/-	%	Dec.
766,982	£1	Birm'gham Sm'l Arms, Id.	44/- 45/-	53 3/4	46 3/4	50/-	44/-	%	Mr/Sp
203,150	£5	Cum. Pref.	5 1/2 sellers	5 1/2	5 1/2	5 1/2	5 1/2	%	Mr/Sp
75,000	£5	Braunton Bros. Cum. Pref.	3 1/2 4	4 1/2	3 1/2	4	3 1/2	%	Oct.
100,000	£1	Brooks, J. B., & Co. Ltd.	36/- sellers	37/6	31/-	36/6	35/-	%	My/Nv
100,000	£5	Cum. Pref.	5	5 1/2	5 1/2	5 1/2	5 1/2	%	My/Nv
100,000	£5	Brown Bros. Cum. Pref.	4 1/2 5	5	4 1/2	4 1/2	4 1/2	%	Ap/Oc
380,000	£1	Charron Pat. Pref. Ord.	13/3 13/6	11/6	8/-	14/-	7/9	%	Ju/Dc
200,000	£1	Clement-Gladiator	3/3 3/9	2/-	1/6	6/-	2 1/4	%	Dec.
100,000	£1	6% Cum. Pref.	13/- sellers	14/9	10 1/4	15/-	12/6	%	Ju/Dc
55,000	£1	Components, Ltd.	5/- 6/-	6/9	4/-	7/9	4/6	%	Dec.
25,347	£1	7% Cum. Pref.	12/6 buyers	15/-	11 1/4	13/-	12/-	%	Dec.
275,000	£1	Darracq. A., & Co. Ltd.	13/6 13/9	18 1/4	8/9	15/-	9/9	%	Ju/Dc
375,000	£1	7% Cum. Pref. Ord.	15/6 15/10 1/2	19 1/4	11 10/16	16/-	13/-	%	Ap/Oc
159,249	£1	De Dion-Bouton, 7% Ord.	7/- 8/-	11/3	8/9	10/-	7/6	%	Dec.
1,000,000	£1	Dunlop Rubber	36/9 sellers	56/9	27/6	39/6	35/6	%	Ap/Oc
200,000	£1	Cum. Pref.	19/- sellers	21/-	17/-	20/-	18/6	%	MJSD
312,785	£1	Income Stock	17/9 buyers	19/-	15/6	19/-	17/6	%	Ju/Dc
624,995	£1	Dunlop Parent Co. 8% Ord.	15/3 15/9	18 7/8	10/-	18/-	13/9	%	Ju/Dc
994,990	£1	5% Cum. Pref.	12/3 12 7/8	16/9	10/6	15 1/4	12 7/8	%	Ju/Dc
499,962	£1	Deferred	9/6 sellers	15/-	6/3	11/-	8/-	%	Ju/Dc
99,977	£1	Enfield Cycle	20/- 20/6	19/9	13/9	21/9	18/-	%	Oct.
24,985	£1	Cum. Pref.	20/6 bid	21/3	20/6	23/-	21/-	%	Fb/Oc
292,904	£1	Humber, Ltd. (New)	9/- sellers	7/6	3 7/8	14/-	6/9	%	Nov.
341,495	£1	6% Cum. Pref.	15/3 15/9	11/-	6/9	17/9	10 1/4	%	Nov.
50,000	£1	James Cycle	10/- sellers	6/6	5/-	15/-	6/6	%	Oct.
100,000	£5	Lucas, Joseph, Ltd.	9 10	9 1/2	9 1/2	9 1/2	9 1/2	%	Ap/Nv
100,000	£5	Cum. Pref.	5 5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	%	Mr/Sp
73,385	£1	New Hudson Cycle Co.	24/- sellers	24/6	14/6	28/-	24/6	%	Nov.
18,033	£1	Cum. Pref.	18/- 19/6	20/-	18/-	19/6	19/-	%	Mr/Nv
50,000	£1	Premier Cycle	3/6 4/-	5/-	3/-	5/6	3/9	%	Sept.
125,000	10/-	Cum. Pref.	7/3 sellers	8/9	6/9	8/6	7 1/4	%	Sept.
31,000	£1	Riley (Coventry), Ltd.	4/6 5/-	8/9	5/3	7 1/4	4/9	%	Nov.
200,000	£1	Rolls-Royce	44/- 44/6	47/3	36/3	48/6	44/6	%	Ju/Ju
138,662	£1	Rover	43/- 43/6	31/3	12/6	44/6	30/9	%	Nov.
100,000	£1	Rudge-Whitworth, Ltd.	18/- 19/-	24/-	15/-	25/3	17/9	%	Oct.
100,000	£5	6% Cum. Pref.	4 sellers	5 1/2	3 1/2	4	3 1/2	%	Oct.
41,621	£1	Siddeley-Deasy	10/- 11/-	10/6	6/-	11/-	8/10 1/2	%	Dec.
50,007	£1	Singer & Co., Ltd.	16/9 17/3	19/6	6/6	19 1/4	16/-	%	Oct.
70,000	£1	Star Engineering, Ltd.	11/- buyers	18/6	10/6	17/-	11/3	%	Mar.
69,157	£1	Cum. Pref.	16/- sellers	18/-	15 1/4	17/6	15/6	%	Mar.
87,550	£1	Stepney Wheel	29/9 sellers	35/-	30/-	32/6	29/6	%	Mr/Oc
120,000	£1	Sunbeam Motor Car	56/9 buyers	59/-	37/6	59/-	52/-	%	Nov.
30,000	£1	6% Cum. Pref.	22/- sellers	23/3	20 1/4	22/6	21/6	%	Ap/Nv
80,000	£1	Swift Cycle	18/6 19/-	21/0	13/-	24/-	19/9	%	Dec.
100,000	£1	6 1/2% Cum. Pref.	16/6 sellers	17/3	14/10 1/2	17/3	16/3	%	Ju/Dc
80,000	£1	Triumph Cycle	70/- 71/-	71/6	43/9	82/-	68/-	%	Nov.
50,000	£1	5% Cum. Par. Pref.	23/- sellers	23/6	20 7/8	24/6	21/6	%	Nov.

* Interim. a Final making 20% for year. b actual on account of arrears. c Including all arrears.
The feature of the week has been the strength of Rover shares, in which there has been considerable business transacted. They were dealt in as high as 44/6, but have reacted slightly from the best price on profit taking. Darracqs, New Hudsons, and Enfields have improved, and a small demand has sprung up for Swifts and Rudge-Whitworths. Triumphs, Birmingham Small Arms, Dunlop Rubbers, and the Parent Tyre issues are all easier.

"The Autocar" Diary.

- June. 22-29.—Austrian Alpine Tour.
- 28.—Notts A.C. Clipstone Speed Trials.
- 28.—Herts County A. and Ac.C. Annual Gynkhana.
- July. 5.—Yorkshire A.C. Speed Trials on Saltburn Sands.
- 5.—Mersey M.C. Colwyn Bay Open Speed Trials.
- 12.—Grand Prix Race. Picardie Circuit.
- 26.—Notts A.C. Inter-club Hill-climb for the Du Pre Cup.
- July. 28.—Grand Prix de France and Coupe de la Sarthe. Le Mans.
- August. 10.—Mont Ventoux Hill Climb.
- 24 and 25.—R.A.C. of Belgium Grand Prix Race.
- September. 21.—Coupe de l'Auto, Boulogne Circuit.
- Nov. 20-27.—Marine, Motor Boat and Stationary Engine Exhibition, Agriculture Hall, promoted by the S.M.M.T.

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