

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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Notes.

Some More Points for Next Year's Cars.

Recently we made a few suggestions with regard to next year's cars, which are now being considered and settled in experimental form by the makers. These suggested improvements were very small in themselves, but would save the owner a great deal of trouble and expense. They were that provision should always be made for the driving and fixing of the lighting dynamo in an accessible and well protected position, that provision should be made for the driving of a speedometer, and that the position of the steering wheel and pedals should be made central to the driver's seat, *i.e.*, moved to the right. Among other useful suggestions

which might be added before it is too late for it to be embodied is that the back axle should have jack tables upon it, so that it is not only easy to put the jack in position, but the tables should be of such length that the same jack should be suitable both for back and front axles without the use of packing in the form of blocks of wood or a brick or other similar device. By "jack tables" we mean a good square bearing depending from the axle in such a way that the jack head can be placed under it easily and a really firm holding thereby given for the jack. With the average back axle one has either to use a lot of packing and place the jack under the spring or to let the jack rise against one of the spring clamp ends. In either case a very rickety hold is given to the jack head. This did not matter very much in the days before detachable wheels, but nowadays, with detachable wheels almost universally employed, any insecurity of the car when jacked up is very serious indeed, as if it should fall off the jack at the moment when the wheel has been taken off to put on the spare wheel the consequence is almost sure to be disastrous, and almost irreparable, as the frame would be so badly racked that, quite apart from the damage which might be done to the axle, it is an open question whether the car would ever be lineable again unless it were taken all to pieces, the frame trued, and then the various units put back again—altogether an exceedingly costly business.

Inadequate Jacks and their Dangers.

Incidentally, too, it might be well to remind some makers, at any rate, that the jack sent out with the car should be equal to the work. In the last twelve months we have had two jacks supplied with different cars which collapsed under the weight of the car. Luckily, no harm was done, because we were merely running a trial trip of the jack, as we always do with a new car, but had a wheel been off at the time the consequence would not merely have been a broken jack.

It is true there are already a very few cars with jack tables fitted to the back axle, but they are at present quite the exception. In some cases the steel stamping on the axle casing which carries the brakes is so arranged that it affords an excellent hold for the jack, but in the vast majority of cases no provision is made at all, and we have found that the only safe way to go to work when changing a wheel is to carry two jacks: one a long one for getting the best hold possible either under the spring or spring pad, and the other a low one which we place under the centre of the differential and screw up just to touch, so that if the car should slip off the main jack it might not roll over. Another equally good plan is to carry, in addition to the long jack, a strong wooden trestle of just the right height to go under the back axle at the differential when the car is jacked up, but this takes up considerably more room than a little low jack. It should be borne in mind, too, that, however good the detachable wheel system on a particular car may be, its value, so far as rapidity of manipulation is con-

Notes.

cerned, is greatly discounted if one has to adopt all sorts of time-wasting expedients in packing up the jack, using two jacks, and generally making necessary preparations to ensure that the car shall not fall off the jack during the anxious moments when one wheel is off and before the spare wheel can be put into place.

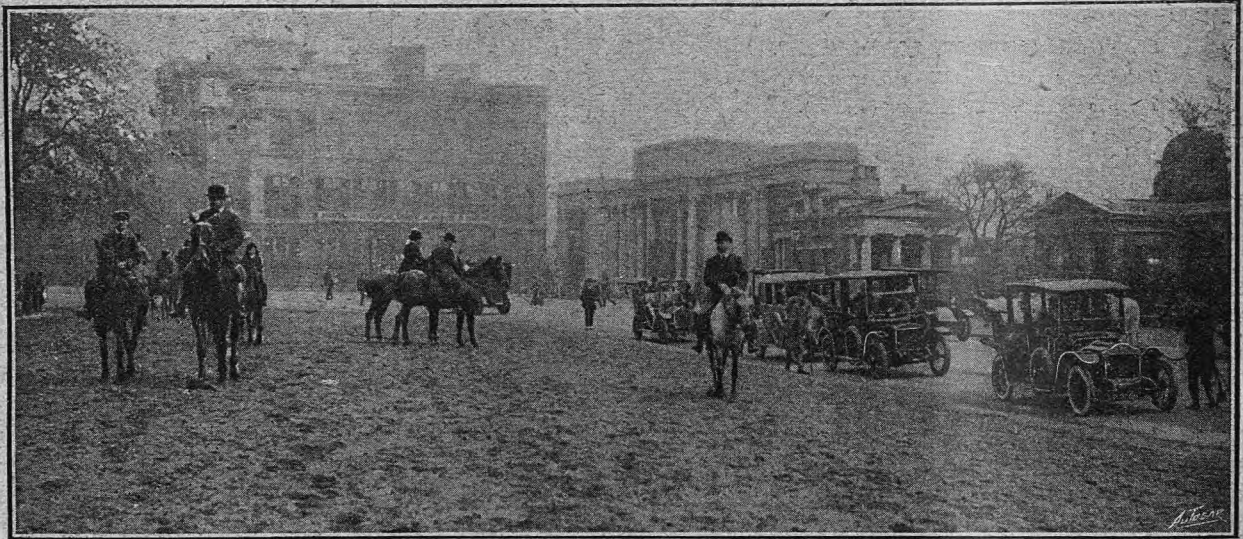
Another Simple Improvement.

Another simple improvement is in regard to the gear box and back axle; it is a feature found in very few existing cars, more often in the back axle than in the gear box, and very rarely indeed in both on the same car. It is simply that an oil filler should be so arranged that it also serves as an oil level. The filler simply takes the form of a projecting pipe bent upward with a large screw plug to close the open end. It is only necessary for the open end to be at the right level for this funnel to serve both as the oil filler and the oil level. With this simple fitting it is

Home-produced Fuel.

It would appear that, in the United States, despite the fact that petroleum is a native product, a bill has been introduced into Congress to subsidise the manufacture of alcohol for power and industrial purposes generally. It is proposed that a bonus of ninepence per gallon shall be paid to each distillery producing industrial alcohol up to 500 gallons per day. This subsidy applies only to spirit for industrial purposes, and any alcohol manufactory to be eligible for the subsidy must be producing this industrial spirit alone, and the refuse, when suitable, is to be given to livestock for food within a five-mile radius of the distillery. Presumably, the idea of this second proviso is to encourage the raising of livestock.

We believe that America has the finest and most useful Board of Agriculture in the world, and it is very certain that if the manufacture of industrial alcohol came within its purview, as we presume it would do,



Rotten Row, 1913.

impossible to make a mistake, because if the oil is not up to the level it can be seen at once and one cannot overfill, because the oil simply will not go in. The only proviso to make is that the orifice shall be at least one inch and a half in diameter, otherwise with the thickish oil that one uses for gear boxes and back axles it would be difficult to pour in the lubricant without spilling.

Both these improvements, as well as the three mentioned previously, cost almost nothing so long as they are incorporated in the design, but each of them saves the owner or his man a great deal of time. As we have said, none of them is novel, but we also believe we are right in saying that no car at present embodies all of them, though quite a number possess one or more. On most existing cars they can be fitted by scheming and a lot of expense, this particularly applying to the dynamo drive and to the back axle and gear box oil fillers.

It is about time some attention was given to the numerous culverts between Bicester and Aylesbury on Akeman Street. This road, which roughly follows the line of the old Roman road, has several very nasty culverts at the Bicester end; they are almost as bad as some of the Irish donkey-back bridges, and

it would be fostered to the full extent that would be possible. However, the great point about the bill is that it should be introduced in the United States, where till recently petrol has been so plentiful that it has been used in the most wasteful manner. It is true that since the consumption has increased so enormously the production of petrol has not proportionately increased, and the demand and supply are more or less balanced; indeed, the tendency is for prices to go up. Between Great Britain and petrol, thousands of miles of ocean transport or ocean and land transport combined have to be arranged before she can obtain a drop, and yet her Government will do nothing to make the use of alcohol fuel possible, still less does it consider the possibilities of encouraging the manufacture of industrial spirit. Probably the Oil Trusts or their nominees in Congress, if not in the Upper House, will wreck the American Bill, but the mere fact that it should have been introduced is significant.

give the occupants of any wheeled vehicle quite a severe shock if they are not on the look-out for them. We believe we are right in saying that these hillocks on the main road are only found in the Oxfordshire section; as one nears Aylesbury going east they disappear, and the bad ones are all at the Bicester end.

Useful Hints and Tips.

Leaky Tyre Valves.

THE owner-driver ponders the disadvantages of his chauffeurless condition never more than when he is inflating his tyres, and discovers that two or three of the tyre valves permit the air to whistle out almost as fast as the pump can inject it. The remedy is usually obvious. The pin stem of the valve plunger has an inexplicable habit of becoming bent. I never heard any explanation of this phenomenon, but beyond question a pin that has not been seen or handled for 2,000 miles will suddenly bend. When bent, the pin may jam so that its mushroom head fails to seal the valve; or it may jam at a gentler angle, and simply prevent the rubber head from bedding evenly into its seat; in either case the valve will leak, and pumping becomes valueless.

It is not easy to true a pin plunger, and its cost is infinitesimal; a spare should be immediately fitted. If the pin be straight and true and yet leak, the probability is that over-zealous screwing down of the small inner valve cap has ground a minute fragment of rubber off the washer, which reposes deep in the barrel of the cap. This fragment may have dropped into the valve and be jamming the pin, which has the same effect as a bent pin. The fragment should not be fished out with a pin, or the valve may be further damaged. It is best to remove the valve and screw its body (minus cap and plunger) on to the inflater. Two or three short, sudden strokes of the pump and the obstruction will fly out, after which the valve can be re-assembled and should prove airtight.—RUN-ABOUT.

Carburettor Adjustments and Carbonisation.

We have lately been experimenting with the carburettor of one of our cars in an endeavour to obtain greater power and more economical running. The latter we attained by various small adjustments and two alterations, one of which consisted of soldering a small thimble of gauze over the head of the main jet—for the carburettor in question is of the two-jet type, the smaller jet being merely used for starting and slow running. The effect of this thimble of gauze is more thoroughly to atomise the petrol leaving the jet. The other alteration was the cutting of a slot in the throttle barrel and a corresponding slot in the throttle casing so that as the throttle was opened these two slots gradually coincided and admitted more air, or, conversely, decreased the suction upon the jet.

It is not so much, however, the adjustments to the carburettor to which we wish to refer, but to what happened subsequently. After doing all we could to the carburettor the petrol consumption was vastly improved, the difference amounting to something like 20%, but we were very disappointed to find that the power had not increased in the slightest degree.

Shortly after, at the end of a long week-end run, we noticed that the engine was apparently carbonising badly, for the knocking or "pinking" arising from this cause was very noticeable even on comparatively slight gradients with the ignition only half advanced. At the first opportunity, therefore, we removed the cylinders, cleaned the combustion chambers, and scraped the piston heads. We made absolutely no adjustment to any part of the engine or chassis, but replaced the cylinders immediately after the internal parts had been cleaned.

The result was astonishing, for the power of the car, as observed on the first run after the cleaning, had

noticeably improved; in fact, hills were taken on top gear which on the previous week-ends had almost necessitated first speed, that is to say, the engine laboured on second. It is well-known, of course, that an engine badly carbonised usually develops less than its normal power, but the difference which was apparent on this first run after the cleaning could not wholly have been due to a clean engine, for we had on a previous occasion, before the carburettor adjustments were made, cleaned the cylinder heads and pistons, but with nothing like so good a result.

Apparently, therefore, the carburettor adjustments were not taken advantage of, as it were, by the engine on account of its dirty condition, although, as we have said, the petrol consumption was considerably improved.

The moral of this is that efforts to improve the power of an engine by carburettor adjustment must not always be considered futile if the desired result is not at once obtained, but that before the adjustments are condemned one should make sure that cylinders are quite free from carbon deposit. In this case it would appear that the superior carburation obtained by the adjustments merely resulted in a harsher knock and not in greater power, and it was not until the cause of the knocking had been removed that the improved carburation could be taken advantage of.

Clutch Noises.

At first thought it seems difficult to realise that any noise can come from a clutch, but it is fairly common experience to note grating or even squeaking noises during declutching or when the clutch is being slipped. The general cause of such noises is lack of lubrication of the clutch fork or its equivalent.

Ordinarily, the clutch is withdrawn by a fork which is connected to the clutch pedal, acting on or through a ball bearing. When no ball bearing is used it is obvious that noise is sure to occur if there be no lubricant on the wearing surfaces. If a ball bearing be employed noise will also occur if there be much a shake in the bearing. Most clutch forks are nowadays provided with grease lubricators, and these lubricators should be regularly screwed down and refilled when required.

Sometimes the clutch fork carries rollers or discs, and when the clutch is disengaged these discs rotate at very high speeds and throw off any lubricant which may have been put upon them. The result may be considerable noise, as the bearing surface soon becomes dry. It is best to remove these rollers and fit square blocks of vulcanite or some such material, and take care to lubricate the blocks from time to time.

Another cause of noise is due to lack of lubrication of the main clutch bearing. When the engine is running with the clutch out it is obvious that the flywheel rotates in relation to the clutch. There is consequently a bearing in the clutch which comes into operation at such time; this bearing is very much out of sight, and consequently apt to be out of the mind of the driver. Hence, this important but unfortunate bearing is frequently neglected, and so wears comparatively quickly, generally without any noticeable noise, although sometimes squeaks are heard.

If the clutch leather be worn down considerably, the heads of the rivets may be exposed, and may cause scraping noises when the clutch is being slipped. Also the metal face of the clutch may touch the flywheel for the same reason.—W.

Open Speed Trials at Colwyn Bay.

To be Organised by the Mersey Motor Club on July 5th.

THE Mersey (Liverpool) Motor Club have been granted permission to use the Promenade at Colwyn Bay, North Wales, for a series of open speed trials, to be held on Saturday, July 5th. Both motor car and motor cycle events will be run off and permits have been obtained from the R.A.C. and the A.C.U. The course selected is absolutely straight, and, we are informed, has an ideal surface. It is sufficiently long to permit of attempts being made on the flying half-mile and flying kilometre records, in addition to standing start and handicap events. Every precaution will be taken to safeguard the public by way of barricading, etc.

Unfortunately, the permit from the R.A.C. is only for cars with engines up to 2,000 c.c. While this capacity will admit of four-cylinder engines up to 69 x 130 mm., it will be a pity if the permit cannot be extended so as to allow cars up to 2,300 c.c. to compete, for this capacity would immediately widen the possible range of entries to a considerable extent, as it would include cars with engines of 75 x 130 mm.,

of which there are a large number in use, and other combinations of bore and stroke.

Special classes are being arranged for strictly touring cars, so as to encourage amateur drivers to take part in the meeting.

Under the 2,000 c.c. limit about 108 different models of cars on the British market are eligible, including such well known competition cars as the 11.9 h.p. Arrol-Johnston, 12-15 h.p. Calthorpe, 12-15 h.p. D.F.P., 11 h.p. Humber, Baby Mathis, 10-12 h.p. Métallurgique, 10 h.p. Singer, 13.9 h.p. Stoewer, 12-14 h.p. Vinot, and others.

Should, however, the 2,300 c.c. limit be allowed by the R.A.C., fifty additional cars would be eligible, which would include such cars as the 16-25 h.p. Alpine model Austro-Daimler, the 15.8 h.p. Brenna, the 14 h.p. Humber, the 12-16 h.p. Riley, the 12 h.p. Rover, and the 12-16 h.p. Vermorel.

Full particulars with regard to entries and other details can be obtained from the hon. secretary, Mr. S. W. Carty, 5, Redcross Street, Liverpool.

A Three Hundred Hour Engine Test.

An American Demonstration Run. A Feeble Exhibition.

AN event which has been attracting a good deal of attention in American motor circles lately is the recently concluded laboratory test by the Automobile Club of America of a 4 in. x 5½ in. (102 x 139.7 mm.) six-cylinder poppet valve Packard engine. According to the rules of the test the engine was to accomplish a 300 hour run at more than 70% of its best brake horse-power. This test the engine successfully accomplished, but analysis of the figures of the A.C.A.'s report shows that the performance was not so remarkable as at first sight appears. For instance, the best recorded h.p. that the engine gave was 44 h.p. at 1,533 r.p.m., which for an engine of approximately 6,864 c.c. cannot be considered good, as the horse-power of an engine of these dimensions according to the Dendy Marshall formula of $\frac{D^2 S N R}{12,000}$ should be 67.45 h.p.

The test was run at an average of 35.7 h.p. at 1,208 r.p.m. Here, again, the showing is poor, as by the same formula the engine should have shown 53.152 h.p. at 1,208 r.p.m.

With regard to petrol consumption, this worked out at 1.072 pints per brake horse-power hour, which is

about double what is usually considered a fairly good consumption, *i.e.*, .6 pint per horse-power hour. A further remarkable figure is the consumption of lubricating oil given as 1.07 gallons per hour, which, taken in conjunction with the standard gear ratio of the chassis from which the engine was taken, is equivalent to a consumption of 1.07 gallons of lubricating oil for 37 miles. During the test it is only fair to state that the adjustments made were trivial, and that only one stop of 47s. was made to rectify an air lock in the petrol feed pipe. But then, we should not expect trouble with such a small output of power from an engine of these dimensions.

Compared with the Daimler sleeve valve test at Coventry four years ago under the official observation of the Royal Automobile Club, the Packard performance takes rank as a rest cure. This is borne out by the volumetric efficiencies of the two Daimler engines and the Packard, which are as follow: Packard 6,864 c.c., 35.7 h.p. giving 1 h.p. per 192.2 c.c.; 38 Daimler 6,272 c.c., 54.3 h.p. giving 1 h.p. per 115.5 c.c.; and the 22 Daimler 3,764 c.c., 38.83 h.p. giving 1 h.p. per 96.9 c.c.; the volumetric efficiency of the last engine being almost double that of the Packard.

The Proposed New Western Outlet from London.

The Great West Road Scheme, in connection with which the Roads Improvement Association has been conducting an educational campaign during the past eighteen months, has now advanced a big step. At the meeting of the Middlesex County Council on the 29th ult., the county council passed a resolution intimating its preparedness to consider favourably the construction of a western approach road through Middlesex commencing at Kew Bridge and passing through the northern parts of Brentford, Heston, and Isleworth, and joining the main Bath Road at a point west of Hounslow Barracks Station. The cost of the scheme is approximately £452,000. This figure is a preliminary estimate, and may be revised when the

various details are exhaustively drawn up. The Road Board have agreed to contribute 75 per cent. of the total cost of carrying out the scheme. The Highways Committee have now been authorised to carry on the necessary negotiations with the Road Board and the other authorities concerned, and the County Surveyor has been authorised to prepare the necessary plans and estimates. Other portions of the original scheme, *i.e.* from Cromwell Road to Kew Bridge, will probably not be undertaken, for practically the whole of the remainder lies within the area of the L.C.C., whose attitude is anything but favourable. A plan showing the original and the modified schemes was given in *The Autocar* of November 2nd, 1912.

A Spring Tour in France.

By Owen John.

(Continued from page 975.)

NEXT we came into dusty, windy, trippery, lovely Avignon, where, at the garage of M. Mathieu, outside the old city walls, we found that there was nothing the matter with the clutch except my ignorance as to how it should be adjusted. But, as it took us some hours to find this out, we decided to abide, and so once again we visited the beautiful city, looked from its lofty gardens across the Rhone to lovely Villeneuve and lonely Ventoux, and tried to make out in the summer haze the distant outlines of the Alps. Then the wind got up—it always blows at Avignon—and so we inspected the shops, dined at the Hotel Crillon, and wept with a thousand natives at the nearest *cinema*.



Avignon may suffer from being too popular; yet nobody should miss it, because it seems to be almost as Italian as Calais is Belgian, or Villefranche-de-Confient is Spanish.

The next day being Sunday, we left, pointing S.E. for Aix-en-Provence, and because it was Sunday every car that existed in those parts was out as well. But the road was excellent—far better all the way than it used to be—and being a fast car we only got the dust of those we met, and gave as good as we got. At the start my clutch went to the other extreme and slipped.

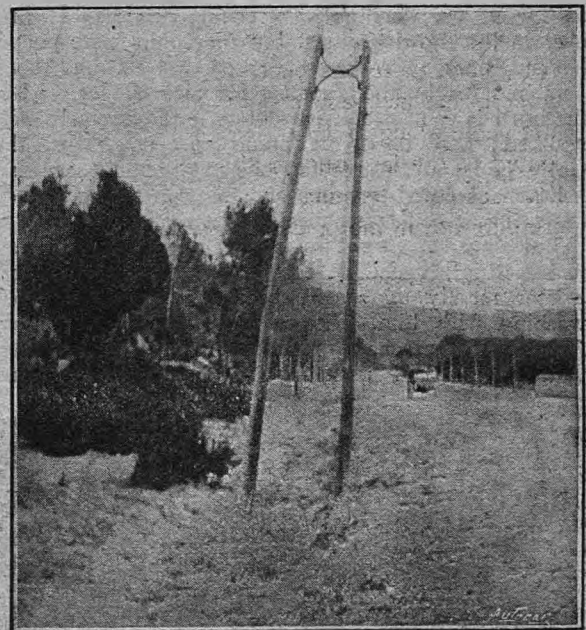
While I was tinkering with it—I might remark that I fell through once into the tray by breaking a bottom board—up came two gendarmes and demanded my papers. I gave them all I had—speaking to them in English, my French at that moment was totally absent—and they looked at a German one, an English one, an old French one, my new one, and the one with my photograph on it, rubbed their chins, nodded their heads, and departed. Considering that I had my coat off, was dirty and dishevelled, and was wrestling with an interior screw under the floorboards, I was annoyed, and I have since wondered if my spruce

London photograph bore any resemblance to the heated figure that gave it to them.

But after this all went well, the sun shone, there were swallows, square miles of gorse, of rosemary, of yellow broom, and an infinite view of things beautiful. The difficulty lay in not always wanting to stop and loaf. The hot scent of the pines was perfection, there were grasshoppers, wild irises, wild orchids, and we had all the countryside to ourselves. We were at the back of the line of mountains called the "Chaines des Maures," which make Marseilles, Toulon, and Hyères a little Riviera of their own. Far ahead we could see the Esterels, and just between the two ranges we could see the true Côte d'Azur itself, where the red rocks dipped down into the bluest Mediterranean.

It was a day to linger, and we lingered. So idly through Brignolles and Le Luc, and just beyond the latter village we turned south for the coast at Ste. Maxime, intending to stay the night at the latter place. The by-road was even more enchanting than the main. For miles our track lay over soft brown dust through pine and cork forests, then it began to climb up and up by pleasant well-engineered windings, till at last it reached the top at the village of La Garde Freinet.

According to the map we should have held on to Cogolin and turned sharp there for Ste. Maxime, but here I had the bad fortune to discover an A.C.F. signpost labelled Ste. Maxime direct. Therefore—it



The road to Aix.

being sunset—we took it, and if there is another more precipitous, dark, twisting, narrow, awkward, ditch-ridden, sudden, acute-angled road in this world I hope I may never come across it. At most corners we had to reverse twice, the precipice-side bank was only earth, there were loose rocks on it in places, odd bits of timber lay haphazard about, and, as I have before

A Spring Tour in France.

intimated, it was getting dark. I have seen Spanish pictures of such places, and in "Carmen" and "Faust" there are scenes to the same effect, but the artists responsible never contemplated bringing auto-

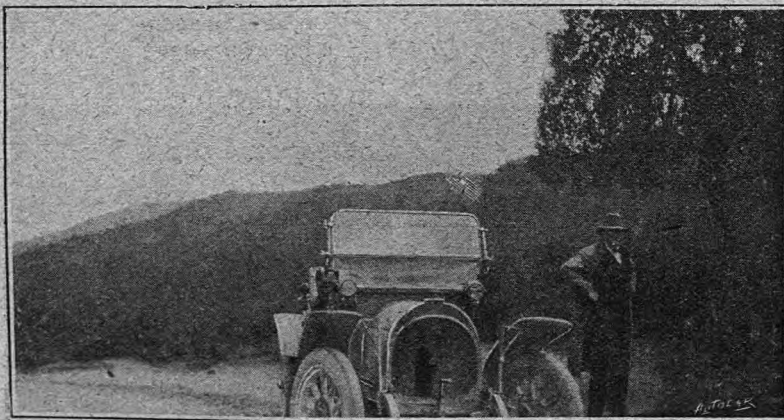


On the left, the author as shown by the photograph on his French driving licence. On the right, the author as seen by two gendarmes when interrupted in the course of making a clutch adjustment.

mobiles into them. But that we did and came out the other end whole was a happy event.

It was nearly dark when at last we reached civilisation in a village called Plan de la Tour. Six miles of a heavenly road beside a pebbly river-bed separated us from the haven where we would be, and in less than no time we burst upon the blue Mediterranean, lapping against the sea wall beneath wide palms and all the foliage of the tropics. The sight of prickly pears and aloes and palms has an intoxicating effect on me when I first see them after a long absence, and I invariably feel exactly as stout Cortez must have felt in Darien. Whereupon we sought the Grand Hotel Ste. Maxime—and found ourselves amongst the most English of the English. It was a shock, but we dug out our "glad rags," and remembered our manners as far as we were able. Evening service was just over in the drawing room, but the chairs were not to be put back, because a French concert had been arranged for by the *direction* for after-dinner. But the hotel is comfortable, moderate, and extremely well situated; here or at its brand new neighbour, the Golfe Hotel at Beauvallon, one might find peace and a haven of rest for weeks at a time in the society of one's fellow countrymen and women.

But since, as Sterne remarked, one does not travel to see Englishmen, we moved on, bidding the proprietor merely *au revoir*, because we had left our washing with him. So to Fréjus, along the very frontier of the sea, through pine woods all the way, with glimpses of most fascinating little coves and

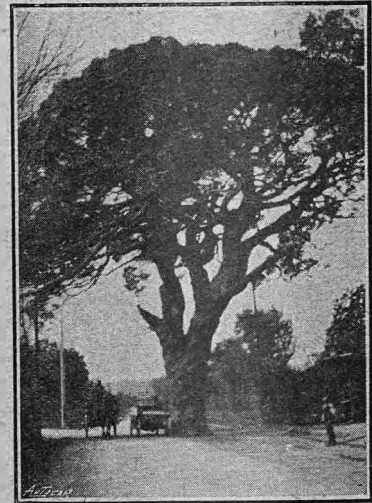


Our smart (?) turn-out for the Riviera.

villas framed in flowers. The road is narrow—until one tries its continuation, the Corniche of the Esterels, between St. Raphael and La Napoule.

At Fréjus the river Argens separates the two mountain ranges, and for a few miles each side of it the scenery is dull and flat. But although Fréjus itself is ordinary and appears uninteresting, yet it has good Roman remains and any number of them. At St. Raphael one picks up the sea and modern civilisation again: for a short mile or so one might be at Cap Martin or Beaulieu. The hotels seem delightful and better situated than any in the more fashionable part of the Riviera. Then come pine woods again and more villas, after which is fifteen miles of nothing less than pure torture.

For a car bound westwards it is not so bad, but for one going towards Cannes the exquisite Corniche Road, cut out of the side of the cliff, with never a straight hundred yards, is trick-driving pure and simple. Every car one passes—and cars are innumerable—takes, of course, the inside berth, and the other has perforce to choose between scraping axles or leaning out over the sea. This, at least, is what it feels like; probably there is ample room. Sometimes comes a tourist *char-à-banc*, which seems to block the whole road, but more dangerous still is the driver, like myself, to whom the road with its perfect scenery is new, and who is quite unacquainted with its many and hidden corners. But the journey is worth it, if only for the colours and the contrasts, though at such places as where a single bridge is shared by the railway and the road one feels inclined to despair of getting through without a disaster. How dangerous a job it is can be best realised by noticing with what care every chauffeur goes, and to those who know the usual methods of driving in France this signifies much indeed.



A road impediment; Bertand's pine, near Cogolin.

When about fifteen miles east of Fréjus I stopped for petrol. Fortunately the innkeeper, outside whose little place the tell-tale blue boxes stood, had but one *bidon* left, for which I had to pay some three francs. Three miles farther on I found out the reason. We were still within the *octroi* of S. Raphael, for between La Napoule—where the famous golf links are—and Cannes it was down as low as 2.45, with benzole at an even lower rate still.

From the links into Cannes is a dull and ugly road, and it is not until one gets all of a sudden on to the sea front by the great white

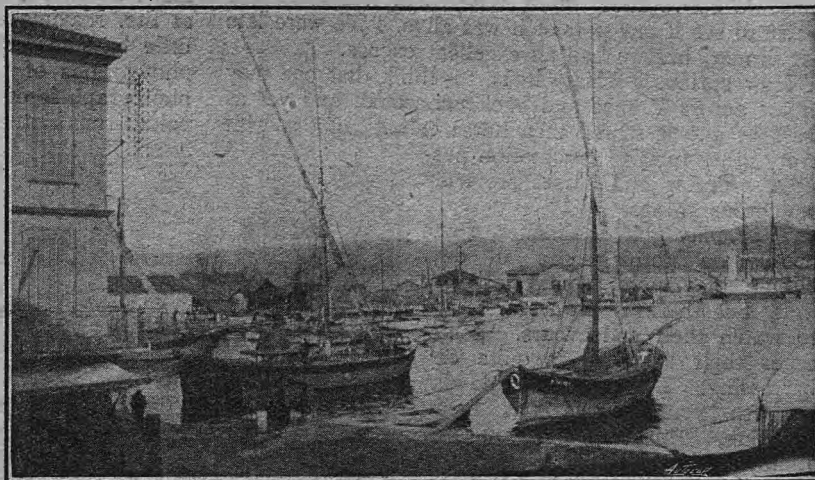
Casino and close to the big yachts that one realises one has arrived.

Being of a careless disposition, I had not engaged rooms anywhere—indeed our intention had been to stay at some little place along that fearful road I have described, but one trial of it had promptly settled that idea—so we pulled up at the nearest hotel to where we stopped and asked for accommodation. It was the Hotel Splendid, and we were in luck. Not only because there was accommodation for us, but also, because it happens to be one of the nicest and most "French" hotels in all the town. Here there is no "swank"—if I may use the expression—and no pretence that the hotel is anything else but an hotel. While, of course, it is not so inexpensive as the usual hotels one stops at on tour in France, it is moderate in all things compared to far less comfortable places at home and elsewhere. Added to which the cooking is perfect, and there are not the usual dozen servants waiting on departure for their tips.

We lingered a little at Cannes, and our expenses there were not touring expenses. For instance, there is the Casino, and, again, there are Cannes shops. But Cannes is, and always has been, delightful to me, and though the main part of its season's inhabitants are English, they are the best English, and behave accordingly. The Casino has improved Cannes, and the *baccarat*—I spell it with one "c," which is correct, I believe—is worth watching, even if one be strong-minded enough to refrain from playing. Here one may study clothes—female clothes, that is—and wonder.

The old idea that at public places abroad evening dresses are incorrect is exploded. Now they are *de*

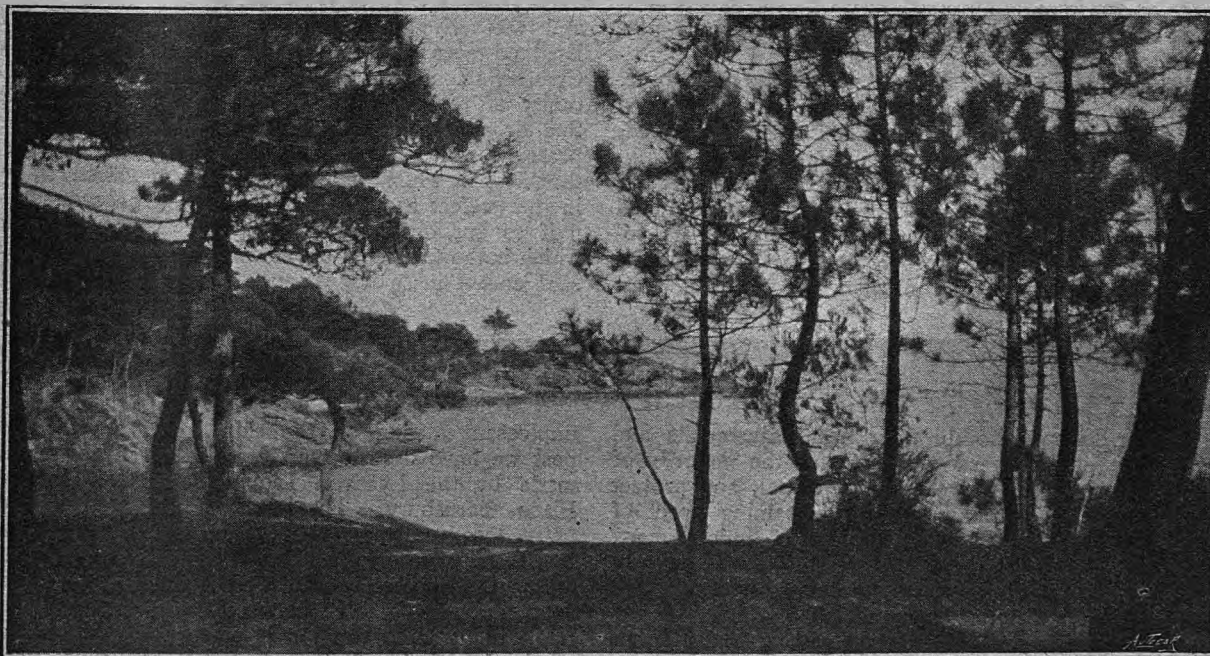
A Spring Tour in France.
rigueur, and with them are invariably worn the weirdest things in head coverings—one cannot say hats: One lady, nick-named the Mauretania—there was also a Lusitania—wore on occasions a bright yellow and red turban, while others wore dead



A view of St. Tropez.

macaws, translucent sunshades, Catherine wheels of ospreys, jewelled sashes, tulle lampshades, and every other kind of monstrosity imaginable and unimaginable. With gowns to match. The restaurant attached is not inexpensive, but the crowning spectacle is the bar—or refreshment room—about midnight, when British and foreign respectability—and otherwise—is to be seen perched on high stools sucking orangeade and other drinks through long straws. This is life—high life.

We suffered our only disaster at Cannes. Being about to dine out one night we summoned a cab and got into it. In front of it was a stationary motor, and, as our *cocher* pulled out to clear it, a tramcar came up behind us and sat on the back part of our little *fiacre*.



One of the tulle beaches as seen from the Cannes-Toulon road.

A Spring Tour in France.

The impulse started off the empty motor down the road, and, when we could, we got out and took another cab. I have never heard such a row as everyone else made, but we were silent, and as we left we saw half the population endeavouring to lift the tram off our late conveyance while the driver examined the horse to see if any part of it was alive. We were late for dinner, but we had an excellent excuse.

How curious a thing it is to think that one may motor across France and back unharmed, and yet as soon as one is seated in a horse cab it collides with every other form of locomotion possible. Trams and horses are truly dangerous things.

They play golf at Cannes, some people do nothing else all day. Others play polo, some not very well, but there is always a crowd to watch their endeavours. Sometimes their approval is quite embarrassing. For instance, one day a fresh young voice was heard shouting, "Mother! did you see? Jimmy's hit the ball!" Anyhow, it is an excellent practice, and one can read all about it afterwards in the *New York Herald* and the *Paris Daily Mail*.

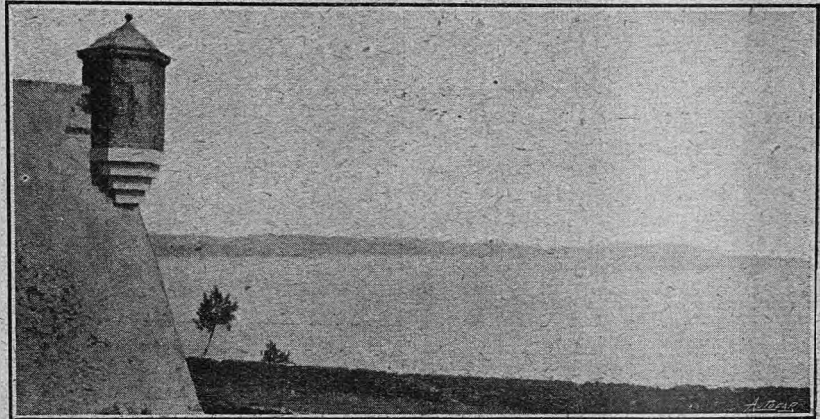
Another cheap excursion is to go over to "Monte." I am of opinion that the railway is the best method; the road and they that motor thereon are fearful together. "Society" at "Monte" centres round the bars, and the leaders of fashion are the barmen. There are others, however.

When we deemed our washing was ready for us at Ste. Maxime we left Cannes, returning as far as la Napoule on the same road we had entered by. After the golf links—all mimosa trees and limousines—we took the usual Esterel road, and let me remark here how very good it is now in surface. There can be few more beautiful highways in the world, and one looks back at the blue sea framed in dark green trees with the red rocks dipping into it; and the even more perfect horizon dotted with white sails.

There are some places one can get romantic over. The view from the Esterels on a fine morning is one of them. All around are olives and quaint, stripped, cork trees, there are tall bushes of pale rosemary, white Mediterranean heath, and feathery yellow mimosa: below the road run sparkling torrents, and above the ruddy mountains stand decked with gleaming pines. We have come from deep lush meadows and palm trees and peach blossom, but what the forest holds is even better.

Owner-drivers who do their own adjustments and small repairs make, we are sure, for the majority of them, stern efforts to wear gloves withal, and protect their hands from the unpleasant ingraining effect of dirty grease. But there comes a time, indeed many times to us, when gloves, by reason of the way in which they blunt the touch, become anathema and are torn off in a pet. Then the job of going over the car completed, the problem of getting one's hands back into a presentable condition remains. Motor soaps are, some of them, more or less effective, but the best leave traces of the grime, and generally an

One might easily wax poetic—if inclined that way—over the scenery that one passes through for more than a dozen miles, except that the divine *afflatus* is a bad state of mind for motor driving. Wherefore, perhaps, we did well to arrive again at Fréjus and make our way along the road we had come by as far as Ste. Maxime. We lunched at one of the hundred little bays that scar this perfect coast, and we took photographs of it, although we could realise that a photograph is of no value whatever in a place where colour runs riot, and, without it, all is a mockery. Yet



The watch tower of St. Tropez. Nice is in the distance with the Alpes Maritimes (invisible to the camera) far behind.

we tried our best, and afterwards climbed out on the rocks and generally behaved in a youthful manner.

Then we resumed and—by way of an interlude—experienced the sensation of a magneto jumping off its plate. It was an automatically-self-advancing-and-retarding Bosch magneto, and it says something for its hardihood that it survived being fished out of the tray and put back in every possible wrong way until we found the right one.

This happened in Ste. Maxime, and here I met the local garage proprietor, who sold us petrol and oil and talked English to our amazement with a North of England accent. He told us he had worked at Crossley's some five years ago, and I take this opportunity of recording that there seems very little Mr. Sue does not know about cars and magnetos. His presence saved me getting even more hot and dirty than I was. Here we also found our *blanchisserie*, and in the perfect evening light we passed on around the gulf to our destined haven at St. Tropez, a place which is the first ideal comic opera seaport I have ever seen except in Spain, Cornwall, and the pantomimes.

(To be continued.)

A Real Motor Soap.

unpleasant feeling on the skin. For several years past we have used a fluid soap called Lyxavon, and made by the Lyxavon Liquid Soap Co., Prospect Place, Barnsbury. The effect of this stuff is really marvellous, and the reluctance to tackle a greasy job, by reason of the objectionable condition in which it leaves the hands, is quite absent when a tin of this soap is available. No matter how grimed and awful one's digits look, the job is persevered with because of the knowledge that one's hands can subsequently be really cleansed of all traces of it, even with only cold water available.

Springing Systems.

A Review of Some Present Day Forms of Car Suspension for Front and Rear Axles, and their Merits or Demerits. By W. G. Aston.

It is sometimes said, and with a certain amount of justice, that most cars of to-day are alike except for small detail differences which the designers seize upon in order to exhibit their characteristic individualities. To the man in the street this statement contains a large amount of truth, but those who take more interest in technical affairs realise that quite frequently small details in construction are the outward and visible signs of a wide difference in principle. So far as the general lay-out of a chassis is concerned, although we have not reached any stage that is entitled to be called finality, we have certainly got to one in which it is possible to say that the general arrangement of nearly all cars is alike. For instance, engines and gear boxes of practically all cars exhibit a strong family likeness, and if one had them removed from the chassis and all sorts of makes put together, it would be a clever man who could call each one by its right name. Braking systems are also "much of a muchness," with one or two notable exceptions.

There are, however, two very important features of car design in which a very great disparity of opinion is manifest, and it is almost a case of "*Quot homines, tot sententia.*" These are the suspension and the transmission. With regard to the former, the present article has for its object to show what a large number of different principles are employed in prominent cars at the present day. It is intended not to be a disquisition on the theory of springing, but simply a review of current practice. On account of the close connection, however, between suspension and transmission, it has been found inadvisable to attempt to separate the two, and therefore in this article both systems are reviewed together.

Front Axle Suspension.

The suspension of the front part of the chassis will be considered first. In general, it is not unfair to say that the importance of the front springs is grossly under-rated by most manufacturers. True, they are not so relatively important as the back, since the centre of gravity of the passengers is far nearer the rear wheels than the front, but, at the same time, there is no reason why so much of the attention in the consideration of suspension should be devoted to the rear and so little to the front. The front springs may be considered to be of more importance to the driver than to the passengers, on account of the very pronounced effect which they have upon the steering of the car. If it is important

that the back tyres should be kept in constant contact with the road surface, it is equally necessary that the same should apply to the front tyres.

There are practically no steering gears which are really irreversible. They may be actually so, or nearly so, when the car is standing stationary, but in a state of vibration, such as is caused by a rapid succession of small road shocks transmitted through the front wheels, the apparent irreversibility frequently vanishes. The same phenomenon is observable on ships in which the rudder is controlled through a worm and wheel device similar to that used in the steering box of a car, although the pitch of the worm is very much smaller than is used on any car. It is found that the rudder not only can, but does, manage to reverse the action of steering, although if the boat were in dry dock it is quite probable that, however hard one tried to push the rudder over, the gear would be found irreversible. It very frequently happens that one front tyre is completely out of contact with the road surface, whilst the other strikes a small obstacle which tends to deflect it, or possibly causes it also to leave the road surface. In this case steering becomes a very difficult matter to perform to a nicety, and, so far as the writer's knowledge goes, there are very few cars indeed at the present day which steer as well at a high speed over rough roads as they do at a low speed, unless suitable shock absorbers are fitted. Yet passengers in the same car will enjoy just as much comfort in the one circumstance as in the other.

The chief reason why the front springs are generally only moderate instead of being good is that it is not possible to make them of sufficient length. For equal roads, the longer the spring the greater the flexibility or range of deflection through which it can pass. Consequently, since front springs are inclined to be short, they show a tendency to be rather hard and generally too lively. Where a longitudinal half elliptic spring is used, it is not easy to see how this

difficulty can be overcome, as one does not want to have the dumb iron extensions of the channel steel frame projecting a considerable distance in front of the periphery of the wheels, and, this being so, it is rather surprising that more attention has not been given by motor car manufacturers to the claims of the cantilever or Lanchester type of front spring (shown in fig. 1), which, of course, demands no dumb iron in the usual sense of the term.

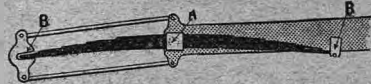


Fig. 1.—The Lanchester or cantilever type front spring.
A, trunnion. B B, slides.



Fig. 2.—The Waverley compound quarter-elliptic front spring.

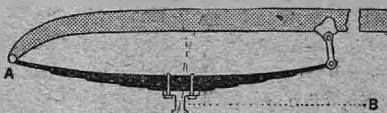


Fig. 3.—The type of half-elliptic front spring extensively used.

A is the approximate centre of the arc through which the axle oscillates.
B is the centre of the arc through which the steering rod oscillates.

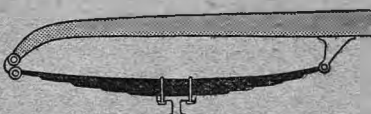


Fig. 4.—A De Dion front spring with a shackle at the forward end.

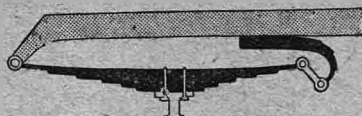


Fig. 5.—The threequarter elliptic front spring used on the London General omnibuses.

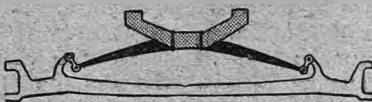


Fig. 6.—The transverse spring on the front axle of the Ford car.

Springing Systems.

The types of spring commonly used for the front axle are five in number:

- (1.) The quarter elliptic or grasshopper.
- (2.) The half elliptic.
- (3.) The threequarter elliptic.
- (4.) The transverse.
- (5.) The helical.

Of these the half elliptic enjoys an immense preponderance numerically. Whether it will continue to do so, however, is open to some doubt, especially as the Americans have shown how serviceable and satisfactory a proper design of transverse spring can be.

The Lanchester or cantilever type is shown in fig. 1. Ball jointed radius rods are arranged above and below the spring, so that the axle has a parallel motion. (See figs. 12 and 13.)

Fig. 2 illustrates the Waverley (old type), which employs two quarter elliptic springs, and therefore requires no slides nor shackles. The demand for a larger body space on this car has now led to the use of half elliptic springs.

Fig. 3 shows the standard type of half elliptic spring as used on at least 90% of cars. The spring is eyed to the dumb iron in front and shackled behind, and, as will be perceived, the axle, therefore, under road shock oscillates up and down in a small arc approximately represented by a part of a circle described about the point A. Now, the steering thrust rod, which connects the steering box crank to the stub axle pivot, is centred at the point B, and in consequence of this the forward end of the connecting rod tends to swing in a circle about B. If, therefore, the spring is deflected, lost motion must occur at some point, and as both A and B may be considered immovable, the deflection of the spring is accompanied by the steering wheels turning slightly one way or the other on their pivots. As a rule, the amount of wheel deflection which thus takes place is practically negligible.

But it may be cited as one reason at least why the front springs should be made on the hard side. In the older De Dion cars the arrangement of the front spring is the exact reverse of that shown in fig. 3, as it is eyed at its rear end and shackled at its front. In this case, therefore, the amount of lost motion and consequent deflection of the front wheels was very much slighter than in the previous case, since the two circles had their centres much closer together. Consequently, the two arcs were of similar, though not necessarily coincident, curvature. (Fig. 4.)

In the Argyll car, the employment of the front wheel brakes renders the use of a torque rod to take the thrust of these brakes desirable. As this torque

rod also serves the purpose of a radius rod, the springs are practically shackled at both ends. In point of fact, the front shackle takes the form of a slide which answers the same purpose and presents a much neater appearance.

The threequarter elliptic front spring (fig. 5) is, in so far as the writer is aware, employed on no pleasure cars at all, but, as it is used on many thousands of the 'buses belonging to the London General Omnibus Co., it is at least worthy of illustration. There does not appear to be any reason whatever why this form of spring should not be more largely used, as it possesses certain distinct advantages. The small quarter elliptic might be modified to form practically a subsidiary shock absorber, considerably weaker than the lower half of the spring; the front portion of the latter would therefore simply serve as a radius rod.

Although the transverse type of spring is fitted nowadays to few but American cars, it was used in the very earliest days. The 70 h.p. Panhard on which Jarrott won the Circuit des Ardennes was one of the more notable machines that employed this form of suspension. Today it is principally associated with the Ford car, the arrangement of the spring in this case being shown in fig. 6.

The front axle is held in position by two converging radius rods, which meet at a point about the centre of the chassis, where they terminate in a ball joint. By this means the axle is prevented from sliding from side to side, as the double shackling of the spring would otherwise allow it to do. By fixing the pivot of the radius rod at or about the normal centre of the steering connecting bar, the swivelling tendency of the front wheels in passing over bad roads, as previously mentioned, is almost entirely done away with.

In the Sizaire-Naudin no front axle of the ordinary type is used; instead, the stub axles are carried on vertical slides in the form of boxes, which abut against the extremities of the spring, as shown in the sketch fig. 7.

In light cars, the small weight of the vehicle makes the use of undamped helical springs feasible, but in larger-sized cars, although they were once fairly often used, they are very much the exception nowadays.

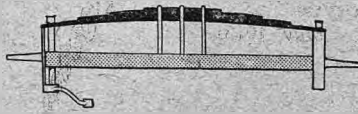


Fig. 7.—The Sizaire-Naudin system of front springing.

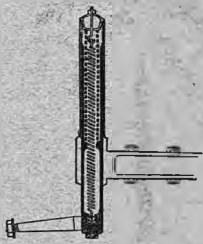


Fig. 8.—The H.L. helical spring suspension.



Fig. 9.—The Calthorpe quarter-elliptic rear spring.



Fig. 10.—The G.W.K. quarter-elliptic rear spring.



Fig. 11.—The Waverley rear spring.

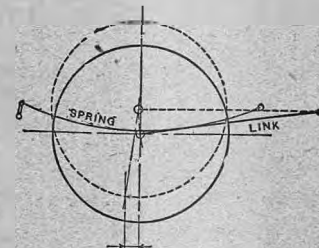


Fig. 12.—A diagram showing the movement of a wheel caused when the axle is thrown upwards with the ordinary type of rear spring.

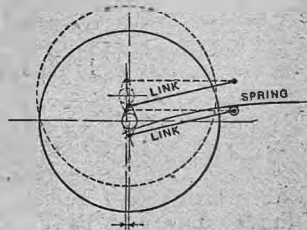


Fig. 13.—Movement of the wheel when the axle is thrown upwards in the Lanchester system of springing with parallel radius rods.

owing, of course, to the fact that, if undamped, these springs will merely act as "bouncers." In the H.L. car, which made its bow to the British public at the last Olympia show, helical springs are used, the arrangement being shown in the sketch fig. 8. In this case the springs are two in number, one being of the compression type and one of the tension type. They therefore tend to work against each other, and in this manner the bouncing tendency, if not avoided, is at least mitigated.

Rear Springing.

The types of rear springs in use are as follows:

- (1.) Quarter elliptic or "grasshopper."
- (2.) Compound flat.
- (3.) Half elliptic.
- (4.) Threequarter elliptic.
- (5.) Full elliptic.
- (6.) Transverse.
- (7.) Combined longitudinal and transverse.

Quarter elliptic springs are apparently growing in popularity. One instance of their use is to be found in the Calthorpe (fig. 9). In this case the spring, in addition to its suspensory functions, takes the drive and acts as a radius rod. The axle is free to revolve in the rear eye of the spring, and the torque is taken by the tube which encloses the propeller-shaft.

On the G.W.K. (fig. 10) a somewhat similar arrangement is used, but the axle is rigidly fixed to the spring, which, therefore, takes both the torque and the drive. It is a moot point as to whether the principle of making the spring serve any other purpose but that of providing suspension is good practice; theoretically it is not so. Thus, a radius rod should be a perfectly rigid member, which a spring is not. Again, if used as a torque rod the spring is subjected to stresses quite different from those imposed by carrying a road vehicle. In actual practice, however, this principle of doubling or trebling the duties of the spring works perfectly well.

In the Waverley car (fig. 11), as in the G.W.K., the springs again are used as torque and radius rods, but there is an important difference between these two systems. From figs. 9 and 10 it will be realised that the axle, under road shock, moves in an arc approximately part of a circle described about the point of anchorage of the spring. In the Waverley the axle has a parallel motion.

The importance of this point is shown in figs. 12 and 13, which refer particularly to the Lanchester spring system. The former shows what happens to the tyre on the road in the ordinary suspension, and the latter what happens when a parallel suspension is used.

Springing Systems.

It should be pointed out that the parallel principle owes its inception to the Lanchester car, on the earliest models of which it was incorporated. Fig. 12 shows how, if the spring be deflected upwards, the point of contact between the road and the wheel changes, and, in consequence, a slip between the tyre and the road surface occurs. This slip, it may be observed, is equal to about half the distance which the axle moves upwards (and, of course, depends on the length of the radius rod or link). In the parallel system the axle, though moved upwards, does not tend to turn on its own axis, and consequently the amount of deflection at the point of contact with the road is very much smaller. This is shown in fig. 13. It need hardly be said that the effect of this system upon the tyre wear is exceedingly beneficial, for tyre slip must always result in unduly rapid wear.

The original Lanchester system, which may be described quite fairly as the pioneer of good springing, and is one of the best that has ever been devised from the point of view of comfort, has been in use now unchanged for many years. It employs, as shown in fig. 14, a compound type of spring. This may be described as a cantilever. The bracket A to which it is fixed is attached to the frame by means of a trunnion, whilst at either end the spring rests upon lubricated slides. An upward road shock therefore tends to turn the rear extremities of the spring upwards, and the front extremity downwards, as shown in an exaggerated form by the dotted line. This movement occasions the greatest possible flexion of the spring, which is accompanied by a large differential movement between the leaves or plates of which it is composed. With a given number of leaves, and of a given length, the frictional damping effect of such a spring is greater.

therefore, than it would be if it were used as a half elliptic in the ordinary way.

In the Lanchester car the spring has nothing to do with either the torque or the drive, but merely carries

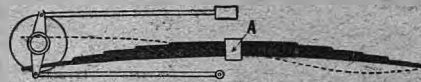


Fig. 14.—The Lanchester rear spring which is attached to the frame at its centre by the trunnion A.



Fig. 15.—The Rolls-Royce rear spring. This is secured to the frame above a trunnion A.



Fig. 16.—The Sheffield-Simplex rear spring, secured to the frame below a trunnion A.

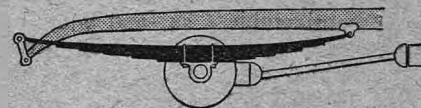


Fig. 17.—The type of half-elliptic rear spring which displaces both torque and radius members.

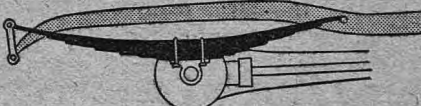


Fig. 18.—The Vauxhall half-elliptic rear spring. A separate member is provided to take the torque.

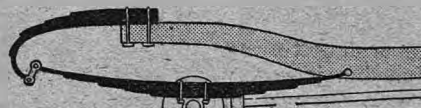


Fig. 19.—The Hurlt threequarter elliptic rear spring, taking both drive and torque.

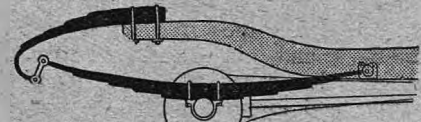


Fig. 20.—The Lancia threequarter elliptic rear spring. A separate torque member is provided.

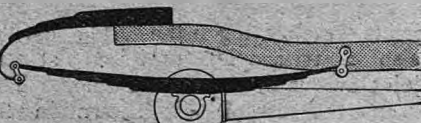


Fig. 21.—The Argyll threequarter elliptic rear spring which is shackled at the front end. The casing of the propeller-shaft takes both torque and thrust.

Springing Systems.

the load of the car. A parallel motion is given to the back axle by means of two pivot links, one above and the other below the spring. The lower link is of definite length, but the upper one is provided at its forward end with a rubber buffer, which, therefore, provides progressive resistance against the torque effect. The same system is also used in the Siddeley-Deasy car.

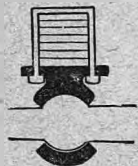


Fig. 22.—The spherical bearing of the spring pads of the Charron car.

The Rolls-Royce system of springing, as used on their London-Edinburgh models, is illustrated diagrammatically in fig. 16. The disposition of the spring is in this case precisely as in the Lanchester, and here again it has nothing but suspensory work to perform. The central platform of the spring is trunnioned to the frame, and rollers are provided at each end so that the extremities can slide. The torque and the drive are taken by a spherically-ended tube which encloses the propeller-shaft, not shown in the sketch.

The Sheffield-Simplex principle is the same as the Rolls-Royce, except that the trunnion pin, instead of being below the spring is above it, as shown in fig. 16.

Half elliptic springs are fitted to a considerable number of cars, although perhaps not to so many as formerly. Two principles are in vogue, which may be illustrated by the Straker-Squire (fig. 17) and the



Fig. 23.—The Arrol-Johnston full elliptic rear spring.

Vauxhall (fig. 18). In the first case the axle is rigidly attached to the spring, and the propeller-shaft is therefore fitted with universal joints both top and bottom. In the second case the axle is swivelled in the spring brackets, and a separate torque member is used. In both cases the drive is taken through the front portion of the spring.

A very popular type of rear springing is the threequarter elliptic, which is applied in almost every possible form. In most cases its function is purely suspensory; in others it takes the torque and not the drive; in others again it takes the drive and not the torque, and in others it takes



Fig. 24.—The Studebaker full elliptic rear spring..

both. In the Hurler (fig. 19) both drive and torque are taken by the spring. The cardan-shaft is universally jointed at each end.

In the Lancia the spring takes the drive, but a separate torque member is provided. Here again double universal joints embodying also a telescopic joint are used.

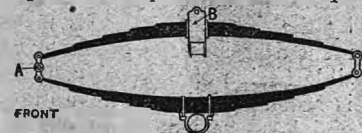


Fig. 25.—The arrangement of the rear spring on the Austin car. The front ends are fixed to the chassis frame at A, and the upper spring is carried in a trunnion B.

In the Argyll (fig. 21) a single universal joint on the head of the propeller-shaft is used, the casing of which takes both drive and torque. Here it will be observed that the lower half of the spring is shackled at both ends. In the Benz a similar arrangement is used, except that separate radius and torque rods are used.

In some cars, notably the Charron, the lower half of the threequarter elliptic spring is attached to the axle by means of a spherical joint, as shown in fig. 22. This allows the spring at one side to be deflected more than at the other side, without imposing any lateral stress on the leaves.

The principal advantage of the full elliptic spring is that the same frictional surface between the leaves and the same amount of deflection can be incorporated in a spring which takes the smallest possible amount of room. Full elliptic springs can be arranged in many different ways, and the particulars of three are given. Fig. 23 illustrates the Arrol-Johnston spring. Here both springs work strictly as one, their eyes being mounted concentrically on the same pins fore and aft. They are in this car relieved from both driving strain and torque. In the Studebaker the spring is arranged as shown in fig. 24, and is used to convey the drive, the torque being supported by a separate member.



Fig. 26.—The transverse rear spring on the Ford car.

In the Austin the full elliptic spring really consists of a half elliptic applied to a compound spring. There is no connection between the front eyes of the upper and lower springs, both of which are supported directly by the side member of the chassis. The load on the rear extremity of the upper part of the spring is taken by the flexion of the whole of the upper part, as it is supported in a box which is swivelled to the chassis.

Both the drive and the torque are separately accommodated.

The Ford transverse spring arrangement, as shown in fig. 26, is almost exactly similar to the front spring already described.

The torque and drive are taken by a tubular propeller-shaft casing, so that there is nothing for the spring to do but to support the load; the spherical joint at the head of the propeller-shaft casing prevents the axle rocking from side to side. A similar system, though more elaborate, is used on the Alda car as exhibited at the Paris Salon. This is shown in fig. 27. It will be observed that the main transverse spring is supported by an upper inverted transverse spring, at the extremities of which are attached multiple spring shock absorbers. The arrangement appears to be exceedingly complete, but it would not be difficult to prophesy that rolling may be liable to occur with this design.

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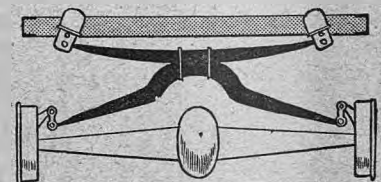


Fig. 27.—The transverse springing of an Alda car exhibited at the last Paris show.

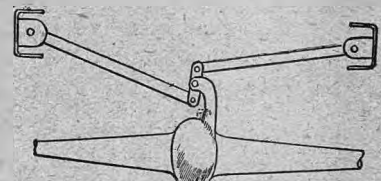


Fig. 28.—The system of links employed with the Arrol-Johnston rear spring to prevent rolling.

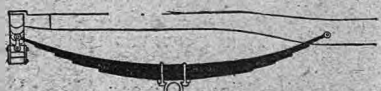
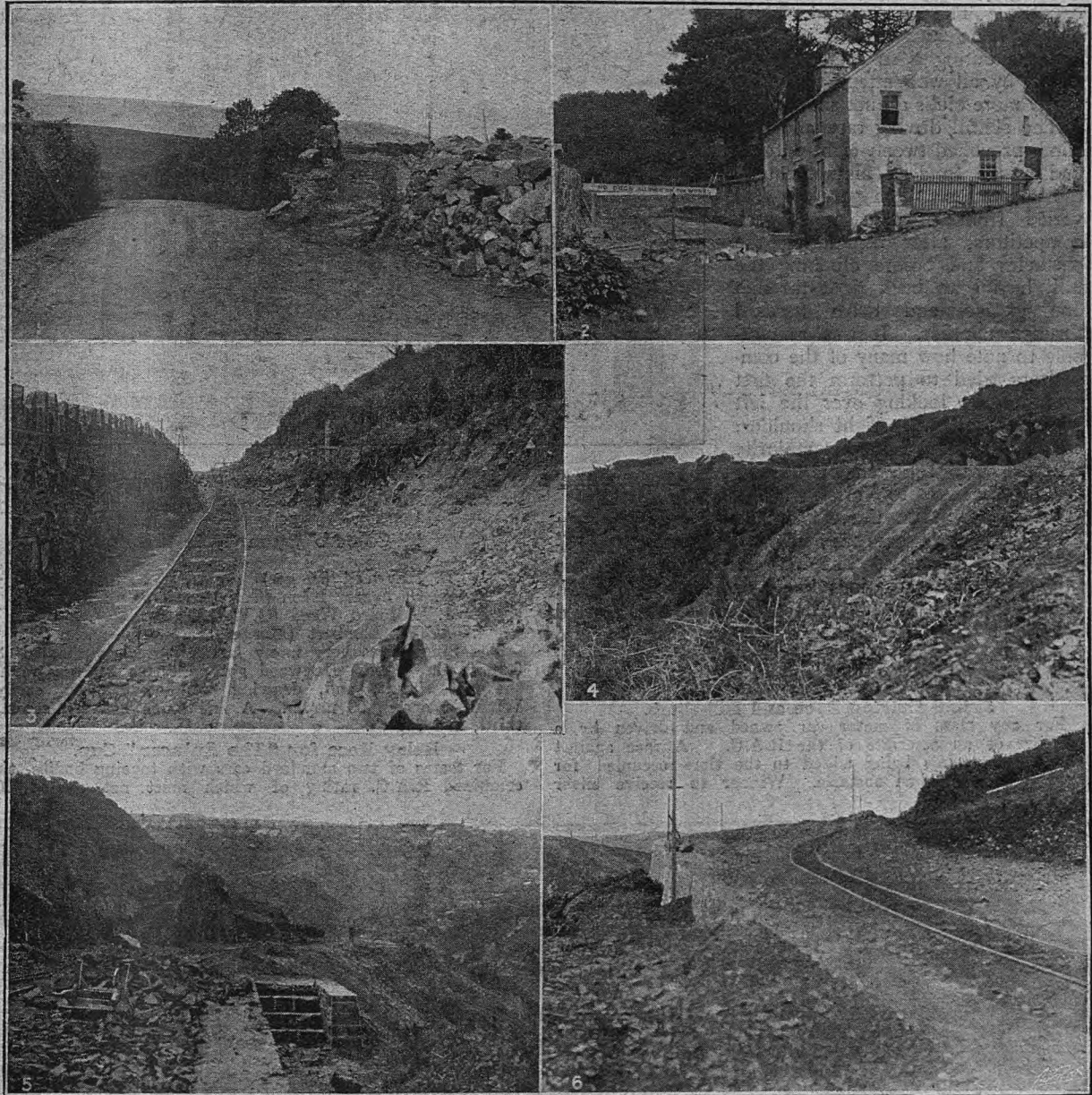


Fig. 29.—Semi-elliptic longitudinal rear springs combined with a transverse spring.

In one car this undesirable attribute, *i.e.*, rolling, which is common to a certain extent to all forms of springing, has been adequately provided against, *viz.*, the Arrol-Johnston. In this case a simple link motion, diagrammatically shown in fig. 28, connecting the chassis members with the back axle, is employed to ensure that the two always remain parallel to one another. It is, of course, especially useful with covered bodies in which the centre of gravity of the vehicle is some little distance above the centre line of the axles.

Springing Systems.

A transverse rear spring in conjunction with longitudinal half elliptic springs (fig. 29) was at one time a very favourite form of suspension, though now rarely used, owing, no doubt, to the rolling tendency. Inasmuch, however, as it provides a form of three-point suspension, it is possessed of certain claims to consideration. Its arrangement is, of course, analogous to two threequarter elliptic springs, of which the upper portions are put in a different plane and united to form one. Amongst those cars which use this system are the Niclausse and the Colonial Napier.



TO AVOID A DANGEROUS HILL. The diversion of the road between Lower Fishguard and Cardigan, Pembrokeshire,, which was decided upon at the beginning of last year, is now well in hand. The progress of the work is seen in the above photographs. The new road is to enable traffic to avoid the notorious Dinas Hill leading out of Lower Fishguard. The top of this hill can be seen in No. 1, and also the beginning of the new road branching off to the right. No. 2 shows where the existing road and the new road join at the bottom of the hill. Nos. 3 and 4 show portions of the road where it is cut away on the hillside. No. 5 is a view across the valley in which lies Lower Fishguard, and shows another portion of the new road. No. 6 indicates how the road in places is being formed on the hillside with a substantial wall on the left. The old hill has been the scene of many difficulties with cars, and almost innumerable drivers have found themselves coming to a standstill and eventually requiring outside aid to surmount the stiffest portion of the hill. The new road will, however, have no very severe gradient at any portion of its length, which is approximately a mile. As compared with this, the existing road is not much more than a quarter of a mile in length between the points where the new road joins at the top and bottom.

The R.A.C. at Brooklands.

Inter-club Meeting and Gala Day of the Royal Automobile and Associated Clubs.

THIS event still remains a highly successful and enjoyable reunion, but most regrettably continues, so far as the competitions go, to be confined to a few Southern clubs. It is greatly to be regretted that the big associations of the Midlands and the North do not make a special effort to be present and make the gathering one thoroughly representative of the country. The Associated Clubs always seem lucky as to weather, and the outing is so keenly appreciated by all who attend that it is a pity more clubs do not share in it.

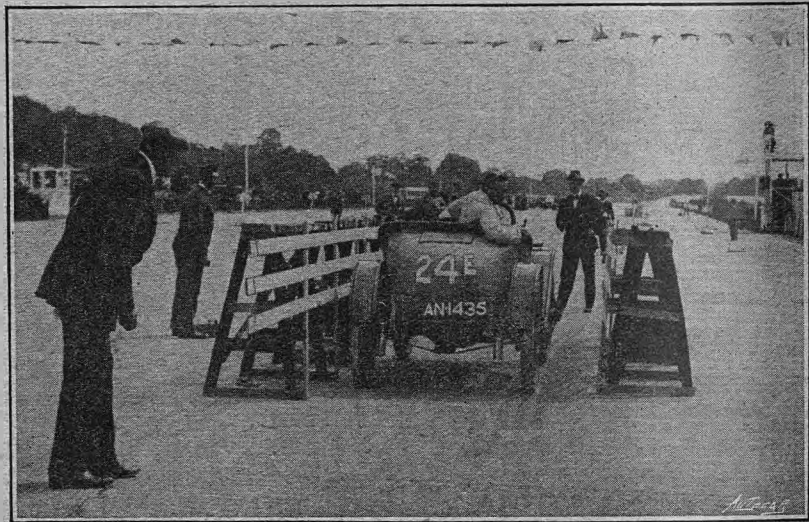
The skilful driving race and hill-climb provoked twenty-eight entries, and was a fund of amusement to the spectators. The garaging was varied from previous years, the competitors, after negotiating the obstacles and before climbing the hill, having to back right through one garage and drive forward through another. It was remarkable to note how many of the competitors tried to perform the first evolution by looking over the left instead of over the right shoulder, with the result that the majority of those who followed the former practice came to grief. The obstacles were, on the whole, too easy. In future years they might be made more difficult with advantage. The hill-climbing proved quite interesting, the sensations being provided by Mr. N. S. Hind's 35.7 Berliet "Black Beetle," Mr. Harold Lambert's 15.9 Crossley, Mr. W. G. Barlow's 15.9 Sunbeam, Mr. G. D. Pearce-Jones's 22.5 Vauxhall, and Mr. Malcolm Campbell's 24.8 Darracq.

Skilful Driving Race and Hill-climb.

For any class of motor car owned and driven by a member or an associate of the R.A.C. A race against time, five seconds being added to the time occupied for each contact with an obstacle. Winner to receive silver

cup presented by the Hampshire Automobile Club; second, silver cup; third, silver cup. First car entered and driven by private competitor to receive Mr. Percy W. Northey's cup. Result:

1. H. O'Hagan (15.9 Crossley).
 2. H. Nelson Smith (8.9 Hillman).
 3. Harold Lambert (15.9 Crossley).
- Mr. O'Hagan took Mr. Northey's cup.



R.A.C. GALA DAY AT BROOKLANDS. A competitor driving backwards between obstacles in the Skilful Driving Race.

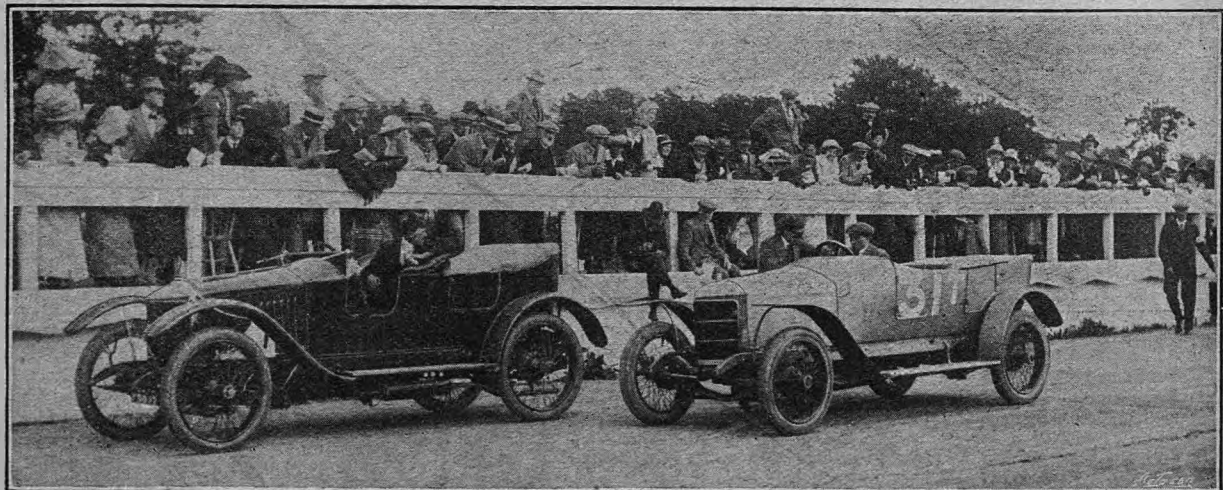
All Comers' Open Cycle Car Race.

- | | Handicap. |
|----------------------------------|-----------|
| 1. B. Haywood (Singer) ... | scr. |
| 2. A. G. Frazer Nash (G.N.) ... | 33s. |
| 3. J. Talfourd Wood (G.W.K.) ... | 21s. |
| 4. A. W. Lambert (Morgan) ... | 9s. |

The Singer was very finely handled, and overhauled its field in fine style. Haywood got on terms halfway round the last circuit, and, drawing well away, won easily. Winner's speed, 60 m.p.h. A fine finish between second, third, and fourth.

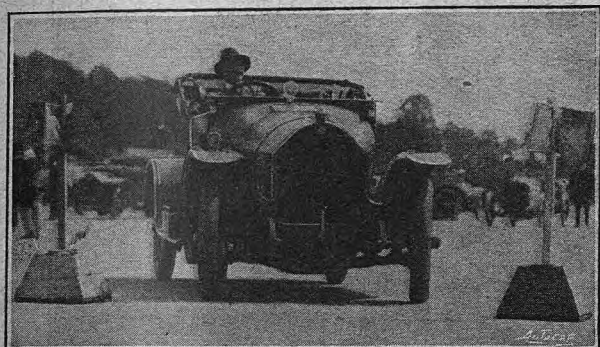
Relay Race for "The Autocar" Cup.

For teams of two standard cars with touring bodies, the combined R.A.C. rating of which must not exceed 50,



R.A.C. GALA DAY AT BROOKLANDS. The Herts County A.C. team, winners of Relay Race. Number 31 is seen pulling up, while the second member of the team is waiting to receive the badge which had to be carried to the finish.

entered by associated clubs, and owned and driven by private competitors only. Two circuits of the course were made, one car of each team starting for the first circuit. The second car of each team was stationed on the starting



R.A.C. GALA DAY AT BROOKLANDS. A competitor in the Skilful Driving Race.

line, the driver being in his driving seat. The driver of the first car of each team, on completing his circuit, dismounted and handed to the driver of the second car of that team a badge, on receipt of which the second car started and completed the race.

This race, though interesting enough to those who participate in it, and the members of the clubs competing, is somewhat tame to watch, and does not lend itself to description. From the reckless manner in which some of the competitors used their brakes, the competition must have been somewhat costly from the tyre point of view. Result:

1.—Herts County A.C. : G. D. Pearce-Jones (22.5 Vauxhall) and R. H. Cobb (20.1 Vauxhall). 2.—Essex M.C. : O. D. Pollak (15.9 S.C.A.R.) and McL. N. Staight (15.9 S.C.A.R.)

Won very easily. The Hampshire A.C., the Middlesex County A.C., and the North Berkshire A.C. were also represented by teams.

All Comers' Open Motor Car Handicap.

For cars the observed speeds of which have been over sixty miles per hour for a Brooklands flying lap, or in the case of cars which have not competed before which are likely in the opinion of the handicappers to exceed this speed. Distance, about 8½ miles. The winner to receive the Car Illustrated Cup. Result:

	Handicap.
	M. S.
1. Percy Lambert (15.9 Singer) ...	0 27
2. W. G. Barlow (15.9 Sunbeam) ...	1 48
3. Louis Coatalen (23.8 Sunbeam) ...	scr.
4. N. S. Hind (35.7 Berliet) ...	1 6
5. R. H. Townshend (43.4 Sheffield-Simplex)	0 51

In the beginning the Sheffield-Simplex showed a great turn of speed, which, had it been maintained, would have



R.A.C. GALA DAY AT BROOKLANDS. Mr. B. Haywood, on a 10 h.p. Singer, winner of the Open Cycle Car Handicap.

The R.A.C. at Brooklands.

put this car very near winning. It, however, died away in the latter half of the race. Coatalen, who travelled very fast on one of the new Grand Prix 80x150 six-cylinder Sunbeams, which he was "exercising," overhauled the Berliet at 1½ laps, but could not give the Singer 27s., which was grandly handled by Lambert. Winner's speed, 84.51 m.p.h.

Hill-climb.

Open to teams of four standard motor cars with touring bodies the combined R.A.C. rating of which did not exceed 100, entered by associated clubs, the winning team the one whose cars occupied the least aggregate time in ascending the hill. Result:

1. Herts County A. and Ae.C. : G. D. Pearce-Jones (22.5 Vauxhall), R. H. Cobb (20.1 Vauxhall), Leslie Munro (20.1 Vauxhall), and S. S. Barber (25.6 Talbot). Time, 64½s.

2.—Hampshire A.C. : Miss Laura B. Starkey (15.9 Sunbeam), C. L. E. Geach (22.5 Vauxhall), C. E. S. Gillett (20.1 Talbot), and H. C. Lafone (15.9 Chenard-Walcker). Time, 77s.

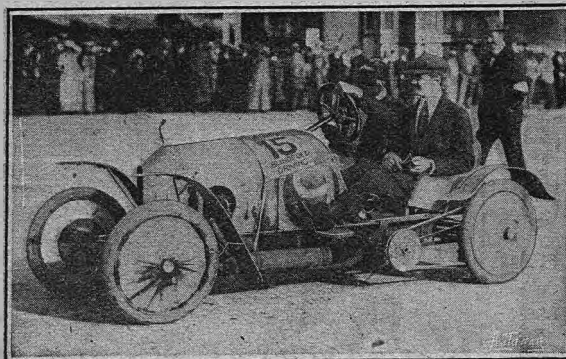
3.—Essex M.C. : McL. N. Staight (15.9 S.C.A.R.); O. D. Pollak (15.9 S.C.A.R.), R. C. Fish (24.0 Berliet), and S. G. Cummings (13.9 Cummicar). Time, 78½s.

The Middlesex County A.C. and the North Berkshire A.C. also competed.

Mr. Pearce Jones's 22.5 Vauxhall made the fastest ascent of the day in 13½s.

Blindfold Driving Competition.

For any class of car, passenger machine, or cycle car owned and driven by a member or an associate of the R.A.C. The drivers, blindfolded, started their cars, one at a time,



R.A.C. GALA DAY AT BROOKLANDS. Mr. C. Whitehead, on the G.N. cycle car, winner of the Blindfold Driving Competition.

from a certain point in the straight, and drove in a circle on the forward gear, endeavouring to bring their cars to rest on another defined spot. The winner was the driver whose wheel hub cap was nearest to the proper point on stopping.

This event provoked much amusement, the errant wanderings of some of the competitors being quite incomprehensible. It is difficult to realise that so utter a lack of appreciation of movement and position can result from the eyes being blindfolded.

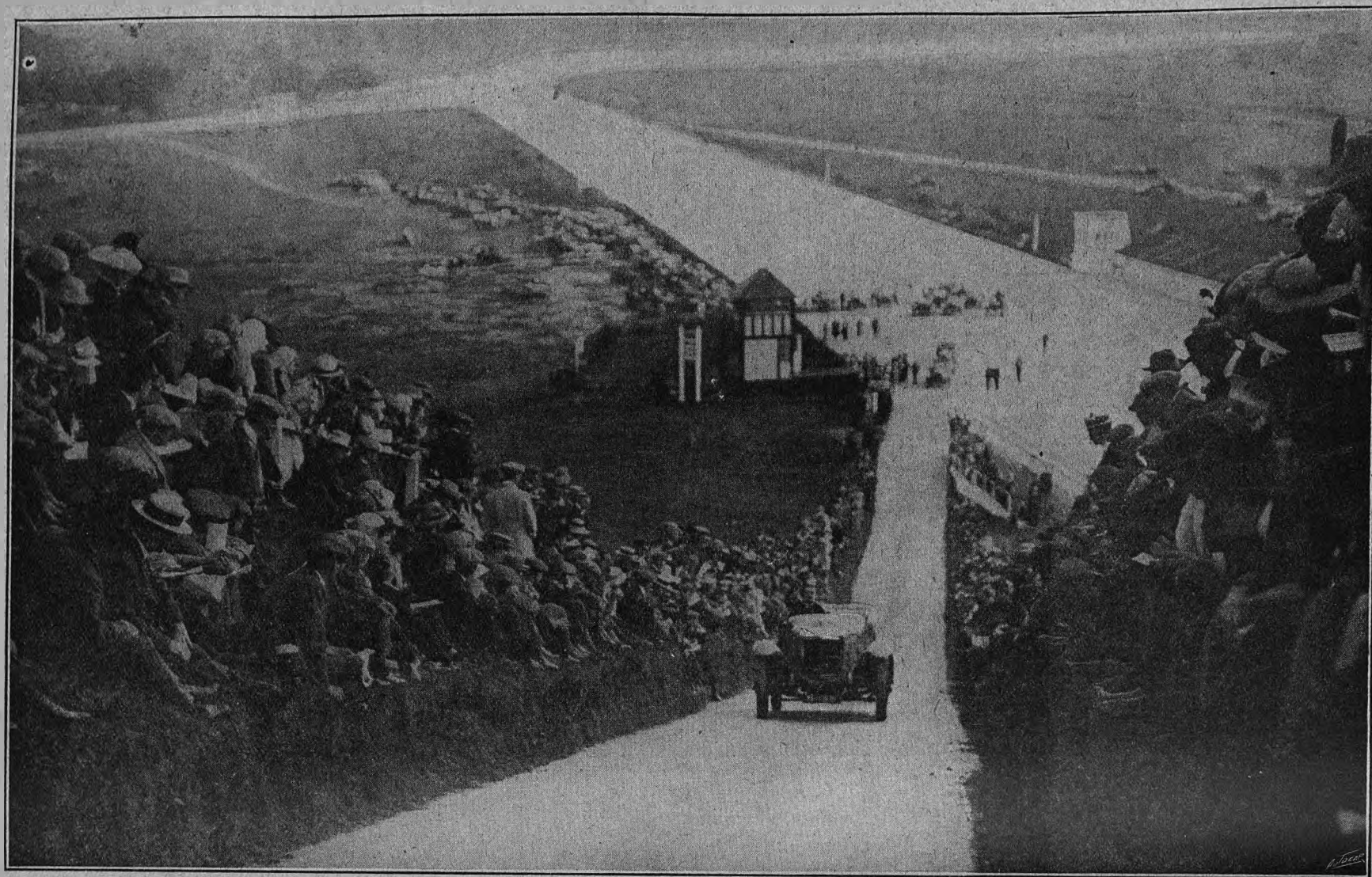
The first place fell ultimately to Mr. C. Whitehead (G.N. cycle car), who finished 23ft. from the point, Mr. Warwick Wright on a Sheffield-Simplex being second (31ft. 2in.), and Mr. L. W. Cox (15 h.p. Crossley) third. Mrs. Hordern, driving a Napier, lost her bearings altogether and charged the railings.

A word of praise must be accorded to the officials, who handled the meeting in excellent style, the whole function going off without a hitch. They were: Clerks of the course, Mr. F. P. Armstrong, Mr. C. Braun, and Col. H. C. L. Holden, R.A., C.B., F.R.S.; judge, Mr. A. Armitage, J.P.; chief marshal, Capt. R. K. Bagnall-Wild; clerk of the scales, Mr. H. W. Norman; timekeepers, Mr. A. V. Ebblewhite and Mr. T. D. Dutton; handicapper, Mr. A. V. Ebblewhite; secretary, Mr. J. W. Orde.

The Associated Clubs at Brooklands.

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Mr. G. D. Pearce-Jones on his 22.5 h.p. Vauxhall, climbing the Test Hill in 13 $\frac{3}{4}$ secs., the fastest time of the day.

THE AUTOCAR, June 7th, 1913.

The Indianapolis Grand Prix.

The 500 Miles Track Race won by Goux on a Peugeot.

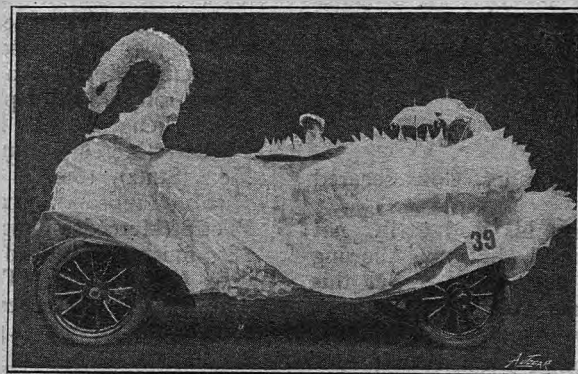
THE 500 miles race for the Indianapolis Grand Prix took place on Friday last week, in the presence of a crowd of spectators estimated at 90,000.

As we stated in *The Autocar* of the 10th ult., the prizes offered amounted to £10,000 in value, in addition to numerous special prizes offered by various firms, such as the Remy Electric Co., who put up a trophy to be taken by the driver of the car leading at 200 miles.

Eight European cars had been entered, viz.: three Isotta-Fraschini, two Peugeots, one Mercedes, one Mercedes-Knight, and a Sunbeam. As will be seen, one of the Peugeots and both the last-named cars acquitted themselves well, for, while the Peugeot driven by Goux secured first place, the Sunbeam, which was driven by Guyot, was fourth, and the Mercedes-Knight fifth. The performance of the latter is particularly noteworthy, as its engine was of the smallest cubic capacity of any car in the race. The following is a list of the twenty-eight starters (the number 13 was not allocated, though the superstitious may argue that Zuccarelli being really No. 13, his ill-luck is accounted for! No. 11 did not start):

No.	Driver and car.	No. of cyls.	Bore and stroke.	c.c.
1.	H. Endicott (Nyberg) ...	6	102 x 127	6227
2.	Merz (Stutz) ...	4	120 x 160	7238
3.	Anderson (Stutz) ...	4	120 x 160	7238
4.	Burman (Keeton) ...	4	129 x 140	7320
5.	Evans (Mason) ...	4	110 x 153	5817
6.	Tower (Mason) ...	4	110 x 153	5817
7.	Herr (Stutz) ...	4	120 x 160	7238
8.	Guyot (Sunbeam) ...	6	90 x 160	6107
9.	Knipper (Henderson) ...	4	110 x 153	5817
10.	Wilcox (Fox) ...	4	121 x 140	6440
12.	Goux (Peugeot) ...	4	110 x 200	7603
14.	Zuccarelli (Peugeot) ...	4	110 x 200	7603
15.	Liesaw (Amel) ...	4	114 x 127	5186
16.	Jenkins (Schacht) ...	4	124 x 140	6763
17.	De Palma (Mercer) ...	4	122 x 157	7343
18.	Bragg (Mercer) ...	4	122 x 157	7343

No.	Driver and car.	No. of cyls.	Bore and stroke.	c.c.
19.	Wishart (Mercer) ...	4	111 x 127	4916
20.	Pilette (Mercedes-Knight) ...	4	100 x 130	4084
21.	Pennebaker (Stearns-Knight) ...	4	130 x 137	7274
22.	Clark (Fulsa) ...	4	121 x 140	6440
23.	Mulford (Mercedes) ...	4	112 x 181	7134
24.	Grant (Isotta) ...	4	117 x 153	6581
25.	Tetzlaff (Isotta) ...	4	117 x 153	6581
26.	Trucco (Isotta) ...	4	117 x 153	6581
27.	Disbrow (Case) ...	4	130 x 140	7432
28.	W. Endicott (Case) ...	6	110 x 127	7243
29.	Nykent (Case) ...	4	130 x 140	7432
30.	Haupt (Mason) ...	4	110 x 153	5817

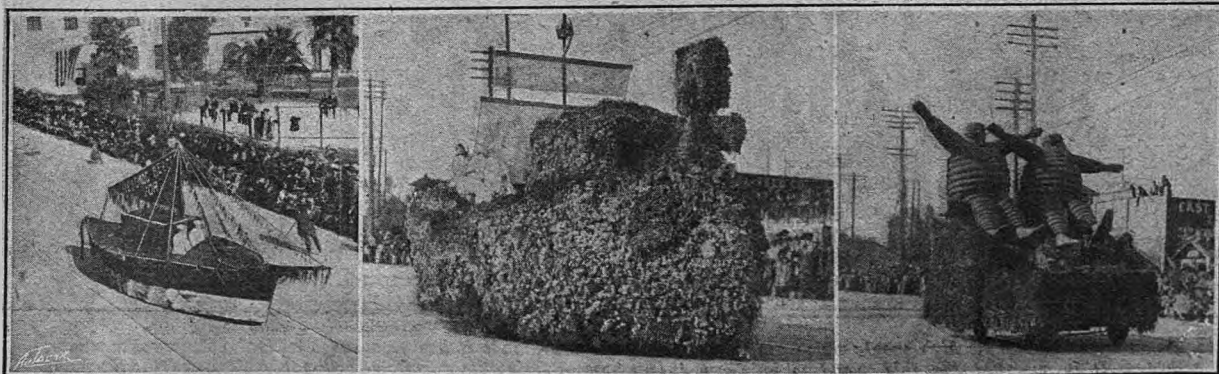


A car, decorated as a swan, which recently took part in an American carnival procession.

At 10.25 a.m. the competing cars were ranged in three rows according to their numbers on the programme. The width of the track being over ninety feet, there was ample space allowed between each car. The twenty-nine cars were got away to an excellent start at half-past ten exactly. The sight of the crowd of flying cars making circuits of the track at ninety miles per hour was one that can never be forgotten by those who witnessed it. Brooklands has never seen such a remarkable scene. The racing cars reminded

one of a crowd of cyclists engaged in a sprint race. Before many laps were over Goux and Zuccarelli had drawn away from the field, closely followed by Burman and Guyot, with all the rest in hot pursuit. The heat was stifling, and the glare from the track very distressing. It was clearly going to be very hard on tyres.

Goux led Zuccarelli by a short distance for some time, but a little later he suddenly slowed up and allowed Zuccarelli, Burman, and the others to pass him. A tyre had burst. A spare wheel was attached in an incredibly short space of time, and in a few moments he was out in pursuit of the field at a terrible speed. He gained on them hand over hand, and before long was once again at the head of affairs. Just after 60 miles had been covered Zuccarelli, while still holding second position, stopped with volumes



Three other decorated cars which recently participated in a carnival procession in America.

of smoke issuing from his bonnet. His carburetter had fired. Poor Zuccarelli! his pluck deserved a better fate. Just before the completion of the first 100 miles Goux suffered a second burst, and Burman passed him, leading him by about 1,000 yards.

At the completion of the 100 miles the positions were: 1, Burman, 1h. 15m. 15s.; 2, Goux, 1,000 yards behind; 3, Guyot, one lap behind; Anderson two laps, Nikrent three laps, Trucco four laps, Evans and Tower five laps, and Knipper six laps behind the leader.

Early in the next 100 Goux, driving his Peugeot magnificently, got his own back from Burman and made things so hot for the latter that the American gave up at 150 miles.

Bar accident, the race was thenceforward a certainty for Goux and his Peugeot, which was evidently far and away the fastest car in the race. Goux easily kept his lead, and, slacking his pace somewhat, began to put on his laps in regular time. At 200 miles the positions were:

Goux, 2h. 33m. 30s.

Anderson, two laps behind.

Guyot, three laps behind.

By leading at the close of 200 miles, Goux secured the Remy trophy value £500.

For the next 100 Goux kept his lead easily, not permitting himself to be hurried, but not allowing any of his pursuers to gain upon him. But this stage was remarkable for some very fine fast work by Mulford on a Mercedes, who got away from the

ruck and, travelling very fast, soon dispossessed Anderson and Guyot of their positions. The close of the 300 miles was as follows:

Goux, 3h. 52m. 22s.

Mulford, three laps behind.

Anderson, Merz, and Wishart four laps behind.

While Goux remained easily at the head of affairs up to 400 miles, a big struggle for second place ensued between Mulford, Anderson, and Wishart. At 320 miles Anderson and Wishart were up with Mulford, but Wishart presently dropped away, and Anderson, going on, gained a lap on Mulford. At the finish of the 400 miles the positions were:

Goux, 5h. 9m. 53s.

Anderson, four laps behind.

Mulford, five laps behind Goux.

Now, barring accidents, nothing could dispossess Goux and his Peugeot. Some changes, however, took place amongst the runners-up, for Wishart, who had been lying fourth, passed Mulford and Anderson, followed by Merz, who had been lying fifth, and who now ran into third place. Final result:

Goux (Peugeot), 6h. 29m. 37s.

Wishart (Mercer), 14m. later.

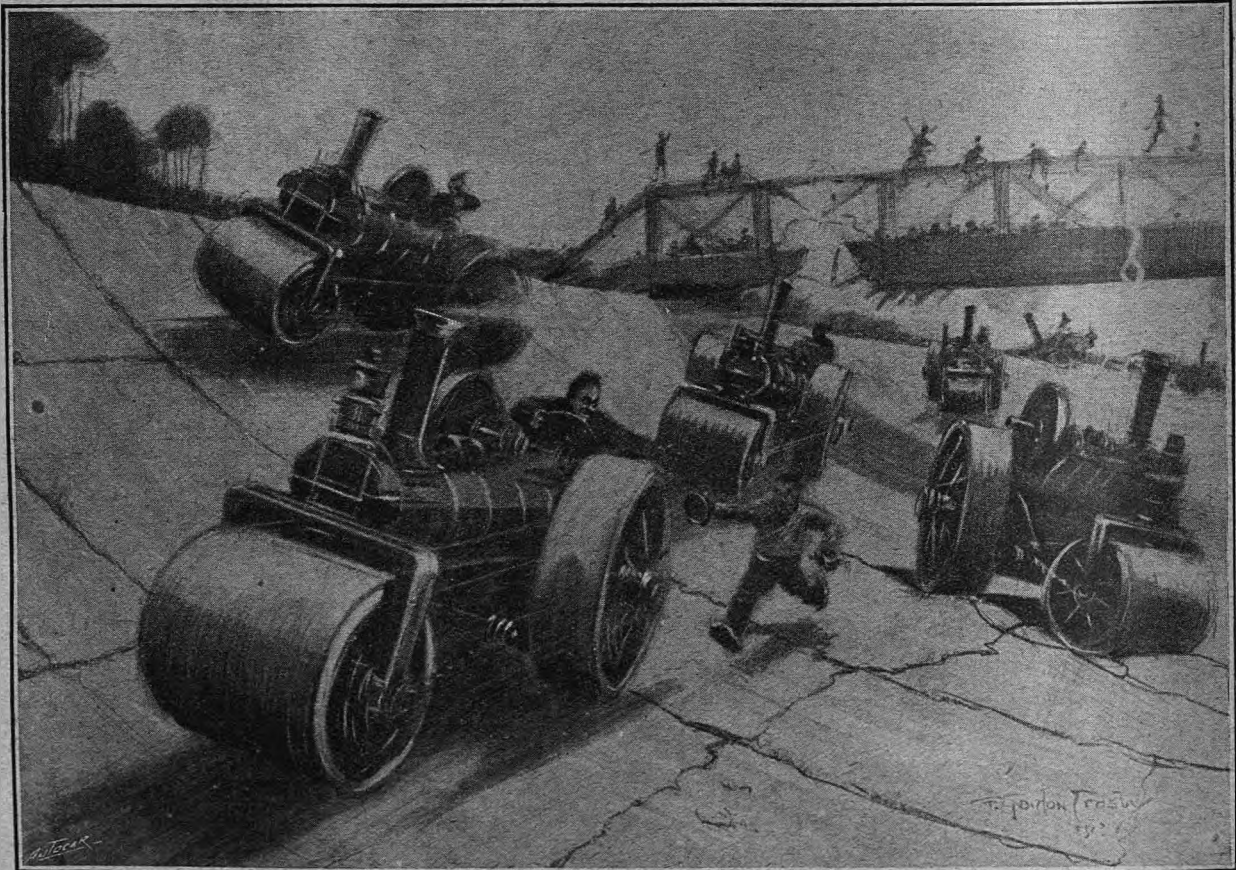
Merz (Stutz), 16m.

Guyot (Sunbeam), 31m.

Pilette (Mercedes-Knight), 39m.

Also finished: Mulford (Mercedes), Disbrow (Case), Wilcox (Fox), Clark (Tulson) and Haupt (Mason).

The track is 2½ miles in circuit, and the winner's average speed was 77 m.p.h.



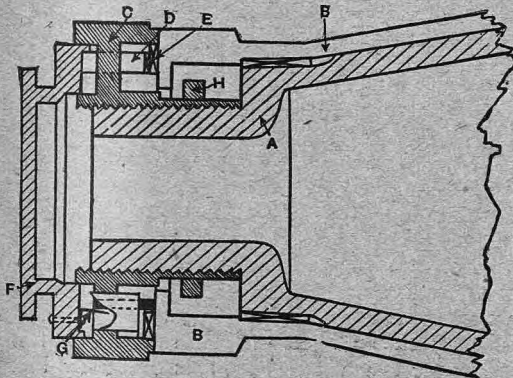
As an anti-climax to the high speeds which are being attained at Brooklands it has been suggested that a steam-roller race be held. It is suggested that this would not only serve the purpose of providing a fresh attraction, but also of rolling the track. Excellent suggestions, no doubt, but no such attraction is required on Brooklands, and we are afraid that to roll a cement skin on a sand foundation would be about as useful as applying a rolling-pin to a baked pie.

The Metallurgique Detachable Wheel.

A Multiple Lock System by Ratchet and Pawls.

ON the fixed hub shell A is mounted the detachable hub shell B which is secured by the ring C. Passing through C is a spring pawl D which engages with the ratchet E cut on the shell B in such a manner that when the ring C is screwed up on A it is prevented from unscrewing so long as the pawl

now free, the ring C can be unscrewed, and as the outer hub B is held to it by the ring H, the act of unscrewing draws the wheel off the fixed hub shell A. In the meantime, before the ring H comes into play, the black pin still bears against the edge of B, but its head, on which the spring F was resting, eventually disappears inside the peculiarly shaped scoop or cam. The hub cap thus re-enters the ring C, bringing the main locking pawl into play if it be screwed on again. On replacing the wheel the spring G is guided by the scoop or cam, and does not touch the black pin.



Part sectional view of the Metallurgique detachable wheel system.

- | | |
|-----------------------|--|
| A, inner or fixed hub | E, ratchet on outer face of detachable hub B |
| B, outer hub shell | F, wheel cap carrying pawls D |
| C, locking ring | G, flat steel spring |
| D, spring pawl | H, collar on locking ring C |

is in engagement. There are, of course, several pawls, but only one is shown.

The ring C also carries a pin, shown in solid black, which is held against the face of B by a light spring (not shown). The hub cap F has attached to it the pawls D, and is held normally by springs so that these pawls are in engagement. If the cap be pulled out axially the pawls are released, and the small flat spring G springs inwards and rests against the head of the black pin, thus preventing the cap from sliding in again. The locking ratchet being

Sheep on the Road at Night.

Just lately at Halesworth County Court, proceedings were taken against a motorist who accidentally ran into a flock of sheep at night and killed three of the animals. In dismissing the case with costs Judge Wilmot said it was negligence for the plaintiff to have a flock of sheep on the road at night with only a man and a dog. It was time that such a practice was stopped.

There is no more casual user of the King's highway than the sheep and cattle drover. He seldom if ever endeavours to drive his charges to one side or the other to permit traffic to pass, but stands and looks callously on while the flock or herd are persuaded to give way by the proximity of the approaching or overtaking vehicle. With regard to beasts upon the road at night, it should, of course, be imperative that they be covered front and rear by men carrying lanterns. Then there is the case of cattle sent out to graze at the roadsides and left to ramble at will over the roads at night. It is no less curious than true that the necessity for providing some safeguard of the kind is omitted from the model General Traffic Rules lately compiled by a sub-committee of the Royal Automobile Club.



THE MANCHESTER A.C. RELIABILITY TRIAL. This competition, in which reliability, petrol consumption, and hill-climbing were taken into consideration, was run off over a course of 132 miles on Saturday last. The above illustrations show two of the successful competing cars, i.e., Mr. E. R. Foden's 20 h.p. Vauxhall (left) and Mr. J. Newton's 12 h.p. N.B. (right). The former won the silver cup for the best amateur performance and the prize for the best fuel consumption, 32.3 m.p.g. Mr. J. Newton was first in the trade class for cars up to 16 h.p. The fastest time for the hill-climb was made by Mr. E. Mercer's 20 h.p. Vauxhall in 50 secs., though the highest marks for this were awarded to Mr. R. S. Owen's 20 h.p. Argyll. The success of the Vauxhall cars in this contest was, by the way, extremely meritorious, for of the ten first prizes eight were secured by cars of this make.

The Care of a New Car.

Practical Advice. Use a Car Moderately at the Beginning of its Life.

THE following suggestions and notes are among those issued by Messrs. F. S. Bennett, Ltd., to the purchasers of Cadillac cars, but as they are worthy of consideration by all motorists we have no hesitation in giving them *in extenso*:

"It is so very natural for the purchaser of a new motor car to desire to show its beauty and speed to his friends, that we feel justified in offering the following suggestions, as we believe every car owner wishes to obtain the most complete satisfaction from his car.

"The motor car of the present time is essentially a machine of very advanced type, and made up of very many closely fitted parts. These parts necessarily move at various speeds in relation to each other, and some of them are subject to a high temperature in addition to the friction produced by their contact with each other. These facts necessitate the use of materials which will give a long life to the machine. The cylinders and pistons are made of hard, close-grained grey iron, and while ground as smoothly as possible, their surfaces, if examined with the aid of a powerful magnifying glass, would present the appearance of a piece of sand paper.

"The various machining and grinding operations probably would not leave the grain of the metal laying in the direction in which these parts move when in operation. The same holds true of the finish of the crankshaft and of the bearings, although the latter are reamed with tools which have cutting edges nearly as keen as that of a razor. In the operation of a motor the pistons are subjected to great and rapid changes of temperature, which also tends to alter the grain of the metal.

"All these facts are very strong reasons why the owner of a new car should use it very easily and at moderate speeds when he first receives it, gradually increasing both the work and the speed, and at the same time providing adequate lubrication for all the working parts. To this end we urge that car owners use a new car moderately for the first 500 miles which the car is driven, that the various working parts of the car may have the proper conditions under which they will gradually blend themselves together, and produce

the harmonious machine which the car designer intended it to be.

"The railroad companies understand this thoroughly, and when new locomotives are received from the makers they are subjected to a gradual and careful working-in process. They are first used for slow freight service, the loads and speeds being gradually increased until the working parts have become smoothed up and are operating harmoniously. The trial trip of a new steamer is one which gives the designer and builder some anxiety until it is over, and their minds are at ease regarding the performance of its machinery. During such a trip the engines of a steamer are watched by a corps of careful engineers, each one equipped with an oilcan, and who are constantly watching the action of each working part of the engines and other machinery. A new steamer usually makes a long trip light, before being loaded to its capacity or being forced to its full speed. When a new machine is operated in a factory it is always lubricated carefully and allowed to run slowly for some hours, after which the speed is gradually increased and work gradually applied to the machine, until its working parts have become harmonised.

"If the owner of a car will consider the number of surfaces which are in moving contact with each other in the engine and its attendant parts; in the clutch and its universal joints; in the transmission and the universal joints; in the drive shaft between the transmission and the rear axle; in the gearing and bearings of the rear axle and the wheel bearings; and added to this, the friction between the leaves of the springs as his car passes over obstructions and drops into depressions, he will appreciate the wisdom of giving the car a sufficient opportunity to 'find itself,' as the expression is.

"The owner of a Cadillac car who will comply with these suggestions and will refrain from racing and working his car to its maximum capacity until the working parts of the car are thus blended in, will be amply repaid by the satisfaction he will obtain in the possession of one of the most quiet, smooth-running, and easy riding cars ever built."

Mr. H. R. Pope has been selected by Itala Fabbrica di Automobili to drive in the Grand Prix Race.

* * *

The French Minister of Commerce has officially agreed that the Grand Palais shall be available for the Syndicat des Constructeurs d'Automobiles for the Paris Salon between the 17th and 31st October next. Consequently, the French motor show is now certain to be held in that month.

* * *

A hill-climb promoted by the North Staffordshire Motor Club was held on May 31st near Longnor, on a very fast hill on the moors. The weather unfortunately spoilt what promised to be a large turn-out, besides causing the electrical timing apparatus to work a little erratically at first. The winner on formula was Mr. Stanley Goodwin, driving a 15.9 h.p. Crossley, who made a fast and skilful climb, with a beautifully judged change-down near the crest of the hill. Fastest time was made by Mr. J. A. Prendergast driving Dr. W. D. Prendergast's 30 h.p. Daimler.

The makers of the Argyll car have been inundated with telegrams of congratulation on the achievements of their single sleeve valve engine car at Brooklands in beating world's records, as reported in our last two issues. Among the many telegrams received was one from the Duke of Argyll and another from Mr. C. Y. Knight, the inventor of the Knight sleeve valve engine.

* * *

The Austrian Daimler Motor Co. state that the Austro-Daimler cars will not compete in this year's Austrian Alpine Tour, owing to pressure of work at the factory, where, as well as cars, very large Austrian and Continental Government contracts are in hand; in addition, the factory is working at high pressure on aeroplane engines. In view of the fact that the Austro-Daimler cars in the 1911 contest won five first prizes, the team prize and three special prizes, while in 1912 four firsts were secured, the makers are satisfied, under the circumstances referred to, to rest on their laurels.

A.A. and M.U. Notes.

Communicated by the Secretary, The Automobile Association and Motor Union.

Whitcomb Street, Coventry Street, W.

Special Road Warnings.

Members are advised to drive very carefully through the villages of Bracknell and Wokingham (Berks.), as several prosecutions for driving to the common danger have recently occurred in this district.

The Association learns that complaints are being made regarding undue noise made by cars when passing the church at Hunton Bridge (Herts.) on Sundays. Will members using this road kindly note?

A Map Exhibition.

In connection with the Road Congress, which will be held from the 23rd to 28th inst., there will be a section devoted to maps. The Automobile Association and Motor Union has been requested to make all the necessary arrangements for obtaining a comprehensive collection of maps, and every effort is being made to provide an exhibition of the highest interest to motorists. The various publishers in this country are being approached and endeavours are being made to obtain maps covering each country throughout the world. Members of the Association can, upon application to the head offices, obtain tickets of admission to the exhibition, which will be open from 10 a.m. to 6 p.m. Among exhibits of more than ordinary interest may be mentioned a series of contour moulds of various portions of the United Kingdom, also the very famous map of the old city of Yeddo, Japan, printed in the Japanese manner.

Taxation of Old Cars.

The Association continues to receive enquiries from members as to what steps are being taken to secure a reduction in the taxes on old cars. For the information of members generally it may be stated that, as a result of the deliberations of the Taxation Committee (upon which the A.A. and M.U. is represented), the Chancellor of the Exchequer has agreed to receive a deputation on the matter.

Latest Road Information.

LANCASHIRE.—Preston-Lytham Road: Rough surface and frequent holes between Freckleton and Lytham. Kirkham-Lytham Road: Remetalling full width one mile west of Kirkham; also half width under repair in Wrea Green; two steam rollers working; lights at night. Tarring in hand full width between Wrea Green and Moss Side Station; alternative route *via* Freckleton Marsh to Lytham. Blackpool-Poulton Road: Special care is necessary through Poulton-le-Fylde and district. Preston-Garstang Road: Members are warned to drive with caution between Withy Trees and Broughton village, also through Garstang. Preston-Liverpool Road: Special caution is advised between the Windmill and Tarlton Bridge. Lancaster-Kendal Road: Members are warned to slow through cross roads in Carnforth. Control likely to be working in the ten-mile limit in Burton and Milnthorpe.

YORKSHIRE.—Otley-Bradford Road: Care should be taken on entering Otley by the Bradford Road owing to repairs to main water supply. Leeds-Tadcaster Road: Remetalling and rolling operations full width between the 1st and 2nd milestones from Leeds; lights at night. Leeds-Harrogate Road: Tarring full width between the 2nd and 3rd mile stones from Harrogate. Special care is advised between the ten-mile limits at Burley and Ilkley, also all main roads in Leeds.

COVENTRY ROAD.—In bad condition between Barnet and St. Albans, tarring in hand. New telephone main being laid through the Chalk Cutting, Dunstable, half width; lights at night. Under repair between Daventry and Coventry.

LONDON-YARMOUTH ROAD.—Under repair at Brentwood, Ingatestone, Chelmsford, Witham, and at Marks Tey.

CAMBRIDGE-NEWMARKET ROAD.—Tarring between the 4th and 7th milestones, whole width. Under repair between the 10th and 11th milestones, whole width.

NORWICH-YARMOUTH ROAD.—Rollers working between the 5th and 6th milestones, full width.

SHREWSBURY DISTRICT.—Hereford Road: Remetalling full width $3\frac{1}{2}$ miles from Shrewsbury. Welshpool Road: Remetalling centre of road from Shelton to Bicton Heath, left corner at night.

NORTH DEVON.—Bideford Old Road, *via* Eastleigh: From just beyond the 2nd milestone up to the 6th is nothing but loose stones; roller working at the 6th milestone on towards Barnstaple. This is very dangerous, and great care is needed. Bideford-Horns Cross: Control is likely to be working and care is necessary.

BATH ROAD.—In bad condition between Colnbrook and Slough in places. Tarring at Maidenhead to Thicket Corner, members are warned to drive slowly.

BRIGHTON ROAD.—Roller working between Kingswood and Reigate; tarring between Reigate Station and Woodhatch; Woodhatch-Redhill; Reigate-Dorking; Reigate-Gatton Point; Horley to Merstham and through Redhill town; and at Hogg's Hill, Crawley.

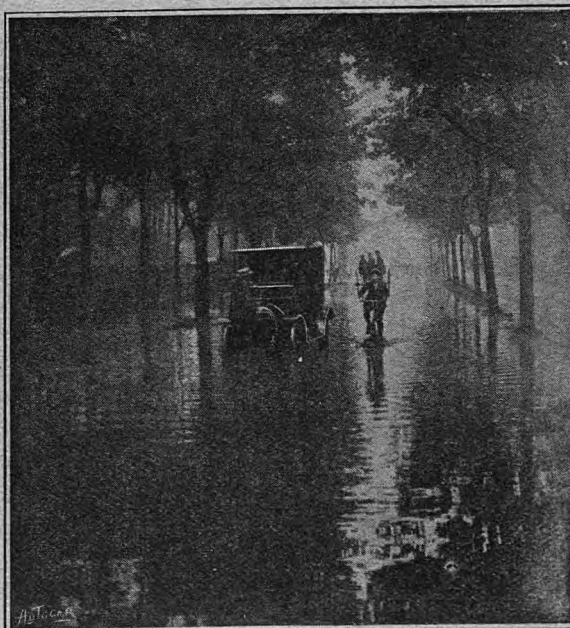
KENT.—Controls are likely to be working on the outskirts of the town of Canterbury, also members are warned not to leave their cars standing.

LONDON DISTRICT.—Controls are likely to be working between Pinner and Harrow, at Barnet Hill on the right, Hendon on main road, Brentford-Hounslow, Epping-Woodford Road, Morden, Sutton, Banstead, Staines-Sunbury, Bedfont-Staines, Putney High Street.

PORTSMOUTH ROAD.—Controls are likely to be working between Ripley and Guildford, about half a mile south of Clandon cross roads. Portsmouth-Southampton Road: Control starts at the "Plough" towards Southampton, working both ways.

SOUTHAMPTON-BASINGSTOKE ROADS.—Controls are likely to be worked from Southampton to Fareham, and from Bitterne to Bursledon, between Woolston and Floating Bridge at Bursledon, and all cross roads in Southampton. Winchester-Bournemouth Road: Under repair between the 5th and 6th milestones from Winchester and at Lyndhurst, North Hinton, South Hinton, and at Christchurch.

SUSSEX.—Hastings Road: Members are warned to slow through Dunton Green. Controls are likely to be working at Felpham, near Bognor, and Ifield, also in the ten-mile limit at Uckfield.



A terrific rain and thunderstorm on Friday last week caused extensive floods in the Scarborough district. The illustration shows a car stranded in the middle of a road, where, in places, the water reached a depth of 30in.

The Record Breaking Argyll.

Particulars of the few Variations from Standard.

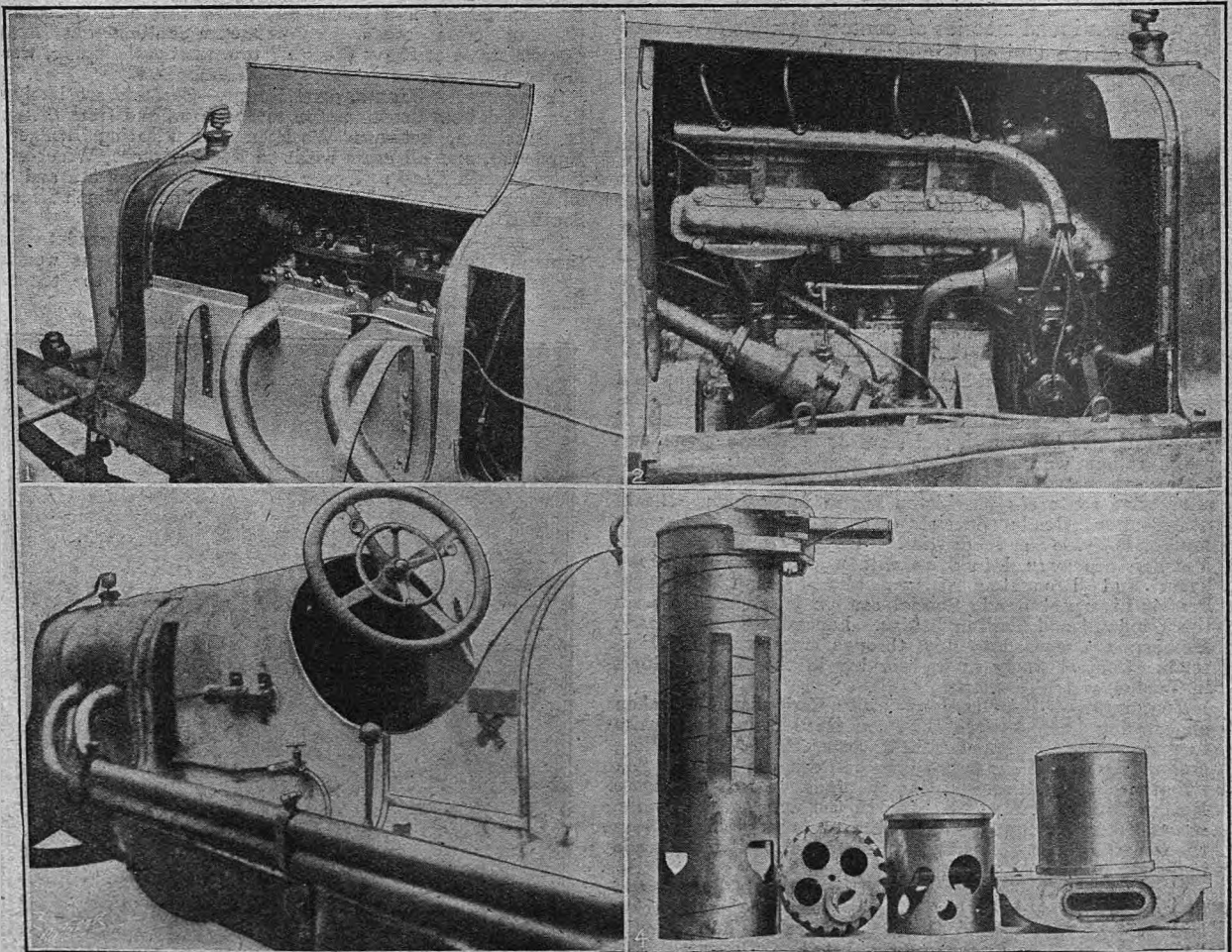
WE had hoped shortly to be able to give a fairly full account of the Argyll car that was used last week for obtaining so many records, but we find that we shall not be able to do so for some time yet, as there is no present intention to take down even the engine in its entirety. On Thursday of last week the cylinders were removed for examination and cleaning, and their condition was perfectly satisfactory, so much so that they were replaced at once and further use is likely to be made of the car before any sort of general overhaul is undertaken. There are, however, one or two peculiarities worth noting, and the illustrations herewith show some of the details of the engine.

Probably one thing which will appear especially peculiar is the inlet pipe, as this is not branched in accordance with modern practice but is quite straight, the Zenith carburetter being located right against the radiator as can be seen. On the other hand, the sleeves with their operating gear are quite normal, and in accordance with standard Argyll practice, though we believe that the port openings are a little different. In tuning up the engine, once the best shape of port for very high speed running had been ascertained,

most of the work seems to have been done by getting the best possible carburation and by some slight adjustments to the ignition, for the compression, too, is normal and is not very high.

Of course, great care was taken of the lubrication, the driver having two supplementary tanks under his control in order to maintain the level in the sump. Of these one had a feeding pressure supplied to it from the petrol tank pressure system, and the other had a hand pump, so that all eventualities might be met. Also on the side of the body there was a large screw-down greaser which fed the water pump gland to guard against leakage or seizure.

The chassis itself was, of course, gone over very carefully to eliminate rolling resistance, and the rear spring period was raised by a most interesting alteration to a pair of standard springs. These had the fourth leaf removed, and then were reassembled with this leaf upside down and on the top. This, together with the Triou shock absorbers, gave a very small amplitude of movement and an extremely high frequency. We have already remarked that the rear axle kept quite cool despite the worm drive, and have since been assured by Mr. Scott that the axle actually



THE RECORD BREAKING ARGYLL. (1) The exhaust side of the engine. (2) The inlet side of the engine, showing the straight inlet pipe leading from the carburetter behind the radiator. The funnel attached to the curved elbow of the "breather" tube is intended to convey cool air to the oil in the crank case. (3) The near side of the car. An oil pump is fitted within the driver's reach for replenishing the supply in the sump. (4) From left to right, a valve sleeve (inverted), a valve actuating gear wheel, one of the lanterned pistons, and a combustion head (also inverted) of the Argyll single sleeve valve engine.

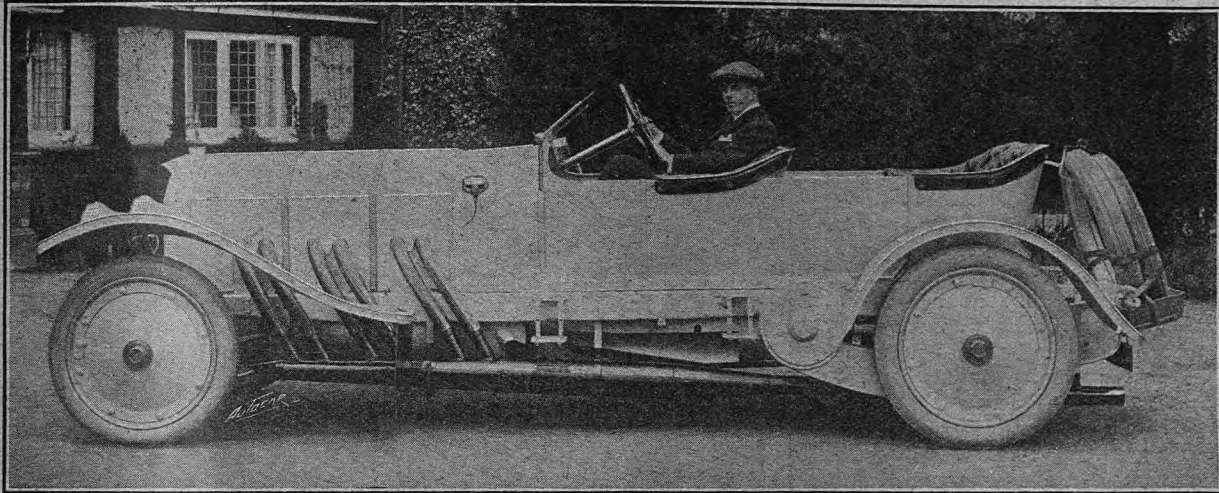
ran cooler than a bevel pattern also tried on another chassis.

As may have been judged from the illustrations of the car which have appeared, the bodywork was executed very neatly, being made in the Argyll works from sheet aluminium. No part of it had loosened after the two thousand miles and more of bumping on the track, and it is entirely devoid of any squeak,

while it is stayed with such rigidity that it does not even emit that peculiar drumming noise so common with bodies made from thin sheet metal.

With tanks partly full and radiator full the car scales about 1 ton 3 cwt., so the actual weight is not much over a ton. The third driver of the car on Tuesday last week was Mr. J. A. Toop, who took over the wheel during the final stage of the 14 hours' run.

The Record-breaking Argyll.



A 65 h.p. six-cylinder Mercedes car which has recently been turned out by Messrs. Gordon Watney and Co., Ltd., Weybridge, Surrey, for the personal use of Mr. Gordon Watney. It embodies many special features which have been fitted by the firm mentioned, including the four-seated aluminium body, which has detachable upholstery in red leather. The engine has a bore and stroke of 120 mm. by 140 mm. As seen in the illustration, it has six external exhaust pipes encased in flexible brass tubing. The ignition is the Bosch dual system; other special fittings include a Zenith carburetter, Hele-Shaw clutch, C.A.V. dynamo lighting equipment, and Dunlop detachable rims. The Auster wind screen is another detail made specially to the design of Mr. Gordon Watney, who is seen at the wheel. The wheelbase of the car is 12 ft.

Tyre Repairs and Retreading.

A Visit to an Up-to-date Works.

WE paid a visit recently to the West London Rubber Co., 339a, Upper Richmond Road, East Sheen, where we were shown, not only the process of retreading tyres, but also the manufacture of the treads themselves.

Not infrequently one finds, behind somewhat grandiloquent titles, that the resources of firms which go in for tyre repairs are of such a crude, insufficient nature as to make one feel dubious as to the probable quality of the work produced. There are tyre repairs and tyre repairs, and when what is termed "retreading" consists merely of smoothing off the old tread when worn and vulcanising on a new thin strip of rubber, it is hardly likely to inspire confidence.

We were pleased to find that the West London Rubber Co. is conducted by a man who thoroughly knows his business from A to Z, and we can say without the least reserve that we were highly pleased and completely satisfied with all that we saw. Without entering too minutely into details, it may be said that the old tread is cleaned off completely, down to the under fabric, the surface of which is then roughed by a machine to give a good grip for the solution. Before putting on the tread proper, the modern system is followed of putting under it a strip of very elastic rubber which forms a resilient cushion between the tougher tread and the under fabric, a most useful and important provision which tends to prolong the life of the tyre.

The treads are manufactured, as already mentioned, on the premises. Mr. Bankhert, the guiding spirit of the firm, before commencing business in London, had many years' experience with some of the most important tyre and rubber manufacturing firms on the Continent, so that in the mixing and manipulating of the material he works with expert knowledge and experience which enable him to make the best use of the best materials.

Non-skids, both of the leather-faced and rubber-faced varieties, are made by this firm, which works chiefly for the trade, *i.e.*, for garages and even for tyre manufacturers who have not their own repair departments. Bearing in mind, however, that many private owners object to entrusting their tyre repairs to garages, the West London Rubber Co. are prepared to accept private orders at moderate retail charges. We need hardly say that every kind of tyre repair is undertaken.

The news comes from San Francisco that Mr. Nicolas Lettinich, a student at the Santa Clara University, has applied for a patent for a new substitute for petrol which it is stated can be sold at 4d. per gallon! Not only is the new fuel—to which no name has as yet been given—cheap, but it is said to have been tried on a car, the mileage of which increased from 14 miles per gallon of petrol to 25 miles on the Lettinich spirit.

The Latest Mea Magneto.

Maximum Spark through the Full Range of Advance and Retard.

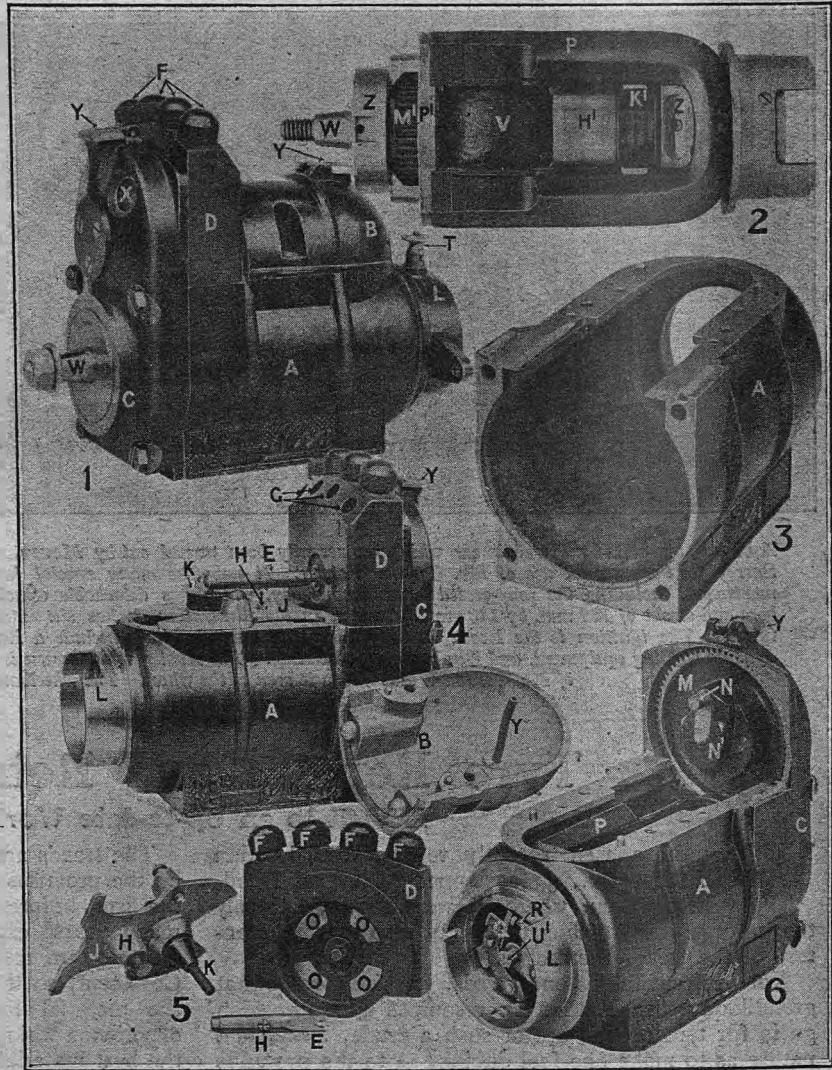
IN general appearance the most striking feature of the Mea magneto is its ostensible lack of magnets, that is to say, magnets of the usual horse-shoe pattern. As a matter of fact, a magnet of a special form is contained within the casing which envelops the greater part of the machine.

The design of this magnet is due to the great electrical engineer Werner von Siemens, who required a more permanent and compact form of magnet for his delicate electrical measuring instruments, and the outcome of his researches was the evolution of the bell-shaped magnet embodied in the Mea magneto. It is claimed to be exceptional in retaining its magnetism, and, being cylindrical, more easily incorporated in the design of instruments whose outlines are, in general, concentric.

The bell-shaped magnet is free to rock in the casing through a considerable angle, irrespective of the revolution of the armature within it, and as the cams of the contact breaker are rigidly connected to the magnet, it follows that, as the contact breaker is rocked from the advanced to the retarded position, the magnet moves with it. The consequence of this is that at any position of the contact breaker the magnet is always in the most favourable position for the production of a spark. To make this clearer we may take the case of the ordinary fixed type of magneto, with which it is usual for the maximum spark to be obtained with the contact breaker fully advanced. Should the contact breaker be retarded, the armature will have passed its most favourable position in relation to the magnet by the time the contact breaker operates to induce the high tension current, consequently this current when produced is comparatively weak. With the constant efficiency of the Mea, irrespective of the contact breaker position, starting up is easier, as the contact breaker may be retarded, thereby cancelling the risk of a back fire, while at the same time the magnet is still in a position to afford the best spark.

Before proceeding further, it may be well to remind our readers that the revolution of an armature between the poles of a magnet gives rise to low tension currents in the short thick wire winding of the armature, and sudden interruption of the flow of these currents sets up induced high tension currents in the long thin wire winding. One end of the low tension winding is connected to the insulated contact breaker rocker, leading

through the platinum points back through the body of the magneto to the other end of the winding; one end of the high tension winding is connected through the collector brush to the h.t. terminals and thence to the



THE MEA MAGNETO. Figs. 1-6. (1) The complete machine. (2) The bell magnet and armature. (3) The outer casing. (4) The machine with cover removed. (5) The brush carrier and distribution block. (6) The machine with distribution block, cover, brush carrier, and contact breaker cover removed.

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|-------------------------------|--|---------------------------|
| A, casing | K, high tension collector brush and terminal | Pr, end plate of magnet |
| B, cover | Kr, high tension collector ring | Q, contact breaker rocker |
| C, end plate | L, contact breaker case | R, platinum points |
| D, distribution block | M, half time gear wheel | T, low tension terminal |
| E, high tension conductor bar | Mi, armature gear wheel | U, contact breaker bolt |
| F, high tension terminals | N, high tension distributor brush | V, armature winding |
| G, high tension lead sockets | Ni, revolving distributor and brush | W, armature spindle |
| H, safety gap and brush | O, metal segments | X, timing window |
| Hr, high tension wiper ring | P, magnet | Y, lubricators |
| J, brush carrier | | Z, bearings |

sparkling plugs, across the spark gaps to the body of the plugs, through the engine, and thus back to the other end of the winding through the body of the magneto also. A safety gap is provided for the spark to jump across to earth should the high tension terminals be disconnected. A switch terminal is fitted on the contact breaker so that the current may be short-circuited to earth to stop the engine.

The Latest Mea Magneto.

The complete machine is shown in fig. 1, the chief feature in this being the window X in the end plate C, through which may be seen numbers on the half-time wheel corresponding to the numbers on the terminals; by this means the wiring of the engine is easily carried out, as the particular terminal to which

the high tension current is being delivered is indicated by the number which is seen whenever the distributor brush is in contact with one of the segments.

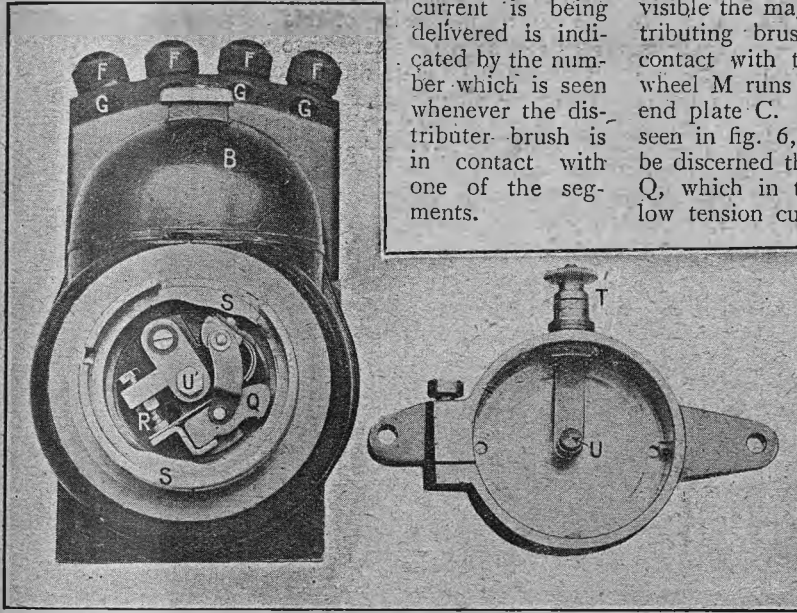


Fig. 7.—End view of the Mea magneto with contact breaker cover removed.

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|------------------------------|--------------------|---------------------------------------|
| E, cover of armature casing | Q, contact breaker | T, low tension terminal |
| F, high tension terminals | R, platinum points | U, low tension terminal brush |
| G, high tension lead sockets | S, cams | U ¹ , contact breaker bolt |

The bell-shaped magnet and the armature in position are shown in fig. 2. The open ends of the magnet are closed by a bridge piece or end plate which carries a hollow extension, in which is the fibre gear wheel and a ball bearing housing. At the opposite end is the other ball bearing housing and the contact breaker casing. Within the magnet and revolving between the two bearings is the armature V, the wiper H¹, and the high tension collector ring K¹. The whole of this unit is carried by the casing A, fig. 3.

The machine with the cover B removed is shown in fig. 4, in which can be seen the casing A, the contact breaker case L, and the end plate C carrying the half-time wheel which meshes with the one on the armature shaft. The collector brush which picks up the high tension current from the ring K¹ in fig. 2 is indicated by K, and thence the current is carried by the bar E to the centre of the high tension distributor. The distribution block D carries the metal segments which connect to the terminals F, from the sockets G of which the high tension wires lead to the sparking plugs. The safety gap for the high tension current occurs at H, the points on the brush carrier plate J being in contact with the wiper H¹, fig. 2, through a special brush. The brush carrier plate J is shown detached on the left of fig. 5, and thereon may be seen the two brushes of the safety gap H and the high tension terminal K respectively, seen in fig. 4. These two brushes bear against the wiper ring H¹ and the collector ring K¹ on the armature-shaft, fig. 2.

On the right of fig. 5 is the inside of the distribution block D with the metal segments O, which are in connection with the high tension wire terminals. The high tension current is brought by the bar E to the brush centre, whence it is distributed by the revolving

high tension distributor brush to the metal segments O.

It should be mentioned that the distributor and its gear wheel run on a pin projecting inwards to form a spigot bearing from the body of the end plate C of the casing A. Fig. 6 is a similar view to fig. 4, but with the brush carrier plate, the conductor bar, and distribution block removed. This removal renders visible the magnet P, as well as the high tension distributing brush, the centre plate of which makes contact with the brush N in fig. 5. The half-time wheel M runs on a horizontal pin projecting from the end plate C. The contact breaker mechanism is also seen in fig. 6, but more clearly in fig. 7, where may be discerned the platinum points R, one on the rocker Q, which in turn is operated by the cams S. The low tension current is brought from the armature by the contact breaker bolt U¹, which also serves to bolt the contact breaker plate to the armature end.

The armature casing cover is shown at B, and at the top of this will be seen the spring lid of the oil opening provided to lubricate one of the armature bearings. Similar facility for lubrication is also provided at the other end of the magneto, as seen in fig. 1.

The details of one of the high tension terminals are shown in fig. 8. The top of the distribution block is shown at D and one of the four metal segments at O. This is in metallic connection with the socket into which the high tension lead G is inserted, this lead being provided with a metal end piece held in the socket by the terminal F, which presses it firmly into contact with the conductor from the segment O.

In general the Mea is a very compact machine, as may be surmised from the illustrations, but undoubtedly one of its most commendable features is the fact already mentioned, that the high tension current, and therefore the spark generated, is the same strength at any point in the range of the advance and retard

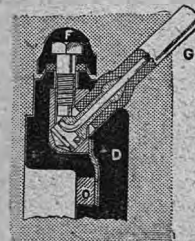


Fig. 8.—Section of the Mea high tension terminal.

- | |
|--------------------------------------|
| D, distribution block |
| F, high tension terminal |
| G, high tension lead socket and lead |
| O, metal segment |

movement of the contact breaker. It is splendidly finished and turned out, and compares most favourably with other magnetos on the market. Its sale is in the hands of the Mea Magneto Co., Ltd., Stephen Street, Tottenham Court Road, London, W., and it is handled in the Midlands by Mr. B. W. Shilson, 28, Spencer Avenue, Coventry.

Owing to the authorities of many provincial towns and villages in France notifying their intention to impose more serious fines for excessive speed and dangerous driving, the French Automobile Club has just issued a notice urging all motorists—both French and foreign—to drive carefully in all villages and at all crossings, and so deter the authorities making a movement towards the threatened stricter regulations.

The 9 h.p. Hillman Light Car.

Four Cylinders ; 60 × 120 mm. Bore and Stroke. A Large Car in Miniature.

THE new two-seated vehicle built by the Hillman Motor Co., Coventry, is essentially a miniature car, inasmuch as the difference between it and large touring cars exists merely in point of size. The bore of the four-cylinder engine is 60 mm. and the stroke 120 mm., 1,357 c.c.

The inlet and exhaust valves of each cylinder are covered by a single valve cap, the removal of which enables both valves to be taken out. An easily detachable aluminium casing is provided to enclose

clutch leather itself being fastened to the cone at the largest diameter. A universal joint is provided only at the gear box end of the clutchshaft, and is of the square block type. A clutch brake is formed on the casing of this universal joint, and consists of a segment attached to a bell crank lever, which is operated by a tie rod attached to the clutch pedal. The gate change gear box gives three speeds and a reverse, the ratios with the final reduction on the back axle being 4.5, 7.63, and

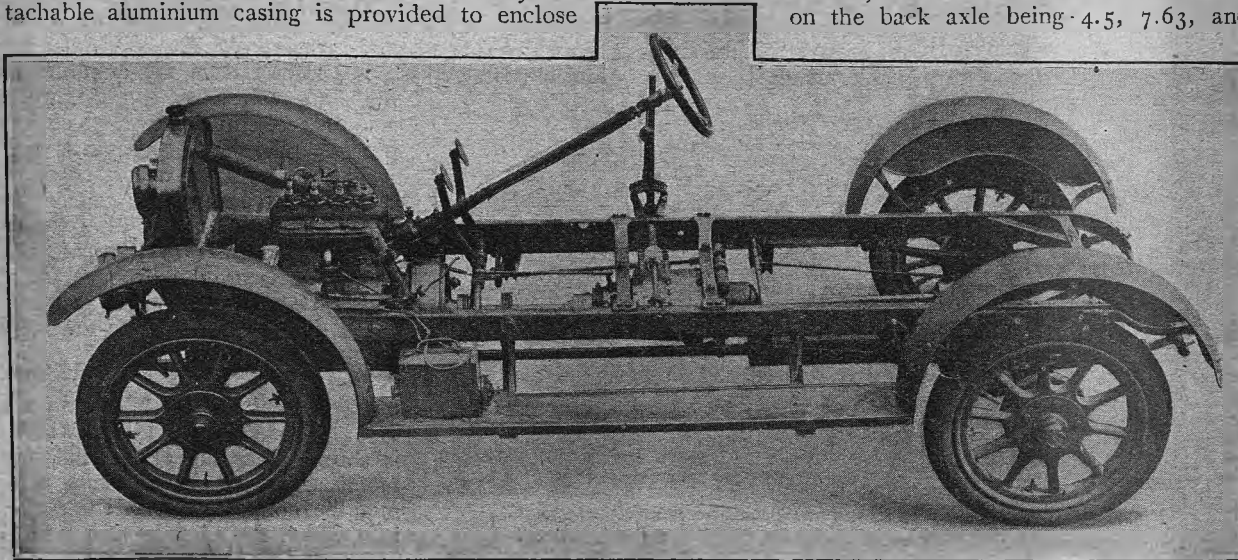


Fig. 1.—Near side view of the chassis of the Hillman light car.

valve stems, springs, and tappets. A Solex carburetter is used and fitted on the valve side, where also is the exhaust trunk, a ribbed manifold which is bolted to the side of the valve pockets from end to end of the *en bloc* engine.

The gudgeon pin bearings are of phosphor bronze, the big end bearings being of phosphor bronze lined with white metal, while the crankshaft is carried on two bearings, one at each end. The timing gear wheels are steel pinions with helically cut teeth.

The Bosch magneto is on the offside, with its axis parallel to that of the engine.

Lubrication is effected by means of a plunger pump driven from the rear end of the camshaft. This pump draws oil from the sump at the bottom of the crank case, and delivers it to troughs into which the big ends of the connecting rods dip at each revolution. Lips on the sides of the crank case pick up the flying oil and convey it to the main bearings. The water cooling is on the thermo-syphon system, with a honeycomb radiator.

The frame is of channel section pressed steel. Only two channel section cross members are used, one at the forward end, and the other at the extreme rear, the latter being braced up by angle-pieces of channel section.

A leather-faced external cone clutch is used, the driven member being made from a steel stamping with radial cuts so that a certain amount of spring is provided, the

13.12 to 1 respectively, and the reverse 17.5 to 1. All the gearshafts run on ball bearings.

Two malleable cross arms are bolted to the top flanges of either sides of the frame a short distance apart, and from the centre of these the gear box is supported, the forward end being suspended from a knuckle joint at the centre of the forward cross bracket, the rear end being bolted to the other. A drum is placed on the shaft at the rear of the gear box for the foot brake. The brake itself is a steel band split at the top and provided with helical cams, which are operated by a shaft carrying similar reverse cams. The brake band is lined with Thermoid. At the rear of the brake drum an encased split ring universal joint is provided.

At the rear axle end of the propeller-shaft a flexible telescopic square nut coupling is provided. No torque

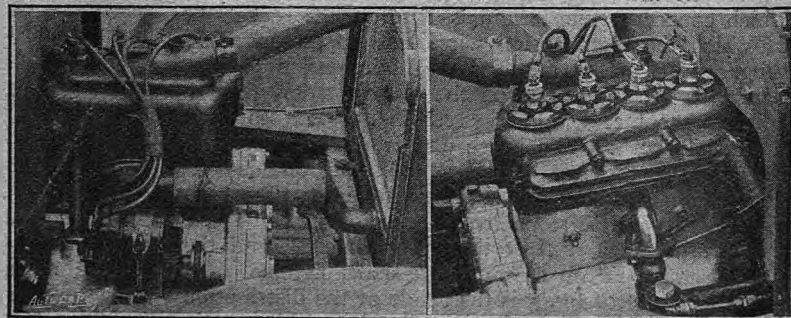


Fig. 2.—Off-side and near-side views of the engine of the new Hillman light car. It will be noticed that the magneto is in a very accessible position. Each large valve cap covers a pair of valves.

or radius rods are used, the drive being taken through the rear springs. Overhead worm drive is fitted, the differential being of the parallel pinion type. The

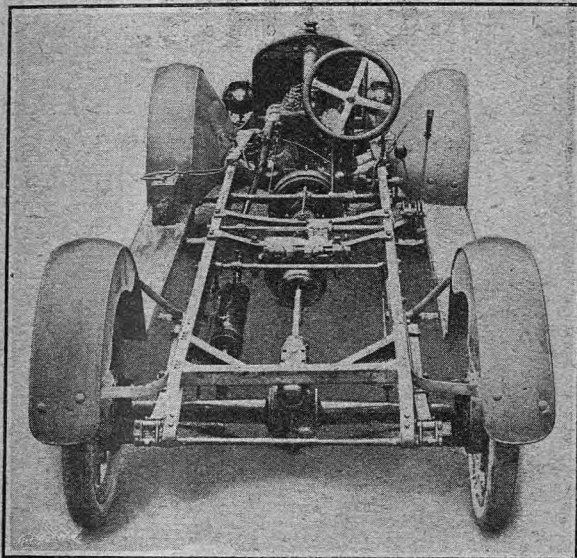


Fig. 3.—Rear view of the chassis of the Hillman light car, showing the worm driven rear axle and other details.

rear axle itself consists of a central steel casting, to each side of which a tapered and flanged cast steel tube is attached. 700 x 85 mm. Sankey detachable steel

wheels are fitted. Semi-elliptic springs are used both at the back and front; the front axle is of H section stamped steel. The steering gear is of the worm and sector type with plain bearings and a ball thrust to the worm. A petrol tank with a capacity of five gallons is fixed in the scuttle dash. The following are a few of the leading dimensions: Wheelbase, 7ft. 6in.; track, 4ft.; overall length, 10ft. 10in.; overall

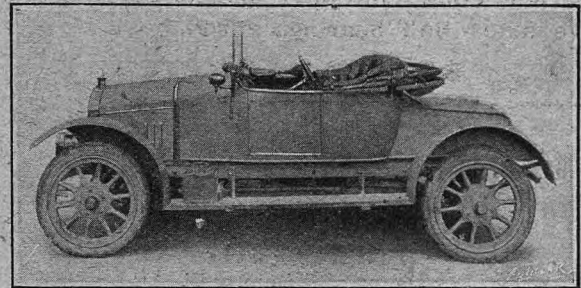


Fig. 4.—The Hillman light car complete with standard two-seated body, hood and screen.

width, 4ft. 10in.; minimum ground clearance, 8in. The width of the seat is 36in. The weight of the complete car is 12½ cwt.

The standard car has a two-seater body with scuttle dash, the price complete being £200, fitted with hood, screen, acetylene head lamps and generator, electric horn, side and tail lamps, spare wheel and tyre, number plates, and kit of tools.

Royal Automobile Club Trial.

The "Standard" Petroleum Carburetter and Vaporiser.

A THOUSAND miles road test took place between April 29th and May 6th, under R.A.C. observation, of a "Standard" petroleum carburetter and vaporiser entered by the Standard Petroleum Carburetter (Parent) Co., Ltd., 171, Queen Victoria Street, E.C., and a certificate of performance has been issued by the Club which contains the following particulars:

Description of Device.—Paraffin is admitted under gravity to a float chamber of the usual form situated to the rear of the silencer of the car. The fuel passes to a jet, immediately above which is an orifice with an adjustable shutter for the admission of air. A tube leaving the jet chamber takes the paraffin-charged air to the vaporiser situated in front of the silencer. The vaporiser consists of a coil of tube in a chamber to which the exhaust is admitted. Between the throttle and the vaporiser is an automatic air valve, the strength of the spring of which is controlled by the driver. The mixture is then taken through a throttle to a three-way cock, which communicates with the engine and also with an ordinary petrol carburetter, the throttle of which is linked up with that of the paraffin carburetter. The three-way cock determines from which source the engine draws its mixture.

The weight of the whole device, including vaporiser, was 35 lbs. 11 ozs., and was fitted to a 20 h.p. (22.4 R.A.C. rating) Ford car.

Particulars of Car.—Bore and stroke of engine, 95 mm. x 102 mm.; number of cylinders, 4; weight—front axle 6 cwt. 3 qrs. 22 lbs., back axle 8 cwt. 2 qrs. 1 lb.; total weight, 15½ cwt. approximately; average weight of load, 3 cwt. 0 qrs. 6 lbs.; average running weight, 18½ cwt. approximately; gear ratio on top gear, 3.63 to 1; size of wheels, 760 mm.; engine revolutions on top gear at 20 m.p.h., 816 r.p.m.; country of origin of device, England.

The cubical content of the compression space of a cylinder of the engine was 261 c.c., and the volume swept by the piston was 723 c.c., giving a compression ratio of 3.8.

Fuel Used.—The paraffin oil used was subjected to a

distillation test, and the following is the result of the test, and also of one of ordinary commercial burning oil.

	Fuel used.	Ordinary Paraffin Oil.
10% distilled over at	... 144°C.	... 152°C.
20% " " "	... 153°C.	... 164°C.
30% " " "	... 160°C.	... 181°C.
40% " " "	... 167°C.	... 198°C.
50% " " "	... 172°C.	... 209°C.
60% " " "	... 180°C.	... 229°C.
70% " " "	... 190°C.	... 243°C.
80% " " "	... 204°C.	... 261°C.
90% " " "	... 224°C.	... 280°C.

The trial was held upon the Club's six standard routes, the total distance traversed being 1,000 miles, which was covered at an average speed (running time only) of 19.91 m.p.h. The weather was fine, and the roads in good condition. During the trial the engine was started thirty-five times, of which six were after standing overnight. On ten occasions, after short stops (longest seven minutes), the engine was started on paraffin; at other times the petrol carburetter was used for starting. The average time elapsing after starting until the fuel was changed over to paraffin was 2m. 29s. The longest wait was 4m. 56s., which was after standing all night. On seven occasions experimental attempts were made to change to paraffin prior to doing so successfully. The engine was stopped accidentally once when changing gear. It was found that the three-way cock mentioned in the description had moved, putting the engine partly into communication with the petrol carburetter, from which the petrol had been turned off. On two other occasions the engine was accidentally stopped when starting or stopping the car. No work was done upon the carburetter or upon the engine during the trial. The temperature of the cooling water was taken at intervals, and was found to vary between 91°C. (196°F.) and 93°C. (200°F.).

The amount of paraffin used was 30.28 gallons, being a consumption of 33.03 miles per gallon or 35.69 ton miles per gallon; 1.69 gallons of petrol were used for starting purposes.

At the conclusion of the trial the cylinders of the engine were removed. There was a somewhat considerable amount of deposit upon the pistons and cylinder heads.

On the Road.

The Coachman-chauffeur and the Driver-mechanic.

AS I am in doubt as to the exact official publication that voices the complaints and interests of chauffeurs and other motor drivers, I will report my sad case here in the hope that it may be seen and attended to. It happened recently, and the scene was 'the town of Rugby. Bored with my company and suffering from a horrible *table d'hôte* dinner, I went into a cinematograph theatre and watched various dramas and comedies unfolded. I suffered funny Frenchmen and worse Yanks, a sloppy Continental love tale, and then "it" came. "It" was an American importation entitled "The Doctor's Photograph," and here lies my tale. I am afraid I must tell the whole of it to make it clear.

Beginning with an American lady fondling a photograph of a long-haired doctor in dress clothes, the scene changes to his surgery and crowds of waiting patients. His list is rudely set aside by a man with a criminal face, who tells him his only child lies dying. Putting aside the panellists and directing his assistants to give them the A.D.T. bottle (A., as my friend Mr. Warren Bell has explained, means "any," and T. means "thing"), he leaves the house with the man, and by means

of knives, swabs, cuts, and hand-holding, in twelve hours he saves the little girl's life, and, kissing her on the brow and refusing all rewards, leaves for home.

Next scene. The "doc" arrives at his lover's house in the *soi-disant* country, and presents her with a new likeness. Overjoyed they kiss until bed time, when she departs. He, after smoking last pipe, also retires. Darkness, but by faint gleams something is

happening. A window opens and in comes little by little our friend the sick child's father in his true colours as a burglar. To look around for five minutes and then to pouch all the silver lying about is his task. All is fish that comes to his net, and the last thing



THE EMBODIMENT OF JOVIALITY. The occupants of one of the cars which took part in the procession organised by the Leipzig Automobile Club to commemorate the battle of Leipzig, 1813.

he takes is the new "photo." Heavens! he breaks into a sweat. That face! those eyes! that hair! Where has he seen them? Then he realises, but while yet he gazes—we see "insets," as it were, of the two sleepers in their respective rooms being alarmed by suspicious noises—in come the doctor and his lady. Then the fat is in the fire. He makes no attempt to escape. The doctor sadly but firmly admonishes him.

Overcome by remorse he disgorges his plunder, followed immediately by the production of an enormous jemmy, his beautiful electric torch, a sand-bag, and many other house-breaking and offensive weapons. One by one the "doc." takes them over, and then, with a blessing, allows him to depart. End of Scene II.

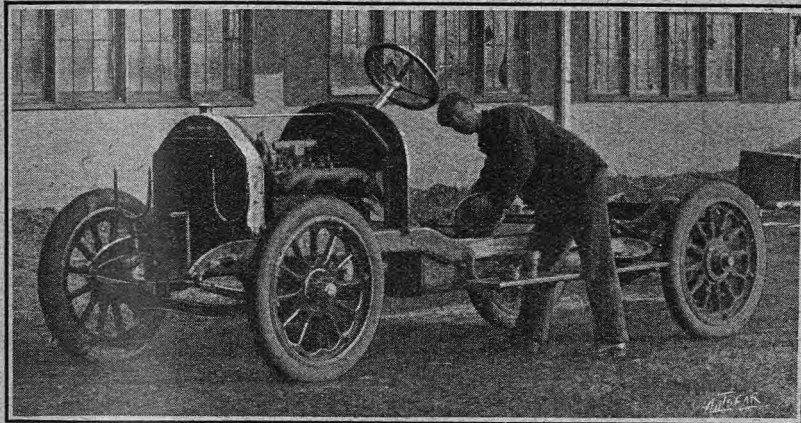
Now, if this were all I should not have written of it. But Scene III. is called "A Position of Trust," and, lo and behold in it we see the physician and his new wife waiting for their new auto. It arrives, and the new chauffeur descends. He is—ah, reader, you have guessed it—he is none other than the reformed ex-burglar.

Now we know what happens in the land of wooden nutmegs, we know why ordinary folk go about invariably with "guns." But to reproduce this tale here, here where chauffeurs have clubs and organisations and banquets, is a heinous libel



THE BATTLE OF LEIPZIG. To commemorate the battle of 1813, the Leipzig Automobile Club organised a procession in which 150 cars took part. These are seen in a row in front of the Imperial Law Courts.

that reflects on all the class. I think the Committees of the Head Chauffeurs' Club, the Institute of Mechanic Drivers, and of the Society of Motoring Companions, ought to interfere to prevent thousands and thousands of ignorant people from believing that all chauffeurs are recruited from the ranks of criminals.



From America hails the above photograph, which, it is stated depicts the son of a New York millionaire exporter working on a 40 h.p. Pathfinder chassis. It is to be hoped he will discover the mistake he is making in good time, for he appears to be placing the crown bevel and differential in the gear box.

There may have been magistrates and district councillors present—I was in the front row and could not see the cheap parts of the house—certainly in some towns those in authority over motorists must see the film. Therefore, it must be stopped, and in its place I will write another play showing the many and various inquisitions necessary over here before the best and most righteous of men may enter the ranks of those who are responsible for and direct our British motors. I have great fears as to the future of the British chauffeur of the highest and most expensive type. With very few exceptions there is, to them, a horrible simplicity coming over modern motor cars, and very soon there will be no more need for a driver to know about their insides than for a gamekeeper to know all about gun-making or for a postman to understand the art of polite letter writing. It is true that a good man, as now, will be worth more than an indifferent one, but who shall judge by how much?

A perfect engineering expert is an excellent adjunct to a car, but, from the nature of the case, an expensive one. Very often, too, because a man is a motor expert he is a road hog of the worst type, and cannot understand why his passengers should be more afraid of accident and disaster than he is himself. All men who drive themselves make bad passengers, and, personally, I am one of the most timid men when I am being driven. What my feelings would be if I were being rushed along in my own car by a scorcher I went in fear of I cannot imagine.

I do not say that all experts are scorchers, but undoubtedly some of them are, and the money in wages that one would expend over such would hardly be saved by engineering skill that saved a biennial over-

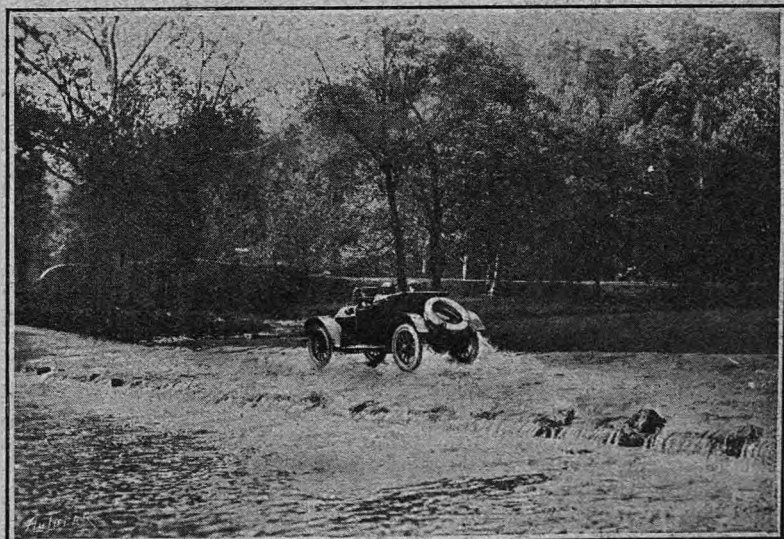
haul, even in the unlikely case of no accidents at all having been met with. These gentlemen, also, must cost a terrible lot in tyres. I was reading only last week an account of a scorching rush across a country in which a raw (to motoring) journalist talks of a *coup de frein* that burst a cover as a bit of fine driving and rhapsodises on the music of an un-silenced exhaust. Joy-rider, I call him.

On the Road.

Then we come to the next class of driver, one who can tack *p.s.* to his name and hopes to get paid as an expert. Of course he varies, but there is no motoring school experience worth anything, and all the initial societies in the world would not convince me otherwise. He, in his opinion, is miles ahead of the converted coachman or groom, a low being who touches his hat and delights in any odd jobs. But is he right? Is the man who knew the road before there were motors, who knew how horses hated them, and who knew all about horses the worse for his knowledge? Is he, because he was a horseman, of no use as a mechanic? There can be no doubt

about the answer, and nine car-owners out of every ten in the country will be with me when I put it down in print that the best driver and the man who looks after his car best is one of the same class and breed as the nearly extinct coachman.

Even the expert will not deny that the ex-coachman can wash and clean a car better, or at any rate does so, and occasionally he may admit that he can also drive fairly well. But as for knowing what is wrong with a car, well—And yet, when we come to consider the matter, what does go wrong with a car on the road nowadays that is not either patent to a beginner or else beyond all but the super expert? With the experience learnt on a bad old car the tricks of a modern one are palpable, and one choked jet, cracked plug, broken wire, or fractured petrol pipe should be



MOTORING ACROSS A WATERFALL. Motorists when passing through the Rock Tree Park, Washington, U.S.A., cross a ford which is really a road laid across the stream in such a way that it causes a miniature waterfall. The road is wide enough for two cars to pass each other.

On the Road.

enough to teach the learner for all time. But one cannot teach without demonstration, and all the imaginary disasters in the world are not nearly so valuable as an actual one. Tyres are another matter, for their repair or substitution comes entirely by practice, and no theory is of much value. With tyres everyone starts fair, and beginners of to-day may be glad they did not learn in the days before there were spare wheels and rims to bring them home without having to change covers and tubes on the road itself then and there.

I am discussing this matter merely from what I regard as the average owner's point of view. In spite of

is that an intelligent servant, of the same class that coachmen and grooms come from, makes the most satisfactory driver, and in the end will prove to be the most economical. As a rule, one knows something about his folk and his previous employers, and long years in London or in the "shops" have not demoralised him or taught him to be too sharp. But, in having one's coachman or gardener taught, see that his education is not merely theoretical.

A case came recently to my notice where an absolute novice was sent to be taught to drive with a view to caring for one of our most expensive and intricate British cars. Possibly here practical education took



A MODERN CHARIOT ON AN ANCIENT HIGHWAY. A 30-50 h.p. six-cylinder (100 x 120 mm.) Armstrong-Whitworth car touring in Italy. The paved road is the Appian Way which was begun by Appius Claudius Cæcus about 312 B.C., and is the oldest and most famous of the Roman roads. It extends from ancient Rome through Capua to Brundisium, now known as Brindisi, and is laid over the 14ft. to 18ft. of its width with hexagonal blocks of stone. From Rome to Brindisi is 300 miles as the crow flies.

what one hears as to the ability of a highly-skilled chauffeur to effect repairs, it is a moot point whether there is an economy in paying any driver more than forty shillings a week at the most, because the extra fifty pounds a year one of these superior folk costs will cover a lot of small expenses and provide at least a year's petrol. To say nothing of the fact that, as a rule, a washer and cleaner will be wanted as well.

Of course, when a "stud" of cars is in question, a senior who can put them all right and tell his subordinates what to do and how to do it pays well, but I am not discussing this side of the matter—I am writing of the ordinary over-taxed country gentleman or lady, who has no money to burn, and who looks for his, or her, motors to take the place of the dispossessed horses and carriages. To these my advice

up too much of his time at the expense of the other branch of the subject. At anyrate, he had not driven the new car half-a-mile when he put it into a dray, and the new owner had to put off her arrangements and defer her happiness for yet another month.

When motoring was in its early days there was a very pretty motto in general use which ran, "Never learn to drive on your own car," with a corollary that it was much cheaper to hire somebody's else's even at a most exorbitant rate. There was much sense in it, too, for either gear boxes were not such handy contraptions as they are to-day, or else gear-changing is easier. Perhaps, also, frequent gear-changing is not nearly so necessary. Now the popular motto runs, "Any fool can drive a motor—and most fools do."

OWEN JOHN.

Leaves from a Sportsman's Notebook.

By J. Fairfax Blakeborough.

A Risky Procedure.

I HAVE often had cause to regret that I have not been endowed with the patience and the understanding to manage a camera. I did once buy one but had to confess myself hopelessly beaten. The other day I was once more full of regret at my inability to snapshot, for I saw a combination which would have made an interesting and fitting picture for this page. A groom passed the front of my house riding a motor cycle and leading a stallion horse which trotted along in front, as far as the leading rein would allow it, for all the world as though yoked in tandem. The groom was saving time and saving his legs in doing so. He was only travelling at the trotting speed of a horse—say seven or eight miles an hour—but one fancies he was seeking trouble when he got amongst the traffic of the town near which I live. One wonders, too, what he would do with the horse if his motor cycle went wrong in a country lane. I am afraid it would mean leaving the cycle.

The Pace of Horses.

The reference to the trotting pace of the horse in charge of the motor cycle-mounted groom must not be taken as being the average rate at which horses travel. Twelve miles an hour is nothing extraordinary, and I remember on one occasion going with a race horse trainer friend through Thirsk to the Seven Stars Inn at Sutton-under-the-Whitstone-Cliffe (all that goes for one half-penny on a telegram) in half an hour and five minutes. The distance cannot be less than eight or nine miles. We never broke trot, and beat another friend, who had a pony of whose trotting capabilities he boasted much, by almost five minutes. It is only fair to add that the old horse we drove developed a "sand-crack" afterwards, and was liable to go lame. He was, however, the fastest horse and hardest puller I ever drove. When we were going away racing from Hambleton Hills we used regularly to allow ourselves no longer than a few minutes over the half-hour to descend the mountain (down Sutton Bank so well-known to motorists) and cover the remaining seven miles to Thirsk station.

I wonder why it is that one seems to be travelling so much faster when behind a good trotter than when seated in a car going twice the pace? The fact remains that one does feel this, and the only explanation is that the eye sees the horse's legs, and the vibration and rattle of the wheels convey to the brain the idea of excessive speed.

Whilst dealing with problems, has it been explained why it is instinct in the *genus homo* to prefer to go at a great speed than to travel slowly? One often finds this instinct developed very strongly in the sex feminine. Something of the fascination of the speed of locomotion was caught by that delightful sporting poet (who never lived to see a motor and who loved a horse above everything), Adam Lindsay Gordon, who wrote:

"Oh! the vigour with which the air is rife,
The spirit of joyous motion;
The fever, the fulness of animal life,
Can be drained from no earthly potion."

Saddle and Car-seat.

Just as those who have never travelled in a smooth-running well-driven car cannot form any conception of the pleasure derived from a motor journey, so those who have never ridden thoroughbred horses can have

little idea of the fascination of the motion of these graceful animals. A good car spoils one for old ramshackle conveyances, the blood horse disenchant one with common, short-stepping, inside-shaking, half-bred animals. For some three years I lived in training stables, and prior to that I had ridden Irish hunters. I very soon became a convert to the action of the thoroughbred, and look back with great delight upon the early morning exercise gallops I used to ride on the top of those Yorkshire hills with their wide tracts of spongy turf, whereon so many famous horses have done their "work" prior to winning races. Mr. Godfrey Miller was also training at Hambleton at the time, and he not infrequently used to hire a car to take him to local race meetings. He has retired from training, and now many of our Northern trainers have bought motors of their own. Mr. Peacock, of Middleham, has one. Mr. Renwick, of Whitewall, Malton, has one, and drives to Langton Wold every morning to see his horses do their work. His car is seen standing outside his house at six o'clock every morning, and is there again by ten o'clock or before when there is racing in the North. I know no class of men so desirous of giving their friends the benefit of their cars as those connected with training. It is to them a delight to give a lift to brother trainers in a smaller way than themselves and to jockeys who are to attend the same fixture. The veteran Mr. John Osborne (who trained the winner of this year's Chester Cup and has had several other winners, though going on for nonagenarianship) has taken to the car like a duck takes to water, though one of the very men who, one would imagine, would be so conservative as to refuse to ride in a horseless vehicle.



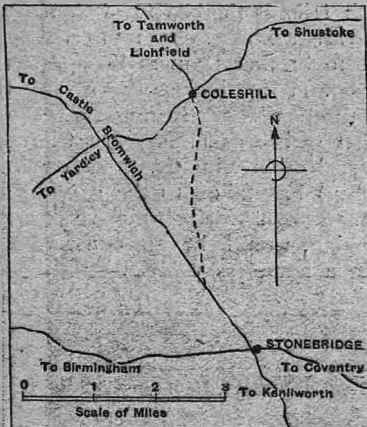
OUTSIDE THE MUNRO PALACE, RIO DE JANEIRO. The Munro Palace was the Brazilian exhibit at the St. Louis Exposition. On the completion of the exhibition it was taken to pieces, transported to Rio, and re-erected at the entrance of the Avenida de Branco, the principal boulevard in Rio. The car is a 16-20 h.p. Wolseley.

Steel Motor Houses.

From the country where once (at least according to the writer Artimus Ward) they made nutmegs out of wood, come motor houses of steel. The Edwards Steelcote motor houses are, save for beams, uprights, etc., formed entirely of galvanised steel, galvanised by the Tightcote process, by which the sheets are galvanised after resquaring, and so rusting at the edges is prevented. The motor houses are sent out in sections cut exactly to shape and ready to go into place to form the sides, ends, roof, and doors. Each piece of frame is also cut to proper length. All pieces are plainly marked to correspond with numbers on the accompanying blue print, so that any carpenter, chauffeur, mechanic, or private owner can set the house up in a very short time, there being no cutting or fitting to be done. A catalogue descriptive of these houses can be obtained from Messrs. Reed and Co., 3, Morning Post Buildings, 346, Strand, W.C.

A Pot-hole Avoiding Route.

Mention was recently made by "Owen John" of the execrable condition of the surface of the greater portion of the road lying between Stonebridge (on the Coventry-Birmingham Road) and Coleshill—the most pot-hole road in existence he called it. Time was when the run from Stonebridge to Coleshill, which stretch is a portion of one of the main roads running north to Lichfield, Stafford, etc., or *vice versa*, formed one of the pleasantest imaginable, owing to the good surface of the road and the nature of the country thereabouts. Now, as "Owen John" says, it is a road to be avoided; it is a mass of deep pot-holes, and is, in either



A map showing how to avoid the bad stretch of road between Stonebridge and Coleshill, which is a part of one of the main roads leading north through Lichfield, Stafford, etc. The bad stretch is indicated by a broken line.

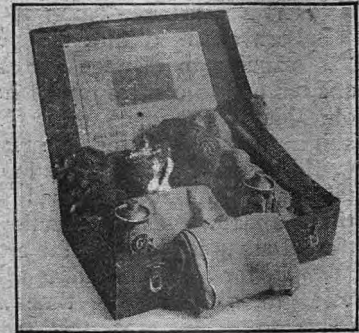
generally speaking, in a terrible condition in either fine or wet weather.

There is no need, however, for the motorist bound for Coleshill from Stonebridge to go far out of his way to avoid this pot-hole stretch, as reference to the accompanying map will show. The road indicated by a broken line is the one complained of; it can be avoided and Coleshill reached by running along the Castle Bromwich road for about three miles and then turning sharply to the right, when a drive of a little over a mile and a half brings one to Coleshill, the turn into the main street of which, by the way, must be taken with care. As will be gathered from the map, the distance by the road we advise is not much longer than by the direct way—about a mile and a half—while the surface of the road is far superior. There are earlier cross-roads, however, after leaving the fork north of Stonebridge, but these must not be taken as they lead into the bad stretch at about its very worst portions.

c.40

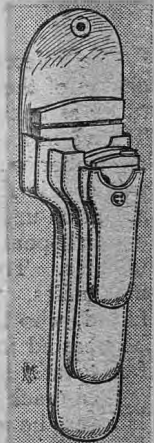
Some Useful Accessories.

Several interesting accessories have recently been placed on the market by Messrs. John Barker and Co., Ltd., High Street, Kensington, W. One is the guinea cleaning outfit, which is illustrated herewith. It contains seven useful sponges, a spoke brush, two tins of polish, one dozen swabs and a large chamois leather, while the whole is contained in a fibre casing with spring fastenings, so that the outfit may be neatly stowed away in the garage.



Barker's cleaning outfit.

We also illustrate a nest of adjustable spanners in a pigskin leather case, containing three different sizes; one for ordinary use, one for small work in more or less inaccessible places, while the smallest one is invaluable for electrical adjustments. The same firm also supply a similar leather case containing tube spanners of different sizes, and have lately introduced a toolbox containing trays for the tools, brass bound and supplied with a good lock. Somewhat similar to the cleaning outfit is what is known as the motor joint box, containing washers of all kinds, joint paste, asbestos string, sheet asbestos and sheet fibre. Such an outfit should be exceedingly useful to those owner-drivers who execute their repairs and adjustments themselves.



A set of three adjustable spanners in a leather case.

Proposed Medical Examination of Motor Car Drivers in France.

A private Bill has been introduced into the French Parliament in which it is proposed that all applicants for licences to drive motor cars shall submit a medical service showing (1) that they have a good constitution, (2) normal sight, (3) normal hearing, (4) that they are not suffering from any complaint, such as heart disease, which might cause a sudden collapse, and (5) that they do not suffer from monomania, hysteria, epilepsy, or other complaint of the kind. The member responsible for the measure draws attention to the danger attendant on the present system of granting licences, pointing out that there is nothing in the present regulations to prevent deaf persons or those with bad sight, etc., from procuring driving licences. He also points out that such a certificate is required of railway employees.

The Isle of Man Race.

The Stock Car Race for the Tourist Trophy, promoted by the Royal Automobile Club and banned by the Society of Motor Manufacturers and Traders, will not be held in September next, as arranged, as an insufficient number of entries has been received.

Benzole.

Some Firms from which it may be Obtained.

Distillers and Distributers.

CUMBERLAND.

Fimby.—West Cumberland Bye-Product Co., Ltd.

DURHAM.

Durham.—New Brancepeth Colliery.
Perryhill.—Dean and Chapter Colliery Co.
Gateshead-on-Tyne.—Judge, Brand and Co., Ltd.
Newcastle-on-Tyne.—Team Bye-Product Co., Ltd., Dunston.
Spennymoor.—Sadler and Co., Ltd.
Sunderland.—Brotherton and Co.

LANCASHIRE.

Accrington.—The Altham and Hanwood Colliery.
Church.—W. Metcalf, Ltd.
Manchester.—Clayton Aniline Co., Ltd.
" Crawfords, Ltd., Stretford Road, and Chorlton Road.
" Hardman and Holden, Miles Platting.
" J. E. C. Lord, Ship Canal Tar Works, Waste.
" H. N. Morris and Co., Ltd., Gorton Brook Chemical Works, S.E.
Wigan.—Wigan Coal and Iron Co., Ltd.
Liverpool.—Brotherton and Co.
" Bradbury and Hirsch, 11, Dale Street.
Ulverston.—Sadler and Co., Ltd.

LONDON.

Blagdon, Waugh and Co., 4, Lloyds Avenue, E.C.
S. Bowley and Son, Battersea, S.W.
Birt, Boulton and Haywood, 64, Cannon Street, E.C.
Thos. Crow and Sons, West Ham, E.
Gas Light and Coke Co., Ltd., Westminster, Beckton, and Goswell Road.
Gas Lighting Improvement Co., Salisbury House, E.C.
Otto Gas Co., Queen Street Place.
Product Works, Backton and North Woolwich.
South Metropolitan Gas Co., East Greenwich.

STAFFORDSHIRE.

Kidsgrove.—Birchenwood Colliery Co., Ltd.
Stoke.—Talk o' th' Hill Colliery, near Stoke.
Tunstall.—Staffordshire Chemical Co., Ltd., Chatterley.
Wolverhampton.—Sadler and Co., Ltd.
" Major and Co., Ltd.

YORKSHIRE.

Barnsley.—Mitchell Main Colliery Co.
" The Old S.L. Stone Chemical Works, Ltd., Darton, near Barnsley.
Clockheaton.—Henry Ellison, Ltd.
Dunsbury.—J. B. Brown and Co., Saville Town.
Huddersfield.—J. W. Leitch and Co., Milnsbridge Works.
" Read Holliday and Sons, Ltd.
Hull.—Blenkin and Son, 76, Queen Street.
" Blundell, Spence and Co., Ltd.
" E. Hardman and Co., Bedford Street, Wilmington.
" Major and Co., Ltd., Sculcoates.
Knottingley.—Stainsby and Lyon, Ltd., Aire Tar Works.
Leeds.—Protherton and Co., Ltd.
" George Exley and Son, Hunslet Lane.
" J. G. Roper and Sons, Low Fold Mills, East Street.
" Tunstall and Co., Ltd., Leeds-Bridge.
Middlesbrough.—Bolc'ow, Vaughan and Co., Ltd.
" Cochrane and Co.
" R. Heath and Co.
" Major and Co., Ltd.
" Sadler and Co., Ltd.
Normanton.—Whitwood Chemical Works
Rotherham.—Ellison and Mitchell, Ltd., Kilnhurst.
Sheffield.—Newton, Chambers and Co., Thorncliffe.
" Manchester Autocars, Ltd., Whitworth Street.

NORTH WALES.

FLINTSHIRE.

Prestatyn.—Meldrum and Co.

SCOTLAND.

LANARKSHIRE.

Glasgow.—William Baird and Co., Ltd., West Street.
" Brotherton and Co., Troyan Chemical Works.
" Provan Chemical Works.

LINLITHGOWSHIRE.

Linlithgow.—Philipstoun Oil Co.
" James Ross and Co., Ltd.

Dealers and Retailers.

BUCKINGHAMSHIRE.

Slough.—B. A. Harris, 163, High Street.

CHESHIRE.

Altrincham.—C. Alexander, 132, Ashley Road, Hale.
Birkenhead.—The Birkenhead Motor Works, Duke Street.
" The Mersey Motor Co., Ltd., Conway Street.

DERBYSHIRE.

Ashbourne.—A. R. Atkey and Co., Ltd.
Derby.—A. R. Atkey and Co., Ltd.
Matlock Bath.—E. Williams and Co., Ltd., South Parade.

ESSEX.

Colchester.—Adams and Co., 47, Culver Street.

KENT.

Deal.—C. J. Lindsell and Co., Broad Street Garage.

LANCASHIRE.

Liverpool.—Theo and Co., 6, Hatton Garden.
" Trueman Motor Co., Ltd., 54, Trueman Street.
Manchester.—Baxendale and Co., Ltd., Miller Street Works.
" Max R. Lawrence, 33, Blackfriars Street.
" Manchester Autocars, Ltd., Whitworth Street.

LEICESTERSHIRE.

Leicester.—Green and Co., Evesham Road.
North Evington.—W. H. Coffin, Gwendolen Road.

LONDON.

Ariel and General Repairs, Ltd., Camberwell New Road, S.E.
Clifford and Co., Main Road, Sidcup, S.E.
Finchley Road Garage, Ltd., Lymington Road, Hampstead.
Gamage, Ltd., Holborn, E.C.
The Kingston Motor Works, High Street, Kingston.
The Lankester Engineering Co., 39, Eden Street, Kingston.
S. Newton and Co., Brixton Hill; also 109, Streatham Hill.
Ormerod and Co., Chelsea Garage, 85, King's Road, Chelsea.
T. F. Ralph and Co., 61-63, Bathurst Mews, Sussex Square, W.
Southern Automobiles, Ltd., Blackheath, S.E.
G. Stone and Co., Thornton Road, Clapham Park.

NOTTINGHAMSHIRE.

Nottingham.—A. R. Atkey and Co., Ltd.

OXFORDSHIRE.

Reading.—P. Smallbone and Co., 499, Oxford Road.

SOMERSETSHIRE.

Bridgwater.—The Bridgwater Motor Co., Ltd., Eastover.

STAFFORDSHIRE.

Lichfield.—Jones and Co., Bird Street and Bore Street.
Uttoxeter.—A. R. Atkey and Co., Ltd.

SURREY.

Aldershot.—Aldershot Traction Co., Halincote Road.
Byfleet.—The Pyfleet Automobile Co., Old Woking Road.
Egham.—The Egham Motor Co.; 1, 2, and 157, High Street.
Weybridge.—Brooklands A.R.C. Brooklands Track.

WARWICKSHIRE.

Birmingham.—Arthur E. Hooke, 167, High Street, Erdington.
" Alfred Huggins and Co., Ltd., 68, Broad Street.
" M. Whittingham Jones, 77, Edgbaston Road.
Dunchurch.—Sam Robbins, Ltd.
Rugby.—Sam Robbins, Ltd., Bilton Road.

YORKSHIRE.

Leeds.—R. Wilkie, 68, Albion Street.
Middlesbrough.—Nesham's Central Garage, Grange Road, E.
Scarborough.—J. S. Atkinson, Belle Vue Street.
" Castlehouse, Ltd., Victoria Road.
" Castlehouse and Turner, Somerset Terrace.
" T. M. Hebborn, Falsgrave Road.
" Vasey and Drewery, Westwood Road.
" Walker and Hutton, St. Nicholas Cliff.
" Stanningley-Armitage Co., Bradford Road.
York.—Gibbs and Co., Fawcett Street, Fishergate.

SCOTLAND.

Inverness.—Macrae and Dick, motor engineers.

SOUTH WALES.

GLAMORGAN.

Cardiff.—James Howell and Co., Wharton Street.

MONMOUTHSHIRE.

Newport.—The Newport Motor Car Co., 84, High Street.
Pontypool.—Woolley and Co.

Derelict Tyres.

Patches of Fabric or Leather Stitched to the Casing to be Repaired.

MR. TOM CANN, of Messrs. Tom Cann, Ltd., Leicester, will admit with pride to the craft of shoemaking since his earliest days, and we may say that but for his knowledge of this ancient industry the successful method of tyre repairing which his firm now practises in ever increasing volume would probably never have occurred to him. In travelling over a large area of country in the pursuit of his business the concomitant tyre worries and expense caused him to turn his attention to the subject to save his own pocket, and the method prompted by his knowledge of shoemaking proved so successful that from doing a few repairs for himself and friends he has gradually built up a very large business. Joined by his two sons, who had engineering and rubber experience, the methods were improved, and special machinery designed with such effect that Messrs. Tom Cann, Ltd., claim to have many thousands of repaired tyres running in the United Kingdom to-day with all-round success.

Let us briefly recite the process of repair as lately demonstrated to us, in the case of a cover badly burst diagonally across the tread, as shown in the accompanying illustration.

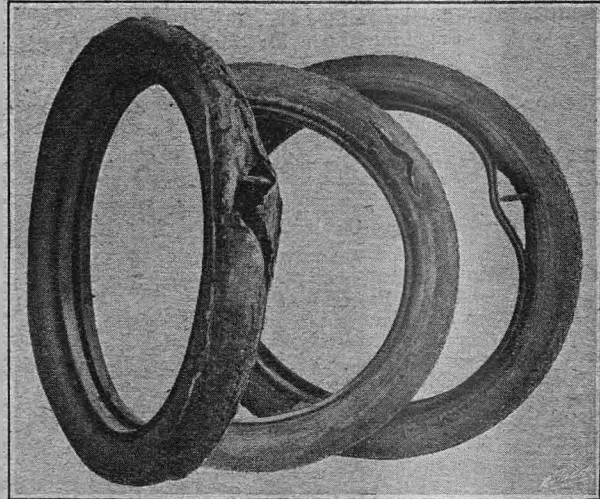
The casing is stripped down to its foundation, and the fabric is "stepped" for some distance all round the burst. It is then thoroughly buffed to open its pores, and rubber solution forced into it, layer by layer of specially frictioned material being then sewn together and to the original carcass. It is the special method of sewing the fabric over the whole area of the repair that forms one of the features of the Cann method. One ply of pure Para is added, and sufficient new rubber vulcanising compound is used to form the tread.

Only the portion of the cover to be repaired is placed in a specially constructed mould. This special mould is also a feature of the Cann repair, the construction of which we are not permitted to mention, but each repair has its own mould, so that the exact conformation and pattern of the cover is retained. Only the portion actually under repair is subjected to pressure and heat, no other part of the old tyre coming in for double vulcanisation.

A feature is also made of retreading, all the old surface rubber being removed, the casing buffed, and

a layer of pure Para rubber used under the tread. In addition, a ply of heavy canvas is stretched right round the inside of the cover and well sewn to the carcass.

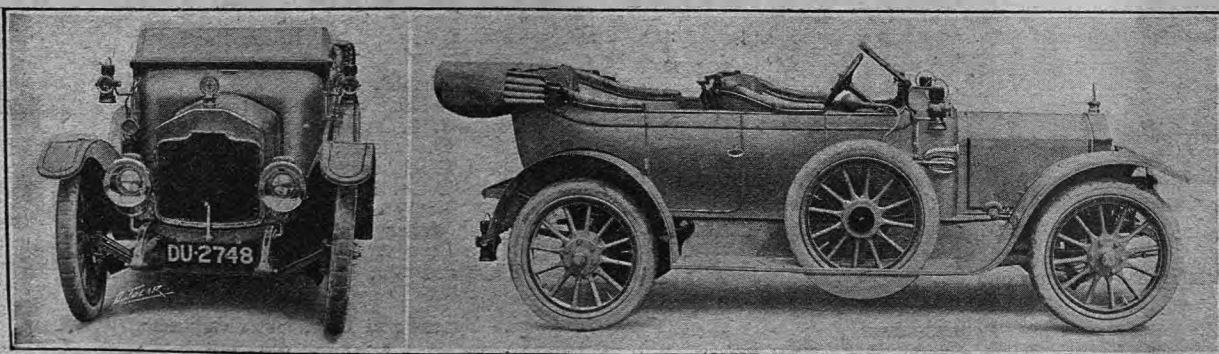
Realising that rust is the deadly enemy of pneumatic tyres, and that it attacks the beads in a very deadly manner, Messrs. Tom Cann, Ltd., have introduced a method of protecting the bead against rust by encasing it all round with chrome leather in such a manner that it is not only proof against rust, but the



Three examples of derelict tyres successfully repaired by Messrs. Tom Cann, Ltd., Leicester.

rim is also rendered watertight, and the cover is further strengthened as to its sides. This method was described and illustrated in our issue of 25th January last.

A torn-away bead such as shown in the right hand of the three illustrations herewith can be repaired by a Cann process, wherein a patch of chrome leather is used and stitched to the carcass after encircling the bead at the torn-away portion and for some inches on each side. As most of our readers know, such a tyre defect has not hitherto been considered worthy of repair.



Two views of one of the latest 12 h.p. Rover cars fitted with standard flush-sided body, hood, and screen. The special equipment includes a luggage grid, Auster back screen, Lucas lamps with a D.A. outfit, and 815 x 105 mm. tyres. The finish is grey with green upholstery and black plated fittings, including the metal portions of the screen. The front seats have 2in. additional leg room as compared with standard.

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.

A UNITED ASSOCIATION OF MOTORISTS.

[19609.]—On the subject of motoring societies and associations, may I be allowed to support the views expressed by "Owen John" in your last issue? Surely the amount of money wasted in payment of road scouts and other "problematical" luxuries must be enormous. One-tenth of this sum spent on guide posts and improvement of dangerous corners, etc., would be far more useful. With increasing prices of petrol and other commodities, the object of motorists is to reduce expenses in all matters which are not really essential.

I would even go further than your contributor, and ask what good at the present time are the local and county associations? In my view these also seem to have had their day and to have become an anachronism.

All that seems to be required now is one strong society, representative of all motorists, to conduct reliable and absolutely independent trials, to provide facilities for foreign touring, to influence motoring legislation, and to improve road conditions wherever possible. F. H. HUTTON.

[19610.]—"Owen John," in your issue of the 31st ult., opens up a very large question, and personally I should have been glad if he had wound up his article by enumerating his real remedies. No one can be more trenchant when he likes than "Owen John"; but after clearly recapitulating the evils and abuses pregnant in the ruling circles of automobilism, he stops short over the remedies to be applied. In former letters I have endeavoured to deal squarely with the position of the R.A.C., and when its chairman stated at the annual meeting that most of the abuses criticised were to be remedied, my friends and myself publicly declared we would cease our criticisms and that the Club should be given a chance.

Our astonishment when the letters passed between the R.A.C. and the Victor Tyre Co. were published was great, and personally I believed there must be an explanation. I sought it from the R.A.C., but got nothing but rebuffs for my pains and a refusal of information. I made a special journey to see Mr. Yarworth Jones, who proved to me from documentary evidence that his published statements were correct.

Now further letters are published in *Truth* of May 28th, the whole leaving no doubt that the R.A.C. has not played the game. The merits or demerits of the tyre controversy have no interest to myself—I have never used anything but Dunlops, Michelins, and Avons—but the question as to whether the organisation to which I belong is conducting its business on right lines or not is of direct personal interest.

With the evidence before me I am compelled to resign my connection with the R.A.C. If the Club will side-step in one direction it will do it in others, and I cannot honestly belong to such an organisation. My own resignation counts as nothing, but I believe that every motorist not blinded by prejudice is contemplating a similar step, and that therefore I shall make one amongst many others.

Now the question arises, Does "Owen John" mean that he thinks the Club will reform and lower its subscriptions and do all that he desires, or does he really mean that there is room for another organisation incorporating what he outlines?

There will be many thousands of motorists who will agree that much smaller subscriptions would be sufficient to finance a suitable society (what motorists really want is a society) to look after and defend their interests. Not a "Society of Encouragement," and not one to trundle to the trade in any way, but just a Union of Motorists to further their own ends purely. We do not want the road scouts, we do not want everything subordinated to the interests of motor manufacturers and agents, but we do want a real society of amateur motorists legislating on

their own behalf, in the way that seems best to themselves. A very moderate subscription (plus thousands of members) would provide for legislative efforts, for bringing pressure to bear upon road improvement schemes and all matters pertaining to the open road, for advice upon touring and all matters affecting automobilism, for the defence of test cases, for mutual self-help in oppressive cases, and, indeed, for almost all the "benefits" now advertised by the Club excepting the road guides. Would it not be of general interest to have a real discussion in your columns from your readers? Do they think a new society is wanted, and, if so, on what lines? Let the subject be thoroughly threshed out in all its bearings, and let us see whether motorists are really so negligent of their own interests as the present leaders deem them to be. Will those who would be willing to help in the formation of such a society also write to me personally, and we will see what can be done. A. W. FARNSWORTH.

Devonshire Club, S.W.

POLICE TRAPS IN ESSEX.

[19611.]—In reply to [19584], I must plainly state that I do not agree with this gentleman's remarks, which to anyone who does not know the road are quite misleading. Having a car of my own, which I drive myself, and having travelled this particular road from Ingatestone to Widford frequently during the past eight years, I am in a position to state that it is quite an open country road between these two places, free from any dangerous corners, and could with perfect safety be negotiated at forty miles an hour if necessary. Ingatestone itself, with its narrow main street, is well looked after by road signs and the police. Widford and Margaretting are so small that neither could hardly be called a village. And then this gentleman dilates about the mud and the slush and the dense clouds of dust.

Surely this is a matter for the Essex County Council to deal with if this main road is in such a disgraceful condition.

The worst offenders, in this gentleman's opinion, appear to be coming from or returning to London. What a downright silly remark. Where else could they be going? Every schoolboy knows that this particular road is the main road between London and the East Coast. "F" then concludes without being able to mention one serious motor accident by stating that they are asking for a ten-mile limit and hope to get it. F. S. BARTON.

BIRKENHEAD FERRY CHARGES FOR MOTOR CARS.

[19612.]—Although the charges for the conveyance of motor cars across the Birkenhead ferry have recently been amended they are still unsatisfactory in some respects. The amended regulations provide that no four-wheeled motor cars are allowed to cross the river in the passenger steamers between twelve o'clock midnight and 5 a.m. (8 a.m. Sundays). A special luggage steamer may be engaged for crossing after the daily service is ended at 10.35 p.m. and before the ordinary luggage boat service commences on the following day at 5 a.m. The charges for these special trips are 7s. 6d. till 11 p.m. for one or two cars, and for more than two 3s. each; between 11 p.m. and midnight one or two cars 15s., more than two 6s. each; between midnight and 5 a.m. cars are taken by passenger boat at 10s. each, except cars which are too large for the passenger boats, in which case the charge is £2. The luggage steamers start sailing at 5.30 a.m. on weekdays. On Sundays the luggage steamer does not start until 10 a.m., but cars will be conveyed by passenger steamer until 8 a.m. at 10s. each. On Sundays before the scheduled time of the vehicle steamers (10 a.m.) special trips can be arranged at the following rates: Between 8 and 10 a.m., 7s. 6d. each car; between 6 and 8 a.m., 15s. each (for cars too large for the passenger steamers); between 5 and 6 a.m., 20s. each car (any size). The regulations to be observed when motor cars are conveyed by passenger steamer between midnight and 5 a.m. (Sundays 8 a.m.) are as follows: "None

Correspondence.

of the passengers, except the driver, are to be allowed in the car while the car is passing, to or from the boat, and the driver must also alight when the car is in its proper place on board the boat, and the engines of the car have been stopped. The driver must not re-enter the car or start the engine, until the gangways are down and all the passengers have disembarked. The petrol and oil tanks must not be refilled while the car is on the boat. Motor cars using the passenger steamers must not exceed 6ft. 3in. in height and 6ft. 5in. in breadth over all."

The arrangements for Sunday morning are most unreasonable, as they practically bind the motorist not to start till 10 a.m. The luggage boat, instead of the passenger boat, should be run hourly every night, as not only the motorist, but horse traffic, commercial motor traffic, and passengers would take advantage of the arrangement. The people who will suffer most under the present arrangement are the American tourists, who for the most part use the ferries at night. There is sufficient river traffic at night to demand a luggage boat every hour, and when it became known that such a boat was running a great number of vehicles would take advantage of it. At present it is impossible for Birkenhead people to cross to Liverpool with their landaulets at night, or *vice versa*, whereas if the luggage boat were put into service instead of the passenger boat, and at a reasonable charge, motorists could use their landaulets to visit their friends at night.

TAYLOR.

THE COACHBUILDERS' SECTION AT THE SHOW.

[19613].—It is the universal grievance of the coachbuilders' section at the Olympia Motor Show that only a very small percentage of actual buyers filter through into the annexe.

As there does not seem any likelihood of the coachbuilding industry obtaining stands in the main hall, it behoves the trade to find a means of obtaining the maximum recognition of their productions, upon which so much forethought and money have been spent.

One must acknowledge that the exhibitors in the coachbuilders' section deserve more attention than they receive.

I think the whole aspect of the conditions might be changed by utilising one of the existing entrances to the exhibition at the extreme end of the annexe, opening into Blythe Road. This would relieve the pressure at the Addison Road entrance, and at the same time give the coachbuilder the notice he requires.

Visitors entering from Addison Road have come to recognise the annexe as a *cul de sac*, and turn at the end of the main hall, but if there were an exit at the Blythe Road end, this tendency to "cut" the annexe would be checked.

The cost of the instalment of the necessary turnstiles would be practically nil, but the value of the resulting business would be enormous.

If you would kindly give up a little of your valuable space to this suggestion and to comments from other exhibitors, I feel confident that you would earn the gratitude of the whole coachbuilding trade.

A. SPEIGHT,

General Manager of the Regent Carriage Co., Ltd.

CLIMBING EDGE HILL.

[19614].—We were very interested to read the letter under this heading [No. 19568] from a correspondent signing himself "Buff," but he appears to have failed to notice that the 20-40 h.p. Metallurgique was started at the cross road at the foot of Edge Hill where it was already on the gradient, thus rendering it impossible to get a good run at it. In these circumstances, we are quite convinced that no standard car of reasonable power and with gears not specially made for the purpose could possibly ascend the hill on third gear, even with only one passenger. To do so is a performance the merit of which depends entirely upon the state of the road, as when the 20-40 Metallurgique made the climb in question, the rain had made the first corner too greasy to be taken at such a speed as would be necessary. At the same time, starting as it did, the engine of the Metallurgique was never much short of its maximum revolutions. It did not "roar up," except in a very special sense of the phrase, as the motor is designed to remain quiet and contented under all speeds and loads.

Far from making a song about the performance, we would beg to remind your correspondent that we did nothing of the kind. The statement appeared in *The Autocar* that first gear was used in topping Edge Hill, and we made the climb under discussion simply to show that this was entirely due to a slight mistake on the part of the gentleman who was then driving the car.

c48

Our only regret is that "Buff" is in South Africa; perhaps when he returns (if he still has the same car), a match could be fixed up, when we should be quite prepared to give him the benefit of an engine larger than ours by fifteen per cent., and more than ten per cent. greater diameter in the bore.

METALLURGIQUE, LIMITED.

Oscar Cupper, Managing Director.

THE SPEEDOMETER DRIVE.

[19615].—Your correspondent "L.A.L.," writing in *The Autocar* of May 31st, suggests a means of driving the speedometer from the tail end of the wormshaft, and we would point out that this method of drive is adopted by the B.S.A. Co. for the B.S.A. cars. The dome which covers the tail stock of the worm is removed, and on the end of the wormshaft is fixed a small sprocket. In place of the dome shaped cap is fitted a neat aluminium oil-tight chain case with another sprocket at the other end in an eccentric bush. The spindle on which this latter sprocket runs projects through the case and is finished to take various makes of speedometer-shaft (Watford, Smith, Stewart, and Cowey). The flexible shaft can thus be laid in a straight line past the gear box, which is part of the back axle, and strapped to the torque tube at intervals, and as the torque tube encloses the propeller-shaft, the cable is kept very clean, and can be carried in a neat bend up to the instrument on the dash. There is no necessity for sharp bends, and the cable is not subject to any appreciable distortion.

We have found this drive in conjunction with Watford speedometers to be highly satisfactory, and we supply all B.S.A. cars fitted with this type of speedometer drive.

BYFLEET AUTOMOBILE ENGINEERING CO.,

E. Dougill.

MUDGUARDS.

[19616].—Your editorial comment of the 24th ult. on the subject of inefficient mudguards interested me keenly. I should be very pleased to enter a little vehicle should the suggested trials take place, for, in addition to the points you raise, the very large area of the wings and valances covered with mud does not improve the appearance of a car.

I have found good results by using domed wings with extensive valances; in fact, these extensions should arrest the drops from the front leading edge of the wings, and it appears that the closer the guards fit the wheels the more efficient the mudguarding, provided, of course, sufficient clearance is allowed.

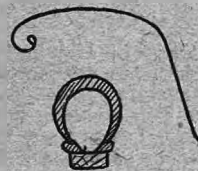
I would like to voice the unpleasant experience of faster cars cutting in immediately after passing, and throwing mud at the victim from the driving wheels.

A. E. PARNACOTT.

[19617].—I was most interested in reading your article on mudguards in the issue of *The Autocar* May 24th.

It is quite obvious that the present type of mudguard is not satisfactory, and, with a view to preventing this splashing, I recently designed and protected a mudguard of the domed type with the edges curved inwards so as to form a channel that would hold and carry all mud, dust, and water to the lowest point of the guard. I do not know if it will be sufficiently novel and effective, or whether any of your readers would be interested in trying the idea. The section of the guard would be somewhat as shown in the diagram.

W. BRYANT.



MOTOR OMNIBUS DEVELOPMENT.

[19618].—With reference to the remarks of your correspondent "Old Tight Lidy" in the letter No. 19595 published in your issue of May 31st, whilst I agree with some of the remarks, it must be borne in mind that a great improvement has taken place in the London General Omnibus Co.'s running of motor omnibuses compared with what occurred a few years ago, and when one reflects upon this, it must be admitted that great strides have been made in a great organisation in a comparatively short period of time.

My principal reason for writing this letter is because I do not agree with the last paragraph of your correspondent's letter.

As one who daily drives in the London traffic with a 15 h.p. two-seater Napier, I find a vast improvement in the behaviour generally of the London motor omnibus drivers. They do not purposely, as a rule, crowd or squeeze lighter vehicles, but on the contrary are wonderfully considerate.

Correspondence.

For my part, I find, on overtaking these quiet running motor omnibuses and giving the signal, that generally they draw to the left and give room for one to pass.

When one thinks of the daily strain that these drivers have in connection with their work, I think it shows a greatly improved organisation compared with the past, and I have no doubt that as time goes on conditions will even further improve, as the omnibus companies' managers no doubt fully recognise that they must supply a good service to the public without being a nuisance to other road users, and will act accordingly.

H. T. VANE,
General Manager, Napier Motors, Ltd.

A NEW GOSPEL OF LUBRICATION.

[19619.]—In reference to your article under the above heading, I may say that I have been using Oildag for the last two months in my 45 h.p. Sheffield-Simplex. The Oildag is supplied in tins, of sufficient quantity to mix with five gallons of the ordinary lubricating oil generally used, and it seems to be quite immaterial what oil is used. As far as I can see, the graphite does not settle in the oil, the vibration from the engine being quite sufficient to keep it properly mixed.

Since using Oildag the compression of the engine has greatly improved, and the engine uses far less oil. It used about a quart of oil for every hundred miles, but since the introduction of the Oildag it does not require quite a quart for every two hundred miles, which is considerable economy.

I have not examined the valves since using the Oildag, but will do so and let you know the result of the examination, but, judging from the excellence of the compression, I do not think there can be much wrong with them. The only difficulty is to obtain the Oildag, but this may be had from Messrs. Paddon Bros., Albemarle Street, London, who supply it in tins of the above-mentioned size.

I have no interest in the firm mentioned.

R. KIRKE, JUN.

OIL AND PETROL CONSUMPTION ON FORD CARS.

[19620.]—I noticed in a recent issue of *The Autocar*, page 748, a paragraph appears which gives a very false impression. It is headed "A Useful Accessory for Ford Cars," and begins with the words "In order to obviate the necessity for frequent stops for oil replenishment." Now twice last week I drove my Ford over 200 miles in a day; on each occasion I oiled up before starting and inserted a little more at lunch time. This can hardly be called frequently stopping for oil replenishment. With regard to "Owner's" complaint about only getting 9 m.p.g. of petrol, I ran from here (Dover) to Llanelly, 340 miles, on twelve gallons of spirit.

ED. CH. FISHER.

THE A.A. SUBSCRIPTION.

[19621.]—With regard to the trenchant criticisms of the A.A. by "Owen John," I should like to say that I agree with him to a very great extent, and think that if pressure were brought to bear on the rulers of the Association by a large number of members something might be done to improve the lot of the "Man in the Car." In renewing my subscription this year I have also tendered my resignation, to take effect at the end of the year unless the subscription be reduced to £1 ls., pointing out that this economy could be effected if the number of scouts were reduced and only placed near traps—I recently passed eight during a forty-mile run on a trapless road—and by removing the horrible coffin-shaped telephone boxes which are becoming an eyesore on the roads near London. The whole *raison d'être* of the A.A. is to warn members of traps; this can surely be done at a guinea a head, and if those who agree with me will take similar steps to enforce their wishes it will be done.

MEDICUS, W.S.C.

HEAVY FUELS: A WARNING.

[19622.]—I would like to call your readers' attention to a possible danger in the use of benzole or paraffin. It is quite possible to use these fuels, and with quite satisfactory results, provided the matter has been thoroughly considered. Of course, it is pretty generally known that benzole and paraffin do not vaporise as readily as petrol, and there is a very considerable danger of fuels that do not vaporise quickly of creating very serious damage to the engine by being sucked through the carburetter in the cylinder, and a portion only being vaporised and used, the remainder washing the oil off the cylinder walls and getting down into the crank case, and, on several occasions, scored cylinders and melted bearings have been the result.

When using benzole, it is desirable to have the carburetter very efficiently heated, and if there is any length of induction pipe this should be heated as well. In the case of paraffin, a really efficient vaporiser must be used between the engine and the carburetter, as unless this is fitted an enormous quantity of fuel has to be used in order to get enough, as only a certain proportion of whatever quantity is sucked from the carburetter will vaporise; the remainder will play havoc in a motor car engine, especially if there is any suspicion of leakage past the piston. Of course, some engines will use benzole better than others, as some have more efficient cooling arrangements, and the cooler the engine is, the more trouble is likely to occur.

My experience with air-cooled engines is that they will use common paraffin perfectly without any vaporiser at all, but directly water cooling is adopted the trouble begins. An engine that keeps so cool that you can bear your hand on the cylinders after it has been running an hour or so may have advantages, but it is certainly not the kind of engine to use common fuels in. In an engine of this description, a certain portion of the radiator should be covered up so that the water may become much hotter, and the hotter it becomes, the more efficient is the engine up to anything below boiling point.

Care should be taken that really good oil is used. Of course, everyone is anxious now to reduce the fuel consumption to the lowest possible limit owing to the very high price of petrol, but I have proved that it is quite possible to drive a 15 h.p. four-cylinder car thirty miles at a cost of 1s. 4d. for fuel by the use of petrol and benzole in a specially-constructed carburetter.

C. BINKS.

CARBON DEPOSIT IN CYLINDERS.

[19623.]—Having read your article in *The Autocar* of May 17th, page 899, re copper in engine cylinders not carbonising up, I fancy the theory put forward by your correspondent is somewhat faulty. As copper conducts heat so well, it would carry heat from the surface and remain cooler than the iron, but under very slight heat copper forms a scale of black oxide which has such a very different "co-efficient of expansion" under heat that when the metal cools it flies off, and no doubt takes the carbon deposit with it. If anyone wishes to prove this, let him heat a copper sheet over the gas and allow it to cool. The oxide will chip off and cause a crackling noise as it does so.

NEMO.

ROADS NEAR SALISBURY.

[19624.]—May I draw the attention of your readers to the fearfully dusty state of the roads in the neighbourhood of Salisbury? Tarring of roads in this district is unheard of, and as the Salisbury Rural District Council frequently use chalk as a binding medium, the result is not only discomfort, but serious danger with fast motor traffic on the roads, especially on market days, when there is a very large number of carriers' carts and other horsed vehicles. The dust is so dense and blinding that it is generally wise to slow down on passing a dust-raising car. I was nearly run into a week or so ago after passing a motor char-à-banc by a motor cyclist and sidecar, who was "blinding" through the white cloud raised by this monster, and endeavouring to overtake it.

It is really scandalous that these roads should year after year be inches deep in dust in the summer and nothing done to remedy it, and it is a grievous hardship to poor people who use the roads on foot or in the carriers' carts.

In Salisbury itself conditions are not much better. Tar painting has recently been heard of there, and some experiments have been made on a few side streets.

SARUM.

CAMBRIDGE MOTORISTS.

[19525.]—In reference to my letter [19585] on the above subject, I enclose two more press cuttings which seem to me to bear out the statement I made in my former letter.

I add to my statement that I do not, of course, blame the police, as they have to do, I suppose, what they are told; indeed, I have reasons to believe the proceedings are in some cases distasteful to them personally, but with that, of course, motorists in general have no concern. ROBERT C. PIERRE.

[The cuttings enclosed are reports of proceedings against motorists before the local police court, and we must say that, on the published evidence, the fines inflicted appear to be somewhat harsh.—Ed.]

THE VICTOR TYRE TEST.

[19626.]—On the correspondence as published, I should think, as a business man myself, that Mr. Yarworth Jones has thought rather less of his business interests and rather

Correspondence.

more of the interests of the R.A.C. This is sportsmanship, doubtless, but Mr. Yarworth Jones seems to have imagined that the spirit of sport is common. As a matter of fact it is not. I am not a member of the R.A.C., but I can easily see that the R.A.C. is a commercial and not a sporting institution. Acting upon the assumption that it was a sporting institution, Mr. Yarworth Jones seems to have trusted it to act as such. That was Mr. Yarworth Jones's mistake.

The R.A.C. was presented with a commercial opportunity and took it. The R.A.C. in that case has also made a mistake. It has forgotten the nature of the man it has to deal with.

Mr. Yarworth Jones has, during the course of this controversy, shown that he is also a fighting man to whom the power of the R.A.C. does not seriously count. I think the R.A.C. is going to regret its lack of business acumen, leaving the sport out of it entirely. I think, also, the fight is good, because it makes the real position clear. It enables us to set a value upon the R.A.C. and its work. If that value is not complimentary to the R.A.C., that is the penalty the R.A.C. must pay for its stupidity.

I do not agree with your correspondent that this discussion is wearisome. It has a strong human interest. I shall watch developments as a motorist, as a business man, and, as I like, a sportsman. J.D.

that "the ultimate tension will not fall heavily upon the finances of the concern attempting to arrange their supply."

JAMES W. PERROTT, Secretary,

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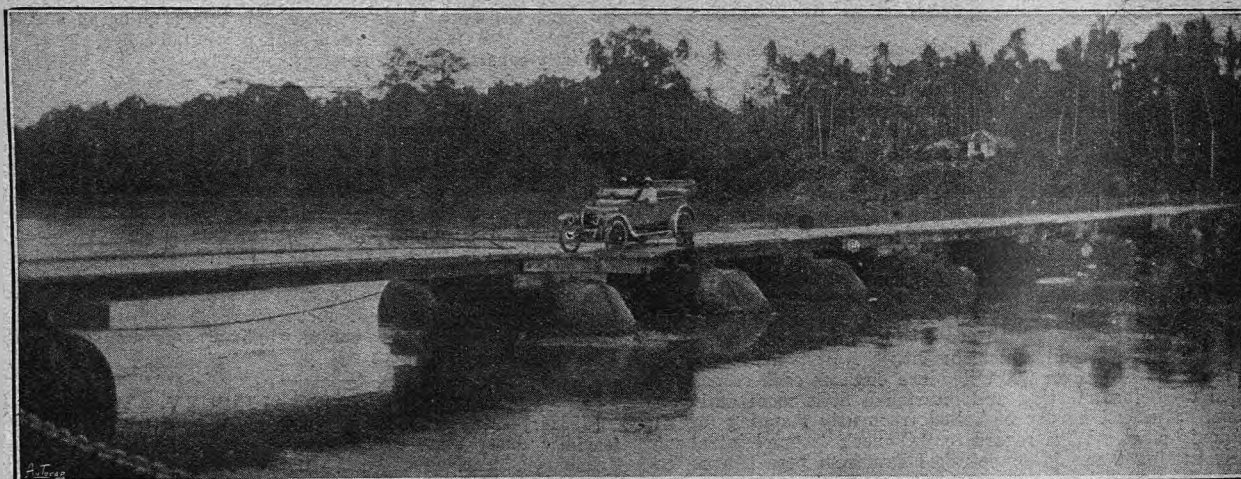
MOTORING IN THE MALAY STATES.

[19629.]—As a regular reader of *The Autocar*, I send you a photograph taken on a recent motor run I made from Penang to Ipoh on a 15 h.p. Daimler.

The photograph was taken right in the heart of the rubber industry near Kuala Kangsar, about forty miles from Ipoh, and, I trust, will prove interesting to readers of your paper, more particularly so to subscribers who at one time resided in Malaya.

The view represented is that of the Engor Bridge and river taken from the bank showing the 15 h.p. Daimler crossing.

It is quite a novel and almost exciting experience to pass over this pontoon bridge for the first time. The approach is down a series of pontoons resting on the banks and running parallel to the river. The gradient is considerable, and, should the brakes fail, the car and occupants would be precipitated into the river, which swarms with crocodiles, as a right angle turn has to be negotiated before one actually gets on to the bridge. The boards are only loosely laid on the



MOTORING IN THE HEART OF THE RUBBER DISTRICT IN THE MALAY STATES. A 15 h.p. Daimler crossing the Engor pontoon bridge on the road from Penang to Ipoh.

PERPETUAL MOTION (?)

[19627.]—With reference to your various correspondents' ideas and suggestions with regard to alleged perpetual motion, it would be interesting to know how either the R.A.C. or the Treasury will find a rating for competitions, taxation, and so forth. Can either Mr. Perrott or anyone else make a suggestion in this direction? The whole thing is interesting if it is practicable. R. JEFFRIES ADAM.

[19628.]—Mr. Charles H. Hole [letter 19604] is very kind indeed to qualify Dr. Sandor's invention, as far as he could appreciate it from my account, as "something almost more wonderful than 'perpetual motion.'"

I am glad to state that Dr. Sandor has found a marvellously cheap method of providing power and a wonderfully efficient and cheap material for storing and giving out energy. Mr. Hole's interpretation of the words "useful life" and all the subsequent conclusions are evidently the result of a misunderstanding. The paragraph relating to "useful life" reads as follows: "The springs are by no means expensive, the 18 h.p. size costing only £2 10s. each, and the makers guarantee a useful life of one year, but they are confident that the springs will last for about two and a half years."

The guarantee of the manufacturers as to the quality of the material of course has no connection whatsoever with the requirements of the mechanism. The springs have to be rewound after 492 hours' run, during which time only fifteen outer spirals of spring No. 1 have been unwound. The rewinding is done on a well known principle of leverage, and a 2½ h.p. spring motor is sufficient for the purpose. Should Mr. Charles H. Hole be desirous to go fully into the technical details of Dr. Sandor's spring motors, he will find a most hearty reception at our offices, and would be easily convinced

rafters, and the noise caused by the boards jumping up and down as the car goes over them is considerable. It is also a common occurrence for the front of the car to drop from six to nine inches going from one pontoon to the other.

Penang, F.M.S.

A REGULAR READER.

ACCELERATOR V. DECELERATOR.

[19630.]—The writer of letter 19561 says that he has "yet to meet a car whose carburetter will be proof against a sudden and complete depression of the accelerator pedal." I should be glad to introduce him to my 28 h.p. Humber limousine, which is fitted with a Binks carburetter and an Eismann automatic advance magneto. In this car it is possible to plunge the accelerator pedal down entirely, and the engine never chokes, but just gets away and develops power quietly. I agree with "Governor" so far as to admit that I never met with this before, and it surprised the Humber testers. RUSSELL.

THE DISGRACEFUL STATE OF THE HOLYHEAD ROAD.

[19631.]—Please note that the excellent photographs sent you by Mr. Palethorpe, and published in *The Autocar* of May 24th (page 942), are of a portion of the Holyhead Road in the county of Merioneth.

CHARLES S. MAINWARING, Colonel,

Chairman of the Denbighshire Committee.

THE S.M.M.T. AND PRICE MAINTENANCE.

[19632.]—We notice in your issue of the 31st ult. a letter from "A Fair Trader" [No. 19593], whose original letter on the subject of the S.M.M.T. and price maintenance is quite fresh in our memory.

We have, of course, noticed the apparent reluctance of the trade to enter into a public discussion in your columns on this subject, and it is very interesting to note that, although the Trade Debating Society decided practically unanimously that price maintenance was to the advantage of all concerned, no champions can be found to write to *The Autocar* and say in what manner this desirable result is brought about.

What the argument is that proves price maintenance to be to the advantage of the consumer, *i.e.*, the public, we cannot even imagine, since its only effect is to keep up the prices, whereas, in many instances, we have ourselves demonstrated that a fair profit can be made by the retailer, although he may be selling at less than the fixed price. It is the consumer with whom this firm has mainly to deal, and it is simply repeating a very old statement of our policy to say that we consider the best way of conducting our business is to please the consumer by supplying him with the very best quality we can, charging a fair profit only. With the trade we are not concerned, but if they were content with reasonable profits and fair competition instead of demanding inflated profits and fixing a retail price, we are quite sure their profits would show no diminution whatever.

A. W. GAMAGE, LTD.

ROAD MANNERS.

[19633.]—May I use your paper as a means of suggesting to the chauffeur of car No. LH — that he takes lessons in: 1, the rule of the road; 2, judging distances; 3, ordinary manners.

ROBERT YCLE.

[We omit the number of the car, but suggest that our correspondent should communicate it to the R.A.C. and the A.A. and M.U.—Ed.]

MOTOR SPIRIT MADE AT HOME.

[19634.]—Respecting letter 19606 in your correspondence columns of May 31st, has Mr. Higgins given a thought to the necessity for a still licence and the inspections of the still by the local excise officer? In distilling crude oils, will he not become a motor spirit manufacturer, and will not the excise officials require him to take out a licence and make an entry of premises and utensils, and will they not harass him with stringent regulations?

H₂O.

ELECTRIC SELF-STARTERS:

[19635.]—I think "Lieut-Col.'s" [letter No. 19573] astonishment on reading Mr. Bell's article must have been shared by all owners of 1912-13 Cadillacs.

That Mr. Bell should give such small space to the electric self-starter, and describe it as full of difficulties, too elaborate, and prohibitive in cost, was surely enough to amaze those of us who have had practical experience with the system. The difficulties have been overcome. The apparatus, as installed in my car, is less complicated than any electric lighting set I have yet seen, and the cost, judging by the price of the complete car, cannot be very high. I am told that it can be supplied for about £50, and I know from recent experience that an electric lighting set alone costs that amount in this country when fitted as an extra to a car.

I have never seen any complaint of failure of the Cadillac system in your columns, and I cannot understand why it is not generally adopted. I enquired recently if it could be supplied with a new Wolseley chassis I was ordering, but was told that "while the electric self-starter appeared to be fairly satisfactory on Cadillac cars it is unsuitable for cars of this make." It cannot be that our English makers are shy of copying foreign cars, for, with one or two notable exceptions, we have always waited for French or American ideas to lead the way in car design.

As to my own personal experiences of the system, I have now had my car seventeen months, and the milometer record is 10,280 miles. It has been started and driven by my wife, myself, and chauffeur without ever once failing on the coldest morning. After the first few months I used Crown spirit, later Taxibus, and for the past four months benzole, and it has started equally well on all three.

Like your correspondent, Mr. Grindrod, I have yet to find a weak spot in the system. The instructions are very simple and clear, and easily carried out.

The electric lighting is as perfect as the starting. I have used the lamps five to seven hours at a time, and they appear to be as good as new.

During the whole time I have had the car it has never been in the repairer's hands, and whatever adjustments have been necessary I have been able to do myself.

Correspondence.

After reading letter 19591 (Guarantees), I think if I had had the writer's experience I should hardly have signed myself "Satisfied Owner." It would not now appear to me that it was at all satisfactory to have complained in less than six months after delivery of "amongst other things" (1) rear springs flat and useless, (2) loose baffle plate in silencer, (3) plating worn off, (4) leaky water connections, and (5) defective magneto lubrication. And this in a new car turned out by an English firm of repute.

C. SHARPE, M.D.

A WARNING.

[19636.]—I think it only fair to warn other motorists of the methods employed by the police in Eastbourne. There is an average of five prosecutions a week under the statute with regard to driving to the common danger. As you know, the police under this statute can make good their case on the hypothetical supposition that there might have been traffic in the road at the time, though actually there was none. I do not mean traffic coming from a side turning, but on an open clear road which, though perhaps it was actually empty at the time of the offence, the police are allowed to suppose was full of other vehicles. Also, the police do not give notice of the offence till some days afterwards, so that, although the police can collect witnesses on the spot, the motorist is unable to produce an independent witness other than the occupants of the car. This, added to the fact that there is no member of the bench who himself drives a motor, places a motorist at a distinct disadvantage. The large number of convictions in this town must lead to one of two conclusions, either that motorists drive more recklessly and carelessly in Eastbourne than elsewhere, which is improbable, or that the police are conducting a special campaign against motorists which almost amounts to a persecution. The latter I have reason to suppose is the case.

Anyhow, I think it only fair to warn others who intend spending a holiday in Eastbourne that they had much better keep clear of it or they will probably, as I have, spend most of their time consulting solicitors and answering summonses.

W. BASIL JONES.

SUMMARY OF CORRESPONDENCE.

With reference to Mr. R. W. A. Brewer's lecture before the Institute of Inventors, a summary of which we gave last week, Mr. E. C. Javal, the inventor of the Javal atomiser jet, has written us pointing out that his device (which we have described in *The Autocar*) fulfils the requirements mentioned by Mr. Brewer in the matter of atomising the petrol in a carburetter.

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Reviews.

"THE LITTLE GUIDES. SOUTH WALES." (Methuen and Co., Ltd.) The southern portion of the Principality has now been covered in this excellent series of guide books, which now numbers forty-six in all. The present work, which is embellished with thirty interesting and well produced illustrations and two maps, is from the pens of G. W. Wade, D.D., and I. H. Wade, M.A., who have apparently spared no effort and no research to make this work as complete as possible within the limits assigned. After dealing with the situation and extent of South Wales, the communications, with a special section devoted to the roads, the Fauna and Flora, etc., a very interesting section is devoted to the Political and Religious History of this part of Great Britain, while the antiquities are very fully dealt with. In these, of course, particularly those belonging to pre-historic periods, gallant little Wales is very rich. The bulk of the volume is, however, devoted to an alphabetically arranged description of all the interesting and important places in South Wales, and it is to this section that the motor tourist can turn for information, as to all and everything he should or can wish to see when touring that delightful portion of His Majesty's realms.

"ENGLISH LOCAL GOVERNMENT: THE STORY OF THE KING'S HIGHWAY." By Sidney and Beatrice Webb. (Longmans, Grier and Co. 7s. 6d. nett.)—Now that the burning question of the construction, repair, and administration of our roads is very much in the air, this work, as setting out in a clear and most interesting manner the story of the vicissitudes through which our roads have passed, and the bungling errors of administration, the prejudice, ignorance, parsimony, and lack of foresight which have landed us in the present tangle, should be read by each and every motorist who is interested in the subject. It is curious to note that the advent of the automobile and motor omnibus is producing effects, both on public opinion and on administration, which are almost parallel to those produced three centuries ago by the coming in of the carriage and waggon. As the authors set out in the preface, "The 'new users' of the roads in the seventeenth and eighteenth centuries, whose aggressions were made the subject of persistent complaint in their day, are now themselves resenting the quite analogous aggressions of the 'new users' of the roads in the twentieth century. A hundred years ago (as related in the eighth chapter of this book) the country was saved by 'Pontifex Maximus Telford' and 'Macadam the Magician.' The authors do not venture to presage the name of our twentieth century deliverer, not even the message he will bring or the office he will hold."—May the reviewer take his courage in both hands and venture the suggestion that, given effective legislation and just and equitable taxation, the name of Crompton might in the future come to be bracketed with the twain of the past. The work is really wonderfully complete, for, in order to round off the story, it commences with the war chariot of the British heroine Boadicea and winds up with the motor car of to-day. From the perusal of this work it is evident that to-day we have to lament two unfortunate phases in the history of our roads. The first is the falling into barbarism of the country after the departure of the Romans, and the consequent neglect of the great road system left behind by that wonderful people, and the too early successful advent of railways. Had George Stephenson dated but thirty years later; it is certain that this country would to-day have possessed a system of highway communication equivalent to that which, so far as lay-out is concerned, would be equal to that of France. The work had already been begun and much effected, as witness sections of the Great North, the Holyhead, the Bath, and the Dover Roads to-day. But so soon as the locomotive had proved itself, so soon as the "Rocket" had hauled its train of passengers successfully from Liverpool to Manchester over Chat Moss, killing Mr. Huskisson by the way, that moment was almost the signal for the abandonment of all the schemes for the improvement of the roads and the speeding up of the coaching traffic. The decay of the Roman Catholic faith, entailing the abandonment of pilgrimages, and the occult cupidity of Henry VIII. and his sycophants, also robbed posterity of roads that might have formed the foundation of good highways to-day, to say nothing of the centuries of ineptitude, of muddle and mess which ensued, and which have resulted in the highly objectionable hydra-headed control under which we now writhe. Those who are not conversant with the subject are sometimes heard sighing for the return of the turnpike system, but the perusal of the section of

this book which deals with that period of our road history will quickly disabuse their minds. In a final chapter devoted to "Users of Roads in the Twentieth Century," the Road Board is pilloried as follows: "The failure of the Road Board to fulfil all the functions of a central road department—a failure due, as we have shown, partly to its statutory limitation, to distinctly new improvements, apart from maintenance, and partly to its policy in excluding from its purview all the roads maintained at the cost of the ratepayers in London and the county boroughs, and all but those called main roads in the urban districts—will, we think, lead shortly to fresh developments." In concluding, these two profound students of the road question make the following admirable suggestions: "What is to-day required, in the organisation of our highways, is (a) such an amendment of the Act of 1909 as will permit the Road Board to make grants-in-aid under appropriate conditions (but only to local authorities of sufficient magnitude—say county or county borough councils, and to borough and urban district councils having more than 20,000 population) for the maintenance of their highways as well as for their improvement; (b) such an amendment of the Acts of 1875, 1888, and 1894 as will enable all the rural district councils, and such of the urban district councils and borough councils as have fewer than 20,000 inhabitants, voluntarily to cede their road administration to the county councils as a means of relieving their own local rates, which would not otherwise receive any benefit from grants-in-aid; and (c) the allocation by the Chancellor of the Exchequer to the road fund—a step perhaps to be facilitated by a reasonable increase in the taxation on carriages, on motor cars, and on petrol (we do not agree with the two last-named, particularly the last, under present and future circumstances)—of a sum which would enable the Road Board to make its grants-in-aid of highway maintenance substantial enough to give its influence weight—perhaps equal to 20% of the actual annual expenditure of the local authorities on this service (now nearly £18,000,000 per annum)—in addition to the present special grants for road improvements, which would, of course, have to be made available for all the highways of the kingdom, urban as well as rural." In conclusion, the reviewer would like to pay a tribute to the monumentally painstaking manner in which this work has been compiled, for the notes and references to each chapter are almost as voluminous as the chapters themselves. Finally, let it be said that, though the title of this work may suggest dullness and tedium, the absolute reverse is the case, for to anyone taking the slightest interest in the subject every page is holding and readable to the last word.

THE A.A. AND M.U. HANDBOOK, 1913. A copy of the A.A.'s most carefully prepared *vade mecum*, the Handbook, has recently reached us, and we are fain to say that it will be welcomed by all members of the A.A. It has been enlarged considerably over its predecessor, for the hotel section alone now contains particulars of over 1,100 hotels, all of which have been carefully inspected and classified by members of the travelling hotel staff. Hotels are specialised, by stars (five, four, three, two, and one in number), the one-starred houses having limited catering and sleeping accommodation, but satisfactory in other respects. The charges for bedrooms and all three meals are given in plain figures, also the inclusive charge for a driver, and whether the garage is free during lunch or not and its capacity. The motor agents or agents holding the A.A. appointment are also given with their addresses and the makes of tyres they stock. The list of the telephone stations shows that forty-six boxes have already been placed in position and others are constantly going up. It is only by consulting the list of the stations of the patrols that one can realise how thoroughly the country is covered by this wonderful service. There is, of course, the usual addenda to a book of this description on foreign touring information. Shipping rates, motor car law to date, the Treasury regulations for horse-power, and excellent tips as to what to do in cases of accident on the road constitute very valuable features of the handbook. Lastly, but by no means an unimportant matter, the work is well indexed.

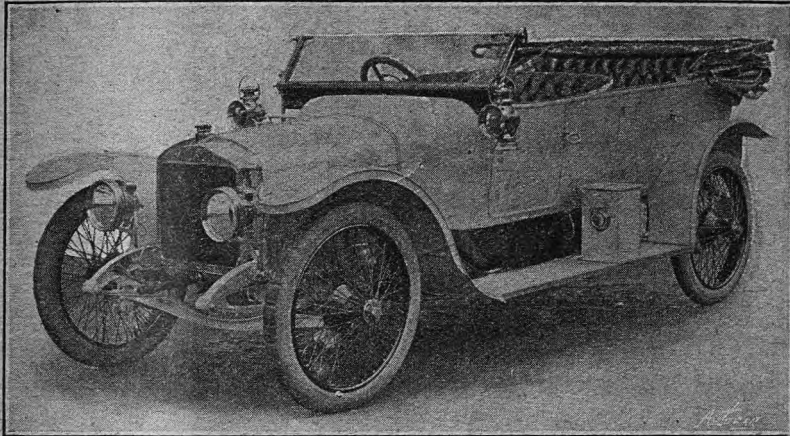
"COMPLETE HINTS AND TIPS FOR AUTOMOBILISTS." Under this title "Useful Hints and Tips" have been reprinted from *The Autocar* in booklet form. The fifth edition now on sale has been thoroughly revised and brought up to date. The book can be obtained from *The Autocar* Offices, 20, Tudor Street, London,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

Flashes.

The Nazzaro car, which won the Targa Florio race, ran upon Pirelli tyres.

* * *

The Summer Meeting of the Automobile Golfing Society will take place on the Huntercombe Golf



A 20 h.p. Austin, with a Defiance type body, which is now being exhibited at the Automobile Show at St. Petersburg.

Links on Wednesday, June 25th.. The trophy, value £50, presented by the Society of Motor Manufacturers and Traders, Ltd., for annual competition, will be competed for on that date, as also will several other valuable prizes.

* * *

One frequently speculates upon the fate of old cars. The following history from particulars supplied by Mr. Frank Darling, of Vancouver, of a 35 h.p. Coventry built Daimler car, is not without interest. The car was originally purchased by a Mr. Leonard, of Vancouver, and after much use it drifted to stage work at Sooke, Vancouver Island. About a year later it returned to Vancouver and performed local work there for some time. Eventually it was purchased by the Western Power Co., and shipped to their power plant at Slave Lake, Alberta. The rims and tyres were removed, and the steerable front axle replaced by a rigid one. The car was then mounted on the regular flanged rail wheels, which were bolted to the wooden ones. The tonneau body was removed and two long board omnibus seats were substituted. A canopy was built up of one inch pipe framing, covered with white duck and provided with side curtains. A wind screen of ordinary glass in a wooden sash was fixed to the dashboard. The car, which is shown in the accompanying illustration, is now used over a track of about six miles, and the trip can be made in nine minutes, but it is said that making the journey in twelve minutes is quite fast enough. The car is quite satisfactory in its new walk of life, and its owner runs it as often as possible to save using a locomotive, which uses half a ton of coal per trip, and is, therefore, more expensive to run.

Although the 1913 Targa Florio has only just been run off, it is stated that three entries have already been sent in for the 1914 event to the Organising Committee, the entries in question being those of three six-cylinder Aquila cars.

* * *

Owing to the great volume of traffic on the roads during the Ascot races, the Chief Constable of Berkshire (Major A. F. Poulton) has issued special regulations to be observed by vehicles of all kinds. No motor car or other vehicle will be allowed to stand or park on the roadside, but after 3 p.m. a single line will be allowed under the direction of the police. Every motor car will, therefore, be under the necessity of finding accommodation in some special garage or motor enclosure. The Royal Automobile Club has leased all the motor enclosures on Ascot Heath, but these are available for use by the general public as well as by members, on payment of fees varying from 2s. 6d. to £2 2s. Applications for parking space must be made to the manager of the enclosure, Mr. E. de Rodakowski, 43, Pall Mall, London, S.W.

* * *

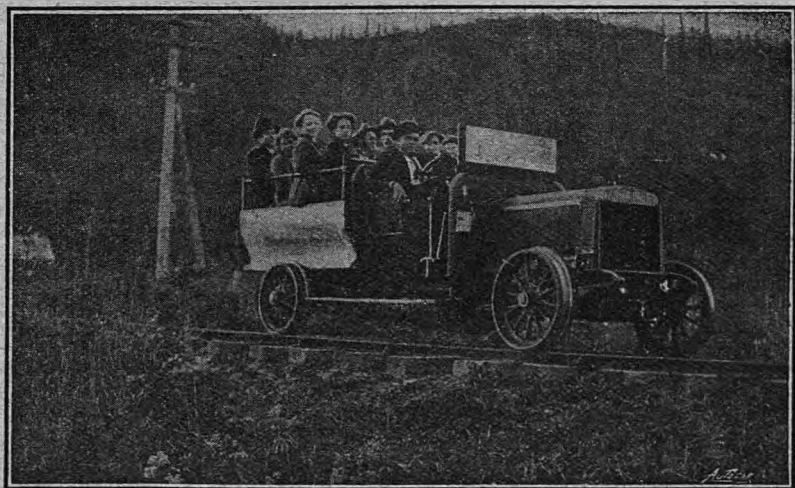
Those motorists contemplating a tour in Switzerland may be interested to learn that the road over the Simplon is now open to motor cars.

* * *

A new monthly publication with the title "Good Roads Canada" has just made its appearance in Toronto, the object being to push forward the Good Roads Movement throughout the Dominion.

* * *

Claiming that the present price of petrol does not leave sufficient profit to cover expenses, a number of the leading motor garage proprietors and repairers in the Paris district recently met together and signed an agreement not to sell at less than 50 centimes per litre, or 2 francs 50 cents per *bidon* (tin) of 5 litres. The price fixed is equal to very nearly two shillings per gallon.



An old 35 h.p. Daimler car converted for use on rails in Canada; referred to in a paragraph on this page.

Flashes.

At a recent meeting of the Court of Common Council (London) attention was drawn to the speed at which cars are driven through Leadenhall Street, E.C., and it was resolved to erect thirty-two "Drive Slowly" signs, these to be illuminated at night and fixed to lamp columns at certain dangerous points.

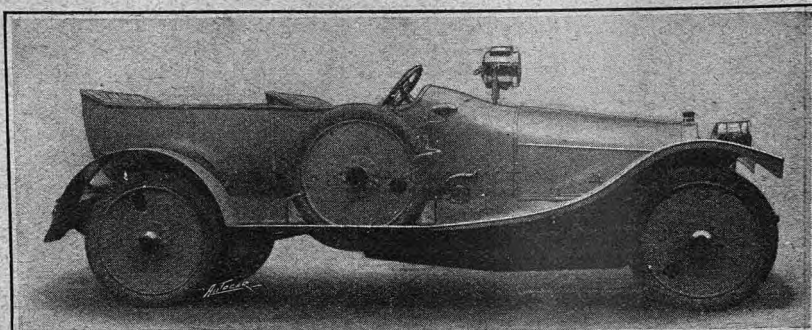
* * *

Motorists are advised to exercise care in driving at Wolverhampton, where hitherto the police have been most considerate. Owing, however, to the abuse by a few drivers of this consideration on the part of the Chief Constable the local magistrates have intimated that they intend to deal severely with cases which may be brought before them.

* * *

The Brewer carburetter, which is one of the simplest made, has a mixture lever on the dashboard in reach of the driver's hand. Of course, this attachment is optional, but there is no doubt that it promotes efficiency, saves fuel, and amuses any but an unintelligent driver. With it one can regulate to a nicety for hard slow pulling, acceleration, or light easy work on the level or down hill. We had a demonstration run in Mr. R. W. A. Brewer's venerable Decauville, and were much interested in noting the way in which the engine responded to the movements of the mixture lever. Though excellent results could be secured by setting it in a "neutral" position and leaving it there, the car became a thing of life when the lever was manipulated back or forth in accord with the demands of the moment.

Mr. J. H. Robertson, a Belfast motorist, during the course of a hill-climbing competition near Belfast, was obliged suddenly to swerve whilst ascending the hill, with the result that one of his tyres was completely pulled off the rim. He was, however, enabled to replace the tyre and complete the climb in six minutes one second, the distance being one and one-eighth miles. This was possible by reason of his car



A 15.9 h.p. Star sporting type four-seater which has been supplied to a customer, by the London Automobile Supply Co., 2-6, Milner Street, Cadogan Square, London, S.W.

being fitted with Warland Dual rims, and the performance mentioned speaks volumes for the celerity with which tyres can be manipulated when these rims are used.

* * *

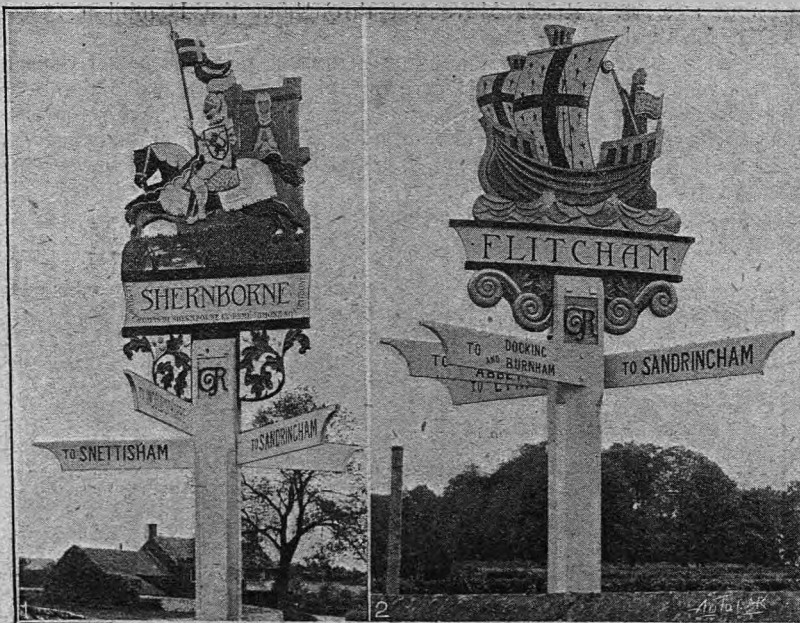
There are more expeditious ways of committing suicide surely than the drinking of a pint and a half of petrol. The Budapest youth who is reported to have adopted this plan was evidently in search of novelty. The draught took three days to complete its purpose, although he tried without success to set fire to himself at the mouth after having drunk the potion, death being due eventually to injury caused to the stomach.

* * *

A monster meeting of motor cars is being organised by the German Imperial Automobile Club for the 13th inst. in celebration of the completion of the twenty-fifth year of reign of the Kaiser. The cars, which will be drawn from all the leading motoring associations in Germany, will be lined up on the Doberitz military road near Berlin, and will be reviewed by the Kaiser. These demonstration and celebration gatherings seem to be popular in Germany; on another page in this issue we illustrate the Leipzig meeting.

* * *

The Scottish Automobile Club has been asked to warn motorists of the danger of running into sheep on the Edinburgh-Carlisle Road in the upper district of Tweedsmuir, where the road is unfenced. All motorists passing through this country are therefore asked to drive with great caution. The Club is erecting a caution post at each end of the unfenced part of the road.



THE KING'S SIGNPOSTS. (1.) The Shernborne signpost represents Sir Thomas de Shernborne, whose family held the Shernborne estates for many centuries, and Dame Jamona, his wife. Sir Thomas held office in the court of King Henry VI. (2.) The signpost at Fritcham cross roads, which shows St. Felix of Bergundy in a boat on the water, and the flag at the stern bears the inscription, "Felix." St. Felix, after sailing up the Wash, entered a small boat and proceeded up the River Babingly to Fitcham, where he founded the first Parish Church. King George, in erecting these signposts, has set an example which might well be followed by those of his subjects who take pride in their estates.

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 addressed 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. 2676.—Carburettor for 40 h.p. Napier.

I have fitted a Polyrho carburettor to a 1908 60 h.p. Napier landaulet in place of the original. After careful tuning up the following advantages have been gained: Very easy starting, more power at all speeds, much improved acceleration, cooler running, and an average of 16 m.p.g. all the year round.—CHASSIS No. 3125.

No. 2685.—Tyre Alarms.

The Palmer Tyre, Ltd., 119, Shaftesbury Avenue, London, supply a very good deflation alarm. These alarms are easily fitted to the back wheels. I have fitted them to all four wheels of my Argyll car, but there are difficulties in fitting them to the front wheels. The Palmer Tyre, Ltd., have particulars of how I fitted them to mine.—H. CARE GIBBS.

No. 2688.—Small Car for India.

The 10 h.p. Adams, to my mind, cannot be beaten for bad roads and hilly districts. I have had experience with all kinds of cars for eleven years, and have done something like 20,000 miles on a 10 h.p. Adams. The pedal system of gear changing is perfect, and I have never had the least trouble with the gears. The large flywheel makes the engine different from any other single-cylinder, and I have found it reliable in every way.—COMMERCIAL.

No. 2628.—Carburettor for Wolseley Car.

Both mine have the original carburettors fitted by the makers. On a straight run I can get twenty miles to the gallon, and have no cause to complain. Besides I do not just see how a different carburettor could be fitted to these engines without very extensive alterations. Perhaps I may mention that the makers have sent me a blue print of valve setting which makes a very big difference to the power of these old cars, and both are now better than the day they left the makers' hands.—T. H. MUIRHEAD.

No. 2684.—Carburettor for Lancia Car.

Referring to my letter 2684 in *The Autocar* of May 24th, I should like to say, in fairness to the makers of the Lancia cars, that since writing my letter they have had my 25-30 h.p. car at their London works. They have adjusted the carburettor, with the result that now, instead of 11 m.p.g., I get a full 17 m.p.g., which is remarkably good considering the gradients in this part of the country (Sussex). I should like to bear testimony to the courteous treatment I have received from the London agents in this matter.—F.M.

No. 2695.—Removing Carbon from Cylinders.

I took delivery of my present car a year ago, and drove it some 7,500 miles within the twelve months. At the end of that period, though the engine was running as well and quietly as when new, with no suspicion of a knock, still I rather fancied that the car was inclined to be a little sluggish on hills and was not picking up as quickly as it used to

do. I took the car to my local repairer, who holds a licence from the Cycliclean Co., and within an hour the operation, which was found to be badly needed, was duly completed. The results have far exceeded my expectations, as the car immediately recovered its usual spirits, and former liveliness. Compared with the old and laborious method of taking down the engine for the sole purpose of scraping the cylinders, to say nothing of the loss of time the car is out of commission, and also of the expense incurred, I think the Cycliclean process is greatly superior and quite as efficient, and it certainly will be more universally used when the private owner has become educated to the fact that the process has no deleterious effect on the engine.—G. A. GILDEA.

No. 2686.—90 x 140 Metallurgique.

I have a 20 h.p. Metallurgique, late 1910, fitted with low open touring body by Van den Plas, seating five, I find it most reliable under all possible conditions. Whilst paying a visit at Christmas last year, the car had to be kept outside owing to the garage being occupied, but still it always ran beautifully. The car is often overloaded, and when touring it carries luggage as well as five or six up. The chauffeur was ill for many months this winter, and so the car had no attention beyond an occasional cleaning, but it always went magnificently. In January last I fitted a Mills jet, with very good results, the mileage per gallon increasing from 18-20 to 22-25. The car runs slower, much slower, sweeter, accelerates wonderfully quickly, and is quieter, which is really extraordinary, as it was very quiet before; speed up to 55 m.p.h. with three up. The suspension is quite ideal, as there are shock absorbers fitted, as recommended by the makers. The weight is two tons ready for the road, and tyres average 4,000 or 5,000 miles—Michelin or Dunlops fitted to the back, and Helsby (which are very excellent) to the front, and all have puncture-proof inner cases. Altogether, I am delighted with the Metallurgique. I have also a 14 h.p. of the same make, giving excellent results, fitted with a Mills jet.—DELIGHTED.

No. 2704.—Commercial Traveller's Car and Taxation.

The information contained in your answer to query No. 2704 is not quite correct. If the enquirer did as you suggested and made his car look like a business vehicle, he would still be liable to licence duty, although he used it entirely for business purposes. There is a clear distinction between "business purposes" and "carrying goods." All travellers are liable because they use the vehicle for going about obtaining orders, and not "solely for carrying goods in the course of trade or husbandry." Similarly a doctor has to pay for all vehicles he uses, though he doubtless carries medicines, instruments, etc., to use in the course of his business or profession. Certainly he is entitled to one half rebate on any motor cars so used, but this does not alter the main fact. No declaration

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AGENTS EVERYWHERE.

Some Queries and Replies (Continued).

is required in the case of an exempt vehicle, nor is it necessary to claim exemption, but a person receiving a declaration form for establishment licences is required to make a return, even though it be a *nil* return. The three conditions of exemption from licence duty are: (1.) Construction and adaptation. (2.) Sole use for carrying goods. (3.) Inscription of name and address. The very subtle distinction between "carrying goods, etc.," and "business purposes" is usually the cause of a good deal of misunderstanding in the matter of liability to licence duty.—W.H.B.

No. 2690.—Engine Starter (Air).

I do not think your correspondent need feel disposed to condemn air starters on hearsay on account of their alleged inability to retain the compressed air for the length of time he requires, viz., a fortnight or so; for, if the workmanship be free from defects, I think there need be little, if any, appreciable loss of pressure during such a period. I have a self-starter of this kind, and until I had it seen to I used to lose a lot of pressure even in a night, but some time ago, when I knew the car would not be used for a week or more, I noted the pressure (300 lbs.) when the car was put away, and tried it again a week later. I could not detect that the pressure had fallen in the slightest. This was about a maximum pressure, for it is only on runs of more than ten or fifteen miles that the pressure exceeds 300. My next car will have to be fitted with some kind of compressed air starter and tyre inflator.—THERMO.

No. 2529.—15-20 h.p. Armstrong-Whitworth.

In the autumn of last year, I discarded a car of a well known make because I thought it had worn badly, the bill for six months being £54 odd. I selected an Armstrong-Whitworth car on account of the excellence of the workmanship, and so far I have found it in every way satisfactory. Since December 5th, 1912, I have run over 1,400 miles by speedometer, and the Dunlop tyres have not yet been punctured. On the hilly but very well kept roads here on the border of the Lake District, the petrol consumption is 18 to 20 m.p.g. The engine picks up extremely well and changes gear very smoothly. The hill-climbing powers of the car leave nothing to be desired.—J. E. WILLAN, Col.

No. 2547.—Carburetter for Humber Car.

I have a 12-20 h.p. Humber (1910), to which I fitted a Claudel-Hobson carburetter in place of the one fitted by Humber, Ltd. I found a most remarkable improvement. It improved the running, which is much quieter, it is more economical, doing 24 m.p.g., the acceleration is greatly improved, and one can drive on top speed at a very slow rate in traffic and accelerate beautifully. I cannot speak too highly of this carburetter and the wonderful improvement in every way it made to my car. It is necessary when fitting to have hot air, which I managed by laying a pipe on the exhaust, which is quickly heated as soon as the engine is started, thereby providing warm air to the carburetter, which is necessary in the winter months. A Claudel-Hobson is supposed to be fitted with a hot water circulation which is impossible with thermo-syphon cooling, as in a

12-20 h.p. Humber, therefore I use hot air, which is an admirable substitute.—FRANK S. LENN.

QUERIES.

No. 2706.—Asbestos Motor Houses.

I SHOULD feel obliged if any of your readers would give me information regarding motor houses made of Poilite asbestos material. Are they as satisfactory as brick buildings?—W.F.C.

No. 2707.—Bowden Extra Air to Zenith.

I WOULD be very much obliged to hear of results of fitting a Bowden extra air inlet to a Zenith, on a 20 h.p. Métallurgique, fitted with a Mills jet. Are mileage, speed, acceleration, etc., increased?—F.G.G.

No. 2708.—Windhoff Car.

I SHOULD be glad if any of your readers could give me their experience of the Windhoff car. It is, I think, a German car just introduced into this country, and I should like the opinion of an unbiased owner.—H. R. H. COCKERTON.

No. 2709.—Touring in Norway.

I SHOULD be greatly obliged for information with regard to Norway as to its accessibility and suitability for a motoring holiday of a few weeks. I should like especially information as to the condition of the roads and their contour; are the hills usually more severe than those of, say, the English Lake District?—J. M. DENTON.

No. 2710.—Turin Motor Exhibition.

RESPECTING the paragraph in *The Autocar* of May 24th, page 954, regarding the C.A.V. lighting set, can any of your readers inform me what positions the Lodge, Trier and Martin, and the Rotax-Leitner lighting systems held in the test referred to as having taken place at the Turin Exhibition, also what the test consisted of?—ARNOLD A. CARLSON.

No. 2711.—Taunton to Exeter and Launceston.

I AM thinking of driving over the above roads next week. Can any reader tell me whether the conditions of the roads are as bad as some would make out? It has been suggested that the road between Exeter and Okehampton, for instance, is almost impassable by reason of the size and frequency of pot-holes. Is this correct, and, if so, is there a better route through to Truro?—M.W.B.

Road Warnings.

HAMPSHIRE.

West End, near Southampton.—Botley Road.

Hound.—Portsmouth Road.

Millbrook.—Redbridge Road, measured 220 yards.

METROPOLITAN POLICE DISTRICT.

Willesden; St. Mary Cray; Chislehurst; North Cray; Putney.

YORKSHIRE.

Settle.—Southern and northern ends of town, measured 220 yards.

SCOTLAND. MIDLOTHIAN.

Edinburgh.—Craigmillar Park and Portobello Road.

Dumbarton.—In the vicinity of Milngavie and Bearsden.

Week-end and Touring Notes.

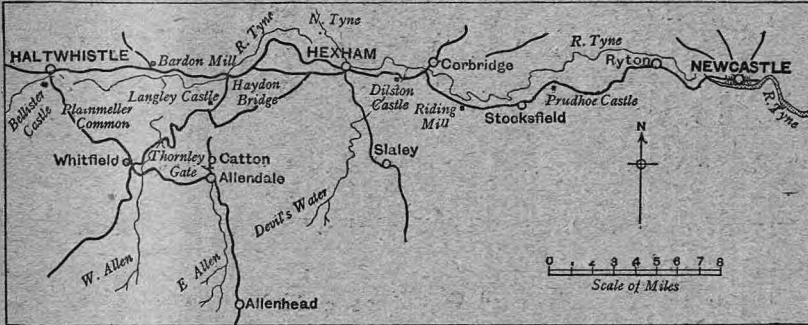
By the Banks of the Tyne and the Allen.

By M. Adeline Cooke. Illustrated by Olive V. Cooke.

There is something to interest everybody in Newcastle. True, a cloud of black smoke hangs over the city like a pall, yet even about that there is something impressive to the stranger. It proceeds, he knows, from the numerous iron, ordnance, and engineering works, shipyards, and foundries which go to make "the metropolis of coal" one of the greatest commercial centres of industry in Britain. Below the smoke and the steam thousands of men are busy, assisted by mechanism which borders on the marvellous, forging, contriving, making, and sending out into the world those numberless mechanical inventions and manufactures, the formation of which we think so little and know less.

The fortunate few can visit the famous Elswick works, and there are besides, public buildings of diverse interest, and beautiful parks. The swing bridge over the Tyne occupies the same site as that which the Romans

Many curiosities are grouped therein—a wheel from a gun carriage used against the Scots in 1640, a carved mantelpiece supposed to represent James I. carried to heaven by angels, and some old tapestries. There are many narrow gloomy passages within the walls, which, in places, are some 18ft. thick. Flights of curving steps lead to the turrets and battlements, from which are obtainable magnificent views over the yellow Tyne and the smoky city; other steps descend to the library and to the exquisite chapel with its glorious groined roof and zig-zag ornamentation. Then there are guard-rooms and a dark place some call the dungeon, though others deny that it was really used as a prison, and there are steps up to odd little openings and to doors which, I suppose, opened on to that part of the castle which has now been demolished. There are few fortresses so grim and so suggestive, or so illuminating re-



constructed A.D. 120. The Romans had a hand here, as indeed they seem to have had with most of the important northern towns. The great wall which Hadrian built across Northumbria ran through Newcastle, and it was Hadrian who constructed the bridge across the Tyne. So here grew up a Roman station—houses, temples, baths, etc.—all to be swept away when the northmen broke, like the billows of the sea, over the deserted wall. Its second name, Monkchester, was given by the Saxon monks, who made it their home, and when Norman Robert commenced to build the castle, which William Rufus completed, it quite naturally received the title of Newcastle.

The huge massive castle keep stands to this day in the heart of the commercial city, and though there are diverse architectural alterations and additions to the entrance to the castle, the Black Gate, now an antiquarian museum, we have only to walk down the steep street by its side to see the ancient blackened structure, worn and aged, which was built by masons in the Norman times.

A great flight of stone steps leads up to the entrance of the frowning keep. On the right as we ascend is the priest's room—a beautiful little chamber with some exquisite Norman zigzag moulding. More steps bring us to the Great Hall, a lofty apartment with steps in the thickness of the wall leading to narrow windows and to dark passages running all round, from which we look down into the Hall and see the banners hanging in the misty gloom of the roof

garding the life lived in mediæval castles. No visitor to Newcastle should miss seeing the castle. It is open from ten o'clock till four or five, according to the season of the year, and a small fee is charged for admittance.

The cathedral, not far distant, is scarcely imposing, but contains much of interest, and possesses the merit of being open quite early in the morning, while visitors are unhampered by vergers and demands for sixpences. The general effect is marred on entering by the huge memorials to Lord Collingwood and Sir Matthew White Ridley, which are placed against the last pillars in the nave next to the chancel. Lord Collingwood, who was a Newcastle man, and second in command at Trafalgar, is commemorated by a bust, but Sir Matthew (the Ridley family, of course, loom large in the district, and have done so for centuries) is represented by a life-size statue. The face is very fine, but why should a worthy gentleman who died in the early years of the nineteenth century be garbed in a style of dress extraordinarily like a Roman toga? We could not see the chapel, for some alteration was being made to the organ. However, we much admired the carved screen across the chancel and above the choir stalls, but, although it is very ingenious, I am not sure whether it is not somewhat incongruous for the figures of angels to carry electric lights. The beautiful tower of the cathedral, with its flying buttresses, fine lantern and crocketed spire, cannot fail to command atten-

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Week-end and Touring Notes (Continued).

tion; with the busy thoroughfare in front, and the Black Gate and castle keep at a little distance behind, it forms a picture of Newcastle not easily forgotten.

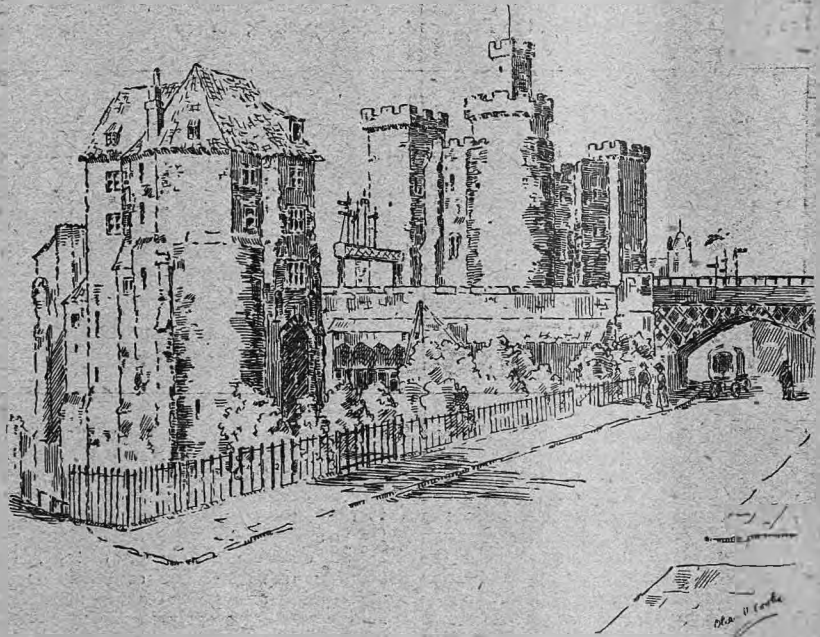
Having thus seen the principal sights of Newcastle, the fitting commencement of our tour along the banks of the Tyne, we run gently out of the city and over to the southern bank of the river. For a while the smoky mantle hangs about us, but gradually and very gladly we leave it behind and emerge into purer air and more beautiful surroundings. It is sad how the pleasant countryside is ruined by the stress of many manufactures; at Ryton the contrast is startling in the extreme. Down in the valley lies the railway line and the yellow, muddy, uninviting river, on the northern side of which are rows and rows of melancholy-looking houses, built, we conclude, for the workmen and colliers. These dwellings stand drear and uninviting in a bleak, barren, and desolate land. But our road, on the summit of the high ridge

fashion on the brow of the hill overlooking the rail and the river, and to get a good view of it it is necessary to descend the steep hill to the railway station, from which, to the astonishment of porters and passengers, the illustration overleaf was obtained.

"Fair lies the scene round Prudhoe's height,
Rich, verdant hills and river bright,
For Tyne, meandering here and there,

Like silver lies on pebbly shore."

Alas! the verse is scarcely applicable at the present time, and very shortly will cease to be so entirely. Not long ago, so an inhabitant informed us, the situation and surroundings were almost unrivalled for beauty. But now the long arms pushed out from Newcastle, the collieries and factories, are doing their fell work and marring the prospect; when the wind is in a certain direction the cloud of smoke even penetrates to Prudhoe. This great tower of strength, which is supposed to derive its name from its situa-



The Black Gate and Castle Keep, Newcastle.

above the Tyne, has brought us into the midst of a charming village. Here are stately trees and pleasing foliage, and the church of Holy Cross, which is rightly considered one of the finest in Durham, in which county we now are journeying for a little space.

The church contains interesting brasses and inscriptions, and some old oak carvings with a good deal of new judiciously intermixed. The pulpit, for instance, is adorned with some new and exceedingly finely carved figures of Constantine with the standard, St. Bede (with the face of an ascetic but so beautiful it is impossible to forget it), St. Cuthbert, St. Helena, and St. Aidan. There are also some curious little old figures at each end of the choir stalls, and one represents a woman, with a most wonderful face, who is wearing a long robe which covers her head and flows down, overlapping in front in an exquisite line. Who could have been the artist-creator of this gem of pose and expression?

Now our way lies to Prudhoe Castle, which stands in the most picturesque

tion on a "proud height"—the derivation sounds a little obvious to be sure, but we will not quarrel with it—came into being in early Norman times, and the older portions of the castle were built about 1165 by Odelin de Umfraville, descendant of Robert cum Barba, to whom Duke William granted the barony. Times without number it was attacked by foes covetous of its immense strength, but the Umfravilles remained in possession until the fourteenth century, when the last male died, and his widow, Maud, carried the estates by marriage to the all-conquering Percies.

And now the glories of the Tyne burst upon us. We have passed Stocksfield and are journeying towards Riding Mill. The broad, excellent road lies by the riverside, and is shaded on the one hand by thick trees which throw welcome shadows this sultry summer's day; a strip of wood undergrowth on the other just separating us from the wide beautiful river, clear and blue hereabouts. We draw up the car in a secluded spot, and bid us to

Week-end and Touring Notes (Continued).

the river's brink, for what, I ask, can be more beautiful on a hot day than to sit in the shade of a spreading tree close to the refreshing sound and sight of the full flow of a stately river! In this charming glade we eat our lunch. We invariably carry luncheon and a tea-basket on our tours, for ordinary hostels are anathema on broiling summer days and curtail one's liberty. Afterwards we leisurely dawdle along through delightful scenery, and then enjoy a pleasant run to Dilston, where the stern old historic tower stands alone above the glorious foliage-decked glen, down which leaps the brawling stream of the Devil's Water. Dilston Castle, we understand, can only be inspected when the family are not in residence at the Hall, and as we do not know whether this is the case or not, we leave our car at the gate and walk up the avenue to enquire. As we walk up to the house we have a good view of the ruined castle and chapel standing in the midst of a sweep of velvet turf, and very pleased we are to find the Hall in the hands of the painters, and permission and keys given us by a smiling maidservant. Dilston Castle is of great antiquity; it came to the Radcliffes about 1494, and is chiefly associated with the handsome, beloved, and unfortunate Earl of Derwentwater, who was educated at St. Germans with the son of King James II., and was an ardent Roman Catholic and devoted to the exiled monarch. All the county adored him, and sang his praises.



Prudhoe Castle. The older portions were built about the year 1165.

Derwentwater, of course, took a prominent part in the ill-fated rising, and was beheaded on Tower Hill. On that fateful day the Devil's Water ran red with blood, "corn came from the mills with the hue of gore, and in the heavens appeared strange lights." His wife, who it is said urged him to

assist in the rebellion, though it does not appear that pressure was necessary, had to flee from the sorrowing and incensed retainers, and even now, it is said, she haunts the ruined tower, and her lamp flickers along the battlements as she wanders about and waits and waits for the homecoming of her ill-starred husband. The little chapel stands by itself, and is quite bare, but here the Earl was laid to rest, though subsequently his body was removed to Thorndean. The remnants of the castle are near by, and we gain an upper room and reach the battlements, from which a lovely view of the surrounding country is obtained. (To be concluded.)

Flashes (Continued).

We are informed that the West End address of Car Springs, Ltd., whose Acme shock absorbers were described in last week's issue of *The Autocar*, is 1, Newman Street, Oxford Street, London, W.

We have received a copy of the latest instruction book issued to purchasers of Standard cars. This is a most complete publication, for each item of the car requiring attention is dealt with specifically in the text, with references to the corresponding illustrations. The latter are very numerous, and consist of line drawings and diagrams of all the principal parts of the car. Each drawing is clearly lettered or referenced, and indication is given of the means and method of lubricating the bearing surfaces. This instruction book deals with the 15 h.p. and 20 h.p. four-cylinder cars and the new 9.5 h.p. four-cylinder light car. The book is divided into five parts, the first dealing with a general description of the chassis, the second and third with lubrication and adjustments respectively, whilst Part 4 consists of simple and concise directions on the ordering of spare parts and renewals. The fifth section comprises the various illustrations already referred to.

The Star Engineering Co., Ltd., of Wolverhampton, send us a copy of an interesting brochure relating to Marconi wireless motor car stations mounted on Star chassis. The chief feature of the booklet is a description of the demonstrations of these equipments in the field, and a report upon the motor car supplied to the Spanish War Office for use as a Marconi station. The Star Co. intimate that they will be pleased to forward a copy of the booklet to any reader of *The Autocar* on receipt of a postcard.

An interesting booklet just published by Messrs. Clement-Talbot, Ltd., Barlby Road, Ladbroke Grove, London, W., tells the story of the record drive across Australia from Sydney to Brisbane, a distance of 700 miles over exceedingly rough country, which was recently made in a 12 h.p. Talbot car. Following so closely upon the publication of the Talbot album of the one hour record run of the 25 h.p. Talbot car on Brooklands, it serves to emphasise the versatility of these cars for different kinds of service. A copy of the booklet may be obtained by any reader upon application from the Clement-Talbot Co. at the address given. The little work is well worth writing for.



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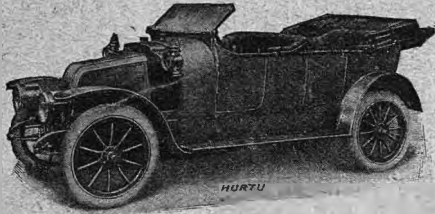
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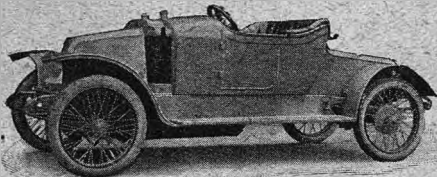
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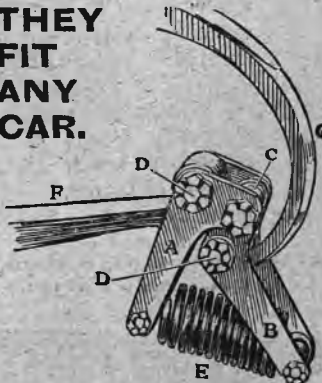
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"The Autocar" Share List.

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.	Highest	Lowest.		
£2,520	1/	Abingdon-Ecco, Ltd.	2/6	3/6	3/-	2/3	3/6	3/-	9/	Nov.
45,000	£5	Alldays & Onions (£3 paid)	3 1/4	4	4 1/4	3 1/4	3 1/4	3 1/4	5	Ap/Dc
50,000	£5	" " 6% Cum. Pref.	5	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	6	Ap/Dc
209,802	10/-	Argylls, Ltd.	5/9	6/1 1/2	6/-	4/-	6/-	4/9	Nil	Dec.
150,000	£1	Belsize Motors, Ltd.	25/-	26/-	28/1 1/2	25/-	27/6	26/-	12	My/Nv
100,000	£1	" " Cum. Pref.	20/-	sellers	20/0	20/-	20/3	20/-	6	Mr/Av
44,771	£1	Bowden Brake, Ltd.	4/-	sellers	7/-	3/1 1/2	5/-	3/-	Nil	Dec.
766,982	£1	Birmingham Sm'l Arms, Ltd.	47/3	47/9	53/3	46/3	50/-	47/6	10	Mr/Sp
203,150	£5	" " Cum. Pref.	5 1/4	5 1/2	5 3/8	5 1/8	5 1/4	5 1/4	5 1/2	Mr/Sp
75,000	£5	" " 4 sellers	4	sellers	4 1/2	3 3/8	4	3 3/8	6	Oct.
100,000	£1	Brampton Bros. Cum. Pref.	36/6	sellers	37/6	31/-	36/6	35/-	5	My/Nv
100,000	£5	Brooks, J. B., & Co., Ltd.	5 1/4	5 1/2	5 1/4	5 1/4	5 1/4	5 1/4	5 1/4	My/Nv
100,000	£5	" " Cum. Pref.	4 1/2	5	5	4 1/2	4 1/2	4 1/2	4 1/2	Ap/Oc
380,000	£1	Brown Bros. Cum. Pref.	13/3	13/9	11/6	8/-	14/-	7/9	9	My/Oc
200,000	£1	Charrou Par. Pref. Ord. ...	3/3	3/9	3/-	1/6	6/-	2/1 1/2	Nil	Dec.
100,000	£1	Clément-Gladiator	14/6	sellers	14/9	10/4 1/2	15/-	12/6	6	Ju/Ds
55,000	£1	" " 6% Cum. Pref.	6/-	6/9	6/9	4/-	7/9	6/-	Nil	Dec.
25,347	£1	Components, Ltd.	12/6	buyers	15/-	11/4 1/2	13/-	12/-	7	Dec.
275,000	£1	" " 7% Cum. Pref.	14/-	14/3	18/4 1/2	8/9	15/-	9/9	Nil	Ju/Dc
375,000	£1	Darracq, A., & Co., Ltd.	15/6	sellers	19/1 1/2	11/10 1/2	16/-	13/-	7	Ap/Oc
159,229	£1	De Dion-Bouton, 7% Ord.	8/-	tid	11/3	8/9	10/-	7/6	6	Dec.
1,000,000	£1	Dunlop Rubber	38/-	39/6	56/9	27/6	39/6	35/6	12 1/2	Ap/Oc
200,000	£1	" " Cum. Pref.	19/6	20/-	21/-	17/-	20/-	18/6	6	MJSD
312,785	£1	" " Income Stock	17/9	buyers	19/-	15/6	19/-	17/6	5	Ju/Dc
624,995	£1	Dunlop Parent Co. 8% Ord.	15/6	16/-	18/7 1/2	10/-	18/-	13/9	10	Ju/Dc
994,900	£1	" " 5% Cum. Pref.	12/6	12/9	16/9	10/6	15/1 1/2	12/7 1/2	5	Ju/Dc
499,962	£1	" " Deferred.	10/6	sellers	15/-	6/3	11/-	8/-	Nil	Ju/Dc
99,977	£1	Enfield Cycle	20/-	21/-	19/9	13/9	21/9	18/-	5	Oct.
24,985	£1	" " Cum. Pref.	21/-	bid	21/3	20/6	23/-	21/-	7	Fb/Oc
292,904	£1	Humber, Ltd. (New)	9/6	10/-	7/6	3/7 1/2	14/-	6/9	Nil	Nov.
331,495	£1	" " 6% Cum. Pref.	15/6	16/-	13/-	6/9	17/9	10/1 1/2	Nil	Nov.
50,000	£1	James Cycle	11/6	sellers	6/6	5/-	15/-	6/6	Nil	Oct.
100,000	£5	Lucas, Joseph, Ltd.	9	10	9 1/2	9	9 1/2	9 1/2	5	Ap/Nv
100,000	£5	" " 5 1/2 sellers	5 1/2	sellers	5 1/2	5 1/2	5 1/2	5 1/2	5	Mr/Sp
72,385	£1	New Hudson Cycle Co.	23/6	24/-	24/6	14/6	28/-	24/6	10	Nov.
18,333	£1	" " Cum. Pref.	18/3	19/3	20/-	18/-	19/6	19/-	6	Mr/Nv
50,000	4/-	Premier Cycle	4/1 1/2	4/6	5/-	3/-	5/6	4/4 1/2	15	Sept.
125,000	10/-	" " Cum. Pref.	7/3	7/9	8/9	6/9	8/6	7/3	7 1/2	Sept.
31,000	£1	Riley (Coventry), Ltd.	6/-	6/9	8/9	5/3	7/4 1/2	5/-	Nil	Feb.
200,000	£1	Rolls-Royce	44/6	sellers	47/3	36/3	48/6	44/6	30	Ju/Ju
138,662	£1	Rover	38/9	39/-	31/3	12/6	40/-	30/9	10	Nov.
100,000	£1	Rudge-Whitworth, Ltd.	18/-	sellers	24/-	15/-	25/3	19/9	5	Oct.
100,000	£5	" " 6% Cum. Pref.	3 1/2	sellers	5 1/4	3 1/2	4	3 1/2	12	Oct.
41,621	6/-	Siddsley-Deasy	11/6	sellers	10/6	6/-	11/-	8/10 1/2	8 1/2	Dec.
50,007	£1	Singer & Co., Ltd.	17/6	18/6	19/6	6/6	19/1 1/2	16/-	Nil	Oct.
70,000	£1	Star Engineering, Ltd.	11/-	11/9	13/6	10/6	17/-	11/6	5	Mar.
69,157	£1	" " Cum. Pref.	16/6	sellers	18/-	15/4 1/2	17/6	16/6	7	Mar.
87,550	£1	Stepney Wheel	29/9	sellers	35/-	30/-	32/6	29/6	20	Mr/Oc
120,000	£1	Sunbeam Motor Car	56/-	tid	59/-	37/6	59/-	52/-	25	Nov.
30,000	£1	" " 6% Cum. Pref.	22/-	sellers	23/3	20/4 1/2	22/6	21/6	6	Ap/Nv
80,000	£1	Swift Cycle	20/-	sellers	21/9	13/-	24/-	19/9	6	Dec.
100,000	£1	" " 6% Cum. Pref.	16/9	sellers	17/3	14/10 1/2	17/3	16/3	6 1/2	Ju/Dc
80,000	£1	Triumph Cycle	76/-	sellers	71/6	43/9	82/-	68/-	30	Nov.
50,000	£1	" " 5% Cum. Par. Pref.	23/-	sellers	23/6	20/7 1/2	24/6	21/6	6 1/2	Nov.

* Including all arrears.

Markets generally have been dull and depressed, with Rudge-Whitworths a particular feature, slackening off in business is to be expected during the summer months.

"The Autocar" Diary.

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| <p>June.
7.—Shelsley Walsh Hill-climb.
19.—Cardiff M.C. and South Wales A.C. Open Hill-climb at Caerphilly.
21.—Cardiff M.C. and South Wales A.C. Open Speed Trials at Porthcawl.
22-29.—Austrian Alpine Tour.
28.—Notts A.C. Clipstone Speed Trials.</p> <p>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.
19 and 20.—R.A.C. of Belgium Grand Prix Race.</p> | <p>July.
26.—Notts A.C. Inter-club Hill-climb for the Du Pre Cup.
28.—Grand Prix de France and Coupe de la Sarthe. Le Mans.</p> <p>August.
10.—Mont Ventoux Hill Climb.</p> <p>September.
21.—Coupe de l'Auto, Boulogne Circuit.</p> <p>Nov.
20-27.—Marine, Motor Boat and Stationary Engine Exhibition, Agricultural Hall, promoted by the S.M.M.T.</p> |
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