

The Motor

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BY MOTOR TO THE ICE.

Motorists found a new objective for motoring during the recent exhilarating but short-lived cold snap. By the aid of the motorcar it was possible to reach the best of the ice, and motoring and skating proved an interesting and healthy combination of pastimes, the enjoyment of which is all too rare in this country.

NIGHT DRIVING, PAST AND PRESENT.

Headlights and Modern Driving Conditions—What the Motorist Requires from Electric Headlights.

THE subject of headlights for motorcars has lately occupied a very prominent position, not only in the motoring press, but also in the public mind, as shown by the numerous articles and letters in the daily papers. That this is so, is obviously due to the fact that whilst many far-reaching changes have taken place both in lighting mediums and road conditions, the design of most headlights has remained unaltered, except in small and unimportant details.

The object of this article is briefly to outline firstly, these altered road conditions, and secondly, how by means of the new possibilities opened up by the advent of electricity as a safe and sure lighting medium, these changed conditions may be satisfactorily overcome, and at the same time there may be removed many of the faults inherent in present-day conventional design.

We propose to confine our remarks to electric headlights, as it is in this direction that we firmly believe the future lies, not only because of the clean and instant action of electricity, but because of the fact that an electric bulb, as opposed to an acetylene or any other sort of hot and unprotected flame, makes possible the use of quite a different method of reflection, than was feasible with a design which had of necessity to provide for the escape of hot gases, and consequent tarnishing of reflecting surfaces. It is distinctly disappointing to find that there has apparently been little or no advance in lamp design, since the days when paraffin only was available.

We have read with the very greatest interest the various articles and letters which have appeared from time to time in the columns of motoring journals on this subject, and whilst agreeing with many of the statements made, it seems to us that these wider possibilities of design have been overlooked by the majority of these writers.

What little advance there has been, is in details, and is summed up in the words "parabolic" or "Mangin-type" respectively, and indeed these words have apparently become a perfect obsession like unto "that blessed word Mesopotamia."

The coming of electricity as applied to car lighting, has most certainly opened up new possibilities in lamp design, and in endeavouring to utilize these possibilities to their fullest extent, we must first of all disassociate from our minds entirely, the remembrance of previous designs, which had to make provision for factors which no longer exist. Furthermore, it must be again pointed out that not only have we to deal with altered conditions as regards the illuminant, but also altered conditions as regards the very roads themselves.

In regard to the latter, comes first and foremost, the factor of the tar-sprayed road.

The ever increasing use of tar-spray on roads has caused many motorists to assert that their headlights to-day are not nearly so effective as those they had years ago. This fact, coinciding in point of time with the increased adoption of electricity in headlights, has perhaps prejudiced this form of illuminant in the eyes of the unthinking.

Of course the same decrease in effectiveness applies equally to acetylene.

Let us more closely examine these altered road conditions, because herein lies the whole question of present-day requirements, and the only solution of the problem.

A few years ago practically all roads at night gave

the effect, in contrast with the hedges and banks on either side, of a white ribbon between dark borders.

On that white ribbon the driver was able to distinguish dark objects on the road in front quite plainly at a fair distance, with headlights only giving a moderate light.

This was, of course, by reason of the fact, that not only was there a strong contrast, but because the light-coloured road did not absorb the projected rays, but on the contrary deflected a certain proportion of them in a forward direction in a manner somewhat similar to that of a cannon-ball ricocheting off the surface of the sea.



Fig. 1.

A certain amount of diffusion also took place, of course, owing to the particles on the surface of the road.

When one remembers that nearly all the objects on the road at night are of a much darker hue than the dusty or even muddy road itself, it will at once be seen that under these former conditions, a strong contrast was obtained. We can only detect objects by contrast. In fact, contrast is the fundamental basic principle which renders sight itself possible.

A dead-black object on a dead-black surface, is to all intents and purposes invisible. This, of course, is the way in which many puzzling illusions are obtained for theatrical purposes. And in dealing with tar-sprayed road surfaces, we are face to face with a very difficult problem, just because the contrasts between objects on the road, with the dark surface of the road itself, are reduced to a minimum.

A practical motorist, if he thinks for a moment, will recollect that, whereas a dusty unsprayed road looks at night like a white ribbon between dark borders, a tar-sprayed road, especially when wet with rain, appears to be a black ribbon running between lighter coloured borders. That is to say, that the hedges and banks are lighter in colour than the tar-sprayed road itself, though on a dusty road they appear quite dark by contrast with it. A moment's thought, therefore, will make clear how much more difficult is the problem of night driving now than formerly, for whereas the road itself used to help the light of a lamp, it now actually absorbs nearly all the light that strikes it.

All this goes to show that it is absolutely imperative to make the very utmost use of every unit of light which we have at our disposal, not only by so designing our lamps that the utmost c.p. available is thrown forward, but, and this is a most important point, seeing to it that all the available light after it has left the lamp, is thrown where we actually require it, namely, ahead on the road itself.

Let us, therefore, see whether the present conventional design of headlight makes the utmost use of every ray of light which is available from its illuminant.

Firstly, it is clear that all rays of light which rise above the level of the bonnet of the car are wasted, for no driver requires to see any objects above that level. Therefore, any lamp which throws any portion

NIGHT DRIVING.—Contd.

of its light in an upward direction is wasting just so much of its available resources.

Taking as an illustration, an ordinary headlight of parabolic construction, we find that it projects forward a cone-shaped beam, whose apex is the illuminant itself.

In actual use the road itself has the effect of flattening the under-side of this cone, but the top half of it soars up into the air, and is quite useless from the driver's point of view. "We think it is hardly realized what a large proportion of the light of a lamp of this type is thus wasted. A glance at the accompanying sketch shows quite clearly that practically 50 per cent. of the total output is ineffective, besides that large proportion already wasted within the lamp.

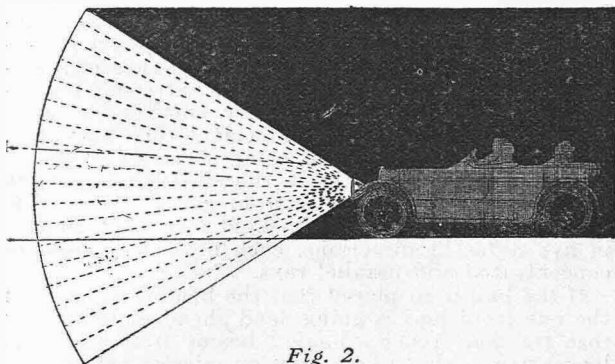


Fig. 2.

And not only is it ineffective, but this splayed or diffused light is detrimental, inasmuch as it introduces two other serious drawbacks.

The first is, that these upward-going rays, in fog, put up in front of the driver's eyes, a great white and impenetrable blanket of illuminated vapour. It is a common experience for motorists to be obliged to extinguish their headlights, and, in some cases even their sidelights as well, for this reason.

The solution of this difficulty has been attempted, by the use of rays from which the ultra-violet elements have been eliminated. But whilst it is admitted that a light of yellowish hue can be itself seen, when used as a lighthouse signal, at a greater distance through fog than a violet-white light; it must not be taken for granted that the same applies from a driver's point of view. It is just the difference between "seeing" and "being seen." Extensive experiments in fog have proved conclusively, that only a concentrated powerful searchlight type of beam can possibly show the driver the contrasts necessary to distinguish the road and objects ahead of him under these conditions.

The second drawback of this diffused light is the same question of contrasts under more normal conditions; namely, a dark clear night.

To make this point clear, let us take two simple illustrations.

In our own homes we know that when dusk is falling, on glancing out of the window of an unlighted room, we can distinguish objects perhaps quite plainly. But the moment the light is switched on in the room it appears to us as if black night had suddenly fallen outside.

Again, why in theatres is the auditorium darkened during the performance? It is again merely a question of contrasts. Arguing from these simple illustrations, we think it will be clear that the driver of a car should be as nearly as possible surrounded by darkness, whilst the road should appear as on a screen at a suitable distance ahead of him.

The confusing effect produced by street lamps, or the striking of a match, or switching on of an inspection lamp inside the car baffles the driver's vision by destroying the contrasts.

Taking two lamps, one giving a diffused light and the other a concentrated beam, and so adjusting the power of each illuminant, so that both lamps give the same power at a point, say, 30 yards ahead of the car, it is obvious, and we have proved it, that, from the driver's point of view, the lamp giving diffused rays is unbelievably inferior to the other. In spite of its inferiority, it will be recognized that the power of the illuminant in the lamp giving diffused light must of necessity be many times greater than in the concentrated beam lamp, in order to give the same candle-power at the distance in question.

Another point that seems to have escaped the notice of advocates of diffused rays is the fact that the eyes of a human being have a certain limited angle of vision, and within this angle a still more limited area, wherein they have power to convey to the brain an accurate idea of distance and definition. Therefore, with one's gaze concentrated ahead, it is unsafe to rely on the distorted vision of objects at the side, seen from the corner of one's eyes. It is also obvious that the fainter the definition ahead the greater must be the strain on the driver's eyes, and thus the side definition is more inaccurate still. This applies even when the car is only travelling at slow speeds—how much more so, if anything like a fast speed is to be obtained in night travelling.

It is, of course, imperative that motorists have a good driving light, both for their own safety and that of other users of the road.

We have so far dealt with the subject as motorists writing for motorists. But, at the same time, we must not lose sight of the general public's points of view, the chief of which, of course, is the question of dazzle.

In order to give the increased light ahead which we have shown to be necessary, one would have to increase the intensity of the illuminant, roughly, 10 times in any lamp of conventional design.

One can imagine the outcry there would be on the part of the other road users, and it would, of course, merely lead to drastic legislation.

Now we have already shown that all rays rising above the level of the top of the radiator are not only useless, but absolutely detrimental and injurious from many points of view.

This question of glare is one more powerful argument in support of our contention on this point. The average height of pedestrians, and particularly that of cyclists and horses, is considerably more than that of the top of a radiator, and, therefore, if all the beams of light are travelling on a plane below this level, they cannot possibly strike the eyes of approaching traffic.

This, we think, is obviously the only solution of the glare problem. It might be contended that a light on so low a plane would not light up such lofty objects as removal vans, etc., but we might point out that, however accurately such a lamp were designed, at long distances there would be a certain diffusion of light, from even parallel beams, owing to the refraction and deflection of the atmosphere, and in any case a sufficient portion of the vehicle would be visible.

Now, every motorist realizes that he must have some slight illumination on the sides of the road



Fig. 3.

NIGHT DRIVING—Contd.

immediately about the car, in order to help him to turn into side roads, and otherwise assist him.

Ample illumination for this purpose can be cheaply provided by the ordinary sidelights, which the law compels him to carry. He has thus his diffused light under control, allowing him to extinguish it in fog or mist.

It is our very strong conviction that the functions of headlights and sidelights are, and should be, kept quite separate.

We have so far only dealt with the ideal light required from a headlight after it has issued from the lamp, and these requirements can be summed up in one sentence, namely:—

A brilliant, flat, spear-shaped table of light, having its greatest intensity and penetrating power in the centre, in order both to penetrate a long distance ahead and to overcome the light-absorbing properties of tar-sprayed roads.

To obtain such a sheet of light all uncontrolled diffused rays must be eliminated.

To produce the ideal headlight would appear at first an easy matter by merely masking the front of a searchlight and only allowing a rectangular slit for an opening, but the first experiment on these lines would show the futility of such a method.

It may be thought that the desired effect might be obtained by using two headlights, each throwing a powerful concentrated beam of light of the true searchlight type; but it is unnecessary to point out that the small area illuminated would be altogether inadequate for comfortable driving purposes.

We are forced to the conclusion, therefore, that conventional ideas as to lamp construction must be dispensed with and the solution arrived at from an entirely new direction.

As has been pointed out already, with electricity as a lighting medium we are now able to design a form of lamp which was not possible when provision had to be made for the egress of fumes and hot gases. This being so, our first problem is to get every single one of the rays given off by the filaments, under control, so to speak. A short-focus parabolic headlight collects and throws forward the rays issuing from about

two-thirds of the bulb, but there is a large proportion of rays emanating from the front of the bulb, which merely stray out direct into the air in all directions.

This is apparent by glancing at Fig 4

A lens placed in front of the bulb to collect and straighten these diverging rays would, of course, have the effect of breaking up and diffusing the rays already straightened and projected forward by the parabola. The parabolic type of lamp is extremely suitable for use as a sidelight.

Let us, therefore, place the bulb in the exact centre of a perfect sphere, the interior of which is highly polished. Every single ray given off by the filaments now strikes the polished interior, and is reflected back again to the centre, forming there a second image super-imposed on the original one, and thus doubling its effective candle-power.

Now we can proceed to turn this doubled intensity to account.

A double convex lens of suitable dimensions inserted in the front of the sphere will project a powerful beam of light composed of parallel rays in a forward direction. This beam, though extremely powerful, will only illuminate a very small area, and, therefore, by itself is not sufficient. The back half of the sphere is capable of being utilized for the insertion of lenses also, and if, therefore, say, four are fitted, similar to the one in front, we shall have the effect of a ball of light, with light streaming from it in five different directions, each beam composed of concentrated and parallel rays.

If the ball is so placed that the beam issuing from the one front lens is going dead ahead, it is obvious that the four rearward-going beams from the back lenses need only to be caught on mirrors set at suitable angles to be also deflected forward, parallel with the direct front beam. Here, then, we have the effect of five distinct and separate columns of light of the true searchlight type, and whereas one, or even two, such beams would not be sufficient to illuminate the full width of the road, by means of the four adjustable mirrors, the five beams can be so distributed as to cover and illuminate practically any desired area. But even so, the possibilities of this method are not yet exhausted, for by using a special fluted type of mirror instead of plain glass ones to deflect, say, two of the beams, the almost unbelievable effect may be obtained of two long flattened beams of light, which could be utilized for broadening the total width of illumination, without causing a single ray to rise above the level of the bonnet. This is diffusion of light scientifically controlled.

This problem of a broad, rectangular beam of light has, we understand, been an unsolved perplexity up to the present, and the solution we have just put forward is, we believe, the simplest and most effective, if not the only one.

Here, then, we should have three powerful searchlight beams sweeping down the centre of the road, and the two fluted mirrors spreading their respective beams fanwise on either side. The sidelights, with their milder diffused light, would serve to illuminate the immediate vicinity of the car if desired.

The level of the plane of light thus obtained from such a headlight would be parallel with the height of the mirror which intercepts and deflects the one upward-going beam of light issuing from the back half of the sphere.

Thus the driver would have all the light below the level of his eyes, and instead of peering through a blaze of light at objects at a distance apparently only faintly illuminated, he would have a clear view through the darkness of the road itself, with objects on it brilliantly thrown into prominence by reason of the contrast.

And in this connection, we would point out that the sidelights themselves should be fixed in such a position that none of their rays strikes upon any portion of the wings or bonnet.

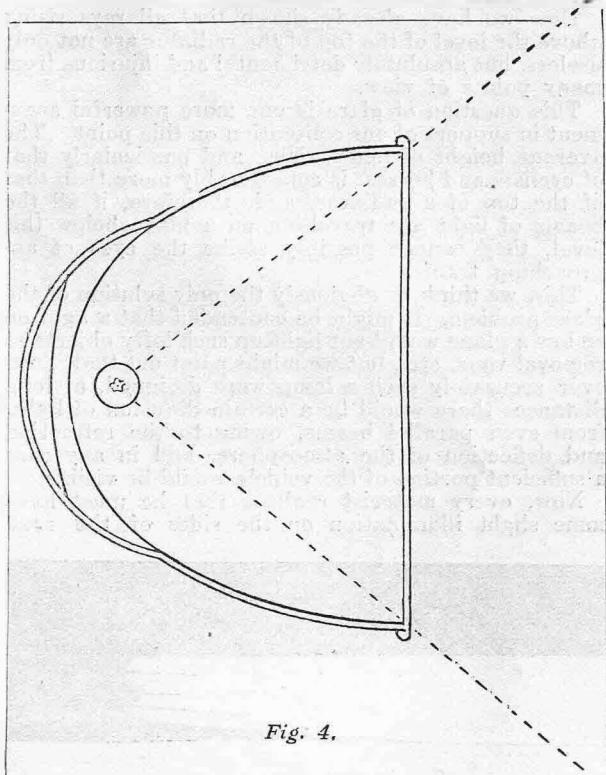


Fig. 4.

NIGHT DRIVING—Contd.

In these days of light-coloured paintwork, the rays of a moderately bright sidelight shining on the polished surfaces tends to minimize the strong contrast which it is so desirable to obtain.

Similarly, in fog, there being no upward rising rays, there could obviously be no baffling fog bank put up in front of the driver's eyes, and, in addition to this, all the beams being powerful and concentrated, they would be able to penetrate and force their way through the vapour to a much greater extent than is possible with vague diffused rays of light. And furthermore, by adjusting two of the beams so that they would each illuminate their respective edges of the road near to the car, it would be quite an easy matter to hold the centre of the road, and at the same time to be able to distinguish other vehicles by means of the remaining three beams going dead ahead.

We have endeavoured to show that beams of light travelling so close to the surface of the road, however powerful they might be, cannot inconvenience other users of the road. Many ingenious devices have been fitted to headlights, some mechanical and others permanent, in order to solve this very pressing question, but in every single instance the device has meant blocking out and thereby wasting a portion of the available light from the lamp. Surely it is an obvious fact that one requires the utmost light one can possibly have just at the very moment when one is meeting and passing other road users.

in order to see clearly and to judge their size, character, pace, and even their attitude.

Some writers have lately assumed that one meets only motors on the road at night, and with that whole-hearted confidence in both the steerability of the car and the superb capability of the driver to avert almost certain disaster at critical moments, they seem to forget other less wary objects. A tramp with a sack over his head on a pouring wet night, on a dark road surface, takes more than an ordinary pair of acetylene headlights to detect at any reasonable distance.

Those who have come up behind a wagon laden with scaffolding poles under similar circumstances will quite appreciate that to recognize the fact even a few extra yards away may avert a serious accident, when the wagoner draws to his own side and swings his "tail" across the path of the oncoming motor.

Farmers' wagons with faggots protruding from the sides should be given a wide berth, but unless one has a very powerful light, the faggots are not distinguishable against the background, similar in colour.

Each of our readers will readily recollect his own narrow escapes at night, and endorse our views as to the absolute necessity of having the most powerful light reasonably obtainable.

A really good headlight should be considered as a most convenient form of insurance, and even preferable, because it will save life, limb and property by prevention, rather than replacement in cash.

C.H.K. AND C.W.C.

Motoring in Malaya.

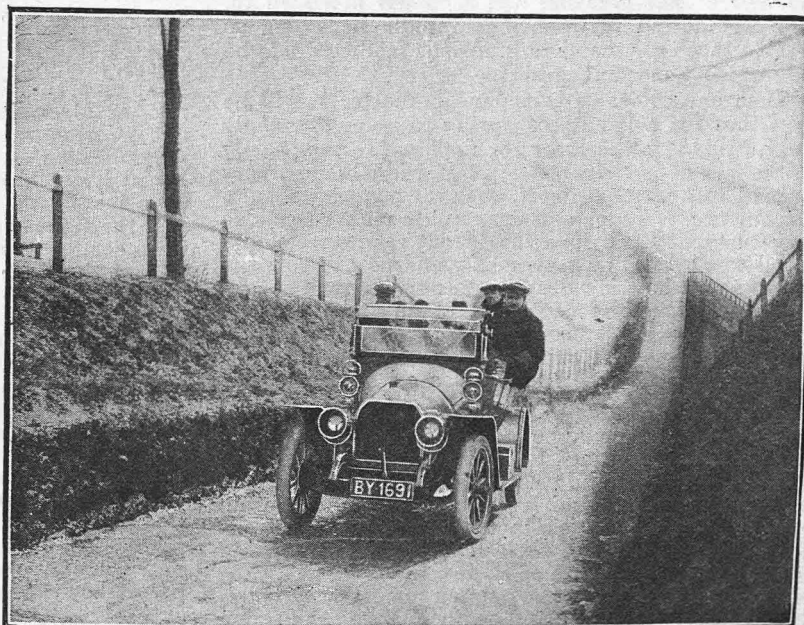
Motorists who are seeking entirely new ground for a tour cannot do better than turn their attention to the Federated Malay States. The West Coast of the Peninsula possesses an excellent road system of about 2,000 miles, and the best time for motoring is during the dry season, which lasts from April to September. The temperature varies between 70 degrees and 90 degrees in the shade, and is about the same all the year round. No special type of car is required for Malayan roads, but the more efficient the water-cooling system the better. There is no speed limit in Malaya. Two ladies attended by a native have travelled through the Peninsula on a 10 h.p. single-cylinder car. The Malay States Information Agency have published a very attractive booklet on motoring in Malaya. It gives in a convenient form all information likely to be required by those contemplating a motor tour through the Peninsula, and includes a useful outline map. Copies of the booklet can be had on application at the offices of the agency, 88, Cannon Street, E.C.

As was reported in last week's *MOTOR*, the Dewar Trophy has been awarded to the Thomas Transmission Co., for trials carried out under the observation of the R.A.C. The Thomas transmission was tested upon a touring car and also upon a lorry. The former was a Delahaye car and the latter a heavy Leyland lorry. Both vehicles were fitted with the celebrated Hobson-Pognon plugs, and another success must therefore be added to the already long list of successes gained by these plugs. They may be obtained direct from Bougie Pognon, Ltd., 29, Vauxhall Bridge Road, London, S.W.

A Unique Performance.

On the last day of January a 10-16 h.p. Stoewer car, fitted with a four-seated body complete with hood, lamps, Stepuer wheel, etc., underwent a hill-climbing test at Brooklands. Although only built for four, the car carried as many as seven passengers, whose total weight amounted to 1077 lb. Standard in every respect, both as regards body and chassis, the car, with its load, climbed the test hill with

ease—and this from a standing start. On a second test, the car was stopped and re-started successfully three times on the steepest gradient of the hill. Mr. W. Turner Smith, the British representative for Stoewer cars, was informed by the officials at Brooklands that such a performance is unique. The test was an official one, and has been certified by the Brooklands Automobile Racing Club. Stoewer cars may be inspected at 18, Brompton Road, London, S.W.



A 10-16 h.p. Stoewer car with four-seated body, which carried seven passengers up the test hill at Brooklands, and was stopped and started three times on the steepest part of the hill.

COMFORT ON THE ROAD.

Some Hints and Tips Mainly Intended for Beginners, but Useful to all Motorists.

IT is safe to say that 50 per cent of that increasing body of motorists who drive their own cars for business or pleasure, and look after everything themselves, do not travel in anything like the comfort they should. If they gave a little attention to some of the apparently trivial details of the car, they would find an all-round increase of comfort which would surprise and delight them; and it is the purpose of this article to endeavour to give a few hints with regard to one or two small points which will repay the time and trouble spent over them.

Not only are the running details of the car often neglected, but in nine cases out of ten, when it is necessary to make a roadside adjustment or tyre repair, the work is proceeded with in a manner involving a degree of discomfort which is quite unnecessary, and as a result entails the expenditure of more time and labour than would be the case if a little thought were taken before starting on the job.

With regard to the running details, one of the features of the last Olympia Show and one of the most noticeable things on cars on the road has been the almost universal adoption of that type of spiral spring shock absorber, of which a large variety have lately been put on the market.

Neglect of Leaves of Springs.

We are told that these attachments absorb the small shocks which would otherwise be transmitted to the car body, because the ordinary springs are too stiff to respond quickly to anything less than a fairly severe bump; but to my mind the inability to respond quickly is not due to any defect of the laminated springs, but simply to the almost universal way in which the proper greasing of the leaves of the springs is neglected. If the owners of cars would see to it that the proper greasing was regularly attended to, they would find their springs rapidly becoming so flexible that only the ultra luxurious faddist would be found fitting shock absorbers.

When one comes to consider the matter it will be seen that for a laminated spring to respond readily and quickly it is necessary for each leaf to slide easily on the face of its neighbouring leaf, there being a very large sliding surface, and if, as in the majority of cars, this surface be rough and dry, and in most cases also very rusty, it is obvious that great resistance is opposed to any sliding movement, and as a result the spring as a whole is "dead," while those small shocks which are the chief causes of rattle and noise are transmitted to the frame and body.

How to Grease the Leaves of Springs.

The remedy is simple and easy to carry out; the frame of the car should be jacked up so that all weight is taken off the springs to be operated upon. If the front springs are to be treated first, and only one jack is available, it is advisable to jack the frame up in the middle of the front cross-member, so that both front springs are relieved of their load together. Jacking up one corner of the frame to do one spring at a time is not good practice, as it puts an unnecessary twisting strain on the frame and engine. When the frame is up sufficiently high just to raise the wheels clear from the ground, it will be found that the weight of the axle has caused the leaves of the springs to open slightly, and grease should be introduced between

each leaf with a flat steel rule, or, if the goddess of the kitchen be absent, a table-knife will prove an excellent substitute for the rule. The leaves should be wedged apart with a screwdriver in order to get the grease well up towards the U bolts which hold the spring to the axle, and when all the leaves have been greased the jack should be lowered and the superfluous grease which will be squeezed out from the springs should be wiped off. The back of the car should then be jacked up and the process repeated with the back springs, blocks having been placed under the front wheels to prevent the car rolling off the jack. All shackle bolts should also be well greased.

Should the springs be in a bad and rusty condition the full effects of the greasing will not be felt until some hundreds of miles have been run, when the dose should be repeated and should then be sufficient to last for the season. If the springs are clean, good effects will immediately be felt and the springing will go on improving for some hundreds of miles.

Details that Need an Oilcan Occasionally.

Another fitting which pays for a little oiling is the side brake rack and its pawl; these parts generally get their share of water when the car is washed, and are often rusty so that the pawl works stiffly on its pivot, with the result that the side brake does not pull or push on easily, and when on does not always stay there owing to the pawl not dropping into the catch properly.

The catches of the side doors are also places that are often sadly neglected; it is much nicer to hear the door close with a well-greased click than to have to slam it two or three times before it catches.

The Double-purpose Petrol Can.

The spare can of petrol is a great comfort when touring, as a car always runs dry five miles from anywhere, and even with the assistance of the ubiquitous A.A. man the consequent delay is annoying. PENDING the invention of a car which will never run dry except when opposite a petrol shop, the neat little clamp which will hold a spare can on the running board is a real necessity, and the can has more uses than merely carrying petrol. It will be found to be just the right height when laid on its side in the road for a comfortable seat while operating on tyres. Most men work at a tyre standing up and get a crick in the back as a consequence. Sitting on a petrol can and doing the work in comfort is a much more sensible idea. The best plan when a tyre punctures or bursts is as follows: First run the car to a convenient place at the side of the road, if an offside tyre has gone run to the wrong side so that cars do not splash you in passing; then, having put the brakes on, light a pipe and take off your overcoat (it is better to take off your coat at the beginning than half-way through the job when the tail has been trailed in the mud) and jack up the wheel. Next lay out the tyre levers, a pair of pliers and a swab close to hand, and, placing the petrol can in a convenient position, sit on it and commence operations in comfort.

Whether it be putting on a Stepney, a new cover, or the simple sticking on of a Patchquick, you will find the time occupied in doing it in comfort to be far less than that taken by the man who rushes at the job like a bull at a gate.

TRAM TRAPS ON SHARP CURVES.

Dangers of Tram Lined Roads.—Faulty Laying of Tram Lines.—Level Crossing Dangers.

A DANGER-TRAP which, while holding no surprises for those "in the know," disconcerts the unwary and unmechanical driver, lies hidden on tramway routes where sharp curves exist, and as there are very few systems possessing none, and many which abound in such, the danger is worth emphasizing. I refer to the enormous amount of end "overlap" on a tram—especially in the case of the short wheelbase models, although the eight-wheeled bogey carriage class is by no means innocent of the charge—when it is rounding a sharp curve, its encroachment upon the general highway constituting a serious danger to other users of such roads.

Fig. 1 shows the position taken up on such a curve by a four-wheeled tram having considerable overhang at each end in relation to its wheelbase. Here we see that, on approaching the corner, the forward end of the car reaches the commencement of the line deviation, while the wheels of the under-carriage are yet many feet from it. This means that the tram will continue to advance in a straight line for, perhaps, as much as 8 ft. or 10 ft., until the leading wheels themselves "arrive" at the curve, when the body of the tram will swing round with an all-compelling sweep, and woe betide any traffic that has made a miscalculation and got within the danger zone of its "tail"; the danger lies at the tram's forward end until the wheel flanges strike the curve, when the particular feature will be found to be more accentuated at the rear, so that any vehicle adhering to the rule of the road and passing a tram on its near side, finds itself, on corners where the curve is sharp and the road narrow, in a fair way to being (1) blocked by the forward "overhang," and (2) the next instant being ruthlessly swept on one side by the tail action, this being traced by the dotted portion in Fig. 1.

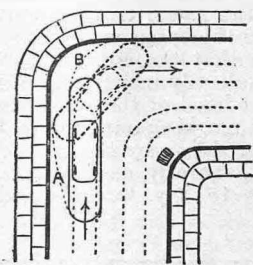


FIG. 1

Showing rigid short wheel-base tram, with long end overhang, negotiating sharp curve, the dotted curves A. and B. outlining the course taken by aft and fore ends of car respectively.

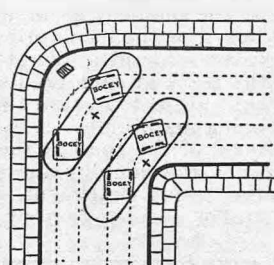


FIG. 2

Showing 8-wheeled trams negotiating sharp curve. Those portions marked x depict the overhang as the body takes a short cut round the corner. Exaggerated for sake of clearness.

Many a time have I noticed on our local tramway system, which abounds in these dangerous spots, unwary cyclists and drivers of other vehicles being caught napping, and having to make a flurried—sometimes a desperate—flank or other movement to avoid annihilation; and the look on their faces afterwards, when they realize that they have come out of a tight corner, where they apparently had no previous suspicion of its possibility, shows one that they are not only puzzled, even then, to account for the situation which

undoubtedly existed to their danger, but are certain enough of its reality to look out for squalls at that corner in future, even though they be unable quite to "tumble" to the why and wherefore of their unpleasant experience.

Cars with Bogey Wheels.

And this is not the only dangerous feature of such sharp corners where the road is, in addition, narrow. In encountering a long "bogey" tramcar travelling in an opposite direction to yourself on one of these curves, if you see that the roadway unoccupied by the lines upon which the tram is travelling appears to give you room, do not be too ready to pass the juggernaut on the "apex" of the curve; that is to say, if the distance between you (when you are first able to catch sight of the horror) is such that, if you keep advancing at your then rate of progress, you are likely to pass each other at the centre of the bend, my advice is not to "keep advancing"; either stop till the tram is round the bend, or yourself get round first. If you know the corner and its possibilities from past experiences, well and good; but if not, take every precaution, or you may find yourself in a tight corner, owing to the inherent vice from which this brand of tram suffers (viz., taking a "short cut" across the corners with its body, while the wheels follow their appointed course), explained in Fig. 2, I hope, fairly clearly. And the longer the body of the vehicle the more accentuated becomes this undesirable feature, so that while the present tendency to favour the adoption of these lengthy and unmanageable vehicles exists, the danger arising from this particular failing is likely to become worse rather than better. In points of this and a like nature met with on the road, where things are not always what they seem, it is the unmechanical mind which gets into trouble nine times out of ten; so, as we are not all mechanics, and such screened "mechanical" dangers are increasing in our midst every day, it behoves us all to see that we are not trapped.

Swollen Wood Paving.

The recent abnormal spell of wet weather is responsible for—in addition to a "murmuring" in our tents, and other calamities—a very undesirable state of affairs where the reign of the wood block holds undisputed sway. Here again it is a case of "cherchez le tramme," for although wood paving is to be found elsewhere, it is apparently a sine qua non where tramway lines exist in modern towns. During the last few weeks I have in several places on our tram route come across a portion which, when walking or knocking thereon, gave out a hollow, crust-like sound, while a few feet further along the sound would be normal, viz., dead and solid. Furthermore, at the faulty spots—all of which have announced their presence to me in this manner—the camber becomes so accentuated that the ever-present evil of side-slipping has more terrors than normally, for excessive camber does more to bring it about than anything else—especially when the surface is greasy, as it has been continually for some weeks on end. So badly has this swelling occurred in some places, that here and there blocks have become squeezed upwards from sheer inability to bear the pressure any longer, and protrude above the level of their neighbours in a positively dangerous manner. A few days ago a tram drew up rather suddenly just abreast of me, and I—as

TRAM TRAPS.—Contd.

surprised to see—instead of passengers alighting from or entering the car—the driver get down, and with a heavy piece of iron advance upon a protruding wood block adjacent to the rail and attempt to hammer it back into place so that he might pass over the spot without injury! I suppose so long as trams are with us, wood paving will be the most convenient medium for laying the permanent way, but it has its disadvantages when an unduly wet season visits us, although I really think this trouble would not obtrude itself at any time if more sensible methods were employed in laying it down. All such bad spots have—in this town—so far been confined to the tram route, which would seem to prove that the senseless camber with which each section is laid out provides, ready to hand, the key to the evil, for the tighter the blocks become the more accentuated the “lift” must become to provide room therefor. But were the surface to be laid out innocent of all camber—or to all intents and purposes so—this “lead” would not be given to the surface crust to indulge in upheavals where there is no natural resistance to its desires. This undesirable tendency on the part of sodden wood paving seems



FIG. 3

Contrasting correct and incorrect cambers.

to me to be one very strong argument in favour of the system—already, I believe, discussed in these columns by Mr. Sturmev—of designing roads with the lowest portion in the centre, in fact providing a concave instead of a convex contour; any desire on the part of the wood blocks to burst their bonds when lying in such a plane would but hold such a surface more tenaciously to its foundations, as the “squeeze” would naturally be diverted downwards. Of course, I ignore the traffic point of view for the moment, although I realize on sight, so to speak, that pirouette and side-slip indulged in towards the centre of a roadway would hardly be the innocent amusement which some seem to think it to-day; skidding about with a friendly kerb as a lee shore is child’s play compared with what it would be if the tendency lay in the opposite direction, as would be the case were the above suggestion adopted. On a “favourable” day the road centres would look like one vast vehicular shambles!

Faulty Laying of Tramlines.

When once one starts on the subject of tramways, the difficulty lies rather in “ringing off” than in finding matter whereon to ventilate one’s indignation! Why are tramlines more often than not laid in such a manner that the wood blocks “surround” the line at a much higher level than the flat surface of the metals? This is where so many and so great dangers lie for the cyclist and others, whilst we motorists have to be ourselves extremely careful to avoid dropping our wheels into these channels, unless we wish to sow the seeds of a beautiful skid—on a greasy day. I have written on this subject before to-day, but can only repeat that while local and county authorities are giving away the ratepayers’ birthright into the hands of tramway companies—and in many cases giving it away for absolutely no quid pro quo of any kind whatever—the very least they can do, both for the general users of the roads and the long-suffering householder, is to incorporate in their agreements a clause insisting on an absolutely uninterrupted contour to the surface of the road, whether cambered or not (save and except, of course, the necessary groove in which the wheel flanges travel); the very sight of a multi-cambered road upon which tramway engineers have wrought their pleasure brings me dangerously near to

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foaming at the mouth, nor have I ever yet obtained a logical or reasonable reply to my questions, oft-asked, both as to why municipal authorities allow such multi-contoured surfaces to replace the original plane, and why tramway engineers, if left to their own devices, seem to consider it necessary to install such? The natural reply—and the nearest I have obtained to a reasonable one (in fact, I doubt not that it is the correct one)—is that a camber is necessary for the proper draining of the road; but whilst quite admitting the truth of the argument, it is quite unnecessary to provide a complete edition between each set of rails, for the drainage of the surface would be just as complete as previously if relaid with the original camber. And if their reason is that an accentuated camber provides better drainage for their property than would the original lesser camber, the attitude of the ratepayers’ representatives should be obvious; they should gently but firmly insist on the safety and comfort of the general public being respected before the dividends of the intruding company are considered to the detriment of those who have the greater claim to the use of the highway. Fig. 3 shows both the correct and the indefensible methods above mentioned, admittedly on the exaggerated side for sake of clearness.

Level Crossings.

And while on the subject of backslidings on the part of those who have a public duty to perform, why are not railway companies dropped on with a heavy hand when they fail—as they mostly do, and fail miserably—to maintain a proper level to the road surface where they have been suffered to cross it. Quite apart from the standing danger which these level crossings ever present to the public, it is adding insult to injury to invite vehicular traffic to jolt and bang across the pro-

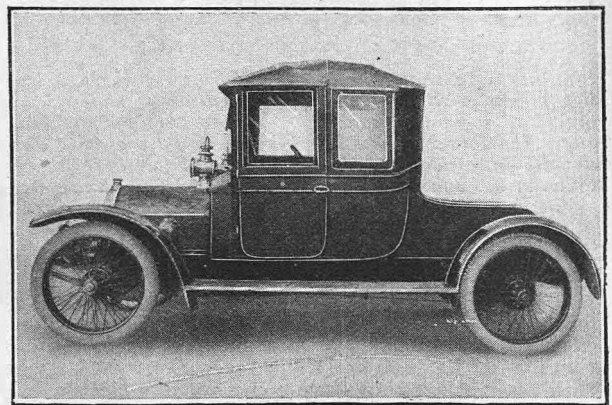


FIG. 4

Cross section of a level crossing. Thick surface black line shows correct level of road, whilst the sunken dotted portion shows it as it is too often found.

truding iron rails. Whoever poses as the guardian of the public in such matters—and I am a little vague at the moment as to whether the Local Government Board or the local authority are the sponsors in these cases—should undoubtedly see that the condition of the track at such points is periodically inspected, and take steps to ensure the correct level of the roadway being maintained. Fig. 4, while marking out the ideal level of the road at these spots, shows by the dotted lines the contour the surface generally assumes, to the great detriment, needless to say, of wheeled traffic passing thereover.

P.H.M.



A new 12-18 h.p. Riley coupe specially designed for doctor's use, with 9 ft. standard base.

THE 30-50 h.p. ARMSTRONG-WHITWORTH.

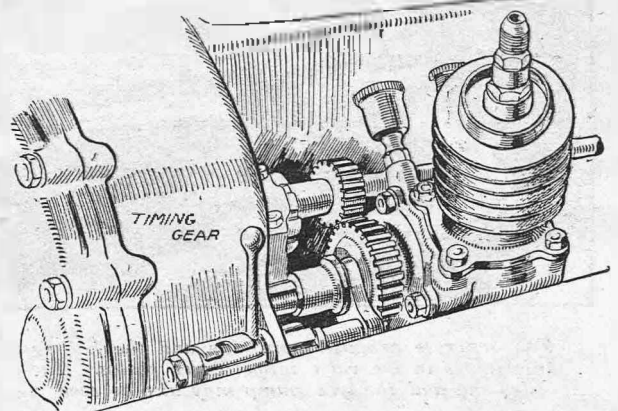
A High-grade Six-cylinder Chassis Intended for the Exclusive Market.

ONE of the most remarkable of the many biological phenomena extant is the diversification in the likes and dislikes of matters pertaining to art.

Some people will look at a picture, which the cognoscenti declare to be a wondrous exhibition of the highest art, and will yet fail altogether to see anything pleasing in it. Others again may give a cursory glance to the subject and pass a non-committal expression of opinion, without in any way becoming enthusiastic upon it, whilst still others will fail to find words in which adequately to express their high appreciation of the subject under consideration. Sometimes in the highest attainments of art it is only the specially-gifted who are able thoroughly to appreciate the subject, and to some extent these factors are found to obtain in the case of productions which, though not necessarily of art in the generally-accepted sense of the term, are, nevertheless, so to the eyes of the true engineer. Anyone, however, who made an examination of the 30-50 h.p. Armstrong-Whitworth chassis—so long as there was present the merest incipient knowledge of the subject—would be bound to be pleased by that which was studied. Looking further and more closely into the matter, the appreciation would rise in proportion, whilst when the expert, or the art critic, as one might express it, came to make a full investigation of this chassis, then, indeed, if he were eloquent, a pæon of praise would ensue. Personally, in the rush of the Show, we were able to devote but a comparatively cursory examination to the chassis, but now that we have had an opportunity of inspecting it more fully, we find that it is a truly excellent production.

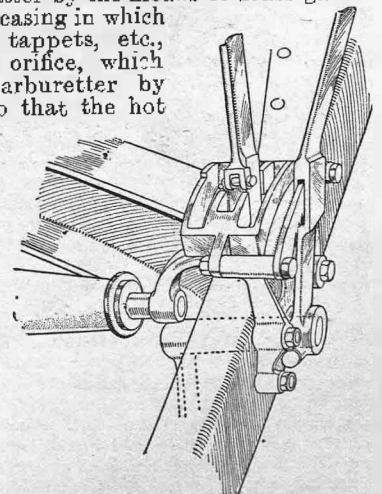
But, apart now from mere generalization, and to take the units of the chassis seriatim, we find that the six cylinders are cast in sets of threes, the bore and stroke being respectively 90 mm. by 135 mm. There is nothing particularly outre or uncommon in the general design of the engine, but in detail work there are a number of points which are worthy of consideration. For instance, one finds a cast manifold for each set of three cylinders, with a separate exhaust pipe leading from the said manifold to the silencer. All the valves are mounted on the one side, enclosed by an easily removable cover plate—one cover plate for each set of cylinders, of course. Instead of the usual cotter pin and washer for holding the spring in position on the valve stem, there is a neat machined collar, with a special neck-slotted plate, so that instead of all

the usual worry and trouble obtaining when withdrawing a valve, this small collar may be lifted up about one-eighth of an inch and then the holding plate will come away, and consequently the removal of a valve at any time is, comparatively speaking, child's play. The drive for the camshaft, etc., is through the medium of a silent chain, and disposed on the right-hand side of the motor one finds the magneto

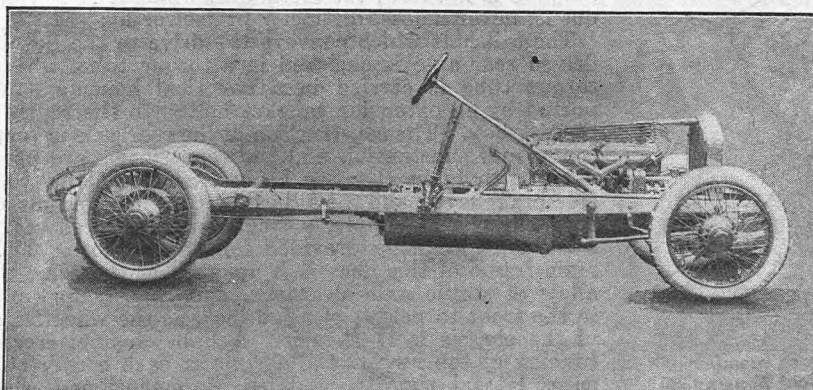


The air-cooled single-cylinder pressure pump for inflating the tyres, and the trip lever for putting it into or out of gear as required.

and carburetter, whilst the bed-plate of the engine carries a small pump for blowing up the tyres, and also a dynamo for the car-lighting apparatus. The magneto is a Bosch dual, and there is nothing particular in regard to this fitment beyond that the coupling is an Oldham-type joint made with fibre, and the removal of the magneto is, consequently, a very simple matter. The carburetter fitted is a White and Poppe, and this does not call for comment, but on the other hand the method in which the hot air is taken to the carburetter is certainly out of the ordinary. In each of the cover plates enclosing the valve stems, etc., there are two holes, about 1½ in. in diameter, which are protected against the passage of dust or other extraneous matter by the means of brass gauze. In the corner of the casing in which the valve springs, tappets, etc., are enclosed is an orifice, which connects to the carburetter by means of piping, so that the hot



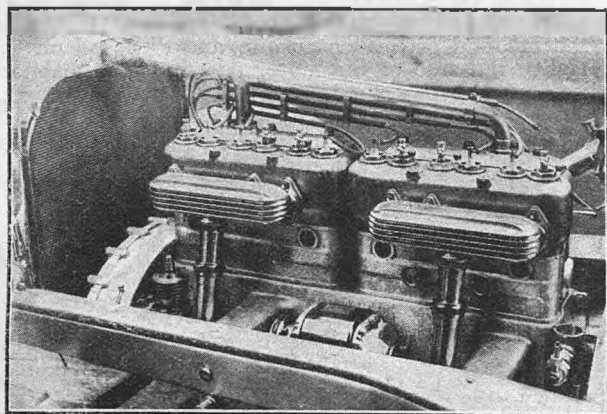
The gate is bolted directly to the frame, but the change-speed lever is carried on an extension of the gearbox.



The 30-50 h.p. six-cylinder Armstrong-Whitworth chassis.

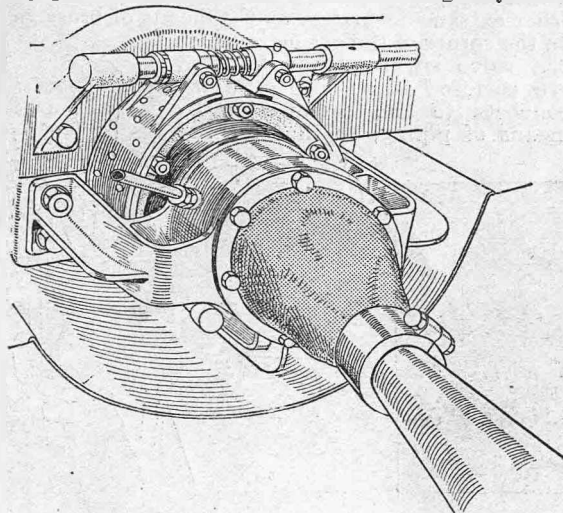
30-50 h.p. ARMSTRONG-WHITWORTH.—Contd.

air for the carburetter is drawn through the two holes in the cover plates and consequently impinging on the cylinders, is thereby warmed, and, passing on to the carburetter, thus obtains the gradual heating which is found to be so beneficial in point of economy in petrol consumption. This gradual heating is obtained in a simple manner, whilst the gauze acts secondly as a strainer to exclude dust and other extraneous matter from entering into the carburetter. The tyre pump,



The separate exhaust manifolds and the hot air inlet ports in the valve tappet cover plates. The dynamo and the tyre pump may also be seen

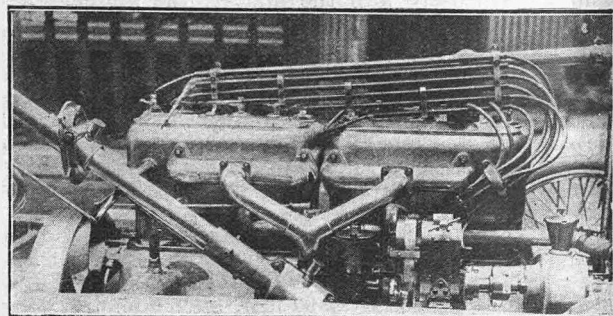
previously referred to, is a single-cylinder plunger type of pump, fitted with cooling vanes, and this pump can be put in gear by moving a small lever which is mounted adjacent to it, from one slot into another, the one being the in-gear and the other the "neutral" position. The same driving shaft continues on to operate the dynamo, and it must be admitted that both these fitments are very neatly housed in the places where they are put. The silent chain drive for these fitments is provided with an eccentrically-adjusted bearing, so that if the chain should stretch, after considerable usage, the slack may be easily taken up, and both the tyre pump and the dynamo are provided with a corresponding adjustment to ensure the correct alignment of the driving shaft. The crank-shaft is mounted on seven bearings, the said bearings being phosphor-bronze run with white metal, so that every precaution is taken to ensure longevity in re-



The extension bracket bolted to the cross member of the frame, which supports the spherical housing of the torque tube. The pipe for leading the lubricant to the universal joint is also indicated.

gard to the engine and strength has not been sacrificed to ensure lightness. Lubrication is by means of a force-feed pump, and the same drive is utilized for the air pump to ensure the requisite pressure for feeding the carburetter with petrol from the tank, the said tank being bolted to the rear of the chassis. Incidentally, we might point out the petrol tank in itself is worthy of particularized attention, as the method in which it is carried is exceptionally neat, and the main frame is carried out in a scolloped manner, and the petrol tank is suspended directly from this frame extension instead of from the usual bracket and hangers, etc. A water pump is used for the purpose of ensuring an adequate circulation, and the draught is drawn through the radiator by means of fan blades in the flywheel, an underscreen, of course, being part of the equipment to ensure an even draught.

A multiple-disc type of clutch transmits the power from the engine to the gearbox, and there are some 60 or 70 plates in this clutch, and although we have not personally tried the car, we are given to understand that it is particularly "sweet" in action. A universal joint is interposed between the clutch and the gearbox, the latter providing four speeds and a reverse. The control is through an ordinary type of gate, and the gearbox itself is supported by two channel-section cross-members of the main frame. The mounting of the gate calls for comment, inasmuch as it, in itself, is carried directly from the main frame, but the shaft and lever for changing the speeds are both carried directly by the gearbox, and there is an entirely different centre for the brake-actuating rod. It is thus seen that no binding action can take place,



The magneto and carburetter side of the six-cylinder 30-50 h.p. Armstrong-Whitworth chassis, showing the arrangement of the wiring, etc.

and that, although the side brake may be tightly pulled on—even to its full extent—nevertheless the movements of the change-speed lever are in no way impeded. At the rear of the gearbox is a powerful contracting brake, which is operated by two cams, the design of the operating mechanism being worthy of more than passing attention, as, although the system adopted is not new, the method in which it is carried out is, nevertheless, distinctly praiseworthy.

The tailshaft which conveys the drive to the bevel-driven rear axle is enclosed in a torque tube, which torque tube is carried in a spherical housing supported by an extension bracket bolted to the rear of the gearbox. The construction of the rear axle is very sound and substantial, and the rear wheels are provided with internal-acting brakes, controlled by the side-brake lever, and the adjustment to these brakes is very handy and simple, a small hand-operated star-adjusting nut being provided for this purpose. The main frame of this chassis is upswept at the rear, to allow of ample axle clearance, and slightly inswept in the front to permit of a full lock, as the wheelbase of the chassis is 11 ft. 9 in. A light channel cross-bracing at the rear of the chassis at each corner ensures lateral rigidity, and, as aforementioned, the under side of the main frame is extended out to constitute the supporting medium for the petrol tank.

30-50 h.p. **ARMSTRONG-WHITWORTH.**—Contd.

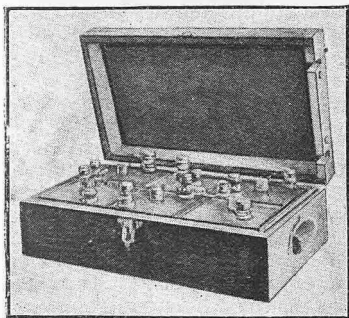
The rear springs are three-quarter elliptical, the ordinary type being used in front, and beyond the fact that there are no fewer than 14 leaves to these springs, they do not call for further mention. All the spring shackles, etc., are fitted with greasers, and the hubs are of very large diameter, which fact would seem to warrant the presence of substantial bearings. The weight of the chassis is between 24 cwt. and 25 cwt., and the tyres fitted as standard are 895 mm. by 135 mm., and the equipment of this chassis includes, in addition to the dynamo, a set of five lamps.

In producing this model, Messrs. Sir W. G. Armstrong, Whitworth and Co., Ltd., have evidently made a bid for the high-class, more expensive type of

chassis, and we do not in any way hesitate to say that the product which is the materialization of this intention is in every way worthy to attain to its desired end. Throughout the whole chassis there is continual evidence of thoroughness in design, and the desire on the part of the manufacturers to obtain the best result, regardless (with, of course, reasonable limitations) of the actual expense incurred. The result is one of the soundest and—if we may depart from the dictates of grammatical exactitude, in order graphically to explain our meaning—one of the most complete chassis which it has ever been our lot to investigate. It may be seen at the premises of Messrs. Sir W. G. Armstrong, Whitworth and Co., Ltd., in London, at 3, Blenheim Street, New Bond Street, W., the chassis being a polished one.

Some New Electrical Accessories.

Some new accessories of the electrical type recently introduced by Leo Ripault and Co., 64a, Poland Street, London, W., are of noteworthy interest. First we may mention the Rip accumulator, which is of a special type, designed for car lighting, and has a number of features which increases its efficiency and



"Rip" new car lighting accumulator.
Leo Ripault.

reliability. Each cell is self-contained, instead of having the usual double-compartment 4-volt arrangement. The illustration depicts a six-cell battery of 12 volts. The terminals have received special consideration to render them corrosion proof. The glands are perfectly acid-tight, and the terminal heads are capped with vulcanite. The celluloid cases are made on a new principle with regard to the joints, the edges of the

celluloid being lapped over the top of the case, which makes a far stronger job than is usual. This accumulator is mounted in a highly-finished mahogany case with a lock. The Rip electric torch is a very cheap and efficient little hand lamp, useful in the motor house, or to carry on the car for inspection purposes. It consists of a small, single-cell dry battery, with a small, metal filament lamp arranged as one of the terminals; the other terminal is formed of a brass spring, which, on being pressed, makes the connection, and the lamp lights up brilliantly. This battery gives current, it is claimed, for 25 hours intermittent use. A new Oleo sparking plug, called the 2BM, has been introduced. This has all the good features of the standard Oleo plug with regard to the soot-proof insulator and the excellent finish. Nevertheless, it is sold at a cheaper figure than the standard Oleo. It may not be generally known that Oleo plugs are supplied in special types for slide-valve engines. One of these is illustrated, and is intended for use on a Daimler engine.



Special long
Oleo plug for
Daimler slide-
valve engine.
Leo Ripault.

A new portable electric inspection lamp is a useful fitting. A hook with swivel joint is provided at each end, and it can be used in any position, and forms an interior lamp for emergencies. The electric bulb is protected by a thick glass and the usual wire shield. The flexible conductor can be neatly wound on a drum formed on the lamp case and thus protected from damage.

The Siddeley-Deasy car, which was used by the King and Queen on their visit to the central provinces of India, was fitted with Riley detachable wire wheels.

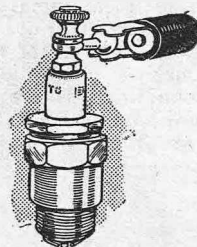
A correspondent writes that he would be obliged to any readers who could give him their experiences of the Atlas Automatic Tyre Pump. We shall be pleased to find space for any replies to this inquiry.

A New Sparking-plug and Cable Connector.

A new plug and terminal connector for the high-tension cable is here illustrated, from which it will be seen that a ball joint is provided. Not only does this give immediate detachability by means of the "snap-on" connection, but it gives a freedom of movement to the heavy cable which entirely removes all strain from the cable itself. The plug illustrated is known as the Re V, and is supplied by the Re V Sparking Plug Co., 13a, Broad Street, London, W. It will be noticed that it embodies the best practice in design. The insulator is of the non-sooting order, and the electrodes are of pure nickel, and well calculated to withstand the intense heating effect of the magneto spark. This plug comes out at a very reasonable figure.



New 2 B.M.
Oleo plug.
Leo Ripault.

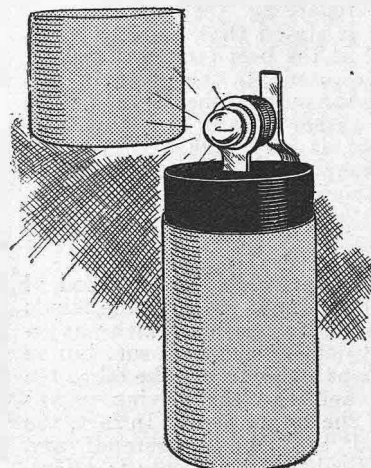


New Re V plug and
ball joint cable con-
nector. ReV Spark-
ing Plug Co.

The generous treatment of customers has always been a marked feature of Messrs. Harvey Frost and Co.'s business programme. "Test before you buy" is practically what the firm says to all prospective purchasers of their appliances. A free trial of a H.F. vulcanizer can be obtained by anyone on application, and as some doubt occasionally arises in connection with this generous offer, the firm wish to state that the offer is perfectly bona fide, and always has been. There is absolutely no obligation or condition. Harvey Frost and Co., 39, Great Eastern Street, London, E.C., hand over the appliance with a willing hand, and the recipient can test it at his leisure. This offer is one which no genuinely interested person could decline, and a satisfactory feature of it is that appliances sent on trial are invariably kept and afterwards paid for by the applicants.

Multi-point Ignition.

The editorial note to the letter on this subject published in the 6th February issue may unintentionally convey the impression that equally efficient results to those obtainable with a double spark magneto could not be obtained with a double-pole plug, such as the Lodge, which can be worked from either a coil or ordinary magneto. This system also gives perfect synchronization, as does the double spark magneto.



"Rip" cheap hand lamp or torch,
car or garage use. Leo Ripault.

A NEW TRANSMISSION.

Another Development of the Hydraulic System of Transmission.

By HENRY STURMEY.

SO far as we of the pleasure car world are concerned, the question of transmission—or rather change-speed gear—remains pretty much as it was when the Panhard No. 5 won the Paris-Bordeaux race. It is true we have improved its details and have enormously improved the materials of which it is made, and for the most part the shaft and gear, or worm, has replaced the chain for the final drive. The gear itself, however, is the same old barbarous atrocity of sliding rapidly revolving gear wheels into mesh. Our neighbours of the commercial car have done something to improve on this state of things and, with them, the ever-meshed gear, of one sort or another, is rapidly replacing the old design. Still, with neither has perfection yet been reached, and it is more than probable that the ultimate transmission system, both for touring cars and commercial vehicles will be something very different to anything we have with us to-day. The jerk and jar of a stopped gear, irrespective of the method of application, are undesirable features and the ideal is certainly in the direction of a transmission which shall be infinite in its variations from absolute zero to maximum, and which shall in prac-

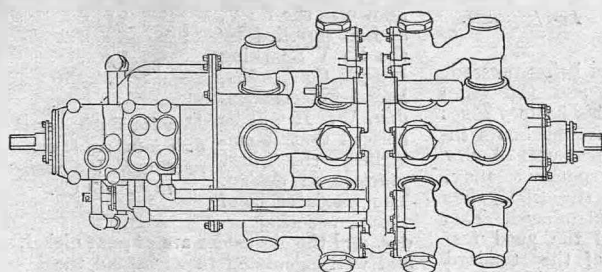
our own naval shipyards, all of which I take to be conclusive evidence that it is at least commercially practicable.

So far as its application to motor work is concerned, it is designed in two forms, the simplest of which, for use on shaft-drive touring cars, is illustrated herewith. It consists, broadly, of a multi-cylinder hydraulic pump with five cylinders and trunk pistons, coupled up directly to a duplicate construction, in which the pistons are used as motors to drive the tailshaft. The motor pistons are arranged all to work on a single crank attached to the tailshaft, and they work without any stroke variation, but the pump pistons, which also all work on a single crank, operated directly by the engine, are arranged with a variable throw, this being effected by mounting them, not directly on the shaft itself, but on a ring enclosing an eccentric, the turning of which varies the centre from a position concentric with the driving shaft to one of maximum eccentricity. The operation of this eccentric mounting is effected by means of a supplementary piston controlled by a small lever on the steering wheel. No clutch is provided, but the moving of the control lever into the neutral position brings the engine shaft centre and the pump centre concentric, with the result that there is no movement on the pistons, and in this position the pump performs the function of a wonderfully efficient brake. Movement in either direction, forward or back, from this neutral point, however slight, produces movement in the pump, the stroke of its movement increasing as the lever is moved from zero to the maximum, the speed of the car increasing also, at the same time, from a state of rest to maximum, so that, it will be seen, the whole control of the car forward or back is effected at any speed desired by movement of this lever. The action by which the drive is effected is of course that, as the pistons of the oil pump—the gear is filled with lubricating oil—are worked, so the oil is pumped through the passages provided for it to the motor cylinders, entering which, it operates on the pistons, and in forcing them down causes the rotation of the tailshaft and the consequent propulsion of the car. As the construction runs always in oil, it is claimed to be practically everlasting, as well as quite silent in operation.

The gear has been designed in five different models, suitable for cars ranging from a 12-15 h.p. touring car to a 50 h.p. 10-ton lorry.

On the score of efficiency, some doubt has been expressed in the past regarding the efficiency of hydraulic gears, but it is stated that, in a series of tests made with the oil at the best temperature and using an electric motor to supply the power and a prony brake to measure the output, the average, over a series of tests, gave rather over 87 per cent. efficiency, which, if correct, is very high, so that it is quite possible we may hear more of this very interesting and promising transmission in the near future, especially as I understand arrangements are now being made with parties on this side for its introduction and demonstration here at an early date.

In general construction, principle, and method of operation, this gear will no doubt recall to the minds of many readers the Lentz transmission, which was recently described in full detail in THE MOTOR, but in that case the power pumps which forced the oil to the set of driving pumps, and also the driving pumps themselves, were all of the rotary type. In fact, the principle involved and the *modus operandi* are, broadly speaking, identical, but Dr. Lentz is a German, and the other invention emanates from the country of inventive genius—America.



A plan outline to show the general arrangement and system of grouping the power and transmitting pumps.

tice give results, so far as smoothness and flexibility of control are concerned, equivalent to that which is associated in our minds with the action of steam engines and electric motors.

The friction gear, of course, very nearly approaches that ideal, but its limitations are great; and in the petrol-electric system we have another approximation to the ideal, which also has its limitations in another direction; and the other remaining direction in which perfection may be sought is in that of fluid transmission, whether pneumatic or hydraulic. We have, of course, heard of fluid transmission gears before now. Pneumatic gears have been talked of, and, I believe, made; and much money was expended on the Hall hydraulic system several years ago, in experiments on commercial vehicles; and now we have—or rather they have in America—another development of the hydraulic system, in the "Manly" hydraulic transmission, which would appear to have taken a step in advance, as it has now, after a couple of years experimental work, been incorporated into their standard designs by two large and (in the States) well-known firms of heavy car builders. It may also here be incidentally mentioned that it has already been adopted in the United States Navy in the mechanism employed on armoured ships for controlling the turning of the turrets, the elevating of the guns, etc., and no fewer than 60 of these gears are being fitted on board the two new 28,000-ton Argentine battleships which are now being built in United States yards, and I understand that it is also now being considered in one of

MUD-SPLASHING PREVENTIVES.

Interesting Trials of Devices for Preventing the Splashing of Pedestrians by Motorcars.

IT was necessary to make mud artificially at Versailles, in order to carry out the competition of mud splash-guards of the Automobile Club of Seine and Oise. The brilliant sunshine was powerless against the cold east wind sweeping across France from Russia; the roads were frozen hard, and the passage of cars raised clouds of dust. On the old-world pave leading to

on the board after the passage of a competing car. Some of the appliances were so hopelessly inefficient that the attendants had a busy time washing the mud away after the cars had gone by.

Another class of splash-guard consisted of a deep ring of rubber, canvas, or other suitable material, the same diameter as the wheel, and mounted to either the spokes or the rim. In this class was the Menu, an apparatus which has already been described and illustrated in these columns, and which appeared to do very well in the competition.

Several makers, however, had made the mistake of fitting the splash-guard close to the wheel, and in one case even riveting the band on to the tyre. This arrangement was most inefficient, for, there being no space for the mud to fall, it was simply flung over the top of the guard. In one case two of the splash-guards came off before the car had finished its run, and very few clean squares were left on the indicator boards.

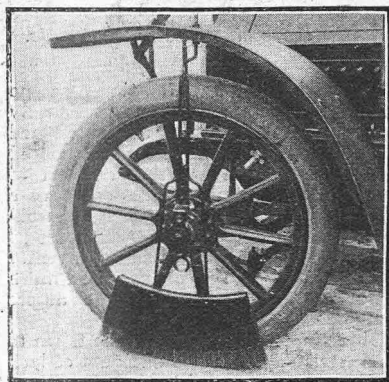
There were some most complicated systems of chain-mail or rubber skirts right round the wheel, but even these were not always capable of keeping the boards free from spot or stain. Further, they had the disadvantage of detracting considerably from the appearance of the car. One maker had tackled the problem in a

very thorough manner by completely encasing all four wheels by means of a sheet-metal housing, giving such protection that mudguards were altogether unnecessary. If awards were made for efficiency only, this apparatus ought to have been first, but it is doubtful if it would have been possible to find many motorists willing to fit it. The cost of the appliances in very many cases made their adoption doubtful.

While a few moderately-efficient splash-guards could be purchased for £3, there were others which cost £20 per set. Obviously not many motorists will be found willing to spend such a sum for the benefit of the man in the street, and it is certain that taxicab companies and owners of commercial vehicles will not willingly tax themselves to this extent.

Too many of the inventors had apparently overlooked the fact that the motorist does not usually suffer from the effects of mud-flinging, and that he will not tax himself very heavily in order to assure the protection of strangers.

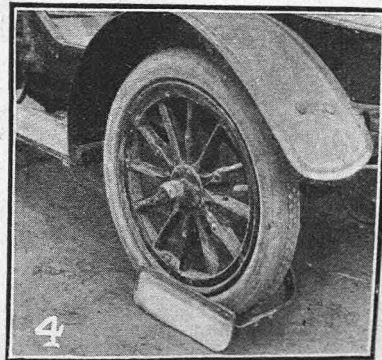
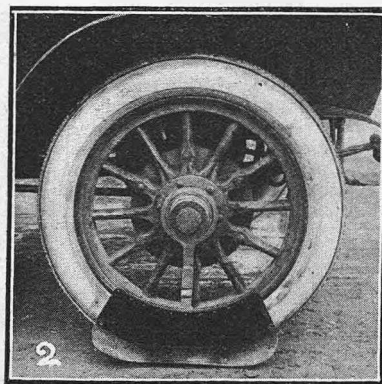
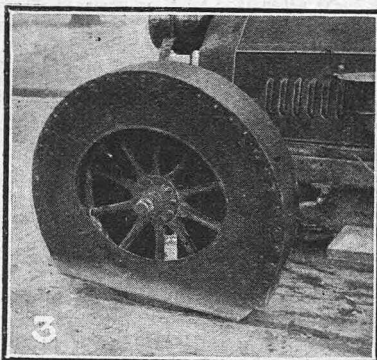
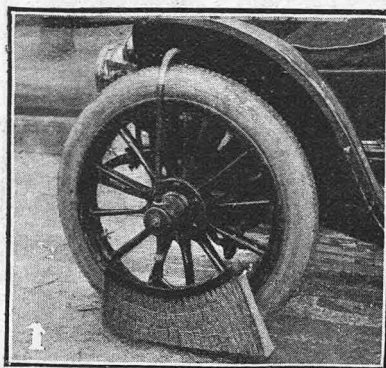
It was fully proved, however, that motorists have no desire to inconvenience or annoy other road users by the large amount of interest shown in the competition. The appliance sought for does not add an atom to the comfort of the passengers, nor in any way improve



The Dreux splash-guard, which was awarded first prize.

the historic chateau of Versailles, a track had been prepared with a layer of about 3 in. of black, oozy mud. It was over this track that the cars fitted with the various splash-guards entered in the competition had to be driven before members of the jury. The method of judging the efficiency or otherwise of the splash-guards was by means of big boards covered with white oilcloth, with black horizontal and vertical lines painted on them at regular intervals. These boards were placed on each side of the track, leaving a space of about 20 in. on each side of the passing cars. All competitors had to run over the mud track in two directions at a speed varying between 16 and 24 miles an hour, and points were deducted according to the number of squares receiving mud splashes from the wheels of the passing cars. In addition, there was a technical examination of the various appliances, with a view to easy fitting, cleaning, etc.

The competition attracted 30 entries, of which 20 presented themselves for the practical test. It may seem a simple matter to build a splasher capable of preventing lateral projections of mud, but the competition showed that it is far from easy to construct an apparatus which will afford complete protection and at the same time be easy to fit and low in initial cost. The most common method of tackling the problem was to hang a big leather, rubber, or canvas splasher from the hub cap, with various appliances to prevent it being carried round with the wheel. If it can be kept in the desired position, a splasher of this type is fairly efficient, but the test showed that it could not very readily be kept there and in several cases it oscillated to such a degree that there were very few clean squares



SOME ANTI-SPLASHING DEVICES.

(1) The Gruyelle, which won second prize. (2) The Neron-Bristol, which won third prize. (3) The Morand. (4) The Roane-Joffre

MUD-SPLASHING, etc.—Contd.

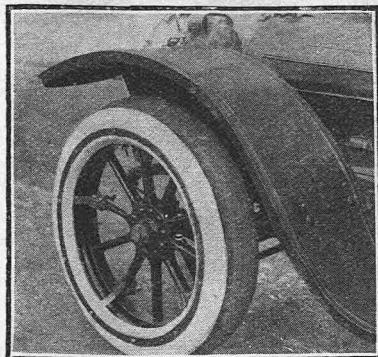
the running of a car, yet private motorists showed that they were willing to encourage its development. The matter, too, is one that interests public bodies, omnibus and taxicab companies, and the Paris corporation was represented by one of its leading road engineers, and the General Omnibus Co. had sent a delegate.

Roughly, there were two distinct classes of splashguards: simple splashers made of leather, brush material, rubber, or rubber and canvas, swinging from the hubcaps; and deep rings of leather or rubber the same diameter as the wheel, and mounted on its outer face, with a suitable interval between the two. The jury appeared to favour the former class, for the first eight prizes went to splashguards hanging from the hubcap. Guards of this type have been in use in Paris for several years on the motor-buses, but have been found inefficient by reason of their tendency to revolve with the wheel.

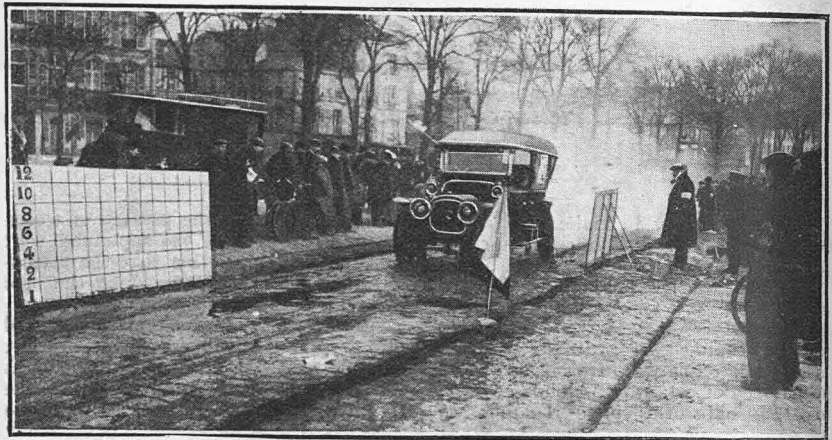
The DreuX splashguard, which secured first prize, got over this difficulty by reason of an indirect attachment to the wheel. A vertical stay having an elongated slot was mounted on a pin projecting from the hub cap and passed through a hole provided for it in the mudguard. This allowed for the vertical movement of the stay as the wheel rose and fell in relation to the mudguard. The arm carrying the splasher, which was formed of brush material bound with leather, was secured in the slot of the stay by means of a suitable bolt, and thus had a free up and down motion limited, however, by a couple of coil springs. These same springs prevented fore-and-aft oscillations of the splashguard. The apparatus had the advantages of low cost, simplicity, and easy attachment.

The Gruyelle, which won second prize, also consisted of a brush carried against the outer face of the wheel within $\frac{1}{2}$ in. of the ground, but was distinctive by reason of its attachment. It consisted of a tube, one end of which carried the splashguard, the opposite end being on the steering pivot, and also having a bearing on the hub cap. The workmanship in this case was very neat, and there was the additional advantage of fully protecting all moving parts against dust and mud.

Leather was used on the Neron-Bristol which secured third prize. The weight of the splashguard was alone relied on to keep it in the correct position, the method of attachment being a disc on



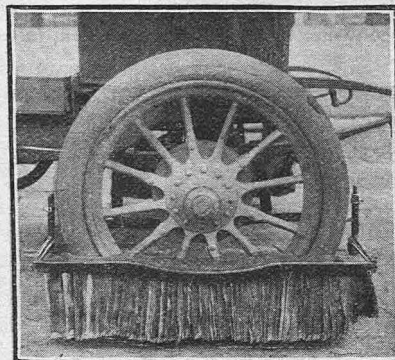
The Menu, one of the most successful of the anti mud-splashing devices.



The method of testing the mud splashguards in the series of French Trials.

the hub cap receiving a grooved ring with a projecting arm carrying the leather splashguard.

The four following appliances were similar in general design, but distinctive by reason of their method of attachment to the hub cap. The first disc type of guard was the Carchey-Itasse, which won eighth prize. It was a metal disc faced with rubber and attached by means of elastic bands to four knobs clipped to the spokes of the wheels. The elastic bands gave sufficient movement of the guards to avoid obstacles. The



The Messenot.

Menu, which was classed next in order of merit, is an apparatus having already been described in these columns, and one possessing the advantage of making the least alteration in the appearance of the car.

In their desire for simplicity some of the competitors had attached deep rings of rubber or leather to either the tyre itself or to the wooden felloe. Naturally these could come in contact with footpaths without receiving any injury, but they were not always the most efficient, for the mud was sometimes flung over the top of them in considerable quantities. A chain-mail guard right round each wheel did not at all add to the appearance of the car, and probably accounted for the absence of this make from the list of awards. The cost, too, was £20 per set, which is far too high for an apparatus intended to benefit strangers only. Another distinctive apparatus was the Morand, composed of a sheet metal casing almost completely enclosing the wheel, leaving only a portion of the spokes visible. Its effectiveness

could not be doubted, for there was no possible escape for mud except directly on to the ground again. With this guard the ordinary mudguards were rendered unnecessary; nevertheless, it failed to win a prize, and will doubtless have a very limited success owing to its unusual appearance. The demonstration model was very roughly made, but the inventor had on hand a section of his guard much better finished and with all angles rounded off.

Objection could reasonably be taken to an Austrian apparatus on account of lack of elegance. It consisted of a skirt of rubber strips, each strip about 3 in. in width and 6 in. in length, with a metal weight at the lower end of each, fastened diagonally to a length of wood placed outside the wheel in a fore-and-aft direction. It may have been difficult for mud to pass through the "pleated skirt," but it would have been still more difficult for the driver to run close to the footpath, and almost impossible to convince any private motorist that the attachment would add to the appearance of his car. It was surprising that so few inventors appear to have realized that their appliances must of necessity be an encumbrance, and therefore the least conspicuous the better.

How to Braze Cast-iron.

From time to time we receive inquiries as to how cracked water jackets and fractures in cast-iron parts may be repaired, and at the moment there are a number of different systems in use. Messrs. Southern Automobiles, Ltd., Westcombe Hill, Blackheath, London, S.E., have perfected, and are now placing on the market, a new flux for brazing cast-iron under the title of S.A. brazing flux. We have examined a sample of repair work done with the ordinary workshop blowpipe and spelter. The sample shows a clean repair of a piston ring. One of the features of this flux is that it will carry the spelter into the minutest cracks, also that it is not vital that the surfaces of the fracture should be perfectly clean, although it is advisable where possible; it leaves very little scale behind it, and what there is will be found quite soft and easily removed. The makers will be pleased to send a small sample of repair work to any of our readers who are interested, and also to advise on any class of cast-iron repair, if the parts are sent to them carriage paid.

RUBBER TAX IN FRANCE.

The French Tyre and Motor Industries up in Arms Against It—Course for the Grand Prix Selected—Worm Drive: An Expert's Opinion.

(By OUR PARIS CORRESPONDENT.)

THE French tyre and motor industries have risen up in arms against a proposed law now before Parliament imposing a tax of practically 5d. per lb. on raw rubber imported from elsewhere than French colonies. Those responsible for the proposal are obviously desirous of encouraging the struggling French colonies in Africa, and believe that this can be done without handicapping the industries making use of rubber. The tyre and motor manufacturers, however, look upon the matter in an entirely different light, and are so convinced of the disastrous effects it will have on French trade that they are preparing an energetic attack upon the movement. Behind them they have the mass of motorists, who fail to see how any rubber tax, even if only designed to benefit the colonies, can fail to increase the price of tyres. The manufacturers maintain that the tax, small as it appears at first sight, will make it almost impossible for them to compete with foreign firms either at home or abroad.

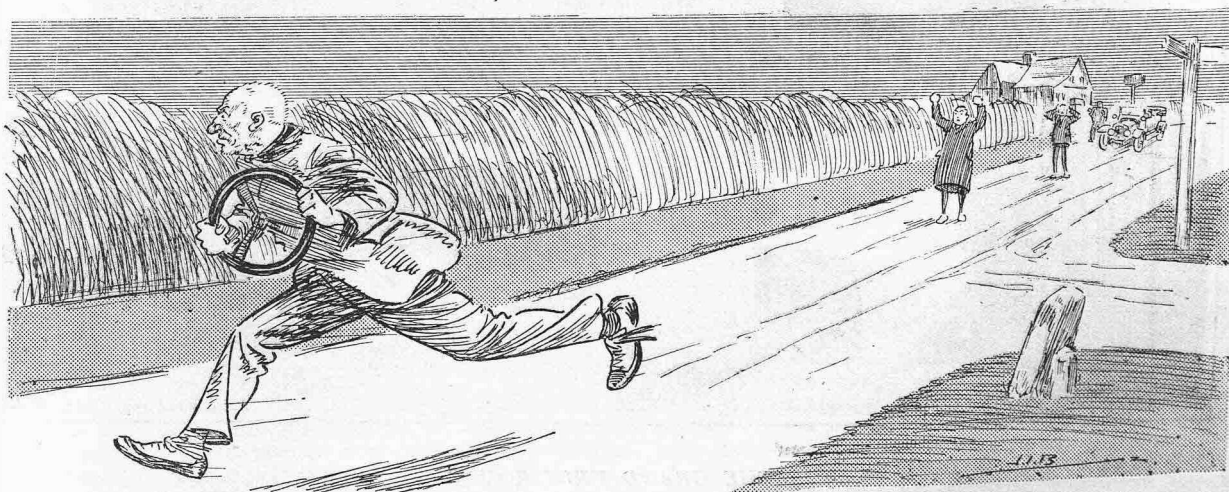
M. André Michelin, who is doubtless better qualified than anybody to deal with this question, points out that of the 331,587 cwt. of raw rubber imported into France last year only 8170 cwt. came from French colonies. Not only is the French supply inferior in quantity, but it is decidedly lower in quality than the rubber obtained from British and Dutch colonies. The best Para gives, after purification, about 83 per cent., and Sernamby rubber 75 per cent., while the commoner qualities from the French colonies in Africa only yield 50 to 60 per cent. after purification. Thus, instead of the tax being 5d. per lb., it would be about double this figure for all the lower grades of rubber. If the project becomes law, the French makers, declares M. Michelin, will be obliged to erect factories abroad for the purification of the raw material, in order to compete with British and Dutch rubber, which is already imported in a purified condition. Further, to compete successfully with foreign tyre manufacturers, wages will have to be reduced, a result which is evidently not foreseen by the authors of the proposed law.

From the standpoint of the private motorist it is to be hoped that the proposed tax will not become law, for the various car, horse-power, petrol and oil taxes imposed directly or indirectly place a heavier burden on the motorist in France than in any other country. From the standpoint of the British business man the situation is different, for a tax on his raw material will make it more difficult for the French manufacturer to compete advantageously on the British market. Between the united industries interested in rubber, and the authors of the proposed tax, the fight is likely to be severe, and it would be a bold man who would predict the winner.

The Grand Prix Course Selected.

Dieppe has been definitely selected as the scene of the French Grand Prix race. There was really very little doubt on the matter, for there were only two competitors for the honour: Dieppe and Anjou. As the seaside town could hold up the attraction of a subsidy of £4000, and its rival could guarantee only a much smaller sum, a choice was readily made. Undoubtedly, too, it is the best possible choice, for the race, being a Franco-British event, the course is most conveniently situated for the two most interested parties. Dieppe is only 100 miles from Paris, the centre of the French motor industry, and less than four hours from the English coast; thus the largest possible attendance should be secured.

It has been decided that the race shall be held during the last week in June; the exact date can only be fixed after consultation with the local authorities, so as to interfere as little as possible with the markets and fairs in Dieppe and the neighbourhood. As a week-end is preferred for the two-day race, the probabilities are that the event will be fixed for the last Saturday and Sunday in the month. So far as is known at present, the 1908 course will be used again, with the grand stands in the same position. The sporting commission has already secured the necessary land for the stands, and has also rented the land opposite in order to prevent speculators obstructing



EXTRACT FROM A NOVEL

"Ralph took the wheel and soon gave his pursuers the slip." Was this another case of accessory thieving? CCI

NEWS FROM PARIS.—Contd.

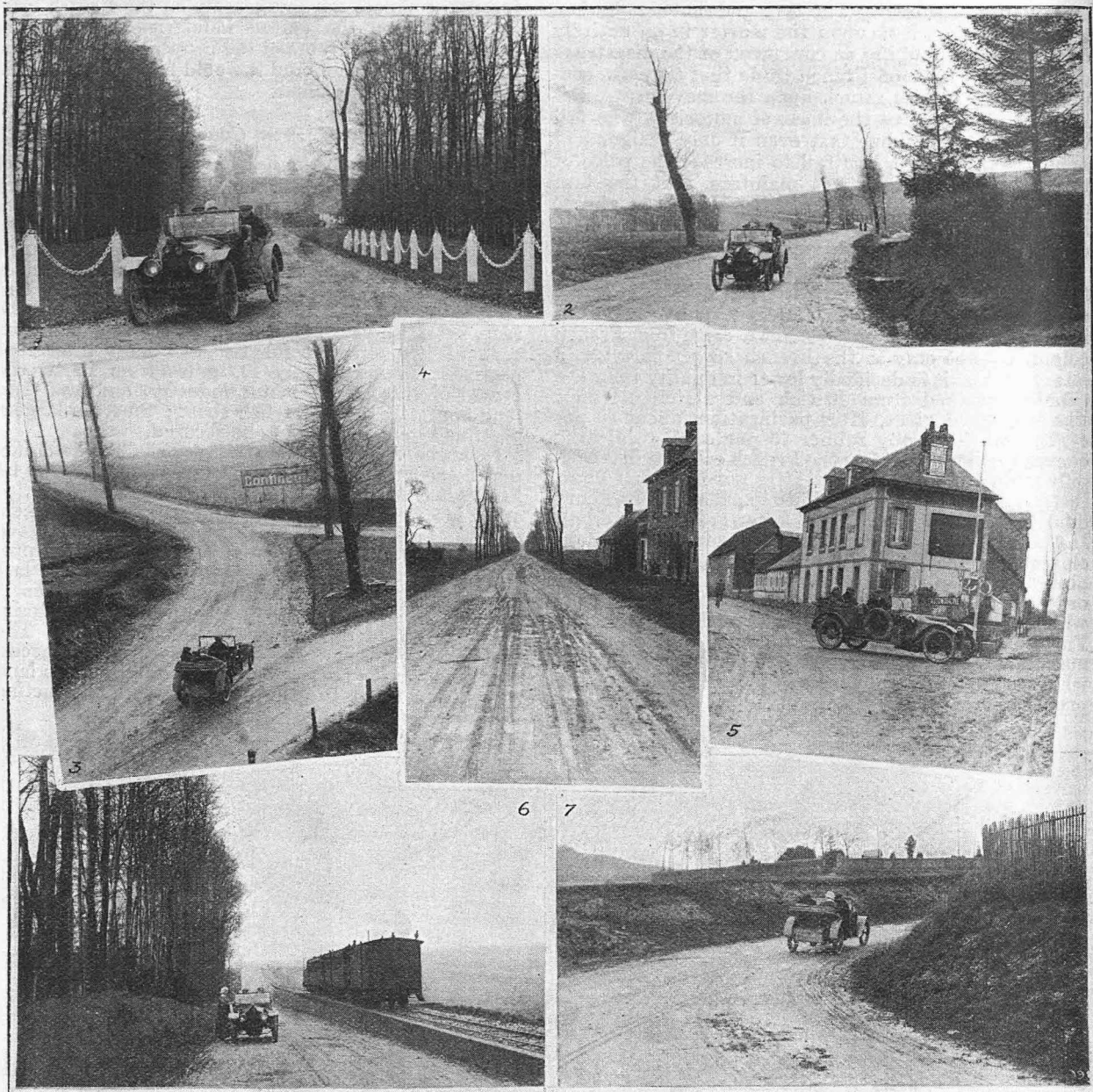
the view. Final entries for the race will be received until the evening of 1st March, at double fees. From private information received from New York, it is evident that there will be no American entries. The American firms having paid the greatest amount of attention to racing at home, appear to be indifferent to speed tests abroad, and those firms interested in securing European trade have not devoted much time to a study of racing.

Worm Drive: An Expert's Opinion.

French engineers as a whole have shown so little enthusiasm for worm drive that it is most interesting to obtain the opinion of a man of such experience as M. Henri Brasier. Writing to "l'Echo des Sports,"

the eminent French engineer declares that he has proved to his own satisfaction that "a carefully-produced worm and worm wheel are as efficient, at all speeds, as bevel gears; that they are most agreeably silent; that there is no appreciable wear; and that the temperature of a worm-driven rear axle is no higher than that of an axle with bevel gears.

"The reason why I have sought to adopt worm drive to small cars," writes M. Brasier, "is most simple. Small cars have small motors which are obliged to run at a high number of revolutions, and in order to provide for the comparatively low number of revolutions of the road wheels, when on direct drive, it is necessary to fit a very large crown wheel and a very small driving pinion. But we are limited in the diameter of the crown wheel, and the driving pinion must consequently be made smaller. Nevertheless, this small pinion does what is asked of it, and even does it



THE GRAND PRIX ROUTE.

(1) The Chateau de Douvrend. (2) The road near St. Martin en Campagne. (3) Turning after the bridge at Ancourt. (4) A straight bit of road near Saint Martin en Campagne. (5) Sharp fork at Neuville. (6) The descent at Eu. (7) Sharp bend at Londiniere.

NEWS FROM PARIS.—Contd.

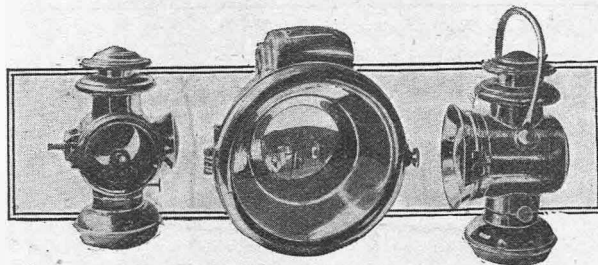
well, because it transmits low efforts at frequent intervals, notwithstanding that its teeth work one by one, and not two or even three together, as in the case of larger driving pinions obtaining their power from a big, low-speed motor.

"It will be asked, 'Why change it, then?' For the reason that the small bevel pinion has not only to support the efforts due to the power of the motor, but has also to withstand directly all road shocks, and particularly all braking efforts. Under these conditions it has some really hard work to do, and it is only a proof of its robustness that it does not break more often. I believe that by replacing this small, hard-working little pinion, which only works by points, by a big-surfaced, well-made worm—it is true that it is not easy to make—is for the good of all motorists. I have applied this system to my new 10 h.p. four-cylinder models of 67 mm. by 110 mm. bore and stroke, after having tested it for several months on all kinds of roads with a car weighing 26 cwt. empty, and driven by a motor developing 28 h.p. to 30 h.p. As the result of these tests, I am convinced that with a correctly-cut worm the only difficulty has been with the ball-thrust bearings. This difficulty has been overcome. As the result of experiments now being undertaken with larger models, I shall decide whether the use of the worm can be advantageously applied to heavier and more powerful cars."

To this testimonial in favour of worm drive might be added the information that the Brasier factory is not the only one in France having closely studied this question. In addition to Darracq and Gregoire, where worm drive is employed on a few of the models, four or five other firms might be mentioned as having made preparations for producing touring cars with worm drive. Others are still in the experimental stage, but it is quite safe to predict that when the show season comes round again, there will be not a few cars of French construction with worm instead of bevel gears.

New Seabrook Lamp.

The lamps illustrated are included in the "Superb" set supplied by Seabrook Bros., 57, Great Eastern Street, London, E.C. This set consists of two Solar headlights, two side lights, one tail lamp, and one acetylene generator with shaking grid, the complete set costing the very moderate sum of £9 16s. 6d. These lamps have a number of distinctive features; for example, all riveting is done from the inside, and the outside is thus left quite smooth for cleaning. The side lamps are wind proof, and have a safety catch to the oil base. With regard to the headlights, Messrs.



New Seabrook lamps.

Seabrook guarantee that they will give a longer beam than any other acetylene lamp of the same-sized mirror. This is a special deep concave short focus design. A higher-priced set named the King comprises two No. 77 Solar head lamps, two side lamps of handsome square design, one tail lamp, and one shaking grate generator. The excellent illustrated cata-

The Tour de France.

Instead of a competition, the Tour de France would be more correctly described as a travelling motor show. The cars entered, which must be standard models catalogued at not more than £320 for chassis without tyres, have to cover a total distance of about 2500 miles at an average speed of 18 miles an hour. For a modern car this is not a severe test, and, indeed, the interest of the tour lies in the fact that the competitors will be taken through a score of the largest towns in France, and will have every opportunity of showing and demonstrating their productions to the inhabitants. If orders do not roll in as the result of this journey round France, everybody will be disappointed. Entries for the tour have just closed, with 63 cars on the list, 52 of these being in the car class, and 11 in the voiturette section. A voiturette is defined as a motor vehicle costing not more than £160 fully equipped with tyres. These small cars will cover the same distance as the larger ones, but will be asked to maintain an average speed of 15½ miles instead of 18 miles an hour. The firms entered for the tour are Ford, Barre, D.F.P., Alcyon, Gregoire, La Licorne, Benz, Pilain, Schneider, each with three cars; Delage, Reo, Simplicia, C.I.D., Stimula, and Crespelle, with two cars each; and the following firms with one car each: Hurtu, Hupmobile, F.L., Majola, D.S.P.L., Lozier, Turicum, Bazelaire, Optima, Bugatti, Scar, and Muller and Mignot. The voiturettes are Ronteix, Luxior, Violette, Ponette, Sphinx, Bedelia (two), C.L.C., Phanomobile, and Obus. There are no English firms in the competition, but the list comprises three American firms. The C.I.D. cars are valveless models, two being four-cylinder models in the car section and the third a single-cylinder in the voiturette division. Starting from Paris on Friday, 1st March, the travelling salon will move on to Nancy, 196 miles away, then successively visit Besancon, Lyons, Grenoble, Nice, Marseilles, Montpellier, Toulouse, Bordeaux, Nantes, Le Mans, Rouen, Lille, Rheims, returning to Paris on 20th March, after having covered a total distance of exactly 2403 miles.

logue of the firm's specialities gives full details of these lamps. This can be had on application to the address given.

"Motor Humour": Another Instance.

R.S. writes as follows:—

It was with great pleasure I read your recent article on motor humour. Perhaps your readers would like to hear the following experience of the early days of my motoring in Italy.

A friend and myself were on a belt-driven car, coasting merrily down-hill, and after crossing a stream, we had to climb the other side of the valley.

The engine was running exceptionally well, my friend engaged a gear, but the car kept slowing down until it came to a stop. The engine was running, and so, after inspection, we found we had lost the belt. I had the pleasure of walking up the hill in scorching sunshine, and was inclined to curse motor-cars and all these little mishaps, when I came across a carman perched on top of one of those big two-wheeled wagons, only too well known on the Italian roads. He was quite scared, and as soon as he saw me, he shouted: "For goodness sake, Signor, do not go any further if you value your life. There is, a little further on, a huge serpent in the middle of the road, who made a dash for my mule and myself, and it is a wonder we are still alive. And he went on thanking the "Madonna" and all the Saints according to the Italian custom.

He could not, however, understand why I burst out laughing, and his surprise was even greater when he saw me a few minutes after carrying the "serpent" on my arm.

A TEST TRACK.

Suggestion for a Special Demonstration Track Near London. Why Not?

IT seems to me that the most needed "want" of the motoring public and manufacturers alike is a demonstration track. We have, it is true, Brooklands; but then, this is 22 miles from London, and if every purchaser were taken on a trial run to the track, this would be an extremely expensive item for manufacturers to cope with.

In the ordinary course of events, the prospective purchaser asks for a trial run, and the salesman usually suggests Netherhall Gardens and Fitzjohn's Avenue, N.W. In doing this, a long pull and a short, steep climb are both necessary, but neither of these demonstrations tell the purchaser much. The car used may be geared for climbing these two hills specially—not that I suggest seriously that this is done. No; what is wanted is a special track within a few miles of central London, to which cars can be taken to prove their worth.

To my mind, this track should contain the following "stretches":—

(a) About 400 yds. of flat, straight track, upon which acceleration tests could be demonstrated; the track to be marked off with white posts every 10 ft. or 20 ft., so that calculation would be simple.

(b) A long continuous hill, beginning with a gradient of 1 in 40 and incorporating a stretch of 1 in 5.

A long, straight stretch is not necessary for this test, and is not advisable, as the lock of the car could not easily be tested. A special hill should be constructed with a double-width road, railed off in the middle: an up road and a down road. The road to be spiral, i.e., encircling the hill, and the gradient

gradually increased as under ordinary road conditions. At various points on the gradient refuges would be constructed for "failures" to run back into, and gaps in the centre railings for cars incapable of ascending to turn round and descend on their proper side, and thus avoid congestion.

At the top of the hill a large flat space would be made for cars to turn round and descend by the down road. During the long upward climb, the engine and transmission would have to work up to its maximum, and the client would have an opportunity of finding out bad qualities, i.e., loss of power on long climbs; also it would be easy to judge quietness of transmission when working at maximum "pull" and satisfactory cooling. All these points could be demonstrated in a short space of time, and would save both time and expense, wasted so often by clients and manufacturers in giving extended road trials.

I do not say that a long road trial should never be given, but I am sure that, in the majority of cases, it would not be necessary after a car had accomplished the preceding test. The corners on the hill would be a very good test for steering lock.

Another point that this arrangement would do away with is "joy-riding." Many "inquiries" are received, in which trial runs are asked for, when the inquirer never intends to purchase, but thinks it a huge joke to have a nice motor ride in the country at somebody else's expense. They would not inquire if they thought that they would only be taken about 10 miles inclusive out to the testing ground and back.

J. MILTON RANDALL.

A Look Round the Clement Talbot Works.

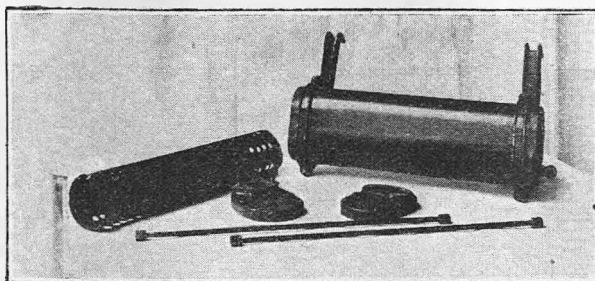
IN the course of our frequent visits to motorcar works it often occurs to us what a good thing it would be if the motorist could enjoy a similar experience. We were particularly impressed in this way one day last week, when we were being conducted by Mr. Frank Shorland and Mr. G. P. Mills over the works of Clement-Talbot, Ltd., where the Invincible Talbots are made. Why "Invincible?" might be asked: Well, the answer is to be found at every turn of the works, for thoroughness is everywhere the watchword. It is at such a place as this that the query, "Why do motorcars cost so much?" would receive its everlasting quietus—at least in respect of such a high-grade car as the Talbot. The average motorist who takes delivery of his car, and finds everything perfect, takes it all for granted. Of course he does not know. He has not seen the gears being run in for hours and hours. Nor has he seen the engines assembled and undergoing their bench tests under the most exacting scrutiny. He has not observed the infinite care with which the whole mass of detail is assembled together in the chassis, a test body put on and the machine run on the track—Messrs. Clement-Talbot, Ltd., have their own four-lap-to-the-mile banked track encircling the factory. Even after this test the chassis are driven for miles on the road up hill and down. We saw one chassis having its rear axle dismantled after testing, a slight noise having developed in the course of the trial on the track.

These are only a few of the exhaustive processes of testing and counter-testing which a Talbot chassis goes through before it reaches that point of perfection which satisfies those responsible for its production and refinement.

A department at the Clement-Talbot works which

D4

interested and impressed us very much was the Spare-parts Store. In this department a complete stock of parts is kept in such order that it is possible to locate any single requirement for a Talbot car of any date in a moment. Here again it comes home to one that in view of the locked-up capital represented by such a stock, and also in view of the convenience of quick delivery to customers in case of sudden emergency, the prices of spares are not so unreasonable as sometimes we are led to suppose from complaints that find their way into the Press.



In a recent issue appeared some criticisms of silencers. The Croydon Central Motor Co., Ltd. send us this illustration of the silencer of Stoewer cars, which they handle, and which they claim has all the points required. The car is perfectly silent, yet the exhaust box contains nothing which can choke or cause back pressure. The whole can be taken down and cleaned by undoing four nuts only.

A MOTOR MUSEUM.

Some Further Press Opinions on the Scheme for the Initiation of a Museum of Historical Cars.

WE are pleased to record that a number of readers have been in communication with us since the initial announcement of the formation of a motor museum appeared. It seems likely, judging by the information received, that, when followed up, some interesting historical relics are likely to be traced.

In the meantime we shall be glad to hear from any of our readers who may in their travels come across interesting specimens of old cars, accessories, etc., dating prior to 1903.

We give below some further extracts from the Press on the subject of the initiation of the formation of the museum:—

From the "Daily Telegraph":—

"A happy idea has struck the proprietors of THE MOTOR in the suggestion that a permanent museum of the early motor vehicles should be established. For the present that journal is bearing the cost of the project, with the hope that in the future the nation will take over the museum as an addition to the South Kensington relics of the past. There must be quite a number of the early motor tricycles, bicycles, and cars in many of the out-houses and workshops of both professional and amateur motorists in this country. Now is the time to unearth these relics and forward to the committee the particulars of them, so that arrangements can be made with their owners for their despatch to the new museum of motoring. The early steam-using self-propelled carriages of the days of Murdock, Trevethick, Gurney, and Hancock will probably find a place in such a resting-place in juxtaposition to their more modern petrol-using rivals."

From "The Observer":—

"We are at last," writes Mr. Massac Buist, "to have a motor museum, thanks to the enterprise of the proprietors of THE MOTOR, who, while others are talking and nobody is doing anything, have made arrangements for being responsible for permanently housing, until a more favourable opportunity, the examples of historical types of motorcars from the earliest sorts, the value of which exhibition cannot be over-estimated, either to the public to-day or to the generations that shall come after us, and which will marvel, firstly, at the rapidity with which mechanically propelled road vehicles were developed, and, secondly, at the unpromising beginnings and materials with which we started. One cannot accord too much praise to the admirable enterprise of Mr. Edmund Dangerfield and his paper."

From "The Nottingham Guardian":—

"One of our technical contemporaries has started a scheme for collecting and preserving motorcars and cycles typical of the early stages of the motor era. A completely independent and representative committee of trustees has been secured, and arrangements are in train to house the expected collection. Any of our readers who are able to secure samples of any very early car or cycle should rescue them from the scrap heap."

From "The Sunday Times":—

"THE MOTOR is the responsible agent in a somewhat ambitious, but highly interesting and praiseworthy scheme for the formation of a motor museum. The project is now well on foot, and the trust deed is in the process of formation. The list of trustees contains the names of many eminent motorists, and H.H. the Duke of Teck occupies the position of chairman. It is stated that the original idea was kindled by the small exhibition of historical motor vehicles displayed at the White City in 1909. At that time the journal indicated expressed its opinion that it was a world of pities that this collection should again be scattered, and that efforts should be made to secure it in its entirety as a permanent exhibit."

"Now, as each year renders it more difficult to trace machines of exceptional historic interest, it has been realized that there is no time to be lost, and, without more ado, action has been taken to secure a collection that will, undeniably, prove a source of interest and benefit not only to ourselves, but doubly so to the subsequent generations. . . . It must be admitted that the objects of this scheme are in every way admirable, and it is to be sincerely hoped that the efforts will meet with success."

From "Country Life":—

"With praiseworthy enterprise, our contemporary, THE MOTOR, has made the initial movement towards the formation of a permanent motor museum. A committee of trustees has been formed, including the Duke of Teck, Sir David L. Salomons, Sir Boverton Redwood, Colonel H. C. L. Holden, Mr. W. Joynton-Hicks, M.P., Mr. Julian Orde, and Mr. Edmund Dangerfield. We understand that Mr. Claude Johnson also will act on the committee. It is hoped that a representative collection of historic automobiles, as well as old prints, models and specifications, will be drawn together, and that eventually the collection will be taken over by the nation. In the meantime, THE MOTOR accepts custody of the exhibits, and will provide accommodation for them. Prompt action of this kind is needed, for already not a few of the pioneer vehicles have been lost, or have been allowed to fall to pieces. Long before this time we should have possessed a national museum of automobilism, and 50 years hence the collection now forming will be of priceless value to our successors."

From "The Spherc":—

"For years the motor enthusiast has regretted that no serious effort was being made to collect and preserve the various relics of the early days of the pastime. Nowadays we seem to forget that current things will one day have historic interest. Fortunately the necessary step has now been taken, thanks to the enterprise of THE MOTOR. A committee of trustees has been formed, and THE MOTOR will accept custody of old and historic cars so as to form a museum of automobilism. It is hoped that this will eventually be taken over by the state as a national motor museum."

From "The Glasgow Herald":—

"There is at present afoot a proposition in favour of collecting specimens of old motor vehicles, with a view to their preservation for the edification of the younger as well as future generations. This laudable project has been inaugurated by THE MOTOR, of London, and already considerable progress has been made towards its realization. The time is opportune for such a movement so far as the United Kingdom is concerned. Less than 20 years have passed since the motorcar came on the scene in Britain, and there should still be many specimens of comparatively ancient makes of vehicles about for the asking. On the other hand, they will continue to grow scarcer year by year as the marine store dealer is permitted to lay vandal hands on the corks, wherefore the need for present-day action. . . . THE MOTOR administration have formed a body of trustees outside of trade circles, with the Duke of Teck as chairman, and already valuable assistance has been promised from quarters best able to render help. The intention is to gather and house in a becoming fashion a representative collection of motor vehicles, as well as of drawings, prints, and models of cars produced prior to 1903, and when the museum is sufficiently advanced to secure its acceptance by the nation. . . . It is a pity that this highly commendable project was not undertaken in 1909, when a number of early cars were collected and shown at the Shepherd's Bush exhibition."

A number of other Press notices have come to our notice, but we are unable to find room to quote from them in this issue.

The real value of the

Cadillac

is not adequately expressed by its price.

Almost everybody is convinced of the excellence of the Cadillac; almost everybody concedes its unique reputation.

But have you realised the full and splendid extent of that reputation?

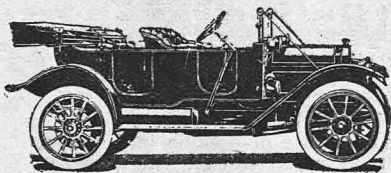
When Cadillac reputation for reliability, for service, for value, for comfort, for endurance, for refinement, is being discussed and compared—you will usually find that the comparisons are made with cars of the highest price; and then the result not in disparagement of the Cadillac.

You can probably recall instances—as many others can—in which cars of much higher price have been sold in order to acquire a Cadillac.

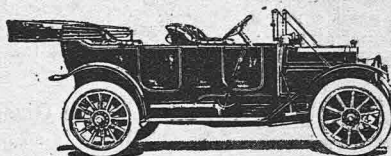
Taken together, the two sets of facts constitute a profession of confidence in the integrity of Cadillac construction which should be conclusive in establishing its value to you.

You know what a dependable car the Cadillac is. You will appreciate, therefore, how much it means when we say that there are now more than five thousand 1912 Cadillacs in the hands of more than five thousand enthusiastic users, who without exception are every day having demonstrated to them that the Delco system of automatic electric starting and electric lighting is precisely as dependable as every other feature of the Cadillac car.

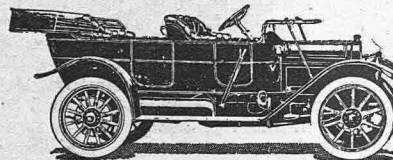
Intensified by the luxury of the system which performs the triple function of starting, lighting, and igniting, the Cadillac has reached a state of perfection which is not adequately expressed by its cost in comparison with that of other cars of equal horse-power.



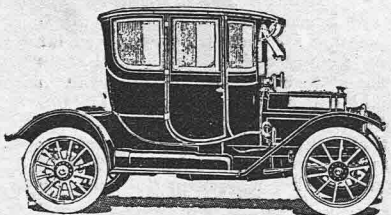
PHAETON, 420 Gns.



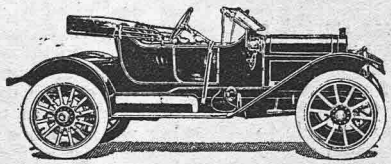
TOURING CAR, 420 Gns.



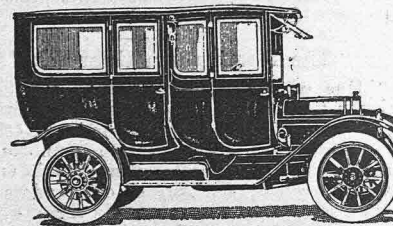
TORPEDO, 440 Gns.



COUPE. Four passengers, 525 Gns.



ROADSTER, 420 Gns.



LIMOUSINE. Seven Passengers, 700 Gns.

Hood and Screen on open Touring Cars extra.

MANCHESTER
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NO. **71**

F. S. BENNETT, LTD.,

Telegrams:
"Ehsbee, London."

(Cadillac Motors, Ltd.),

Telegrams:
"Ehsbee, London."

Cadillac Corner, 219-229, Shaftesbury Avenue, London, W.C.

MANCHESTER
SHOW,
STAND
NO. **71**

IMPRESSIONS OF THE AMERICAN SHOWS.

*The Coming of the Self-starter.—Faults in Universal Stand Decoration.—
Mr. W. M. Letts Talks About His Visit to America.*

"SO you are home again, safe and sound, Mr. Letts. How long has your trip occupied?"
"Exactly a month. That is, from 30th December to 30th January."

"You ought to know your way across the Atlantic by now. That's about your tenth trip, is it not?"

"My twelfth; and I think the most pleasant and informative of them all."

"And what is your opinion of the shows. Take the Importers' show first."

"That was very nicely done. The show was held at the Astor Hotel, and presented a very attractive appearance. There was some good coachwork there, too. No; there were not many British makes shown; Napier and Daimler almost the only ones, unless I add the Minerva."

"Well, it comes natural to include the Minerva, for it's the most British of all the Continental cars. By the way, what other nations were represented at the Importers' show?"

"France, Italy and Germany had produced the bulk of the exhibits."

"And what did you think of universal stand design, as shown at Madison Square Gardens?"

"Well, to be frank, I disapproved of it entirely, and unless we can do infinitely better than that, I shall be absolutely opposed to its adoption at Olympia."

"Do you mean that the effect is monotonous?"

"Not exactly that, although that was an effect. The scheme was at fault, so that the decorative quality of the result was low. And I am quite certain that it did not attract the best class of people."

"Was the attendance of the better class, then, poor?"

"Yes; there was an absence of the retail buyer, and this I put down to the general lowering of the tone of the show by the pooriness of the decoration. There was no counterpart of the chic crowd that we get at Olympia."

"But the exhibits should have been selected so that they, and not their setting, should be the attraction."

"Well, it was quite evident that it was more of a dealers' show than one for the public. There were very few handsome bodies, the majority of the makers contenting themselves with showing their standard cars with open touring bodies. There were very few limousines in the show."

"And what was your conclusion about the self-starter? It seems to have come with a rush."

"Well, shall I give you my prophecy? Yes? Then, at the 1913 show over here you will not find a car that is not fitted with an engine-starting device of some sort."

"It's interesting to hear you say that. We of THE MOTOR have hammered away at their merits for some time, having had considerable personal experience ourselves with one device and another."

"Well, it will very soon seem absurd to stand out in the mud in order to start the engine."

"Just as absurd as walking out into the mud in order to enter the back of a car, eh?"

"Exactly."

"And what did you think was the best system?"

"For simplicity and reliability, I concluded that acetylene gas pumped from a reservoir into the cylinders and there fired was the best."

"And of the two makes which did you think was the better?"

"Well, that is hard to say. But I liked the look of the Disco. The makers are turning out 400 sets a day, and by the end of February they will be making 500 a day."

"Are you taking up the Disco for this country?"

"I can let you know more about that next week. It ought to go well, as it is easily fitted, the cost of fitting being only about £4."

"Do you think the Grand Palais show—the third of the New York shows—will continue?"

"No, I think we shall see no competing show next year. The licensed and unlicensed makers will concentrate at one exhibition."

"In the way of the pleasure car, in what direction is the trade tending?"

"More and more makers are entering the field of the small car and forces are splitting up, so that a leading man of a concern, one who has been responsible for its success, severs his connection and starts for himself. For instance, Hupp is now making the R.C.H. cars, Flanders is starting afresh, and Briggs has left the Krit and is making the Briggs Detroit. The marvellous thing is that there seems to be room for them all."

"I suppose you found a lot being done with commercial vehicles?"

"Yes, the best pleasure-car makers are all making delivery vans and trucks. It may suit their style of manufacture, for more careful work in manufacture with less regard to the need for a big output is necessary in building commercial motors."

"Is that right that one of the concerns is experimenting with worm drive for its heavy vehicles?"

"Yes, the Pierce-Arrow Company are doing so."

"You saw over some of the factories, did you not?"

"Yes, and I want to say that the kindness and courtesy extended to me at each and every factory was wonderful and was very pleasing indeed. I went over the Ford factory, and it was really a marvellous sight. The extensions to the factory which they are just finishing could house some of our motor factories complete. They will turn out 72,000 cars this year."

"They are putting the driving seat on the left side of the car, are they not? Will they disorganize their output in order to meet the requirements of the British motorists, who want the wheel and control on the right?"

"No, they will leave out those details and let the English factory at Manchester provide the parts."

"What about the possibility of labour troubles to disturb output in America?"

"Most unlikely. The employers over there seem to have the knack of handling their labour with consideration. They give the men the opportunity of making money and they know that for every extra dollar the men make, the employers make five."

"Are there no labour union troubles?"

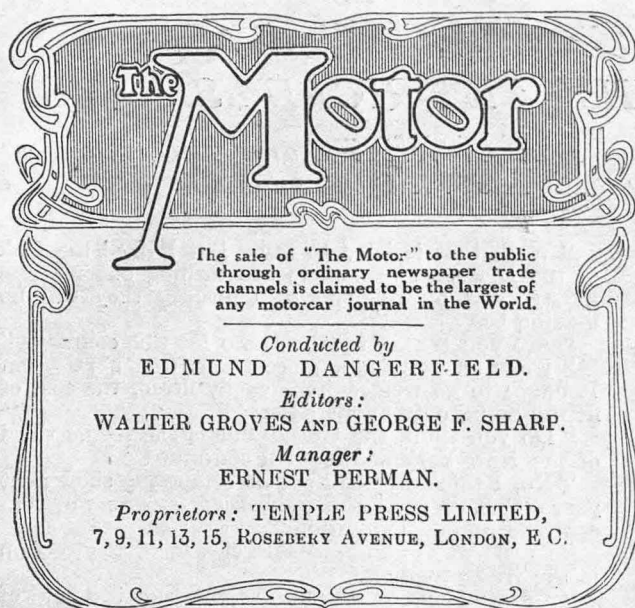
"No, the elaboration of the use of machinery and the refinement of the organization mean that men can be brought off the farms and set to the work simply because they are not able to go wrong."

"Did you meet many Britishers over there?"

"Oh yes, quite a number. I saw McCormack, of Wolseley's, and J. C. Pullinger, of Arrol-Johnston's. Ballin Hinde was there with Mrs. Ballin Hinde, and they were going west on a pleasure trip."

"And you are off north now on business, I suppose?"

"That's so," said Mr. Letts, as he shook hands.



The sale of "The Motor" to the public through ordinary newspaper trade channels is claimed to be the largest of any motorcar journal in the World.

Conducted by
EDMUND DANGERFIELD.

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The Dangers of Frost.

Unusual Driving Conditions that Produce Unexpected Dangers.

AS we assign ourselves the task of writing a few notes on the dangers of frost as pertaining to motorists, the climatic conditions are such as to warrant the relegation of any such thesis into a remote pigeon-hole until the dawn of next winter. In this country of ours, however, it is part of our glorious inheritance never (or hardly ever) to experience isothermal conditions for two weeks on end, so that, by the time that the recent ice has thoroughly disappeared, we may once again be back in the grip of King Frost. Now, be it not thought that we purpose for the moment adverting to our tried and trusty friend—and, forsooth, hardy annual—the cracked cylinder. No. What we do wish to draw attention to is a more serious danger than that, one which involves not only damage to property, but also to persons, and even loss of life. As a premise, let us recount.

One day during the cold spell then, we sought a little relaxation on the ice on the lake at Wisley, on the Portsmouth Road, a spot which will, perhaps, be more familiar to most readers as The Hut. The distance from town is but 23 miles, and yet by the time we arrived there we had come across no fewer than five motorcar accidents, all due to the abnormal condition of the road surface. For some reason the surface of the Portsmouth Road on the day in question was far more treacherous in many parts than other roads appeared to be, and for considerable stretches the snow had congealed into what was practically ice. In fact, people were actually skating on it in parts. Now, with a road in this condition, the danger to the average motorist is that he will not recognise the change in the co-efficient of friction between the tyres and the surface on which the car is travelling: in other and more simple language, the gripping power of the wheels. Consequently, if, when travelling on ordinary roads at 20 m.p.h., one can stop dead in, say, 10 yards on such a surface as that described, one might not be able to stop in 15 or even 20 yards. With steel-studded tyres this is quite a reasonable figure, and when a driver finds that the car is not slowing down so quickly as anticipated, a sudden aggravated application of the brake completes the trouble, by causing a bad skid.

DJO

It would serve no useful purpose further to detail the actual accidents, but briefly, some half-dozen cars were quite hors de combat, so that the danger alluded to is by no means imaginary. The obvious moral, of course, is always to have plenty of reserve space in which to stop, and never wantonly to risk the necessity of a sudden stoppage.

Guides for Tourists in Great Britain.

AN extensive scheme is now being considered by one of the committees of the Royal Automobile Club for the appointment of a number of men in uniform to be described as "R.A.C. Touring Guides." These would be stationed at the home ports used by motorists, where they would be permanently employed, and at such places as those where inconsiderate driving has taken place, at dangerous places at certain times, at the R.A.C. official hotels in much-frequented towns, and in the touring centres during the touring season and at great road junctions, where there is a diversity of routes. The Royal Automobile Club has already appointed such guides at Continental ports, and we must say, from personal experience, that their help is invaluable. This system will, under the new scheme, be built up and expanded, so that the guides would be of real help and assistance to the motor tourist. We do, however, ask this, that the men should be carefully trained and voluminously instructed. A kind of porter is not the sort of individual who is wanted. Rather, he should be a motorist who is conversant with the difficulties that beset the motorist touring in an unknown country or district. He should be fully versed in the facilities offered by the town which he is in or is near. He should know what is locally required of the motorist, and be able to tell him where to stop and what to see and so forth.

The Regulations Concerning Carbide.

THE recent prosecution in Glasgow of a carriage hirer for contravention of the Order in Council of 8th August, 1911 (made under the Petroleum Acts), by keeping 14 lb. of calcium carbide without intimation having been given to the Local Authority is deserving of the attention of car users. The Order in question is number 794 of 1911, and provides for three sets of circumstances. Up to 5 lb. may be kept without a licence, provided the carbide be kept in 1 lb. tins. Up to 28 lb. may be kept without a licence, provided it be kept only in a vessel or vessels hermetically closed, placed in a dry and well-ventilated place and kept out of the reach of unauthorized persons, and provided that notice of such keeping be given to the Local Authority. If more than 28 lb. be kept, this notice is not sufficient, but a licence must be obtained from the Local Authority. The 1 lb. tin is not generally purchased by a car user, because the average generator, when used two or three times a week, would use up 4 lb. or 5 lb., whilst, even so much as 8 lb. or 10 lb. is not an unusual consumption. Moreover, it is general to buy carbide in 7 lb. or 14 lb. tins. Therefore, it would seem as if, practically, every car user is called upon to give notice of his keeping calcium carbide to the Local Authority appointed under the Petroleum Acts, 1871-1881, which are held to apply to carbide. And, of course, dealers are required to conform to the same regulations, taking out a licence if more than 28 lb. be kept. We have had over 15 years continuous personal experience with calcium carbide and have never had the least mishap or incurred the slightest danger from it, such untoward circumstances as did obtrude themselves in the very early days of acetylene lighting being, purely, the result of faulty lamp construction. But, nowadays, one would no more expect danger or trouble from acetylene gas, or its prime elements, than from the paraffin one uses in one's lamps.

EVENT AND COMMENT.

German trade organs have noted our scheme to create an automobile-museum, and a Berlin representative remarks:—"We are curious about the outcome of this movement. Very nearly 10 years ago, Major-General Becker suggested the foundation of an auto-museum in Berlin but, in consequence of the well-known want of historical sense in engineers and manufacturers, his idea never got beyond the paper-stage. Still, should England display more energy and bring something into being, motorists at home may possibly reconsider the matter." We know Major-General Becker as a pioneer of motoring in Berlin, but were unaware that he had ever made the suggestion in question. Berlin, by the way, already possesses an excellent museum pertaining to railway traffic, as well as an equally-interesting postal museum, which includes models of mail vans used from the early posting times.

There is Irish humour in the presentation of a motorcar to Mr. John Redmond by his colleagues. It may be called to mind that the leader of the Irish Parliamentary party met with a rather serious accident recently through the breakdown of a horse-drawn vehicle in which he was travelling; and his supporters, no doubt, wish him to avoid mishaps of a similar kind in the future. With great commonsense they have presented him with an up-to-date automobile. This should have a good augury for the roads movement in Ireland.

Although held during very inclement weather, the last show at Madison Square Gardens, New York, attracted a record crowd. The total attendance was 146,812, and the average each day was 22,894. The record day's attendance was 27,000, or 7000 in excess of the best achieved in 1911. The capacity of the building was taxed to its utmost.

The Knaresborough Urban Council asked the W.R.C.C. to arrange for an edict limiting the speed of motorcars in their town; but the County Council has rapped the knuckles of the Urban Council by stating that "Section 1 of the Motor Car Act of 1903 should be sufficient protection for the public," and under the circumstances the W.R.C.C. is not going to worry the Local Government Board to impose restrictions. We need hardly say that no sensible motorist would travel any faster or any slower. Knaresborough may sleep in safety. It has been a sleepy place a long time.

It appears that members of the R.A.C. suffer from the weaknesses (forgetfulness and carelessness and the like) just as do their fellow men, for the secretary of the Club has, locked in his strong room, watches, spectacles, cigar and cigarette cases, pipes, pouches and cigar holders, pocket books, knives, pencils, keys, umbrellas, silk scarves, gloves and other personal items that have been left lying about on the club premises. There is a solitary tie pin, keeping company with a single cuff link, there is a pair of slippers and a sleeping suit, a couple of photographs lie awaiting their owners' claim, and there is an international flag-signalling book. If matters go on like this, a sale by auction will have to be held periodically in the lounge!

An American Senator has suggested that an additional tax of 10 per cent. be put on cigars and alcoholic liquors, and the revenue devoted to road improvement. It seems rather hard on the alcohol motor of all types from 1 m.p. (man-power) upwards. Even his Flor de Cuba sparking plugs will cost him more.

In connection with the splash-guard competition just held at Versailles, somebody has recalled that the first competition of this nature, held by the Paris General Omnibus Co., was undertaken on the order of the Paris municipality. The omnibus company was quite indifferent about the mud-flinging proclivities of its vehicles, and when the order came to find a remedy, it could not hide its dissatisfaction. It had its revenge, however, for the notice it sent out was worded as follows:—"On account of the permanently filthy condition of the Paris streets, the company has decided to hold a competition of splash-guards."

The Hon. Roland D. Kitson who was summoned at Leeds for driving his motorcar in excess of the legal limit, made a spirited protest. He said that the police trap was situated in an extraordinary place. It was on a portion of Roundhay Road that was down-graded, and it was quite impossible to time accurately. He knew that during the previous week £100 worth of Leeds licences were taken up outside that city, which was really a very serious thing. The motorists of Leeds were getting tired of persecution.

The magistrate objected to the word "persecution." Rightly or wrongly, the Legislature had decided on an arbitrary speed limit, and the magistrates were bound to enforce that limit of 20 miles per hour. Strictly speaking, of course, the magistrate was right, but the methods of the police in some localities do, nevertheless, amount to persecution, and the motorist must adopt the method of protest nearest to his hands.

Although in this case it was stated by the police that the trap was set in a place where there was danger to traffic from side streets, it is too often the case that traps are arranged on open stretches where it is anticipated that motorists will fall easy victims, whilst real danger spots are often left without police protection. That is persecution pure and simple, and that is what motorists resent!



Messrs. Louis and Laurent Seguin, the inventors of the Gnome engine. The elder of the two (on the right) has just been awarded the Legion of Honour.

EVENT AND COMMENT.—Contd.

"A fine finish!" is said to have been the comment made by Mr. Ernest Terah Hooley on hearing the sentence passed upon him of 12 months imprisonment in the second division by Mr. Justice Phillimore. In the actual case which resulted in the downfall of the financier there was nothing of immediate motoring interest, but the fact that in 1896 and the following years Mr. Hooley was engaged in the flotations of such concerns as Clement-Gladiator Components Tube, Dunlop Pneumatic Tyre, Humbers, Singer, Swift, and other concerns, with capital amounting in the aggregate to £16,000,000, recalls the heyday of a remarkable and meteoric financial career which had a tremendous and baneful effect upon the cycle and allied industries.

Mr. Hooley made a fortune of five millions as if by magic, and within a few years of doing so was a bankrupt. To describe the climax which was reached on Saturday as "a fine finish" may be the fallen financier's parting shaft of satire. It is certainly an ignominious finish over which, with all the details that have led up to it, it is, perhaps, fitting to draw a veil.

We regret to announce that M. Louis Delaunay-Belleville, the well-known automobile constructor, passed peacefully away at his villa, "Esterel-Terrasses" at Cannes, on Saturday last, having contracted a severe attack of influenza some little time ago. The deceased was much esteemed in the Winter Colony at Cannes, where he had been in the habit of wintering for many years past. His remains are to be conveyed to Paris, where the funeral will be held early this week.

Our own correspondent in New York has waxed enthusiastic over the triumph of the automatic engine-starters that permeated the American shows, and the prominent business men we have talked to, on their return from the States, are all convinced that the Americans have caught the European makers napping. We of THE MOTOR drew attention to the first self-starters shown at Paris more than three years ago, and we have given accounts of our own experiences with the S.C.A.T., Adams, Goodheart, and other devices, but the idea has been slow to catch on here, and slower still on the Continent.

The American makers have seen the advantages of starting an engine from the seat, and have gone ahead to develop the idea, and many of the car manufacturers are turning out the whole or the greater number of their 1912 models with the self-starter included, and regarded as a necessity and not a mere luxury. What an opportunity for the small maker over here! The big concerns, with their 1913 designs already well under way, may not be able to touch it for another year, but the smaller makers can jump in at once and take with thankfulness the benefits the gods give them.

Talking of self-starters, it is necessary clearly to consider exactly what happens when a charge of mixture (whether the air be carburetted with petrol, acetylene, or other substance is immaterial) is exploded in a cylinder when the crankshaft and pistons are stationary. The shock is sudden enough to present a liability to damage, but that liability is enormously increased if the cylinder walls be gummy with congealed oil, as is the state in the winter. We should make a point, if we had an engine equipped with a self-starting system that imposed these sudden shocks on top of a stationary piston, of reverting to a practice that was common in the early days of motoring,

namely, injecting a few drops of paraffin into each cylinder at the end of a day's running. The compressed air systems are free from the objection of imposing these sudden shocks, but, even with them, clean cylinder walls are essential, particularly in cold weather or when a car has been standing in a cold atmosphere all night.

The owner of a dog which had been run over by a motorcar has written to the "Warrington Guardian" expressing his appreciation of the conduct of the motorist after the accident happened. "It is refreshing," he says, prior to recounting how the car-driver did all in his power to mitigate the suffering of the animal, "it is refreshing to record an act of sporting consideration and courtesy on the part of a motorist. . . ." And it is refreshing to us to know of somebody who is sufficiently generous not to withhold just praise to a member of a class that has been overmuch maligned.

From London County Council reports it is possible to gain reliable information as to the advance of the motor. This authority now announces that the recent new index mark of "L.F." is nearly at the end of its numerical tether, and so the Local Government Board is now being asked to give London another index mark, which will be "L.F."

For the quarter ended 31st December the L.C.C. registered 1619 motorcars, 312 heavy motorcars, and 498 motorcycles. Thus, altogether the municipality has registered—and taken the welcome fees—

48,701 motorcars.
3379 heavy motorcars.
16,874 motorcycles.

EDITORIAL NOTICES.

"THE MOTOR" is published in London every Tuesday morning. All editorial communications and copy must be addressed to "The Editors," and, to ensure insertion, should reach the office, 7-15, Rosebery Avenue, London, E.C., by first post Saturday. Important items of late news are received up to first post Monday morning. Contributions, literary and artistic, are invited, and will be accorded careful consideration, on terms set out on the last page of the Sale and Exchange section at the end of the book, to which readers are referred for other notices.

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FINANCE & BUSINESS

Dealings in motor shares last week were fairly brisk, but, after opening firm in the early part of the week, they eased off towards the close. There has been a fair amount of trade in Dunlop Rubbers; they have changed hands at 53s. 6d., but have since eased to 52s. sellers, and Dunlop deferred, after being done at 12s. 6d., close sellers at this figure. There has also been a fair amount of business in Small Arms, and the shares have fluctuated between 50s. 6d. and 51s. 6d. and close steady at 51s. to 51s. 6d. Humbers were also done at the higher price of 5s. 7½d., but have since eased to 5s. to 5s. 3d. Sunbeams have been rather freely offered and have fallen to 39s.; they are offered at this figure. There is no change in Swifts or Triumphs, the market keeping steady round about last week's prices. Rolls-Royce have been a little easier on the new issue, and the shares have changed hands at 41s., but close steady at 41s. to 42s. Stars and Rovers are both a little easier, the former being 14s. sellers and the latter 14s. 6d. sellers.

We know of a well-established firm in the Argentine who are desirous of securing the selling agency there for a good car. The two partners are Englishmen, and one is an engineer who has had 20 years experience in all parts of the

Argentine Republic. They are agents for machinery, are of good standing, and their financial position is quite satisfactory. We shall be glad to put makers who desire representation in the Republic into communication with the Buenos Ayres firm, letters addressed to "Argentine," care of the Editors of this journal, being forwarded.

The directors of Rolls-Royce, Ltd., last week offered the balance of the unissued share capital of the company, namely, 63,510 preferred ordinary shares of £1, the issue price being £2 per share, these shares, when fully paid up, to rank pari passu with those already quoted on the Exchange. The money provided (less underwriting commission of 2s. 6d. per share and expenses of issue) will be devoted to the enlargement of the works at Derby and to provide further working capital, the demand for Rolls-Royce cars and the increase in the sales of the cars abroad as well as in the home country having grown steadily and persistently. The preference shares receive a preferential dividend of 6 per cent. per annum and take two-thirds of the surplus divisible profits. In each of the last two years 15 per cent. has been paid by way of dividend on these shares. The ordinary shares, which were issued to the

original proprietors of the business, have received approximately 10 per cent.

Mr. Edmund Gascoigne has resigned his position as manager of the London branch of the motorcar department of Sir W. G. Armstrong, Whitworth and Co., Ltd.

Mr. R. V. Asbury's many friends will be glad to hear that he has passed successfully through the difficult and serious operation of trepanning which he had to undergo some weeks ago. He made a recovery that surprised the hospital staff, but, as one who has always lived an out-door life, his physical fitness pulled him through. We are sorry to say that his chief, Mr. J. K. Crowther, has not found the winter climate of Britain (although it be his home country) to his liking. Both, however, will soon be as hard at work as ever pushing Maxwell and Stoddard cars to success.

The centre of the trade shifts to Manchester this week, the opening of the show in the Rusholme Exhibition Buildings on Friday being preceded by the dinner given by the East-Lancashire and Cheshire section of the S.M.M.T. on Thursday evening. We believe that Mr. J. A. Newton, the new chairman, and Mr. Lawton Goodman, the new vice-chairman, are laying themselves out to provide their guests with a delightful evening. The A.A. and M.U. dinner on the following Friday is expected to revive the flagging physique and to give vent to the joyful spirits of the trade men who are weary with their week's efforts, but pleased with the results.

The imports of cars, chassis, and parts for the month of January show a continued increase, the numbers of cars and chassis (after deducting those re-exported) having risen from 896, valued at £232,285, in the month of January, 1911, to 1326, valued at £269,287. The chief increase is in the number of complete cars, which rose from 384 to 717, whilst the average price has fallen from £280 to £193—a big fall, indeed! The value of the parts imported rose from £165,866 in January, 1911, to £207,401 last month. The total net imports for the month are thus £476,688, as compared with £393,151 in January, 1911.

The exports of British cars show a small increase, namely, from 434, valued at £181,565, in January, 1911, to 493, valued at £195,200, last month. Chassis exports have risen from 53 to 105 during the month, so that the total exports of vehicles rose from 487, valued at £201,350, in January of last year to 598 valued at £235,018 last month. The exports of parts show a small falling off from £97,273 in January, 1911, to £84,660 in January, 1912. The total exports of cars, chassis, and parts were thus: January, 1911, £298,623; January, 1912, £319,678. The average value of the exported British cars has fallen below the average of January, 1911, when the figure was £418, but it exactly equals the figure for the whole of last year, namely, £397. The average value of the exported British chassis was £379 during the month of January last, as against £373 for the month of January, 1911, and £403 the average price throughout last year.

"THE MOTOR" SHARE LIST.

The Prices recorded in the end columns are those ruling on the Stock Exchange at Mid-day on Monday, 12th February.

All the shares are fully paid except Alldays £5 ordinary shares.
The dividend recorded is the dividend for the whole year unless otherwise stated.

SHARES.		NAME.	Dividend.		Previous Prices				Prices, 12th Feb.	
Issued Capital.	Paid Up.		Last.	When payable.	Highest.	Lowest.	Highest.	Lowest.	Buys.	Sells.
£	£									
45,000	£3	Alldays & Onions...	5%a	Mar./Nov.	4	3½	—	—	3½	4
50,000	£5	" " Cum. Pref. 6%	6%	Mar./Nov.	5½	5½	5½	5½	5½	5½
209,802	10/-	Argylls, Ltd. ...	nil	Nov.	7½	4½	5½	4½	5½	5½
107,893	£1	Belsize Motors ...	10%	May/Nov.	27½	25½	26½	25½	26½	26½
767,225	£1	Birmingham Small Arms	10%a	Ap./Oct.	57½	46½	52½	49½	51½	51½
75,000	£5	Brampton Cum. Pref. 6%	6%	Oct.	4½	3½	4½	4½	3½	4½
100,000	£1	J. B. Brooks & Co. ...	10%	Mar./Nov.	31½	27½	32½	31½	32½	33½
100,000	£5	" " Cum. Pref. 5%	5%	Mar./Nov.	5½	5½	5½	5½	5½	5½
100,000	£5	Brown Bros. Cum. Pref. 6%	6%	Ap./Oct.	43½	4½	—	—	4½	4½
884,000	£1	Charron, Ltd., Par. Pref. 7%	7%	Jan./Jul.	10 6	6½	8½	8½	7½	8½
275,000	£1	Darracq (1906) ...	8½	Jan./Dec.	23½	17½	18½	17½	16½	17½
375,000	£1	" " Pref. Ord. 7%	7%	Ap./Nov.	20½	18½	18½	18½	18½	18½
41,621	6/-	Deasy Motor ...	nil	Oct.	8½	6½	—	—	6½	6½
159,229	£1	De Dion-Bouton (1907) Pref. 7%	6%	Nov.	12½	6½	10½	9½	9½	10½
105,000	£1	Delahaye & Co. ...	20%	July	1½	1½	—	—	1½	1½
60,000	£1	" " Pref. 7%	10%	Jan./Jul.	23½	20½	—	—	20½	20½
800,000	£1	Dunlop Rubber Co. ...	20%	Ap./Nov.	82½	42½	56½	45½	50½	51½
200,800	£1	" " 6% Pref.	6½	Nov.	22½	20½	20½	19½	19½	20½
312,726	£1	" " French l. Stock	5%	May/Nov.	23½	17½	19½	17½	18½	19½
624,966	£1	DunlopTyreNewCum.Ord. 8%	4%	May/Nov.	22½	15½	18½	15½	16½	17½
994,950	£1	" " Cum. Pref. 5%	5%	May/Nov.	18½	16½	15½	15½	16½	16½
429,962	£1	" " Deferred ...	3%	May/Nov.	24½	10½	11½	11½	11½	12½
215,842	£1	S. F. Edge, Ltd. ...	8%	Ap./Dec.	16½	11½	—	—	15½	16½
75,000	£1	Eriswell (1906) ...	nil	Jan./Aug.	2½	—	—	—	2½	2½
60,000	£1	" " Cum. Pref. 6%	nil	Jan./Aug.	3½	3½	—	—	3½	3½
292,904	£1	Humber ...	nil	Nov.	8½	4½	6½	4½	5½	5½
831,495	£1	" " Cum. Pref. 6%	nil	Nov.	11½	6½	8½	7½	7½	7½
100,000	£5	J. Lucas, Ord. ...	10%	Ap./Nov.	9	8½	9½	9	9	9½
100,000	£5	" " Cum. Pref. 5%	6%	Feb/Oct.	6½	5½	5½	5½	5½	5½
96,430	£1	Rolls-Royce, Par. Pref. 6%	15%	Jan.	45½	37½	44½	41½	40½	42½
188,668	£1	Rover ...	5%	Nov.	19½	12½	14½	14½	14½	14½
70,000	£1	Star ...	Mar.	15/10½	11½	19½	16½	13½	13½	14½
69,187	£1	" " Cum. Pref. 7%	7%	Mar.	18½	16½	17½	16½	17½	18½
87,556	£1	Stepney Spare Wheel ...	20%	Apr./Nov.	88½	27½	32½	31½	32½	33½
70,000	£1	Sunbeam M.C. Co. ...	15%a	Nov.	46½	27½	46½	39½	38½	39½
80,000	£1	Swift ...	6%	Apr./Nov.	21½	15½	17½	16½	15½	16½
100,000	£1	" " Cum. Pref. 6½%	6½%	Apr./Nov.	17½	16½	16½	16½	16½	16½
148,500	£1	Thornycroft, J. I. & Co.	nil	May/Nov.	15½	14½	14½	13½	—	—
198,000	£1	" " Cum. Pref. 8%	15%b	May/Nov.	29½	13½	20½	19½	—	—
80,000	£1	Triumph Cycle Co. ...	15%a	Nov.	46½	20½	49½	45½	47½	48½
50,000	£1	" " Par. Pref. 5%	6½%	Nov.	21½	17½	21½	20½	20½	21½

a Plus 5% bonus. b On account of arrears.

SOME USEFUL HINTS.

(By OUR PARIS CORRESPONDENT.)

The Use of the Hand Brake.

CALLED upon to drive daily under probably the most arduous traffic conditions in Europe, I have made a practice of using the hand brake very considerably. The hand being much more sensitive than the foot, it is possible to make use of the side lever with far less wear and tear and with less danger of skidding than with the pedal-applied brakes. Thus, whenever an obstacle presents itself in time, it is the hand brake, and not the foot brake, that is applied. In an emergency the foot brake is used, or the two together. Since adopting this method of driving, skidding has become unknown, and the car appears to be all the better for the gentler treatment it has received. There is one disadvantage connected with the constant use of the side brakes. Frequently, under dense traffic conditions, it is necessary to throttle down, apply the brakes, change gear, shift the steering wheel over, and accelerate again in an interval of two or three seconds. Under such conditions one is apt to forget that the side brakes are on, and an effort will be made to get away with them set, or partially set. It would be an advantage, therefore, if the side brakes were automatically released, as in the case of the foot brake, with a suitable mechanism for maintaining them in the locked position when necessary. Half-a-dozen ways present themselves of accomplishing this, without any important complication of the lever. As at present constructed, the motorist is encouraged to look upon his side brakes as an emergency set, and in too many cases, unfortunately, uses them in this way. For country work the matter is of less importance, and to professional chauffeurs, not over sensitive as to the life of tyres and mechanism, the change may not appear necessary. But to the owner-driver desirous of getting the best possible results, the use of the hand brake offers decided advantages. One of the most skilled French race drivers of my acquaintance, a man who has spent practically his whole life behind the steering wheel, always handles his car under traffic conditions in the manner indicated above, and it is only necessary to spend half-an-hour with him in a maze of cross streets to realize what gentle but firm control can be had of a car with a predominant use of the hand brake.

Making Use of Waste Space.

On nearly all modern shaft-driven cars there is a considerable amount of waste space between the gearbox and the rear axle. With the propeller shaft within a torque tube and the brake connections close to the frame members, the whole of the space on each side of the shaft is vacant. This might with considerable advantage be employed for carrying a chest to contain storage batteries, spare cans of oil, or such tools as are not often needed. The objection may be made that any articles stowed in this position will be difficult of access. This, of course, depends on the nature of the body, but on a large number of cars the space usually left vacant can be made use of to considerable advantage. On one car with which I am acquainted the owner has a very neat arrangement. The body is a two-seater with a couple of folding seats at the rear. The tools most often required are in the extreme rear portion of the body, separated from the central part by a division, and are accessible through a rear door. In the floorboards, behind the main seats, is a trap door,

giving access to a large three-decker toolbox hung in the space to the left of the propeller shaft. Underneath the footboards, and in the vacant space between the sub-frame and the main-frame member, is the storage battery for reserve ignition and a spare can of oil. Not only are there no toolboxes on the running boards, and, indeed, no other accessories than the spare wheel, but the emergency seats at the rear are always available for use, and not, as is usually the case, littered up with spares. Everything is accessible, for on opening the rear swing-down door the pump and all ordinary tools are immediately to hand, and on lifting up the trapdoor within the body the spares can be brought out. The arrangement has the advantage, in these days of motor-accessory thieves, of leaving nothing for light-fingered gentry to carry away. The bonnet, a Renault type, is always locked, and a handcuff secures the spare wheel. Evidently others have thought of the possibility of making use of this waste space, for at the recent New York show a chassis was shown with a large sheet-metal box carried within the frame between the gearbox and the rear axle.

Fitting a Parcel Carrier.

Another detail improvement which can be made to a car by any amateur is the fitting of a net parcel carrier on the underside of the scuttle dash. Having secured a piece of net the correct size, a piece of cord to match should be threaded along each of its four sides, then the two ends of the cord tied together. Two small hooks are screwed into the rearmost edge of the scuttle dash, and two others in the dashboard. The two sets of hooks should be sufficiently far apart to necessitate stretching the net a little in order to get it on. Two or three more hooks are screwed into the dashboard in order to receive the front edge of the net, and the fitting is complete. The net will be found decidedly useful for carrying such light objects as letters, papers, a cap, gloves, etc.

An Advantageous Medium :: ::

For Second-hand Advertisements.

When an intending motorist is looking for a second-hand car, he almost invariably has a preference for certain makes. How much simpler for him to glance through the classified columns of "The Motor" than any other medium! In "The Motor" the second-hand cars advertised are alphabetically classified; that is why quick sales result from advertisements in "The Motor."

The rate is only 1s. 6d. (minimum) 12 words, and 3d. each additional two words.

Advertisements in "The Motor" are set in a large type and are easily read. We are overwhelmed with letters from readers gratefully acknowledging the quick results of an advertisement.

"The car which set the fashion to the world."



FIVE



**Magnificent Specimens
of the 1912**

MERCEDES

LIVE AXLE MODELS

ranging from 12-15 h.p. to 45-50 h.p.

:: :: will be exhibited on :: ::

STAND 29

North of England Motor Show,

:: :: **Manchester,** :: ::

by our Agents—Messrs. ANNE COWBURN, Ltd., of Park Place,
Cheetham Hill Road.

Trial cars of all models from 12-15 h.p. to 45-50 h.p., will be at
the disposal of prospective purchasers to enable them to test
the merits of this world-famous car.

Mercedes Showrooms:
132, Long Acre, W.C.
Telephone: 273 Gerrard.

MILNES DAIMLER, Ltd.,
221, Tottenham Court Road, London, W.
Telephones: 8910 and 8911 Gerrard and 8821 Central.
Telegrams: "Milnesie, London."

"The car of Emperors and Kings."

C.D.C.



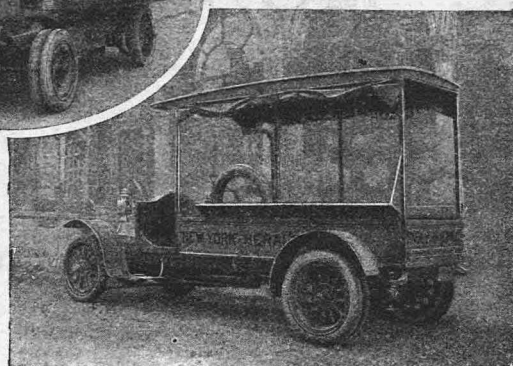
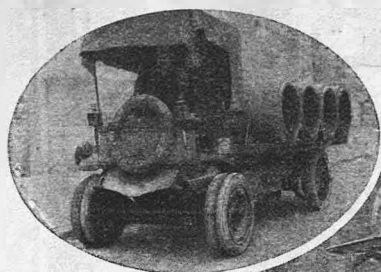
Letters from Bibendum to a Self-made Motorist.

XI.

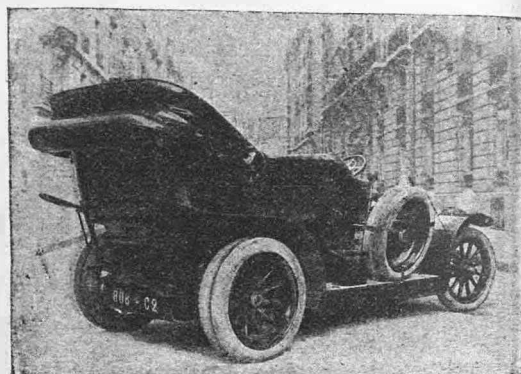
81, Fulham Road,
London, S.W.

13th February, 1912.

My dear Miles—Knowing the circumstances, it did not surprise me much to hear from Brownlow this morning that, during the four working days you have spent in town, your "wheeling flights" have only landed you at the office three times, and that on each occasion you have spread your wings westward again within the hour. But I reckon Gladys knows the old man well enough now to know that he doesn't hold with a matinee, two theatre nights, and a 4.30 a.m. dance all inside four days. She is only looking at it—and going to write you I guess—from the



Michelin Twin Tyres in America.



Heavy touring car fitted with Michelin Twin Tyres.

him and how perfectly simple and easy they are to operate. Here, at 81, Fulham Road, we have everything for making a complete demonstration of the whole unit; and through you, Miles, I extend a cordial invitation to every big-car man in the country—whether his interest lies in his own touring car only, or in motor vans or lorries—to come in on the first opportunity and see Twin Tyres actually fitted, detached, and re-fitted. We can show him details of actual savings effected by dozens of progressive motorists who have prevailed upon themselves to give Twins a trial; and we can refer him to owners who are running Twin Tyres under all sorts of conditions, and who will be only too pleased to give details of their experience.

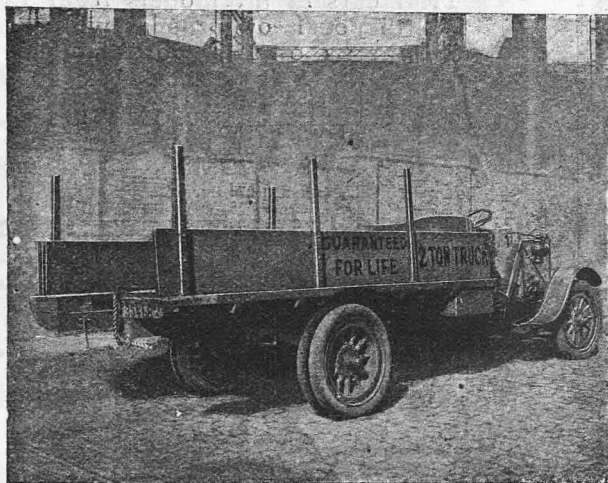
Any motorist whose car scales, under ordinary travelling load, more than two tons, is running himself in for a very great deal too much expense if his tyres are of the ordinary single variety—and he ought to know it, unless his chief aim in life is to get rid of as much money as possible.

Your affectionate "father,"

BIBENDUM.

point of view of your health. Naturally I didn't tell her that the florist, for convenience, has made out his bill on a sheet of foolscap, and that your expenses account will take you six months to work off out of salary. Looks to me as if her information on these points had better come from you; because she gives me to understand that she wants to marry you, and, as she knows already that the old man isn't holding up your job longer than you're capable of handling it, she's just primed right to tell you a whole lot of things that will do you a mighty lot of good.

What I am surprised about is that, after getting all I can tell you on paper about Twin Tyres, you didn't let anybody show you the actual thing. There's nothing like seeing how a device works; it's better than all the diagrams and descriptions, however clear. No man who can't quite get the hang of a thing of this nature, from reading about it, should hesitate to have a practical demonstration. And let me say at once that I am looking forward to showing every heavy-car owner, who is interested in cutting his tyre-bill down and in receiving greater travelling comfort, just how Twin Tyres can help



Michelin Twin Tyres on a 2-ton lorry.

A GREAT WINTER TRIAL.

The Great Winter Reliability Trial of the Royal Swedish Automobile Club—Two Vauxhall Cars the First Arrivals at the End of a Severe Test.

AS early as seven o'clock on Sunday morning crowds of people were assembled at the starting-place in order to witness the first stage of an exceptionally interesting competition.

Those who knew the ways and methods of the organizing club also knew that a tremendous amount of preparatory work lay behind the smooth surface, and that the competitors could look forward to a journey, the minutest details of which had been arranged by an experienced and foreseeing organization. The distance to be covered (Stockholm-Gothenburg and back) amounted to 600 English miles, a compulsory stop of 12 hours being prescribed at Gothenburg. Forty-three cars were entered for the trials, two of which did not start: one for want of a driver and the other because the radiator had frozen on the way up to Stockholm.

The weather was glorious, a radiant sun shining down on a glistening field of snow, that creaked in a most delightful way as you hurried up towards the long line of cars around which drivers, mechanics, observers, passengers and spectators were moving about waiting for the stroke of eight.

The competing cars looked as a rule most impressive. As to the bodies, there were some very elegant ones, whilst others had adopted the typical grey racing garb. Among the various makes represented, one noticed the Benz, Opel, Horch, Mathis, Minerva, Vivinus, Vauxhall, Humber, Ford, Panhard-Levassor and others.

At eight o'clock sharp the first car, a splendid Minerva, started. No. 2 was a 20 h.p. Vauxhall, with Mr. Hy. Kjellgren at the wheel.

"One minute left," calls the starter; "20 seconds, 5-4-3-2-1-Go!" and off they go as regular as clockwork, an interval of 2 min. between each start.

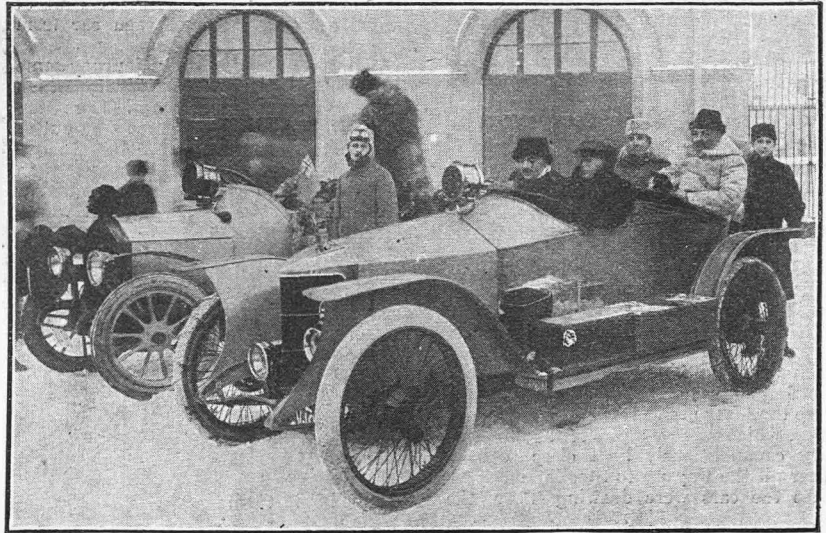
The Union Jack flying from the radiator of No. 8 proclaims the driver an Eng-

lishman. It is the managing director of Vauxhall Motors, Ltd., Mr. P. C. Kidner, who looks very much at his ease at the wheel of another 20 h.p. Vauxhall. At 9.24 the last car started, everything going off without a hitch.

The first control station was reached at the exact second by a number of cars,

for each minute. A competitor arriving at a control station within the last two minutes of his driving time, calculated on the basis of the maximum speed (30 kilom. in the daytime and 20 kilom. at night) will, however, not be penalized for fast driving.

The two Vauxhall cars very soon took

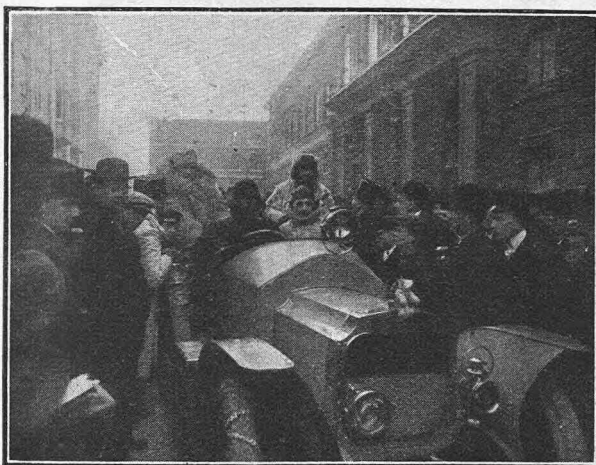


Mr. P. C. Kidner, on his 20 h.p. Vauxhall, at the start of the great Swedish reliability trials.

there being a very modest amount of snow in these parts. The trial, however, fully justified the name of winter trial before the journey was over. Another three control stations had to be passed before reaching Gothenburg. At each one of these the cars had to stop, if only for a few seconds, in order to give their time, as ascertained by the observer accompanying in each car, fast driving being penalized with two points

the lead, both arriving at Gothenburg soon after five the following morning; which, however, does not necessarily mean an advantage over the other competitors. The only Swedish car taking part in the trials, a 36 h.p. Scania-Vabis, arrived at Gothenburg in fine form, and almost at the exact minute previously calculated for its arrival.

The big hall of the Palace Hotel, in front of which the control station was



The first car to arrive at the finish, Mr. Hy. Kjellgren's 20 h.p. Vauxhall.



The only Swedish car taking part in the trials, Mr. P. Lindström at the wheel.

GREAT WINTER TRIAL.—Contd.

placed, soon looked like the meeting place of a crowd of travellers from the Arctic regions, and a stranger not knowing the circumstances of the case must have been deeply impressed with the Swedish climate.

These people having the appearance of Polar bears were, however, not very talkative. On being asked by a reporter to tell him something of his experiences of his 21 hours drive, one of them answered:

"We were told at the start to 'go,' and we went to Gothenburg. That is all there is to say about it."

There is a good deal of truth in this statement. When the roads are good (as good as Swedish roads can be), the weather fine, and the machine a first-rate one, no very exciting incidents are likely to happen.

Very soon one after the other disappeared in order to get a well-earned rest before the return journey. Many, however, complained that the stop lasted too long. They were anxious to get away. The cars were all locked up in an immense garage guarded by a Cerberus, who did not let anybody in until exactly 12 hours after the arrival of the car in question, and only on presentation of a legitimation card signed by the official in charge of the control station.

The two Vauxhall cars which had been the first ones to arrive at Gothenburg were the first ones to start for the journey back, which was by a different route, and they conscientiously kept close to each other all the way up to Stockholm.

As the cars were drawing near the

beautiful Lake Vattern, the quantity of snow on the road deepened, and this, combined with most enticing moonlight, made a fascinating picture—for those who had time to pay any attention to it.

The lighter cars sped over the snow without sinking down, but, unfortunately, a heavier one suddenly got stuck in a veritable mountain of snow, blocking the way for those coming after. Drivers and passengers alike had to get out and work like mad to force their way through, but in spite of their efforts a gathering of about a dozen cars had assembled in a long line before they were able to get any further. This occasioned a delay which greatly puzzled those at the headquarters in Stockholm receiving the laconic telegraphic messages concerning the time of arrival and departure of each car from the several control stations.

At different stages of the journey some of the cars met with accidents which occasioned their withdrawal from the competition. Altogether nine cars out of the 41 starting had to give in. In one or two cases something went wrong with the steering apparatus, and the number of points the repair of the damage would entail caused the driver to resign. One car landed in a ditch and refused to allow itself to be hauled up again, so the passengers had to leave it for the night, and were picked up and taken to the nearest control station by a private car passing.

The first car was expected to arrive at the finish outside the club premises a few minutes before three in the afternoon, and long before this the streets along which it would have to pass were lined with spectators. Mr. Kjellgren's Vauxhall was exactly up to time as it "snailed" in to the goal at 2.54.33 p.m.

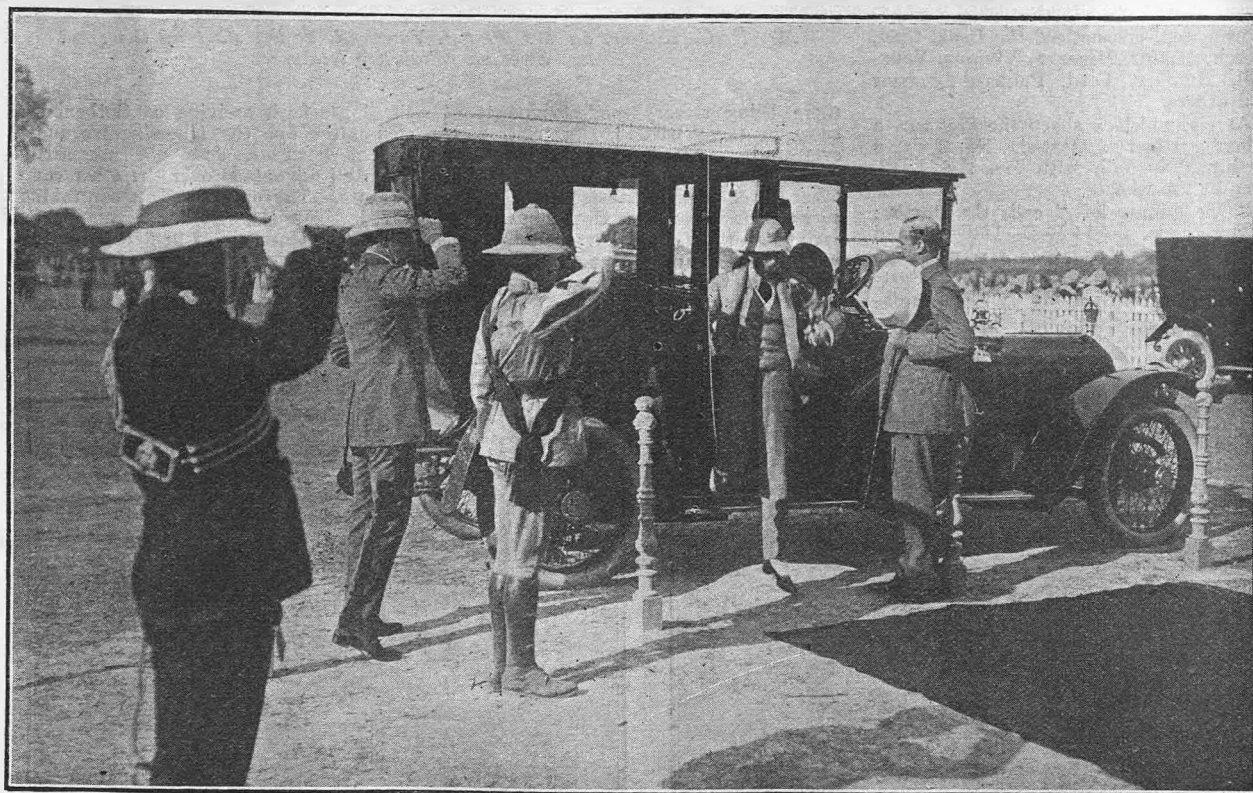
on the 6th, followed in 5 min. 57 sec. by Mr. Kidner. In due course, a bugle call announced the arrival of Mr. Osterman on a 40 h.p. Minerva, and in the course of the afternoon and evening one car arrived after the other, the last one, however, not until 3.10 a.m. on the 7th.

As to the results, these cannot even be guessed at so far. There is a stiff bit of work in front of the judges it seems. To quote an old Norwegian gentleman who stood patiently awaiting the arrival of his son on one of the competing cars last night: "We never thought in Norway that there were so many fine drivers over here in Sweden."

The distribution of prizes will take place on the 15th, and until then the parties concerned will have to control their curiosity as to who will be the winners of the Winter Cup, the Gothenburg Cup, and all the other prizes.

The number of motorists who joined the A.A. and M.U. during January was 645. Among the new members are the Earl of Drogheda, Baron Rolf Cederstrom, Sir Charles Philip Huntington, Bart., Sir Lewis Dibdin, Bart., Sir James Barr, Sir George J. R. Clarke, Bart., Admiral Sir Albert Markham (also Lady Markham), the Hon. L. G. Greville, Capt. the Hon. N. Gaythorne-Hardy, the Lord Bishop of Leeds, Archdeacon Sinclair, the Archdeacon of Brecon, the Archdeacon of Coventry, Mr. Leslie Scott, K.C., M.P., Alderman W. H. le May, J.P. (Mayor of Lewisham), Baroness Dekusel, Lady Compton, Lady Clarina and the Hon. Sybil Hood.

The A.A. and M.U. will have a stand (No. 104a) at the Manchester Motor Show.



In this excellent illustration His Majesty The King is seen alighting from a 50 h.p. Wolseley car at the Calcutta race course. Lord Hardinge (hat in hand on right) is seen greeting the King. The car was used by the King during the Durbar and at Calcutta.

NEWS AND NOTES.

A New Rotary Valve Engine.

We recently saw running a small two-cylinder engine which embodies the principle of the rotary disc valve and the cylindrical rotating valve, for which it is claimed that certain disadvantages formerly known to exist with this combination had now been avoided. The cylinders rotate around a fixed crankshaft, and the drive for the rotary valve is obtained from a fixed gearwheel on the shaft. With this there engages a bevel pinion for each cylinder, the respective shafts of which drive a similar two to one gear outside each cylinder head, this driving the rotary valve system. The engine we saw is an air-cooled one, at present in experimental form, but a short run at high speed demonstrated at least that the valve system will work. Owing to the patents not being completed fuller details cannot be given yet, but such further information as is available can be had from W. Cochrane and Co., 26d, Clarges Street, Piccadilly, London.

An Important Announcement.

An interesting announcement was made by the chairman, Mr. J. E. Lambie, at the staff dinner of the Bedford Willesden works, on Wednesday evening last, when he stated that in future Bedford Motors, Ltd., would be styled General Motors (Europe), Ltd., and in addition to the Bedford car, which had been distinguished by the excellent coachwork produced by the Willesden factory, under the superintendence of Mr. F. S. Buckingham, of Elswick fame, this concern would sell in future the Buick car, and have behind them the powerful combination of General Motors Co. of Detroit. Many speeches were forthcoming from the various heads of departments, including Messrs. Buckingham, Downs, Benthall and others, while a feature of the evening was the recital of some clever personal verses by Mr. R. G. Booth, of the Willesden Works. Mr. F. S. Bennett, a director of the new concern, gave the toast of "The Firm," and Mr. R. D. F. Paul, of THE MOTOR, replied for the Press and visitors. Our representative was struck with the enthusiasm which prevailed among the Bedford staff, a feature which, under the enterprising management of Mr. J. E. Lambie, has no doubt much to account for the leading position the Bedford car enjoys in the popular-priced market to-day.

During the month of January the A.A. and M.U. Touring Department issued 147 triptyques for various Continental countries, also 73 international passes. Under the provisions of the International Circulation (Motor Cars) Order, 60 certificates of fitness of cars, also 64 certificates of competency of drivers were granted by the Association.

Next Thursday week, 22nd February, "The Commercial Motor" publishes a comprehensive illustrated report of the commercial motor vehicles exhibited at the Manchester Show.

NEXT WEEK.

Our next issue will be the North of England Show Number of "The Motor." It will contain the first published

Illustrated Report of the North of England Motor Show.

Also the following articles of general interest:

Manchester as a Touring and Motoring Centre.

(Illustrated.)

The Growth and Development of the Motor Industry in Manchester.

The Private Garages of Some Prominent Local Motorists.

(Illustrated.)

Things a Beginner Wants to Know.

And many other attractive features. Order next week's issue of your newsagent in advance.

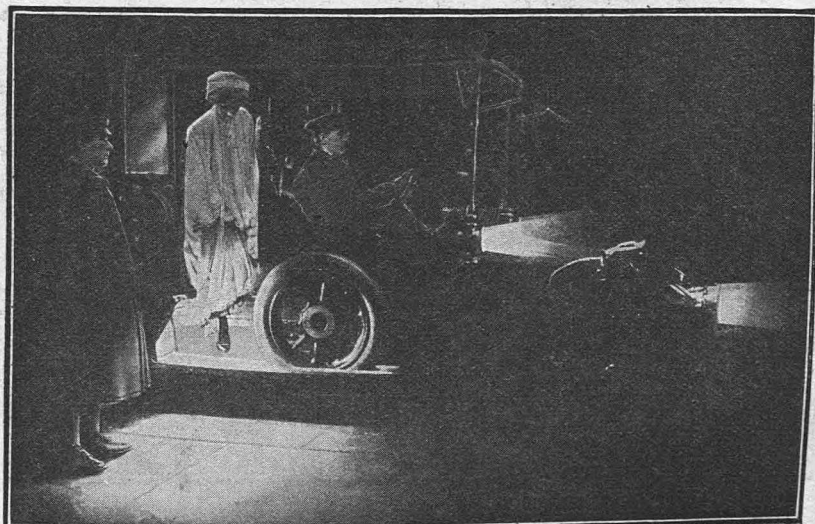
It is impossible to promise that further applications for seats for the A.A. (Northern Section) dinner can be dealt with so many having been received.

The New Automatic Steplight.

A new automatic step light "Mind the Step" is a useful accessory, and the photograph, taken at night, gives some idea of the effect. The fitting takes the shape of a shade or carrier which is attached to the inside of the door of the car at the lower edge, and which contains a metallic filament lamp and automatic switch, the connection being made to the accumulators by a flexible wire under the upholstery and through the door check strap. The action is simple, when the door is opened the light is automatically switched on, and swings out with the door over the kerb or road, with the result that the step, kerb and pavement are well lit, and thus the danger or difficulty of descending from the car in darkness or a half light is avoided. This fitting is supplied by Southern Automobiles, Ltd., Westcombe Hill, Blackheath, London, S.E., who are making two types, one self contained for cars not using accumulators, and the other for cars which have an automatic lighting system.

A British Firm in Canada.

The Wolseley Tool and Motor Car Co. are the first British motor concern seriously to cultivate Canadian business. For some time they had an agency in Toronto, but now a more energetic move is being made to secure trade which has too long been left to American firms. A contract for a big garage and branch has just been awarded by the company, the cost being £8000; and it is stated that, should business warrant it, a factory will be established in Canada. Agencies are also being placed in the various large cities and towns. In connection with British enterprise, it may be stated that the Vauxhall car has now an agency in Montreal. It is clear that some manufacturers are alive to the possibilities of trade in the Dominion.



A new automatic steplight.

NEWS AND NOTES.—Contd.

Middlesex County A.C.

The interests of motorists in Middlesex are well looked after by the Middlesex County A.C. Every phase of motor-ing affairs is included within the scope of the club's activities. Four sub-committees were formed at the first meeting of the new general committee which was held on Wednesday last. These were a competitions committee, a social committee, another to deal with road and traffic problems, and one to look after legislative matters. The energetic manner in which the club officials have all

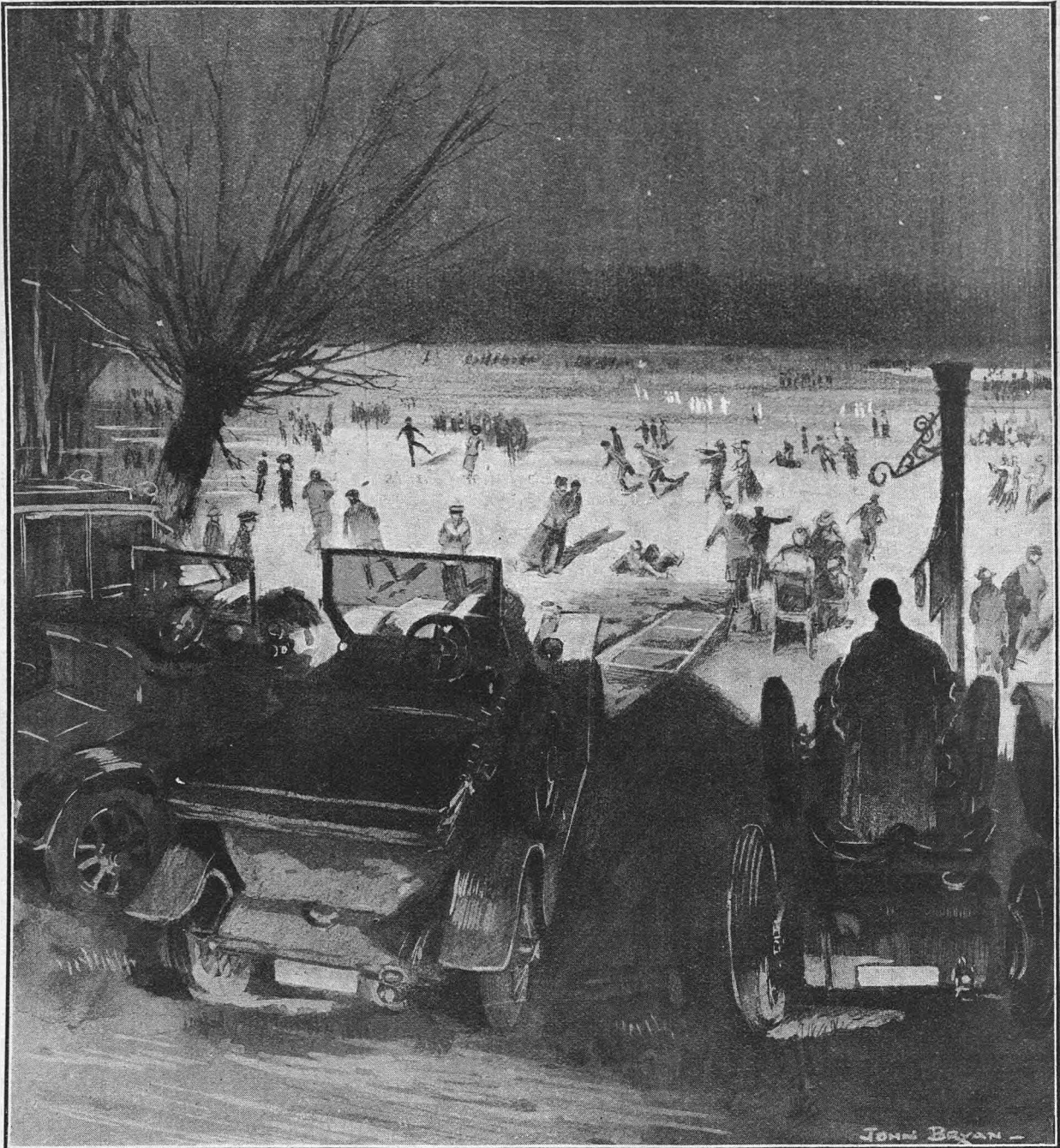
along acted in the cause of automobilism is further exemplified in the formation of these four committees, and Middlesex motorists should rally round the club and support it all they can in the good work it is doing for their sake.

Midland A.C. Concert.

The Midland Automobile Club is right in the front rank as organizers of either hill-climbs, speed contests, or social functions, and the ladies' invitation concert held at the Grand Hotel, Birmingham, on Wednesday night last, was in every way a great success. The large Grosvenor Rooms were tastefully decorated with flowers for the occasion, and the

excellent programme was enjoyed by all present. The concert was quite an informal affair, without speeches (except by one or two of the artistes) or ceremony of any sort. Everybody was pleased, and credit is due to all those who helped to make the concert so very successful.

Considerable enthusiasm was shown at the annual general meeting of the Essex Motor Club, on the 1st inst., and there is every prospect of a most successful year for this enterprising club. The secretary is Mr. D. S. Kapadia, and his address is the Grange, Aldborough Hatch, near Ilford, Essex.

*A NOVEL SCENE.*

On Sunday week skating was indulged in till late in the evening on the lake at Wisley, motorcars being ranged round the lake opposite "The Hut" with their headlamps alight to illuminate the fine expanse of ice.

THE A-L ACETYLENE GENERATOR.

A Happy Combination of Simplicity and Efficiency.

DURING the past fortnight or so motorists who have had acetylene lamps, and even, in many cases, ordinary oil side lamps, have had a bad time owing to the heavy frost. We ourselves were in serious trouble one night, as the generator was entirely frozen and the side lamps were so cold that the slightest movement of the car caused a down-draught, which immediately put out the lights. To cure this we had to take the side lamps indoors and turn the wick up high, so as thoroughly to heat the top and sides, and then the heat-induced draught was sufficient to counterbalance the down-draught caused by the exceptionally heavy wind. Incidentally, however, by the time that these adjustments had been effected the carburettor had frozen up, so that, altogether, we had an enjoyable evening, and the lamp question was once again brought vividly to mind.

It is on such occasions that one has an appreciation for simplicity in construction, and in this respect there is no doubt that the A-L generator has very strong claims for consideration, whilst as regards its efficiency, this is so amply proved by its general adoption on London buses, etc., that the question hardly needs further investigation.

Practically speaking, there is only one moving part, which consists of what one might term a diving bell, which is either immersed in water or lifted up out of contact with the water as the exigencies of the case demand. On looking at the second illustration, it will be seen that there are two cones, the lower one for holding the charge of carbide and the upper one arranged to cover the lower one, leaving, however, a minute space between the two surfaces. The generator tank is then half-filled or nearly filled with water, according to the requirements in regard to the required effective pressure of the gas

generated, and if not wanted for immediate—or approximately immediate—use, the diving bell is held in the up position, as shown in the first illustration, by means of the little set-screw (K). Even if the carbide-containing cone should be let down in the water, so long as the tap or taps (F) are not turned on there will be no waste, as it is fairly obvious that the pressure of the gas being generated inside the container would soon be sufficient to prevent the water coming up

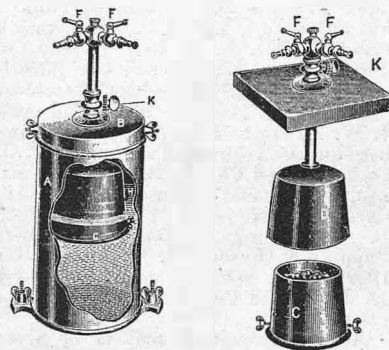
capillary action in the flow of water, as one might be a little inclined to assume. Consequently, there is no unnecessary continuity of action, and, so soon as the taps are turned off, the generation of gas must cease, as the rising pressure inside the carbide chamber quickly exceeds the comparatively small pressure of the head of water, thus driving it out and holding it out, so that no waste of carbide takes place.

A little consideration will convince one that, although this arrangement is so particularly simple, it is, at the same time, equally scientific, and the generation of gas is controlled according to the actual requirements, instead of by the somewhat arbitrary and, necessarily, frequently uneven drip of a tap or needle valve. To explain in a little further detail, so soon as, for any reason whatsoever, the gas pressure commences to decrease, the water oozes in a little quicker and instantly restores the balance, and, of course, vice versa, should through any chance the generation of gas be too quick, then the pressure will very soon restrain further water from entering, and once again the balance is restored.

It is not very long since this generator was placed on the market, but its general popularity is a sure indication as to its efficiency, whilst we think that we have adequately explained its simplicity.

Incidentally, we may mention the fact that the Ford Co. have just recently ordered some thousands of these generators for their cars, and we are informed that a large number of Ford agents were partial to the A-L on account of its simplicity and reliability.

It is one of the many excellent specialities of Messrs. S. Smith and Son, Ltd., of 9, Strand, London, W.C., and it is made in several qualities and sizes, the details of which may be obtained on application to the firm.



between the faces of the cones. On opening the tap the pressure inside is reduced, and the head of water is sufficient to make a small quantity ooze up between the conical surfaces of the carbide container and its cover, when it will run down the inner wall to the carbide, and then, of course, the generation of gas will commence. It should be understood, however, that the oozing action of the water in passing from the tank to the carbide is controlled purely by the balance of pressure relatively to the variation in the pressure of the water head in the outer chamber, and the gas pressure inside the carbide chamber, and there is really no

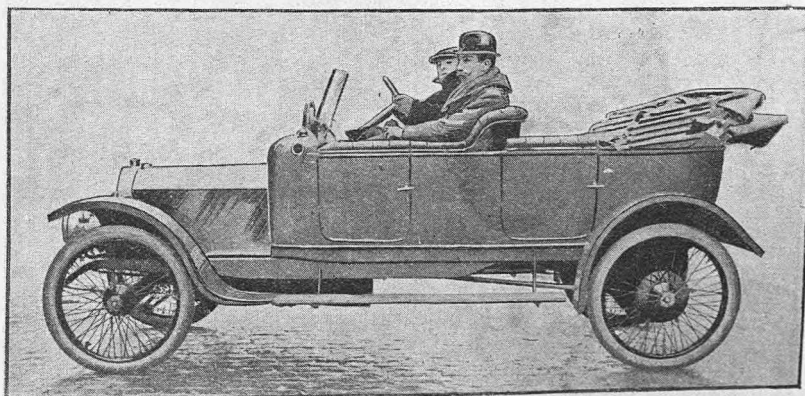
New B.S.A. Showrooms.

Messrs. The G. and W. Motor Exchange, Ltd., have obtained an agency in London for B.S.A. cars, and are very shortly to be in possession of fine premises situated at 34, Knightsbridge, S.W., which will be solely devoted to the exhibition and sale of B.S.A. cars, so that their agency in this respect will be a unique one. Although Messrs. The G. and W. Motor Exchange are opening these special premises to deal with their B.S.A. agency, they are anxious that it shall be understood that this movement is purely an extension of their activities, and that their ordinary business will be carried on at 14 and 15, Riding House Street, Upper Regent Street, London, W., as heretofore. This latter business is in regard to second-hand cars, and also agencies for Daimler, Vauxhall, and Dennis cars—the last mentioned being a sole London agency. They are able to give very good deliveries of Daimler cars; in fact, immediate deliveries of most models.

Adverting again to the question of the new B.S.A. showrooms and cars, they can commence to give delivery of these cars in March. We illustrate one of them—with a little longer wheelbase than the original productions we fancy—and

in a short run we found the body quite comfortable, and the car to be quite a lively one. Details as to the delivery of B.S.A. cars, which can be effected by Messrs. The G. and W. Motor Exchange, Ltd., can be obtained by application to the new showrooms.

In the advertisement of Pilain cars in the last issue of THE MOTOR the price of the 16-20 h.p. model was incorrectly given as £320. The right price is £330, without tyres. The sole concessionaires for Pilain cars are A. Pellant, Ltd., 74, Shaftesbury Avenue, London, W.



One of the new B.S.A. cars, for which special showrooms are being opened at 34, Knightsbridge, London, S.W.

THE NORTH OF ENGLAND MOTOR SHOW.

Manchester's Motor Display—A Record Gathering.

THE motorcar show which opens in the Exhibition Building, Rusholme, Manchester, on Friday next is the second to be held in the Cotton City under the ægis of the Society of Motor Manufacturers and Traders, the previous motorcar exhibitions in the city having been organized by the Manchester Motor Trades' Association, which is now absorbed in the East Lancashire and Cheshire section of the society. One of the conditions of the agreement between the association and the society was that the former should hold an annual exhibition in Manchester for three years, and there is every evidence that such a show is desired and is desirable, for the exhibits this year number 158, as compared with about 130 last year, whilst certain manufacturers have not been able to secure space in which to display their wares.

The exhibition buildings are situated a few yards off the main Oxford road and not many minutes tram ride from the centre of the city, represented in this case by St. Peter's Square. Three-quarters of the centre of the building are devoted to pleasure cars, and the further end to commercial motors, whilst along the sides are grouped the various makers and agents for accessories and parts.

The whole of the prominent manufacturers are represented, some showing directly, as, for instance, the Star Engineering Co., Crossley Motors, Oldham Motor Co., Belsize Motors, Humbers, Newton and Bennett (S.C.A.T. and Nazzaro cars), Argylls, Lanchester Motor Co., Hollingdrake Automobile Co. (La Buire), Daimler Motor Co., Darracqs, White Co., Eclipse Machine Co., Wolseley Tool and Motor Car Co., Armstrong-Whitworth and Co., Iris Cars, Mass Cars, Brasiers, B.S.A. Co., F. S. Bennett

(Cadillac), Phonomobiles, Mansions Motor Co., Spyker Cars, S.C.A.R., Ltd., Brompton Motor Co. (Benz), the Cambridge Auto Co., Mann and Overtons, and Seabrook Bros. (R.M.C.).

Among the agents are to be found the Mallard Motor Co., of Liverpool (Austin cars, Darracq cars, and the Hupmobile), Tom Garner (Arrol-Johnston), La Sagesse Motor Co. (Enfield cars), Ward, Fawsitt and Co. (Lancia and Maxwell cars), Jackson and Kinnings (Fafnir), Anne Cowburn, Ltd. (Mercedes), Smith Bros. (Napier), A. H. Meldrum and Co. (Swift), J. A. Lawton and Co. (Metalurgique), H. H. Timberlake (Hotchkiss and Delage), Lookers, Ltd. (Minerva), J. W. Haworth (F.I.A.T.), E. J. Chambers and Co., Marshall's Motor Co., J. Cockshott and Co. (Rolls-Royce and Renault), Norman Crossland and Co. (All-days and Omions), T. Garner (Talbot), H. W. Cranham (Singer), Northern Supply Co. (Rover), W. Watson and Co. (Berliet), H. Whitlock and Co. (Deasy), H. Brady and Co., Williams Bros., and others.

All the prominent makers of accessories, fittings and car equipments will be displaying their goods, either on their own stands or through their agents. Tyres, lamps, speedometers, rims, wheels, chains, mats, tyre inflators, shock absorbers, oils, lighting outfits, plugs, clocks and every other article which, because of its utility or its beauty, appeals to the motorist will be found on exhibition.

In coachwork there will be found much that will interest, because not only the British coachbuilders but the body-building departments of the large motor works are turning out car bodies such as were never equalled, or at any rate excelled, before in this country, and it is to be noted that Manchester has become one of

the most important centres of this branch of the industry.

The price of admission throughout the show is 1s., except on Tuesday and the second Friday, when the charge until 5 p.m. is 2s. 6d. A band will play daily.

Manchester and its district is so rich in its industries that there is bound to be a large attendance of wealthy, smart people interested in high-class chassis and chic coachwork. The popular priced cars will appeal to those with more limited pockets, and, of course, in much greater numbers. No show has, in fact, ever been so comprehensive of all that is best, reasonable, and most attractive in the way of motorcar production as the one which will open its doors next Friday.

The New 20-30 h.p. Nazzaro Car.

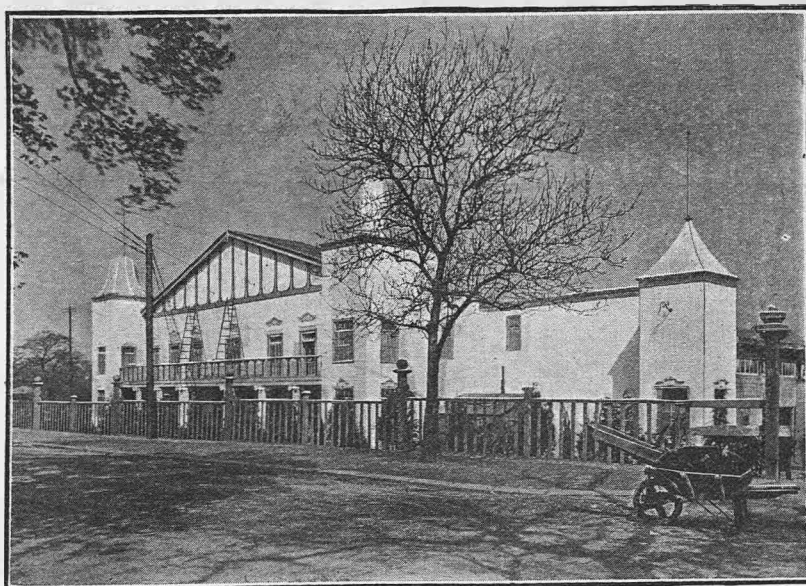
To be Exhibited at the Manchester Show.

A car which will attract a large amount of attention at the forthcoming Manchester Show is the 20-30 h.p. Nazzaro, which is being shown by Messrs. Newton and Bennett, of King Street West, Manchester, who are the sole concessionaires for the United Kingdom.

This car is designed by the two famous Italian racing men, Nazzaro and Fabry, and is being made at their works in Turin. High-quality workmanship and the best of material are being employed in the manufacture of this chassis, which, however, shows no great departure from conventional lines. The engine is four-cylinder, and, with inlet and exhaust pipes, is cast monobloc, the cylinder dimensions being 100 mm. bore by 140 mm. stroke, and the R.A.C. rating being 25.6 h.p. The valves are large, and the valve tappets, which are adjustable, are enclosed in the cylinder casing, although they are quite accessible. A double-jet carburettor feeds the components of the mixture to a mixing chamber and throttle, which are contained in the cylinder casting for the sake of neatness, accessibility not being affected. Ignition is obtained by a Bosch high-tension magneto, with variable timing. The oil is forced by a rotary pump to all working parts of the engine. Air pressure on the petrol is obtained from a small air pump mounted on the camshaft of the engine. The clutch is of the multiple-disc type, and is easily detachable. Four forward speeds and a reverse are provided, the drive on top gear being direct. The universal joint is fitted with ball bearings. The propeller shaft is enclosed in a tubular extension of the back axle, which transmits the thrust to the frame through a ball joint enclosing the universal joint. Brakes, steering gear and axles are all of the most approved design. The springs are long and resilient. The dashboard and sloping footboards are cast in aluminium, and the road wheels are of stamped steel.

Every car will be personally tuned by Mr. Nazzaro, who intends to guarantee that customers shall receive their cars in thorough working order.

The price of the chassis is to be £485, delivered in London.



Front view of the Exhibition Buildings at Rusholme, near Manchester, where the North of England Motor Show will open on Friday next.

BUYING A SECOND-HAND CAR.

How To Diagnose Defects and Where To Look For Them.

WHEN starting to write an article on the purchase of second-hand cars, one is confronted with rather serious difficulties. In the first place, it is obvious that such an article must be written in a generalized manner, to be of use to everyone contemplating such a purchase, whereas, in point of fact, the features and likely defects which one should look for in purchasing a second-hand car vary very considerably for the different makes on the market. For instance, an expert will no doubt know that in purchasing an X.Y.Z. car, it is essential to see how far the main frame has sagged in the centre, or, on the other hand, how much life is left in the teeth of the small differential pinions, whereas, on another car, those two points may be—like Cæsar's wife—above suspicion, and the likely fault be in regard to the wear of the bearings of the rear wheels, or perhaps the front wheels, or, in still another car, it may be the gearbox or the engine to which one has to look for the most likely shortcomings.

So it is that anyone purchasing a second-hand car who may read these few notes must still bear in mind that, over and above these generalizations, there are certain features in nearly all cars which want especial study.

In the past people have been to a large extent sceptical as to the purchase of second-hand cars, but we must say that, from our observations, we are rather inclined to think there is a move in the right direction in regard to this matter, and there are now a number of firms who deal in second-hand cars which are really good vehicles and honestly worth the money which is demanded for them.

On the other hand, however, it is still quite necessary to advise a prospective purchaser to use all reasonable care in making such a purchase, and even assuming the absolute integrity of the dealer and the desire on his part to sell only a good car, it may still be quite within the bounds of possibility that a serious fracture may occur within a week, which neither he nor anyone else could possibly have known without analytical test. The writer knows of a case wherein one of the cleverest motor engineers had passed a very favourable opinion on a really good second-hand car for a friend, and within about a week, or possibly 10 days, after the purchase, the crankshaft broke in half, due to crystallization of the steel.

The writer was also once personally connected with the purchase of a car in which the stub axle broke off quite abruptly in an exactly similar manner and through the same reason, although, of course, there was in this case no earthly chance of anyone knowing the proximity of this fracture without absolutely analyzing the material, as in but very few cases could a prospective fracture through crystallization be discerned, even if the material were carefully examined superficially.

If then, one is dealing with a firm, the chief consideration must be to deal with a company or individual whose reputation is such as to warrant that it has to be considered in each transaction effected.

If one does not feel confident to undertake the trial and examination oneself, it is certainly well worth while to obtain the assistance of one of the many motor experts who specialize in that line to undertake the work, and make a report accordingly. An item to which a large number of people who purchase second-hand cars do not pay strict attention is the general appearance of the car (that is outline and up-

to-dateness—not paint or varnish, etc.), and really this is quite an important factor, as if one is only just taking up motoring it is astonishing how quickly one becomes imbued with the idea that one wants a better car, a more up-to-date machine, or, perchance, a faster one. Look, then, in the first place to the general appearance as regards outline and proportion, and see if it is such as will satisfy one, two or three months after the purchase, when the first glamour of the new toy has worn off.

There is then the question for consideration as to whether the car to be purchased is an English production or a foreign one, and in either case the facility for, and cost of obtaining spare parts for renewals have to be taken into consideration. It is really by no means infrequent for a person to obtain a second-hand car, and when some important part gives out, to find that it is impossible to replace it without having it made to order, which is, of course, an exceptionally expensive repair. Therefore, consider the ways and means of obtaining, and also the cost of any new parts or replacements which are likely to be needed.

Next it is as well, if there is any possible doubt as to the year in which the car was made, or as to its power, to ascertain these facts for certain, as the reputation and value of cars amongst dealers in second-hand cars vary considerably with the "vintage." The foregoing suggestions are based rather on the idea of a purchase where cheapness is one of the chief considerations, and, of course, in any case the price to be paid is the ruling factor. If one is prepared to spend, say, from £150 upwards, there is no doubt that one can obtain every now and then a really good bargain in the second-hand car line.

Now, many purchasers of both new and second-hand cars are inclined to place speed foremost as their primary desideratum, which is more often than not quite a mistake. If the car is intended for ordinary touring work, the chief characteristics should always be reliability and comfort in combination with reasonable upkeep. Thus, a car which is thoroughly dependable and can always average 20 m.p.h., is to be preferred to a car which is going to cause a lot of trouble and be breaking down on the roadway every now and then, but which, when running well, can average 25 or even 30 m.p.h.

There is one other item in the generalization class which might be dealt with, and that is the number of cylinders, and, broadly speaking, multiplicity in the cylinders will naturally mean higher initial cost, and in most cases larger upkeep. But even this must not be taken as being a hard-and-fast rule, as some two-cylinder cars have a high market value second-hand, and cheaper four-cylinder cars might, no doubt, be purchased for less money.

We may now, perhaps, confine our attentions to some of the more general and more easily located troubles.

First of all, then, it is as well to have a walk round the car, see if it has a "list to port," or otherwise. An examination may reveal the fact that the rear left spring has received a small permanent deflection, which makes the car lower on that side than on the other. If this symptom be at all pronounced, it is sure to prove troublesome, and will cause a considerable amount of side sway which would not otherwise exist, besides tending to make the running of the car less even and more noisy. Then would come the examination of the springs themselves, and also the amount of wear in the shackle pins, as certain indications in the wear of the shackle pins and eye holes

BUYING A SECOND-HAND CAR.—Contd.

tell the expert much anent the manner in which the car has been driven.

Then it will be necessary to examine the wheels. The front wheels may be subjected to a lateral pull on the top, to see how much wear there is in the ball races, or plain bearings, as the case may be. If the wear here is found to be considerable, one may immediately assume that the steering-gear connections are also pretty well worn, and that the steering itself will be rather loose, as considerable play in the front wheels necessitates continual strain on all the steering connections, etc., which is, of course, bound to find materialization in undue wear.

Then the back wheels must be subjected to a similar treatment, to see how much wear has taken place on the squares, or driving dogs, or whatever the system of drive may be (if a live-axle car), and on jacking up one of the wheels and getting someone to hold on the transmission shaft brake, one may then by oscillating the wheel, obtain a good idea as to the condition of the universal joints, and this is rather an important point. There always seems to have been a tendency to make universal joints somewhat below their work, though just why this should be so the writer has never been able to fathom, but the fact remains, and one can hardly select a car in which, after six months ordinary usage, there is not more wear in the universal joints than there should be in proportion to the other parts of the mechanism.

Then, of course, there is the differential gear to examine and the bevel or worm driving gear, to see in what condition these wheels are, and whether they are likely to want renewing shortly.

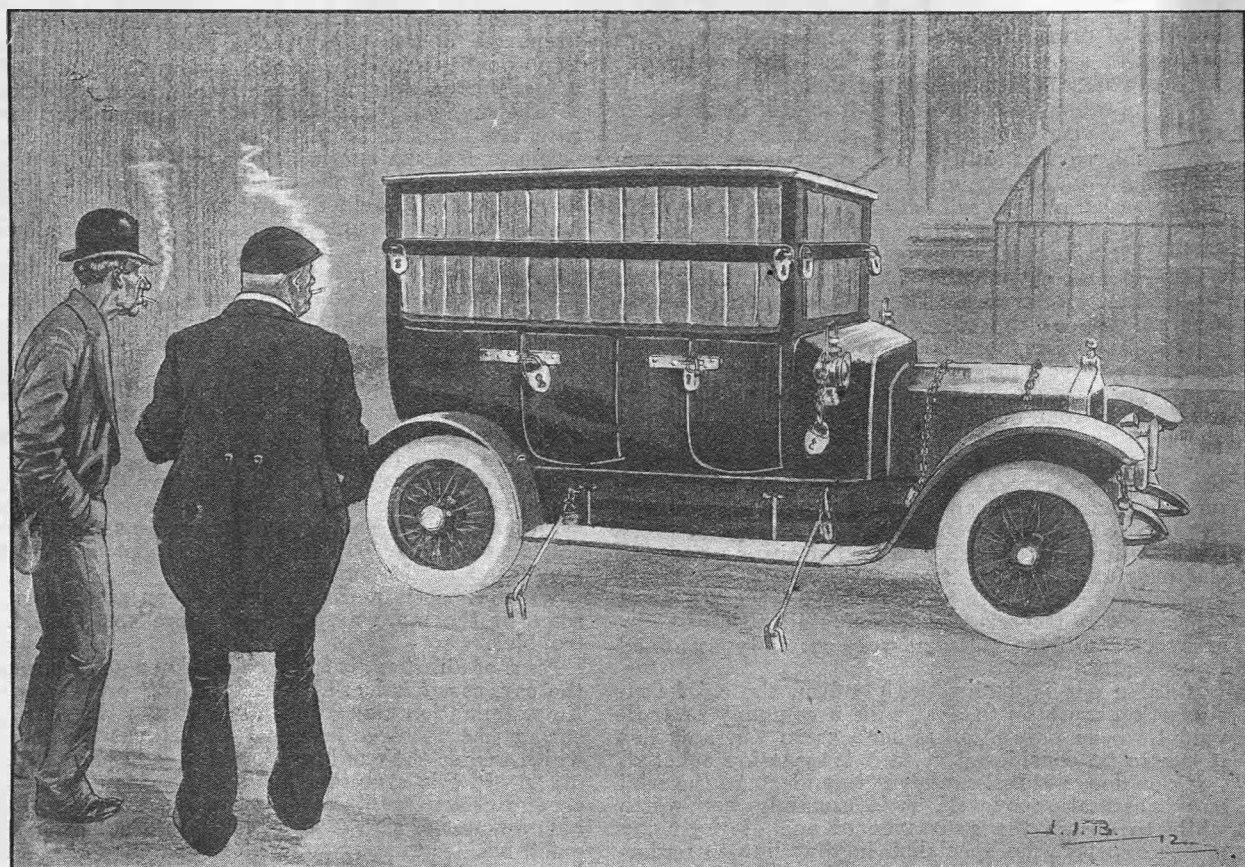
Many of the later-made cars have, of course, a serviceable inspection cover, in which case the work is

fairly easy, but in any case one should study the differential pinions and also the driving key or whatever the driving medium may be which connects the tail-shaft to the shaft of the small bevel gear, as this is also a point where one will frequently find the traces of bad driving or excessive wear to be very marked.

Next will come the matter of the brakes, which want really more than a superficial study, and one should always remember that because the side brake, when pulled on hard, prevents one from moving the car on the road, this is really no criterion whatsoever as to the actual operation of the brakes under ordinary touring conditions. Of course, the mere fact of the load in the car makes a great difference, whilst the action of the springs, etc., also comes into the question, so that one should make a point of trying the brakes under touring conditions.

Having now satisfied oneself that the wheels and brakes, etc., are in reasonably sound condition, and that the car is capable of running, one may begin to inspect the method of propulsion, and perhaps the first thing to do is to examine the engine. Run the engine reasonably slowly in a quiet place, and notice whether the shafts driving the magneto, pump, etc., run truly.

If one can run the engine in a reasonably quiet locality, then obtain an ordinary round wooden foot rule, or even an ordinary plain wooden rule, and, holding this on the top of the cylinder, with the ball of the ear against the other end, one can then detect any knock which there may be, especially if the engine is accelerated rather suddenly. An expert would be able to tell the difference, if there should be a knock, as to whether it is the gudgeon pin or the big-end bearing which is at fault, and if the latter, it may be that a small adjustment which may be made through a



Recent records of accessory thefts from motorcars would seem to suggest the above as the only safe method of leaving a car unattended.

BUYING A SECOND-HAND CAR.—Contd.

cover plate, or by taking down the base chamber, is all that is requisite to correct the fault.

The state of the piston rings may be gauged to some extent by trying the compression by means of the starting handle, on the assumption that one knows what the compression should be in the engine, as, of course, what appears to be a weak compression may be merely the fact that the engine is designed to run with a comparatively low compression. This test should be made after the engine has been run some little time, so that it is reasonably warm.

One may next turn attention to the flywheel and see if it is perfectly true, or if, when the engine is running at high speed, there is any sign of a wobble, which indicates that the rear bearing is rather worn.

Next, note the condition of the clutch, and the condition of the leather (if any), and also notice whether, when the clutch is withdrawn to its full extent, it is fairly firm on its spigot bearing and has not got out of truth. The universal joints, if any, between the clutch and gearbox will probably not need much in the way of examination, but, on the other hand, the withdrawal mechanism should be studied, as this is also a place in which wear is frequently found to obtain, as it is one of the points which the ordinary motorist is inclined to neglect as regards lubrication.

Now comes the item which most people "dive for" straight away when examining a second-hand car, viz., the gearbox. A cursory glance at the wheels will reveal the condition of the gears themselves, and one should then examine more minutely, to find out how much play there is in the shaft, i.e., how much wear there is in the bearings, more particularly with regard to the spigot bearing. If there is much play in these shafts, one may assume that the gears (at any rate, the indirect gears) will be noisy, or will very soon become

noisy. If these points are found to be satisfactory, it is as well then to look round the outside of the gearbox to be sure that none of the supporting arms is cracked, or that the sub-frame, if any, is twisted in any way.

If the car under consideration is found reasonably well to bear the brunt of an examination as indicated above, one must then come to a practical road test, and see if the driving seat is suitable for reach, etc., and, in other words, whether the car is comfortable.

The run should be as far as one can reasonably demand, say 25 or 30 miles, including at least one good hill with a gradient of one in eight, which should be surmounted with a full load with some little reserve of power; that is to say, the car should be able to climb it on the low gear (if this gear be necessary) with only about one-third of full throttle requisite to keep the engine running at a good speed.

In conclusion, we might point out that too much reliance should not be given to the mere appearance of paintwork or varnish, etc., as a few pounds will work wonders in this respect, and it is the mechanism of the car which is the most important part, and if this is found to be in really good condition, the car may then be sent to a coachbuilder, who will make it look quite smart in the matter of paintwork for a comparatively small sum.

Finally, we would say that the best way to obtain a really good bargain in the second-hand market is to await one's opportunity, and not to go round with the idea of walking into certain premises and purchasing offhand a car which one sees there, but rather to have a look round and wait until a good opportunity occurs. In this way one may certainly obtain a really good bargain, and we have heard of many cases where cars purchased second-hand at a very small figure compared with their original cost have given as good service as if they had been purchased new.

Hammersmith Speed Limit.

The Local Government Board have fixed the date for the local inquiry to be held into the application of the London County Council for a speed limit along Hammersmith Road, and for Hammersmith Broadway, for Thursday, 29th February, at the County Hall, Spring Gardens, S.W.

The following are the restrictions asked for:—

A 10-mile speed limit for so much of the Hammersmith Road as extends from Brook Green to Hammersmith Broadway.

A five-mile speed limit across Hammersmith Broadway and upon the immediate approaches thereto.

The Royal Automobile Club and the Automobile Association and Motor Union are acting in conjunction in offering strenuous opposition to the application, and it is hoped that any person interested will communicate with the secretary of either of these organizations.

A conference of the various organizations representing road users of all descriptions is being held in order that strong and combined evidence may be given against the application at the inquiry.

The application is one of unusual interest.

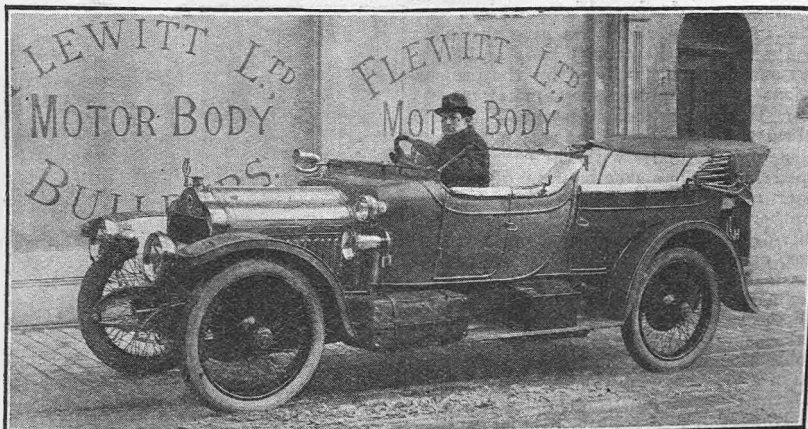
The "danger spot" in the village of Crayke (Yorks.), which consists of a blind corner at the bottom of a hill, owing to cottages (already condemned) abutting into the roadway, is likely to be removed at an early date. The A.A. and M.U., which has been moving in the matter, is informed that the county council will apply for financial assistance from the Road Board.

A Popular Midlander.

The photograph below depicts Mr. George F. Heath (of Heath's Garage, Ltd., Birmingham), on his 26 h.p. Silent-Knight Minerva "Golden Glider," bodywork by Flewitt, Ltd., fitted with Rotax electric-lighting equipment, Russell front screen, Auster rear screen. The car is finished in gold, and at present is at Monte Carlo. Mr. Heath intends shooting in the Grand Prix (pigeon shoot), he having won considerable repute at the London Gun Club, beating most of the English crack shots, including last year's Grand Prix winner. Mr. Heath, together with his wife and Mr. and Mrs. Russell Fletcher (Mr. Fletcher

was lately with the Calthorpe Motor Co.) have gone by car to Monte Carlo. In mentioning Heath's Garage, Ltd., we hear that they are doing a big business and are shortly taking over a large Midland concern, which will make them one of the largest provincial motor dealers.

The A.A. and M.U. learns from the county surveyor that steps are being taken to strengthen the foundations of the Lewes-Uckfield road, which has recently been in so bad a condition that fittings have been shaken off cars and lamps extinguished by the severe vibration caused by the rough road surface. In the meantime the road is now being steam rolled.



Mr. George Heath, of Birmingham, on his 26 h.p. Minerva "Golden Glider."

THE CARRIAGE SECTION.

Dealing with the Construction, Equipment, and Appointment of Motorcar Bodies.

The Care of Springs.

THE spring suspension of the modern motor-carriage has received great attention of late, and as the subject is of some importance to the chassis manufacturer, the motor-carriage builder, and, not least of all, to the motor-carriage owner and user, it is likely to occupy both the time and attention of all of the interested parties until some nearer approach is made to the perfect spring suspension of the motor carriage. In the meantime motor chassis are being fitted with the best and most perfect springs which are available at the present time, and these require to have a certain amount of careful attention devoted to them if they are to give the best results of which the individual examples may be capable.

The making of springs has passed through many phases. In the first instance each plate was beaten out by hand hammers from the rough steel billets, then a rough method of rolling the plates was adopted, and it was not until 1826 that the rolls for rolling the metal into the most desirable shape were invented and the English spring steel makers were able to compete with the Continental ones, chiefly German, and to drive them out of the market.

The particular shape given to the steel by these rolls had previously been given by hammering the plates, producing a slight hollow when two plates were fitted together. The object of this hollowing of the steel was twofold, the edges could be fitted more closely, and there was a little space for a hard lubricant. Many modern springs have the flat surfaces ground so that they fit closely across the face, and there is a freedom from roughness which enables one plate to slide freely over the other. This smooth grinding of the flat of the spring has its disadvantage, for there

is no place where even a little grease may lodge to provide lubrication.

The object of fitting the springs being to provide a sufficiently strong elastic body between the axle and the chassis, movement on the part of the component leaves is inevitable, and under pressure this movement of metal on metal will squeeze out all lubricants and produce a noise or squeak. This movement naturally destroys the continuity of the paint on the edges and allows water and dirt to get into the interstices and help to dry up the oils, etc., used. The preparation of the springs for their work is of importance, for if they are made in the best modern manner there should be some space in the centre of the plates throughout their lengths.

The plates, after being finished, should be coated on both sides with a thin coat of paint in which japan is the chief component. The object of this is to protect all those parts of the spring which do not rub one on the other. The plate should then be coated with a mixture of hard Russian tallow, and graphite, and put together, the surplus grease being cleaned off. When this procedure has been followed faithfully the springs do not rust up or make any noise so quickly as when they are merely coated with some rough sort of thick paint or grease. Motor-carriage springs should be taken off at least once a year, and properly cleaned and painted. They are usually fitted where they are not easily reached for cleaning and in a position where wet and mud accumulate.

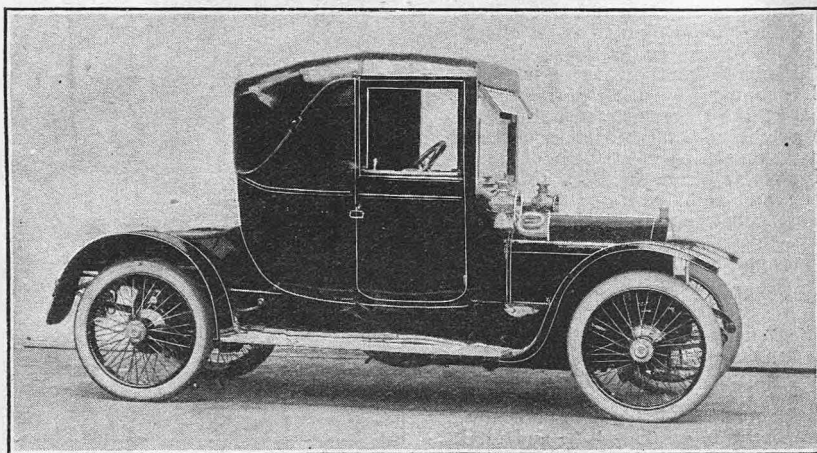
The conditions surrounding the places where the springs are put to do their work are the very worst possible for the successful performance of that work, and care should be taken, first of the perfect manner in which they are turned out, and, secondly, the frequency with which they are properly overhauled.

A New Wolseley Two-seater.

The illustration which we give shows how the lines of the chariot body of 100 years ago are being utilized for the proportions of the present-day motor-carriage. In this particular instance of the application of the design the rear portion is that of a landaulet with the cabriolet-shaped hood. The combination of particular names having definite meanings is rather confusing, cabriolet being an owner-driven carriage with a rounded cover, open in the front, the lower part being enclosed, and a landaulet being a landau coupe—that is, cut down—the earliest examples of the landaulet being of the same form as the landaus. The combination has resulted in the production of a very convenient motor-carriage.

In the instance illustrated the carriage is arranged for the hood to fold well down, the front remaining standing as a windscreen, the upper part of which swivels outwards. The boot contains the usual fold-down seat. It is mounted on a 12 h.p. Wolseley chassis.

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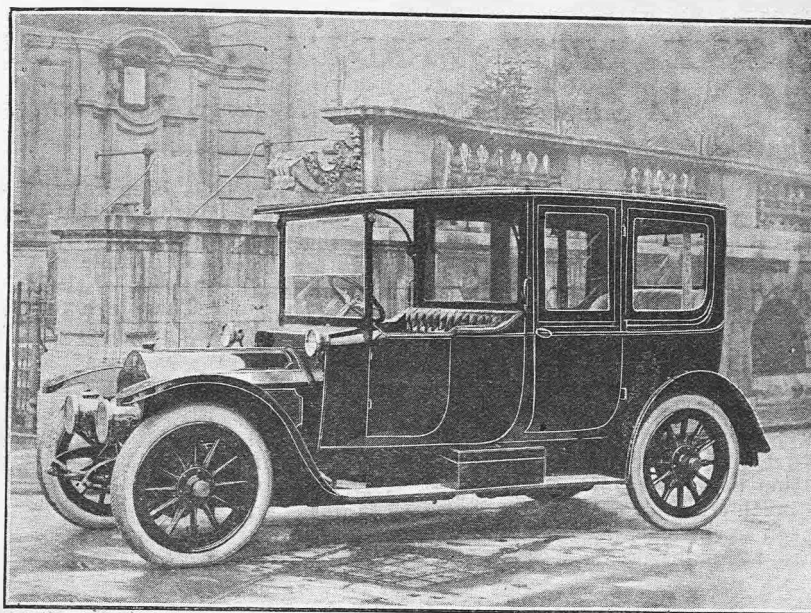
Cabriolet with standing front on a 12-16 h.p. Wolseley chassis by the Wolseley Motor Co.

CARRIAGE SECTION—Contd.**A Lorraine-Dietrich Limousine.**

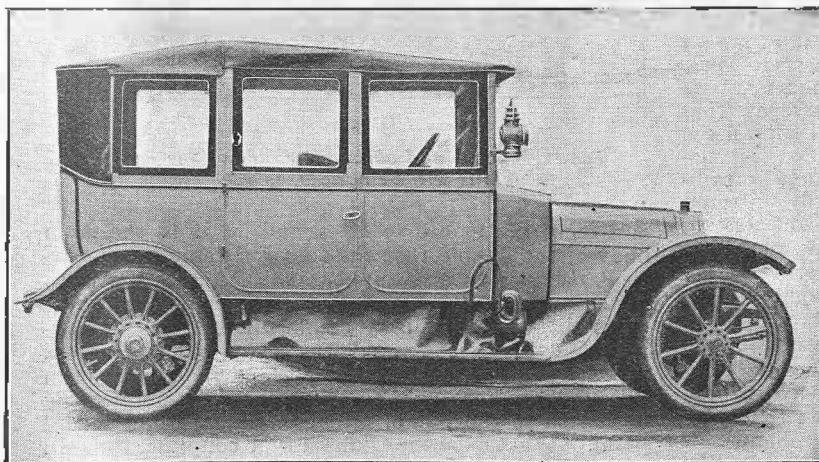
On an 18-20 h.p. Lorraine-Dietrich chassis, for which Messrs. Charles Jarrott and Letts, Ltd., are the agents, there has been placed by Messrs. Thrupp and Maberley, Oxford Street, a special limousine, of which we give an illustration. This particular combination is a new one, and shows how it is possible to place on a reasonable wheelbase with moderate h.p. a comfortable and roomy six-seated enclosed carriage. The lines of the bodywork harmonize with the extension front and the size of the chassis; not always a success. The carriage is painted a dark red, with the front seat upholstered in red leather. The upholstery of the interior is carried out in fawn cloth, the whole carriage being finished off in the well-known style of the carriage-building firm.

A Useful Trial Motor-carriage.

Peugeot (England), Ltd., of Brompton Road, have had prepared for the convenience of their prospective customers one of 12-15 h.p. chassis completed with a Coventry saloon car. The carriage work has been completed on popular lines, and the interior is comfortably upholstered for the service in which the car is to be engaged.



Limousine on the new type 18-20 h.p. Lorraine-Dietrich chassis by Thrupp and Maberley, London. Supplied by Messrs. Charles Jarrott and Letts, Ltd., to J. E. Withers, Esq.



A "Coventry" torpedo cabriolet on a 12-15 h.p. Peugeot chassis.

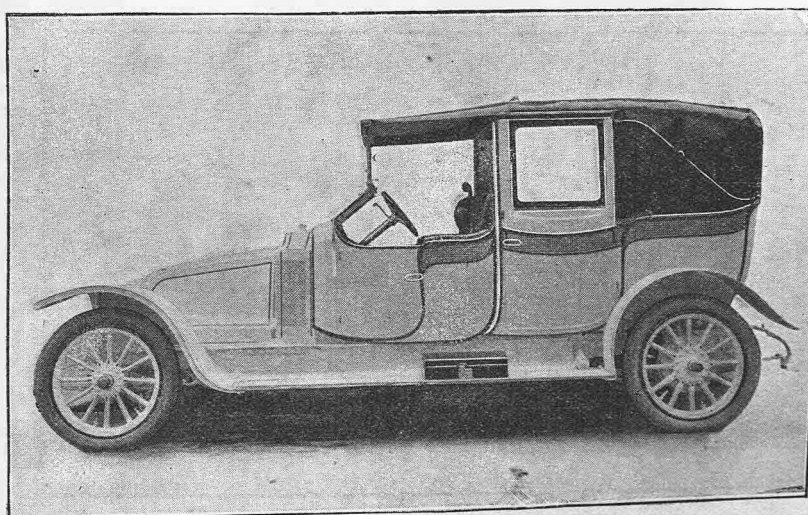
Our Growing Exports.

The importance of the export business to the motor industry of the country is chronicled in the monthly and annual returns of Trade and Navigation which are regularly issued, but the particular manner in which the business is created or carried out can only be gathered from individual instances. Why the business is growing is not difficult to understand when these individual instances are inquired into and examined, as in the case which we illustrate. The company of Windovers have for a long time enjoyed a reputation in foreign countries for the wearing qualities of their coachwork, and, naturally, when the importer ceased to find so extensive a use for his carriages and turned his attention to motors, he went to the concern about whom he knew something from past experience of the value of its products.

This carriage is mounted on a 20-30 h.p. Renault chassis, and has been especially built for a client in India, through their Bombay house, and is an example

of the design which is found acceptable as an open and closed carriage, as necessary a form of vehicle for India as for Great Britain. The colour is ivory-white, with a band of green cane work, and relieved with green lines. The interior is upholstered in light green leather. The coachwork has been carried out by Windovers, Ltd., London, at their manufactory at Huntingdon.

From the tone of conversation amongst the members of the Carriage Builders' Institute, it is apparent that business is very good indeed in all parts of the country. It is evidently becoming the practice of motorists to place their orders in the winter months, so that the new cars may be ready in time to take advantage of the first of the fine spring days. The principal chassis manufacturers are full of work, and the delivery is rather slow for the desire of those who are anxious for quick delivery.



A cabriolet in ivory white for India, on a 20-30 h.p. Renault by Windovers, Ltd., London.

THE NEW MODEL 20 h.p. SPYKER CAR.

A Substantial and Particularly Well-thought-out Chassis.

MOST of us will no doubt remember that in the days of our childhood, when studying our geography, we were led to understand that the country of Holland was renowned chiefly for the production of laces, certain spirits and liqueurs, and sundry other things of less national importance; but, needless to say, the production of automobiles found no mention. Even in these days, *Holland, as a country, cannot claim pre-eminence in regard to the production of motorcars, and, in so far as we are aware, there is only one car of note which finds its way from that country to these shores, the car in question being the Spyker. If, however, one cannot give much credit to the country in regard to quantity, one can nevertheless, without hesitation, say that in regard to quality, this new Spyker chassis is as

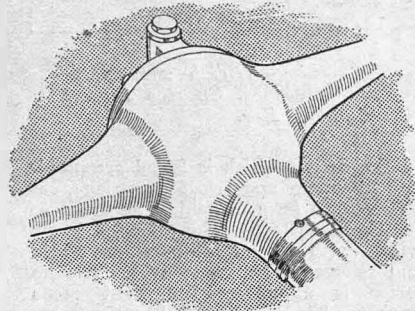
thoroughly up-to-date and representative of good practice as it is distinctive in its singularity.

Without further preamble, we may say that although there is nothing radically altered in the design, the main constructive features remaining as heretofore, nevertheless the chassis as a whole is a distinct improvement, and has embodied in it many small points which are worthy of consideration by anyone interested in motoring matters.

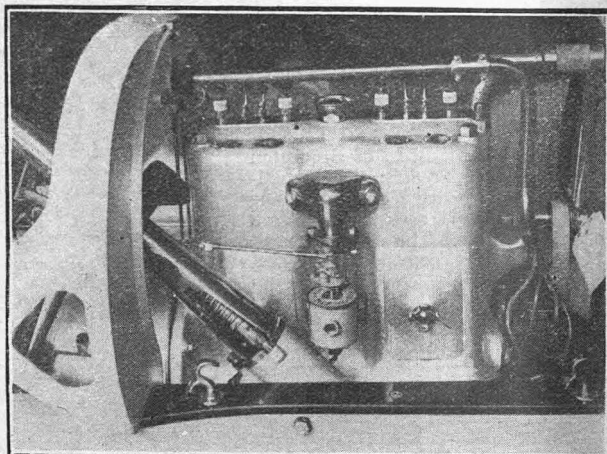
The engine is a four-cylinder one, with a bore and stroke of, respectively, 90 mm. by 135 mm., the cylinders being cast monobloc. The valve mechanism is arranged on identically the same system as in the recent models, namely, with large helicoidal gears cut on the extended webs of the crankshaft, which gearing

has been referred to once or twice recently in *THE MOTOR*, so that by mentioning the fact that the adjustment of the valves has been improved and rendered more simple in operation, we may perhaps leave the question of the valve gearing in the present instance.

There are four aluminium cover plates, two each side of the engine, which enclose the valve mechanism,



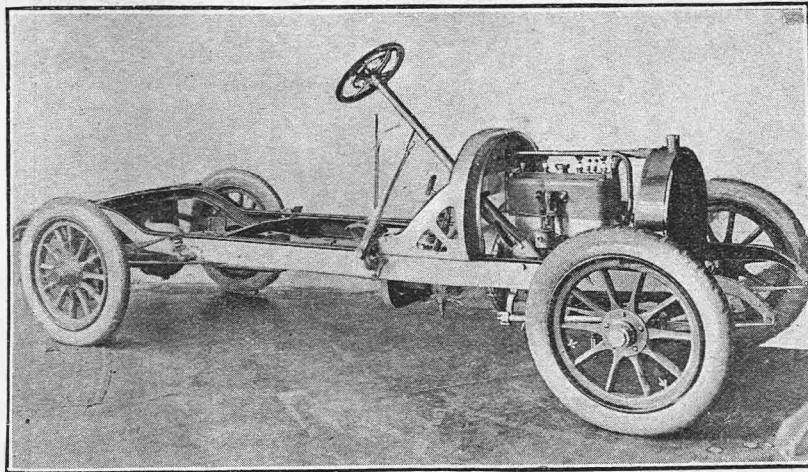
The differential casing is made in one piece with a large erecting and inspection plate at the rear.



The right-hand and carburettor side of the engine, which, it will be noticed, is very clean.

and these plates are so fitted and let in to the main body of the engine that the tout ensemble has a particularly neat external appearance. Across the front of the engine, and driven by skew gearing, there is a cross shaft which is responsible for driving the magneto and the water pump, the latter being disposed slightly to the left of the engine and the magneto on the right. There is nothing particularly noteworthy in regard to the pump, although perhaps one should point out that even the Oldham-type coupling, through which the drive is conveyed, is enclosed in the aluminium casing, so that there is really no part exposed to dust or other extraneous matter. The connections

are also very direct, and the difference in the height between the inlet and the outlet pipes is less than one usually finds. The magneto is one of the new type Bosch, and is in a readily accessible position, whilst we notice that the sparking plugs are now mounted in the top of the cylinders. The vent pipe from the crankcase, instead of coming up by the side of the engine and gradually exuding oil on everything in the vicinity, is arranged to come right up to the top of the cylinders in the very centre of the engine, so that its functioning should be cleaner than is generally the case. Both the exhaust and the inlet manifolds are internally cast, and the hot air for the carburettor is taken through the centre of the engine from a ribbed expansion box surrounding the exhaust pipe, and the question of carburation has been studied to such an extent and

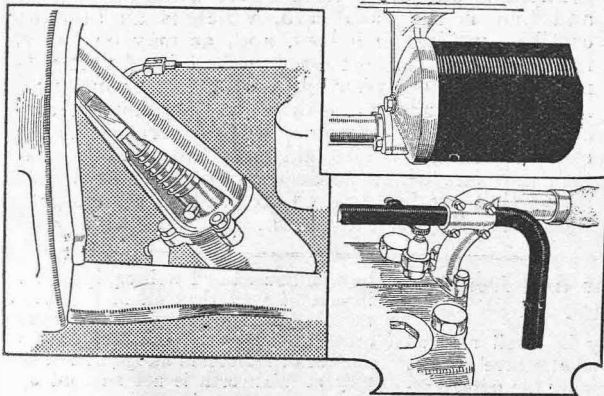


The new 20 h.p. Spyker chassis.

SPYKER CAR.—Contd.

deemed of so much importance, that the carburetter was decided on in the first place and the engine then designed to suit the carburetter. One ought perhaps to mention that the carburetter which is so highly thought of is a Zenith.

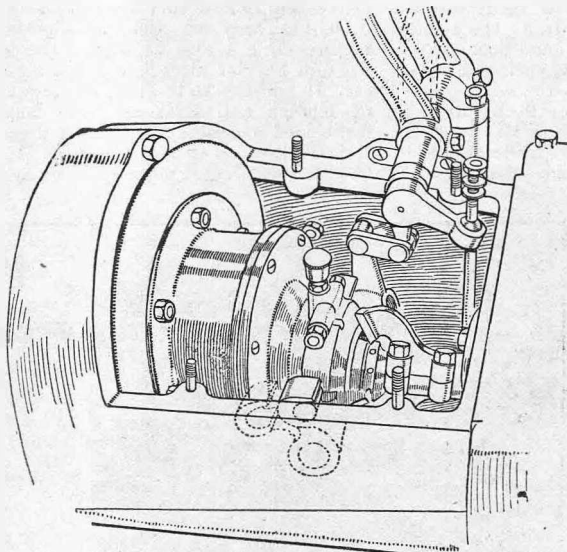
One other point in connection with the engine should be mentioned, and that is the particularly neat arrangement of the wiring and the method of carrying the wires, and from one of the illustrations it will be seen that the outlet pipe for the water from the top of the cylinders has a small extension, which constitutes a clip bracket for carrying a copper pipe, in which the wires are conveyed from the magneto to the plugs. Admittedly this is but a small point, but it is



On the left, the base of the steering column is shown slotted to constitute the guide for the throttle control movement. On the right, at the top, is a sketch of the neat bracket, supporting the exhaust box; beneath, the water pipe to the top of the radiator is seen to be extended to form a clip bracket for the copper tube carrying the wires from the magneto.

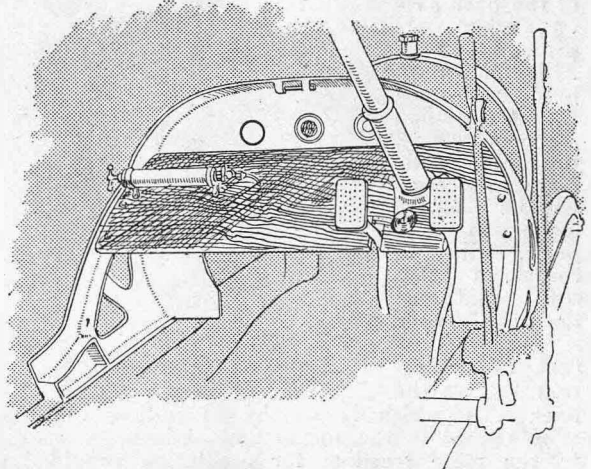
one of those items in detail construction which go to show how thoroughly the designers have done their work.

The engine, clutch, and gearbox are mounted on a unit system, the clutch being a metal-to-metal steel plate one, which can be removed without the necessity of interfering with the rest of the unit. This arrange-



The cover removed from the clutch case; the dotted lines indicate the way in which the clutch withdrawal lever moves back, so that the clutch may be removed without dismantling the pedals or otherwise disturbing the power unit.

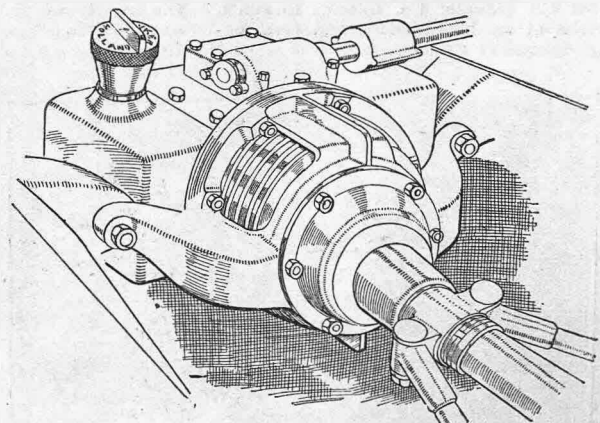
ment is particularly ingenious, as may be gleaned from the illustration of this portion of the mechanism. The clutch and brake pedals are mounted in such a way that the clutch pedal may be brought out of engagement with the withdrawal mechanism, so that when the coupling is undone and the cover plate of the



The cast aluminium dashboard which is built up in halves, and is very substantial.

clutch removed, the whole clutch mechanism may be taken away without interfering with the pedal control work or any other portion of the power unit.

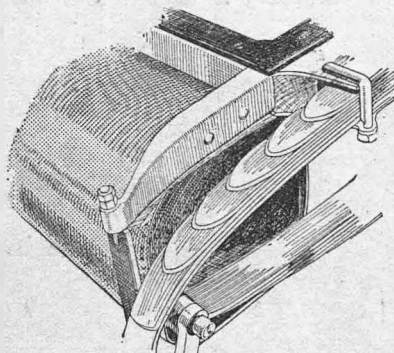
Four speeds and a reverse are provided, the control being through the medium of a gate, with the direct drive on the top speed. Although externally the gearbox appears to be slightly below the average in overall dimensions, when one comes to examine the matter in detail one finds that a large portion of what appears to be the gearbox is in reality only a reserve oil tank communicating with the engine, so that it will be gleaned that the construction of the gearbox is kept within small bounds. Fast with, and at the rear end of the gearbox is a large disciform piece of metal, to which is bolted the exceptionally substantial four-armed carrier bracket which supports the spherical housing of the torque tube, and we really do not recall a more mechanical or more thorough "job" than the construction under consideration. The internal expanding brake is, of course, mounted inside this four-armed carrier, the brake drum being provided with cooling ribs, and from this point a long taper torque tube encloses the shaft which conveys the drive to the bevel-driven rear axle. In addition



The anchorage of the spherical housing of the torque tube and the arrangement of the triangulated tie rods are carried out in a really exemplary manner. One third of the width of the "gearbox"—to the left—is a reserve oil tank for feeding to the engine.

SPYKER CAR.—Contd.

to the torque tube, the back axle is connected to the forward end of the torque tube—near its point of anchorage—by means of triangulated tie rods, so that every movement of the back axle is adequately provided for. Although not new, we illustrate the method of constructing the rear axle casing, which, as will be seen, is made in one piece, with, of course, a large cover plate at the rear. There is another feature in connection with the back axle which is worthy of notice, and that is in regard to the spring pads, which, in addition to the mere freedom for oscillation provided on



The main frame neatly extended to carry the petrol tank.

a fair number of cars, have also a certain amount of latitude for lateral movement, so that one can see that the movement in question is practically universal. The spring pads in question are provided with greasers, and the general arrangement is certainly quite distinctive. All the shackle pins, etc., are provided with a lubrication device, a remark which is applicable generally to the steering connections, etc., etc. The suspension at the rear of the chassis is by means of three-quarter elliptical springs, the ordinary type being used in front of the frame, which is considerably upswept at the rear and somewhat inswept in the front, whilst the petrol tank at the rear of the chassis is supported by a neat extension of the main frame instead of by an ordinary hanger bracket.

There is one other item which demands comment, and that is the dashboard, which is an aluminium casting built up in halves, and, as may be gathered from the illustration reproduced, it is of particularly neat appearance and very substantial in construction. As may be gleaned from the points enumerated above, and from the illustrations which we reproduce, this chassis is really a thoroughly well-thought-out production and one which possesses a number of points in detail that are highly creditable. The address of the agents is: Spyker Cars, Ltd., 97, Long Acre, London.

Silent Knight Cars Added to Daimler Co.'s Hiring Department.

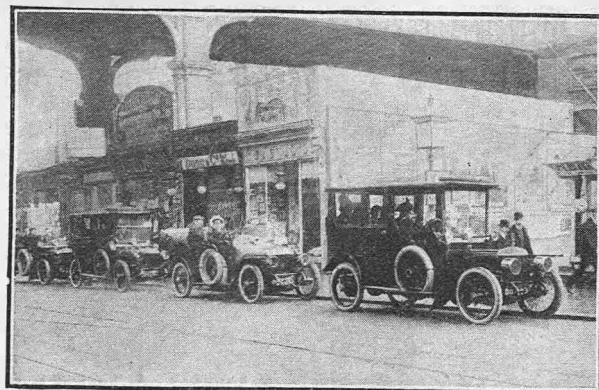
The Silent Knight once more justified its title one day recently when a number of Pressmen travelled from London to Brighton and back again in cars of this famous type. The Pressmen expressed themselves pleased with the trip, and had nothing but praise for the silent and comfortable cars that carried them. Silent Knight cars are now a feature of the Daimler Co.'s hire department. The Daimler garage premises in Marylebone Lane, London, are used entirely for cars which are let out on hire. The staff numbers 140, and that fact alone is some indication of the great change which is taking place in the methods of the carriage user. A visit to the garage buildings in Marylebone Lane is an education in administrative methods. Account is kept of every detail, every car is examined before it is hired out as well as when it is returned to garage, and all adjustments and every repair made immediately it is necessary. Of much interest is the announcement that the Daimler Co. intends to run a series of combined motor and river excursions next summer.

Bleriot Extensions and Developments.

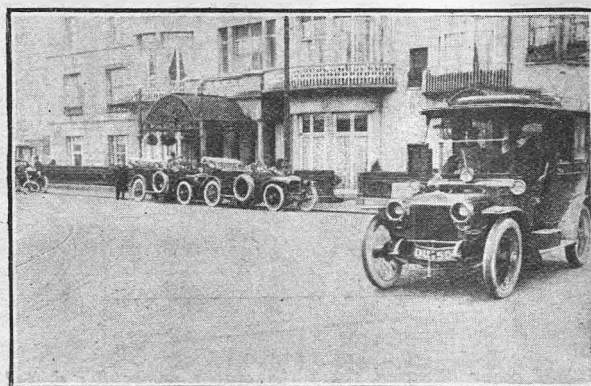
The motor industry has well reached that stage of development where it feels itself justified in assuming the outer garments of prosperity in the shape of handsome buildings in which its operations may be conducted. But it is an essentially practical industry, in that it desires utility and suitability as well as smart external appearance. Thus in London, there are gradually taking their position a number of magnificent motorcar showrooms, eminently adapted to the class of trade for which they are intended, and in the accessory branch of the trade the new premises just taken at 57, 58 and 59, Long Acre, and exactly facing the end of Endell Street, to house the staff of Messrs. Bleriot, Ltd., are likely to rank as one of the finest. It affords over 30,000 sq. ft. of floor space, which means a five-floored building with 50 ft. frontage and a depth of 140 ft. to the street at the rear. A large ground-floor showroom, excellent offices, capacious stores, a whole floor devoted to the work of installing electric-lighting outfits are among the uses to which the space will be put, so that it is not going too far to say that Bleriot, in a couple of months time, will

be well housed and well equipped for the important part they fill in the motorcar trade of this country—not to mention other important branches of their work outside of motorcars altogether. The factory at Walworth is not affected by the change, as there is need for every inch of space occupied there. It is interesting to note, by the way, that Messrs. Bleriot employ only adult male skilled labour, no women or apprentices being employed, so that whatever goes out under the name of Bleriot may be as well made as it can be and as reliable as it should be.

If there be any reader of THE MOTOR who is not more or less familiar with the Klaxon horn, he should hasten to acquaint himself with this warning signal, the fame of which reverberates throughout both hemispheres, by applying for a copy of the well-compiled booklet issued by the Klaxon Co., Ltd., 41, Great Portland Street, London, W. It is not uninteresting to note that Klaxon horns are used not only as warning signals on motorcars, but also as factory hooters, fire and burglar alarms, distress signals, etc. In addition to treating of every type of Klaxon and Klaxonet, the booklet mentioned contains illustrated descriptions of the two special types of Klaxon batteries which the company now market.



The cars outside Brixton Station.



The cars outside the Royal York Hotel, Brighton.

A DAIMLER CAR RUN TO BRIGHTON.

OTHER PEOPLE'S VIEWS.

The Perfect and Imperfect Chauffeur.

More Interesting Views on the Problem—The Question of Commission.

A Reply to "P.H.M."

If your "O.P.V." columns are open to both "Master and Man" I should very much like to relieve my mind of the following:—The views of "P.H.M." in the 30th January issue are, no doubt, correct so far as they go, but why does he not differentiate between the good and the imperfect chauffeur? It is positively disheartening to read from week to week the constant abuse levelled at the chauffeur as a class. Is it not time that men like "P.H.M." realized that roguery exists in every walk of life, and that chauffeurs, as a class, are not nine-tenths composed of rogues? In whatever walk of life one cares to look, it will be found that much the same takes place as "P.H.M." complains about, and the only cure lies with the employer himself, and should he be such a fool as to be unable to detect dishonesty in his chauffeur, the sooner he gives up motoring the better it will be for his pocket.

It may seem surprising, but none the less it is a fact, that there are honest chauffeurs about, in which category I think I can safely place myself. Now, take my own case, I had a public school education, and served my time later with the old M.M. Co., in Coventry and London, with the intention of following up the technical side of the motor industry. Unfortunately, through family troubles bringing financial difficulties I had to give up this idea, and for the past few years have filled the position of chauffeur and mechanic to a "gentleman." I say "gentleman" advisedly, as there are a great number of men who sail under this patronymic who have no right to, no, not even one-tenth of the right I have to myself. Imagine the effects on the feelings of a man situated like myself, after reading the abuse complained of. Personally, it makes me positively ashamed of the position I hold, and I should not under any circumstances, reveal to my relations the work on which I am occupied, and I think, if men like "P.H.M." endeavoured to make the chauffeur's life a little brighter instead of constantly reviling the man, he, and they, would be doing more good than at present. The chauffeur's life is by no means a bed of roses. I have three cars under my charge, have a man for washing, etc., and earn £3 per week. Many may say "Why that is Utopia," to a common motor driver. But is it? Look at the other side of the picture. I am practically tied to the place every day. I rarely know in the morning whether I am to have the evening to myself, I can seldom make arrangements for an evening off. I have many interests in the local village life, but these have to be constantly thrown to the wind, as it is purely problematical, until late in the day, whether one or the other car is wanted in the evening or not. This, of course, is an unavoidable state of affairs, I merely mention it to show that even if a man is in a good situation the social life of the chauffeur is not quite as pleasant as many suppose.

A.K.

The Question of Commission.

I was very pleased to read "P.H.M.'s" article in a recent issue on "The Imperfect Chauffeur," as the commission question is one in which I am deeply interested. I hope it will be the means of raising a discussion in your columns, so that the matter may be thoroughly ventilated.

"P.H.M." writes, apparently, from his experience as a private motorist, but from my own experience in the "trade," I regret to say that the practice of giving commissions is far more widespread than he suggests.

There is a class of dealers and repairers who have a regular scale of commissions, so much on tyres, so much on oil, etc., but fortunately they are in the minority. This I know for a fact, for drivers have boasted to me of the large addition they were able to make to their wages by getting their masters to deal with these firms. The majority of dealers, of course, refuse to do business in this way, but they are, nevertheless, compelled in certain individual cases to give gratuities in some form or another. If some of the largest firms find it necessary to distribute largess amongst their clients' chauffeurs and coachmen, how much more so must it be for the smaller fry, to whom the loss of one customer is a very serious matter?

It is all very well for "P.H.M." to advise car owners to study their accounts and see that they are not overcharged—that of itself will not prevent drivers pocketing occasional commissions. In any case I think that "P.H.M." is wrong in assuming that it is the owner who eventually pays—my experience is that, in nine cases out of ten, it is the dealer who has to bear the loss. And for the following reason:—Nearly every accessory and supplies, including oil and petrol, has to be sold at a certain published price, which it is obvious the dealer cannot add to without great risk of detection; therefore, if he is to recoup himself he must advance his charges for labour. But if he puts up his price for labour it is almost certain he will have disputes with his clients, and lose work through his prices being too high. Rather than run these risks therefore, he pays the commissions out of his own pocket.

Of course it is morally wrong and against the law (not always the same thing) to give commissions, but are there not exceptional cases when it becomes, almost, justifiable? For example: Mr. A. buys a car through B. and Co. (Mr. A., be it noted, has owned other cars, but his knowledge of motors is somewhat rudimentary), and as his chauffeur has been with him a number of years he places great reliance on his judgment. B. and Co. know this, and they likewise know that the said chauffeur is not very well disposed towards the new car, although it is a very good make. When the car is delivered, therefore, as an inducement for him to take a little extra interest in it, and to prevent unfounded complaints, they give him a gratuity. The result is

O.P.V.—Contd.

satisfaction all round, where dissatisfaction and unpleasantness might have reigned. Are B. and Co. very much to blame? The same thing applies to many repair jobs.

I do not think that many of the motoring public realize to what an extent the dealer—particularly the small man—is in the chauffeur's hands. Even where the owner drives and places his orders himself, the chauffeur has a lot of power. And where the master leaves everything in his driver's hands, matters are much worse for the agent, unless the driver is an exception. If a chauffeur asks for a commission the agent knows that if he refuses complaints will be made about his work and he will lose a customer. And not only that, for where two or three chauffeurs are gathered together there will be talking and comparing of notes, as a result of which the dealer probably loses further business. Then on the other hand, if he gives commissions and is detected and prosecuted, the Official Receiver stares him in the face! Truly he is "between the devil and the deep sea." It may be urged that the chauffeur is also putting himself within the reach of the law, but then it is far more serious for the dealer to be found out than for him.

Now, I do not wish to infer that all chauffeurs are dishonest. I am pleased to say that I have the acquaintance of several men who would scorn to accept commission in any circumstances. I think the average chauffeur does not consider that in accepting commission on his master's orders he is really acting dishonestly. He seems to look at it in the light of a business transaction, and as a right handed down from his forerunner, the coachman. I believe if he were told that such commission was really a bribe, and that in accepting it he was running the risk of criminal prosecution, he would be vastly surprised.

The blame for this state of affairs ought not to be laid wholly on the agent and the chauffeur—the owner is just as culpable. Nor is it fair to expect that the former can stamp out the practice unaided; the owner must back him up. There is no reason why the R.A.C. or A.A. and M.U. should not take a hand in the matter too. As I said before, I am sure that very few chauffeurs (and not many agents) are aware how far the Bribery Act applies to them. If a card detailing the pains and penalties of the Act were distributed by the R.A.C. amongst its members, associates, and repairers, it would do a lot of good. And if car owners would get an understanding in writing from their dealer not to give commissions, and in return promise (also in writing) to thoroughly sift all complaints before transferring their patronage, the result would be beneficial to all concerned. But I am afraid the love of getting something for nothing is too deeply ingrained in human nature for the practice ever to be completely wiped out.

MALONE.

Electric Car Lighting: Dazzle and Glare.

We have followed the various letters on this subject recently appearing in your columns, and from a perusal of some of these one might easily imagine that Messrs. Lodge Bros. were one of the first to design an efficient electric headlight; but the question of electric lighting for cars has been taken up by them so recently that their experience in this regard cannot be considered large, whereas we had placed on the market and supplied a large number of very satisfactory and highly-efficient electric headlights years previous to Messrs. Lodge Bros. taking up this business, and, moreover, we were the first to educate the motorist up to the fact that it was not only the long-range beam that was required, but also an evenly-diffused light illuminating the whole of the road, and in this respect practically all our competitors have flattered us by following the lead we have given them. Many very instructive

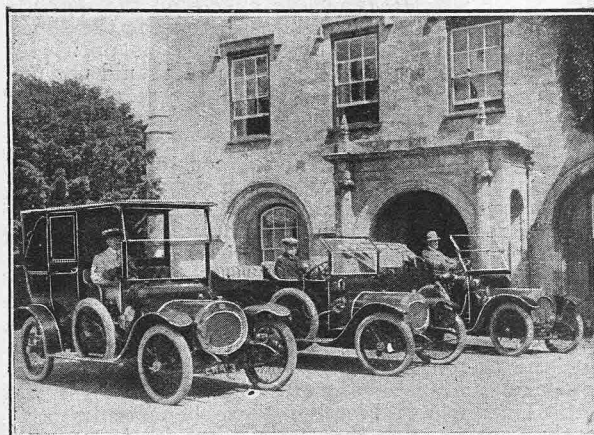
diagrams of results can be placed on paper, and in this regard Messrs. Lodge Bros. have admirably succeeded; but the motorists who purchase expensive lighting outfits require practical results upon the road, and that is no doubt where our unique experience scores, for the executive staff of our firm have all been practical motorists from the inception of the motor industry in this country, and any new design of lamps emanating from our laboratory has to go through a searching test upon the road, in which many theoretically correct features get a rude shaking up. What we aim at with the C.A.V. headlight—and which we believe we have accomplished—is to get an efficient range of a quarter of a mile ahead, and with the beams so evenly diffused that no defined edge, even to the long-range beams, can be detected. This gives the driver an impression of a huge ball of daylight travelling in front of him, but the motorist or cyclist meeting these lights is not inconvenienced owing to the peculiar design of our reflectors; which give an even and soft light (and minus any dazzle) within a range of 50 yards from the car.

C. A. VANDERVELL AND CO.

Springs and Shock Absorbers.

A great deal is now being heard of the above devices. It has been rightly pointed out, by Mr. Sturme, that the term "shock absorber" is being wrongly used. When a spring is deflected, owing to the wheel encountering a road obstacle, it recovers quickly and causes an up-and-down or see-saw movement of the body of the car. A shock absorber (see "Motor Manual") is meant to check and reduce this movement. One kind of shock absorber checks the spring action in both directions. It merely amounts to a stiffening of the spring, and seems to be useless. The same result could be attained by shortening the spring. The real shock absorber checks only the recovery of the spring. It seems to be rarely used. Mr. Liebstein (THE MOTOR, 23rd January), seems to have had some experience of it.

The devices now being discussed in THE MOTOR are not shock absorbers but supplementary springs. Most of them seem to be meant to yield to road inequalities, too small to affect the main springs. If we use them it is clear that we have to meet the recovery of the main as well as of the supplementary springs. They seem generally to give satisfactory results. What, then, becomes of the shock absorber idea? Is it all nonsense? The system of springs described by "G.H." in THE MOTOR of 5th December may contain shock absorbers, but this is not made clear. Further explanation is needed, and a



A group of three Riley cars outside Conington Castle, Hunts., the residence of J. N. Heathcote, Esq. Each car has a different type of body and each has covered a considerable mileage without giving the slightest trouble.

O.P.V.—Contd.

good drawing. I am inclined to think that shock absorbers are not wanted, and have been dropped. I believe that they were used on railway carriages and abandoned.

I agree with Mr. Sturmev that the public are apt to follow the lead like sheep, and that it is often a mere chance whether a good idea is accepted or not. That greater efforts have not been made to supplant the pneumatic tyre which, at least to those who do their own repairs, is such a source of worry, trouble, expense, and possible grave inconvenience, has always surprised me. I have always had the idea that solid tyres would suit many people if their cars had additional springing. I lately suggested to the R.A.C. trials of a car, first with pneumatics and then with solids and extra springs, the up-and-down movement of the body of the car being shown on a diagram (this has been done on railways) drawn on a moving band of paper by a pencil which moves up and down with the spring. They did not fall in with my suggestion. Perhaps some maker of solid tyres will do so.

M.I.C.E.

Petrol and Patriotism.

With petrol rising in adverse ratio to the weather about a week ago, and retailers asking 15d. and 16d. a gallon for the spirit, one is tempted to ask a patriotic question, viz., with petrol at that price, and rumours that it will go up further owing to supply shortage (partly due to commercial motors), what valid reason is there for benzol not becoming more popular? To buy this would not only give the owner more mileage per gallon, and so economise, but it would give a stimulus to a branch of the British chemical industry. What is the real explanation of the stagnant interest in benzol-use in this country, especially compared, say, with France?

ROSE ROUGE.

A Car Conversion.

Re Who Sent Photo? De Dion 8 h.p. car, in your issue of 16th January. This is most interesting to me, as last December I went into the cost of conversion of my 8 h.p. De Dion car, which is the same type of car as shown in your illustration. It, however, looks longer in the bonnet than mine. I should like, therefore, to ask "Square Boat," through your columns, the model, also length from dash to back of engine, the cost of conversion, the width, depth and height of radiator, and if he really means to say that he can get 42.75 miles to the gallon of petrol, as I only average 25 to 27 miles.

SQUARE SHOT.

The Value of the Hand-controlled Extra Air Inlet.

Your correspondent, Mr. T. Ford, in "O.P.V." 23rd January issue, has touched upon a matter of extreme importance to actual and prospective motorists in his advocacy of the value of a hand-controlled extra air inlet. He deals with the matter in such a complete way, and so clearly shows the advantage of the extra air inlet, that there is little to add. We can only say, however, that with a large experience, we have never yet found an automatic carburettor which cannot be improved by the fitting of an extra air inlet, because it stands to reason that such a degree of automaticity cannot possibly be obtained which shall give the best results (always with due regard to economy) under every condition. This is a subject which is, we know, engaging the attention of many car owners and it is a common sight now to see extra air levers fitted up for use in conjunction with automatic carburettors. On both our 8-10 h.p. and 12-15 h.p. Phoenix cars we fit an extra air lever, and the value of this in the attainment of the best results is beyond question, while there is the additional advantage that the best results mean the most economical running.

PHOENIX MOTORS, LTD.

Cost of Motoring.

Below I give a tabulated form giving three instances of moderate season's running. One showing advantages of buying a good second-hand car, another, the cost of running a new car, lastly, the same car showing effect of second season's work. All are actual figures taken from my motor log book.

To read letters on this subject in some of the daily papers is amusing, and even in some of our technical journals it is striking to notice the wide diversity of opinions on the same subject.

So far as my experience goes, as owner-driver of nine different pleasure vehicles covering 10 years, I cannot see how a general rule can be given as to cost per annum or per mile, so many varying conditions have to be considered, such as:—Purpose for which car is run, class of roads, care in driving, make of car.

It is a wrong idea to suppose that the lower the first cost of car the cheaper will be your motoring, neither does it follow that a high-price car is going to be cheap on the road. Careful driving and a judicious selection of the vehicle for a particular purpose are important factors in the question of economical motoring.

Some makers sacrifice economy for sweet running. A smooth running car is not necessarily an economical one.

H.S.R.

COST OF MOTORING.

Car.	Year.	Value of car when new, complete.	Total miles run.	Petrol.		Lub'g Oil.		Grease.		Tyres.				Mechanical repairs.	After season value of car.	Total cost per mile less depreciation, interest, capital.	Average passenger load.	Remarks.
				Total gallons used.	Miles per gallon.	Pints used.	Price.	Lbs. used.	Price.	Covers repairs.	Tubes repairs.	Vulcanising tubes, &c.	Renewed tubes & tyres.					
Talbot—12-14 h.p. four-cylinder four-seater.	1909	£115	2,039	96 £5 16 10	21.2	14	7/-	—	2/-	—	1	0 0 9	£ 4 15 0 5 10 0	£ 0 3 0	£100 received.	2d.	50	1907 Model car bought second-hand.
Belsize—14-16 h.p. four-cylinder five-seater.	June to Dec., 1910	£332	2,187½	101 £5 0 0	21.6	24	9/9	1	6d.	—	5	1 5 5	—	Nil.	£235	85d.	50	New car.
Belsize—14-16 h.p. four-cylinder five-seater.	1911	£332	3,246	194 £10 18 0	16.7	12	6/-	—	1/-	—	4	0 19 6	18 18 9 3 7 8	0 14 0 New piston rings.	£200	2½d.	50	Last year's car. 4,394 miles per tyre, 810 x 90 mm.

O.P.V.—Cont'd.

To Facilitate Starting-up in Cold Weather.

Now we are experiencing so much severe weather, an arrangement I have adopted for years may be of use to motorists who find a difficulty in starting their engines the first thing on a cold morning. The method is to drill a small hole between the carburetter and engine, and as near as possible to the latter, in the induction pipe, and tap this hole with a 3-16 in. thread, and screw into it a bolt with a butter-

fly head. Some little time before I require the car I unscrew this bolt and squirt some petrol into the hole, and then replace the bolt. No matter how cold the morning may be the engine will generally fire at the first attempt. It is a nuisance to take out a sparking plug for putting petrol into the cylinder, and there is no fear of removing the oil from the pistons when the induction pipe is used. When waiting in the open, the radiator should always be covered over in cold and frosty weather. It much facilitates starting, and may prevent damage to the water-circulation system. F. L. NICHOLLS.

*Self-starting Engines.**Explosion Self-starters: Do They Injure the Engine?*

The discussion on this subject, while being to me extremely interesting, as, indeed, it is bound to be to all motorists who are desirous of keeping an faith with all that is best and most modern in the motor-world, has, to my mind, opened up a point over which I have frequently cogitated in connection with the starting of all internal-combustion engines, and since several of your correspondents have touched on the theme, I should like to be permitted to enter the arena for a few words on the point to which I refer. It is that of delivering what must be in the nature of a sledge-hammer blow to one or other of the pistons in order to start the engine on its work.

This feature certainly seems to me to be, from a mechanical and engineering point of view, inherently bad practice, and one which no designer should, if able to avoid it, include in his scheme of things where an engine—or, indeed, any machinery—is concerned. While not professing any real engineering education, nor claiming any more knowledge on the subject than is possessed by most persons of intelligence, I think I am correct in saying that anything in the nature of a positive and direct blow on the piston head should be avoided, whether for the purpose of starting up or otherwise. For this reason, I contend that any device of a self-starting nature incorporated in a motor engine which favours the principle of pressure rather than explosion will inevitably "win out" in the long run, in spite of the fact that the greater number of those devices on the market to-day are of the latter persuasion.

Under this head I am completely in accord with the sentiments of the writer of the article which appeared in your issue of, I think, 23rd January, but to which Mr. J. D. Bell in the 6th February issue takes exception. Whilst quite agreeing with the latter that the engine strain likely to arise from pre-ignition is very much greater, his argument seems to me hardly calculated to benefit his case, for one cannot surely prove a thing to be good by merely proving that it is not so bad as something else which is possible, and if supporters of the explosion system can produce no stronger case than one such as this, methinks the advocates of "gentle pressure" will have less of a tussle to prove its superiority than at one time seemed likely. One must not forget that explosion starters were first in the field—commercially, at all events—and it takes much hard work in this most conservative of all countries to get one's foot in the door, so to speak, with any improvement over the first comer. I say improvement advisedly, for I cannot believe that anyone seriously thinks a callous, brutal smack to start operations can be the equal in engine-starting practice of the principle of even, steady pressure; the one is distinctly bad treatment—treatment which no engine should be called upon to endure, while the other is in no way capable of betterment.

Why, even the soon-to-be-obsolete method of starting up by means of the handle is to be preferred to

that of hitting the engine into action, for the moving parts are by the former means set into fairly rapid motion before the gas takes up the drive, and the blow is thus proportionately lessened in consequence. Some may argue that if an engine during its lifetime has to suffer some hundreds of millions of blows, a few extra cannot be of much moment, but it should not need any words from me to show that impulses given to an engine already in motion are completely robbed of their malignance as compared with those exerted against an engine when at rest.

As regards Mr. Bell's point of pre-ignition, the fact that no motorist permits such to occur if he can prevent it only goes to prove that his point carries with it nothing in its favour.

Such arguments should provide good copy for steam-car enthusiasts, to whom they undoubtedly give a splendid advertisement. Were I one interested in the sale of steam vehicles, I should by now be smiling broadly and making out a telling advertisement for the next issue of THE MOTOR.

P. H. MEERS.

Self-starters and Tyre Inflators.

We notice a letter in your 6th February issue by "Z.Y.X." We propose to deal with the first of his suggestions, namely, that the car be fitted with an air compressor and a cylinder for compressed air which may be used for working the self-starter and also for filling tyres.

Far from there being anything impracticable or fallacious in this particular idea, if he reads our letter which immediately precedes that of his own, he will see that his proposal is an actual fact, and has been so for some considerable time.

The all-British Adams car is fitted with the device he suggests, and the air compressor automatically fills a cylinder with compressed air up to a certain predetermined pressure. This stored compressed air is used not only for starting the engine, but inflating the tyres in a most satisfactory manner, thus saving all the back-aching" and strenuous work which pumping up a tyre by hand involves.

Furthermore, we think there is nothing more undignified than to see an owner-driver grovelling under the car and winding up a jack, and so jacking the wheels off the ground. With the compressed air at your disposal, it is a matter of a minute to raise the car off the ground, by means of a pneumatic jack.

Also this compressed air may be used for blowing a horn, or supplying pressure by a reducing valve to the tank of a pressure-fed carburetter.

With regard to the price of the air compressor and self-starting device, this comes in considerably less than the outfit of detachable wheels, etc., the charge for the self-starting device with its air container, etc., being only £17 10s.

If your correspondent would like to call round at our show-rooms, we shall be most pleased to actually demonstrate to him the real embodiment of his suggestions, and we feel sure that he will be very much flattered to see that his proposal is an actual success.

THE AUTOMOBILE EXCHANGE, LTD.

O.P.V.—Contd.*Lateral Strength in a Wheel.*

There appeared recently in your columns a suggestion that great lateral strength in a wheel was unnecessary, and that it might, under certain circumstances, be undesirable since a wheel breakage should be regarded as a sort of safety device corresponding to the fuse in electric light installation.

I send a drawing showing the effect of a wheel giving at the end of a bad skid. The dotted line shows the position of the vehicle before, and the full line after the smash.

It will be observed that the centre of gravity of the vehicle which was originally 27 in. from the supporting wheel is now only 14 in. from it. In addition to this the vehicle has moved through an angle of 9 degrees. Both the angular momentum and the diminished distance from the centre of gravity to wheel tends to make the car roll over. This will be amply confirmed by reference to the columns of the daily Press in which motoring accidents are recorded at some length.

It will be observed that in addition to the two causes mentioned the centre of gravity of the car has descended considerably, so that the disaster is really assisted by gravity.

If the wheel stood up the centre of gravity of the car would actually have to rise very considerably before the car could topple over, thus gravity would (when the wheel stayed up) prevent, or tend to prevent, the car from going over.

JOHN V. PUGH.

Revision of Taxation.

A writer in a daily newspaper suggests an "agitation" in view of the Government's coming consideration of taxation, to urge the abolition of all taxes on cars and putting extra ones on petrol and new tyres. As he says, some cars do five or six times the running in one year that others do, yet the tax is the same for all of equal h.p., and the larger and heavier the car the more damage it does to road surface, but the heavier it is on its tyres and petrol, so making up in its greater expenditure per mile for any loss of proportionately higher duties. Surely this would be the fairest way all round, and should be strongly advocated.

JAMES BROWN.

Shock Absorbers.

Your correspondent Mr. H. R. Leibstein, in the issue of 23rd January, suggests that these, according to his mind, might be more correctly termed vibration absorbers. I would draw his attention to the Kap load adjuster and vibration absorber. This particular device has evidently escaped his attention. This load adjuster and vibration absorber does not presuppose that the car manufacturer is not capable of designing suitable springs for the requirements of up-to-date automobilism, but he is not in the fortunate position of being able to demand a constant load; he must not be blamed for a slight harshness in the springing when the car is running light.

Hence the introduction of the Kap load adjuster, which is based on scientific lines and an intimate

knowledge of springs. Although I am in no way interested in the manufacture of it, I have seen some very good performances with this absorber, which is indispensable from the point of view both of comfort and economy. I may state that it can be obtained from the principal garages throughout the kingdom.

THOS. L. JONES.

Charges for Repairs.

Having read the letter on the above subject from "M.S. A1" in the 23rd January issue of THE MOTOR, I should like to point out that probably the estimates "M.S." received from the garages included taking down and refixing the clutch, which often means several hours work, and perhaps little complications which take time, and again the master man with the experience has to be paid as well as the mechanic (whose wages may be anything from £3 to £4 per week).

I fear the mechanic who did the job will be a long time making his fortune.

Then, what sort of a clutch leather was purchased from the saddler for the 2s. 11d.? Would not the garage have fitted a far better one, and one made for the car, probably from the makers?

While I know at times garages do charge high prices, I very much doubt if "M.S." will find it has saved him 233 per cent. when it comes to running the car for a few months and allowing fair wages for the mechanic and master man, and the probability of a far better leather (higher price), better results and longer life.

Did "M.S." take his clutch down and replace it himself? If so, what does he value his time at? "M.S." is, I take it, an amateur, and not a skilled mechanic.

Insurance Co's and Accessories Thieving.

I have read your article and comments on the above, also your article on "Motor Insurance," and quite agree that all policies should be stated in simple words, instead of the legal jargon which the non-legal mind does not understand, so that the insured know exactly what protection they are having. Now, take the clause in most policies: Burglary and accessories, etc., naturally one expects that the word "accessories" comprised all the tools, clock, speedometer, rugs, mats, etc., which are always carried, also spare tyres and tubes; but does it? I think it will be found, on strict inquiry, that the word only refers to accessories actually fitted to car, and no more, so that it is like living in a fool's paradise, imagining one is fully covered.

PERPLEXED.

The A.A. Scouts: an Incident.

A little incident occurred to me this day (30th January) which may interest certain of your readers. I am a beginner on a low-powered car, who has driven rather over 3000 miles without incident, and as such have not joined the Automobile Association. I live on a main road frequented by scouts of the Association. To-day I had trouble, traceable to frosty weather, and was laid up by the roadside until matters were put right. An A.A. scout passed on his bicycle. I hailed him. He stopped and dismounted. I asked him if he could lend a hand, but, on his hearing that I did not carry the mystic A.A. symbol, he fled from me as if I had the plague. The scout was perhaps acting under orders, but surely if orders are issued to scouts only to succour the distressed of the A.A., such orders might be revised! I was under the impression that the A.A. existed to teach good "road" manners among other things. Is not ordinary courtesy the first lesson, and should this not be exercised by the Association's subordinates? Discourteous methods will not produce new members, and I am relieved that the victim is not a foreigner or an American, but merely an

OFFICER FROM OVERSEAS.

C35



SPECIAL NOTICE.

We are at all times pleased to answer any queries put to us by our readers, or to receive correspondence from them upon any motor topic. In consequence of the large number of letters received, however, we must insist upon the following simple rules being adhered to:—

1. Plain writing. Type-writing for preference.
2. All letters to be written on one side of the paper only.
3. Questions to be clear, terse, and to the point, without tedious preamble.
4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.
5. Questions cannot be answered on the telephone.

Too Much Piston Clearance.

C.T. writes:—Would you please let me know what is the correct fit of a 4 in. piston in its cylinder? Would a difference of $\frac{1}{16}$ in. in the diameter of the piston and the bore of the cylinder be likely to cause a knock which cannot otherwise be accounted for?

A piston such a loose fit in the cylinder as this would certainly cause a knock, if it would work at all, which we doubt, as the leakage of gas would be so great. If the cylinder bore is truly parallel and circular, the piston need not be smaller than the bore than 1-1000th in. Many leading makers do, in fact, work to a smaller clearance than this in their engines, because of the extreme accuracy with which the bore can be finished. It follows that if the piston be a loose fit it will soon wear the cylinder untrue by rocking from side to side.

Magneto at Fault.

Single-Cylinder writes:—I have an 8 h.p. single-cylinder car, which was originally fitted with accumulator and coil ignition. A local garage fitted a high-tension magneto for me, fixed ignition timing, but it is a very small size machine. It has never been a success, although I have given it over a month's trial, and I have varied the contact make-and-break into every possible position of advance and retard. The engine is constantly knocking, and the knock is very violent if the throttle be opened anything more than half-way. There is a very decided loss of power, and the only chance of getting the car up slight inclines is to switch on the accumulator and coil and let the two ignitions work simultaneously. I complained at the garage, and they say I only need a control wire. I pointed out that the makers of the magneto recommend quite a different pattern for single-cylinder cars. Do you

think it possible that the accumulator and coil best suit my car? It had certainly more power and no knock on that ignition.

If, as seems probable, you have had a motorcycle magneto fitted instead of a car size, as recommended, you are not at all likely to obtain satisfactory results. These very small types of magneto, whilst well suited for the work they are intended for, do not give a spark of sufficient volume to fire a large charge of mixture with maximum rapidity, which would ensure the full power being obtained. But this does not necessarily mean that it would cause a persistent knock. It is quite likely that the timing of the machine is a lot out of its correct setting, and it requires setting back from the driving pinion by one or two teeth. It may be set at present so much advanced that altering the contact breaker has little effect in retarding the timing.

Carburettor Explosions.

J.L. writes:—Will you please explain the following? I can adjust the air supply of my carburettor by means of a lever on the dash. When I increase the air supply beyond a certain position a sharp report and flame issues from the carburettor. Of course, I can follow that I weaken the mixture, but cannot see what connection this has with the noise and flame produced.

When the mixture is made very weak it burns very slowly as compared with a richer mixture, and the combustion is

still proceeding during the exhaust stroke, and at the moment the inlet valve opens there is considerable flaming gas in the top of the cylinder. The incoming fresh mixture comes into contact with this and is ignited, the flame running along the induction pipe and finding an exit at the carburettor ports.

Improving Engine Lubrication.

C.E.T.—Evidently the cylinder does not obtain sufficient lubrication by splash because the end of the connecting rod does not dip into the oil sufficiently. There are two methods by which you might improve the lubrication: a dipper or scoop could be fitted to the big end of the connecting rod, or an oil drip direct on to the connecting rod could be arranged.

Constant Reader.—(1) The circulation system is probably obstructed. (2) The noise from the crankcase may simply be due to the compression of air caused by the descending piston. If the crankcase becomes unduly hot, this usually indicates leakage of exploded mixture past the piston rings.

LC815.—There is no special reason why a new type thermo-syphon radiator could not be fitted. You will have to use larger bore piping than at present, and keep it as short as possible so as to offer the minimum resistance to the flow.

A.H.—A useful strength for an alcoholic non-freezing solution is one part methylated spirit to six parts water by volume.



Taxi-cab troubles in Paris. Cabs under military escort.

BUREAU—Contd.**Cold Weather and Starting Up.**

A.S.R. writes:—My four-cylinder engine, fitted with a standard make of carburetter, has, since the cold weather began, become very difficult to start from the cold. The engine gives a few explosions when the starting handle is turned, and then stops, and this process is repeated again and again until the engine becomes warm, when it will run continuously. When once the engine is warm, it will always start easily. This circumstance, coupled with the fact that the engine, until warm, will not pull the car up a hill, would seem to point to the conclusion that more effective arrangements are required for supplying warm air to the carburetter. Is this so, and can you suggest a remedy? Is there any fitment for warming the vaporizing chamber by external means, and would this be effective?

Evidently the trouble is due to the carburetter giving for a time very weak mixture, but the remedy does not lie in applying heat to the carburetter, which in any case would be a difficult and risky plan to adopt. The auxiliary air supply should be temporarily cut off, so as to cause all the air to pass round the jet and take up as much petrol as possible. Petrol injection into the cylinders is also advisable. No difficulty of this kind should be experienced if the motor house be kept comparatively warm by means of a slow-combustion stove. The engine can be readily started and allowed to run for a time so as to warm it up well before taking it on the road.

Methylated Spirit as a Non-freezer.

C.W.M. writes:—I have seen methylated spirit (one gallon to six of water) suggested as a non-freezing compound for radiators and cooling system of an engine. Can you tell me if such a mixture has any drawbacks in use, such as damage to radiator tubes or water jackets by deposit or chemical action.

This solution is quite satisfactory; in fact, better than glycerine, provided that it be kept up to strength and be of same specific gravity. The methylated spirit, being volatile, tends to evaporate when the mixture becomes hot in ordinary use, and it is therefore necessary to add a certain proportion of fresh spirit from time to time. This mixture has no action whatever on metal, and is very cleanly.

Action of Petrol on Metals.

G.M. writes:—Is there any particular reason for using brass or copper for making a petrol tank; is tin or tinned steel permissible? I understand petrol acts on aluminium. Can you tell me what the action is?

Petrol has no action whatever on copper, brass, iron, tin, or any of the common metals. The advantage of using brass or copper is that there is no risk of rust forming from damp, which may enter the tank from the atmosphere. With regard to aluminium, it has been suggested that petrol may not act on it to a small extent. At one time carburetters were made of aluminium to save weight, but the numerous complaints as to the formation of deposits in the float chamber, which eventually reached the jet and stopped it up, led to its abandonment. At that time it must, however, be remembered that petrol of the ordinary grades was not so pure as it is now, and traces of acid or alkali were probably present, which would explain the action on the metal.

Time to Change Down.

S.W.T. writes:—I should be much obliged if you would explain the following peculiarity about my car. I have a six-cylinder 38 h.p. limousine landaulet, and I find that, very often when going up a hill on top speed, a regular metallic knocking noise will develop. This only occurs when the car has some difficulty in getting up the hill on top speed, and gradually ceases as the car gains in speed, or if I go down to second speed the noise immediately stops. The noise is not like the usual knock of an engine, but resembles more the sound that would be produced by hitting the cylinder wall with a hammer. My own theory is that the ignition is too far advanced for slow running; my chauffeur, however, suggests that it is due to the universal joints shaking.

This is quite a normal experience when, as appears to be the case in this instance, the engine is allowed to labour and more particularly if the ignition timing point be fixed. The proper course would be to change down, or if it be only a matter of a few yards which the car labours on, and the ignition timing be variable, it should be retarded a small amount. We do not consider that the universals are at fault, assuming these are in normal condition and not worn loose.

Hotter Circulation Water.

A.L.—The greater heat which the circulation water of your engine attains is not necessarily an indication that there is a falling off in efficiency by any appreciable amount. Providing that the water does not boil away, i.e., reaches 212 degrees Fahrenheit, the engine may actually be working at a higher efficiency than before. Note that you are not running on too rich a mixture.

C.R.—The main advantage in using chains for the camshaft drive instead of pinions is because of the much quieter running obtained. There is also less wear and backlash, which ensures that the timing remains practically constant. The stretch in the short chains is assumed to be so small in the life of them that adjustment is unnecessary.

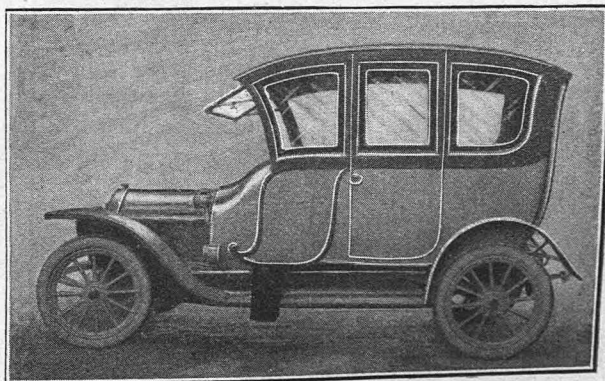
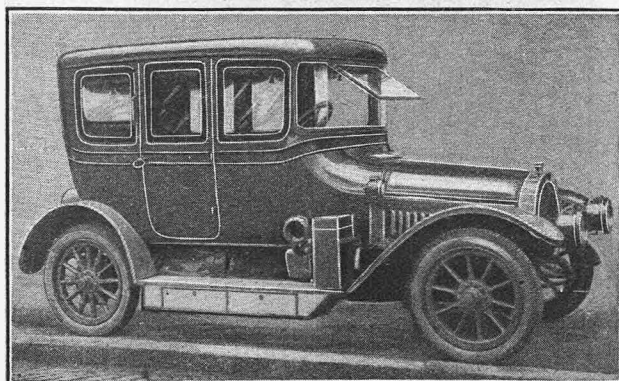
E.B.—The car is evidently not made solely for the carriage of goods or trade purposes, and, therefore, it will be liable to the usual tax. The question of whether carrying a few samples on an ordinary private car thereby renders it exempt from taxation was decided years ago. Obviously there would be a wholesale claiming of exemption if this principle were admitted.

ROUTES.

All inquiries concerning routes and details of tours must be accompanied by a remittance of 6d. and a stamped and addressed envelope. Owing to the very large number of such inquiries received it has become necessary to form a special department to deal with them. Letters should be marked "Motor Routes." We would, however, call our readers' attention to the fact that an excellent series of Motor Road Maps and Books can be had from our Publishing Department. Particulars of these Maps and Books are given from time to time in our advertisement pages.

Routes cannot be sent by return. All applications are replied to in strict rotation in the course of 21 days. We do not give recommendations to Hotels or Boarding Houses.

Owing to pressure on our space a large number of replies are unavoidably crowded out. We are always pleased to reply, almost by return of post, to inquiries, when a stamped addressed envelope is enclosed. During the past week we have posted replies to 125 readers.



Two interesting specimens of French bodywork by Messrs. J. Kelsch and Co., of Paris.

MISCELLANEA

What to Do with a Leaky Hood.

The best of hoods, after long service, may become leaky, and till recently it has been a serious problem how to restore its waterproof qualities. Various preparations have been suggested, most requiring much time, money and patience expended to produce even a moderately good result. This trouble can now be avoided by the use of a special flexible paint obtainable from the Accordion Boat Co. (paint department), 123, Victoria Street, London, S.W. This paint is very easily applied, and can be had in several different colours, and it has the additional advantage that it dries rapidly. Samples of leather and canvas which have been treated with this paint have been examined by us, and appear to fully support the makers' claims. The paint is quite inexpensive, all details as to price, etc., will be found in the makers' booklet, which they will send on application to any reader.

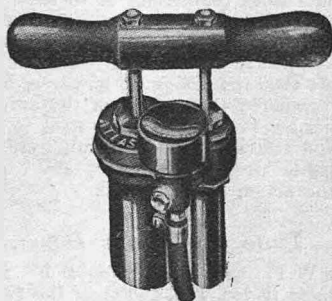
The Lincolnshire Autocar Co., Ltd., Carlton House, Regent Street, S.W., are the sole concessionaires for the North of England for Benz Sohne cars. Their address is Carlton House, Regent Street, London, S.W. In the catalogue which they issue, details of the mechanism of the celebrated cars which are the outcome of more than 25 years experience and study—Carl Benz first made motor vehicles for the market in 1886—are concisely given. All that the prospective purchaser wants to know is clearly told in words and pictures, and he may contemplate buying a Benz with an easy mind, in any case, for it is backed by a big reputation.

A paper on "Ball Bearings" will be read before the Institution of Automobile Engineers on Wednesday evening, 14th February, at the Institute of Mechanical Engineers, St. James's Park, London, S.W.

An Austin motorcar of the latest type has just been despatched to Shanghai to the order of Sir Haviland de Saumarez, Judge of H.B.M. Supreme Court of China and Korea.

A New Tyre Pump.

A new hand-operated pump, of the two-barrel variety, has just been introduced by the Monnot Industrial Co., 41, Gt. Portland Street, London, W. It is named the Atlas pump, and it is claimed that it pumps more air with less strokes than any similar type of pump. The special points about it are the use of solid, seamless brass cylinders, bored



quite true, and the leather buckets are treated and hardened in a special way, which makes the working very smooth and easy. The pumps are of steel. A useful addition is the air pressure gauge placed at the top of the pump, in which position it is safe from damage and easily seen, as compared with the usual position at the foot. The accuracy of the gauge is guaranteed to within 3 per cent. This pump can be supplied without a gauge if desired.

Clever Repair Work.

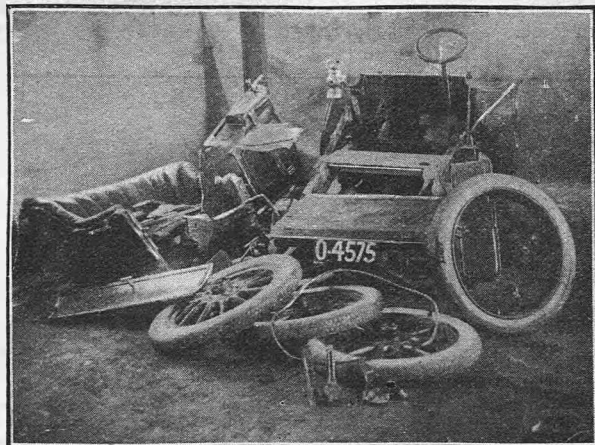
The two pictures which appear below belong to the "Before and After" series. The first shows a Humber car when it had got into difficulties with a brewer's motor lorry, and the second shows the same car after it had been repaired by Henry Garner, Ltd., of Alcester Road, Birmingham. That the car suffered severely in the accident is obvious from the photograph which was taken of the pieces that were collected subsequent to the collision. The car was struck broadside on by the lorry, which was not

stopped by the impact, but, keeping on, went right over the unfortunate car. The body was torn off, the chassis frame bent, and the wood wheels broken. A bad enough mishap in all conscience, and one marvels that after such a sorry experience it was ever possible to put the vehicle together again. But Henry Garner, Ltd., were nothing daunted by the task which was set them—they doubtless recognized that they had an excellent foundation to work upon—and the second picture is evidence of how very well they have done their work. The repairs were carried out at a cost of about £100.

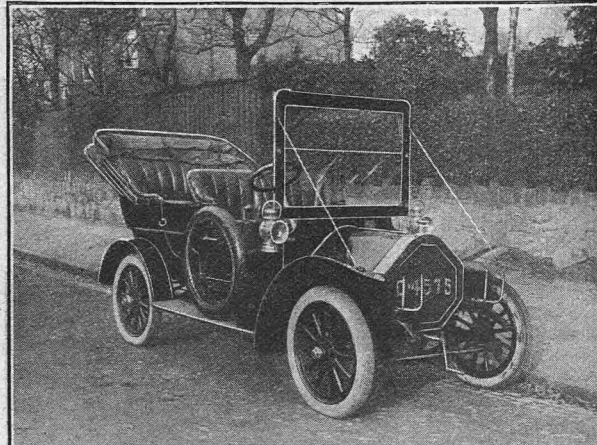
H. and B. Motor Lamps and Horns.

One has but to glance at the illustrations—and these do only the barest justice to the original articles—in the latest list of Messrs. Howes and Burley, Ltd., to see that durability is a dominant feature of the lamps manufactured by this old-established Birmingham company. That the lamps may also be relied upon to give no trouble and every satisfaction in the fulfilment of their purpose as road illuminators is fairly obvious from the fact that not until they have been subjected to sundry severe and careful tests and proved to be thoroughly efficient are they put into stock. Messrs. Howes and Burley, Ltd., are the makers of mirrors and motor-horns, and a few other motorcar accessories as well as the lamps, for which they are chiefly renowned. Their combination electric and reed horn is a novelty which has already been mentioned in these pages. Should the accumulators fail, and the electric horn become useless, the reed and bulb can be brought into play, obviating the necessity for improvising a warning signal. The Birmingham address of the company is Bishop Street. They have showrooms in London at 14a, Great Marlborough Street, W.

The Vauxhall works at Luton cover a fairly extensive area, and are equipped with a splendid up-to-date plant of machinery. The new catalogue of the company contains a series of views of the inside of the factory, and a description of the methods of work there, which give one a good idea of the equipment and organization of the Vauxhall works, and do something to explain the many striking successes of Vauxhall cars at home and abroad.



Humber car after collision with a lorry.



The same car after repair by Messrs. H. Garner, Ltd.

RELICS AND THE RIVIERA.

Some Jottings—Historical and Otherwise—on a Continental Motor Tour.

ALTHOUGH the guide-book definition of what constitutes the Riviera is to the effect that it comprises a strip of land extending along the coast of the Mediterranean for 323 miles from Hyeres to Leghorn, this delectable district from the motorist's point of view begins in the vicinity of Marseilles and ends, unless he is consumed with a burning desire to interview the Italian Customs authorities, at that well-known frontier bridge the Pont St. Louis, that throws its single arch of 72 ft. diameter over the deep ravine hard by the whilom famous Bennet terrace garden that now bears the name of Godart.

We start then from Marseilles. Theoretically, that is to say, for if the truth be told, the chauffeur displayed no overwhelming desire to deal either with the traffic of the Massilia of the Romans or yet with its bouillabaisse, and an opportunity being afforded to make a strategic detour, the same, and the steering wheel, was seized with both hands, which accounts for the fact that the Marseillais have had to exist without gazing upon the particular four-cylinder Humber that had the audacity to penetrate to the southern littoral of France when the said district was, metaphorically, wearing its curl-papers, in the month of August, to wit.

Had one of the party known that it was once the custom of the nursemaids of Marseilles to make their charges kiss the muzzle of the ox that paraded the streets of Marseilles three days before the Fête Dieu, with the idea of preserving their infant charges from that distressing malady toothache, it is more than likely that on the chance of witnessing similar juvenile rites those who travelled onwards without at all would possess to-day a very thorough knowledge of the Phœcean city and, doubtless, of its famous dish made up of rascasses and chapons (scorpion fishes), rock lobsters, cray fish, and mussels stewed in a liquor into which olive oil largely enters, and which is partaken of with fear and trembling and the conventional table furniture. Reticence occasionally reaches the heights of virtue.

There are two routes from Marseilles to Toulon, as a glance at Taride immediately discloses, the short and the long, but as the long is only longer by seven kilometres and more closely hugs the sea, so popular with the average individual when safely on dry land, the Aubagne itinerary was superseded in favour of that which leads through Cassis and La Ciotat and the site of the lost city of Taurventum.

Having climbed the best part of the way up Mount Gineste by a six-per-cent. gradient, and descended on the other side by a declivity of nine per cent., Cassis

is attained, and, notwithstanding its importance when it bore the name of Portus Carsicis and its quarries rendered to the Romans the jurassic limestone, which they conveyed not only to their own country but to far-away Africa, and its sea banks the coral so greatly esteemed by the Roman matrons, a prosaic twentieth century chauffeur sweeps on towards La Ciotat, climbing yet another eminence that, as Taride poetically puts it, possesses a "belle descente douce de five per cent." more pleasing to the man at the wheel than the information that the Citharista Portus of old (now the site of the Messageries Maritime Shipbuilding Yard,

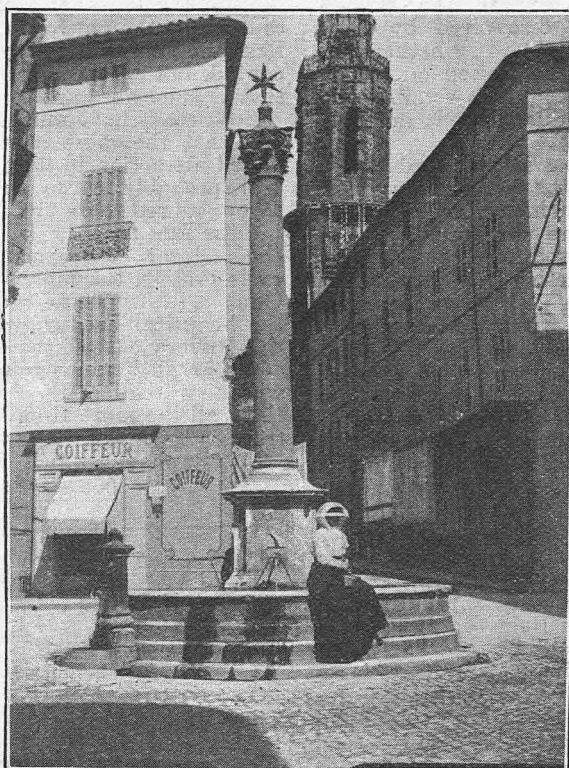
where are employed upwards of 2500 workmen) was one of the stations of the Imperial Fleet of Rome, and we are soon gazing at that peculiar beak-like promontory known as Bec de l'Aigle, which comprises three lofty rocks in a row, and referred to, it is perhaps unnecessary to add, by George Sand in "Tamaris."

By turning to the left instead of the right as we approach La Ciotat not only is time saved, but necessity for going over a small stretch of road twice obviated. Four kilometres N.E. of the pretty village of St. Cyr is an 11th century castle at La Cadere and a 15th century church, but intimations of this nature, singular to relate, are rarely listened to by conscientious drivers who give all their attention to their engine, while information, such as that the vanished Greco-Roman city of Taurventum and the scene of the great naval battle between Cæsar's fleet, commanded by Decimus Junius Brutus, and Pompey's fleet were both in the vicinity of Leques, leaves him positively cold through having ascended by a 12 per cent. gradient and descended by one of 5.5 to Bandol, of the pretty bay he has been known to remark: "This is the place where three ghastly wreaths of immortelles come from," which shows that even a chauffeur, when he is at the same time an amateur, is not altogether obsessed with the mechanism with which he is entrusted.

Between St. Nazarre, usually spoken of as Sanary, and La Seyne are several moderate slopes, the offshoots of that curiously-named granite eminence Six-Fours (originally Six Forts), which boasts an ancient village, a fort, a Roman paved way, and many other features that do not as a rule lure the motorist off the main road.

And so to Toulon, unbeloved by those who drive motors on the Riviera, for particulars of which please see Guide Books.

Whichever road we take it is always a delight to get away from the Plymouth of the Mediterranean,



Aix-en-Provence.

RELICS AND THE RIVIERA.—Contd.

but in view of the fact that we are running in the Cannes direction, it is just as well to take one of the two roads leading to Hyeres. If you go via the inland road and La Valette, on the slopes of Mont Faron are the beautiful grounds of the Ville Ste. Marie to look over, if your chauffeur is not too deaf to hear your injunction to tarry by the wayside, while from the neighbouring eminence Mt. Coudon, 2905 ft., in 2½ hours, there are grand views in all directions. "I have sought for them a great deal and seen a great many, but have never beheld any scene so lovely as the graceful yet bold indented coast of France as exhibited from Coudon." So wrote George Sand, but her words will doubtless fall on deaf ears in this motoring age, even in the event of the method of progression being a Silent Knight.

On the other route, via Pradet, passing in the vicinity of the late Sir Charles Dilke's summer residence at Cap Brun, we proceed past the salt works beyond Carqueiranne to the site of the Roman naval station of Pomponiana, discovered by King Frederick VII. of Denmark in 1843. Whether this interesting information should be passed on to the driver depends upon how the engine is running and the state of his digestion—*bonillabaisse* is not confined to Marseilles unfortunately.

Just as our own familiar Ross in Herefordshire is impregnated with the spirit of the famous man whose surname invariably slips the memory, so is Hyeres dominated by the fact that here was born that Jean Baptiste Massillon, who proved that the age of miracles is not passed by extracting from Louis XIV. the confession, "Father, I have heard several good orators and have been satisfied with them, but whenever I hear you I am dissatisfied with myself." Lest he should forget and become unduly puffed up with pride, the monarch concluded by saying that he would like to listen to the prelate once every two years!

George Sand, of course, had something to say about Hyeres, but on reaching the Jardin des Palmiers the tactful passenger resolves to refer no more to either Roman remains or the author of "Tamaris," and to confine all historical allusions to pleasing references to facts, such as that an orange tree once existed in the neighbourhood that bore 14,000 oranges at one time and possessed a trunk of such rotundity that Charles IX. and his brother, the Duke of Anjou, could scarcely surround it with their arms.

Between La Loude, where Horace Vernet once resided, and where some excellent views of the Iles d'Hyeres are to be obtained, there are several undulations of 6 to 10 per cent., but otherwise the road is fairly level to Frejus, but so impregnated with Roman and Moorish remains as to demand very careful treatment on the part of the well-informed passenger, who may find a learned disquisition upon the situation of the ancient port of Sinus Sambracitanus (Golfe de St. Tropez), interrupted by a query relating to the hotel accommodation at Frejus, a fate richly deserved by those who make vows at Hyeres only to break them ere the clock tower of Cogolin is out of sight.

St. Tropez is so beautifully situated that notwithstanding the fact that it is somewhat off the direct route, it is worth even a chauffeur's while to pay it a visit, noting en route the famous Pin de Bertaud, a remarkable umbrella pine, the quaint houses on the Quai and the wood carving in the church. It is also just possible that the travellers may have their attention drawn to the dust—such a circumstance does occur at times on the Riviera—in the which event he will doubtless refrain from falling into the same error as a certain representative of the people who came that way in 1793, and who gathered several bushels of the sparkling sand and sent it to the Convention with a message to the effect that it was "a proof of the ignorance of those who were entrusted with the administration of the VAR, and who trod underfoot

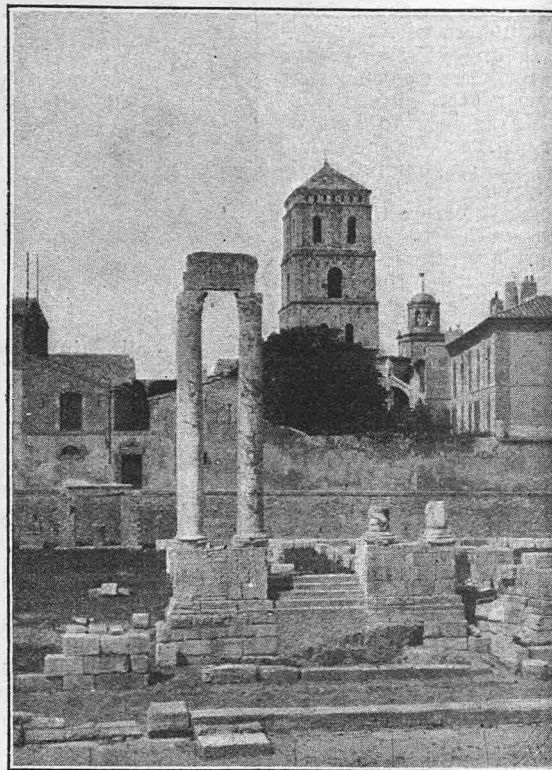
treasures ample enough to pay the cost of waging war against all the kings of the universe, and who did not know how to turn it to account.

Frejus, the Forum Julii of the—ahem!—ancients, possesses an amphitheatre, ramparts, baths, and other remains of an age that trod the Via Aurelia, and is now, thanks to the sitting up of its bay, some considerable distance further from the sea than was the case when Cæsar, after the battle of Actium, sent thither 200 galleys taken from Anthony that doubtless rode at anchor over what is now the permanent way of the P.L.M. railway. The extent of its harbour, now a field, is said to be distinctly visible.

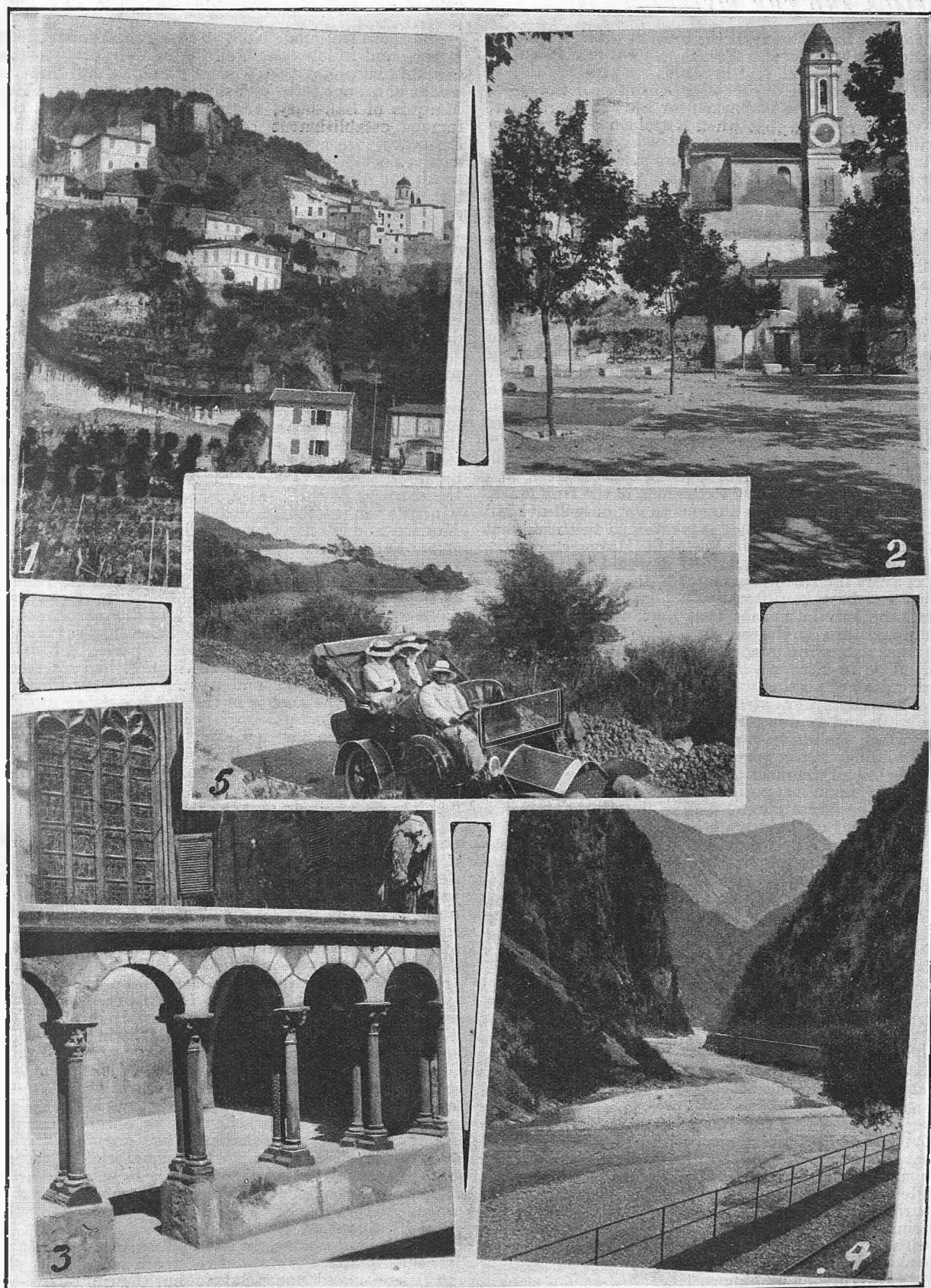
It is probably quite useless to impart this information on the spot to the driver, for that individual will be mentally playing pitch and toss in order to discover whether Fate directs him to take the old route Nationale d'Italie via the Auberge des Adrets, which involves a gradual rise for about 15 kilometres, which will take him to a height of 1188 ft. and into the heart of the Estorel, or to follow the new Corniche built by the T.C.F., that probably boasts more corners to the mile than any other road in Europe, the Maloja Pass and similar highways built "en lacets" alone excepted, but which is fairly free of relics of a period that is somewhat apt to get upon the nerves.

Both roads have much to recommend them, but the fact that the more southerly highway possesses an added attraction in its proximity to the sapphire sea will probably cause the majority of motorists to favour its red rocks and shadowy pines, notwithstanding the fact that the late Mr. Gladstone, referring to the Esterel Mountains, wrote: "Dante during his exile crossed the mountains which divide Italy from Gaul. . . . These mountains were without doubt the beautiful Estorel, which in their own portion of the Riviera cut off the line of passage by the coast at no great distance from the old frontier, and those who now frequent their bewitching passes may enjoy them all the more from knowing that they were once trodden by one of the rarest of human beings."

St. Raphael, which is attained in about four
(Continued on page 4.)



Arts. Roman Theatre and St. Trophime.



RELICS AND THE RIVIERA.

- (1) Cabbe-Roquebrune. (2) La Turbie. (3) Aix-en-Provence: Cathedral Cloisters.
 (4) Gorges of the Var. (5, centre) Corniche de L'estorel.

RELICS AND THE RIVIERA.—Contd.

kilometres from Frejus, is the town at which Napoleon landed in the garb of a French general in 1799 on his return from Egypt, and at which, in the disguise of an Austrian officer to escape the insults—or worse—of his countrymen, he embarked for Elba 15 years later. It will be recalled that when Napoleon escaped from exile he landed at Golfe Juan, a few kilometres beyond Cannes, a column on the left-hand side of the road inscribed "Souvenir du ler, Mars, 1815" marks the spot, and it was remarked that whereas he set foot ashore as "the Corsican Adventurer," that in the course of his 20 days progress across France a servile and somewhat apprehensive Press gradually restored to him his full honours. Thus the day following his arrival on the Riviera he became "the Usurper"; at Grenoble, we are told, he was once more "Bonaparte"; by the time Lyons was reached "Napoleon" was himself again; on his arrival at Auxerre it had dawned upon the journalistic mind that the "Emperor" was coming north; at Fontainebleau "the great man, the Saviour, the star of France" was received with acclaim, and on the morning of the 21st of March "His Royal and Imperial Majesty made his entry into the capital amid unparalleled enthusiasm."

It is unnecessary to dwell upon Cannes, a town rich in recollections of Lord Brougham, cypress trees, and electric trams, or to refer to the Man of the Iron Mask, inasmuch as chauffeurs anxious to get on will not fail to remark, when the fact is mentioned to them, that to reach the prison on the Isle of St. Marguerite where Bazaine was also incarcerated it would be necessary to convert the car into a motor boat, a statement that must not be taken literally, but may be accepted as that, the only intimation that Roman remains on the mainland are preferred to detours involving sea voyages extending over at least 20 minutes.

And so to Nice via Antibes, whose streets in the brave days of posting were in a condition so atrocious that travellers were strongly urged to remain outside the walls and send in for the necessary relay of horses, but which the old habitué tells us is now quite spoilt by building. Of course to get out of a car while on tour is one of the most difficult feats that the traveller is called upon to perform, the momentum of the machine apparently extending to the soul and urging the occupant of the driving seat ever forwards, but if by any chance a halt should be necessary in the neighbourhood of Antibes, it is just as well to remember that from the lighthouse of La Garoupe there is a view to be obtained of the Riviera that is absolutely unique.

Anyone possessing a keen and appreciative leaning towards matters relating to tramways will find in Nice an excellent field in which to make a profound study of this method of locomotion, but the ordinary tourist, it must be confessed, on reaching the town whose name is derived from the word Niky (victory) is chiefly concerned in coming to a decision with respect to which of the two routes to make his exit.

The world-renowned Corniche road via La Turbie, that in 1900 was the scene of the fatal accident to Bauer, the eminent motor racer, and in 1903 witnessed the death of Count Zborowski, whose car crashed into the rocks close to the Bauer memorial plate in the course of a hill-climbing competition (it will be recalled that his car was held by the superstitious in evil repute, inasmuch as more than one of its drivers was killed when racing it), is best left for the return journey, inasmuch as it descends to the coast in the vicinity of Cap Martin, whereas the average tourist is more or less eager to proceed direct to Monte Carlo, a health resort on the French littoral that possesses a very enterprising bathing society.

The lower road, which fully justifies the adjective "ravishing" so frequently applied to it, is not without its undulations, and although it does not get it from the average Continental driver, on account of its tramways and corners, should be taken with great care and with so frequent "appels de trompe" as to be reminis-

cent of the work of a post-impressionist musical composer.

The route Nationale No. 7 sweeps round under Mont Boron, and follows the Golfe de Villefranche to the town of that name, from whence it serpentine through woods of orange trees to Beaulieu, beloved of the late Marquis of Salisbury, and so on to Monaco and the famous establishment of M. Francois Blanc, who, legendary lore asserts, descended upon Monte Carlo with a pocket-book containing 1,700,000 francs, asked to see the director of the Casino in its early days, told him he wished to purchase the entire concern as it stood, and finally that he intended breakfasting at Monaco, and wished to conclude the affair before returning to Nice in the evening. It is also asserted, though it is put somewhat differently, that like many hundreds of thousand visitors to the establishment on the one-time arid and now richly-clothed Rock des Spelugues, M. Blanc returned to Nice at the time he desired with a pocket very considerably lightened. The "bathing establishment," it may be added, was appropriately founded on April 1, All Fools' Day, 1863.

From Monte Carlo to Mentone via Cabhe-Roquebrune (Roccabruna) is a matter of only five miles, while about 2½ miles further on the limit of the present itinerary is reached at the Port St. Louis. When tearing away one's vision from the sight of the innumerable birds seeking shelter from the sun under the cornices of the houses, one gazes from the hotel windows over the crowded Condamine between Monaco and Monte Carlo, and it is interesting but somewhat heart-breaking—on account of the opportunity lost—to dwell upon the fact that as late as 1868, when the railway from Nice to Monaco was opened, only one house, embowered in trees and fields dedicated to the production of the essences that have made the house of Rimmel famous, existed in the whole of that well-built-over district, which in 1857 was worth about £20,000, in 1882 had its value set forth as £500,000, and is now worth a sum that would render the author of the increment tax greatly envious.

On the return journey after crossing the railway, proceeding west from Mentone, instead of following the low road to the left and Monte Carlo, the "Corniche Road" to the right may be taken, and its many "points de vue merveilleux" revelled in. For about 10 kilometres there is a gradual rise of from 12 to 15 per cent. until a height of 1800 feet is attained, and then in the last eight kilometres a somewhat steep descent of from 10 to 12 per cent. brings the traveller to Nice once more. La Turbie, there is no getting away from the fact, is redolent of Roman remains, indeed the Tower of Augustus is alleged to be the most striking ancient monument on the Riviera. A short distance further on the Colonna del Re is passed, built to commemorate the visit of Carlo Felice, King of Sardinia, whose statue at Nice on account of an offending finger suffered greatly, and possibly does still, at the hands of the Nicois who continually broke it off to signify their displeasure.

After passing Eze, a town built on a rock to the left, out of the reach of the Algerian pirates of ages past, as Nice is approached the Observatory of Mont Gros comes more into prominence. The observatory and its appointments, including the great reflector, 31½ in. in diameter, and the equatorial telescope weighing many tons, and yet so nicely balanced as to be moved by a touch of the finger, came into existence by the munificence of M. Bishoffsheim, the Parisian financier.

At Nice, of course, it is "up" to the motorist to proceed inland, the state of the roads permitting, eke to Briançon and Haute Savoie, but the call of Aix-en-Provence is loud and the call of Arles is louder, but of all the calls that lure to the West the call of the Romans is loudest.

H.M.

"COMMERCIAL MOTOR."

Every Thursday. Fully Illustrated.