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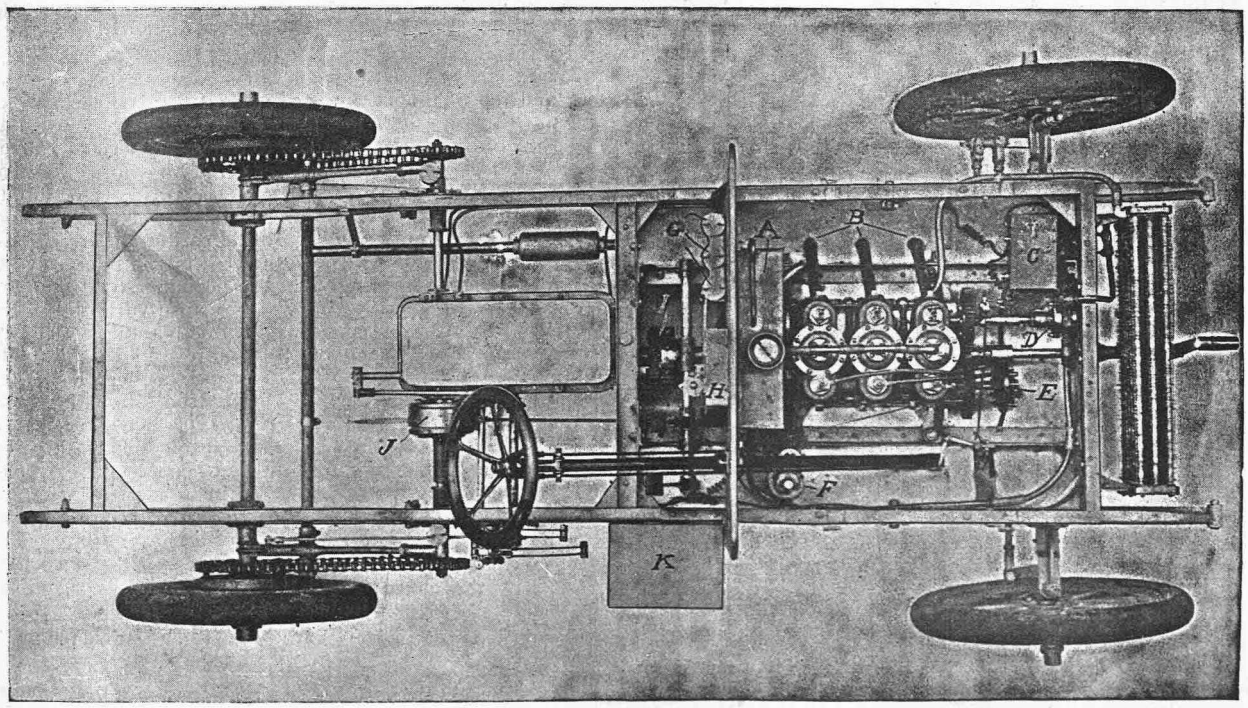
THE LATEST VAUXHALL CAR.

EMBODYING MANY INTERESTING FEATURES.

There has been some discussion recently concerning the merits of British and Continental cars, and as to whether the foreigners are not ahead of us in the designing of vehicles to accord with modern ideas. Although our own folks may not be beating the big drum so loudly, we are positive that they are not lagging behind, and our knowledge of the efforts being made in British factories gives us no cause for any fear as to who will, in the near future, do the trade of the home markets. This week, it is again our privilege to describe an "all-British" car that comprises many novel points, and interest therein will be enhanced when we state that in our walk around the workshops at Vauxhall, every facility was given to us to examine each part in course of actual manufacture, whether it was carburetter, axles, gear box, engine, wheel hubs, etc. With the exception of the tyres, body, electrical equipment and wood portion of the wheels, every part is the production of the firm itself; no part is left to rule of thumb, but each is first designed in the drawing office, proper working drawings supplied to each department, and gauges and jigs used for securing correctness of fitting.

The frame is pressed steel of special section with the ends turned over to act as dumb irons for the semi-elliptic springs, and has three cross stays—one nearly at front end, one just at the rear of dashboard, and one across rear ends. The front axle is dropped, and as chains are used for the final drive, the rear axle is also a solid one. This rear axle carries the springs in a novel manner by means of collars split as to half their length only, with bolts and nuts to draw the split ends together. The axle is driven through the collars, and the bolts and nuts being tightened up, the axle is clamped up tightly, without the need of dowel pins and their possibilities of breakage.

The engine is a three-cylinder one, each cylinder being cast



THE CHASSIS OF THE NEW 3-CYLINDER VAUXHALL CAR.

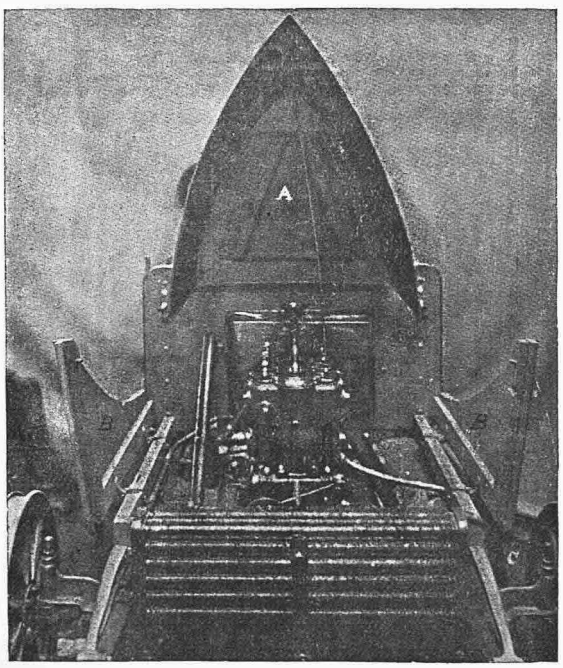
A *Water tank.* B *Exhaust pipes from each cylinder.* C *Induction coil.* D *Water pump.* E *High-tension distributor.* F *Carburetter.* G *Greasers to gear box bearings.* H *Oil pump for crank case.* I *Universal joint to propeller shaft.* J *Band brake on differential.* K *Accumulator box.*

The Vauxhall Car --Contd.

separately and having a bore of 3in., with a stroke of 3¾in. (roughly 76mm. by 95mm.) The water chamber is cast with an open top, this being closed by a brass cap held down by stub screws with an insertion of Klingerite to ensure a tight water joint; these brass caps have cast brass outlet unions attached, and the shape of these can be gathered from the illustrations of the engines. Close inspection will reveal the fact that the union on the third cylinder at the rear is higher than the union on the first cylinder, consequently the hot water is always ascending until it enters the tank and each cylinder secures equal amounts of cold water. The aluminium crank case, when completely dismantled, is practically a skeleton framing; the bottom and sides are quite open, the top having the usual openings for the cylinders to abut upon, leaving only the ends as solid. From side to side are carried two webs: these carry the bearings for the two cam shafts and the bearings for the crank shaft. This gives four bearings for each of the cam shafts and the main shaft. The bottom of the crank case is covered in by a separate aluminium base chamber, but the detachment of this in no way disturbs the bearings. The webs only serve to position the bearings, and these latter are supported by long bolts which pass right up through the top of the crank case, and are there lock-nutted. The cylinders are, of course, held on to the crank case by separate bolts; it will therefore be appreciated that the cylinders can be removed, or the crank shaft bearings adjusted, without disturbing the other. The cam shafts, complete with their bearings, need only the undoing of four small screws at each side, to enable them to be withdrawn from the front end of the crank case. The two cam shafts are needed because

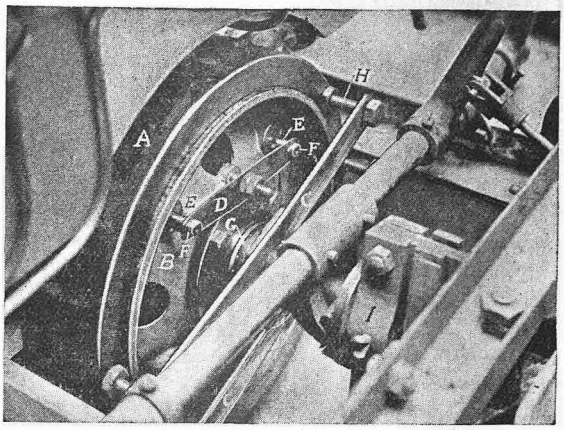
THE INLET VALVES ARE MECHANICALLY OPERATED,

and these latter have a variable lift: perhaps it would be convenient to describe here how the lift is managed. Between the tappets and the ends of the valve stems there is clearance of a trifle over what the valves themselves are designed to lift at, viz., if the actual lift is 3-16in. there is



VIEW SHOWING ACCESSIBILITY OF ENGINE.

A Bonnet. B Folding side boards. C Lubricators to steering pins.



VIEW OF THE CLUTCH.

A Fly-wheel. B Main clutch. C Main clutch springs. D Flat spring for minor clutch pads. E Sliding pins carrying minor clutch pads. F Adjusting nuts for minor clutch pads. G Ball bearing thrust. H Adjustment for main clutch spring. I Universal joint.

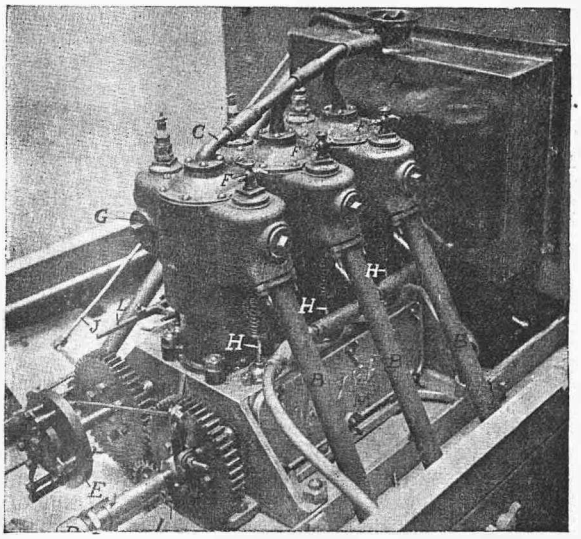
that amount of clearance, plus the usual amount which practice decrees as essential upon all cars, so that we could give this clearance as a full ¼in. Upon the steering wheel pillar is a lever; by means of suitable connections this communicates a fore and aft, horizontal, movement to a rod carried in guides closely adjacent to the bases of the valve stems. Upon the horizontal rod are carried, by means of collars, wedge-shaped rockers. These rockers are free as to their vertical movement, whilst their position on the rod is governed by a collar at each end of each rocking wedge, which is set when the car leaves the factory, but which setting can be quickly varied if desired. The wedge rockers have their narrow end pointing to the front of the car, the widest part pointing to the rear. Remembering that the rockers have perfect freedom of movement vertically, we will suppose that we have entirely retarded the inlet valve lift by means of the lever, and wish, therefore, the valves to keep closed: the rod has, therefore, been moved horizontally backwards, carrying with it the three wedge rockers. The narrowest end of the wedge now lies between base of valve stem and top of tappet, and because of the large clearance (previously mentioned) the tappet lifts the wedge up and down, but no movement is given to the valve. To fully open the valve, lever is fully advanced, and the horizontal rod pushed forward, taking along the three rockers; owing to the wedge shape, the clearance space between tappet and valve is now entirely occupied by the rocker: therefore the tappet lifts the rocker and the rocker lifts the inlet valve to its fullest possible opening. It will be understood that any movement of the horizontal rod must cause variation in the valve lifts. This minuteness of variation is taken advantage of for two purposes—to govern the engine and dispense with the throttle. (The centrifugal governor was detached when our photographs were taken: it would be situated just to the rear of the high-tension distributor.) The governor is connected to the horizontal wedge rod, but only within certain minimum and maximum limits, to enable the driver to run the engine dead slow without the governor, suddenly allowing the valves to stop right down and to disconnect altogether when it is wished to accelerate the engine. The carburetter is a float feed, with automatic auxiliary air valve, and this in combination with the variable lift gives an extremely quiet and vibrationless engine.

ONE PECULIARITY OF THE ENGINE DESIGN IS ABSOLUTELY UNIQUE,

and we cannot recall any make with such an arrangement; the induction pipe leads straight up to the rear of the cylinder nearest the dashboard into the side of the inlet valve pocket; the sides of the valve chambers are joined up to each other by very short pieces of rubber tubing. The effect is as if a

The Vauxhall Car —Contd.

pipe ran from end to end of the three valve pockets: first thoughts would incline to the belief that the cylinder farthest from the carburetter would be starved of gas: but the openings are of such large area that each cylinder gets its due proportion, and 8,000 miles of trial has convinced the designers of the correctness of their views. All the air, before reaching the carburetter, is warmed by an abutting pipe against the exhaust pipe. The water circulation is maintained by a positive rotary pump of the company's own manufacture; the wings carrying the water around the interior of



THE EXHAUST VALVE SIDE OF THE ENGINE.

A Water tank. B Exhaust pipes. C Water outlets, cylinders to tank. D Water pump. E High-tension distributor. F Compression release cocks. G Cap to end of induction valve chambers. H Exhaust valve stems. I Low-tension cam for make-and-break. J Rod from ignition lever. L Shaft carrying variable lift wedges. M Side inspection plate.

the pump barrel are an ingenious modification of the every-day rotary. The water is cooled by a large bank of radiators for the horse-power the engine develops, these consisting of three rows of six each row, or 18 tubes, giving about 36 feet. The tubes are copper with aluminium gills, and each tube is separately headed into the sides of the radiator casing: each tube has also a separate cap at the headers or boxes, and it is therefore quite easy to clean right through each tube with a tube brush. The ignition is distinctive of this car. One triangular cam and a single contact-breaker is carried upon the front end of the exhaust valve cam shaft, whilst the inlet valve shaft carries a high-tension distributor. The induction coil is fixed beneath the bonnet, just to rear of the radiators, and the length of high-tension wire is therefore very small.

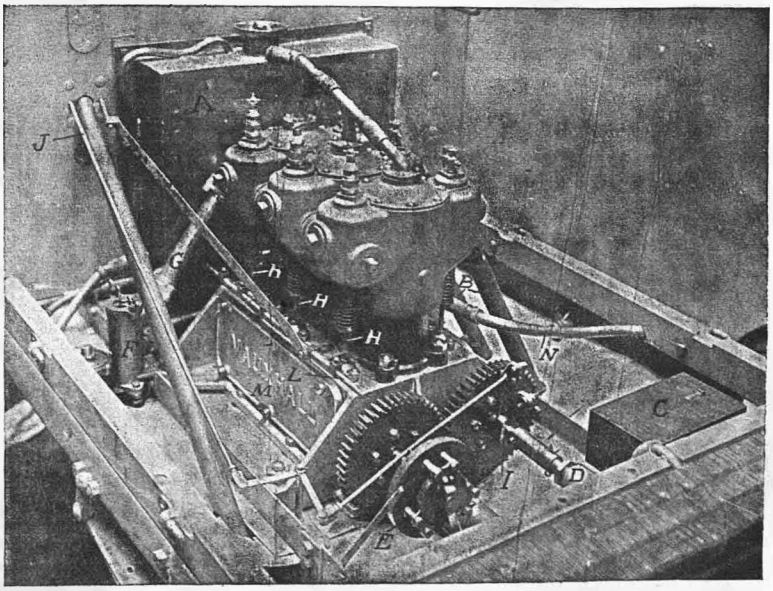
The fly-wheel is of large diameter, and we arrive at what we consider

THE GEM OF THE WHOLE DESIGN.

The clutch discards all usual methods of springing and engaging; a consideration of the illustration we give of the clutch will make the description tolerably clear. The clutch itself is of the usual type in being coned, but is lined with material which continued test has proved much more efficient than leather. The clutch is held up to its work by two large flat springs, and the ends of each spring are carried by bolts attached to the edge of the fly-wheel. The central portions of the springs impinge against flat metal plates (having edges overlapping the edges of the springs) attached to the clutch. At four places through the web of the clutch are placed four hardened pins, which go right through the web, and upon the pin ends nearest to the interior vertical face of the fly-wheel are placed leather, or other suitable, pads. The four hardened pins are held up to their work by flat springs, carried by the rear face of the clutch, and having the spring ends supported similarly to the major clutch springs. The tendency is to always force the hardened pins through the clutch web, and against the rear face of the fly-wheel. When the clutch is out, these padded ended pins are quite clear of the fly-wheel, but as the clutch is gradually let in they commence to take up the drive before the major springs can push the clutch home to put the drive upon the outer clutch circumference. With only such small surfaces engaging there is, of course, a great amount of slip, and this provides a delightfully easy clutch movement; the amount of slip is regulated by the end nuts which hold the minor clutch springs, which also enables wear to be allowed for. When the pads are pushed (by the action of the fly-wheel) back towards the front face of the clutch and against the action of the minor springs, the main clutch face then commences to engage, by reason of the pressure of the flat springs, until the clutch is taking up the full amount of drive. The flat springs also tend to make the clutch engage equally upon the whole of the circumference, and their method of end attachment to the fly-wheel permits of instant and very fine adjustment. The whole movement can be likened to butter sliding upon butter for the easy and

NOISELESS WAY IN WHICH THE CLUTCH PICKS UP THE WORK.

One further advantage can be pointed out, for the ease with which the clutch can be dismantled. Merely releasing the two major clutch springs permits of this owing to the clever arrangement of the Universal joint to rear of the clutch. The gear box has the three speeds and reverse spur wheels in the front half and the bevels in the rear half, and very special attention has been devoted to the efficient lubrication



THE INLET VALVE SIDE OF THE ENGINE.

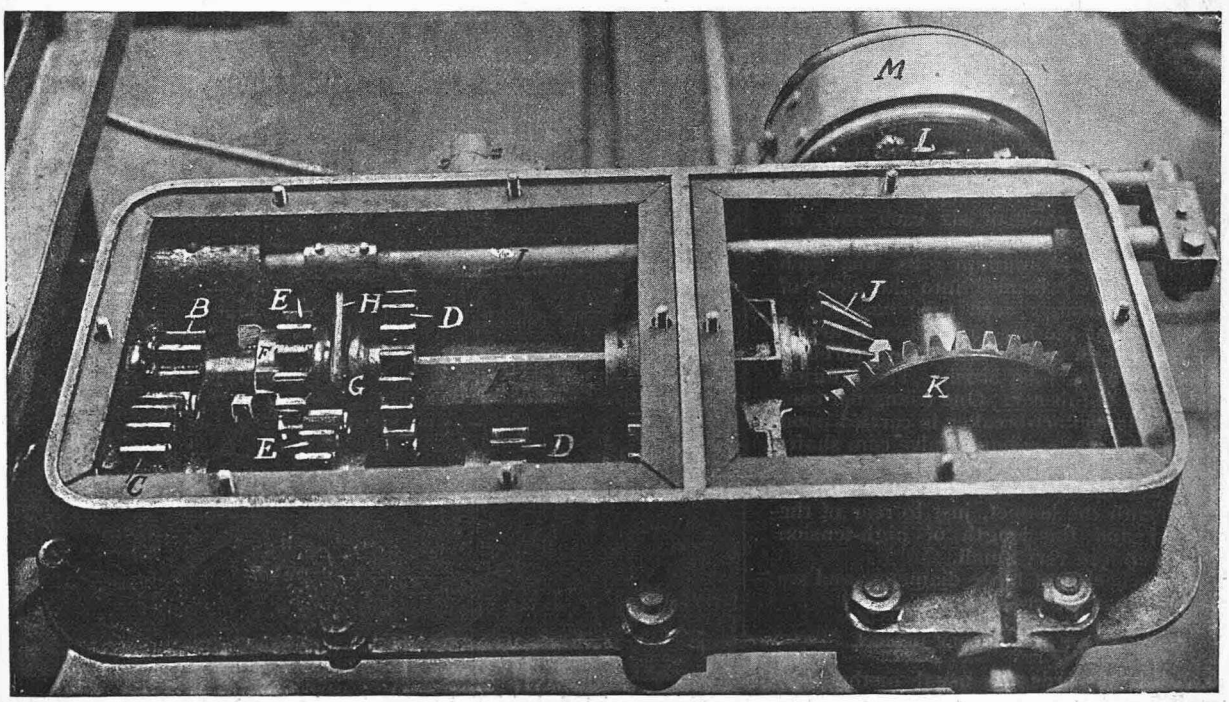
A Water tank. B Exhaust pipes. C Induction coil. D Water pump. E High-tension distributor. F Carburetter. G Induction pipe. H Inlet valve stems. I Low-tension cam for make-and-break. J Rod for ignition lever. K Rod actuating variable lifts to inlet valves. L Shaft carrying variable lift wedges. M Side inspection plate. N Water inlet pipe to cylinders.

The Vauxhall Car – Contd.

of all the bearings here. The box is filled with grease and oil, the shafts have oil-ways cut upon them where they run through the exceptionally long phosphor-bronze bearings, and below each bearing is led a copper pipe communicating each to its separate screw-down greaser upon the dashboard. The differential is supported outside the gear box, and is of the straight spur wheel type, having the oil-tight casing machined from mild steel, and the pinions of case-hardened steel carried at each end in long phosphor-bronze bearings. When inspecting the parts in course of manufacture, we were pleased to notice the full depths of tooth permitted for the gear wheels, bevels, and differential pinions and the large diameter of the various shafts; these are bound to conduce to good and efficient service. The cross shafts from differential box are supported on long bearings attached to the side members of the frame, the shafts being hardened and ground dead true to fit these bearings. The final drive to road wheels is taken by side roller chains. The rear axles have their ends hardened and ground true to fit the hubs; these latter again being of abnormal length. The wheels are equal size, rear and front, and are shod with 700mm. by 80mm. tyres. For lubrication, a hand-actuated force pump supplies the crank case, three screw-down greasers give grease to the gear box bearings, whilst at every point convenient screw-down large diameter grease cups are fitted. The question of proper lubrication has received full attention, and we might instance the hub grease-cups as evidence of this. These are all upon the exteriors of the hubs in full sight, and it does not call for twisting the body or the arm to get at them, for one minute should suffice to go round these and give each one a turn or two. The same system of accessibility of greasers is carried out as regards the cross shaft bearings, steering pins, steering joints, etc., etc. The clutch and foot brake are actuated by push-forward pedals, and are not interconnected. The side brakes on drums bolted separately to the wheels are controlled in the usual manner, and these, together with the pedal brake, are of the band type, lined with fibrous material.

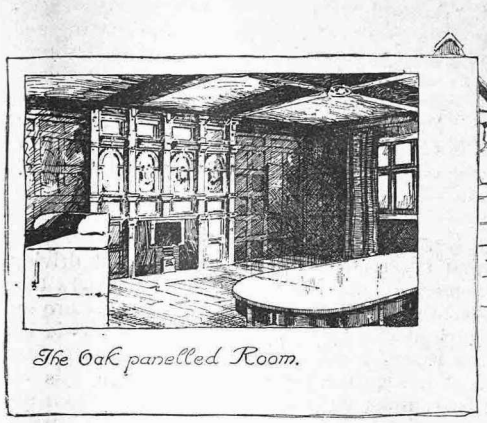
THE CHANGE-SPEED LEVER QUADRANT

deserves a special word of attention on account of the large difference of movement allowed for each gear, and this is obtained without raising the quadrant above its usual position. The method of fitting the bonnet is peculiar to the Vauxhall car, for the bonnet is made of wood, somewhat like the upturned bow of a Dutch fishing lugger, and falls down upon two wooden side boards. When the bonnet is lifted up, these two boards can be turned over as shown in our illustration, and the whole front and sides of the engine are quite free for access. The exhaust system consists of separate pipes running straight from each cylinder into an expansion box, and thence to a silencer of the company's own design. The way in which the latter is fitted upon the long exhaust pipe allows of any number of silencers being fitted up to the limits of the length of the pipe. The standard type of body is a two-seater, and the car is sent out complete with three lamps, horn, rubber mats, tools, pump, repair outfit, and an assortment of spares at the price of £200, leaving the only extra outlay for the purchaser for rugs and number plates. Every detail has been well studied before manufacturing, and the proof that careful work in the drawing office in combination with fine workmanship, can produce excellent results, is shown by a similar car of a little larger horse power, having been run over 8,000 miles, and the clutch has not been re-lined nor any, excepting minor, adjustments made. The *actual* car we have described will be shown at Olympia, and should receive careful inspection, for we consider it marvellously cheap and excellently finished throughout. The car is manufactured by the Vauxhall Ironworks Co., Ltd., 90 and 92, Wandsworth Road, Vauxhall, S.W., the makers of the extremely successful 5h.p. Vauxhall car which, having been the first automobile product of this company, was an earnest of the originality of design and excellence of material and workmanship that have already earned a good name for the word "Vauxhall."

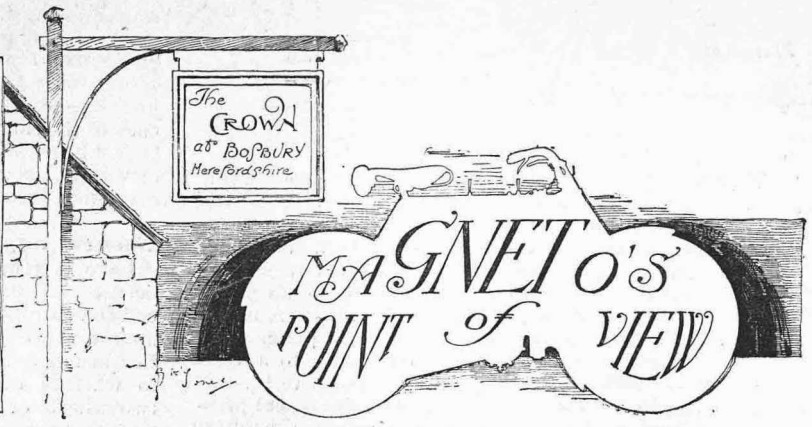


GEAR BOX.

A Main driving shaft. B Spur wheel communicating motion to secondary shaft. C Spur wheel on secondary shaft taking movement from B. D First speed wheels. E Second speed wheels. F Dog clutch for top speed (direct drive). G Collar (carrying D and E) sliding upon A. H Arm moving collar G. I Shaft conveying motion from change speed lever to spur wheels. J Small driving bevel. K Crown bevel giving motion to L. L Differential box. M Band brake from pedal.



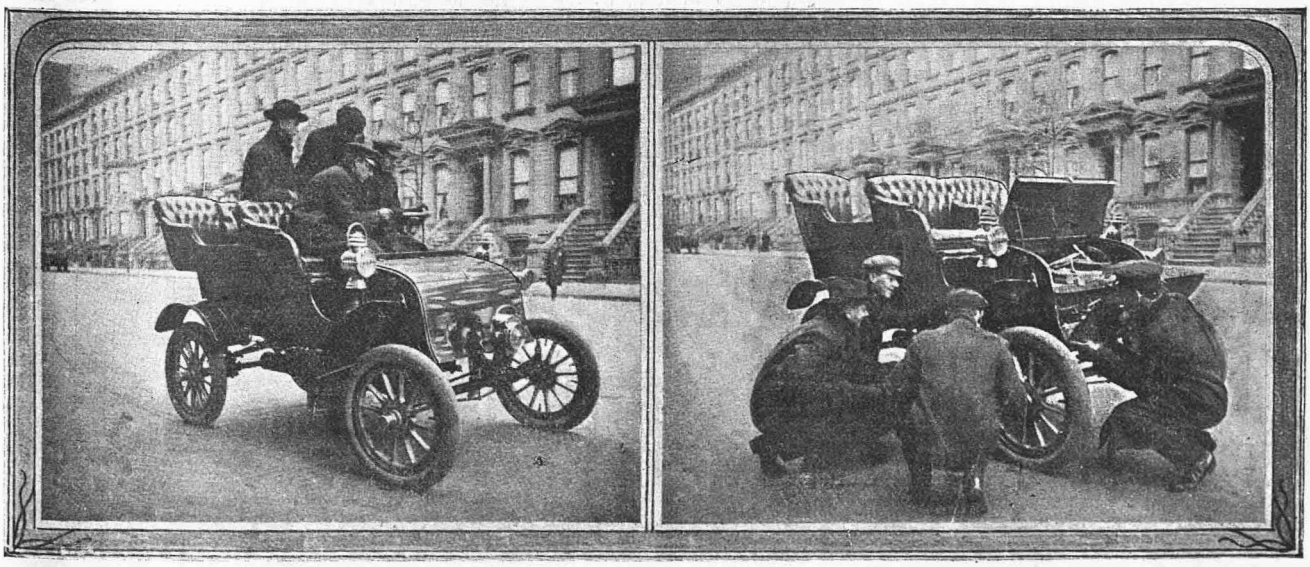
The Oak panelled Room.



Repairs to Leaking Water-jackets.

I dealt with the question of burst cylinder jackets a few weeks back, and it will be remembered that I mentioned a few precautions that should be adopted. A correspondent has written me to the effect that it was unfortunate for him that he did not read about these precautions till too late. He tells me that his 8h.p. car engine has developed a crack in the head and lets the water fizzle through at an alarming rate. The crack does not extend for more than 2½in., starting from the edge of the outlet pipe hole; it can scarcely be seen when the engine is cold, but when hot it appears to be about 1-50th inch wide. The question is whether a crack of this nature can be effectually closed up. In this particular instance I should say it could be done. There are several dodges that could be adopted, but I should be inclined to try sealing it up with copper, as the crack is so small. If the sides of the crack are not rusted up it should be effective. A saturated solution of sulphate of copper—a sufficient supply of which, under the name of blue vitriol, can be obtained from a local druggist for a few pence—should be made, and the cylinder jacket filled with it. It is an advantage to add a few drops of sulphuric acid to the solution. It will soon leak through the crack, and immediately it comes in contact with the iron pure copper is precipitated thereon. The film is very thin, but it should suffice to fill up the space. The solution will not hurt any part of the water-jacket, but, of course, when the repair is made it should be run off from the jacket and washed out to prevent crystals forming.

Although the copper will deposit automatically in a thin film, the aid of an electric current greatly facilitates deposition, and gives a much thicker coating. The accumulator that is used for the ignition comes in most useful for this. All that is necessary to do is to get a couple of lengths of wire and join up to the cell terminals. Let the ends be bared, and the one coming from the positive terminal just dip in the copper sulphate solution, but it must not actually touch the metal. If it does so the current will not pass through the solution and effect what is desired, but simply pass through the metal. The wire from the negative terminal should be joined to the outside of the cylinder just over the crack. In about 20 minutes a heavy deposit of copper seals up the crack. This process can be modified with advantage in some cases, but it entails making a wax mould for a considerable distance around the crack. The idea of this mould is to hold the copper solution over the crack from the outside. Such a mould can easily be made from bees'-wax, just made plastic by heat, and shaped with the fingers. The outside of the jacket should be made quite clean with emery—there must be no grease about: then the wax mould or shell is stuck on by warming the edges, and the copper solution poured in. Connect the negative wire to the jacket and simply have the positive wire dipping in the solution; or, better still, twist it around a bit of sheet copper and dip this in. A coat of copper will at once form over the crack and it can be made practically as thick as desired by keeping the current on long enough.



Automobile schools are being started in New York. The above photographs illustrate a car in the hands of pupils, who are being initiated into the mysteries of motoring.

Magneto's Point of View — contd.

A REPAIR BY PLATE AND WASHER.

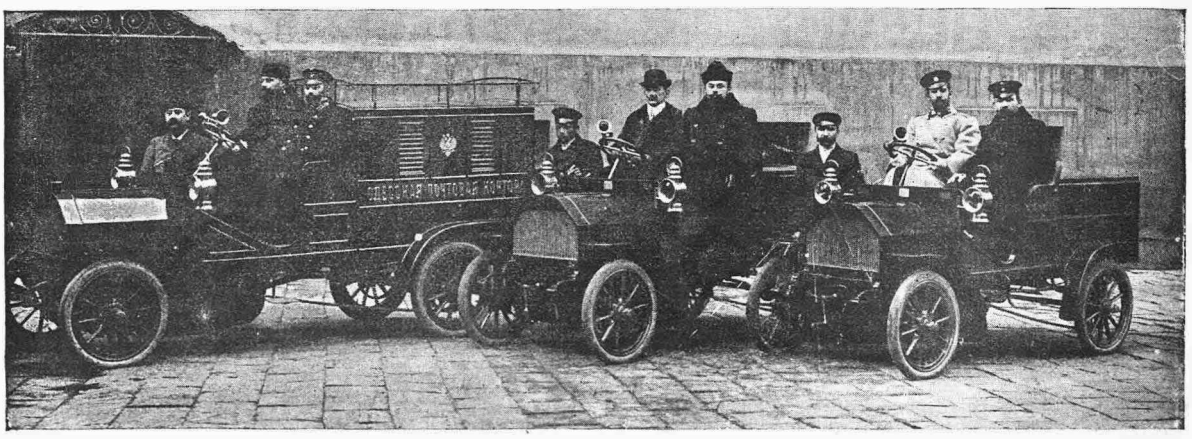
If this dodge was ineffective I should next suggest trying the method of screwing a soft copper plate over the cracked part. Four small holes could easily be drilled and screwed in the jacket and a piece of copper sheet well hammered down to shape. The holes would, of course, have to be made in the plate first and the positions marked off on to the jacket afterwards. Quite small screws should be used. A rubber insertion washer should be cut to fix under the plate. This requires smearing with red lead and oil made to a thick consistency. If well shaped, and screwed down tight, this repair should give no trouble. The joint has no real pressure to withstand, and there is no reason why it should not be permanent. If the jacket is split for a very considerable distance down, it is better to get a new cylinder right away.

New Piston Rings not Gas-tight for a time.

Many motorists when they renew the piston rings are disappointed at the compression not being so good as they anticipated. As a rule new rings never do fit perfectly at first. The cylinder, it must be remembered, has been worn down to a smooth and glossy surface, almost as if it had been burnished. The new rings have not got a surface anything like as true as the cylinder bore, and before they will fit gas-tight it is necessary that they should be worked in by a considerable amount of running, with plenty of lubrication to assist the process. A new engine is—or should be—sent out by the makers with its rings and cylinder in good running condition. To effect this the engines as they are finished, as far as fitting up is concerned, are mounted on a special bench and driven at high speed from a length of shafting fitted with pulleys and driving the engines by means of a belt. Copious draughts of lubricating oil are meanwhile pumped into the crank case. Ten hours' running of this kind wears down all the roughness of both piston rings and cylinder bore, and thus very good compression is obtained. When new rings are fitted, something of a similar nature has to be effected. If it were possible to largely magnify the interior of a cylinder and a set of new rings and throw the image on a screen, it would probably be found that there would be gaps or spaces here and there between them. With continued running these gaps, through which the compressed charge escapes, become reduced and the surfaces approximate to each other. As this working in continues the compression gradually improves. It is important to use as much oil as possible when the rings are new, but not to such an extent as to cause flooding and a smoky exhaust. A word with regard to the rings themselves: it is important to use some judgment in selecting and fitting them. Regarding the diameter of the ring it should spring fairly tight against the cylinder, and the slit should just close up. If there is a considerable gap left between the ends of the ring it offers a path for leakage. The rings must be just a free fit in the groove; there must be no up or down movement: on the other hand, if they are too good a fit they may stick fast in the groove.

Licences and Registration for 1905.

I would remind my readers that the renewal of driving licences and payment of the Revenue tax are matters that call for early attention. I find that the regulations are by no means even now as clearly understood as they should be. For instance, the Revenue tax of 15s. or £2 2s., according to whether the "mechanically-propelled carriage" is on two wheels or four, must be paid within 21 days from the time that the machine or car comes into the owner's possession, and not after the expiry of the 12 months as some seem to think. The full amount of the tax has to be paid on any machine or car obtained between January 1st and October 1st, but if obtained after this half the tax only has to be paid. This holds good up to the beginning of the year, when the new tax becomes due. Supposing a car is sold in June, for which the seller has paid the Revenue tax, the new purchaser has not to pay the tax over again, but he must get the Revenue receipt from the seller, because he is pretty certain to be called on by a Revenue officer, especially if he has taken out an independent registration number instead of having the old one transferred to him. Now with regard to exemption from paying the tax. A large number of correspondents write up asking the Editor's opinion as to whether they cannot fairly claim exemption on some of the most curious pretexts. For instance, why should a clergyman using his motorcycle to visit his parishioners expect to be exempted on the ground that he uses the cycle purely for "business" purposes? Another typical example is that of a person making business calls, as representative for a firm, on the machine instead of taking train. It is a sheer waste of time arguing such cases with the Revenue officials. They will only exempt manufacturers and agents who stock a number of machines or cars which have a trade registration number. The tax has to be paid in 99 cases out of 100 as far as the ordinary user is concerned, so why not pay up and have done with it! The Revenue people have access to the complete lists of motor users and their addresses, and it is pretty certain that a regular campaign is to be started to gather in the Revenue, owing to the depleted state of the exchequer. I advise my readers who are not quite clear as to their liabilities to get an official carriage tax declaration form at the local post office.



Progress in automobilism, as in everything else, is very slow in Russia. The postal authorities at Odessa are now experimenting with motors, and three of the vehicles in use are shown above.

The Motor
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OPINIONS

The Motorcar Act in Practice.

The summary of Mr. Moresby White's paper on "The First Year's Working of the Motor Car Act," which we give in another part of this issue, will be read with interest. Although space precludes the reproduction of Mr. White's arguments in full we have, we think, given a fairly comprehensive report of the working of the Act and the advantages and disadvantages accruing therefrom to the motorist, as viewed through the eyes of an expert legal critic. One of the main deductions to be drawn from the experiences of 1904 is that, in spite of a rather generous measure of public, police, and magisterial prejudice, and a consequent tendency to strain the law against rather than in favour of the motorist, the Act has justified its twin purpose of safeguarding the public and giving the motorcar a definite legal status. Not that we wish to be understood as expressing the opinion that, either theoretically or in practice, it is an ideal Act or one that inflicts no disabilities and no possibility of injustice on the motoring community. Far from it! But we think that it has been sufficiently demonstrated that to road users and pedestrians who exercise reasonable care and observe the rule of the road the modern motorcar holds out no menace of danger; and also, that if the Act be rightly read and impartially administered, the motorist has (in the present transition stage of road locomotion) no special cause to grumble. Mr. White's paper drew attention to one or two points wherein the working of the Act has not coincided with the spirit in which it was framed. The tendency of the police and the Bench to regard the public danger from the viewpoint of their own opinion (and even, sometimes, their own prejudice) rather than from that of the evidence before them, has been only too apparent. The Act was clearly framed in a spirit which intended that actual proof of danger should be forthcoming before conviction on such a charge could be justified. In the minds of many "speed" and "danger" are interchangeable terms: this is a grave mistake, and one which has been responsible for much injustice to motorists. Another matter which seems to us to call for amendment is the endorsing of licenses. Under the Act every offence, except first and second infractions of the 20-miles-an-hour clause, must be punished by endorsement of the license in addition to fine or imprisonment. In many cases under Section 1 where the Bench has marked its sense of the veniality of the offence by a merely nominal fine of a few shillings, justice has defeated its own objects by the necessary infliction of the endorsing clause—a serious matter for any motorist.

The Show in November.

A very strong desire has been expressed that the English Motor Show should be held in November next, instead of in February, 1906, and we believe it is highly probable that November will be decided upon. The latter date is in every way preferable. It is obviously to the advantage of buyers and makers that the new models should be on view at the latter part of the year, thus giving purchasers ample time to decide, whilst manufacturers will have more time to execute orders than they get now—with a show that comes, practically speaking, in the spring. The difference which those three months will make to the manufacturer will be considerable, for it will place the English Exhibition ahead of the Paris Salon, and the importance of this priority from the point of view of the English industry is without doubt the prime factor that should influence the Society of Motor Manufacturers in deciding to fix November for the next Show. The Paris Exhibition has come to be regarded as the motor mart of the world. It is for England to be ahead of Paris with her Show, and it should not be long before the London Exhibition came before Paris in point of importance as well as of date.

The Solution to the City Traffic Problem.

The motor omnibus trial which is now being run under the auspices of the Automobile Club is not without its significance. It cannot be gainsaid that the motor omnibus is likely in the near future to largely supersede the horse-drawn vehicles and to supplant tramways in districts in which they are not already running. The evolution of the motor 'bus has been a slow and tedious one, but it is now proceeding on definite lines. Its advent is bringing about a strange but interesting reversion of feeling. People with prejudiced views against automobilism are recognising the utility of the new vehicle, and, while they once scoffed, they now ride. 'Twas ever thus. The advantages of the motor omnibus are obvious: they are superior to horse 'buses, on account of their greater speed, better control, less vibration, and better and larger seating capacity, while for sanitary reasons alone they are worthy supplanters. Even when compared with the tram, they come out an easy first; they are not bound to monopolise the centre of the road, and they are able to pull up at the side of the pavement to allow passengers to alight; they are faster, on account of their ability to dodge in and out of the traffic; and they are independent of power from a central station. With these advantages they should bring about the elimination of congested town traffic.

THREE SPECIAL SHOW NUMBERS.

In connection with the Great Automobile Exhibition at Olympia, "The Motor" will issue three Special Show Numbers. The first will appear on Tuesday, February 7th, giving the first instalment of descriptions of exhibits with numerous illustrations; the second will be published on Tuesday, February 14th, and will contain the first fully illustrated report of the Exhibition. A special feature of this issue will be the illustrations of novel features, whilst the show as a spectacle will receive full attention at the hands of our artists. The third number will appear on Tuesday, February 21st, and will contain a critical survey of the Exhibition as a whole with numerous additional illustrations. The contents of the Special Numbers will be given in full later.

CYCLOMOTS' CAUSERIE

Motor Spirits. I have just had ample proof of the great difference in the results given by different brands of motor spirit and have learned two things from the experience. The first is that one must not be rash in one's conclusions or assume that any particular detail is perfect, and the second is that the cheap article although claimed to be "just as good" is not often so. Personally, I have always bought what I considered to be the best spirit and have paid a higher price for it than some of my friends have paid for theirs. When I have asked them why they bought what in my opinion was an inferior brand they have invariably answered that they could see no difference in quality between the dearer and the cheaper brands and so they used the cheaper. But, always sticking to the one kind of spirit, I was not able to make my own comparison. However, when the car was in trim after the renewal of her gear pinions, I started with a new brand of spirit stated to be of .700 sp. gr. and, as I have already recorded, the car did not run with her old life at all. After satisfying myself that there was no bad adjustment anywhere, I ascribed this sluggishness (which was at no time very marked) to the bloom on the new gear wheels and concluded that it would wear off. One day I had the wheels jacked up and, on revolving the wheels and also the countershaft and gearing, I found that everything was much freer than I should have anticipated, and this caused me to re-consider my previous decision. Had there been much binding in the gearing I should certainly have felt it when trying to revolve the mechanism by hand. I was thus led to suspect the spirit and then I took the densimeter reading (from the spirit in the car tank and also from a new and unopened can), and found that it registered .715. The tank was emptied and another brand of spirit, which has only recently come on the market was used. No alteration whatever in any other detail was made on the car, but the next time she was taken out the difference was most marked. I had three up (two being moderately heavy-weights—13 stone each dressed for winter work!), some luggage, heavy rugs, and rather an exceptionally-loaded tool and spare cupboard, because I put in my Parsons non-skids (in case the roads far out should prove bad), and an extra pair of batteries. Normally my load is two with only a light rug and none of the extras. The car actually did better with its increased load than it had previously done with the lighter one, taking some rises close to my home (on which, obviously, I have had ample experience of the capabilities of the car) on top gear whereas previously she had always called for second gear. I did rather a lot of work with the heavier load and all the time the car was pulling grandly, and since then I have been out with the normal load (to which heavy winter rugs have been added) and the effect is the same, the car taking rises and hills better than she had done since the repairing job was carried out. The consequence is that I find the car to be driving exceedingly well just now, every detail being in spick and span order, my impression being strong that the car is travelling better than she has done since I first acquired her. This would be due to the general tuning up which she has undergone, and to the reduction of friction in the countershaft as a result of the replacement of the bevel gear wheels. My only fear now is that this specially fine brand of petrol will only retain its superexcellent quality so long as the importers are getting their name established and that when that time arrives the quality will fall off.

Difficulties of Steering and Balance. About a month ago there was a continued article by "Petrolia" on tri-cars in a couple of issues of this paper. "Petrolia" blew both hot and cold on the useful and economical three-wheeler, and with many of his criticisms I had, perforce, to disagree, for it seemed to me that the writer had approached the tri-car with prejudice and had convinced himself, during his riding experiences, of the existence of innumerable evils and defects. To my mind, "Petrolia" made mountains out of mole-hills and as his criticisms dealt largely with vehicles of an early pattern, some of them fell flat because the methods objected to by him have given place to later ideas—the natural outcome of the development of the type and continued improvement of its details. Already, "Petrolia's" arguments have been refuted by other writers, and the only one to which I wish to direct my attention is what he describes as a "great defect of all tri-cars—the difficulty of steering." He tries to convince himself that somebody is endeavouring to "gloss over the fact that the tri-car is at best a glorified tricycle with two steering wheels and hence has all the defects of its type." I had to rub my eyes at this strange statement and go over it afresh lest I had misunderstood the author's meaning. Has anybody ever asserted that the tri-car was not a tricycle? And where does the "glossing" come in? Somebody has been pulling "Petrolia's" leg, surely! It is easy to see from his remarks that "Petrolia" is not a tricycle rider. As one who commenced his career in the 'eighties on a three-wheeler, I have always contended that such a commencement is most likely to develop the best steersman. Few riders realise that the most stable machine at speed is the single tracker. Unlike the car or the tricycle the bicycle is least stable when not in motion, but it is a difficult thing to upset when in motion except through a cause that applies to all vehicles, namely, undue deflection of the steering wheel. The tricycle, on the other hand, is most stable when not in motion and least stable at speed, so that it is readily upset by any lateral deflection (such as one wheel being suddenly thrown out of contact with the ground). The consequence is that a tricyclist is constantly on the qui vive to keep his wheels on the road and he can take a corner at 18 or 20 miles an hour (may be, with only a 27in. back axle) without a swerve. Such a rider will be seen to make a wonderful amount of use of the weight of his body, throwing it from side to side in a way that the ordinary bicycle rider is quite ignorant of. Only last summer I came round a corner on a motor-tricycle, which was lent to me for a few minutes, and, as the brakes were applied, the wire snapped and the result was that the corner was taken at an excessive speed. "Petrolia" in the same situation would certainly have capsized, but experience as a tricyclist enabled me to save the situation although my inside wheel did lift up. As to the alleged "sickening feeling for the driver of being poised on something in unstable equilibrium," to my mind there is nothing so delightful as this feeling given by a tricycle at speed and which we know as the rock of the machine. But I can quite imagine that, to a bicycle rider, it must be feared disconcerting just as is the steering of a tricycle which causes him to make for gutters and ditches unerringly. Let me advise "Petrolia" and all who find that their steering of two or three track vehicles is erratic to hire or buy an ordinary pedal tricycle and spend the rest of the winter on it. The effect will be excellent, and much pleasure will be obtained into the bargain.

The Birmingham Motorcar Show opens on Saturday next.

"THE MOTOR" will issue three Special Show Numbers in connection with the Olympia Exhibition.

These will appear on Tuesdays, February 7th, 14th, and 21st, and will constitute a very complete illustrated record of the Show.

The horse-power of the Vauxhall car described and illustrated in this issue is 7-9. We notice that by some means this has been omitted from the article.

France is contemplating the establishment of an Academy of Sportsmen. Judging from the way in which they have recently been treating the Gordon-Bennett race they want one badly.

Mr. Chas. Jarrott is in favour of the French proposal to run an open race in conjunction with the Gordon-Bennett event, against which the A.C.G.B.I. and the Belgium Club have already entered protests.

Gabriel, the famous French chauffeur, thinks the Gordon-Bennett course elect "a very feasible one for a cautious driver: a careless driver will not complete a half lap. The course does not contain a single straight stretch worth the name."

The French motor Press is already referring to the proposed "let-'em-all (especially the French) -come" International race as "Le Great Event de 1905." Considering the coldness with which the scheme has been received in England, it is a little unkind to borrow our language for it.

The much-discussed curve on the Auvergne Gordon-Bennett course has been sampled by two crack French drivers—Rougier and Gabriel. The latter, on a 24h.p. De Dietrich, took it at 12 miles per hour, and estimates that a very skilful driver might take it at 20m.p.h. The curve has been described as one which "there is no negotiating without the use of the reverse."

The Automobile Club of France is still very busy with its preparations for the proposed International Race on Gordon-Bennett day. Originally mooted and boomed as an "all-comers'" race, the event is now, it appears, to be restricted to 42 cars, 15 of which will represent France—a generous percentage! Of the remainder 10 will be German, six British, three Austrian, three American, three Italian, one Belgian, and one Swiss. British motorists will be interested to hear that we narrowly escaped a representation of seven, as it was originally decided to allow Italy only two.

Coming Events.

Jan. 21 *to* 28 Birmingham Motorcar Show.
,, 23. Scottish Automobile Club (Western Section). Dr. W. R. Ormondy will lecture on motor fuels.
,, 27 *to Feb.* 4. Crystal Palace Automobile Show.
,, *and Feb.* Automobile Show at Bombay.
Feb. 1. Entries close for Motorcycling International Cup.
,, 4 *to* 19 Berlin Automobile Exhibition.
,, 4 *to* 11. Chicago Automobile Exhibition.
,, 5 *to* 19. Nice Automobile Meeting.
,, 7. Ladies' Automobile Club of Great Britain and Ireland's Illustrated Lecture, "Motor Mountaineering in the Alps," by Captain H. P. Deasy, at 3.30 p.m.
,, 10 *to* 18. Society of Motor Manufacturers and Traders' Exhibition at Olympia.
,, 15. Automobile Club Annual Dinner (Hotel Cecil).
,, 24 *to Mar.* 4. Manchester Motor Show (St. James' Hall).
,, 24 *to Mar.* 4. Edinburgh Cycle and Motor Show.
Mar. 3 *to* 11. Liverpool Motor Show.

The Clyde Cycle and Motor Car Co., Ltd., of Shenton Street, Leicester, have issued a very useful little booklet, entitled "The Clyde Motorcar: How to use, and how to drive it." The instructions are very clearly written, and several illustrations are given.

The Rex "Sociable."

The illustration shows two Rex motor-bicycles (3h.p. and 3½h.p.) coupled together by their owners, the idea being to counteract side-slip in greasy weather and to promote sociability. "The combination," says Mr. R. Walker, one of the "twins," "works excellently, and gives us ample power for a large amount of luggage, spares, etc." The couplings are sufficiently stout to bear any strain. The "earth" wires are arranged on the same circuit, so that either "twin" can stop at will. Either machine is capable of pulling the other alone. The name of the other "twin" is Mr. P. Pilling.

June 27th and June 30th are given as two provisional dates for the Gordon-Bennett.

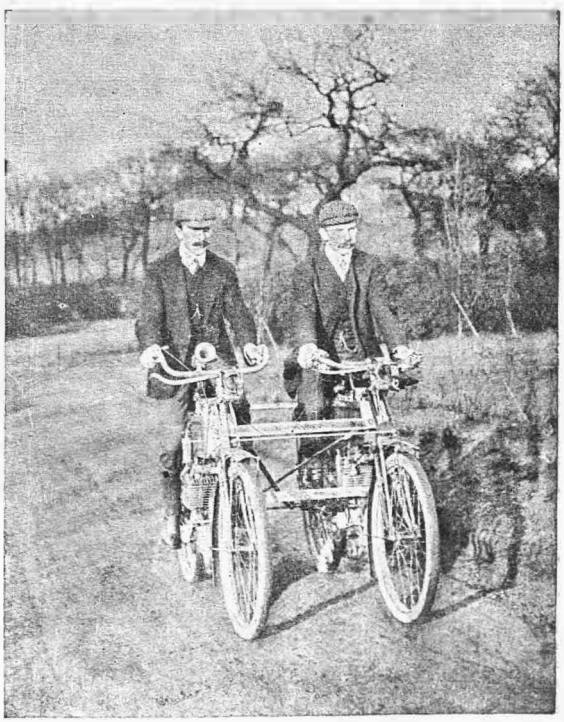
The London Motor Omnibus Co., Ltd., has been formed, with a capital of £103,000.

One of the witnesses in the Leigh (Lancashire) speed limit inquiry was surprised to learn that motorcars were required to carry two brakes.

The Automobile Club has forwarded a strong protest to France against the proposed "Grand Prix" on Gordon-Bennett day. The A.C. has also invited the clubs of other nations to do likewise.

The Automobile Club has given £20 to the fund established by the French Automobile Club towards a reward for the apprehension of the persons who strewed nails on the course last year on the occasion of the "Little Gordon-Bennett."

The British Automobile Commercial Syndicate, Ltd., 97 and 98, Long Acre, and 1, Endell Street, London, W.C., have been appointed the wholesale factors and distributors in England, Scotland, and Ireland for the Spyker cars.



A Sociable Combination.

NEWS.

Messrs. Osborn and Lord, 33a, The Broadway, Hammersmith, W., ask us to state that their application for space at the Olympia Show was received too late, and that in consequence the Gregoire cars will be exhibited at the Agricultural Hall Show in March next.

Motoring in the Desert.

Some interesting details have been published in an interview with Dr. H. Rothschild, who undertook a tour in Algeria last spring with two 60h.p. Mercedes cars. Dr. Rothschild was accompanied by Count Clary, and the travellers had an adventurous fortnight across some of the sandy tracts of the country. The sand (which sometimes buried the car wheels axle deep) and the burning sun proved to be hardships difficult to sustain, but the party eventually returned to Algiers no worse for their experiences. The most frequent trouble was with pneumatic tyres, which were constantly bursting under the intense heat. Dr. Rothschild estimates that his tyre expenses for about 1,000 miles were over £300. Some 875 gallons of petrol were consumed in 16 days for the two cars, one of which was used as a baggage wagon. No excessive evaporation was noted in the petrol, although in the reservoir on the baggage car the spirit was sometimes so hot that the hand could not be held in it.

An Automobile without a Front Axle.

The Christie racer which is depicted in the illustration on this page is a novel American type, and is thus explained by its designer:—

"An automobile without a front axle, giving the greatest possible speed with the least possible weight; so simple in operation that a child might drive it, and consuming less fuel than any other type of vehicle of its power, is the Christie car. The latest car has a vertical motor with four cylinders, having on each end a fly-wheel fitted with taper clutches, and operated with a compound lever, which gives the movement from the high-speed clutch, directly engaging the motor to the wheels, which when disengaged become neutral, allowing the car to coast, and then when engaging lever is thrown entirely back, the clutches being engaged to gears on the counter shaft, which counter shaft is fitted with a differential and gear-case with sliding gear transmission of the ordinary type. This gives the reverse motion to the counter shaft. The gearing is carried in a small case which is bolted direct on the lower end of the crank-case, making a unit of the entire motor power and transmission. The suspension of both the motor and transmission is entirely carried on the spiral springs, trunions and steering gear on either end of the motor, this being in turn supported by the wheel and wheel-box. The lower half of the crank-case has cast projections, upon which the frame of the car is fastened. This frame extends back in a straight horizontal line to the extreme rear end of the car supporting and balancing all other weights on the rear axle, including the radiator, water tank, gasolene tank, oil tank, battery, etc."

C 4

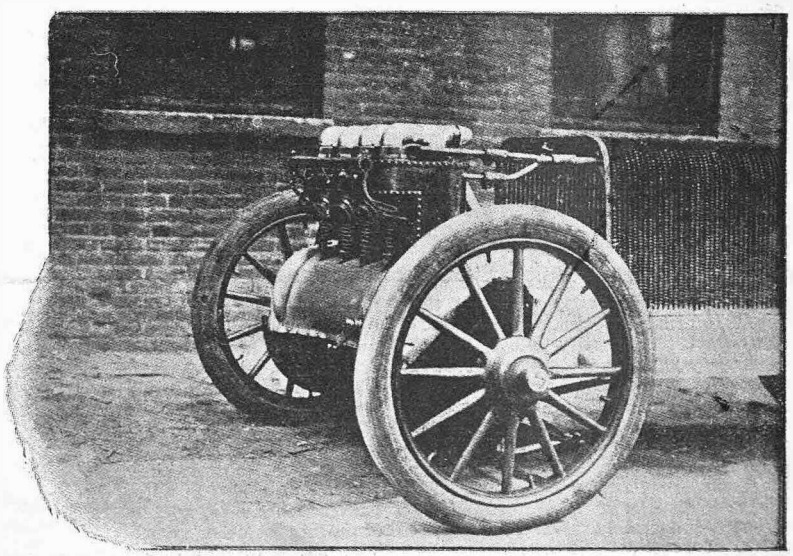
The French Proposal for an International Race.

The editor of "L'Auto" having asked the opinion of the Hon. C. S. Rolls on the subject of the proposed International race in connection with the Gordon-Bennett race, that gentleman has replied as follows:—

With reference to your letter of the 29th ult., personally I am very much opposed to the abolishing of the race for the Gordon-Bennett Cup, or of its being run on the same day as another race. The Gordon-Bennett Cup has become universally recognised as a big sporting event, in which each country enters its three best cars to represent it, and the country which can produce the car, which by its perfection of manufacture in all respects, including tyres, completes the course in the quickest time, becomes the owner of the cup. I am of the opinion that the Automobile Club of France, representing, as it does, a nation which, very rightly, claims to be at the head of the motor industry, should be the last to propose to abolish the race for the Gordon-Bennett Cup, as they, having the choice of cars from among so large a number of manufactures, should be quite willing to enter their three best cars against the three best cars of other nations, who have to choose from such a much smaller number. The proposal to abolish the race does not appear to me to be sportsmanlike, but, from a business point of view, I can quite understand that the French Club might wish to organise a race in which the chances of its country would be increased by having a larger number of cars to race against a lesser number of any other nation. If they desire to have a business competition of this sort, by all means let them have the Grand Prix International, but I should look upon the abolishing of the Gordon-Bennett race as a calamity to the motor movement, inasmuch as it would put an end to what is undoubtedly regarded as one of the finest sporting events of the year, and is looked upon as being on the same plane as the yacht race for the America Cup, etc. As regards the proposal that this year the race for the Gordon-Bennett Cup and the race for the Grand Prix should take place on the same road and on the same day, if the entries are very numerous there will be the risk of the Gordon-Bennett cars (which will presumably start first) overtaking and being hampered by the cars which are started last. Such an occurrence would certainly cause great dissatisfaction to the competitors in the Gordon-Bennett race and the countries which they represent. Furthermore, if the entries are very numerous, the intervals between the cars must be brief, and the risk of calamity must be considerably increased. The limit of cars in the Gordon-Bennett race to between 20 and 30 is, in my opinion, very desirable, as tending to avoid accident and to secure permission for future races, whereas a race in which there are a large number of cars may result in many accidents, and, consequently, the prohibition of motor races.

Special Rex Features for 1905.

The cradle adopted by the Rex Co. enables the engine to be held securely by three bolts in a vertical position. The bottom bolt passes straight through the cradle and engine crank-case. The two top bolts slip into slots, and only require slackening to remove the engine. One of the special features of the 1905 cradle is that the chain-stay bridges, crank-bracket, and lugs, which in previous models have been built up with tube, are now all cast in one piece with the cradle. This provides not only a saving in weight, but a stronger and more elegant frame. The patent double air cylinder and Beehive silencer are also new. The double air draught is caused through the cylinder being cast with an air passage between the cylinder proper and the silencer. The air passes in at one end of the cylinder and out at the other. A passage is left between the two mechanical valves, so that another current of air joins that circulating along round the cylinder proper. This air draught reaches to the valve seatings. With regard to the silencer itself, when the exhaust valve opens the gas expands into a large cavity formed in the top of the beehive. It then filters through a series of perforated pipes into the lower chamber, which spreads the whole length of the cylinder, and escapes through holes perforated between the cylinder flanges.



The Christie: A racing motor without a front axle.

NEWS.

The New René Legros Two-cycle Motor.

This new motor is of the type operating on a two-cycle principle. It is based upon an original principle, quite different to that adopted in most motors of this category where displacement of the piston in the crank case is utilised to produce suction and compression of the mixture, or even auxiliary pump motors, an arrangement which does not solve the problem either, owing to the complication it involves. The Legros motor, on the contrary, is self-contained and makes it possible to obtain, for charging each cylinder, the estimated volume of gas to produce the requisite explosion pressure, for regular and automatic working, on the motor piston. The idea of this motor is based upon the employment of a fixed piston, occupying the interior of the working piston (crank case side). This constitutes the pump which induces, mixes, and pumps the gas into the explosion chamber through a special channel in the fixed piston's support, through which the axis of the double connecting rod passes, transmitting motion to the crank-shaft. Without other complications than that of the fixed piston, the pump requisite for the two-cycle motor to work as regularly as the four-cycle type is obtained. The pump barrel is in the form of a mixing chamber in which the gas becomes heated, increases in volume and is instantaneously ignited, producing the explosion pressure. Like all two-cycle motors this new type

GIVES ONE POWER IMPULSE PER REVOLUTION

of the crank, and per cylinder, but from the point of view of the accuracy of the cycle, it acts as a four-cycle motor. The forward stroke performs the following operations inside the explosion chamber: Ignition, then expansion and exhaust at end of the stroke, whilst in the suction chamber the charge of gas drawn in during the preceding upward stroke is compressed in the intake channels; to be discharged directly into the explosion chamber as soon as the burnt gas has escaped through the ports opened at end of the stroke. During the upward stroke of the piston, as soon as the ports are again closed, the charge of mixture drawn in and mixed during the previous stroke in the pump barrel is compressed. Ignition then produces the explosion, and the cycle continues with the same regularity. One can readily understand what are the advantages due to the equal turning moment thus obtained, without the complication of increasing the number of cylinders, and especially of extra moving parts for a car motor. Regular succession of explosions at equal and often-repeated intervals contribute favourably by their very regularity to mechanical equilibrium. Reduction of half the number of cylinders

GIVES THE SAME FLEXIBILITY

and the same turning effort as a four-cycle motor. Thus three cylinders suffice to produce on the motor-shaft a distribution and frequency of power impulses, to equal which, with a four-cycle motor, six cylinders, six pistons, six connecting rods, six contacts, six sparking-plugs, etc., would be required. Likewise with a two-cycle two-cylinder motor of this type, simplicity and economy are much greater, while weight, size, and price are less. Finally, there is the advantage of greater mechanical efficiency, friction being much reduced—"La Locomotion Automobile."

The Straker-Squire Motor Omnibus which started on its official trial under the auspices of the A.C.G.B.I. on Thursday last.

The Motor Omnibus Movement. First Official Trial under the Auspices of the Automobile Club.

In order to celebrate the inauguration of the first official trial by the Automobile Club of public service motor omnibuses, a luncheon was given at the Club House on Wednesday last, when Mr. Sidney Straker, A.M.I.C.E., the president of the Society of Motor Manufacturers and Traders, entertained a large company, including Major Lloyd and Basil Joy (Automobile Club), J. M. Maclulich (managing director of the Sirdar Rubber Co., Ltd.), and about a score of others, the majority of whom were Press representatives. The luncheon over—as usual at the Club this was a most pleasing function—the Chairman proceeded to discuss the object of the gathering. He said he was glad to be able to state that the Automobile Club has consented to undertake an official reliability trial of a 24h.p. Straker-Squire omnibus, fitted with a petrol engine of the four-cylinder vertical type. He explained that its speed with a full load up can be varied from 1½ to 16 miles per hour, while the fuel tank has a capacity of 20 gallons, i.e., sufficient for a full day's run. The ignition is by magneto low tension and battery. The 'bus is a double-decker, and has a carrying capacity of 34 passengers. It was constructed by Messrs. Buessing, of Brunswick, Germany, to designs based on the experience of the Canastatt works. Messrs. Straker and Squire have imported a number of these public service vehicles for immediate delivery, and Mr. Straker announced that it was the intention of his firm to construct these omnibuses in their own works at Bristol; in fact, they anticipate turning out from 80 to 100 of them in the first year. The trials, which commenced on Thursday last, will last 20 days, and a total distance of 2,000 miles will be covered at the rate of 100 miles per day. As our photograph shows, the trial vehicle is fitted with a temporary body: this carries pig-iron representing about three-quarters of the total weight of 34 passengers. The trial will be carried out under the new rules of the Club, and will be officially observed by its representative, Mr. R. W. Sprague. The total moving weight of this passenger carriage will be about five tons, and the wheels are shod with twin 5in. Sirdar Buffer solid tyres. The Club are to be congratulated upon identifying themselves with the motor 'bus movement.

Postal Automobiles in Russia.

Russia's motor industry, like her political institutions, is still in a backward state—backward enough to induce the Imperial Post to import motorcars and vans. The photograph reproduced on page 646 shows three Postal automobiles at Odessa. All were "made in Germany"—at the Union Co.'s works at Nuremberg. The two small cars, designed for carrying letters up to 5 or 6cwt., are each 6h.p.; the parcel-post van on the left of the group, which can carry double this weight, besides the chauffeur and a couple of postmen, possesses an 8h.p. engine. Any of the vans, when fully loaded, can take a 20 per cent. rise without the slightest difficulty, and cover 30 kilometres within the hour. As most of our readers know, the Union automobiles are fitted with the Maurer frictional gear. The growing popularity of the Union cars is demonstrated by the fact that the Nuremberg Co. has found it expedient to enlarge its premises.

Scottish A.C. (Western Section) Reliability Trial.

We are informed that the support to the proposed trial provisionally promised has been most satisfactory, and it has now been decided to proceed with the arrangements. The trial will take place on May 11th, 12th, and 13th next, and the committee are now framing the rule and conditions of the trial and making arrangements for a preliminary survey of the suggested routes.

NEWS.

Mr. Walter Jamieson, Tollcross, Glasgow, requests correspondents whose letters have been returned (through the carelessness of a temporary post-office employee) to kindly write him again.

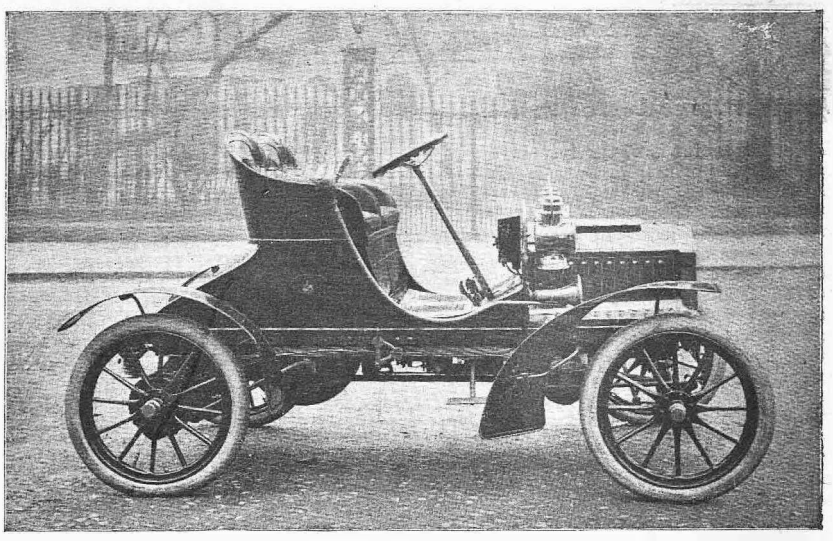
The formula governing the selection of the cars for the French Automobile Club's International Race has not been made public; but it appears that the Gordon-Bennett team will be included in the total number of cars which each nation will be allowed to run. So that (in the event of this ridiculous proposition being allowed to materialise) there will be 42 cars on the track—which, from all accounts, is both narrow and dangerous.

The Latest Oldsmobile Car.

Messrs. Chas. Jarrott and Letts, Ltd., of Gt. Marlborough Street, W., will place upon the market for the 1905 season a new pattern to be known as the Oldsmobile Touring Runabout. The engine will be a 7-horse (in place of the 5-horse used in 1904), 5in. bore by 6in. stroke, and the general features will be re-modelled. A bonnet will be fitted in front, although the horizontal engine will be retained in its present position below the footboards, the bonnet space being occupied by the 5-gallon petrol tank and 6-gallon water tank, and the front taken up by a honeycomb radiator. Steering will be by wheel, tyres double tube detachable (in place of single tube as 1904 standard), and the fashionable type of bucket seats for two persons will bring this car up to date. The price will be £175 with lamps and tools. The £150 model will be retained as regards the price, seating arrangements, and the tiller steering, but the engine power will be increased to 7-horse, and double tube tyres will be a standard. The brakes will be internal expansion. The Oldsmobile system of long springs reaching fore and aft, axle to axle, will continue to be a feature of these vehicles.

Coventry Motor Cycle Club.

At the Railway Hotel, Coventry, on Thursday evening last, the members of the above club, which has a registered membership of about 50, and enjoys the distinction of being the first holders of a handsome challenge trophy, held their first annual dinner, the chair being occupied by Colonel Wyley, V.D., president of the club, with Mr. V. A. Holroyd in the vice-chair. After the toast of "The King" had been given, Colonel Wyley proposed "The Winning Team," and in a very intelligent and complimentary speech referred to the splendid qualities of the members of the Coventry Motor Cycle Club, emphasising the fact that on merit, and merit alone, they had won the cup, and that his greatest wish was that the team would, year after year, be successful and retain the trophy for all time. Several prominent gentlemen connected with the motorcycle industry spoke, after which Mr. V. L. A. Holroyd, the vice-chairman, thanked the speakers, and confirmed the statement that they had a very fine club. The gathering included on its list toasts of "The Visitors" and "The President," which were interspersed with songs and musical selections, contributed by Messrs. H. Smart, S. Sidwell, J. Moring, and H. Lesson (pianist).



The latest Oldsmobile car which will be on view at the Olympia Exhibition.

No less than 320,000 persons visited the Paris Salon.

The Crystal Palace Show.

We are officially informed that the arrangements in connection with the Crystal Palace Automobile Show, which opens on the 27th instant and closes on February 4th, are now practically completed. Non-slipping demonstrations will take place in the grounds, and will be a feature of the Exhibition. It is also stated that the idea of instituting a roll of honour, on which will be entered full particulars of all cars carrying out certain hill-climbing contests on selected hills round the Crystal Palace, is being well supported by exhibitors. A number of interesting racing cars will be shown in the loan section.

The Liverpool Motor Club.

The third annual general meeting of the Liverpool Motor Club was held at 11, Elliot Street, on Wednesday evening last, with Mr. R. McLellan in the chair. The secretary in his report showed that while the attendance at runs during the past season had not been very satisfactory, there was a more promising outlook for the New Year. The treasurer's report disclosed a very satisfactory state of affairs; during the season an adverse balance had been changed into a balance in hand. A proposal was brought forward to change the name of the club to that of "The Mersey Motor Club," as the large and increasing number of members residing on the Cheshire side made the club embrace a wider sphere of action. After much debate it was decided to retain the old name. Mr. J. A. Mackle's amendment to abolish the entrance fee for one year, and to keep the subscription at 5s., with a view to obtaining many new members, was carried. Mr. R. Rutherford was elected captain for the coming year, with Mr. R. S. Tafner sub-captain. Mr. R. McLellan, 101, Spencer Street, Liverpool, has taken up the duties of treasurer. The following members were elected to the committee:—Messrs. J. Edge, H. Roberts, J. A. Mackle, W. Johnson, H. C. Hill. Mr. W. H. McMillan, Bromborough, Cheshire, has again been appointed secretary, and from him may be obtained all information concerning the club, which both motor-car and motorcycle owners may join.

Despite the bitter cold, a large number of cars and motorcycles were out last week-end.

In future only Gladiator cars up to 14h.p. will be sold at 14, New Burlington Street. The other models will be sold by the Gladiator Co., 8 and 9, Long Acre, W.

The second annual dinner of the Birmingham Motor Cycle Club was held on Saturday night at the Crown Hotel, Birmingham. A report of the proceedings will appear in our next issue.

With extreme regret we hear that Mr. William Peto, of the well-known electrical firm of Peto and Radford, broke his right arm through a backfire whilst endeavouring to start his car (an 8h.p. car of French make) last Sunday week. All who know him, and others who have benefited by his efforts to improve electrical ignition on motor vehicles, will wish him a speedy recovery.

The Gordon-Bennett Course.

A very strong rumour is current that the French Minister of the Interior will refuse his permission for the Gordon-Bennett contest to be run over the Auvergne course, which has been selected, owing to its alleged dangerous hills and tortuous turnings. The Automobile Club, however, have not been officially advised that the French Government will take such a drastic action, and, knowing its past history in such matters, we have very little doubt that the race will take place without any change of venue.

The Siddeley 5,000 Miles' Trial.

The 12h.p. two-cylinder four-seated Siddeley car continued its trial under the observance of the Automobile Club during last week, and each day it covered its appointed task without an involuntary stop. Up till Saturday last the car had run nearly 2,000 miles, and, except a few minor adjustments, such as fitting new spring on carburetter air valve (this was done in the motor house), placing nut on terminal, and tightening starting handle, etc., it has run through without any replacement or repair. The Continental tyres, too, are standing well, and up to date are unpunctured.

NEWS.

Minerva Motors, Ltd., have just received an order for a 14h.p. four-cylinder Minerva car from His Royal Highness the Prince of Orleans.

Sarcastic!

Commenting on the craze in some quarters for abnormally-powered cars, where comfort is sacrificed to speed, a Chicago motor journal asks, "What is an automobile?"—a question to which it gives the following answer: "Just now it appears to be a side entrance with a four-cylinder motor."

New Garage in Maidenhead.

The Maidenhead Motor and Manufacturing Co., have opened premises, at 122, High Street, Maidenhead, as an up-to-date motor depot for the supply of petrol, oils, and all standard replacements. They have plant and machinery for the execution of repairs, including gear-cutting and vulcanising, and also a free garage and a free registering office for drivers.

SOME INTERESTING TROPHIES.

The automobile trophies of the world, if collected together, would make an interesting and a valuable display. On this page we reproduce six of the best-known trophies. The first of these, the Gaillon trophy, was presented by the Paris "Figaro" in connection with the annual climb up the Gaillon Hill. The joint holders are Barras (Darracq) and Rigolly (Gobron-Brillie), who occupied the same time over the course at a speed of over 58 miles per hour. The second photograph shows the Chasseloup-Loubat, which magnificent trophy goes to the winner of the French eliminating trials for the Gordon-Bennett race, and is held by Thery. The Aremberg Cup was presented by the Duc d'Aremberg in connection with the great French road race. In 1902 it was won by the Chevalier Rene de Knyff on a 70h.p. Panhard in the never-to-be-forgotten Paris-Vienna race. In 1903, in the Paris-Bordeaux race, Rigolly won it on a 100h.p. Gobron-Brillie. The central illustration is so well known that an apology is almost needed for its reproduction, but a group of trophies would be, indeed, incomplete without the Gordon-Bennett. It has been competed for five times, and is held by France. Added interest attaches to the trophy at the moment by reason of the French proposals to overshadow the contest for it in 1905 by a race for a Grand Prix. The Chateau-Thierry trophy is offered as the chief prize given at the annual Chateau-Thierry meeting. The winners in 1903 were Barras and Rigolly, who dead-heated for first place, and in 1904 it was won by Rigolly. The Vanderbilt trophy, which the Americans regard as the equivalent of the Gordon-Bennett, was only instituted last year, and won by Heath, representing France, on a 100h.p. Panhard.

Residents in London and district desiring a trial run on the Rexette car, with a view to purchase, and whose time denies them a visit to the makers' works, may gratify their wish by making an appointment with Mr. H. Smith, 9, Strand, W.C.

1.—The Gaillon Trophy. 2—The Chasseloup-Loubat Trophy. 3—The Aremberg Cup. 4.—The Chateau-Thierry Trophy. 5.—The Gordon-Bennett Trophy. 6.—The Vanderbilt Cup.

NEWS.

We noticed a splendid specimen of a Milnes-Daimler motor 'bus passing through Cheapside on Friday last on the way to Eastbourne, where it will ply.

A speciality in petrol engines, embodying the features of first-class design and fine workmanship, is made by Messrs. J. Taylor and Sons, Ltd., Belle Isle, King's Cross, London, N. They make from 5h.p. single-cylinder water-cooled up to a 25h.p. four-cylinder.

The "Automobile Club Journal" characterises this year's Gordon-Bennett course in the Auvergne hills as "a course of exceptional difficulty, demanding innumerable and sudden changes of speed . . . the result should be that victory will fall to the driver who drives the most manageable car. In fact, it will not be so much a race for the racing car pure and simple as for the racing touring car."

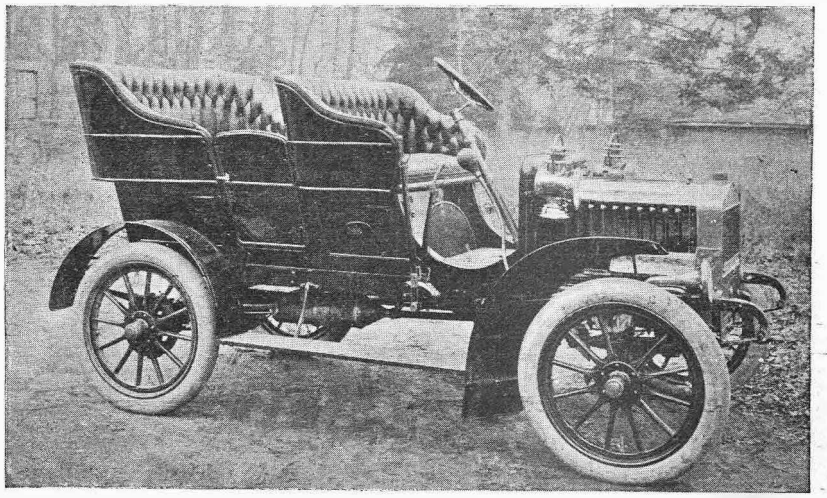
Good for Goggles.

Frottoline is the name of a preparation which will commend itself to motorists for its property of rendering glass "steam-proof." The discomfort, and even danger, of goggles which are clouded over with a film of vapour is sufficiently familiar to those who wear these necessary eye-pieces. Frottoline—a paste put up in collapsible tubes—when rubbed in to the glass, and cleaned off with a dry rag, prevents the formation of this cloudiness. It is applicable to any sort of glass, and the makers (The Frottoline Co., 56, Ludgate Hill, E.C.) claim that it has no injurious effect whatever. One application of Frottoline is calculated to last about 14 days. A small tube costs 1s. 6d., a 1lb. jar 3s., post free.

TWO MAXWELL CARS.

Another American Invasion.

A very wealthy and important American company of automobile constructors is that known as the Maxwell-Briscoe, whose extensive factory is situated at Tarrytown, New York. Their sole export agents are Messrs. Richard Irvin and Co., of New York, and their representative, Mr. J. C. Kirkham, is now in London, where he is busily engaged introducing two new productions to the British public. A representative of "THE MOTOR" had the pleasure of interviewing this gentleman at the Hotel Cecil one day last week, and from him he gathered some information regarding the main features of the cars, specimens of which at the time were on the ocean, and, therefore, not available for the purpose of inspection. The two models are known as the Maxwell Touring car and the Maxwell Tourabout, the prices respectively being £325 and £175, and the aim of the designer, Mr. J. D. Maxwell (who, it will be remembered, was responsible for the design of two American automobiles which have secured considerable popularity in this country), has been to construct the vehicles with

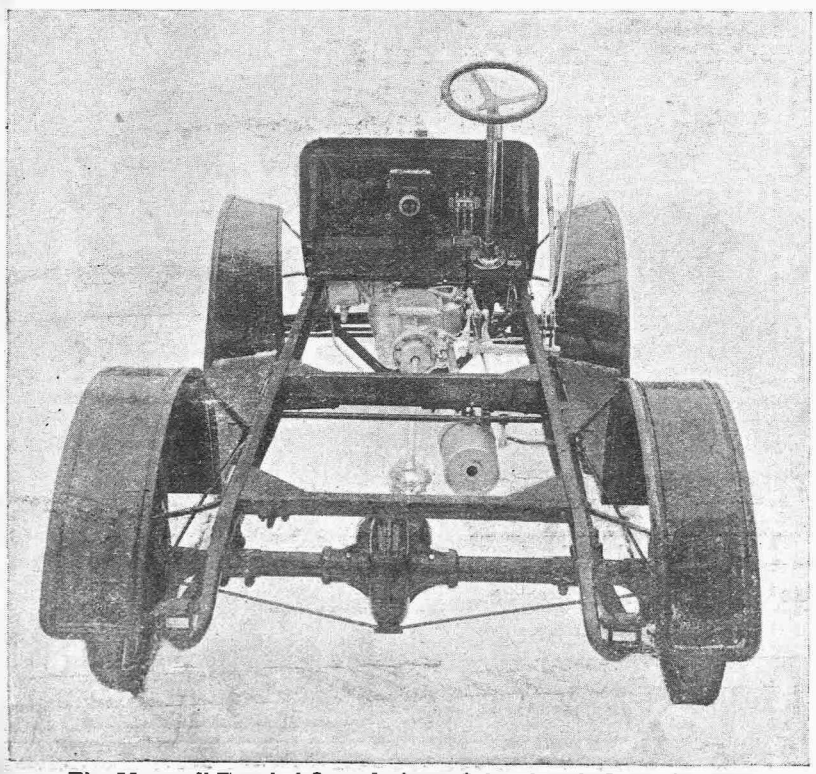


The 16-20h.p. Maxwell Touring Car

A MINIMUM NUMBER OF PARTS

and a maximum amount of efficiency. Not only this, but every part is perfectly interchangeable, and duplicates will be obtainable direct from the agent in this country. These are points which will attract potential purchasers.

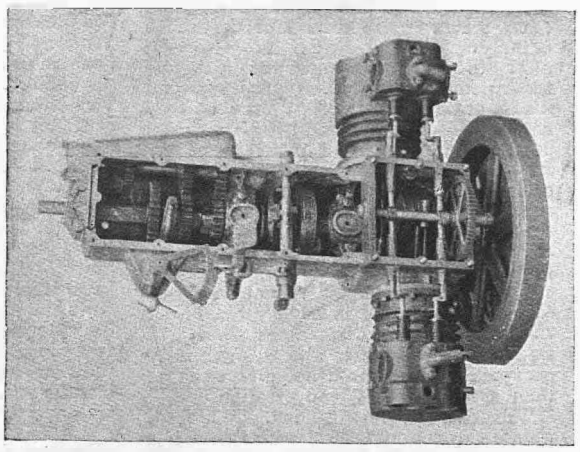
The larger model, Mr. Kirkham explained to us, is fitted with a 16-20h.p. horizontal engine, having a bore and stroke of 5in. by 5in. and two opposed cylinders. The motor, it is claimed, obtains its normal power at 1,500 revolutions per minute, but may be considerably accelerated, while, on the other hand, it may be throttled down to 150 revolutions per minute—a very wide range indeed. The engine is carried on the fore part of a long well-sprung, pressed steel frame under a bonnet, and great care has been taken to secure the accessibility of the parts—the mechanically-operated valves being particularly get-at-able. The power is transmitted through a spring-tension, dust-proof friction clutch, composed of steel discs (these run in oil, and are drivers and driven alternately, and have 600 square inches of friction surface), and a Panhard type of change-speed gearing, giving three speeds forward and one reverse, and thence, by a cardan shaft, having two universal joints and a bevel gear. It is somewhat unusual to employ two universal joints in the drive, but it is claimed that this arrangement insures increased flexibility. An important feature in the design of the car is that perfect alignment of the driving parts has been secured; the advantage of this



The Maxwell Touring Car: A view of the chassis from the rear.

NEWS.

is obvious—the crank and transmission cases being cast in one piece of aluminium, and the engine is so attached that a homogeneous whole is formed. All this is readily accessible by swinging back the bonnet, and the inspection plates, which give access to the clutch and gear-box, are easily removable. Cooling is secured by the use of honeycomb radiators and the adoption of the thermo-syphon system of circulation. No pump is employed. Two powerful brakes are provided, one operating on the hub drums and one on the transmission shaft, these being actuated by side lever and pedal. The body, with carrying capacity for four, is a metal one, and has stamped ornamented beads. A large side-door in the tonneau swings inward—a provision which has been made to minimise the possibility of children falling out through playing with the fastener. Mr. Kirkham informed us that the makers claim great credit for the upholstering and general finish of the car, while it is their boast that the vehicle will rival the steam-propelled types in the matter of noiselessness and lack of vibration.



The Maxwell double-cylinder horizontal engine and transmissions in gear

The Tourabout also has a number of good features. The engine is constructed like the other, but in this case the horse-power is 8-10. As in the Touring car, the crank case and transmission case are combined in one aluminium casting. Two speeds forward and a reverse are obtainable by means of

A PLANETARY SYSTEM OF GEARING,

and the drive is through this and a bevel gear on the rear axle. The frame is of armoured steel channel, and the body is built for two persons, while provision is made for the addition of a dickey seat in the rear, should this be desirable. Mr. Kirkham is very confident that both types of cars will make a very good impression in this country.

Auto-Cycle Club Advantages.

Now that an agreement has been arrived at, after months of negotiation, between the Auto-Cycle Club and the Motor Union, whereby the latter provides legal defence to every member—individual or affiliated—of the former body, motor-cycling clubs are being asked to make their decisions in the matter of affiliation to the controlling body. The scheme, on the whole, is a very fair one, and although both the Auto-Cycle Club and the motor-cycling clubs are called upon under it to depart from the ideal which each might set up, yet it must be granted that the compromise is fair and reasonable, and when the whole of the clubs are banded together, and the new organisation gets into working order, the small remaining barriers to complete control can be cleared away.

Palmer Cord Tyres.

A gentleman writes that he uses a 16h.p. car, which covers, on an average, 500 miles per week through all sorts of weather and over all kinds of roads. He had almost decided to fit solid tyres to the wheels, but, instead, he attached a pair of Palmer cord ribbed tyres on the driving wheels, and they have, he says, given unprecedented satisfaction. They have covered 11,000 miles, only puncturing three times, and are still in good condition and not requiring retreading.

Illustrating one of the Lovegrove coats referred to on this page.

An Easy Way to Replace Springs on Valve Stems.

Pass two lengths of picture-frame wire down through the spring, then compress the spring in a vice, and twist the wire tightly at each side, so as to hold the coils together after the vice is released. The spring will now be passed up the valve stem, the cotter inserted, and the wires can then be snipped with a pair of pliers. If one end of the spring (as in some engines) is turned up into a hook, so as to be inserted into the cotter slot, the same treatment can be applied, but inserting the hook before snipping the wires

Abandonment of Proposed Motor Restrictions.

Motorists will hail with satisfaction the announcement that, after all, the motor restrictions in the Holland Division of Lincolnshire are not to be carried out. It was proposed by the County Council to prohibit the traffic at night-time on the Deeping High Bank and the Peakirk Bank, and to impose a ten-miles' limit on the Spalding and Crowland Bank after dusk. The proposal, naturally, gave rise to considerable opposition, and, as a result, petitions were sent in to the County Council, asking them to re-consider the matter and withdraw the proposed restrictions. It is gratifying to know that these petitions have had weight with the committee which was appointed to deal with the question, for at a recent meeting at Spalding they reported that in consequence of the petitions and objections, they recommended the County Council to withdraw the proposals altogether, although they still considered that the roads were dangerous. The recommendation was approved. As motorists have their own safety to consider, as well as that of the public, they will naturally use the roads with proper care when driving along them after dark.

Two Good Coats.

Amongst a very wide range of useful and high-class garments, J. W. Lovegrove and Co., of 175, Piccadilly, W., are now making two coats at a popular price which cannot fail to recommend themselves to gentlemen in the need of strong and warm, yet exceedingly smartly cut, outer garments. These new coats have been worn by members of our own staff, who have expressed themselves as being thoroughly satisfied with the comfort they have afforded. They are made in two sizes, one suitable for motorcycling purposes and the other for car riding. The longer one of the two we illustrate. This (like the short one) is made of the best treble Irish frieze; this has been specially woven to Mr. Lovegrove's own instructions, and it is interlined with a wind and rainproof material which, while it keeps out the blasts and the wet, does not appreciably add to the weight of the apparel. As the illustration shows, the coat possesses a very smart appearance, the collar being high and comforting, and the pockets, besides being capacious, allow one to get to the inside pockets also. It falls well below the knees, and the sleeves are provided with wind cuffs, which keep out the cold most effectually. Undoubtedly the coat is rare value for the price asked for it, and is well worthy of inspection by motorists who want to successfully combat the worst weather of winter.

NEWS.

Mors, Ltd., are opening an imposing depot at 54, Shaftesbury Avenue, W.C.

Messrs. Carless, Capel and Seward ask us to state that they have reduced the price of their standard petrol by one penny per gallon.

We are asked to state that the sole agency for Stanley cars in this country is held jointly by F. Wilkinson, John Dalton Street, Manchester; W. E. Galloway and Co., Sunderland Road, Gateshead; and Messrs. Paris Bros., Yellow House Lane, Southport. Only one of these names was mentioned in a previous issue.

One Hundred Miles Road Race for Cuba.

Senator Morgan has fixed up a 100-mile motorcar road race for the island of Cuba. The course is from Havana to San Cristobal; it is winding and undulating, but free from steep hills and sharp curves. There is said to be several 10-mile stretches of it which are straight and as smooth as a billiard table. The average width of good, hard, limestone surface is six yards. The International Automobile Racing Association of Cuba, which will have the management of the affair, has decided to put up a telephone wire along the whole length of the road. Fifteen hundred of the Cuban rural guards, a large body of the Havana Fire Brigade, and 200 cyclists, will police the course. The race is to take place on some date early in February—probably the 9th or 14th.

THE OLYMPIA AUTOMOBILE EXHIBITION.

A Short Chat with Mr. H. A. Blackie, the Secretary.

We called at Clun House, Surrey Street, Strand, W.C., one day last week and had the pleasure of a short interview with Mr. H. A. Blackie, the secretary of the Society of Motor Manufacturers and Traders, Ltd., who are organising their third annual automobile exhibition to be held from February 10th to February 18th at Olympia. The society are the first body to secure Olympia as a venue for automobile exhibition purposes, and it cannot be denied, that in doing so they have exercised the soundest judgment. Its position, area, and all-round suitability for the purpose for which it has been selected cannot be doubted, and the promotors are to be congratulated upon their selection. Without desiring to be egotistical in any way we may mention in passing that "THE MOTOR" was the first paper to suggest Olympia as an eminently desirable housing for a motor exhibition. "How are things shaping?" we asked Mr. Blackie, who was so busily occupied that he could not give us more than a few minutes' conversation.

"Excellently," he replied. "Indeed, we are extremely gratified with the results of our efforts. We have secured in round figures about 300 entries, and these include the cream of the industry, as you may see by our list. The support given to us is such that I have no hesitation in saying that it will be the most representative motor exhibition held in this or any other country. It will be essentially an international display- and this term could not be applied in its widest sense to the last Paris Salon which, after all, was to all intents and purposes a French rather than an international display. The Olympia show will be

A COMPLETE REPRESENTATION OF BRITISH AND FOREIGN CARS,

and it will be divided into sections, viz., for pleasure cars, heavy and commercial vehicles, tyres, accessories, machinery, and--in order to be thoroughly up-to-date --a motor boat department. A feature of the exhibition will be the notable increase of British cars—this will astonish the outside public. The Show will be under the direct patronage of H.R.H. the Prince of Wales, and will be officially recognised by the Automobile Club. By the way, I may mention that Lieutenant Charles Godfrey's band will add to the pleasure of the Show, and the public will be pleased to know that the refreshment catering will be in the experienced hands of Lyons and Co. Regarding the area of the hall: this is 130,000 square feet, and the principal positions were let as far back as three months ago. At the moment there is not an unoccupied space."

"It has been mentioned that you are proposing to rival the Paris Exhibition as regards decorative display. Is this so?"

"Well, that is a very large order," was the reply. "I may say, however, that we have arranged for 20,000 extra electric lights to be fitted at Olympia, and the majority of the exhibitors are arranging to have exceptionally artistic stands. We have no doubt that it will be the finest exhibition of its kind ever held in this country; while, as I have said, as a representative display it will surpass the French Salon. There is another thing; in order to give visitors an opportunity of having trial runs in cars which particularly impress them a large garage has been erected capable of holding about 300 vehicles. From here, the cars will be able to run over Hammersmith Bridge and on to Richmond Park, where the well-known test hill will give potential purchasers an opportunity of gauging the merits of the cars up a stiff gradient."

Such in brief is the gist of our conversation with Mr. Blackie, and when we say that the splendid list of entries include such firms as the Wolseley, Humber, Belsize, Panhard and Levassor, De Dion-Bouton, Rolls, Mandslay, James and Browne, John Marston, New Orleans, Speedwell, Gladiator, Armstong-Whitworth, Thornycroft, Vauxhall, Hozier, Daimler, Minerva, Albany, Brush, Standard, Beaufort, Duryea, Singer, Simms, Ariel, De Dietrich, Deasy, Hutton, S. F. Edge, Jarrott and Letts, etc., etc., some idea of the excellent and extensive character of the exhibition may be easily gauged

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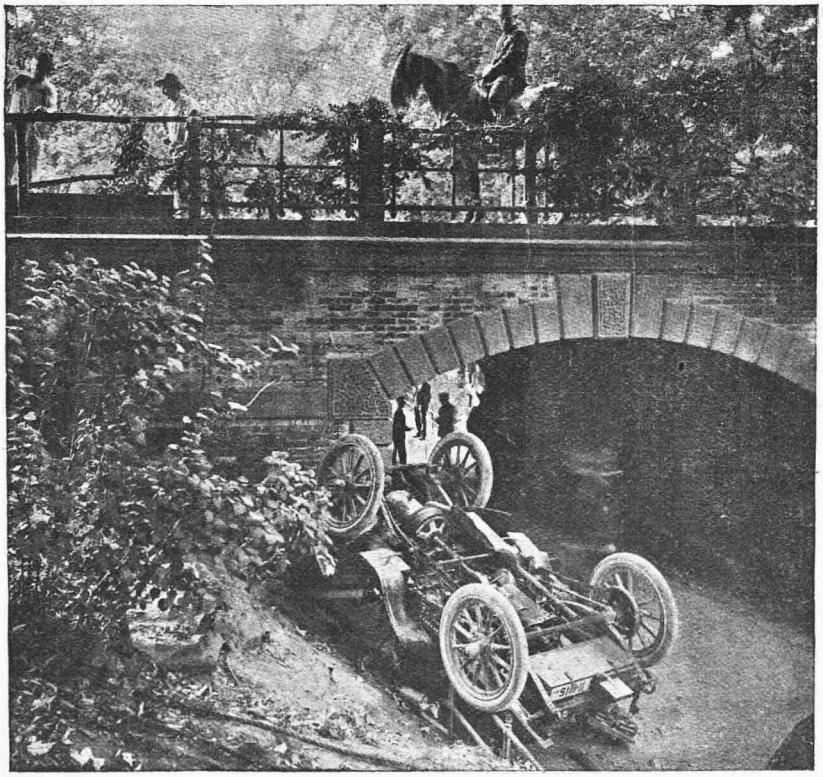
Mr. Ernest H. Arnott has resigned his position as sales manager in the motor department of the Simms Manufacturing Co.

We have received a copy of a small book entitled "Useful Information Concerning Patents, Designs and Trade Marks," which is published by Messrs. Harris and Mills, 23, Southampton Buildings, London. It contains a résumé of the Patent Law as recently amended, and may be obtained post free from the above address.



A curious accident to an automobile happened recently in a New York Park. The car fell 20 feet over a bridge and turned upside down. Two people were in the car, but they were not hurt.

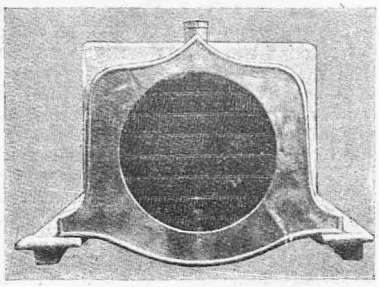
NEWS.

Gabriel on Speed.

The hero of the Paris-Madrid race has, along with several of the leading motor racers of the day, been giving his "Impressions on Speed," but, like the majority, has little to say on the subject, which reminds one of the famous tight-rope walker, Blondin, when asked as to his feelings while crossing the falls of Niagara on a rope, he simply replied, "I only had one thought, and that was to keep my balance." The motorist's one thought seems to be more speed. Gabriel says: "When I am travelling at 85 miles an hour or over, I have one special occupation, and that is, listening to the running of the motor, awaiting the fatal panne, or the failure of a cylinder, and before I stop the car I am calculating what the mischief is, or which of the cylinders is not working. During this time my mecanicien has everything in readiness for a quick repair if necessary. This absence of impression of speed is, however, counterbalanced by the impatience I experience in waiting for a new car more speedy than ever.

New Speedwell Models for 1905.

The Speedwell Motor Co., Ltd., of 151, Knightsbridge, S.W., have entirely remodelled their designs for the 1905 season. One of the special features will be a registered design of bonnet with double-hinged sides, and having the front finished off by a shapely self-contained radiator and tank, which will be distinctive of all models alike. The patterns will be seven in all, and comprise the following details:—6h.p. single-cylinder at 125 guineas; 9h.p. single-cylinder, two speeds, at £160; 9h.p. single-cylinder, three speeds, at £210; 10h.p., two cylinders, at £260; 12h.p., two cylinders, at £325; 18h.p., four cylinders, at £400; and 25h.p., four cylinders, at £590. Each will be fitted with mechanically-operated inlet valves, governed engine, automatic carburetter, wipe contact breaker arranged in a vertical position, and push-forward pedals. The two largest models will have in addition a patented form of live axle of a novel nature, in which, although the drive is by a live axle, the weight at rear will be entirely supported by a solid axle.



The Quart de Litre Record.

Undoubtedly one of the best motorcycle record breaking performances of the year stands to the credit of Anzani, who has just succeeded in wiping out Lanfranchi's long-standing hour and 100 kilometres records on the Quart de Litre type of motor, which is well under 2h.p. To drive such a small-powered motor 46 miles 218 yards in the hour, and 100 kilometres (62 miles 246 yards) in 1hr. 22min. 28⅘sec. is no small order, as the minutest care and attention has to be bestowed upon the machine throughout such a trying ride, and this performance Anzani accomplished at the Parc des Princes track, Paris, on December 22nd last. After his ride he said, "This is hard work compared to my recent hour record of close on 55 miles."

THE MOTOR CAR ACT IN 1904.

Mr. A. Moresby White read an interesting and instructive paper at the Automobile Club last Thursday evening on "The First Year's Working of the Motor Car Act," dealing comprehensively and clearly with the chief features of the Act and their practical working in 1904. After pointing out that the motorcar, as a carriage, has as much right to the use of the highway as any other vehicle, Mr. White reminded his hearers that the Act had placed very extensive and novel powers in the hands of petty sessions magistrates, and that the working of the Act had been "almost entirely dependent upon their views of what it means and how it ought to be administered." He then went on to review various clauses of the Act.

Section I.:—Contains four separate misdemeanours; (1) Driving *recklessly*. (2) Driving *negligently*. (3) Driving at a *speed* which is dangerous to the public, having regard to circumstances, etc. (4) Driving in a *manner* which is dangerous to the public, having regard, etc., etc.

Any first offence under this section entails a fine up to £20 and endorsement of the license, with right of appeal to Quarter Sessions when the fine exceeds £1. The motorist has frequently suffered from the infliction of too small a fine, thereby having no right of appeal, but being still subject to the serious penalty of an endorsed license. An important point to note in connection with offences under Section I. is that the defendant can only be prosecuted under one of the four: if the police charge him with two or more of the offences, he can compel them to elect on which charge they will proceed at the hearing: and if the conviction, when drawn up, includes more than one, it can be quashed upon *certiorari* (cf. Rex v. Wells, where defendant was convicted for driving at a speed *or* in a manner dangerous to the public; this conviction was subsequently quashed). In trying to prove one offence, it is not permissible to adduce evidence of another: *e.g.*, on a charge of driving in a *manner* dangerous to the public, evidence of *speed* is inadmissible; and *vice versâ*. How frequently has not this principle been violated by police and magistrates during the first year of the Act! The importance of clearly establishing the existence of danger to the public must not be lost sight of, as, in Mr. White's opinion, it so often has been in motor cases: and the existence of danger can only be established by evidence of *fact*: police and magisterial *opinion* are not admissible. Mr. White says: "Mere opinion is not evidence . . . yet it is common to find a policeman swearing thus, 'The car covered the distance in so many seconds, which works out at 25 miles an hour, in my opinion a most dangerous speed to the public.' . . . This kind of thing must be severely checked; . . . the point to be decided is whether in the opinion of the Bench *there is clear evidence of public danger*."

Police Traps:—Police evidence as a rule unreliable, both as to timing and surrounding circumstances. It is important that the motorist, when stopped, should ask to see the watch and examine it; record the conversation as soon as possible; take note of surrounding traffic, wheelmarks, etc. "To give warning to anyone of a trap is no offence; it is warning a person not to break the law." This statement of Mr. White's will be read with interest, in view of the action of the police in certain quarters against trap-warners.

Owner's Liability:—The liability of a car owner to give information which may lead to his own conviction is without precedent in criminal law. The justification for this extreme measure is that it would sometimes be difficult, or impossible, to identify an offending driver. This liability only applies to offences under Section I. An owner is not bound to supply such information in the case of an infraction of the legal-limit clause.

Endorsement of License:—With the exception of the first and second offences under the legal-limit clause, every offence committed in connection with the driving of a motorcar must carry with it endorsement of the license. An important point to note here is that the Court has no right to examine the license of a defendant before conviction. Indeed, the license need not be brought to Court; and need only be produced within reasonable time after conviction—say, seven days (to allow of notice of appeal).

Right of Appeal:—This has been dealt with under Section I. It remains, however, to be noted that "where a conviction is bad on the face of it it may be quashed by a writ of *certiorari* from the High Court. "This is a valuable protection to motorists, although little known at present," says Mr. White.

Mr. White sums up the situation as follows:—"The main object of the Act has been achieved; cars can be easily identified, and, in most cases, the drivers also, without serious friction. So far, the public safety is secured, but the apprehension of danger remains. Deep-rooted in the public mind is this fear of the speedy vehicle on the public road. Until by gradual education this is removed, the motorist must expect to suffer the usual fate of a minority."

A general discussion followed the reading of Mr. White's paper. The Chairman (Lord Russell) thought that the first year's working had taught valuable lessons and had indicated necessary amendments. He drew attention to the inaccuracy of speed estimations: a silent car, travelling at 15m.p.h., was usually assessed at 10: a noisy car at 10 was generally credited with 25 or 30. Mr. Staplee Firth questioned the legality of speed restrictions in parks—in which connection a case is now, we believe, *sub judice*. Mr. Shrapnell Smith and others also contributed to the debate.

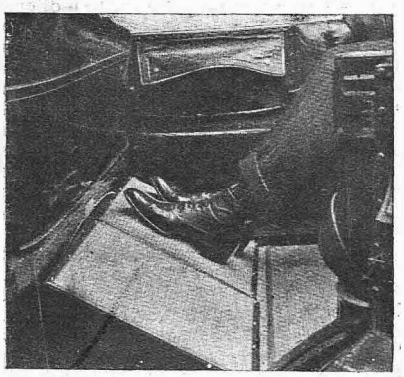
NEWS.

The Motor Cycling Club.

The annual general meeting of the Motor Cycling Club will be held at the Restaurant Frascati, London, W., on Friday, January 20th, at 8 p.m. The balance-sheet has just been issued which shows that the financial position of the club is a very satisfactory one. The committee announce that the club has received offers of prizes and cups for competitions from Mr. S. F. Edge (£50), Mr. A. Brown (value 25 guineas), Mr. J. W. Stocks (value 20 guineas), Mr. J. H. Reeves (value 20 guineas), and Mr. H. Kennett (value 20 guineas). The M.C.C. membership is now very nearly 200, 74 new members having joined within the last season. The report shows that the members of the club committee have attended the meetings with commendable regularity, and that the business of carrying out the various runs and competitions last season was most successfully accomplished.

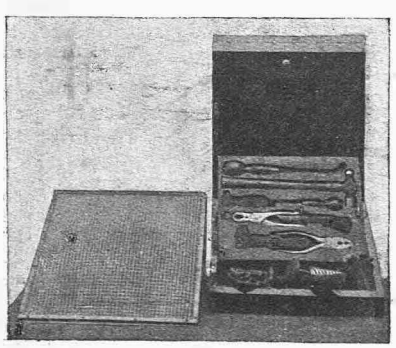
A Clever Idea.

Mr. S. F. Edge has recently patented an ingenious combination of tool box and foot rest, which we illustrate herewith. Those who have ridden in the rear seats of cars, more particularly side-entrance bodies, will have felt the want of some support for the feet on occasions when the brakes are suddenly applied or rough

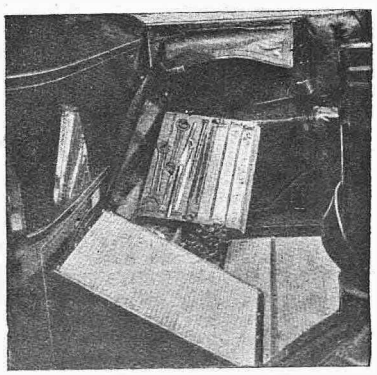


1.—Showing Footboard.

road surfaces are negotiated. Under such circumstances the passenger is usually shot back and forth upon the seat. Mr. Edge's patent is designed to obviate this inconvenience by the arrangement of a rubber-covered footboard, and having beneath the rubber a pneumatic pad, thus insulating the feet from all vibration. The footboards are removable, and at their bases form tool boxes, in which the tools are carried, each in its own compartment. Mr. S. F. Edge will, we understand, license other manufacturers to make. Prices are £5 5s. (in plain wood) and £6 6s. (solid mahogany) per pair, without tools. By a coincidence an article in type for "THE MOTOR" next week, entitled "Care of the Tools," describes a method of arranging the tools exactly as shown in the illustration.



2.—Showing footboard open, displaying tool-box.



3.—Other side open.

The 6h.p. Mobile.

A Malvern correspondent writes to record his favourable experiences with a 6h.p. Mobile car in Worcestershire and Herefordshire, particularly in the hilly country round Malvern. The car has climbed stiff hills such as the British Camp, and from Colwall up through "The Wyche," an ascent which we know from experience to be a formidable one. Freedom from vibration and comfortable running are also features of the car.

WHICH IS THE BEST PETROL?

'The Motor" Proposes to make a Series of Tests.

There are now on the market about a dozen different makes of petrol compared with the two standard makes of a few seasons ago. The advent of all these makes has produced no little stir in the motor world. There is a considerable range in the prices, as low as 8d. per gallon retail being quoted in some instances, and this is little more than is asked for a good quality paraffin oil. On the other hand, it is not unusual to be asked 1s. 6d. a gallon for a well-known make of petrol in some parts of the country. Not less remarkable is the fact that each maker claims to turn out a spirit superior in quality to any other. It gives more power, is more economical, has less odour, is cleaner than it rivals. It is not alone by the makers that these claims are advanced. It is easy enough to get independent testimony that a certain spirit gives marvellous results. If the question be put to one's own circle of motoring friends, it is pretty sure to elicit the most diverse opinions as to the merits of the various makes. So-and-So has tried a new brand, and finds that he can get five miles an hour more speed out of his car, and tackle hills at a pace he had never experienced previously. It seems to us that the question of the hour is, "Whose make of petrol is the best?" The time has gone by when specific gravity was an indication of quality. This is now a factor of minor importance, as it is generally admitted that it matters little whether the sp. gr. be .680 or .725. "THE MOTOR" is endeavouring to arrange for a series of tests, with a view to proving which spirit can justly claim to be the best. The chief factor will be to determine which spirit can develop the greatest amount of mechanical energy for a given quantity. These tests would be made from samples purchased in the ordinary way from a depot, and special precautions taken to ensure that the tests were made from the identical spirit as supplied to the public, and not special samples made up for the test. Those interested in the different brands could be present when the purchases were made if they so wished. The question now arises: What is the best method of making the test? We think that this opens up an interesting subject. Up to the present there is no record of any comparative tests having been carried out, but we have thought out the lines upon which a scientific test might be made, and are now making every effort to get them carried out.

Messrs. W. A. Lloyds' Cycle Fittings Co., Park Street, Birmingham, have now introduced their 1905 booklet. It contains much useful information concerning the firm's well-known motor specialities. It is well illustrated.

Land's End to John o' Groat's on an Ariel Car.

Mr. Charles Sangster, in company with some friends, has just accomplished an "end-to-end" ride on a 20h.p. Ariel car. The full distance is 886 miles, and the car practically performed a non-stop run, the only mechanical adjustment on the road being the replacement of a sparking-plug. Only two punctures were experienced, and, in spite of very unfavourable weather, over about half of the journey a high average rate of speed was maintained. The stiff climb over the Grampians between Perth and Inverness was splendidly negotiated, and both Mr. Sangster and his car are to be congratulated on this additional proof of the capability and reliability of a well-made and skilfully-driven British car.

The French A.C. Proposals.

The Automobile Club have very promptly and very properly passed resolutions protesting against the proposal of the Automobile Club de France to run the race for the Grand Prix at the same time as the Gordon-Bennett. The resolution passed was as follows:—"That the principle of another race being run at the same time and over the same course as the Gordon-Bennett race will decrease the interest in the Gordon-Bennett race, and is bad in principle from a competing club's point of view." It was further resolved that a strong protest against any other race being held on the same day be sent to the French Club, and that a copy of the protest be sent to Mr. Gordon-Bennett, and also to all clubs eligible to compete.

NEWS.

Lovegrove and Co.'s (175, Piccadilly, W.) new illustrated catalogue of motor garments is a work of art and well worth writing for.

The new Bowden two-speed gear for motorcycles is not, as previously announced, being marketed by the Bowden Brake Co., Ltd., but by the E. M. Bowden's Patents Syndicate, Ltd., of Baldwin's Gardens, Gray's Inn Road, E.C.

H. Gutteridge, Ltd., have opened extensive premises at Cambridge Circus, Shaftesbury Avenue, W., for the sale of motor accessories, clothing, etc. It will be remembered that Mr. H. Gutteridge was for a number of years manager of the motor department at Messrs. A. W. Gamage, Ltd., Holborn, E.C.

The Durkopp Motor-bicycle.

The Durkopp motor-bicycle, which Messrs. Gamage, Ltd., Holborn, London, E.C., have introduced into this country, is a machine embodying the features of first-class workmanship and design, and, with certain interesting novelties added, it calls for the careful consideration of those who are on the look-out for a new mount. It has a vertical engine, made in two sizes, viz., 2½ and 3h.p., the dimensions of which are 70mm. by 85mm. and 80mm. by 90mm. respectively. A special feature about this engine is that it runs on ball bearings, which reduces friction losses to a minimum and makes the life of the engine practically unlimited. The inlet valve is mechanically operated. The frame has an extra long wheel base, and there is an extra horizontal tube and a vertical cross stay, which ensures great rigidity. The carburetter is a standard type of spray fed from a tank holding 1¼ gallons of spirit. Two powerful band brakes, one to each wheel, and operated from the handle-bar, are fitted. The diameter of the wheels is 26in., and a noteworthy feature is that the belt rim is secured by arms direct to the tyre rim, which, in our opinion, is the correct way of doing it. The handle-bars are brought well back, giving a comfortable position and effective control over the steering. Transmission is by V belt, the long frame and forward position of the engine giving the advantage of a long drive. With regard to the ignition, either coil and accumulator or magneto combined with the coil system can be had at option. The magneto system adopted on the Durkopp is

A REMARKABLY INGENIOUS ONE,

quite different to any other system. Firstly, the puzzle is where is the dynamo? The explanation is that it is made as part of the internal mechanism of the engine. Although we have not got the exact technical details of the arrangement, it is doubtless on the following lines:—The fly-wheels carry magnets, which, as they rotate, induce a current in two fixed armatures in the crank case. The low-tension current thus obtained passes into an induction coil fixed in a compartment of the tank case, and thence to the spark-plug of the engine. The engine speed can be controlled by a spark advance lever. The size of tyre fitted may be 2, 2¼, or 2½ inches, at option. The front forks are of great strength.

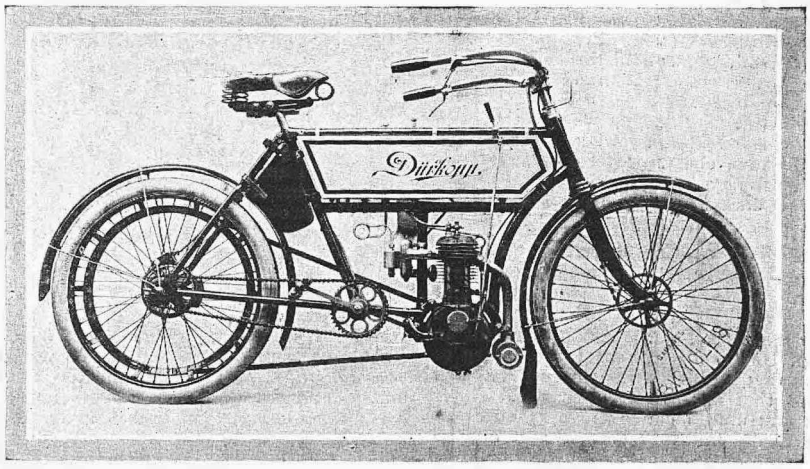
Mr. S. F. Edge has received a cable sent by Mr. Charles J. Glidden from Suva, in Fiji, where he has arrived, and is driving his "Round the World" Napier. He says that there is very great excitement, and that his car is the first that has ever been seen in Fiji, and that the Fijians have christened it "The Father of all Devils."

Automobile Challenge Trophies.

The automobile racing season of 1904 has been remarkable for the successive victories of French drivers on French cars in the classic contests, in fact, almost every trophy of note is now in the possession of the Automobile Club de France. The full history of the Gordon-Bennett cup race has already appeared in our columns, and he or she who knows not the name of Thery must indeed be very far removed from the automobile world. The French driver won the cup from the holder Jenatzy, on German soil, after a very exciting race, on a Richard-Brasier. The Chasseloup-Laubat cup, presented by the Marquis, who is a member of the committee of the A.C.F., was also gained by Thery on a Richard-Brasier for finishing first in the French eliminating trials. The cup offered by the Hon. J. Scott Montagu during the Gordon-Bennett races in Ireland fell to France, and is included among the many trophies held by the French chauffeurs. The Coupe d'Arenberg was put up by Prince Pierre d'Arenberg at the moment when

THE QUESTION OF DRIVING BY ALCOHOL

was so much discussed, and, reserved, of course, to cars so driven. It was first competed for in the Paris-Vienna race over the Paris-Belfort course, and was won by Chevalier René de Knyff on a 70 h.p. Panhard-Levassor. It was competed for again in 1903 on the Paris-Bordeaux route, and won by Rigolly on his 100 h.p. Gobron-Brillié. The Vanderbilt cup is, of course, one of the latest offered, the well-known American millionaire putting up a splendid trophy to be competed for on somewhat similar lines to the Gordon-Bennett contest. The first race for the trophy took place a few months ago on the roads around New York, Heath winning on a 100 h.p. Panhard-Levassor, he having previously gained the Circuit des Ardennes on the same car. One of the conditions governing the race stipulated that the cup must remain in America, so the A.C.F. and the winner have to content themselves with a photograph of the trophy, which is in the shape of a large challenge cup, with a motorcar engraved in the centre. The Cup de Gaillon was founded by our Paris contemporary "Figaro," being for the best performance at hill-climbing. This cup has always been won by a French car, the present holder being Baras, who drives a Darracq. Two well-known trophies, however, are not included among the French successes, they being the Brescia cup, gained by Lancia on his Fiat, and the Rochet-Schneider cup for tourists, which was won on a Swiss-made car—Martini. At Nice the French chauffeurs annexed a couple of Baron Henri de Rothschild's trophies, while several minor challenge cups in various parts of Europe have fallen to their lot. May we have to chronicle such a list for England at the end of 1905!



The Durkopp motor-bicycle which is being handled by Messrs. A. W. Gamage, Ltd., Holborn.

Rough Work on a De Dion in New Zealand.

An Auckland (New Zealand) correspondent forwards some details of a recent run, which illustrates the rough nature of some of the country in "Brighter Britain," and also the capacity of a well-built car for arduous work. On a 12 h.p. De Dion car he had to climb over the Rimutaka ranges and ascend about 2000ft. in six miles, and then descend a similar height in seven miles on a rough surface, the grades varying from 1 in 8 to 1 in 10. He also had to climb the Pikakarakie Hill, a height of 3,000ft. in six miles, up a road only just wide enough for the car itself, with a precipice on one side of the hill falling to a depth of several hundred feet. The car also proved very adept at crossing river beds, several of which were in flood. In one place a river 300 yards in width was crossed, the depth of the water ranging from 18in. to 2ft., and in one place the water rose 2ft. 6 in., right into the floor of the car, within about three or four inches of the air inlet pipes: the stream was running through like a mill-race, and it was all the occupants of the car could do to keep on the ford, for at the same time it was raining and blowing a howling gale; in fact, there has not been such a flood in the district for years.

OTHER PEOPLE'S VIEWS.

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

Carburetter Difficulty with 8 h.p. De Dion.

Sir,—In answer to "C.M." (Stockport), perhaps the following hint will help him. When the mixture tap is in midway position, he gets full gas; bringing it back to steering post gives more air and less gas; pushing it forward gives very little of each.—Yours faithfully, D.G.

Using Surface Carburetter with Leaking Float.

Sir,—I have this trouble, but Mr. Wallace does not say how the old existing wire is to be removed. Presumably to be cut off; but what about the old float with the short length (1⅛in. to 2in.) of wire attached getting underneath the new float? It seems to me that just when the float is most needed, that is, when the petrol is getting low, one must get a false register and probably become stranded. Would Mr. Wallace enlighten me?—Yours faithfully, J. Lucking.

Power of Four-seated Car.

Sir,—In a recent issue you state, in reply to a query of "A.L.M." (Bowdon), that "8h.p. is a very low power for a four-seated car, etc." As an owner of an 8h.p. De Dion car, 1904 make, I beg to state that I differ with you entirely. On roads that are handicapped with winter wet and mud I can average 25 miles an hour with four passengers, and on the level can do 30 miles, passing many four-cylinder cars. The De Dion people build their cars light, and a single cylinder admits of this, hence the pace combined with the low power.—Yours faithfully,
Single Cylinder.

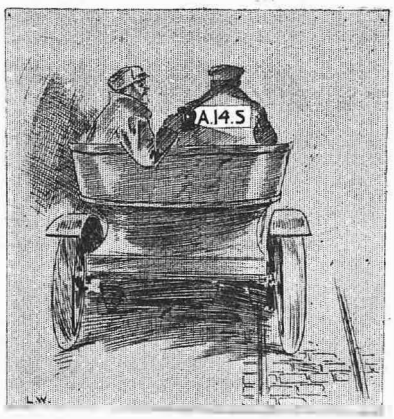
The Humber Olympia Tri-car.

Sir,—Noticing in a recent "Motor" that Mr. Waghorn, one of your correspondents, asks for opinions and experiences of above, I venture to give mine. I bought a Beeston Humber, two-speed, water-cooled, 3½h.p. tandem early in May, 1904. I had the original metal-to-metal clutch replaced by the makers (free of charge) by a foot-applied leather-to-metal clutch of ample dimensions, which has run for nearly 1,500 miles without ever being touched. There are no pedals fitted to my tri-car, as I find that with the two-speed gear I do not need them. I have never been conquered by any hill with two people weighing about 21 stone on the tri-car. When ordering the machine I asked for 2½in. Palmer tyres on all wheels, for which I had to pay extra. So far, in 2,000 miles, I have never had any kind of burst, puncture, or other tyre trouble, and I do not think many people could say this. I have never been landed by engine troubles except by—once or twice—the sparking-plug, etc. I find in summer, with good roads and two people up, that I can average 80 miles per gallon of petrol. The gearing is 5½ to 1 and 11 to 1. With this the low gear is only used for starting off, or on very exceptional hills. Altogether the machine is very satisfactory, and is quite strong enough, as it averages about 20 miles per hour on almost every road.—Yours faithfully, S238.

We are always glad to give space to letters from readers on the subject of car experiences. The only request we have to make is that correspondents will write as briefly as possible.

Olympia Tandem Experiences: Water-cooling v. Air-cooling.

Sir,—It may interest some of your numerous readers if I give my experiences of the Coventry Humber Olympia tandem, which I purchased last March. After having covered 9,400 miles, I may state that I am in every way satisfied. As a hill-climber it is all that can be desired, with the two-speed gear, which I think is indispensable. I have found it faster up hill than many 9 h.p. cars, and have on more than one occasion overtaken 5 h.p. tri-cars ascending hills, as my 3½ h.p. engine gives 5 h.p. on the brake. This autumn I went for a tour in North Wales, with an 11 stone passenger, myself weighing 12 stone 6 lb. We covered 1,300 miles, and the only adjustments needed were the chain twice, brakes twice (due to the excessive wear on the leather), and the trembler on the coil; which is not, I think, excessive for 1,360 miles, and speaks well for the workmanship of Messrs. Humbers. The tyres—Clincher 2½ in. equal—gave no trouble, although in some parts the roads were so rough that it was only possible to drive on the low gear. The Pass of Llanberis, which rises 800 odd feet in 2½ miles, was negotiated with the greatest ease, and without excessive heating. Stoneleigh Hill, Warwickshire, and Sunrising Hill, Edge Hills, are often quoted when climbed. Such hills in Wales are met with every day; but not on any occasion did my passenger have to alight, for the Olympia never failed on any hill, although carrying 40 lbs. of luggage, also spare petrol. I notice air-cooling or water-cooling for fore-carriages has been under discussion; may I ask if those who advocate air-cooling have ever tried North or Central Wales, if so, I should be interested to hear their experiences. The engine power also seems to be a greatly discussed point; personally, I have found that a good 3½ h.p. with chain drive, two-speed gear, and water-cooling, will go anywhere. Up to the present I have not seen the advantage of the higher-powered fore-carriages.—Yours faithfully,
AC325.



An amusing way of complying with the regulations. (Actually seen in Streatham.)

Racing Track Wanted for London.

Sir,—Some time ago I heard that a large motor racing track was to be built at Purley, but I have not heard anything about it recently. We have not a racing track in England large enough for racing cars, such as they have in America. Why should we be behind the times? What is wanted is a track where motorists could take their cars or cycles and test their speeds, etc., for a small fee. We cannot always go to Blackpool, Southport, or Bexhill. Why not have a track near London?—Yours faithfully,
H.W.T.

Causes of Overheating.

Sir,—In the issue of "The Motor" of Nov. 29th, Mr. G. Hume, in the "O.P.V." columns, queries the statement that carbonised oil in the cylinder is one of the causes of overheating, and in support of his views argues that the heat should be kept in, in a petrol motor. If that is so, what is the use of radiating ribs, thin cylinder walls, and, above all, water-cooling. I fancy Mr. Hume is confounding the steam engine with the explosion engine principles. The steam engineer lags the cylinder walls to keep the heat in; the gas or petrol engineer, by means of fans, etc., does all he knows to get rid of the heat as soon as possible, and surely a non-conductor of heat like carbon must tend to keep it in. To quote his own words, "the poorer the conductive properties of the internal surface of the cylinder walls the cooler will those walls remain." This, on the face of it, is absurd. The heat generated by the explosions would, if kept in by non-conducting walls, quickly heat up the engine to such an extent that it would only draw in a small proportion of its proper charge of gas owing to the fact that a gas expands on being heated, therefore the power must drop. The same remark particularly applies to the piston face; he says "let it remain foul as we want to keep it cool." Surely this partakes of an Irish bull.—Yours faithfully, A5331.

O.P.U.

The Simpkin Pitch Band.

Sir,—Would any user of the Simpkin pitch band give, through "O.P.V.," particulars as to reliability and life of same, as I am thinking of having one fitted to a 2 h.p. Werner? Thanking them in anticipation.—Yours faithfully, CH124.

An Idea for a Pump.

Sir,—Referring to "An Idea for a Pump" in issue December 27th, page 588, J. Tomlin, in describing his idea, does not mention how he prevents the air blowing on to the cylinder when he desires it to blow the horn or inflate his tyres. I should like to know how he manages this. The pump piston will also need lubricating. How does he prevent the oil blowing down the tube to the tyre and damaging the inner tube? I should also like to know how he manages to get enough air pressure in the pump to blow up a tyre, as there appears to be no valve in the pump cylinder to allow the air to enter on the suction stroke. To me it looks as though it would be a fairly heavy appliance if it has the necessary strength which a pump of this description will require.—Yours faithfully, H. G. METCALFE.

Steering of Tri-cars.

Sir,—I should like to in every way endorse the remarks made by Mr. G. P. Mills. Not only did your correspondent "Petrolia" appear, as Mr. Mills points out, to be an absolute novice in tricycle riding, but he also appeared to be unaware of the every-day capabilities of the machine. "Petrolia" stated that to swing round an easy curve at 15 miles per hour on a tri-car would mean that one wheel would be off the road, and possibly the whole machine overturned. I shall be very pleased to drive "Petrolia" on a tri-car round his idea of an easy curve at considerably in excess of 15 miles an hour—will guarantee that all three wheels remain on the ground, and will, further, indemnify him from any damage to himself. It seems to me a very great pity that a type of machine which has, on its merits, so quickly and strongly found its way into public favour, should suffer from such unfounded criticism as that in question.—Yours faithfully, A. F. ILSLEY.

Petrol Consumption of the 7h.p. Clyde Car.

Sir,—In reply to the enquiry by T. Spittle in your issue of December 20th, I can only account for the low petrol consumption of my Clyde car in two ways; firstly, the makers claim to have a special arrangement of the Longuemare carburetter, which gives more perfect carburation; my engine runs well with air tap full open and the throttle almost closed, and any alteration in the sprays to give more petrol would seriously affect the running of the engine on hills. In the second place, owing to the free running of the Clyde transmission gear, I can take many hills on my top speed, where many other cars of a similar power have to drop to the second, or even the first. The effect of this is quickly shown in the comparatively low petrol consumption. I have only two speeds on my car, and very seldom have to drop to the first, whilst I can maintain an average over the roads here quite up to the legal limit. Probably the makers would give Mr. Spittle more information on this most important matter. I should be interested to hear the experience of other users of Clyde cars.—Yours faithfully, W. CAMERON.

Palmer Tyre Experiences.

Sir,—I see that your correspondent "Anti-Vibration" is asking for a rider's experience of Palmer tyres. I have now used a pair of Palmer 2¾in. tyres on a 3½ h.p. motorcycle for upwards of 2,000 miles, and have no fault to find with them whatever. When using Palmers I find there is not the slightest suspicion of side-slip, and it is possible to ride over the worst roads in comfort. As regards vibration I always keep the tyres pumped up hard, and have never had cause to complain of undue vibration. If "Anti-Vibration" does not use a spring frame I should advise him to try an N.A.B. or similar spring seat pillar in conjunction with Palmer tyres.—Yours faithfully, PI21.

Misfiring on the Humberette.

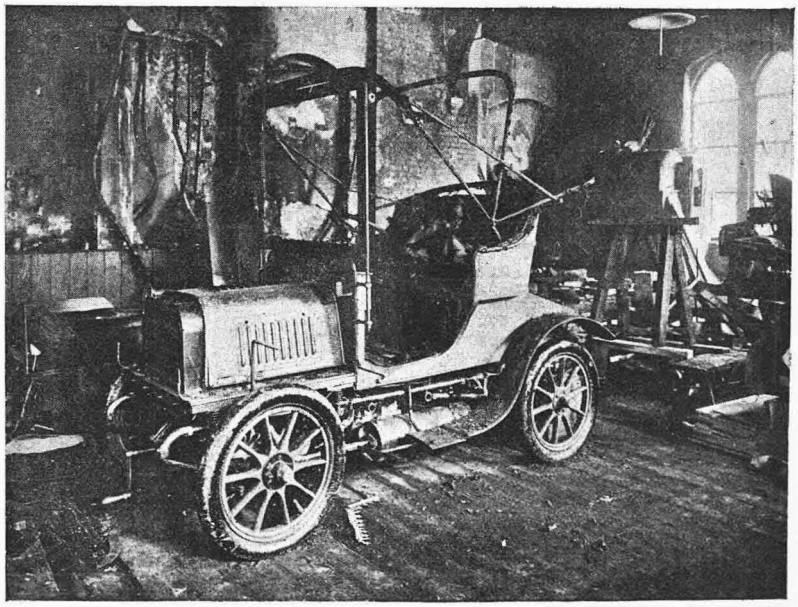
Sir,—With reference to your correspondent's, "J.N." (Bradford), letter in issue of "THE MOTOR," December 20th, regarding misfiring of Humberette, I have no doubt his trouble is the same as my own of a year ago. The cause of misfiring when engine is oiled is that the large timing wheel bush has worn on the spindle, and when oil is injected into engine and timing gear, a film of oil gets between spindle and bush, and breaks the circuit. The remedy is to fit a small piece of spiral spring on the spindle between firing cam and aluminium cover, so that it presses up against centre of cam, and also against inside of aluminium cover. This ensures a regular contact between cam and engine frame, and in my case stopped the trouble at once, though I was three months finding out the cause. Of course, he can have the large wheel re-bushed, which stops the misfiring for a few hundred miles; but I found mine would always wear to a certain point and then get no worse, so I have been running with a spiral spring in as I suggest for seven months, and have had no trouble whatever. If your correspondent tries this I shall be interested to hear the result.—Yours faithfully, G. J. WALKER.

Charging Accumulators Chemically.

Sir,—I have been wondering whether it is possible to "charge" accumulators by chemical means instead of by electrical. Perhaps some of the electro-chemical readers of "THE MOTOR" may give their views on the following. As most of your readers know, the plates of an accumulator are composed generally of leaden grids packed with oxides of lead made into paste with sulphuric acid. The effect of an electric current passing through them is to charge the positive plate with oxygen and the negative plate with hydrogen, thereby turning the oxide at the positive plate into dioxide (or peroxide), and at the negative plate into a suboxide (or, in other words, this is deoxidised). Now is it possible to immerse the positive plate in an inactive state in some highly oxidising solution such as bichromate of potash, which will peroxidise it, and the negative plate in a deoxidising solution and thereby make them as active as if charged by an electric current? Hoping to hear an opinion on this subject.—Yours faithfully, A. R. GOODALL.

The Fuller Syntonic Coil.

Sir,—I should deem it a favour if, through the columns of "THE MOTOR," some of your readers would kindly state their experiences with the Fuller Syntonic coil. I think it would be of interest to others besides myself. I am about to purchase a coil for a double-cylinder motor, and my leanings are towards having the Syntonic, but a friend recently purchased one, and has never been able to get it to work quite satisfactorily, although it has twice been returned to the makers. In this instance the trembler of the coil had a habit of occasionally refusing to vibrate, with consequent misfiring. On the first occasion on which it was returned to the makers it was sent back and stated to be in perfect order, and on the second occasion it was sent back after considerable alterations had been made in the



A Swift car which was involved in a fire recently. A curious feature is that the tyres (Michelin) were quite uninjured.

O.P.U.

trembler mechanism, but with no corresponding improvement in its action. No adjustment seems to improve matters, and the coil has been tried on different machines with similar results.—Yours faithfully, Stephen G. Longworth.

[As far as our experience with this coil goes, we have never had the trembler stick, and have always found it spark well, providing the contact maker on engine and accumulator was all right. We suggest that the real cause of the trouble is at the wipe contact, causing an imperfect connection.—Ed.]

Handle-bar Control.

Sir,—With reference to "Magneto's Point of View" in your issue of January 3rd, and particularly as to the paragraph "Why retain the handle switch," we would like to state that since 1901 a graduated exhaust lifter has been fitted to all our machines, whereby in the early stages of lifting the exhaust the current is retained, so that a weaker charge is fired and the graduation referred to obtained. With regard to our machines fitted with high-tension magneto ignition, we achieve the same end. It has always appeared to us to be wrong to break the current at the exact moment that the exhaust is lifted. There is also a further point of convenience, apart from the raising of the valve and firing a weaker charge which naturally results on the reduced suction, and that is that in again dropping the valve the firing is taken up before the valve is dropped, so that the machine smoothly picks up its running again. In the case of a machine fitted with an exhaust valve which fully drops before the fire is picked up, the machine naturally goes off with a jerk, which neither makes for the comfort of the rider nor the good of the machine.—Yours faithfully, Phœnix Motors, Ltd.

The Prosper-Lambert Car.

Sir,—Would any reader who owns a 16 or 20 h.p. Prosper-Lambert car give me his opinion as to its strength and reliability?—Yours faithfully,

H. Morgan-Byrne.

Car Skidding Experience.

Sir,—In reference to "An Amateur's" skidding experience in "The Motor" of Dec. 27th, which ended fortunately without very serious results, I would suggest that he had better have left his clutch in, turned off the gas, and used the compression to retard the car, as well as foot and side brakes. Should be glad to hear opinions.—Yours faithfully, J.M.F.

Business Methods.

Sir,—I note your correspondent "H.C.'s" letter regarding treatment he has received over motor parts. The following is my experience. Last April I ordered an accumulator locally, for which I paid a fair price; but it proved to be absolutely useless, as it would not hold its charge for more than a day or two, so in August I had it sent back to the makers. They have now had it 17 weeks, and I am still awaiting it.—Yours faithfully,

S.E.A.

V-belt Shifter.

Sir,—In a recent issue appears a letter and photograph from A. C. L. Back, giving some particulars of a V-belt shifter. I should be glad if he will give further details of the same. How does he move the belt back to the fast pulley if stopped in traffic? It is one matter to shift a moving belt to the loose pulley, but a very different matter to move the standing belt back on to the fast one. I had intended placing a jockey pulley on my belt and letting the latter be slack, and when it was necessary to stop in traffic the driving pulley would run round inside the belt, and then in starting the jockey pulley would be depressed, thus taking up the slack of the belt and gripping the driving pulley further than before. Of course, it would shorten the life of the belt if much used, but it seems to me the simplest method of securing a "free engine" when necessary. Your correspondent's plan would be better than this, however, in saving the belt. I should be glad, therefore, if he would give further details.—Yours faithfully,

Nickral.

The Side-car.

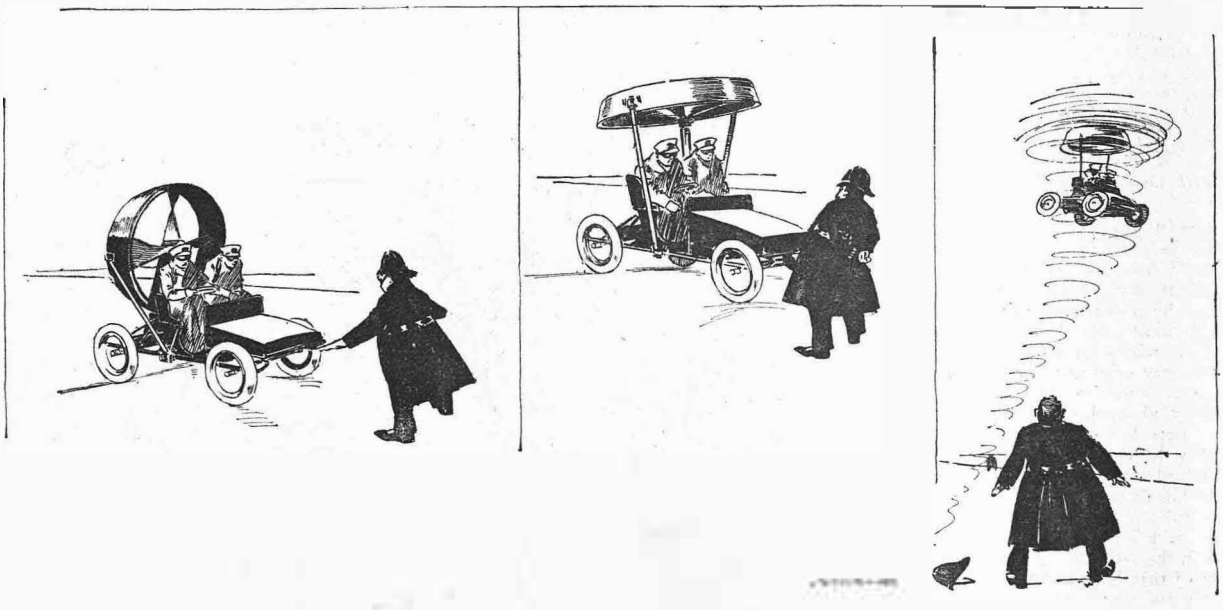
Sir,—In reply to "T.H." (Driffield) I may say that I have one in use which was built last April. It has a 2¾ h.p. Minerva engine. It cost me £48 complete, and has given great satisfaction. It will take any average hill without any pedal assistance. I weigh 10 stone 7 lb., and my wife 8 stone. My own experience is that the steering is far better than on a fore-car. In turning corners a little difficulty is experienced at first, but this is soon overcome. One of the best features of the side-car, I consider, is that there is not the slightest tendency to skid.—Yours faithfully,

H. Cramp.

Mysterious Punctures.

Sir,—In your "Information Bureau," in a recent issue of "The Motor" "C.R.B." (Hunstanton) has trouble with his tubes puncturing in the base of his tyre, and both "C.R.B." and yourselves put the trouble down to spoke-heads and nipping. I suggest that this is not the case. What takes place is that the tube bridges across the two edges of the cover and refuses to blow down between them until riding pressure is reached, when it blows down in a series of bubbles, some of which touch the tape in the rim only when being ridden and chafe through, causing the holes complained about. To remedy this the tube should be a trifle short, plenty of French chalk used on the edges of the cover, and the tube quite deflated after both edges of the tyre have been placed into position, when setting it on the rim. That the tube does bridge across in the manner described I have proved by actual experiment.—Yours faithfully,

Constrictor Hubbard.



OPINION ON THE AEROPINION.

Latent possibilities of the invention recently described in "The Motor." It is claimed that the device has not only power of propulsion but lifting power as well.

OUR INFORMATION BUREAU.

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.

H.H. (Manchester).—As far as it is possible for us to express an opinion as to the cause of the drag on your small car, it seems probable that you have both brakes on more or less continually. The bands may be adjusted too closely to the drums.

R. Luck (Spalding).—(1) Most probably a defect in the circulation. See article on subject in a recent issue. (2) The particular bands you mention have good and bad features. You cannot get all advantages: what is gained in respect of safety from skidding and punctures is at the cost of some resiliency and speed. If you have a powerful engine, however, you can afford to sacrifice a little speed. (3) Why not advertise the attachment?

Charging Accumulators at Home.

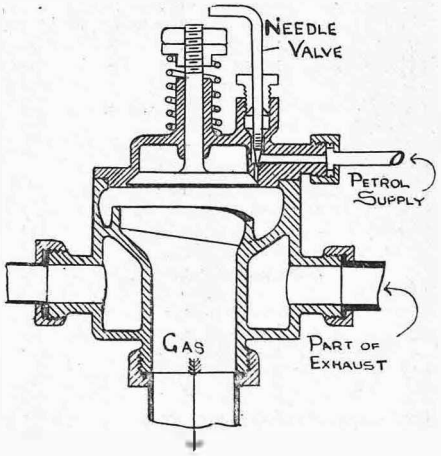
A1445 (Fulham).—The simplest way for you to charge the three different size accumulators is to first find which of the switches controls 4 or 6 lights of 16 c.p. Now, at 200 volts, this particular circuit would not be passing more than 1¼ amperes, which would be right for any of the cells. All you have to do then is to take the cover off the switch, have the handle in the "off" position all the time, and, by means of an insulated wire connected to each of the two poles of the switch, find which is positive and negative. The simplest plan to do this is to get two strips of sheet lead, clean them bright, and twist one of the cleaned wires round each; then obtain a glass, pour in some accumulator acid, and dip the strips into the acid, but keep them half an inch apart. In a few minutes the surface of one of the lead strips will become a brown colour. This strip is then connected to the positive pole of the switch. Now simply remove the strips, untwist the wires, and join the positive wire you have just found to the positive terminal of accumulator and the other wire to the negative terminal. The cells will at once commence to charge. Leave connected till they gas or effervesce strongly. You will find much information and diagrams on the subject in our Manual.

J. G. Durant (North Tawton).—The tricar you enquire about has yet to be thoroughly tried. We hope to express an opinion when we know more about it.

Stationary (Oldham).—The ordinary Leclanche cells, as used for electric bells, would be of no use whatever to spark the engine. There are plenty of good dry cells, such as the Hellesen, specially made for ignition, and these would give you satisfaction. Look up the advertisements.

G. Hutchings, London, W.—(1) We gave our opinion of the so-called motor instruction schools in a recent "Editorial." (2) If you are lucky enough to find a vacancy you might expect 30s. to £2 per week for driving a medium-sized car. (3) We get scores of similar applications, so you can form your own conclusions as to whether remunerative posts are easy to pick up. (4) Yes, our "Motor Manual," 1s. 2½d., from publishing department.

Cycle Mechanic (Largs) asks if we can give an illustration of a simple and efficient carburetter which will use paraffin, as this would doubtless be interesting to many.—We give a section of the Cremorne carburetter. This is of very simple construction, and has been tested and found to give good results. In this pattern there is an inlet valve provided, which, when in position on its seating, shuts off the paraffin or petrol supply. The suction from the engine opens this valve, and the paraffin immediately is sprayed on to a spiral groove in the body of the carburetter. As the carburetter is jacketed, and thus kept at a fairly high temperature by the exhaust by-pass, the paraffin in running around the spiral groove is further vaporised. The air entering with the petrol or paraffin is also heated, and intermingles with the vapour, and thus the mixture is formed. It is necessary to have a two-way tap and a small reservoir of petrol for starting up. As soon as the carburetter is heated up, the paraffin supply can be turned on.



The Cremorne Carburetter.

Rexe.—Get a small up-to-date car by a good maker. We cannot say that you will be able to get it with solid tyres, however. Your best plan would be to put a small advertisement in the "Wanted" columns, stating clearly your requirements. You would be sure to hear of something that would suit you.

H.F.J. (Clogher).—(1) You must re-register the machine, but you could have had the old number transferred to the buyer of the old machine at a cost of 1s. You cannot possibly claim free re-registration. We have made this point clear several times. (2) Perhaps if you fit a slightly enlarged jet to the carburetter the engine would be more responsive to the throttle.

D. R. Chapin (Dingman's Ferry, U.S.A.).—We note the contents of your letter. We are always pleased to hear from "Motor" readers abroad, and their experiences in overcoming difficulties we know little or nothing about in this country always prove interesting. As you have motorcycled 9,000 miles in three years, evidently under the worst conditions of roads and entire absence of repair shops, etc., it constitutes an excellent record.

W. H. Weit (Epworth).—We should have advised you to have got a Dunlop-Bartlett tyre as originally fitted. There would have been no risk then of its not fitting. The other beaded-edge tyre you mention is certainly an excellent one, but they fit the rims best that are specially made for them. As a rule they will fit any beaded-edge rim, but there is always the risk of them blowing off. You could have a new rim fitted, or dispose of the cover you have now and get one as originally fitted.

Wood v. Wire Wheels.

C.R. (Glasgow) writes:—I would be glad if you would explain in what respect a wire wheel on a small car is at a disadvantage with a wood wheel. Also, if a 32in. wheel would be better than a 28in. Would it give easier running? A local motor man tells me it would; but I cannot follow his arguments as to why it would do so.—For a small car a wire wheel is not amiss. It however lacks the lateral strength of a wood wheel and would get sprung out of truth with a shock such as would not affect a wood wheel. Of course there is another disadvantage, inasmuch that there is always a risk of one or more spokes snapping or stripping the nipples, but, in justice to this type of wheel, it must be admitted that such breakages are very uncommon. The cleaning of a wire wheel is a much bigger task than a wood wheel necessitates, and there is also the trouble of rusting to be guarded against. With regard to the sizes, the larger the wheel the smoother it runs, as it mounts obstacles easier and does not fall into ruts in the ground that the small wheel does. It revolves slower for a given speed and the impact on striking obstacles is lessened, with, consequently, less wear on the tyres.

BUREAU.

Cleary and Co. (Bagnalstown).—Write the Electric Ignition Co. (see advertisements). They would probably send you full particulars of the Lodge coil.

H.B.R. (Blackburn).—(1) The lightest machine on the market is, we believe, the Humber, which comes out at 72lb. Engine is 1¾h.p. As you scale about nine stone, you would find it a safe mount. (2) Yes, duplex forks are fitted. (3) Ordinary high tension ignition with trembler coil.

Exhaust Valve Pitting.

H.I. (London) writes:—I shall be much obliged if you can inform me why one of my exhaust valves should have become badly pitted? Car has only run about 350 miles since all the exhaust valves were carefully ground in and all pits removed. Car—24 h.p. De Dietrich (1904). Petrol—Pratt's A and Carless. Lubricating oil moderately thick. No heating of engines, though this particular cylinder seemed more liable to miss at slow speeds than the other three, but possibly this is caused by the power compression in that cylinder.—We should consider that for some reason or other the valve does not shut sufficiently gas-tight on its seating and when the explosion occurs part of the charge fires down past the valve. Are you sure that the valve and its stem are quite true? because, if not, when engine is working it will turn round, and although gas-tight in one place would be leaking in another.

Ignition Matters.

R.F.H. (London, W.) writes:—Please inform me (1) What current (in amperes) ought to be consumed by a trembler coil when being used for ignition on a car, with a 4-volt. accumulator, on a single-cylinder engine? (2) Ditto, on a four-cylinder engine? (3) In what simple way can one tell whether an electric light supply from public mains is continuous or alternating? (I understand that the latter cannot be used for charging batteries.)—(1) It depends largely on the make. Some coils take as low as three-quarters of an ampere, others range from one to four amperes. Without making a test by connecting an amperemeter in the circuit, it is impossible to say what current a coil takes. The best makers nowadays endeavour to so wind the coils as to get as low a current consumption as possible consistent with a strong spark. (2) Same current is taken by each coil of the four, but in a given number of revolutions, compared with a single-cylinder engine, four times the quantity of current is taken out of the accumulators. (3) A simple and sure plan is to obtain from an electrical supplies depot a piece of pole finding paper, and test the wires with it. Continuous current will make a distinctive mark at only one pole. Alternating current either produces no mark at all, or both wires show an indication. There are other methods, such as connecting two clean strips of lead, one to each wire, and dipping them in dilute acid. Continuous current will cause one of the strips to turn a brown colour. You can charge from alternate current by using a rectifier such as the Stuart Livett arrangement.

Clutch (London, W.).—Unquestionably the clutch is too fierce in its action. You may have rather more tension on the spring than is necessary. The leather may be in a very adhesive condition. Try cleaning with some petrol, and then give it a dressing of powdered graphite.

Cracked Water Jacket.

H.S.P. (Tunbridge Wells) asks if there is any firm making a speciality of electro welding or brazing cracked cylinder jackets. We do not know of any such firm ourselves. If any of our readers do, will they be good enough to send particulars along? If the crack is not a very extensive one we should say that it could be satisfactorily rusted up and a copper plate riveted over it. We know this method has been adopted with success. Another plan is to deposit copper in the crack by filling head with sulphate of copper solution (See "Magneto's" article).

Car Upkeep, etc.

N.P.A. (Tunbridge Wells).—(1) You must reckon upkeep on the basis of mileage per year. (2) To give anything like an accurate estimate is impossible. The chief factor is the condition of the car to commence with, and whether it is a known standard make or an unknown make. Many owners do their own minor repairs, and this, of course, greatly reduces the yearly bill. (3) If the 4½ h.p. car is an up-to-date one, and you look after the tyres well, you could reckon on a basis of 2½d. per mile (for two passengers) at the outside to cover everything. The tri-car usually (when skilfully driven) comes out much less; tyre and petrol bills are much lighter; also first cost. Revenue, 15s., as against £2 2s., etc. (4) Yes, to erect a motor-house in your own grounds is the best.

Difficulty in Starting Car Engine.

Petrol Motor (Blackburn) writes:—Can you give me any information as to difficulty in starting of a petrol motor. The engine is a three-cylinder car pattern, 4½in. bore by 5in. stroke, of 20 h.p. The carburetter is the Longuemare pattern with 20 spray notches, ignition is by accumulator and trembler coils. Sometimes the engine will start with half a turn of handle, other times I can't start with 20 turns. The air and spark levers being in the same position in both cases. I have also failed to start with air lever from quite closed to full open. I think I am right in saying that if a engine is once started with levers in a certain position it should start a second time, or almost every time, which I am sorry to say is not the case with my engine. I should be glad if anyone could help me in my case, for when I stop my car I am not sure if it will start again under an hour or two.—You cannot invariably start with the same position of air and spark levers. The principal matters you should look to are (1) spark; see none of the tremblers are sticking and all plugs spark well. (2) Inlet valves must be free. If automatic they sometimes gum up on their seatings. (3) See that there is no chance of petrol failing to reach carburetter, flood the jet, reduce air supply, and remember that in starting a lot depends on giving the engine a very sharp pull over the compression. The idea being that you heat up the compressed charge thereby, and it fires much more readily than it otherwise would.

ANSWERS BY POST.

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

Wednesday, January 4th.—H. Kenneth (Holywell, Bury), B. S. Kemp (Chesham), L. Martin (London), J. Studley (London), J. B. Mills (Walton-on-Thames), A. Connell (Winchester), W. Foster (Reading), N. Roberts (Woodford Green), W. E. Clark (Surbiton), M. Shiel (Adamstown), H. F. Kingston (Alsager).

Thursday, January 5th.—T. H. Brook (Lyss), E. H. Fryer (Derby), H. T. Morgan (London), W. C. Jones (Penmaenmawr), R. Price (Monmouth), F. W. Cory (Ossett), F. A. Bond (Knockholt), O. O. Collett (Bampton), G. Padbury (Axminster), A. Collins (London), T. Southwell (Peterboro'), A. Carneiro (Urmston), A. Booth (Manchester), R. E. Gold (Newton), R. G. Woodward (Worksop).

Friday, January 6th.—F. Newman (London), J. Waysh (Pembroke), W. Wake (York), A. Richards (Plymouth), H. Kingston (Alsager), Castlehouse Bros. (Scarboro'), J. Matson (Yiewsley), W. F. Chenoweth (Grampound Road), D. H. Davies (Llanelly), J. Gray (Keith), M. K. Ryan (London).

Saturday, January 7th.—A. E. Mills (Hendon), E. Dodd (Deal), T. Larder (Holmfirth), H. Cattaneo (London), J. H. Bentley (Misterton), D. T. Alexander (Glasgow), H. Hoft (Downham), H. Blackiston (Brighton), T. Higgs (Swindon), C. E. Moore (Dublin), P. Woawood (Handsworth).

Monday, January 9th.—H. Taylor (Beverley), M. T. Nelmer Bluck (Araluen), C. R. Jenkinson (London), C. E. Law (Mumbles), R. Edwards (Birkenhead), J. W. Sutcliffe (London), A. V. King (Doncaster), A. R. Griffiths (Cirencester), A. Cole (Bristol), E. Byrne (Slane), H. H. Du Boulay (Weymouth), A. T. Pym (Selby), M. Jones (Aberdare), A. Robertson (Paisley), E. Blomfield (Woodford).

Tuesday, January 10th.—A. J. Wood (Guernsey), P. Conordine (Linthorpe), F. W. Tomlin (Ely), E. W. Tudsbury (Sutton-in-Ashfield), W. Mannock (Heywood), S. H. Delves (Norwich), B. Snape (Saltley), E. G. Guthrie (Mossley Hill), C. W. Stephen (Weedon), S. Reeves (Bamfurlong), G. E. Whalley (Aylsham), A. Richardson Itchingfield), J. Aitken (Frodsham), T. Kinahan (Dublin), H. Butter (Hemsley), H. Seiff and Co. (Bradford), J. A. Settle (Heywood).

Wednesday, January 11th.—T. H. Stevens (Barnstaple), E. Oliver (Causeway-side), J. H. Hodges (Berkhampstead), D. F. Irving (Briston), A. M. Crighton (Lisburn), B. Madeley (Warrington), W. Nicholson (Randelstown), F. Rowntree (York), R. D. Galbraith (London).

[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.]