The Motor
INCORPORATING Motor Cycling & Motoring
Vol. 6 No. 151,
December 20th, 1904.

TAKING A CAR DOWN AND RE-ASSEMBLING IT.

By "VEEAITCH."

PART I.

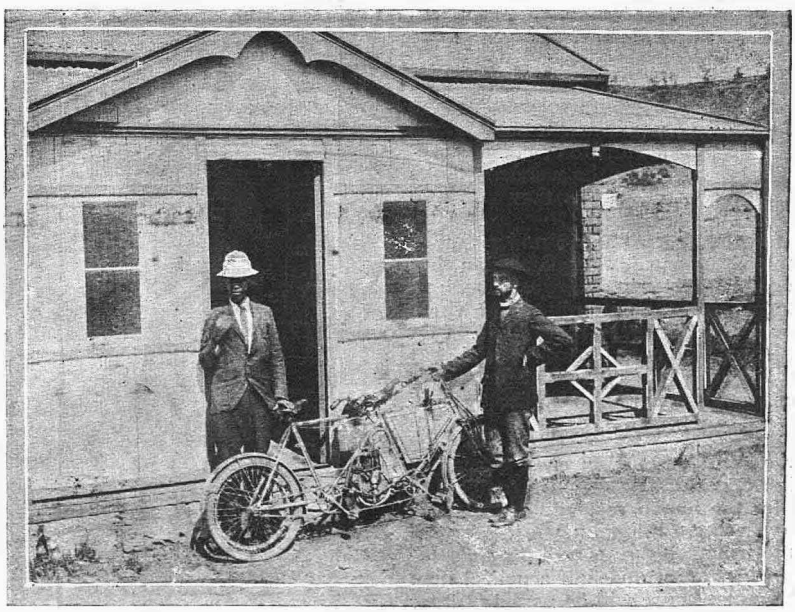
Most of us have read the humorous book entitled "Helen's Babies" with its life-like description of the doings of those two terrible infants who make their uncle's life a miserable purgatory. Children of a larger growth are not so far removed from those fearful and wonderful mites in "wanting to see the wheels go round," and in pulling their cars to pieces to find out the why and the wherefore. Such a great deal of the practical working of the mechanism and the reasons for placing some particular portion in a certain position can be learned in dismantling a car as to well repay any man for the time and trouble he may spend in undertaking what at first may be considered an almost impossible task.

THERE IS NOT THE SLIGHTEST MYSTERY ABOUT ANY PART OF THE CAR,

for every piece has its proper function to perform, and is not placed upon a frame merely for decorative purposes, or to mislead the unwary; even the most unmechanical-minded, provided he will put on his considering cap and think of what he is doing, and why he is doing something, cannot go far astray.

Considered as a whole, it is agreed that a car, small or large, is to the average user a somewhat complicated mass of machinery; taken bit by bit and detail by detail it will be found to resolve itself into an assemblage of numerous small pieces, each following some well-accepted mechanical axiom, and designed to fit into their places with the accuracy of a clock. It is because of this accuracy of fitting that the owner of a car need be under no misapprehension as to making a fool of himself after he has "taken his car down," and having to call in the help of the local expert in piecing it together again. The long spell of bad weather we are experiencing seems an appropriate time to make suggestions whereby the enthusiastic motorist may spend his spare hours in pursuit of his hobby, and have his car in spick and span condition by the time the sun gives us the benefit of his welcome rays again, with the expenditure only of some amount of trouble and a little addition of brains. It is supposed that the prospective manipulator can use a wrench, a screwdriver and a pair of pliers, and is sure he understands how not to misuse a hammer; tools of a particular sort for some specific purpose may save time, but it is quite possible with the aid of two of each of those mentioned to carry through what is proposed—a small parallel vice fixed upon a firm base is useful, but not essential. The reasons for suggesting two where perhaps one might somehow do will be found set out in their proper place.

I can hear some of those who, when this little yarn is ended, I may count amongst my friends saying to themselves—"Nice sort of mentor this is to suggest that a fellow should play about upon his own expensive car with five shillings worth of tools when the repair man round the corner possesses heaps and heaps of expensive things in the way of lathes, drills, and other oddments without end." If the worthy objector will kindly remember that it is because our round-the-corner-friend is a repair man who needs his expensive outfit of tools for repairs and not for much else, perhaps his objections will quickly vanish. Having cleared this objection away, our would-be dissembler may raise another trouble in, "Where the deuce am I going to commence?" and an apt reply would be quoting the oft-told tale of the building of a house—by starting at the foundations and erecting our structure brick by brick; the only difference is that the structure is to be taken down piece by piece and not blown down by dynamite or other unlawful means. Absolutely the very first thing to commence upon is to clean down the outside of the car thoroughly, and a hose-pipe with a moderate-sized outlet (not a rose spray) and not too much pressure behind it will be found useful in getting rid of the



A Phœnix motor tandem which is used by the clergyman seen in the picture for crossing the South African veldt.

Taking a Car Down, etc.—Contd.

first layer of mud and dust. Even with such a simple thing as a hose-pipe it is as well to remember that a motorcar and not a horse-drawn carriage is being washed down; don't be eager to pour the water through the bonnet or force it into the wheel bearings, and if side chains are fitted keep the water religiously away from them; if time is not an object, the best plan is to dispense with the hose and wash down every portion with a stout sponge, and there is then no chance of rusting up chains or unpainted metallic portions. If stray remnants of grease and oil persist in being in the wrong place, another sponge with just a whiff of paraffin will quickly remove all traces; upon no consideration whatever use petrol for smartening up paint and varnish, for although the dirt may disappear the bloom and gloss of the varnish will go too, and no amount of rubbing will ever bring it back to its original condition. A final rub up with a soft cloth or, better still, a chamois leather kept for this specific purpose, will considerably freshen up all round.

The car is not going to be used for some time, and now occurs the opportunity for which you have been longing the last three or four months to take off all the tyres and repair the bad cuts in the outer covers or send them away to the tyre people and have new treads vulcanised thereon.

WE ARE GOING TO DO EVERYTHING PROPERLY,

and in due order, and, therefore, as the steel rims were never intended to run upon hard surfaces, it is as well to have ready two planks two or three feet longer than the wheel base, and somewhat wider than the rims; or four short pieces will serve if they are all about the same thickness, this being not less than ⅜in. to ½in. If the floor upon which the work is taken in hand is a wooden one, the planks are unnecessary, their use being solely to prevent the inturned edges of the rims becoming dented, for the tyres, having been removed, leaves them to bear the direct weight of the car. Each wheel must be "scotched" at front and rear, but half bricks are not recommended for the purpose; any odd piece of wood will serve, so that movement of the wheels is quite prevented; we are intending to remove the brakes and, therefore, have nothing to rely upon to hold the wheels but the "scotches." Each tyre being removed (instructions are supplied gratis by the various tyre companies for users of their wares) clean carefully round every portion inside of the rims with fine sand-paper and thinly cover with a coat of black paint. It hardly needs explaining that to do this properly each wheel must be jacked up in turn so that it can revolve freely; but as I have seen a car moved backwards and forwards to do the same thing, I may be forgiven for pointing it out. There is no need to wait for the paint on the rims to dry before proceeding with the work we have in hand: the wooden planks before-mentioned will now be appreciated, as they will also serve to keep the paint intact.

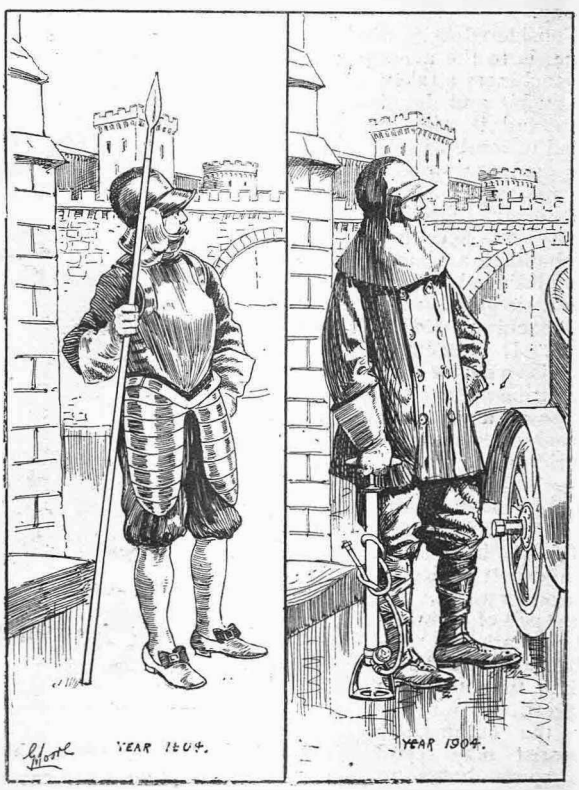
The cushions should now all be taken out and cleaned; rubbing up with a duster or brushing is the usual plan, but if the upholstery is buttoned, the dust has a sweet knack of defying removal from the edges of the buttoning, and where the material is folded over it also discreetly hides itself. Mix some petrol and paraffin (proportions quite immaterial, but half and half will do) and with a stiff paste brush go over every part of the cushions and the car upholstery; there is

NO FEAR OF HARMING THE CUSHIONS,

as cloth is rarely or never used for modern cars, excepting for landaulette and similar bodies. The mixture (as before) will also come in useful for the footboards, under the seats, inside the lockers, etc., etc., where the paint work is not in sight. The exterior of the waterproof rugs will not hurt for an application of petrol and paraffin, and half a pailful kept handily in a corner of the motor-house will be useful at later stages of the dismantling. If the car possesses a decently appointed tool kit, empty the lot (tyre material, of course, barred) into the mixture pail and then go over them one by one with the brush and lay aside to drain and dry. The tool receptacle will probably be all the better for the first clean-out of the season, and the odd quarter inches of copper wire and similar unconsidered trifles that have accumulated can be thrown on the scrap heap.

What may be termed the exterior gear is not quite all disposed of, for the accumulators and coil must be removed; but prior to touching them it will be desirable to first get rid of the mudguards. The iron stays supporting the guards are usually attached by coach screws (as they are technically termed) to the body of the car, and the method of their removal will be quite apparent; some cars have the stays held by nutted bolts and the precaution should be taken of examining to see if this is the case. Care must be used in the application of the wrench so that it goes squarely on to the head of the bolt or coach screw, otherwise it will slip and scratch or damage the paint. The guards having been placed in a safe spot where they will not be trampled upon, we will make a few simple preparations for ensuring the safety of the numberless bolts, nuts, washers, and odd pieces which go to make up a modern car. A packet of linen address tags (such as are usually attached to luggage) will be found very convenient; of course, the common pulp tag will do, but as it is bound to get saturated with grease, any writing thereon becomes illegible. A few odd-size cardboard boxes and an old baking tin surreptitiously "borrowed" from the domestic regions will about complete our requirements, except, perhaps, that a small centre punch, to be purchased at any ironmonger's shop for a few pence, will be found useful in enabling the position of the more important bolts to be quickly located when the time comes for refitting. As an instance: all the bolts having anything to do with the engine itself will be placed in a box upon which the word "engine" is marked; but before removing these bolts (in the case of a two-cylinder engine, with four bolts holding down each to the crank-chamber) punch each bolt with one, two, three, and four marks respectively, and punch corresponding marks by the sides of the holes through which the bolts go; be certain, after having removed one bolt, to screw on to it its *own* particular nut, and then tie up the set of bolts with a label.

(To be continued.)



MOTORCYCLING—SOME USEFUL INNOVATIONS.

BY A PRACTICAL NOVICE.

I made up my mind, at the beginning of 1904, to become a motorcyclist, and forthwith ordered one of the best 2½ h.p. machines on the market. When the machine arrived I found it necessary to do a few little "jobs" both in my cycle house and also on the machine: the trouble and time spent over these was not very much, and more than repaid me afterwards. The sketches I have made of some of these, together with the following explanatory statement, will perhaps be of some service to readers of "THE MOTOR."

First of all, I saw no reason why it should be necessary every time I came in from a run to lower my carrier-stand and to have to put it back into position again when next starting out. It is quite enough to have to do this in strange places, and occasionally on the roadside. So I made a permanent wood stand and sunk a portion of it in the earthen floor of my cycle house in the most convenient position, and then filled it round with concrete up to the floor level, so as to have it perfectly rigid. Figs. 1 and 2 are side and back views of this stand. When the machine is wheeled out the two arms remain in the position indicated by dotted lines (Fig. 1)

READY TO RECEIVE THE MACHINE AGAIN

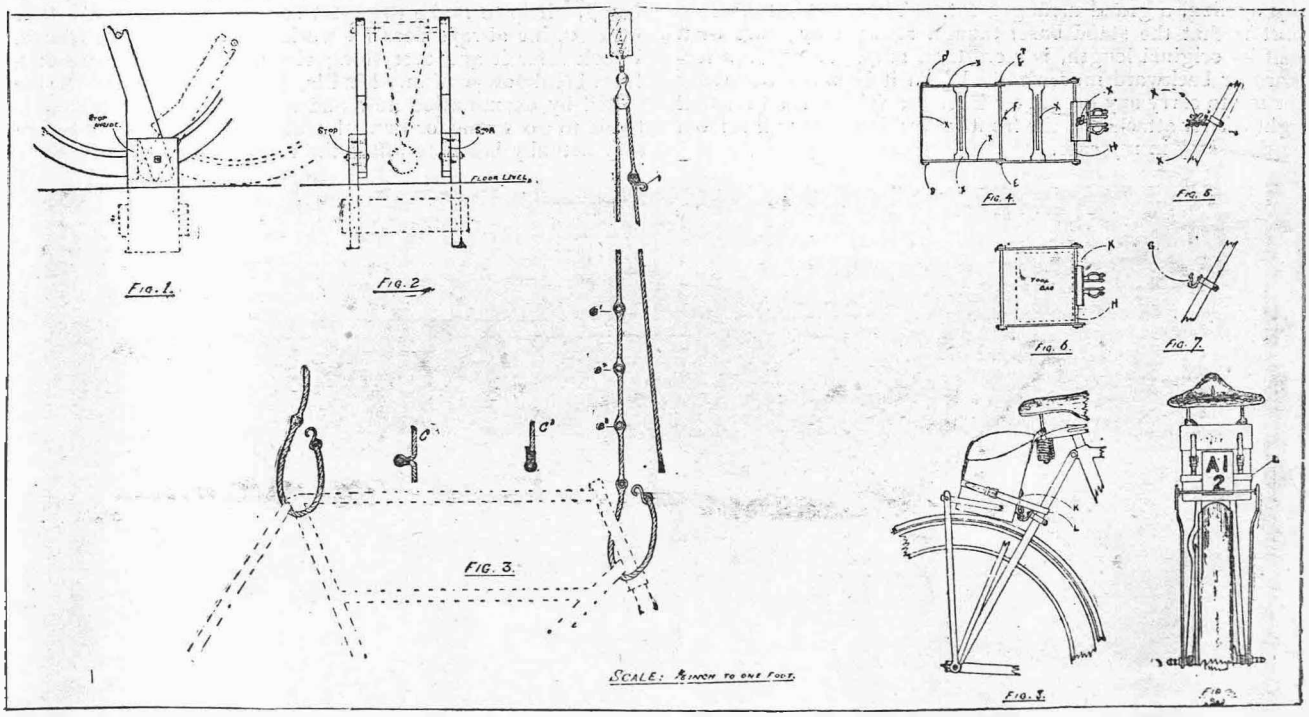
on returning, when it is only necessary to push it back into position with one hand, the back tyre then having a clearance of about an inch from the floor. Looking at the sketch, some may imagine the machine would have a tendency to go forward very easily; but that is not so, as before starting out I always warm the engine up and get my proper mixture, for which purpose I jump in and out of the saddle, and I have never yet noticed any movement of this kind. If any of your readers think of taking off measurements of this stand according to the scale given (⅛ inch to one foot), he will have to remember that the scale is for 26-inch wheels: for 28-inch wheels an inch must be added to the height of the arms.

I found that when the machine required a thorough cleaning and overhauling, it could be done far easier and better by slinging it completely off the floor—from six inches to 18 inches, according as to what height was most convenient for the work required for the time being. To do this I made two slings out of ordinary rope about ½ inch in diameter, and procured a dozen small sail eyes, and some hooks which I made myself out of strong "bull" wire; also a block and hook screwed into the roof timbers to receive each of the slings. These I now have hanging directly over the machine, so that I can

SLING IT UP TO ANY REQUIRED HEIGHT

inside a minute or two. After hooking the ends round the frame the hook A (Fig. 3) is simply hauled down and inserted in any of the eyes B1, B2, B3, according to the height it is required to lift the machine. The back sling is not shown fully, but the details are exactly similar to the front one. Having done some yachting in my younger days, I was able to splice the eyes referred to into the rope; but this is not at all necessary. Quite as strong a way—though not so neat in appearance—is to bend the rope round them and lash it tightly with marlin or suitable twine, as shown in C and C1.

After a month or so of very enjoyable running about, I came to the conclusion that I would seldom or never require any sort of luggage with me, and that I would do away with some portion of my combined stand and carrier, as I always imagined it more or less dangerous when dismounting in a hurry, on account of the distance to which the points of the legs projected out behind. I should mention here that I never could get it to fold up properly, as either the tool bag or saddle springs came in the way. The small thumb-screw, too, was very awkward to get at to tighten it sufficiently. I had also found out, previous to this, that the tool bags usually supplied with machines of this sort are entirely inadequate if one intends to carry—as I always do—a proper supply of spares. Another thing which always bothered me was its constant swaying and flapping against the back forks. I have seen very few motorcycles on which the bag behind was not doing the same thing. So after



Diagrams referred to in the article.

Some Useful Innovations—Contd.

carefully considering these points I made up my mind to remedy all by

THE FOLLOWING ALTERATIONS AND ADDITIONS :—

Fig. 4 is a plan of the stand (before alteration), fastened in position by means of the thumb-screw clamp attached to the back forks. Fig. 5 is a side view of the clamp. I commenced by cutting away the portions marked X (Figs. 4 and 5), and then brought the two back legs or arms, D and D1, forward to the points E and E1, riveting them there permanently on the end of what originally was the hinge rod F. It will be noticed that I also cut away the thumb-screw and the lower or hinged jaw of the clamp. The remaining or upper jaw I bent back, as shown in Fig. 7, so that the small hollow G would lie properly to receive the round rod H. Fig. 6 is a plan of the altered stand and clamp (position of bag and angle pieces dotted in). Hanging on my extra large tool bag I marked carefully where the rod G came against it, and then made two angle pieces out of 1-12-inch sheet brass about ½ inch wide and 3 inches long, and bent them as K in Fig. 8. These I riveted on the back of the bag in such a position that when the strap L was tightened up the bag would be held secure against the mudguard and rod H without the slightest shake of any kind in any direction. Figs. 8 and 9 will fully explain the arrangement. In Fig. 8 I have shown a portion of the stand cut away, so that the position and shape of the angle pieces, etc., may be clearly understood. The enamelled number plate is fastened to the bag by two small copper rivets at top and bottom, and these act as a sort of guide for the strap L which slides in tightly between bag and plate. Of course, it will be understood that in order to lower this stand into position it is only necessary to loosen the one strap L. Some of my readers will, perhaps, think that I was foolish to

DO AWAY WITH THE LUGGAGE-CARRIER

portion of my stand, but all I can say is, I would do the same again to-morrow, if getting a new machine. It is, in my opinion, a grand arrangement. The most astonishing part is that the stand base, though reduced by more than half its original length, is more than ample as regards forward or backward movement. When it becomes necessary for me to carry any luggage I intend to fall back on a small light carrier attached to the front forks; but that will seldom be necessary in my case.

I will conclude by mentioning a few of the less important items which help to complete my "outfit." These will be clearly understood without any illustrations. A light pair of wooden stilts to "jack" up the front wheel for repairing punctures, etc., on the roadside. These are about 15 inches long, each with suitable groove cut in the top which fits the axle nuts; they have a joint in the centre so as to fold up, which permits me to have them always at hand in the tool bag.

My petrol store consists of an old bacon box placed on its side on four rough legs which I nailed on the ends, the original lid being hinged to form a door fitted with a lock. This is always out in the open,

THE TOP IS COVERED WITH ZINC

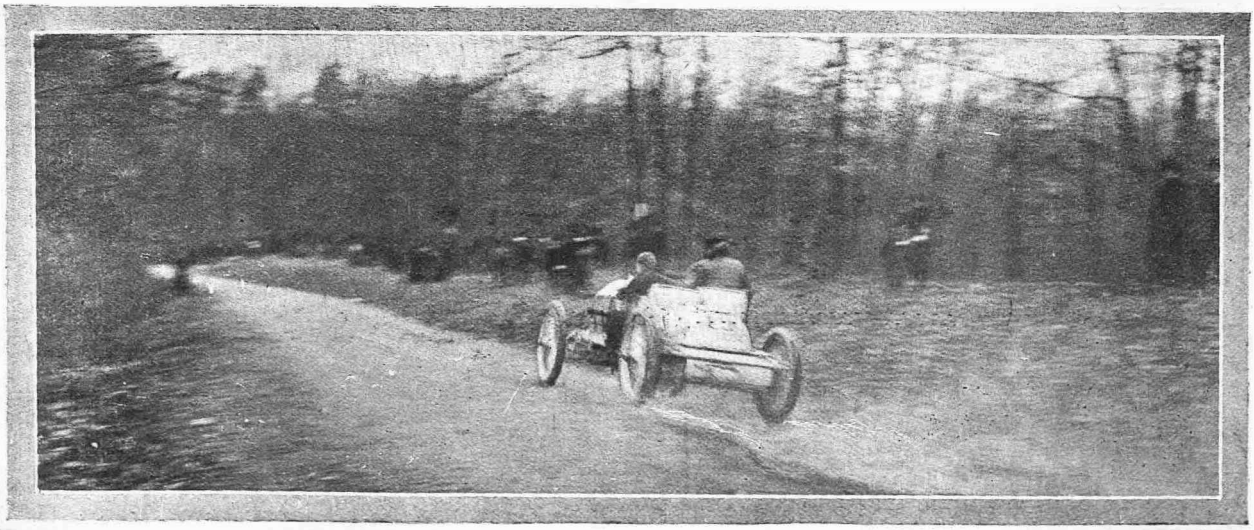
to keep out the wet.

Just over where my machine rests in the cycle house I have always hanging on the wall a 4 volt testing lamp with long flexible wires; and I have got into the habit of applying these to the handle-bar terminals just before starting out, thus testing the wiring on the machine as well as the battery in the one operation. I find this a most convenient arrangement, for it only takes me a fraction of a minute, and I consider it time well spent. Of course, I have always a voltmeter in my tool bag.

The first week I had my machine the engine ran so well and climbed hills so perfectly that I knew everything must have been in proper order. Now there was one thing in particular which I knew would be liable to get gradually weaker, and that was the inlet valve spring (automatic valv), so I took the valve out and made three small weights out of sheet lead. The smallest or lightest weight just barely opened the valve when placed on top; the medium weight just brought it half way, and the heaviest exactly completed the opening. These weights have been most useful on several occasions in setting my mind at rest regarding the inlet spring when looking for the cause of a loss of power. The slightest variation from what the strength of spring should be

CAN BE DETECTED BY THIS MEANS.

I have also, of course, a varied assortment of good tools, oil cans, hydrometer, patented measure and filler, etc., all of which, in combination with a thoroughly reliable "Ariel No. 1," help to make the sport so enjoyable for me. The little engine always does its work perfectly, but, of course, I look after it and everything else properly. My freedom from breakdowns of any kind is, I think, due to being able to tell by examination now and again whether anything is liable to go wrong or not. I always remedy defects before they actually begin to affect the running of the machine.



Racing in America—Wm. Wallace going at full speed at Eagle Rock

MY IDEAL TRI-CAR.

This article is the result of seeing too many good things at the recent Stanley Show and must not be taken too seriously.

All those who visited the recent Show are agreed that its chief feature was the collection of tri-cars, trimos, carettes, motorettes, or whatever you like to call them, the principle of construction being, briefly, a three-wheeled motor vehicle, with single-driving wheel at the back. My purpose here is to set out a specification of my ideal tri-car, and when I have set it down, and the price I mean to pay, I trust I shall be welcomed with open arms by manufacturers.

Engine.—Four-cylinder, of course. The coming fashion in motor-bicycles seems to be in the direction of having four-cylinder engines, so in plumping for a similar one on my tri-car I hope I shall be well up-to-date. In having such an engine I can only trust that I shall, also, be able to keep on the safe side of the law as far as the speed limit is concerned. It will be water-cooled, of course, with pump driven direct by the half-time gears; because whereas, once upon a time, it was fashionable to hide all the mechanical parts of a motor, the fashion is now to lift up a bonnet, and show a forest of tappet rods, fibre tubes, high-tension wires, and a lot more, to frighten the observing non-motorist.

Radiator. —This will be of the Mercedes type. The Mercedes type is very fashionable just now; and besides, a motor tri-car firm shows a single-seated three-wheeler with a Mercedes radiator. What I want is style. Nobody says the Mercedes radiator is pretty; but oh, the style! I must have a fan, too, in case of having to drive slow, or in case I want to leave my tri-car standing still with the engine running. I will have a large silencer, too, so as to make the tri-car as silent as a Bollée or the new Panhard. No vibration for me.

Transmission.—I will have a gear box of the Panhard type—four speeds and reverse. I have heard of men with cheap little 6 h.p. French cars who never get into their third speed except when going down a hill. That's why I am going to have four speeds, because the fourth speed will act as a brake. Most people know that to change from a higher gear to a lower gear suddenly

IS A VERY EFFECTIVE BRAKE,

but I fancy my notion is new. Then, as regards the reverse, I don't know if any of my readers have steered a tri-car backwards—down a hill, for instance. It is a keen form of sport, that might be used at motor gymkhanas very suitably. The prize would go to the man who was the last to go into the ditch. The gear-box would have a magnetic clutch, worked by the foot, and the other pedals would be—one for the accelerator, the other for the brake on the driving shaft—no chains or belts for me. Brakes to all wheels, naturally; if your back wheel skids as the result of putting the brake on, you ought to lock the two front wheels by brakes, just to see what will happen.

Ignition.—This is an important point. I do not like to have to depend on the ordinary form of ignition, so magneto electric ignition shall be my selection. But as magneto ignition is not very easy to start an engine with, I shall have high-tension ignition (I must have a Lodge coil, because it gives a fierce spark: I *love* a fierce spark), so as to start the engine, with a distributor, of course, and after the engine has warmed up to its job, it is so nice to switch over on to the magneto and feel that you are not using any current. Of course, even magneto ignition has been known to fail, so I shall have tube ignition as a stand-by, in case of anything going wrong.

Dashboard.—This is a feature that has too long been neglected on tri-cars. A dashboard can be made to look very smart, with "trimmings" enough, so on my dashboard I shall have the commutator (or distributor—I'm not quite certain on the point), water-pressure gauge, two-way voltmeter, amperemeter and resistance meter, with sight-feed lubricators worked mechanically. A speed indicator would look well, as also a clock.

Control.—Now we come to

THE REFINEMENTS OF THE TRI-CAR.

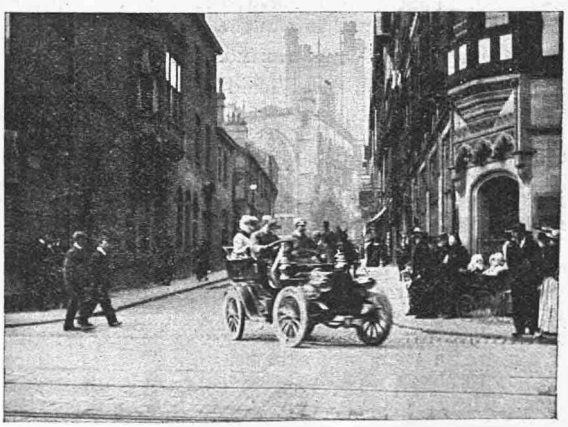
I must have wheel-steering, with a nice long rake to the steering-pillar, because it looks, oh, so smart! As regards the levers, I think I should like Mercedes control levers, although the Panhard rollers are very fine. An interrupter will be fitted in the form of a button, which will enable me to signalise my entrance into a town, a garage, or a police trap. A wire will open all exhaust boxes, for increased power on hills; and, for the gear lever, I think I should like this to work forwards, backwards, and sideways, like the Mercédes, Thornycroft, and other vehicles.

Other Details.—Since bucket seats are so common now, give me Roi des Belges seats. Besides, it sounds aristocratic. Neither myself nor my friends may be able to pronounce it—and I'm sure I haven't the remotest idea what it means—but give me that sort anyway. Also plenty of room for spares and tools is necessary, and it would be nice to have Palmer cord tyres, car size; and I think a detachable tonneau to go over the back wheel would be an excellent idea; also, I see someone is going to build one next year in a tri-car. It would be well, too, to have an exhaust foot-warmer for my passenger, and the manufacturer would throw in a large headlight, paraffin side lamps, and horn. The horn should be long, with flexible tubing, and should not sound a higher note than B flat below the bass clef. I shall

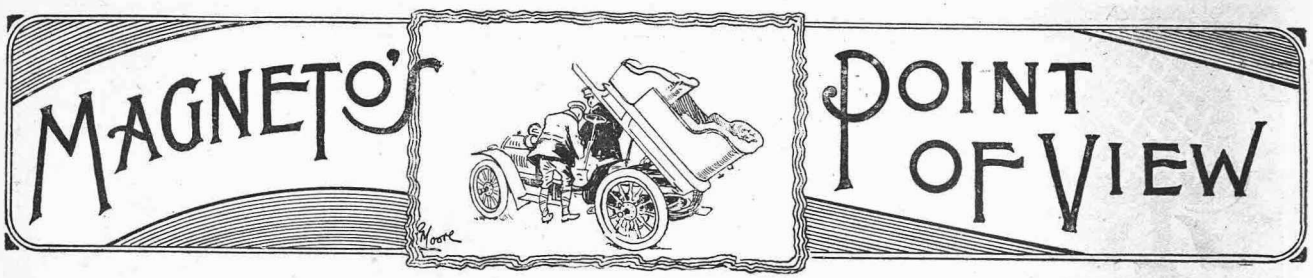
HAVE THE TRI-CAR PAINTED IN MY RACING COLOURS

—vermilion, emerald, and canary—and I am prepared to go to £100 for such a vehicle, or even a hundred guineas, if the manufacturer treats me decently; and, of course, I shall want trade discount off it. I need only add that I shall be pleased to give anyone a trial run on my tri-car as soon as it is delivered.

C. E. WHITTAKER.



Running through Chester.



Prof. Lodge's Lecture.

The subject of ignition and explosive gases was most lucidly dealt with by Prof. Lodge at his recent lecture before the members of the Cycle and Motor Engineers' Institute. Unfortunately, only a favoured few had the pleasure of listening to him, and it seems to me that if the ordinary motorist had an opportunity of hearing a lecture of this kind it could not fail to be of great value and interest to him. The theory he expounded of a gas being simply a liquid sprayed "ad infinitum" is certainly an important one. Practical deductions from this would be that there is scope for great improvement in carburetters so as to break up the petrol into a spray of as fine a nature as possible. The finer the petrol particles are split up the more rapid will be ignition of the charge of gas and air. Prof. Lodge illustrated this in a simple, yet graphic, way. The molecules of a gas are in a state of intensely rapid movement, and the faster they can be made to move about the quicker would be the communication, or propagation of, the inflammation throughout the mass of gas mixture. The rapidly moving molecules carried the flame with them and communicated it to neighbouring molecules.

IMPORTANCE OF RAPIDITY OF INFLAMMATION.

Prof. Lodge laid stress on the facts that rapidity of inflammation of the mixture is of vital importance to the engineer who handles petrol motors, as in truth the petrol motor was an explosion motor which had its analogy in a cannon, to give a popular illustration. The problem was how to obtain the most rapid inflammation possible. Anything which would increase the speed of the molecules would do it. When the gas is heated they go much faster. Now a capital experiment, although but a very simple one, was shown to illustrate this. A long glass tube about 2ft. long and 1in. diameter was taken. The lower end of this was provided with air holes and a gas connection, and, in fact, it was nothing more or less than an ordinary Bunsen burner. A light was applied to upper end; and the well-known blue flame of the Bunsen burner was emitted. The gas supply was gradually reduced, with the result that the flame at the top of the tube grew smaller and finally it began to descend the tube. With this, being glass, it was easy to see it, and it was quite distinct that the flame in descending was crescent-shaped. That is to say, it was high at the sides where it touched the glass, and low in the centre.

A HOT CYLINDER THE MOST EFFICIENT.

The explanation was this. The little mass of flame at the edges was cooled by coming in contact with the glass, and it travelled slower than the central part. This part got ahead of the edges, as it were. In another example, with the tube cold, the flame descended very slowly; with the tube heated it went down much faster, ergo a hot cylinder was the thing, red-hot in fact if you can overcome the difficulties of lubrication and of forcing the charge into the cylinder. The Professor next pulverised a theory which is pretty generally accepted as irrefutable by many motorists, some even who may be regarded as authorities on the subject. It is this—the best explosive mixture is obtained when the gas and air are in such proportions as to give the quantities necessary to obtain a perfect chemical combination when exploded. The Professor, at least as I understood him, states that the best mixture is obtained when the lighter of the components of the explosive charge is in excess. In practice this is nothing more or less than using an over-rich mixture. Up till now, the motorist's doctrine has been use as much air as you possibly can—for one reason, it has the merit of costing nothing. Petrol costs 1s. a gallon.

AN OVER-RICH MIXTURE THE BEST.

This theory of the over-rich mixture being the most rapidly inflammable, Prof. Lodge experimentally demonstrated with the glass tube. The effect of shutting off more of the air at the bottom of the tube was to cause the flame to run down the tube rapidly and thus ignite the volume of gas therein. With a large excess of air admitted to the tube the gas simply burned quietly at the top and the explosive volume in the tube remained intact. In practice it is well known that an excess of petrol in the charge fouls up the inside of the combustion chamber with a furry deposit of carbon, which tends to short circuit the sparks-plug points, and also by becoming incandescent very often causes a premature ignition, so that it is difficult to see how Prof. Lodge's theory could be applied practically.

THE EFFECT OF MULTIPLE SPARKS.

Another way of increasing the rapidity of the ignition is by having a series of sparks taking place simultaneously at different points amongst the charge. This seems fairly obviously an effective method, and I have often had the idea of trying the experiment of employing, say, three plugs and a very powerful spark, not direct from the secondary of the coil, but from a Leyden jar kept charged by the coil. There is a great difference in the heating or igniting effect between the thin, feeble spark direct from the coil, and the inconceivable rapidity and heat intensity of a Leyden jar spark. It seems to me that a very notable increase of power should result in an engine of a given cylinder capacity. This brings me on to the discussion of the Lodge coil, some of the wonderful effects of which I hope to describe in the next issue.

"What plug do you use on your boat-engine?
"Oh, ship's plug, of course."

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OPINION.

Universal Lights.

The deputation representative of the Motor Union, the National Cyclists' Union, and the Cyclists' Touring Club, which waited on the Under Secretary of State for the Home Office last week, has voiced in a public and official manner the feelings of a large section of the community on a matter of great importance. With the enormous increase in traffic which has been developed in late years, and with the introduction of a new and rapid form of locomotion, the need has come for immediate and radical reform in the regulations which affect the lighting up of road vehicles after dark. The convenience and the safety not only of a large and increasing population of motorists and cyclists, but of the whole vast body of road users are involved. The records of road accidents, could they be exhaustively tabulated, would show a heavy list of accidents due to the absence of by-laws enforcing the carrying of lights or to the confusion which arises from a want of uniformity of such by-laws. A Universal Lighting Law, embracing every kind of vehicle which uses the public highway, and allowing no exemption, is the remedy (at once simple and effective) which the motorist suggests and demands. A confusion of by-laws entailing differences in the numbers and colours of the lights carried, and granting exemption in special cases according to the particular fancy of a particular council, introduces an element of danger which is too serious to be neglected. Among many strong arguments brought forward by speakers of the deputation referred to, it was pointed out that the use of excessively powerful and dazzling acetylene lamps was rendered necessary by this illogical exemption clause, which allowed certain forms of traffic to remain unlighted. Why should a farm cart or a furniture van be permitted to prowl about in the dark and thus impose on the driver of the motorcar the necessity of carrying an abnormal light to safeguard himself against running it down? Imagine the state of things at sea (a much wider and less frequented highway than any thoroughfare on land) if every collier or barge were allowed to remain unlighted! We are glad to note that the Under Secretary, in his reply to the deputation, acknowledged the danger of an exemption clause, and indicated that the Home Office discouraged it whenever it came to their notice. And he concluded his reply in the following words:—"No doubt the best solution of the difficulty would be a uniform law for the whole country. For this purpose an Act of Parliament would be necessary, and if a Bill was introduced by a private member it would, on general grounds of public safety, meet with no hostile attitude from the Home Office." Such a Bill ought to meet with no hostile attitude from any part of the community. The interests of all road users are mutually concerned in its becoming law, and no effort should be spared to secure its inclusion amongst the statutes. In the meantime, the thanks of the public are due to those organisations who are working so hard to this end.

A Proposed Anti-Motor League.

Late in the day comes forward a Sussex gentleman in the columns of the daily Press with a plea for an Anti-Motor League. As in its last fitful moments an expiring candle often surprises us with the brilliance of its gleam, so are we surprised at the unwonted brilliance of this last expiring effort of the anti-motorist. For several years the war against motorists (if we may dignify the efforts of the motor-phobe with so honourable a name as war) has been waged in a series of irresponsible, irrelevant, and wholly ineffective campaigns. The fight has been conducted on much the same lines as those which a roomful of irresponsible flies employ against the person of the honest British householder. Each individual fly adopts his own methods: the methods are singularly alike, it is true; singularly petty; and, at times, singularly irritating; for even a fly, if it buzz loud enough, and badger long enough, has power to annoy. But in the disjointed attacks of a few isolated insects, or even of a brood of insects, there is no serious danger. Far otherwise, however, is it when we turn from the guerilla warfare to the menace of a struggle such as that which an anti-motor league would involve us in. We run back mentally over the records of history, and shudder as we recall a few of the mighty leagues of the past which have staggered humanity—or contributed to the gaiety of nations. Was there not, in the early days of last century, a league which sprang into being for this very purpose of crushing the development of speed? Were not the devil of Steam and his attendant imps, Coal and Steel, thundered at from every farmyard in the land? We tremble as we read the record. And well may we do so when we are confronted with the plan of campaign of this new league as drawn up by its author, the aforesaid Sussex gentleman:—"The object, therefore, of this proposed league would be to create such a body of public opinion as would influence the members of the House of Commons, who will be called upon at an early date to discuss the next Motorcar Act, and the increase of speeds which will be asked for on this opportunity." It will be noted that this league—or, rather, this proposed league—is undertaking a large order. To control public opinion is a task which men—outside Sussex—have before this found too great for their strength. To *create* public opinion is, of course, rather more difficult: it is obviously beyond a single man's power: hence the league—the proposed league. We may be pardoned for expressing the hope that the founder of this proposed league has not "bitten off more than he can chew"; for it occurs to us that he has yet two more difficulties in front of him: firstly, he has to create his league—a task of some magnitude; and, secondly, he will have to control it—which is not so much a task as an occupation in itself. Finally, it occurs to us that by the time this proposed anti-motoring machinery is set in motion, there will be no motor for it to move against. We live in stirring times, my masters, outside Sussex; and we look for a new locomotion before the millennium.

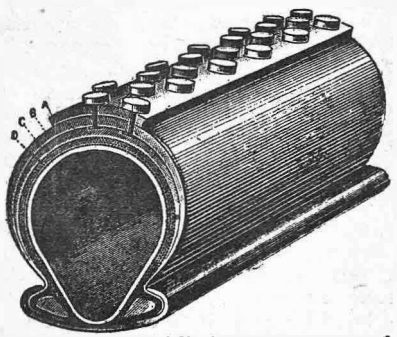
SPECIAL NOTICE.

Owing to the Christmas Holidays, next week's issue of "THE MOTOR" will be published one day later than usual—on Wednesday instead of Tuesday.

WHEEL AND TYRE NOVELTIES AT THE PARIS SHOW.

Some idea of the vast extent of the Paris Show may be formed by an inspection of the numberless exhibits in the department of tyres, non-skidding devices, spring wheels, etc. Novelties and improvements of already existing patents are to be seen on all sides. We have space here for only a few of the more interesting and important.

The J.P. leather tyre forms a combined non-skidding and unpuncturable attachment, which possesses some notable features. The interior layer is composed of rubber, and outside this are four layers of chrome leather, the external layer being furnished with metal studs riveted through the layer beneath it, and forming the non-skid tread of the tyre. An advantage claimed for the J.P. is in the method of attaching the leather layers to the rubber tyre. Instead of roughening the rubber to give it a sticking surface, and thereby injuring it—this process having to be repeated every time a new band is solutioned on—the internal leather band is permanently fixed to the tyre, and is never removed; riveted to this are bolts which pass through and secure the next two leather layers, which form the external band. Thus it will be seen that the whole attachment (consisting of five layers) is rigidly joined together, but the parts are readily detachable without injury to the inside rubber. The stud-bearing tread is riveted to the first of the outer

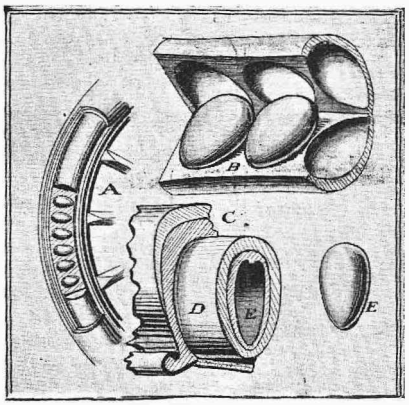


Hydra non-skidding puncture-proof tyre.

leather bands, and these two in their turn are held by bolts to the inner band and the rubber cover. The J.P. tyre is the patent of Messrs. Julien Pinçon and Co., 54, Boulevard Magenta, Paris.

Another non-slipping and tyre-protecting attachment is the Auto-Protector, made by Messrs. De Fornier, 7, Avenue de la Capelette, Marseilles. This in appearance is like several of the well-known devices seen in use in this country. It consists of a band of chrome leather with a tread of the same material provided with a metal armature. This ring of metal is split up into six sections to facilitate detachment and replacement. The makers claim that with this attachment the heat generated in the tyre is sensibly diminished

An air tube with a curious-looking internal anatomy is the Invictus. In principle this in analogous to the water-tight compartment of the naval constructor. The sectional diagram will help the reader to understand the construction of it. The tube is of rubber, and is furnished with internal cells containing hollow rubber balls filled with compressed air. To give as much resiliency as possible, the balls are made egg-shaped. The tube is enclosed in an outer cover in the usual way, and is capable of attach-



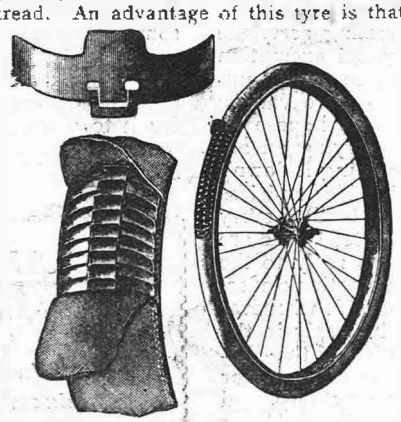
The Invicta air tube.

(A) Longitudinal section of tyre fitted to wheel. (B) Longitudinal section of tube, showing cells and egg-shaped balls. (C) Transverse section of tube. (D) Outer cover. (E) One of the eggs.

ment to any ordinary rim. It is claimed that the puncturing of an odd ball or two will have no appreciable effect on the air pressure in the tube, and that even if several become deflated the motorist will still be able to drive home safely and comfortably.

J. Fouilloy, 14, Rue Neuve Popincourt, Paris, is showing a detachable non-skid, which claims to do away with the strain and consequent wear on the edge of a motor tyre caused by side-slip and turning corners. It consists of the usual chrome leather band and metal-studded tread, the advantages claimed for it consisting in the method of attachment. Collars of special design are fitted to the rim around each of the wheel spokes, and to hooks on these collars the chrome band is attached by patent clips, the contention being that all side strain is taken off the tyre and borne by the rim itself.

The Sans Peur tyre (Beau and Co., 171, Cours Lafayette, Lyons) is a combined tyre and non-skid, the internal layers being rubber and fabric; and the external, chrome leather with a metal-studded tread. An advantage of this tyre is that



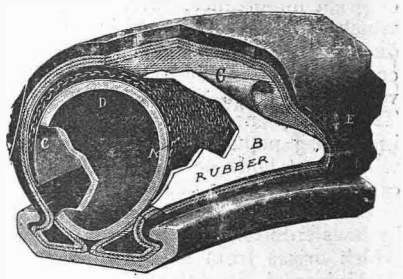
The Cadot puncture shield.

it is not necessary to replace the whole band and tread together; either may be renewed separately. It is said to be non-puncturable, the motorist being enabled, as the name implies, to travel "without fear" of deflation. The same firm have a useful little non-skid belt, half-a-dozen of which may be strapped to the wheel when necessary. The price of this belt varies from 3s. 9d. to 5s., according to size.

Another similar device to the Sans Peur is the Optima (12, Rue Beranger, Paris). A band of specially tanned leather protects the rubber and fabric cover, and the familiar form of leather tread with round metal studs is employed. The band fits under the rim, so that there is no possibility of its working loose, and the bursting of a tyre is rendered a remote contingency.

In the Neron puncture-proof band a finely-woven chain is introduced: this is embedded in rubber, and is claimed to have the property of flinging off any obstacle of a puncturing nature as well as of resisting its intrusion. The section shown will make the construction clear to the reader. It must be understood that the air tube and the outer cover are quite distinct from the Neron band, and are only shown in the illustration to give an idea of the device *in situ*.

Another speciality of the firm of Messrs. Julien Pinçon and Co., whose J.P. band we have already described, is



The Neron puncture-proof tyre.

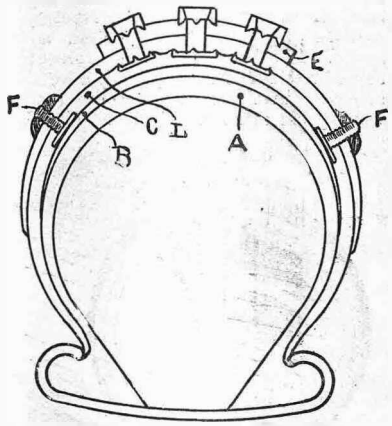
(A) Chain mail band. (B) Rubber. (C) Fabric. (D) Air tube. (E) Outer cover.

the Universal tyre protector. This is a combined non-skid and protector, but it is neither a band nor an attachment: it is a complete envelope. It consists of a one-piece cover of chrome leather with steel rivets on the tread. The cover envelopes the tyre and rim completely and is laced on, being thus quite independent of the tyre, and firmly attached to the wheel. A point to be noted is that the rivets do not come in contact with the tyre. It is claimed that in the event of a tyre deflating or leaving the rim, no danger would accrue with this form of protector.

The Durandal anti-skid cover is too well known to need further description, but a "gaiter" made by this firm, whose works are at Lecluse (Nord), deserves mention: it is made of chrome leather with a smooth tread or with metal studs, and is a very handy little repair band for a cut tyre: it is made in different widths and lengths, costing from 2s. 6d. to 7s. per gaiter.

The Hydra non-skid tyre (60, Boulevard de Clichy, Paris) consists of a rubber and fabric tyre A, to which is solutioned the

Novelties—Contd.

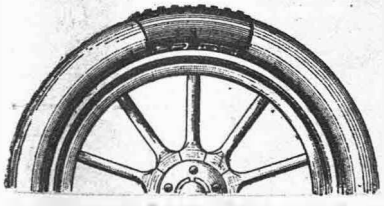


The J.P. Band.
(A) Rubber and fabric cover. (B) (C) (D) Chrome leather layers. (E) Chrome leather tread with studs. (F) Rivets holding leather layers.

leather band B, having attached to it the tread A fitted with steel rivets. An intermediate layer, C, of chrome leather, protects the tyre from contact with the rivets.

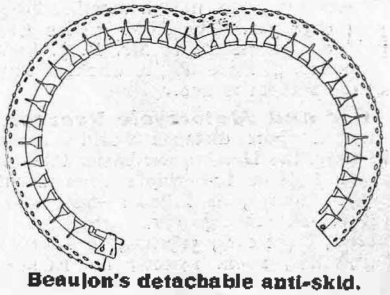
The Cadot shield is a tyre-protecting device which can be applied to any form of pneumatic tyre—motor or cycle. A band composed of metal plates overlapping in the form of fish scales is enclosed in a fabric cover, and the whole is interposed between the outer cover of the tyre and the air tube, affording, of course, complete protection against puncture. The special constitution of the shield is said to give considerable resilience to the tyre without adding too much to the weight. For a bicycle tyre the cost of the Cadot is 12s. 6d.; for a motorcycle, 18s.; and for a car, 30s.

The Ideal anti-skid and tyre protector differs slightly in principle from many other similar devices. As our illustration shows, it is a complete envelope fitted with the usual metallic non-skidding tread. Being entirely independent of the tyre it can be removed or renewed without interfering with this, and it also has the advantage of protecting the edge of the tyre from wear and strain. The cover is made in four sections, and is attached by eyelets to a wire which can be tightened up by a threaded screw at each of the sections, the tightening causing it to grip the tyre and rim tightly. Reversing the operation the cover can readily be detached. It is made by E. Prion, 160, Cours Lieutand, Marseilles.

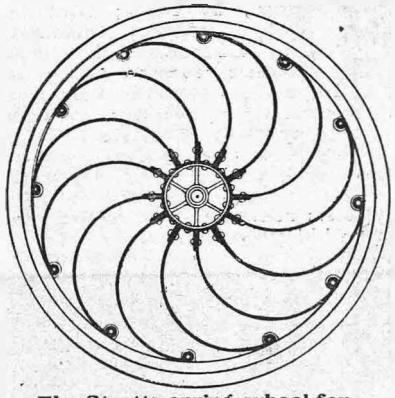


The Durandal metal-studded gaiter.

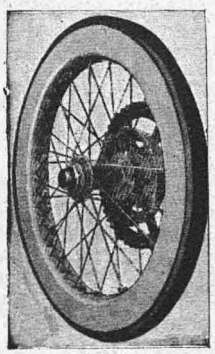
The peculiarity about the Cercle Vitesse anti-skid is that the leather band is placed *inside*, next to the air-tube, and the metal-studded tread is attached directly to the rubber of the outer cover. This is the 1905 improvement of the Pneu-Herault anti-skid (120, Boulevard Magenta, Paris). The inventor argues that the use of an external leather band weakens the rubber cover and renders it less supple; whereas with the band placed inside it acts as a support to the cover and gives it greater resilience.



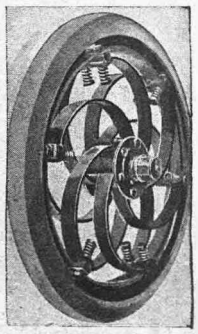
Beaujon's detachable anti-skid.



The Stratta spring-wheel for motor-tricycles.



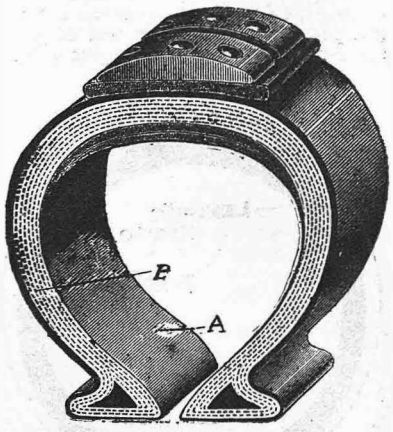
The universal tyre protector.



The Cadignan spring-wheel.

Beaujon's Detachable Anti-skid (13, Rue Labie, Paris) consists of a chrome leather cover so designed as to prevent moisture collecting and remaining between the cover and the tyre proper. The anti-skid device consists of a narrow strip of leather fitted with steel rivets. Round each edge of the cover runs a hinged wire which allows of the cover being opened back, thus greatly facilitating detachment. By means of a screw the tension of these wires may be adjusted to any desired degree, and consequently the tension of the leather flaps forming the cover can be regulated.

Interchangeable steel plates attached to each other by hooks form the tread of the Excelsior non-skidding device (5, Rue des Marais, Versailles); this is attached to a chrome cover fitted with metal studs



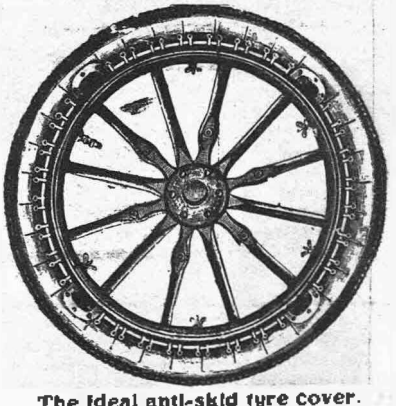
The Cercle Vitesse.
(A) Leather band, (B) Rubber and fabric cover.

which engage with clips on the rim and hold the attachment in place.

Several other devices of an anti-skid and tyre-protecting nature (including the Samson and Parson's attachments which has been so often described in "THE MOTOR") are to be found in the Show, but we have no space to deal with these at present. We must pass on to deal briefly with a couple of wheel novelties.

The L.S. Detachable Rim (L. Stier, Villiers-sur-Marne, Seine et Oise) is made in four patterns to suit either a solid disc wheel, a perforated disc wheel, an artillery wheel, or a cycle wheel. The principle of the rim consists in two half rims connected by a steel T piece; one half of the rim is rigidly bolted to this T piece; the other half being removable by means of a screwed nut on the other end of the bolt.

The Cadignan Spring Wheel (Société de Cadignan and Co., 20, Rue Brunel, Paris) struck us as being a good thing, although by no means entirely new. The wheel is built of steel throughout, and has a jointless forged rim. As the illustration shows, the hub and rim are connected by twelve ellipsoidal steel springs, which form the spokes of the wheel. These springs are attached to the hub by six bolts, each bolt securing two springs—one at each side.

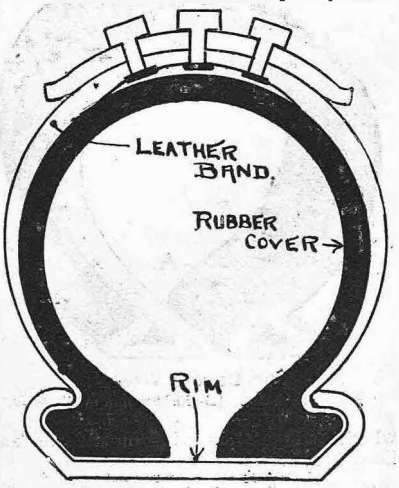


The Ideal anti-skid tyre cover.

C

Novelties—Contd.

The rim extremity of the elliptical spring is re-curved and notched so as to fit over a cylindrical piece attached to the rim: this arrangement forms a sort of jointed attachment which is said to give great resilience to the wheel and to absorb road shocks in a very efficient manner. Solid rubber tyres are fitted to the rims in order to deaden the sound of the wheel on paved surfaces.



The Sans Peur non-skid.

The Scottish A.C.

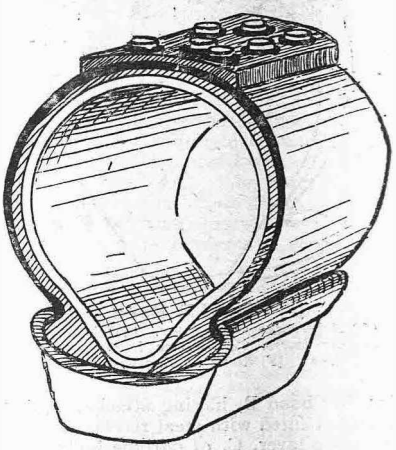
At the annual dinner of the Scottish A.C. (Western Section) the numerous company present (about 150 sat down) included several notabilities eminent in politics, law, science, literature, etc. Sir Matthew Arthur, Bart., was in the chair, and around him were the Rt. Hon. Sir J. H. Macdonald (Lord Justice Clerk of Scotland), the Rt. Hon. Sir Herbert Maxwell, Bart., M.P., Sheriff Fyfe, Professor Archibald Barr, etc. This section of the Scottish A.C., formed in 1902 with 38 members, has now a membership of well over 300. The Lord Justice Clerk paid a high tribute to Mr. R. J. Smith (hon. sec. of the Club), to whom so much of the success is due.

Car and Motorcycle Records.

As a short distance world's record-breaker, the Darracq car easily takes the palm, holding the whole nine of the classic figures, as follow:—Mile standing start, racing cars, 48⅘secs., by Baras; light cars, 51⅖secs., by Hemery; voiturettes, 1min. 1⅗secs., by Edmond. Flying kilometre (1,093⅘ yards), racing cars, 21⅘secs., by Baras; light cars, 25⅕secs., by Hémery; voiturettes, 30⅖secs., by Edmond. Hill climbing (flying kilometre), 10 per cent., at Gaillon; racing cars, 29secs., by Baras; light cars, 32⅘secs, by Hémery; voiturettes, 40secs., by De la Touloubre. In the motorcycle section honours rest with Lanfranchi, on a Peugeot, his world's records being: One mile standing, 57⅘secs.; kilometre flying, 29⅕secs.; kilometre hill climb, 29⅗secs.

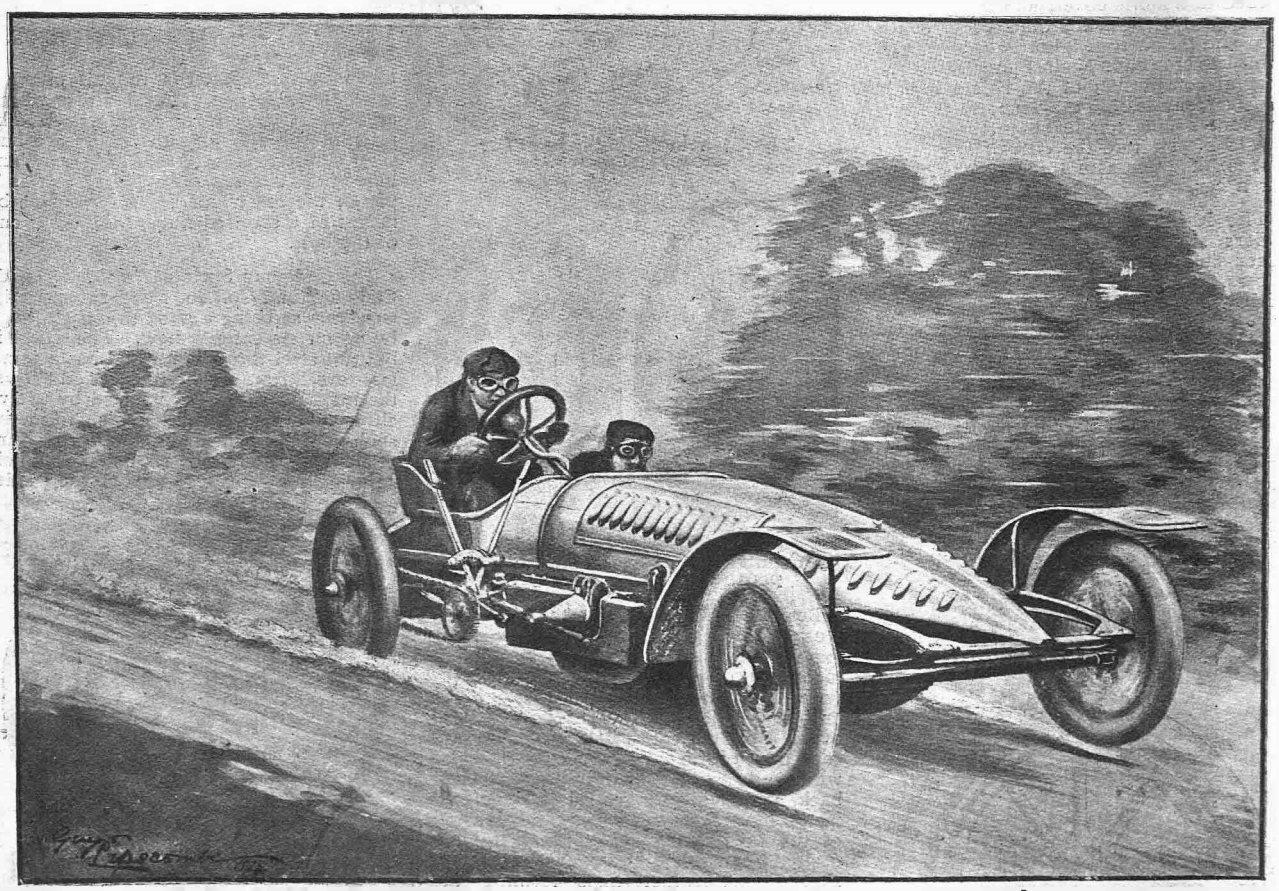
Amenities of the Road.

Count Louis de Clercq, of the Automobile Club of France, relates an amusing instance of his own motor experiences in Scotland last summer. While taking a spin down a long hill near Aberfoyle he saw far away along the road a black speck. It grew bigger, and presently resolved itself into the figure of a wee laddie standing in the middle of the road and waving his arms frantically. The Count,



The Optima non-skid.

of course, pulled up, and asked what was the matter. An accident? An obstacle further along? A police trap? "Nae, nae!" said the boy. "Then why did you stop me?" "I wis wantin' a match."



A reminiscence of the 1904 Gordon-Bennett. One of the Wolseley cars going at full speed.

NEWS.

A Happy Christmas to all readers.

The illustrated report of the motor boat section of the Paris Show is concluded in this week's issue of "The Motor Boat."

Barney Oldfield, the crack American racing motorist, broke the 50 miles track record last week by covering the distance in 48 mins. 39⅘ secs. at Fresno City, California.

We understand that the British agency for the Kelecom motors has now been taken over by Messrs. Taylor Gue, Ltd., of Peel Street, Birmingham, who will also have these well-known engines on view at their London depot, 52, Wells Street, Oxford Street, W.

The "Double Dutch" for "motor" is said to be "snelpaardelooszonderspoorwegpetroleumryting." Parts of this may be used with effect to stir up a sluggish carburetter, or, melted to the consistency of wax, it can be applied to a cut in the tyre as a makeshift. The Dutch Bobby occasionally employs it in staking off a "measured distance."

The resignation of the Spanish minister, Señor Maura, which was announced last week, is said to have been brought about partly through the malefic influence of the motorcar. The young King of Spain is a keen enthusiast for the sport, and Señor Maura, who is of a timid nature where cars are concerned, is reported to have annoyed his Majesty by the restrictions which he sought to place upon the Royal motorist.

An exceedingly enjoyable smoking concert was held at the Automobile Club on Thursday last, the rooms on the first floor being comfortably crowded. The programme was of a high order of merit, and full of variety. We observed the chairman and three members of the Council of the Motor Cycle Trades Association who were present as the guests of the Committee of the Auto-Cycle Club, following upon a conference between the two bodies.

The Auto-Cycle Club has decided, now that certain matters in connection with the international cup race have been cleared up, to carry out its wish to give a dinner to the makers and riders who took part and represented England in that race. The dinner will be held early in January, when the international congress will have been held, and considerable information in connection with the next race will be available. The club will then be able to state its plans in a manner which was quite impossible at the annual dinner.

Coming Events.

Dec. 26. *to Jan.* 2 Motor Union of Western India Reliability Trial.
,, 31. Entries close for 1905 Gordon-Bennett Contest.

1905.

Jan. 14 *to* 21. New York Automobile Exhibition.
,, 14 *to* 26. Fourth Brussels Salon.
,, 21 *to* 28. Birmingham Motorcar Show.
,, 27 *to Feb.* 4. Crystal Palace Automobile Show.
,, *and Feb.* Automobile Show at Bombay.
Feb. 4 *to* 19. Berlin Automobile Exhibition.
,, 4 *to* 11. Chicago Automobile Exhibition.
,, 5 *to* 19. Nice Automobile Week.
,, 10 *to* 18. Society of Motor Manufacturers and Traders' Exhibition at Olympia.

The new address of the Automobile Association of Bengal is 57, Park Street, Calcutta.

The 1905 Gordon-Bennett will be run under exactly the same rules as last year, probably at the end of June, but the date has not yet been definitely fixed.

At its recent committee meeting a number of gentlemen were elected to membership of the Auto-Cycle Club, and a provincial motorcycle club was admitted to affiliation.

The new company of E. J. West and Co. has recently been registered with a capital of £5,000, in £1 shares, to carry on the business of motor engineers, metal founders, etc.

Treading in the footsteps of the English military authorities, the Austrian have placed an order with a Vienna motor firm for an armoured automobile carrying a revolving gun.

The proposed reduction of weight limit for Gordon-Bennett cars did not commend itself to the Conference held last week in Paris. No alteration in existing conditions was made.

The Rex Motor Manufacturing Co., Ltd., have just received the compliment of getting an order for one of their Rexette cars for exhibition at the forthcoming Italian motor show in Turin.

The new signs denoting dangerous corners to motorists. Notice sign also on the lamp.

NEWS.

Mr. Henry Sturmey on the Position and Prospects of the British Automobile Industry.

Mr. Henry Sturmey's recent address to the Automobile Club was full of interest; and, as was natural with so vital a subject, it evoked plenty of subsequent discussion. Mr. Sturmey is chairman of the Industrial Committee of the Club, and was in a position to give his hearers much useful information. After outlining the early days of the industry, and pointing out that though November the 14th, 1896, is usually regarded as the birthday of the motorcar, the year 1900 was really the starting point of the industry in Britain, and the lecturer referred to the early craze for foreign cars, a craze which involved many impetuous companies in financial difficulties. He instanced the absurdity of overstocking the market with large foreign cars selling at from £1,000 to £1,500, for which there must necessarily be only a limited demand. In spite of this excess of foreign goods, British trade was in a healthy condition to-day, far healthier than could have been expected under the circumstances. This statement Mr. Sturmey corroborated with figures showing the business done by 17 firms in the three last years—1901 to 1904.

In 1902-3, 15 of these firms had largely increased their trade, some having more than trebled it. In 1903-4, 16 firms had still further increased their business, and here again in many instances the increase had been very marked; only one out of the 17 showed a decreased business in 1903-4, and this was owing to an exceptional cause. Comparing his figures with the returns of the French manufactures, the lecturer showed that the British motor industry had made

A HIGHER PERCENTAGE OF ADVANCE

than the French.

With regard to the comparisons which have been made between the Continent and Britain from a Gordon-Bennett point of view, Mr. Sturmey argued that this was a misleading basis of comparison. The British manufacturer was catering for a big British public, and not for a small racing section; comfort, reliability, value for money, are the desiderata of this big British public. Taking the most successful British firms of to-day, he declared that, with one exception, their trade had been built up without the aid of the racing interest.

On the export question, Mr. Sturmey said that trade figures showed a more satisfactory state of affairs than was generally believed to exist; and though the value of British exports falls as yet far behind that of French exports, the former is increasing in a much higher ratio than the latter.

Mr. Sturmey pointed out that the great need of the British maker was capital, but that capital was unduly nervous about lending its assistance. He maintained that wherever proper financial support had been given, not only had rapid progress been made, but most satisfactory and substantial results were being reaped.

Concluding with a brief forecast of the future of the trade, Mr. Sturmey quoted the opinion of an American manufacturer. This American was proposing to manufacture small runabout cars—a class of vehicle corresponding with our light car. He said, "There are 400,000 one and two-horse buggies and buckboard wagons in use in America, and we've got to replace them; that will take some years, and then we'll have to begin again and replace the automobiles that are worn out." This, said Mr. Sturmey, gives an accurate idea of the future of the trade in Great Britain. But the British capitalist must wake up!

Universal Lighting.

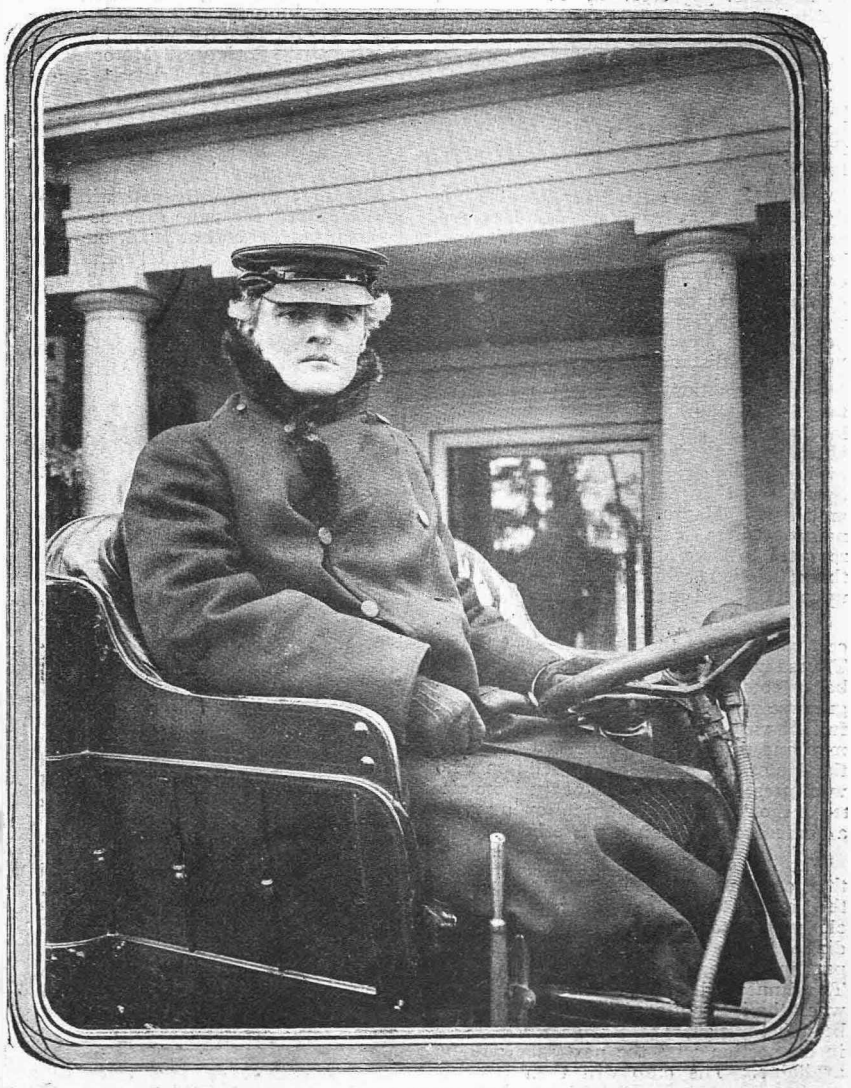
The deputation which addressed the Under-Secretary of State last week on the question of universal lighting was introduced by the Hon. A. Stanley, M.P. The deputation included Dr. Boverton Redwood and Mr. J. A. Farrer (representing the interests of motorcar owners and drivers), and Col. Crompton and Messrs. W. J. Bull, M.P., G. F. Sharp, and R. Todd (representing motorcycling and cycling interests). Mr. Rees Jeffreys acted as secretary. The matter is referred to at length editorially.

A large number of automobiles were out last week-end, despite the greasy roads.

A cable announces that on Saturday last Guippone, on a Peugeot motorbicycle, covered 90 kilometres 360 metres in 1 hour, and 100 kilometres in 1hr. 6mins. 36⅘secs. This works out at over 56 miles an hour—which is a world's record for the type of machine ridden.

Sequel to a Trailer Accident.

A case of some interest to motor and cycle agents was disposed of recently in the Nisi Prius Court. A Birmingham tyre repairer sued a garage company for damages in respect of a motor trailer supplied by defendants. As the result of an alleged defect in the trailer, an accident happened, and plaintiff's wife was hurt. Plaintiff alleged that the cup and ball joint of the attachment was worn and unsafe. Defendant pleaded that the joint was safe, but that the trailer had been carelessly attached by the plaintiff. He also sought to show that the machine had been lent, not hired. The jury found that the machine had been hired, and that the accident was the result of a defect. Verdict, £40 for plaintiff.



The Rev. A. J. Campbell, the distinguished Pastor of the City Temple, who is an enthusiastic motorist.

NEWS.

Heavy Fines for Fast Driving.

Two motorists were recently severely dealt with at St. Neots for fast driving through Buckden. They were fined £6 and £7 each. As the roads in this district are closely watched by the police, who have measured distances at intervals, drivers are warned to be specially careful as to keeping within the speed limit.

The Daimler Motor Co.

The Daimler Motor Co.'s eighth annual statement shows a gross profit of £24,759, which, after the usual deductions, leaves a net sum of £7,334 4s. 1d. As our readers are aware, a resolution was passed by the shareholders in October that the company should be wound up and sold to a new Daimler Co. This was formally agreed to at the meeting under notice, subject to confirmation by a future meeting.

A Big Coventry Dinner: Mr. Pilkington Comes of Age.

The coming of age of the son of Mr. William Pilkington, managing director of the Rex Motor Manufacturing Company, Ltd., Coventry, was celebrated by a dinner held at the King's Head Hotel, Coventry, on Friday of last week. Mr. Arthur Pilkington presided over an attendance of about 220. The toast of Mr. William Pilkington, jun., was proposed in a very humorous speech by Mr. Owen. Mr. George Pilkington presented the guest of the evening with several handsome presents subscribed for by the employes and friends of the firm. In reply Mr. Pilkington, jun., acquitted himself admirably. "Success to the Rex Company" was proposed by Mr. Band, and suitably acknowledged by Mr. Williamson. A capital musical programme was given during the evening, and the proceedings were in every way most enjoyable.

THE LIGHT-WEIGHT MOTOR-BICYCLE TRIALS.

ONE OF THE FIRST OF THE IMPORTANT EVENTS OF 1905.

The plans for this most important trial are now taking definite shape, and we believe that the general consensus of opinion upon them will be that the test is going to be neither partial nor incomplete. In fact, it is our own wish that the Auto-Cycle Club should impose a sufficiently severe task upon the competing machines to prevent those riders and makers who have consistently opposed the idea of lightness from afterwards asserting that the trial was a safe one, or one which proved nothing. It has been generally agreed that the test to which the Auto-Cycle Club has submitted the competing machines in the Reliability Trials of the past two years has been amply stiff and quite sufficient to test their reliability. The trial of the light-weights will, we are confident, be equally as stiff as that to which the heavier machines were subjected, and will equally prove that the former are in every way as efficient and practical and as suitable for the work to be demanded of them as are the latter.

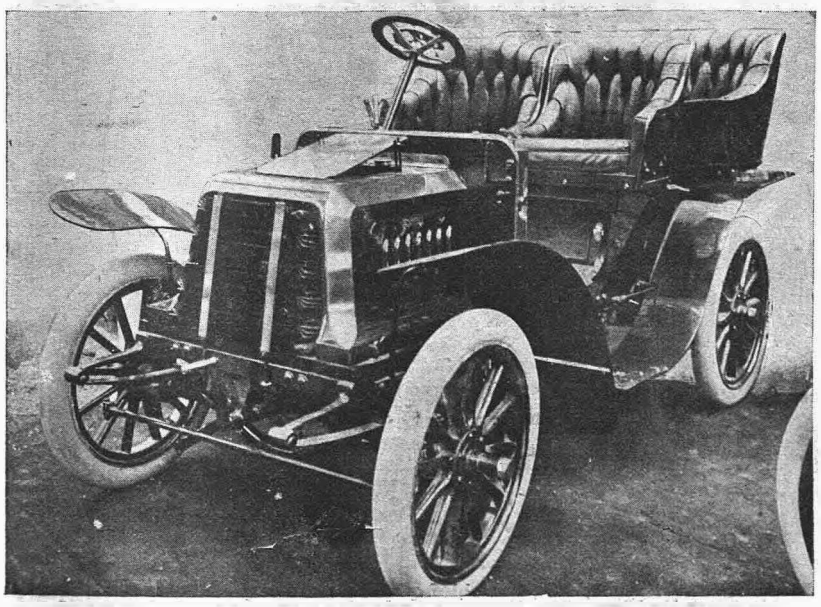
In the first place, it is desirable that the trial shall take place early in the year, so that both the trade and users may benefit by them at once. Therefore, the trial has been fixed for the early part of April, and it will be run in any weather. The distance will be a thousand miles, to be covered in six days—a task which, so far, has not been demanded of a motorcycle. A convenient centre will be chosen in the provinces, and radiating routes will be mapped out extending to about forty miles away. One of these routes will be taken each day, and the machines must go out and home in the morning, and repeat the performance in the afternoon, the daily distance being about 165 miles. The machines will be under strict observation the whole time, and will be under lock and key in the intervals. The roads will be of a fair give-and-take character, special attention being paid to hill-climbing and brake tests. It is proposed that the trial shall conclude on the Saturday night at a town where there is either a good track or a private road, and on the Monday a speed test shall be made. The great feature of the trial will be the strict observation by various methods.

The conditions with regard to the machine are as follow:—It must weigh not more than 100lb. in complete touring trim, and it will be weighed without petrol, oil, accumulators, lamp, number plates, horn, tool-bag or stand, because accessories are a matter of choice, and the trial is not intended to encourage the employment of flimsy accessories to conceal a heavy machine. The rider must weigh or be weighted up to eleven stone. The machine must have petrol capacity for one gallon, and the accumulators must have a capacity of not less than 500 miles. The essential parts of the machines will be sealed prior to the start, and as consumption of petrol, oil and current will be recorded, sealing arrangements will be made for each detail.

Marks will be given, at the judges' discretion, up to a total of 1,000, for reliability, hill-climbing, brakes, speed on the level, accessibility, and finish, and for petrol and oil capacity; whilst over and above the marks so obtained, marks for lightness will be given on the arbitrary scale of 10 marks for every complete pound under 100lb., so that a 70lb. machine can score no less than 300 marks on the ground of lightness. In this way makers will be encouraged to make the utmost use of their material, and to eliminate every useless piece of weight. The makers scoring the highest marks will win "THE MOTOR" trophy, and a prize of cash or kind will be given to the driver. First, second, and third class certificates, carrying respectively the gold, silver, and bronze medals of the club, will be awarded. A special prize is offered by Mr. A. J. Wilson to the maker of the machine which has fitted to it, in the opinion of the judges, the best generally practicable device or devices for reducing vibration. The trial is only open to makers.

If these trials of light-weight motor-bicycles are successful, the attitude which we have taken up, and the beliefs we have expressed from the very inception of this journal will have been completely vindicated. We have all along urged the trade to do away with unnecessary weight in all classes of the motorcycle, and have advocated the construction of a special light-weight machine, not necessarily to displace the heavier and higher-powered cycle, but as an addition to it. There should always be a market for both types, because, whilst the light-weight will appeal to the many and secure converts to the pastime, and serve the purposes of four-fifths of the riders, there will still be a call for machines which shall carry heavy riders in hilly districts, or which are capable of a high rate of speed.

We believe that when the trials have been held, the confidence which an already large section feels in the future of the light motor-bicycle will expand at once.



The Co. Francaise 8 h.p. four-seated car which is being shown at the Paris Salon.

NEWS.

A recent resolution of the Automobile Club of France decrees that two years' residence in France will in future be necessary to render a driver eligible for competing in the French Gordon-Bennett trials. Baron Peter de Crawlez and Charles Jarrott, who both ran in 1904, will accordingly be barred from the 1905 trials.

A Dangerous Pastime.

What! Motoring; No! Football. According to one of the American sporting journals, football holds the record for deaths and accidents in the way of pastimes, as during the months of October and November there were no fewer than 309 accidents, 13 of which proved fatal, in connection with the game of Rugby football in America. Had this happened in the motor world, we fancy some of the uninitiated scribes would have used away their fountain pens in decrying the new sport; but it was only football!

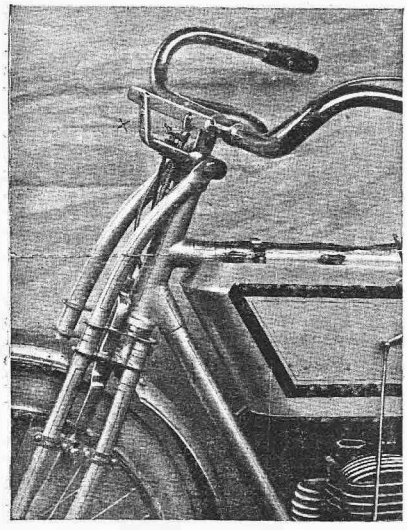
Some Interesting Paris Show Statistics.

The following interesting table was compiled by a well-known French journalist at the Paris Automobile Salon. The figures were gleaned from the stands of 124 motor manufacturers.

Horse-power of the engine:—	
Up to 8 h.p.	7 per cent.
From 9 to 20 h.p.	37 per cent.
Above 20 h.p.	56 per cent.
Number of cylinders:—	
One cylinder	9 per cent.
Two cylinders ...	6 per cent.
Three cylinders	8 per cent.
Four cylinders ...	72 per cent.
More than four cylinders	5 per cent.
Ignition systems:—	
Accumulators or dry batteries	16 per cent.
Low-tension magneto ...	44 per cent.
High-tension magneto ...	36 per cent.
Sundry others	4 per cent.
Governing:—	
On the induction	96 per cent.
On the exhaust	4 per cent.
Chassis:—	
Pressed steel (angle or channel)	70 per cent.
Armoured wood ...	12 per cent.
Tubular steel	14 per cent.
Sundry others	4 per cent.
Clutches:—	
Direct coned	42 per cent.
Inverse coned	36 per cent.
Metal-to-metal ...	20 per cent.
Sundry others	2 per cent.
Change-speed gears:—	
Sliding spur wheels ...	88 per cent.
Sundry others	12 per cent.
Power transmission:—	
Chains	48 per cent.
Cardans ...	51 per cent.
Belts	1 per cent.
Radiators:—	
Honeycomb	31 per cent.
Gilled pipes or others ...	69 per cent.
Inlet valves:—	
Automatic	27 per cent.
M.O.V.	73 per cent.
Rear wheel brakes:—	
Outside the hub	28 per cent.
Inside the hub ...	72 per cent.
Damping action on springs:—	
Truffault brake ...	19 per cent.
Counterstrings	10 per cent.
Compressed air	7 per cent.
Absent	64 per cent

America and the Gordon-Bennett.

The Automobile Club of America drew up a stringent code of rules for American entries for the Gordon-Bennett, which, by the way, had to be given in before December 15th. To qualify for entrance a car had to be completed for a clear fortnight before entering: it had to be driven over at least 1,000 miles of road, 250 of



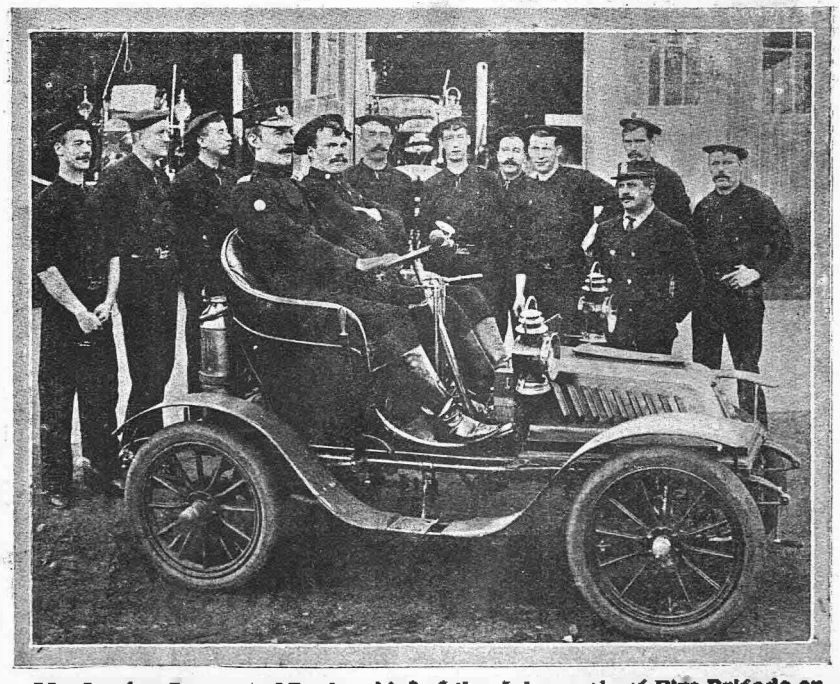
The improved Rex contact breaker and rim brake.

which must have been completed without any stoppage of the engine, and the entrants were required to prove that the car had been driven over 40 miles within one hour, on road or track. The Racing Committee of the club have reserved to themselves the right to decide on the ultimate competitors for the cup.

For the information of the trade Minerva Motors, Ltd., wish it to be known that they continue to supply Minerva motors and motor sets. A considerable reduction has been made in prices for the 1905 season. To the 2¾ h.p. engine the company fit their two-speed gear at a moderate additional cost, if required; and they likewise supply magneto ignition (Eisemann), with their patent transmission, with any of their motors.

Rex Improvements.

The Rex Motor Manufacturing Co. have introduced an improved method of lever contact or circuit breaker on their motorcycles. By means of the wing nut it is possible to adjust the contact at will, and by undoing the said nut it forms an interrupter and takes the place of the old-fashioned plug-switch. This is shown in the illustration, which also depicts the new Rex front rim brake and beehive silencer. Another introduction is a new three-ply Balata belt. Its characteristic lies in the tenacity of its grip at the point where it pulls over the driving pulley. As is well known, an efficient belt transmission without loss of power should be made in such manner as to preserve the top ply taut on the drive and slack on the bottom ply. By this disposition the grip of this new belt allows it to be adapted to the pulleys without over-tightening. When in action the gripping parts come into play automatically. The strain is only in the drive, not by an excessively tight band, the fault in previous experiments, which was open to the objection of injuring the belt by constant stretch, and impairing its life. The belt described is the outcome of Mr. G. Pilkington's (Rex Company) ceaseless experiments. It has been found to be unaffected by wet, grease, or grit. Needless to say, the Rex Co. will adopt this belt so soon as the manufacture permits in sufficient quantities.



Mr. Gordon Stewart, J.P., the chief of the Johannesburg Fire Brigade on his 6 h.p. De Dion. Mr. Stewart finds the car of great service to him in the fulfilment of his duties. Notice the fire extinguisher attached to the rear of the seat.

NEWS.

Numerous accidents having occurred at Dye House Hill, Thursley, Surrey, notice boards warning motorists and others going that way have just been erected by the Rural District Council of Hambledon at the expense of Mr. C. Cordingley, who has personally had experience of the dangers of that particular spot.

At a recent committee meeting of the Automobile Club de France, the following resolution was agreed:—"On the proposal of the Sportive Commission, the committee has decided to put aside the sum of 500 francs for the person or persons who shall have given information leading to the conviction of the party or parties guilty of spreading nails on the race-course for auto-cycles on September 25th at Dourdan." This commendable action is entirely due to the initiative of the Auto-Cycle Club.

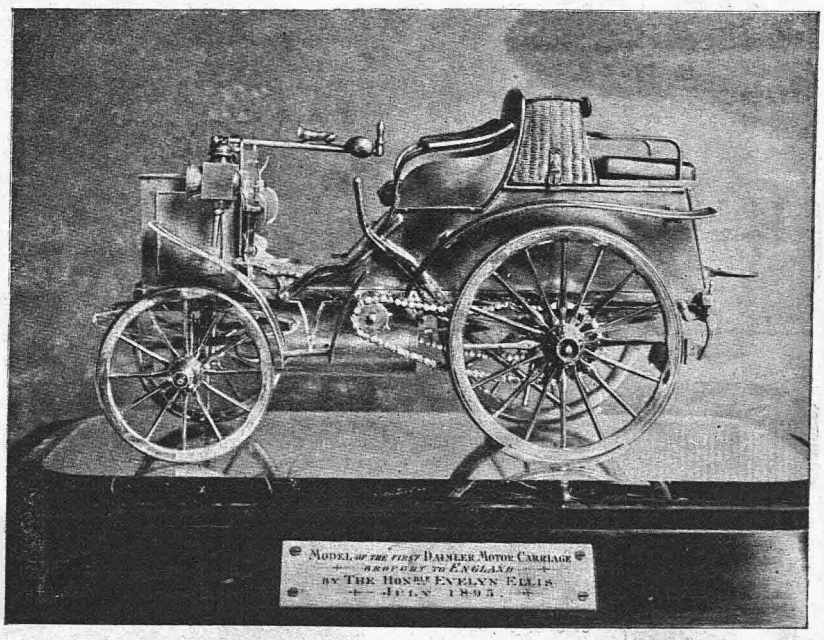
Cheap Fares to the Paris Show.

In connection with the Christmas holidays, the South Eastern and Chatham Railways are issuing return tickets from London to Paris, available for 14 days, at the special reduced fares of 58s. 4d. first-class, 37s. 6d. second-class, and 30s. third-class, and these tickets will also be available for those of our readers who wish to visit the Automobile Exhibition in Paris. They will be issued by the 2.20 p.m and 9 p.m. services from Charing Cross on December 21st, 22nd, 23rd, and 24th, also on the latter date by the 10 a.m. service from Charing Cross, and are available to return by the 2.40 p.m. or 8.40 p.m. services from Paris (Nord) on any date within 14 days of the date of issue. For further particulars apply to the Continental Enquiry Office, Victoria Station, S.E. and C. Railway, London, S.W.

"Not in the Warrant."

An amusing incident was amusingly reported in a recent issue of the "Glasgow Evening News." It appears that the authorities of Glasgow had their "doots" about the weight of one of the motor traction cars belonging to the West of Scotland Carrying Co. So a chief of police, an ex-bailie, and a mechanic were despatched from Greenock to Glasgow to weigh one of the suspects. We cannot do better than continue the story in the words of our Glasgow contemporary:—"On arrival at the company's works, it was pointed out to them that the warrant did not compel the company to place the motor on the weighing machine, and that the visitors would require to do this for themselves. The mechanic who had been taken up from Greenock then boarded the car, but in taking it through the works gates he drove the motor into the wall, of which a large portion was knocked away. He reversed the car, and it then ran across the roadway and damaged the wall on the opposite side, besides breaking a plate-glass window. A constable then came on the scene and demanded to see the driver's license, but it is stated that this little matter had been overlooked, and the officer thereupon took the names and addresses of the trio."

The Motor Liability Bill recently introduced into the Austrian Reichstag has caused great consternation not only in moting circles, but also amongst the trade, who regard it as highly prejudicial to the development of the Austrian automobile industry. The "Neue Wiener Tageblatt" is being deluged with protests against the Bill. Most of the writers unreservedly declare that to pass such a measure would be to sign the death-warrant of Austrian automobilism.



An interesting model which is exhibited at the Automobile Club.

Motoring in South Wales.

A Cardiff correspondent points out that the statement that "the S. Wales and Mon. A.C. now includes amongst its members practically every motorist in South Wales and Monmouthshire," is incorrect, as there are in the neighbourhood of Cardiff, roughly, about 300 motorcyclists, not one of whom, unless he is a car owner as well, is a member of the South Wales and Mon. A.C. It was partly due to the fact that this club refused to admit motorcyclists to membership that the Cardiff and District Motor Club was formed. The statement of which our correspondent complains obviously referred to "motorcarists" as opposed to "motorcyclists." We are glad to learn that both sections of the motoring community are so flourishing.

Sir Walter Gilbey and Parliament on Speed.

Sir Walter Gilbey's article in a recent "Nineteenth Century" on "The Privileges of the Motor" could not well avoid a tinge of prejudice in view of the fact that the author is one of the keenest supporters of the four-in-hand coach. But we cannot account for Sir Walter's apparent dread of even moderately high speeds; and we are quite sure that on his own box this sporting baronet could quite safely negotiate a speed not far short of the legal motor limit of the present day. One sentence in the article struck us—"In old coaching days races were run at about 15 miles an hour, but this was forbidden by Parliament as dangerous. How then can 20 miles an hour be safe for motors?" If this is propounded as a conundrum, we give it up. If it is enunciated in all solemnity as a self-evident truth, we can only say that we do not follow the reasoning. The only part of it that stands out clear is that 15 miles an hour is too fast for Parliament—a statement with which we unreservedly agree.

The Ross, Courtney Terminal Connection.

One of the neatest and most effective terminal connections that has been brought to our notice is the Ross, Courtney terminal, made by Ross, Courtney and Co., Ashbrook Road, Upper Holloway, London, N. It consists of a small brass disc with a toothed edge, and a plain disc to fit inside it. The wires of the cable have simply to be twisted into a loop, laid in the washer, the plain washer placed on top and the toothed edge hammered over, or simply pressed over with the fingers. This very useful little fitting is sold in boxes of one dozen at 8d.

Two Useful Reference Books.

The increased size of the familiar red-backed "Who's Who?" is not, perhaps, entirely due to the number of celebrities who have added motoring and motorcycling to the list of their "recreations"; but we notice a very considerable advance in this direction in the pages of the 1905 edition as compared with that of 1904. We again miss the familiar and useful tables in the front part of the volume; but a prefatory note informs us that the excessive size of the book renders the presence of these impossible, and they have again been incorporated into the companion, "Who's Who Year Book," the revised edition of which also lies before us, and which contains 120 pages of varied and handy information. Taken together, the two volumes form a useful pair of handbooks. The price of the larger volume is 7s. 6d., and of the Year Book 1s. Both of these reference works are published by A. and C. Black, Soho Square, London.

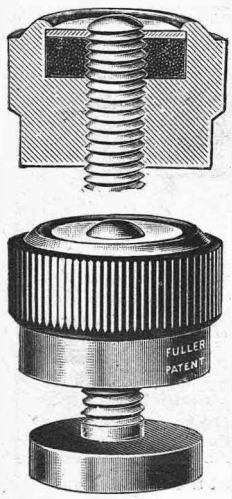
NEWS.

Memorandum for the Christmas holidays: Renew your license for the coming year.

The Clyde Cycle and Motorcar Co., Ltd., of Leicester, have just supplied a 3½ h.p. Clyde motor-bicycle to the order of his Grace the Duke of Marlboro'.

Fuller's Patent "Grip" Nut.

To the numberless patterns of lock-nuts which more or less effect the purpose for which they are designed, Messrs. J. C. Fuller and Son, of Wick Lane, Bow, E., have recently contributed one of the most ingeniously simple of these necessities we have yet lighted upon. The two illustrations herewith show an elevation and a vertical section. The bolt or stud is of the normal character, as is the nut with respect to the lower portion. The upper inner part of the nut (which appears as a thick black band in the sectional view) is composed of leather or fibre, held in place by a flat metal washer, and forced into position by great pressure.



Two views of the Fuller "Grip" Nut.

The metal portion of the nut is tapped to a standard thread, whilst the leather insst is threaded to a slightly smaller diameter. The leather being confined, has no room for expansion, and the entrance of the bolt compressing the leather compels it to automatically grip the threads of the bolt. Upon the sample sent to us for inspection, we find that the nut is easily screwed up with the fingers, but requires considerably more force to unscrew. It is made in a large variety of shapes and sizes, and we venture to predict immediate success for a very clever idea.

Mistaken Ideas of Duty.

A case at the Barnet Petty Sessions last week goes to prove what we have often said before, namely, that the magistrate's idea of a policeman's duty is to catch the malefactor committing crime rather than to prevent him doing so. Mr. Bernard Redwood, of Shaftesbury Avenue, was caught in a police trap at Potter's Bar, and, apparently losing his temper, called the constables by opprobrious epithets, and further annoyed them by taking up his stand on the road and warning other motorists of the existence of the trap, 30 cars escaping in consequence. Mr. Redwood's motives were probably very far removed from any desire to help the police; but the fact remains that if he had not taken the action he did 30 offences would probably have been committed, and the ratepayers' money would have been wasted on the expense of 30 summonses. Thus, to be logical, the police should have been much obliged to Mr. Redwood. Instead, they fined him £2 for obstructing them in the execution of their duty. Of course, without a good show of captures the constable waits in vain for promotion. That is the drawback of a trade which consists solely in the tracking of criminals, and must, consequently, in some districts particularly, have a good deal of unemployed time to fill up.

The Berks and Oxon Chamber of Agriculture is seeking to bring about increased taxation for motor vehicles. Ten pounds for a four-wheeled car, and five pounds for two or three wheels are the amounts suggested.

The "Good" Old Times—in South Wilts.

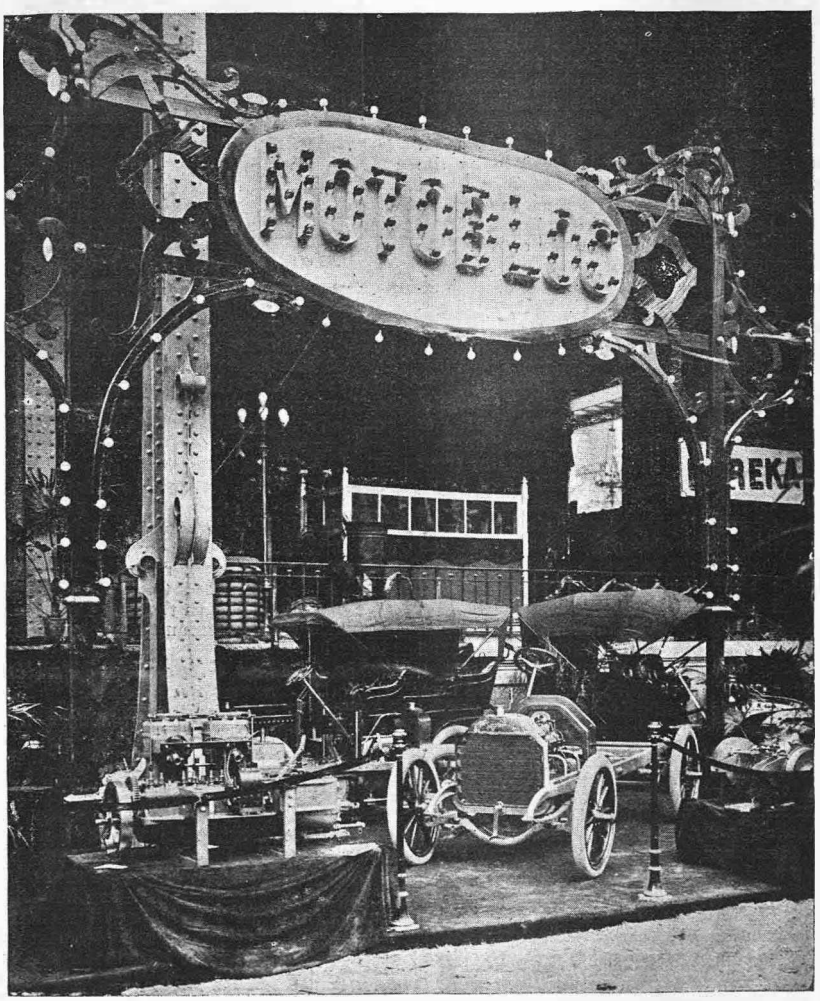
The following resolution was recently carried *nem. con.*, at a meeting of the South Wilts Chamber of Commerce:—"That the South Wilts Chamber of Commerce opposes the re-enactment of the Motor Act of 1903 in its present form, and is of opinion that the speed on public roads must be such as to ensure the safe use of them as heretofore by the public." We should be glad to learn what authority the S.W.C.C. has for declaring public roads to have been safe before the advent of the motorcar—but perhaps the statement covers South Wilts only, and does not extend to the rural districts of England (including London).

The Hon. C. S. Rolls has entered a Rolls-Royce car for the Tourist Trophy.

Motoring in South Africa is going ahead. A reliability and consumption trial was held recently in the neighbourhood of Cape Town. The test was a severe one, and included the climbing of Sir Lowry's Pass, a difficult gradient. An unfortunate accident marred the proceedings, Mr. A. T. Hennessy (President of the South African A.C.) overturning his car, and breaking his arm.

The "Problem of the Cheap Car."

Lecturing before the Motor Mechanical Society at Berlin, Civil Engineer Robert Conrad stated that cheap cars could be produced only by leaving out important parts or by reducing the dimensions to such a degree as to make the cars uncomfortable—that is, by approximating them to the motorcycle type. Herr Conrad referred to the light, cheap cars recently put on the English market, and doubted whether they would "catch on" generally. He remarked, in conclusion: "The cheap car, which costs much less in initial outlay and current expenses than the horse-car, and in this way alone allows the need which is to-day latent to become actual, cannot be built, nor will it be built until considerable progress has been made in motor technics." We shall see!



The Motobloc Stand at the Paris Show.

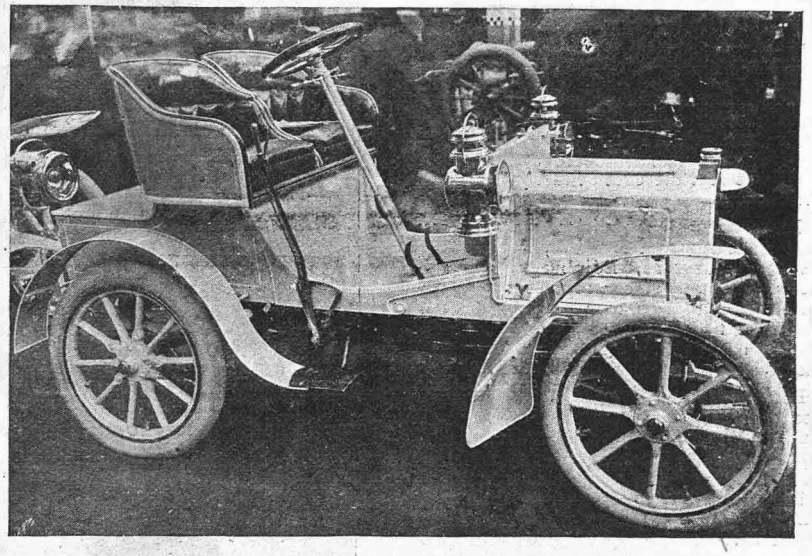
NEWS.

It is expected that the German Motor Club will move into its new and palatial home on the Leipziger Platz in February.

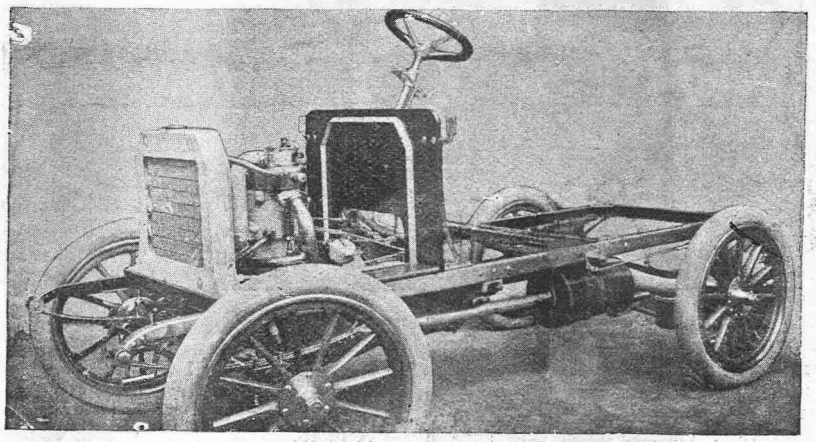
C. S. Rolls and Co. inform us that it has come to their notice that there is an impression abroad that the Minerva cars, for which they are the sole concessionaires in the United Kingdom, are manufactured by the French company known as "La Minerve." They, therefore, ask us to state that the Minerva cars, which they are selling, have no connection whatever with the above-named company, but are made at the new works of the Minerva Motors Ltd., at Antwerp, in which the latest automatic machinery has been installed and wherein over 1,000 men are already at work.

Light Cars at the Paris Show. Further Illustrations.

Owing to the difficulties that surround photography at the Paris Show, a number of the photographs intended for our report came through only at the last minute. We made use of all that was possible, and reserved the remainder for this issue. Thus we are able this week to give photographic representations of the 6 h.p. Baby Peugeot, the 6 h.p. Wolseley (vertical engine), the 9 h.p. Lambert (A. Lambert and Co.), the 9 h.p. La Française, and the 9 h.p. Motobloc. The Baby Peugeot is a very shapely car, with nice lines all through, and, apart from its tasteful finish, the design and workmanship of the machinery are excellent, as would only be expected from makers with the lengthy experience enjoyed by Messrs. Peugeot. The illustration of the 6 h.p. Wolseley gives a better general idea of the design of the whole chassis than did the one given in our last issue, which was devoted to the engine. The difficulty of doing good photographic work amid the surroundings of a show are obvious, and so we must promise to deal with this striking departure of the Wolseley Co. in an early issue. We believe that the new vertical-engined Wolseley will enjoy an even greater demand than has its prototype, the 6 h.p. horizontal-engined car. The former will sell at £200, or £25 more than the latter. The Co. Française car illustrated on another page is the 9 h.p., selling at £200. The work is very good all through, whilst in details the car is quite up-to-date. The 9 h.p. Lambert is made by Messrs. A. Lambert and Co., and is sold at £208. The body is long, as will be seen, entrance to the rear being obtained by swinging inwards the seat beside the driver. It will be seen that this car has a circular radiator tank, and curved bonnet. The illustration on page 562 depicts a chassis view, from the rear, of the 9 h.p. Motobloc, with a two-cylindered sloping engine. This car is earning an excellent name for simplicity and reliability, and it made a very good impression at the Paris Show, which, by the way, no one could truthfully describe as a light car show.



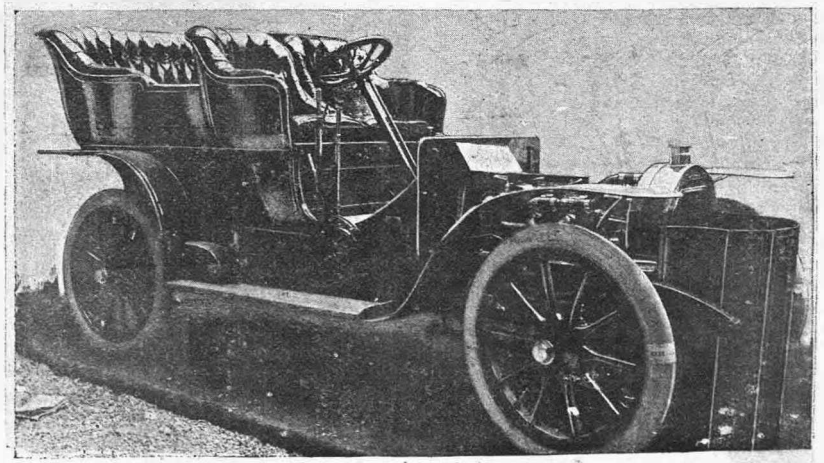
The Baby Puegeot.



Chassis of the 6 h.p. Wolseley.

A Well-deserved Presentation.

In our report of the Motor Cycling Club's dinner (which had to be written on the spot) we did not mention an interesting presentation that was made to Mr. C. W. Brown, the trials hon. sec. It was Mr. Brown's fine experience as a road riding cyclist that enabled him to organise so successfully the various events of the club's season; but when one has the experience there is still energy and enthusiasm required, and it was the exercise of these qualities in the club's interest that the members so well and thoughtfully recognised. Mr. Brown was handed a cheque for £25, subscribed for by the rank and file of the M.C.C.



The 9 h.p. Lambert.

NEWS.

It is interesting to note that the Wolseley Co. were again the first firm to have their stand at the Paris Salon properly installed and ready for the opening day. This was also the case at last year's exhibition.

In response to enquiries, we may say that A. Donaldson and Co., Ltd., of 35, Roseburn Terrace, Edinburgh, are the only White Steam car representatives in Scotland, and this firm has taken considerable trouble to fully grasp the mechanism of White cars, and the best methods for effecting repairs in them.

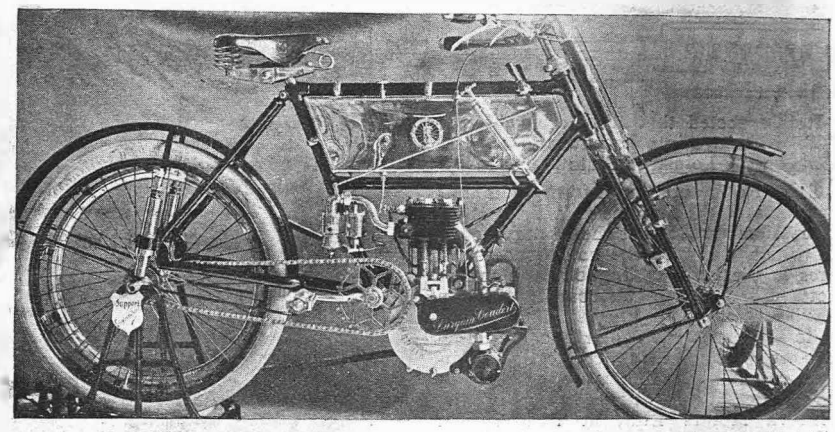
Phœnix Motors, Ltd., are now in a position to supply the Phœnix two-speed gear, clutch and free engine complete as a separate article for fitting to any make of motor-bicycle. They are also supplying it built up into a wheel, and are moreover making conversions of machines from direct drive to two-speed gear, and also converting from belt drive to chain drive with two-speed gear.

More American Records.

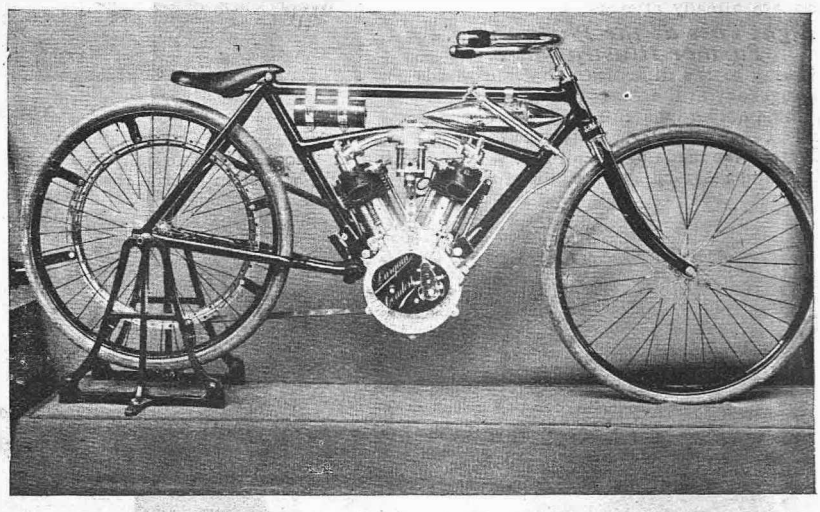
The well-known Pope-Toledo automobiles have been much to the fore of late, figuring prominently in the Vanderbilt Cup, and, with Barney Oldfield at the helm, cutting down previous bests. Last Wednesday Dr. Thomas's Pope-Toledo set up new path records for 25 and 50 miles, the respective times being 23mins. 38½secs. and 48mins. 39½secs.

The Hour Record.

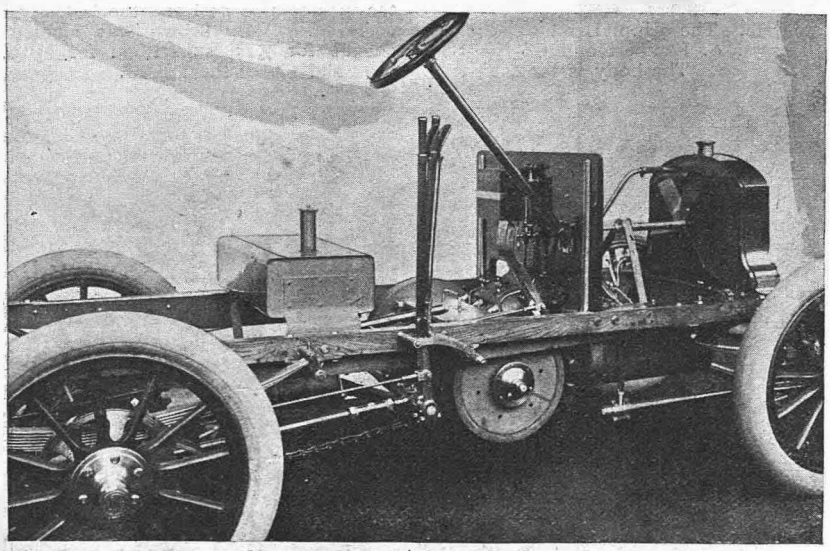
Up to a few weeks ago, the world's hour motorcycle record stood to the credit of one or other of the crack pacemakers who from time to time trailed a bicycle rider over 60 minutes in record time, Cissac, on a 16h.p. machine, who paced Darragon, the present hour bicycle record-holder 54 miles 1,058 yards in the time, being the last pacemaker to hold the motorcycle record. Now the figures stand to the credit of that daring driver, Anzani, who, on an Alcyon, fitted with a Buchet engine, 90 by 90, giving about 3¾h.p., covered 54 miles 1368 yards in the hour from a standing start. This is 5 miles 568 yards in advance of George Barnes' British hour record, but if the skilful little English rider had such a track as the Parc des Princes, Paris, for daily practice, we fancy he would soon add a few miles to his present record.



Lurquin and Coudert touring machine fitted with spring forks to both wheels.



Lurquin and Coudert 12 h.p. racer (100 lbs.), described in our last issue.



Chassis of the 9 h.p. Motobloc.

Modern Fables II.

A motorist, having come into collision with a cart driven by a small boy, was accosted by a constable, with a request that he should exhibit his license.

"By my halidom!"—(or the modern equivalent)—said the motorist, "I have forgotten to take one out!"

"Then I am afraid I must summons you," said the blue one.

In due course the case came on.

"You are a danger to the public," the magistrate observed. "You drive a motorcar without a license, and collide with a horse and cart."

"That is true," said the prisoner, "but the collision was due to the boy's inferior driving, and was no fault of mine."

"But you have no license," reiterated the beak.

"Nor has the boy," retorted the motorist.

"He does not drive a motor," said the magistrate.

"No; but a horse is more dangerous," said the prisoner.

"That's as may be," returned the bench. "But the law does not require that a horse-driver should have a license."

"Then all I can say is that it ought to," said the prisoner as he paid the fine.

MORAL: And it ought.

NOTE.—These columns are set apart for the discussion of motor topics by bona fide readers of "THE MOTOR," and trade letter containing veiled advertisements are not admitted. The Editor is not responsible for opinions expressed by correspondents in this section.

Light Car Experiences.

Sir,—Perhaps the following particulars of my experiences in running a 6½ h.p. Regal light car some 3,500 miles during the past season may interest your readers. Starting early in March with some preliminary 50-mile spins, we were soon emboldened to take longer journeys, and trips to Clacton, Eastbourne, Hastings, etc., were accomplished quite easily in the day, besides allowing plenty of time to put up the car. I have found the car speedy, having averaged 21 miles an hour to Clacton, and about 20 to Eastbourne, etc., and have made these journeys on occasion without a stop, which I think speaks well for general reliability of this type of car. I have also used the car for touring, one being from London to Land's End. Starting from London one morning in July about 6.30 a.m., we got into Exeter with the aid of handy little "MOTOR" strip map at 9.30 p.m., having stopped nearly five hours at Salisbury and other places en route. We found the Chard and Yarcombe climbs the stiffest on this road. We left Exeter next day, and a short run through beautiful scenery brought us to Torquay. There is a nasty hill on this road, the surface being execrable, but our little car went up it. Torquay was left some days later, and a pretty run via Plymouth (for Point Ferry) brought us to Bodmin. The petrol pipe broke near the carburetter when just outside Plymouth, but was soon mended and got on our way again. Getting away from Bodmin next morning, we had a splendid run over wide and mostly good roads to Penzance (which seems to have a great deal of wet) and thence to Land's End Hotel, the proprietor here being most hospitable and full of anecdotes of the record rides. Our return journey was made via Launceston, Okehampton and Axminster to Bournemouth. There are a number of very steep hills between Bridport and Dorchester, but the little car climbed them well. After a pleasant stay of a few days at Bournemouth we completed our tour by getting into London on a Sunday via Southampton and Guildford, having had a most enjoyable holiday. A little later another tour was attempted, to Scarborough. Getting away early, we reached York in 12 hours, including stops for lunch, etc. We subsequently visited Harrogate, Scarborough and Bridlington, and on our return journey made a detour at Grantham to Spalding. Leaving Spalding early on Sunday, we went to Norwich via King's Lynn, and thence home through Ipswich and Colchester, having done 185 miles in the day with ease. Bar punctures, of which we had five in one tyre at Honiton, our principal troubles have been ignition (wiring and adjustments) and water connections. As to expenses, I find this works out about 2½d. per mile, of which tyres form a large item. Petrol consumption, 40 miles to the gallon. As regards efficiency and reliability, my experience is that these little cars stand high, and if carefully driven and tended will maintain a very satisfactory average all day without any real trouble.—Yours faithfully,

ERNEST E. HART.

Sir,—In reply to your request for experiences in light cars, if you think the following worthy of space in your paper, I think it may possibly influence a few would-be purchasers who are hesitating on account of their being unable to think a light car can prove both reliable and cheap. Experiences with a light Vauxhall car: Some months ago, in response to an advertisement in "THE MOTOR," I made a journey to town with the object of purchasing one of the light cars advertised by the Vauxhall Ironworks Co., Ltd. I arrived at the works in Wandsworth Road about 11.30 a.m., and was shown every courtesy by Mr. Ash, the managing director. He promptly placed a car and driver at my disposal for a trial run, and my first request was to get him to show me the hill-climbing powers, which he did to my best satisfaction up a hill of 1 in 6, with myself (16 stone) and driver (about 10 stone) on board. The car took the hill without a falter, and appeared to have plenty of reserve. After this we ran through the traffic over Westminster Bridge to Trafalgar Square to obtain a license (without success), and from there back to Wandsworth Road. I was so delighted at the behaviour of the car I had no hesitation in writing out a cheque and securing what I thought and which has turned out to be a good bargain. My next difficulty was to get the car home to Yorkshire, as, being unable to obtain a driver's license, I dare not attempt the journey alone. Mr. Ash spoke to one of his mechanics, who, for a very reasonable sum and expenses, offered to drive me. I jumped at the offer, and the first thing was to get filled up with petrol, etc., in readiness for the journey on the following day (Sunday). We had four gallons of petrol in the tank, a good kit of tools, etc., and weight of passengers 16st. and 14st. 7lb. respectively. I got the driver to take me to Islington first, where I was staying overnight, and he then drove the car over to Harlesden, and brought it over for me on Sunday morning at 11 a.m. Our first trouble after leaving, at 11.45 a.m., was a broken porcelain in the plug, about 100 yards from the door. This was replaced, and we started off through the grease and mud on our road to Harrogate. Though to me the car seemed to be going well, my driver was not satisfied, and finally said the engine kept missing. We, however, proceeded up Highgate Hill in good form, and on to Barnet. My companion here pulled up the car, and ran over the ignition, to find a nut loose on the commutator; on tightening this a decided improvement was noticed, and we ploughed our way through the rain and mud to Hitchin without a further stop. Lunch there, and started off for Peterborough and Grantham. The car by this time was hardly discernible for mud. We got to Huntingdon by 4.30 p.m., and decided to go on to Stamford, where we put up for the night at the "George," the rain still coming down heavily. We started off (having put two gallons of petrol in the tank) at 9 a.m. next morning, and did a non-stop to Doncaster, arriving there at 1.30 p.m., a distance of about 90 miles, which speaks very well for a 5 h.p. car on heavy roads, and considering the weight on board. We took another two gallons of petrol on board and oiled up. Then, leaving Doncaster behind, went on through Ferry Bridge to Aberford, etc., and reached Harrogate at 4.30, still raining. My companion being in a hurry to get back had just nice time for refreshments, and caught the Midland express to London at 6 p.m. I gained a good experience of the car on the journey, and it has been very useful to me since. The car is excellent value in every respect, and the workmanship perfect. I have covered close on 1,000 miles with no trouble save a puncture, and think nothing of a run to Malton (40 miles) and back on a Sunday.—Yours faithfully, C. W. PLOWMAN.

O.P.U.

Three Months' Experience with a Light Car.

Sir,—As you ask for light car experiences, I venture to give you mine. I purchased a good secondhand two-seated Renault with 4½ h.p. De Dion engine. The engine, gear, and tyres were (and are) in splendid condition; and the car on its "selling trip" behaved magnificently, averaging over 18 miles per hour over 33 miles of by no means level roads. I learned to drive and steer the car after a fashion in two outings; but it quickly became apparent that with a relatively low-powered engine there was a lot to be learnt as to how to get the best results and how not to be on the second or first speed gear unnecessarily. The car has three speeds forward and a reverse, the top speed giving a direct drive. By running the engine at high speed, all minor hills can be rushed, and the petrol bill need not attain undue proportions, owing to the free use of the low gear. By maintaining a good average pace, it is possible to get 50 miles from a two-gallon can of "Bowley Special." If one attempts to average only a 10 or 12-mile-an-hour pace, the lower gears are used more often, for the reason already stated, and the result is not economical running. The first real difficulty to the car novice is the clutch. One is warned over and over again to "let in" the clutch gently, but this art cannot be acquired quickly. It is a matter of practice and experience, and the experience may be expensive. In my own case, one dark evening in the early days of my "carhood," the car suddenly slowed down, and the clutch refused to act. Next morning (having pushed the car into a shed over-night) it was found that the fly-wheel portion of the clutch was split into three. Result, a fortnight without the car; cost, about £2 10s. Exactly a week after the car had been received back, owing to careless fitting of nuts securing fly-wheel of clutch becoming loose, they came adrift, entailing the taking down of engine, and fitting new nuts and key; cost £1 2s. 6d. Another costly item was the fitting of an auto-trembler to the coil; price, £1 5s. I will not enter into a discussion on merits and disadvantages of trembler and non-trembler coils. For myself, I have had trouble with non-trembler coils, and practically none whatever with trembler coils. I have found no trouble by retaining the make and break with the auto-trembler. After this bout of expenditure, the car went without trouble for about a month, when a distracting noise in the rear suggested something wrong. I took no risks, but had the differential gear taken to pieces, and found one of the cogs was broken. Fortunately the driving pinion was not spoilt, but the gear had to be renewed, which cost £4 for the set and £2 for the fitting. Yet again I had to have the engine taken down: this time the clutch would not stop running when freed from the gripping surface: the reason was that oil could not travel down one of the oil-cups in sufficient quantity. This bill is unpaid; it equals a man's time for a day and a half. For petrol and lubricants, over £3 has been paid; and for sundries almost £1 5s., including new balls in bearing of one of the back wheels and a new cone. Thus nearly £16 has been spent on the car within three months. Much of the £3 worth of petrol has been wasted through evaporation by standing in the tank. Such is my first three months with a light car; but I am not daunted, as in the interludes the car is a gem, and unless the next three months should be as heavy in expenditure I shall have no idea of ever reverting to a motorcycle with something attached. Much of the expense set forth above could have been reduced if only the clutch had been get-at-able without taking down the engine. Let me warn prospective car owners to see that the clutch is in such a place, or so fitted, that it can be removed easily. When water gets into your cellar you do not want to have to pull down the house to bale it out.—Yours faithfully,

W. J. Kaye.

Wiring an Old Front-driven Werner.

Sir,—I notice a letter from M. S. Tinne; so I enclose a sketch of wiring as it was on my machine in 1900. It was very complicated, so I reduced the wires to two only, along the top tube, one low and one high-tension. If Mr. Tinne is in this neighbourhood I shall be pleased to show him how I have simplified it: if not, perhaps the sketch of the original wiring may be of use to him.—Yours faithfully, T. Fred Hunt.

Sunny Croft, St. Clement's Road,
Bournemouth, E.

Magneto Ignition.

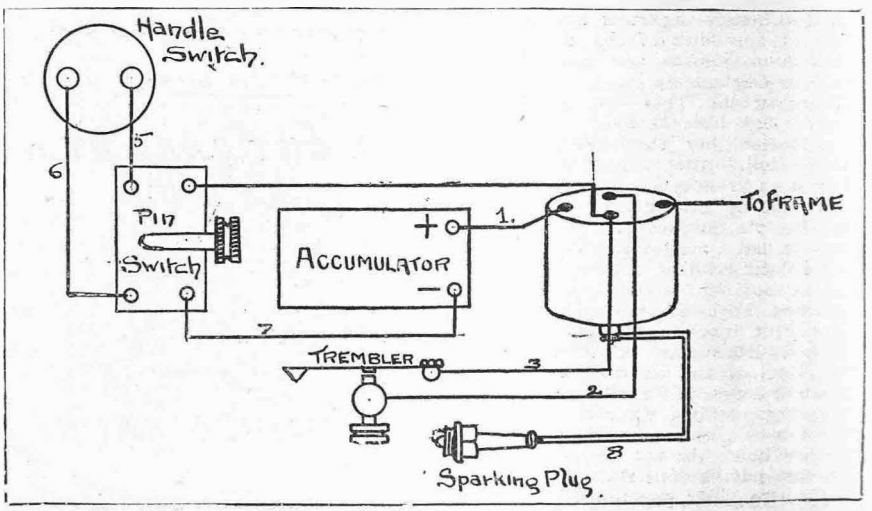
Sir,—In reply to "M.J.'s" request for experiences of magneto ignition of the Clyde type, if he refers to the early Simms-Bosch engine type, of which I have had considerable experience, I would advise him to leave this type alone. I certainly do not condemn magneto ignition as a principle, and I should consider the up-to-date rotary high tension type to be the embodiment of reliability, but I am not in favour of engines which have to work a magneto through so frail a mechanism as the early Simms. Apart from this, I have nothing but praise for magneto ignition: it is quite easy to start with and gives a gigantic spark; and accumulator and other troubles are unknown.—Yours faithfully,

Magneto Mad.

Advantages of the Mechanical Inlet Valve.

Sir,—In regard to the advantages set forth for the M.O.I.V. I note that correspondents frequently refer to the supposed advantage obtained by the early opening of these valves. Surely these gentlemen have got hold of the wrong end of the stick, for I contend that early opening is of no advantage in an engine unless the area of the valve opening is so small as to throttle the incoming gases. In an engine with properly-designed inlet valve, it is advantageous to open the valve a trifle later than at the dead point, so that the initial suction on the carburetter will be considerable. The area of the valve opening being amply sufficient, the partial vacuum caused in the cylinder by late opening will almost instantly relieve itself, and the piston will continue to draw in a volume of gas equal to its displacement until the end of the stroke, provided that the inlet valve can be kept open until the dead point on the out stroke be reached. With the automatic inlet valve there can only be one, and there may not be any efficient engine speed as far as the valve is concerned. The reason for this is that any strength of spring would close the valve before the end of the stroke if it were not for the inertia of the moving parts of that valve, and only at one engine speed will the velocity of the moving valve cause its inertia to overcome to the right extent the opposing force exerted by the spring, at all other speeds the valve will close early or late according as the speed is less or greater than the critical one. In some engines fitted with A.I.V. and probably in most of them, this balancing of opposing forces is never attained at any speed owing to a combination of incorrect weight of valve, strength of spring, and amount of travel, consequently there is always a loss of power. By adapting the M.O.I.V., however, we are enabled to make use of a more powerful spring, which positively closes the valve at the correct instant, at any speed within reasonable limits, if the operating cam be timed correctly. I hope that I have clearly shown, by the above, wherein the advantage, and advantage there surely is, of the M.O.I.V. lies.—Yours faithfully, D. G. W. Hume.

Germiston, Transvaal.



Illustrating letter from T. F. Hunt.

O.P.V.

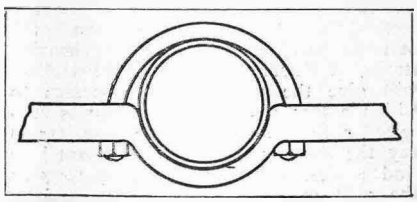
Re Clyde Ignition and Coronet Engine.

Sir,—In answer to "J.M.'s" enquiry re Clyde ignition, I have had large experience of this make in both its high and low-tension forms. The high-tension pattern is undoubtedly far superior to the low tension, though both forms are thoroughly to be depended upon. I have been over 5,000 miles on my present mount (a 3¼ high tension) and there is not the slightest trace of wear in the magneto; during this time I have had no trouble with the ignition. The only drawback to the low-tension form is the multiplicity of moving parts, which means more wear. Re Coronet engine.—G. E. Donald asks for experiences of the above. My 3¼ h.p. Clyde is fitted with one. It has given entire satisfaction and required no attention whatever. There is not the faintest sign of shake in any of the bearings after a season's hard running. Absence of overheating is one of its special features. —Yours faithfully,

MAURICE C. L. FREER.

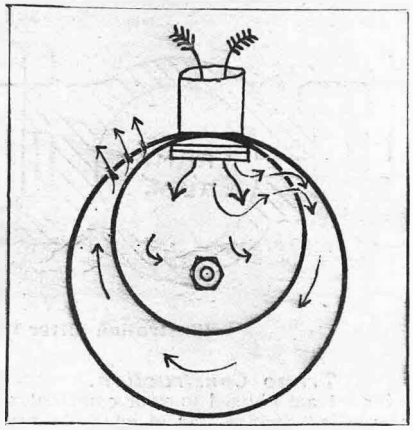
The Tri-car.

Sir,—Having taken in "THE MOTOR" for over two years and paid close attention to the inducements held out by the trade to "the man of moderate means" (whatever that may imply) to turn his attention to motoring, I now think the



Illustrating letter from W. H. Berisford.

time has come when "the fool" may safely take a hand without burning his fingers too badly. The recent Stanley Show has certainly brought the tri-car into a prominence it did not possess before, and deservedly so, for it was as uncomfortable as it was unsightly, and possessed all the faults of the motor-bicycle and none of the advantages of the small car, with the exception of the fact that it carried two people. With the advent of the two-cylinder engine, coach-built body, chain or belt drive, three speeds, and cased-in machinery something practical has been at last evolved in my opinion. Take my own case. I have not room enough for a decent-sized car, nor do I feel disposed to pay a man to do nothing else but look after a small car that may not go out in bad weather once a week, and when it does may cost anything up to £50 per annum for upkeep. A tri-car can be put in almost anywhere. Its upkeep should be very little, and its comfort equal to if not better than most small single-cylinder cars. What is wanted is luggage capacity, at least to same extent that it exists on the small car. The tri-car that seems most fully to meet requirements so far is the Bat Kar, but I was not at the Stanley Show myself, and think a small book of reference (such as you are now publishing on the small car) would be very acceptable on the tri-car. I write to you in the hope of hearing some



Illustrating letter from W. H. Berisford.

opinions as to the best types of tri-cars embodying requirements set out in this letter. Surely manufacturers can give us with three wheels, propelled by a 6 h.p. engine, all the comforts that we got (certainly four years ago) on the small French 4½ h.p. Voiturette and double the speed into the bargain.—Yours faithfully,

DAMNONIENSIS.

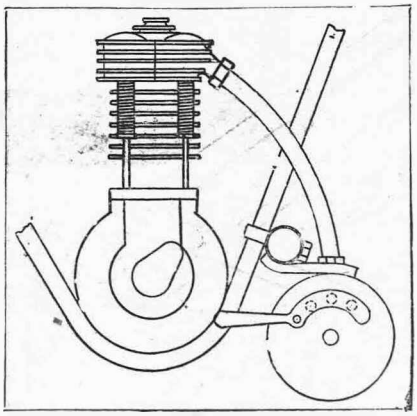
The 4 h.p. Simms Engine.

Sir,—Will any of your readers be kind enough to give their experience of the 4 h.p. Simms engine, and whether Simms-Bosch high-tension magneto ignition is entirely satisfactory? I should also be much obliged for information with regard to a good change-speed gear that can be operated by lever without having to first throw out the clutch at every change. There are, of course, the Phœnix and Bowden types, but in my opinion the back wheel appears to have enough work to do without having a change-speed gear attached to it.—Yours faithfully,

C.C.K.

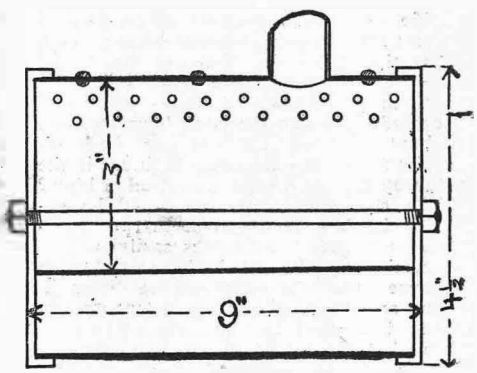
Silencer Experiments.

Sir,—As I have derived considerable benefit from the suggestions in your "O.P.V." columns, I send the results of a few experiments with silencers of different designs. My first (on an engine 75 mm. by 75 mm.) was supplied with the engine and was a "silencer" in name only, as the holes in the two tubes of which it was made were ¼in. diameter. You may be sure it had one good quality, however, there was very little back pressure. My second attempt was suggested by a writer in "THE MOTOR," and consisted of an expansion chamber on the



Illustrating letter from W. H. Berisford.

bottom of which were connected about 30 discs of tin 3in. in diameter, separated by small copper washers. The exhaust entered the centre of these, and of course made its exit radially between them. This was a slight improvement, but I was by no means satisfied, so I went in for a monster—11in. by 4in. by 3in. This "tool box," as my brother-motists called it, had three ¾in. tubes running from top to bottom, with 20 1-16th in. holes about the middle of each tube, the end being open. I also fixed a cut-out on the side by drilling four ¾in. holes and pivoting at the centre a plate with corresponding holes. This type was much better, but did not compensate for the abnormal size and weight. Its best feature was the cut-out, which seemed the means of the machine climbing hills which had previously to be walked. However, I pegged away at different ideas, until I think I have found a design which, although it does not give perfect silence or a perfectly free exhaust (which qualities cannot be obtained together), it does give a minimum of noise and back pressure. On my present engine it is fitted very neatly in a horizontal position, supported by foot-rests (which I will refer to later). It will be seen from the rough sketch that the gases pass into the inside chamber through the walls of both. After expanding here, it passes through two or more rows of 1-16th in. holes, into



Illustrating letter from W. H. Berisford.

the narrow space where the two tubes approach each other. Expanding again, it passes out of the larger tube at the narrow space on the opposite side, through three rows of 1-32nd in. holes. The cost of the whole is very small, and it can be made by any tinsmith out of sheet iron. I have arranged the indispensable cut-out at one end, with a projecting piece behind, by which it is opened by my foot. If I am not taking up too much space, I would like to impress on all motorcyclists the comfort to be derived from foot-rests. My own mount is fitted with pedals (as I consider every machine ought to be), but in consequence of them being fixed too far in rear of the saddle, riding any distance was anything but comfortable. I got a piece of tube (stout cycle tube will do) and fixed it, as in sketch, in front of the loop on my frame, and it has been worth several pounds to me. Not only for comfort, but I find that when I have a spill the rests bear the brunt of the fall and save the cranks, contact-breaker, and engine from serious damage. They should be about 18in. long, and have two pieces of hose pipe of suitable diameter on the ends for the feet to rest on.—Yours faithfully

W. H. BERISFORD.

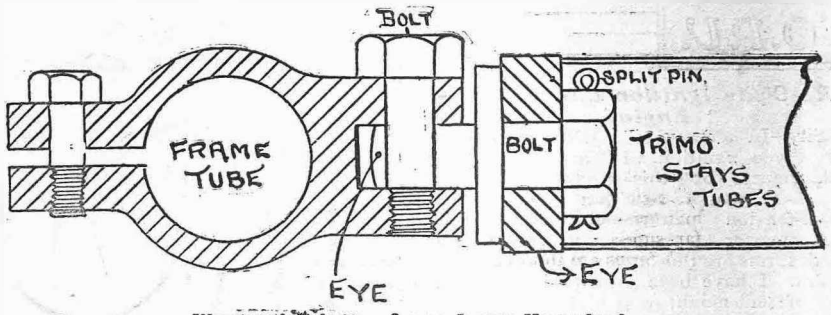
O.P.U.

Petrol Consumption of 7 h.p. Clyde Car.

Sir,—Having read the letter signed W. Cameron in "THE MOTOR" of November 22nd re his 7 h.p. Clyde car, I should like to know what carburetter he uses to enable him to do 50 miles on a gallon of petrol, as this consumption of petrol is much below that used by the average carburetter.—Yours faithfully, T. SPITTLE.

Air versus Water-cooling.

Sir,—It seems to me that the old cycle trick of "follow my leader" is to be perpetuated in the motor trade. The happy thought struck someone that motorcycle engines ought to be water-cooled, and most of the makers, without rhyme or reason, follow suit: some of them formulate the most specious arguments to sell the machines so fitted. Now, in my opinion, water-cooling is not required on any engine up to 5 h.p.: all the water in the Thames will not remedy careless or foolish driving, and other little in-attentions. What is the remedy when the water chambers and pipes silt up?—have new ones. They might last some considerable time if you always used distilled water, but how often will that be obtainable? I know that London water will silt a 1¼in. pipe up solid in four months. An efficient fan will go a long way towards keeping the head cool. I notice that in all answers on cooling devices the dictum is, direct the blast on to the part to be cooled. No one seems to have troubled about exhausting the heat from the head. Why not reverse the order of things in the fan by making it exhaust instead of blow? The combustion chamber could be enclosed (the covering to be in two pieces so as to get at the valves easily) with a variable opening at back covered with gauze: the cold air would be drawn in and around the gills in a constant stream, and discharged from the orifice now used to blow the air on to the part affected. This would dispense with thermo-syphons and rotary pumps, which are the cause of no end of trouble.—Yours faithfully, A4190.

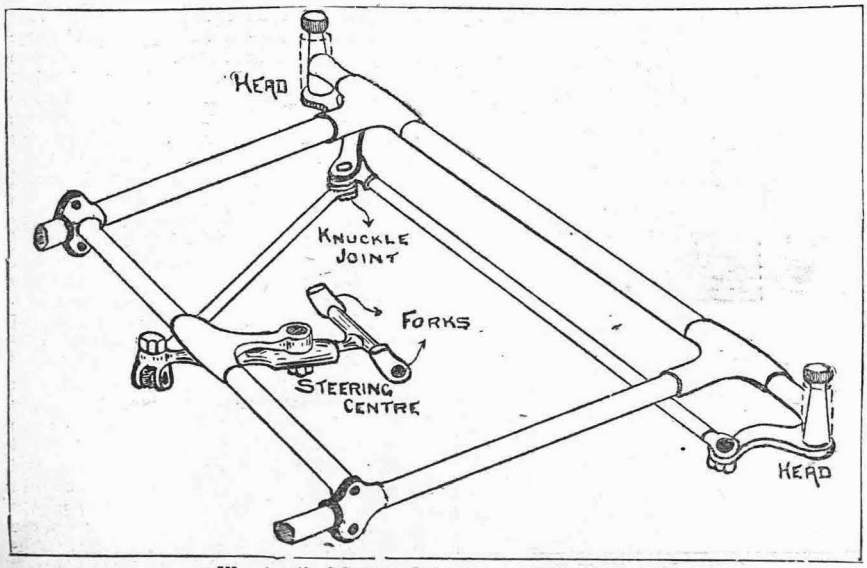


Illustrating letter from J. van Hooydonk.

Trimo Construction.

Sir,—I am obliged to your contributor "Petrolia" for the way in which he associates my name with the evolution of the fore-carriage. I regret, however, that to find that he has not given the details of the trimo constructions his close attention, which leads him to make remarks which I feel necessary to correct. "The trimo type has its steering gear attached to the front forks of the bicycle, which naturally makes for whippy steering." This would be so were the steering attached to the forks only, but by means of the extension piece, and the additional steering centre with which even the very first trimo attachment was provided, the front forks cannot budge, and the whole is as firm or firmer than a single stem would make it. To depend on the lateral stiffness of a fork for the steering is too bad to even think of. The accompanying rough sketch will make the matter clear. With regard to the attaching of the fore-carriage to the side tube "Petrolia" states "This method, however, exposes the comparatively fragile tubing to a twisting strain." The sketch I send herewith showing the double movement clip, a clip which was designed as soon as the fixing to the back axle was found undesirable, will show that movement both vertically and horizontally is allowed for. This method of attachment has now been fitted to the trimo for a season, and while allowing the necessary amount of play obviating all twisting strain is really a very strong fixing. The method of attaching the fore part of the fore-carriage also requires explanation. "The best method is that in which two stays run up to the head of the machine and are clamped firmly in position by the same bolt and nut which holds the handle-bar in position." This bolt, which is rarely larger than 5-16ths, is hardly strong enough to carry all the weight of the machine and stand all the blows. My original design, which is still being used, is a strong clip in two halves completely encircling the head of the bicycle, and brought up close to the top head lug which is a projection on the frame. This clip has two semi-circular recesses into which strongly fit two ears of the side stays. The strain is all solid metal-to-metal and the bolts merely hold the two halves of the clip together. In the method described as "the best" the bolt is subjected to actual shearing strain. I sincerely trust that "Petrolia" will give the matter of the strains to which a fore-carriage attachment is subjected a little more consideration, for to say the least it reads "unpleasant" to find a design which has been through the mill successfully either ignored in detail or improved upon in a manner which on the face of it is asking for trouble.—Yours faithfully,

J. VAN HOOYDONK.

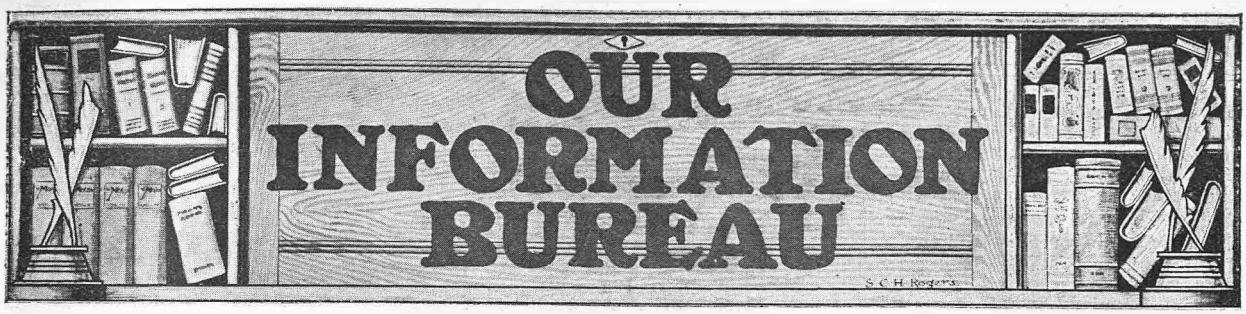


Illustrating letter from J. van Hooydonk.

Brakes on Fore-carriages.

Sir,—In his notes regarding brakes on fore-carriages "Petrolia" criticises them to their disadvantage. The writer does not, however, distinctly state whether the brakes he used were fitted by manufacturers who employ the Bowden wire and make their own fittings or whether they were brakes made under our design with our compensating action. This makes all the difference, because we are prepared to demonstrate that fore-car brakes, as fitted by us, are perfectly even in their action, and are really compensating, the friction applied to both wheels being equal under all circumstances. We are aware that many tri-cars are fitted with brakes actuated by the Bowden wire, but, like other fitments where our mechanism is used, their fault lies in the bad fitting. Some fitters seem to imagine that the Bowden wire is a sort of electric cable which will transmit power even if it is tied in knots, and do not give its action fair play. Hence the trouble. We are now making band brakes for tri-cars with drums 8in. or 9in. in diameter, which drums can be clipped on any fore-car wheels without alteration, and we venture to assert that the disadvantages mentioned by "Petrolia" do not apply to these.—Yours faithfully,

E. M. BOWDEN'S PATENTS SYNDICATE.



SPECIAL NOTICE.

The Editor is at all times pleased to answer any queries put to him by the readers, or to receive correspondence from readers upon any motor topic. In consequence of the large number of letters received, however, he must insist upon the following simple rules being strictly 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 or needless flattery.

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.

Speed Indicator (Forest Hill).—Yes, a reliable and fairly accurate device. You cannot expect extreme accuracy, but the readings are near enough for practical purposes.

J.T. (Stroud).—You can take out a driving licence any time, but it must be renewed 12 months after date of issue. The revenue tax is payable at the beginning of the year.

C.X. (Huddersfield).—The Phœnix Minervette might suit you. It is the nearest to the figure you specify. Phœnix Motors, Ltd., would send you particulars of it. If you fancy a three-wheeler, have a look at the Arielette.

"Praise for a Benz Car."

Dr. Shackel, of Ludlow, who owns a similar car, which gives every satisfaction, would be glad if "A.H.H.H." would communicate with him at Brand House, Ludlow.

Light Car Wanted.

Medico (Hednesford) writes:—As a constant reader of your valuable paper, will you kindly advise me as to the purchase of a suitable car? The conditions required are:—(1) To carry two persons 15 to 20 miles daily. (2) To start easily, there being from 12 to 20 stops on the day's run. (3) Must be a good hill-climber, as the country is rather hilly, and the roads only medium. (4) Must be reliable, and likely to last three or four years. (5) I am prepared to pay round about £200 for a satisfactory article.—For your particular purpose we suggest the following:—Belsize, Brown, Clyde, Eagle, Humber, Minerva, Mobile, Siddeley, Simms, Speedwell, Star, Vauxhall, Wolseley. We suggest that you write these makers for their catalogues and send us along your choice of three or four so that we can further advise; conditions of your local roads and the attention car will possibly receive would help us in selecting.

S.T. (Long Eaton).—You can certainly make use of the bottom bracket to carry the countershaft. This is done on several machines fitted for hand starting.

F.G.D. (Sutton).—The symptoms you describe seem to point to loss of compression somewhere. The shrieking noise might be due to want of cylinder lubrication; or, perhaps, the gear-box bearings are dry.

Slipping Clutch.—If the treatment of the leather with the makers' preparation effects no improvement, it is very probable that a new leather covering on the cone is required. Any practical motor mechanic would put this on for you. You have had a good deal of wear out of the clutch, which, considering its small diameter, has rendered good service.

Exhaust Valve Trouble on Car.

Alpha (Kingston-on-Thames) writes:—The only trouble I have with my car is the frequent breakage of the exhaust valve. I can never get more than 450 miles out of a valve before it breaks at the stem just under the head. The car is 6½ h.p., and is a good hill-climber. A motoring friend told me that owing to the carburetter flooding at times it causes too rich a charge of gas; but I cannot detect any trace of the carburetter flooding, and the consumption of petrol is not abnormal; that is to say, I can average 28 miles to the gallon. Can you suggest a reason why the valves should snap off?—The most likely reason would be that the valve gets overheated and burnt owing to throttling of the exhaust in some way. Are you sure that the silencer holes are quite clear? Perhaps the holes are rather small, and blocked up with mud. The valve may not have a full amount of lift. You require very little clearance between valve lift and stem, say, 1-32nd inch. The spring may be too strong, and simply pulls the heads away from the stem. Are you sure water circulation is effective round the valves?

Novice (Surrey).—As a rule, any machine of 3½ h.p. could have a forecarriage fitted. You require to use a rather low gear, say, 1 to 5½. We should require to have further details about the machine you intend to get to answer the query more fully.

E.A.P. (Nottingham).—It is not always an easy matter to get the materials for repairing a damaged accumulator locally. The best thing is to get the Prested celluloid repairing outfit for repairing cell cases. You will find everything you require in this (see advt.).

Angus (Forfar).—You would require a car geared specially low to take a hill of 1 in 3. Nothing approaching such a grade is met with on ordinary roads. Write one or two of the standard makers and ask them what they can do for you. The test hill in the light car trials did not exceed 1 in 7. If the roads are sandy, pneumatics would be preferable to solids, as the latter would sink into the sand.

Bayswater.—(1) Replace the free pulley and have an ordinary V pulley fitted. Have this turned to a groove angle of 28 degrees, and use a Watawata belt. You will get much more satisfaction than with the original arrangement, which was too complicated. (2) Yes, the exhaust lift is much better than the compression tap. (3) You could arrange for the air to be drawn in from the radiators, as in the system adopted on the F.N. engines.

Knock in Car Engine.

E.R.R. (Bristol) writes:—I have a well-known 8 h.p. light car, single-cylinder engine. It has done about 2,000 miles with only very minor mishaps occurring. But for some time I have noticed that a knock has been developing in the engine. It is of a distinctly metallic nature, as if some part was loose. When climbing hills the knocking is quite distinct. Can you please suggest what is the reason for this, and an effective remedy?—There are two possible reasons, one being that a small amount of wear or backlash has developed in the connecting rod bushes, and the other that premature ignition of the charge occurs, owing to overheating. Presumably you take care not to advance the spark to an excessive degree. This is specially important when hill climbing. You could detect any looseness or backlash in the connecting rod bushes by moving the clutch ring backwards and forwards. Any wear that occurs shows itself more rapidly in the upper bush of the connecting rod; the lower bush, being split, is capable of adjustment. You would hardly be able to refit the bushes yourself. Best to get a competent car repairer to do it.

BUREAU.

R. C. Carter (Dulwich).—Probably a leak from the needle valve of tank to vaporiser. You will not get much satisfaction till you fit a spray carburetter. You should not experience any starting difficulties.

H.E.B. (Attleborough).—We have heard several good accounts of the behaviour of the car, but as a type it is not likely to become popular. In fact, several cars similar in design were placed on the market a couple of years ago, but are not now made.

Lubrication Difficulty on Car.

J.M. (Bradford-on-Avon) writes:—I am in trouble with the lubrication of my Humberette. When the smallest quantity of oil (less than a quarter of a charge) is pumped into the engine it starts misfiring—I have had new piston rings fitted, and the cylinder is quite clean. The car is about 18 months old. Can you tell me how to remedy this misfiring? Do you think any part of the engine requires renewing?—The question is, does the sparking plug get fouled? There are plenty of oil-proof plugs on the market. If the oil gets past the piston, it shows that the rings do not fit well, or there is already an excess of oil in the crank case.

Accumulator Charging.

F576 (Woodford).—(1) Yes, the method is quite correct, but three 16 c.p. lamps at 250 volts will not pass two amperes into the cells, and the charging would be very slow. Better change the 16's for 32's, or connect up to circuit with more than three lights on. If the cells are quite exhausted, it will take 12 hours to charge them. (2) You can charge up in instalments if you wish; it will do no harm. (3) Yes, the switch terminals will always have the same polarity. (4) Simply connect the two accumulators in series; that is to say, join the positive of one to the negative of the other: This leaves one positive and one negative to connect up to the switch.

Storing Machine During Winter.

B.H.S. (Hartlepool) writes:—My motor house is damp, and this fault cannot be remedied. I have removed the outer and inner tubes and fore-carriage, also lamps, accumulators, tool-bag, etc., and have given all silver parts a coating of vaseline. (1) Will the ironwork of the engine, or the brass parts, terminals, etc., suffer any damage? (2) Will the piston rings be affected if well washed (without removal from cylinder) with paraffin and left dry, or should they be well lubricated? (3) One accumulator is fully charged, the other nearly exhausted. How must they be left through the winter? (4) Is there any fear of the petrol freezing and breaking the can? (5) If I replace valves and springs, should they be coated with vaseline? (6) How can I protect the saddle from injury by damp, and keep the belt in condition?—(1) Give all metal work a coat of vaseline: damp sometimes works under the enamel of frame. (2) Not necessary to do anything to the piston rings, the oil will keep them all right. (3) Either give the cells a charge every four or five weeks, or run out the acid, wash well, and fill up with water. (4) No danger whatever. (5) Yes, an advantage. (6) Take saddle off and store in dry place; give belt a dressing of castor oil occasionally to keep it flexible.

A Belt-driven Car.

J.D. (Accrington) writes:—I have a 3½ h.p. Pieper car, two speeds, and flat belt transmission. This being a hilly district, I am compelled to have the belt very tight; otherwise I am troubled with slipping. Now, in motorcycling I find that a tight chain means a serious loss of power, and I should be glad if you could inform me whether the same applies to my car and the belt transmission. If so, would any increased power be obtained by fitting, say, a two-speed gear and clutch, with chain transmission, the chain, of course, at an easy tension? I do not wish to go to the expense of alteration unless I am sure there would be a material increase of power.—A tight driving belt means a certain loss of power due to the extra friction put on the bearings, but we do not think you would economise power by fitting a two-speed gear and chain. You might, however, gain something if the drive was direct on the high speed. If you could fit larger diameter and broader faced pulleys than you have at present, it would not be necessary to have the belt so tight. Or, another way to improve the drive (and a less expensive one) would be to have the pulleys faced with leather and kept well dressed with castor oil.

Eisemann Magneto Ignition.

R. A. Mountain (Hexham).—Referring to the diagram of Eisemann's high-tension magneto in your issue of November 22nd, it appears to me that the diagram does not correctly show the connections. I understand that the dynamo is of the continuous current type, and that the object of the interrupter is to make and break the supply of current to the primary coil? The diagram shows the primary coil short circuited, and the interrupter as shown appears to make an additional path for the current, and does not completely make and break the current flowing round the primary coil. I enclose a diagram, which appears to me to show the connections as they should be made, and if I am wrong in my views I shall be glad if you would point out my mistake. Of course, if the dynamo gives an alternating current, then there would be sparking from the secondary coil, through the sparking plug, and the interrupter would only make a second path for the current and reduce the amount of current passing round the primary coil. I should be glad of an explanation.—The diagram of connections given in our issue 147 is quite correct. There is a striking difference in the principle of the method of inducing the current in the secondary of this magneto system compared with that of an ordinary coil and accumulator. In this the contact breaker, primary winding, and source of current are all in series; but in the Eisemann magneto the armature coil is kept short-circuited by the contact breaker till it has arrived at such a position in the magnetic field that the maximum voltage is induced in the winding. At this instant the original circuit is interrupted, and the primary winding of the coil thrown in series with the armature winding: this operation results in the self-induction of the winding of the armature intensifying its own current, and it is this greatly increased current circulating round the coil primary that gives the strong secondary current. This means that the spark occurs at the plug, because there is a sudden rush of current through the primary, and not a sudden stoppage of current as occurs with the ordinary coil, contact breaker, and accumulator.

G.S.D. (Edinburgh) who inquired recently about trouble experienced with a Stanley steam car is advised to communicate with Messrs. Donaldson and Co., Westfield Road, Edinburgh.

Novice (Dundalk) proposes to make a flash boiler for a steam car from a 12ft. length of gas piping, 1in. bore and 3-16th in. thick. By the time he has warmed such a pipe through, his liquid fuel would be exhausted and he could never reach boiling point. "Novice's" other queries would need two or three complete issues of "THE MOTOR" to properly answer. We recommend him to read a good handbook on steam practice before wasting his money.

ANSWERS BY POST.

In addition to answers appearing on these two pages the following correspondents have been replied to through the post:—

Tuesday, December 6th.—Colonel Orr (Sunningdale), W. H. Blair (Malton), J. D. Jones (Cheltenham), H. Walker (Greystones), W. H. Randall (Iron Bridge), J. Thwaites (Stoke Newington), C. H. Edwards (Willesden), J. Duigan (Rothwell), R. H. Inye (East Ham), H. Lorraine (Leeds), J. Rigby (Southport), E. S. Harper (Southport), G. Marshall (Chesham), F. H. Sharpe (Heanor), R. W. Anderson (York).

Wednesday, December 7th.—H. W. Grosvenor (Gloucester), Elsworth (Handforth), A. Cunningham (Yeovil), E. J. Prentis (Coleshill), W. Evans (Bristol), R. V. Brews (Woolwich), F. Druce (Hemel Hempstead), A. L. Attwater (Horsham), S. J. Asborne (Tewkesbury), A. Munro (Inverness), A. Pearson (Aberdeen), G. E. Russell (Admiralty), J. Jordan (Battersea Park), H. E. Morris (Stroud Green), F. W. Bache (Streatham), R. Surridge (Camberwell Grove), A. H. Cowap (Northwich), H. T. Roberts (Coventry), W. Burton (Litcham), J. B. Wilkin (South Woodford), J. S. Vanner (Poole), A. Williams and Co. (Congleton), G. Gribbon (Inverness Terrace), H. Ryder (Orpington), G. Wordon (Stepney), L. E. Stuart (Hull), L. Milliard (Harewood).

Friday, December 9th.—A. de Kantzow (Havant), E. S. Craven (Horsham), G. S. Reeve (Lamberhurst), F. Gosnold (Folkestone), Oswald Lee (Preston), H. Easey (Lowestoft), E. S. Howland (Tunbridge Wells), James Lowe (Stockport), C. Langham (Tempo Manor), E. Light (Worle), E. F. Allen (Henrietta Street), E. David (Swansea), P. F. J. Humphrey (Liverpool), R. B. Adams (Glasgow), H. S. Durrant (Peckham), F. S. Carter (Woolwich).

[Correspondents are requested to keep their queries as brief and concise as possible. The great and quite unnecessary length of many of the communications sent in precludes the possibility of them being dealt with promptly.]