

The Motor

Vol. 4, No. 103,

January 27th, 1904

INCORPORATING

Motor
Cycling

& Motoring

PRACTICAL MOTORCYCLING NOTES AND EXPERIENCES.

By Capt. C. G. LOW, R.A.

The following notes and experiences are the result of careful observation, and doubtless many of them may prove of interest and value to other practical motorcyclists. The first matter I shall deal with is the

PLATINUM-POINTED SCREW AND BLADE.

I have been riding a $\frac{1}{2}$ h.p. motor-bicycle since March, and have covered the moderate distance of a little over 5,000 miles. I am still using the original screw and blade. As the previous record appears to be about 1,500 miles, this should be of interest. I have myself been scarcely able to credit the nevertheless pure fact of this extraordinary longevity; but there it is, and I attribute it, firstly, to the use of pure platinum, and, secondly, to the employment of a trembler coil. It is probable that as the trembler of coil makes and breaks the circuit many times during the period of contact of screw and blade, the latter often part company, whilst the circuit is actually broken by the trembler, and as no current is, therefore, passing at the time, of course no spark can result across the platinum points under these conditions. The many other advantages of the trembler coil are well known, but the above has, I think, been up to now unnoted. Will other correspondents state their experiences on this point? I have never cleaned the points, nor touched them in any way, except to adjust the screw at very long intervals.

VALVES.

"Jack-of-all-trades," a well-known contributor to the "English Mechanic," says, in one of his replies: "There is too much valve-grinding going on!" My own experience bears this out. Throughout the above distance I have never ground-in my valves, and have suffered no loss of power. Each valve has been once replaced, not because it needed it, but because I wanted to try the effect of new ones. The old valves are now "spare." Of course, if a valve palpably needs grinding, because it leaks, then it must be ground-in, but, otherwise, I think it best left alone. The amount of lift of the exhaust valve is determined by the form of the cam, and the clearance between the top of the tappet and the lower end of the valve stem. It is quite possible for the lift to become reduced by the wear on stem and tappet, and this, of course, means a corresponding reduction of the period during which the valve remains open. Hence if, as some correspondents have remarked, this period is found to be too short, the remedy lies, not in adjusting the two-to-one gear, but in lengthening the valve stem, or tappet, until the correct period is restored. I have effected the latter in two ways:—

1. By heating and drawing out the stem (of course, at a part where the reduction in diameter will not matter) to a trifle over the required length, and then filing down till correct, and re-hardening.

2. By making a small cap to fit over tappet—in my case the cap was a small piece of brass tube with several saw-cuts made across one end, about $\frac{3}{8}$ in. deep, the projecting pieces of metal between the saw-cuts being hammered over

inwards to form a slight thickness over top of tappet. This rough job

LASTED FOR 1,500 MILES,

and was then only accidentally lost in workshop after being removed. The brass stood the strain well, becoming very hard from the continual hammering. My exhaust spring is a very strong one. With this arrangement I was able to vary the lift of the valve at will by inserting discs of very thin copper, and even of paper under the cap. Undoubtedly all tappets should be made with an adjustable top.

HOW TO TIME AN ENGINE.

The popular bogey of setting the two-to-one gear may be much simplified as follows:—Insert a piece of wire through the compression tap or plug aperture, and find by turning the pulley when the piston is at the top of its stroke. If the compression plug is not available, remove inlet valve and insert the finger into cylinder head—or a piece of wire or other handy article—with the same object. The piston being at the exact top of stroke, make a good bold mark, either with centre-punch or file; or paint (my paint mark has lasted for months) on the highest point of the pulley. We have now a permanent and convenient indication of the exact position of the piston in the cylinder at any given moment, and all subsequent setting of valve is plain sailing.

[N.B.—If motor is inclined, the mark on pulley should, of course, be not at its highest point, but at its point nearest the cylinder.]

Now if it is required

TO TEST THE VALVE,

turn the pulley by hand until the valve begins to lift. The exact moment may be found by placing a finger of one hand upon the junction of valve stem and tappet and working the pulley backwards and forwards with the other hand, gradually diminishing the movement. Having thus found the point where the tappet begins to take the weight of the valve, suspend operations and note the position of the mark on the pulley. This should be at about $\frac{7}{8}$ ths of the down stroke—that is, just before the lowest position by $\frac{1}{8}$ th of the semi-circumference of pulley.

The moment at which the valve closes may now be found in the same way, and this time the mark should be exactly at the top of the pulley.

Now if the mark be correct in one position but not at the other, the amount of lift of the valve is too long or too short, as the case may be, and should be altered accordingly. No amount of dodging about of the gear-wheels can possibly remedy it.

If the mark is incorrect in both positions, the valve must be reset by withdrawing the two-to-one gear cover and turning the gear-wheel back or forward a tooth at a time, replacing cover, and testing as before by pulley and mark until correct. The cover need not be screwed hard home until the correct position has been found. I believe, by the way, that much of the overheating complained of arises from insufficient lift

of exhaust valve. In most cycle-motors the sparking contact cannot be adjusted independently of the exhaust valve, and it must therefore be taken for granted that when the valve is correctly set the spark will be so likewise. Should this not be the case the obvious remedy is to alter the length of one of the connecting rods between spark lever and "commutator" (so called). Usually the lever has sufficient range to allow of an alteration in the two-to-one gear without affecting the control of speed by the lever beyond altering its normal position.

Variable speed gear and overheating.

THE DEMAND FOR MORE THAN ONE GEAR IS GROWING, and I am able, from practical experience, to bear witness to the extreme utility of such an arrangement.

A two-speed gear has the disadvantage that, should the high gear be *only just* too high under any given conditions, the low gear will, as a natural consequence, be unnecessarily low. This means running the engine unnecessarily fast for, perhaps, a long distance at a slow pace and overheating is probable, especially with a fore-carriage. A three-speed gear entails greatly increased complication and number of moving and wearing parts. What is wanted in an "Any-speed" gear—i.e., a gear that is variable to any degree between the extreme limits. It is such a gear that I have fitted to my motor-bicycle, and as I have now given it a practical test over more than 2,000 miles, 1,000 of which were with a trailer and luggage weighing over 100 lbs., minus passenger (total, all on, 5 cwt.) on all sorts of roads and in all sorts of weather, I feel justified in giving the result of my experience.

Overheating is practically absent (with trailer), because it is never necessary to run the engine a shade faster than the load actually requires, the gear being, so to speak, fed up to the demand made upon the engine at all times. Wear of engine is minimised, as it is never overloaded and can be run with the minimum of gas.

THE ABSENCE OF JERKING

in mounting stiff hills reduces the strain on engine, belt, frame, and tyres, besides adding to comfort. By using the lowest gear the engine can be started by pushing the machine *at a walk*. I can start with trailer, luggage, etc., up any hill the machine will take without pedalling a stroke; in fact, I never pedal to start. In tackling some precipitous hills in France I simply stepped off when the load got too heavy and walked up comfortably alongside the machine, which cheer-

fully pulled the trailer, etc., up to the top, where I just stepped on again. At Mont St. Michel I broke a pedal off, improvised a foot-rest—or, rather, stirrup—out of a spare belt lashed to crank, and the motor took its 5 cwt. the whole way to St. Malo with only one dismount; and that was more than half-way up a "dangerous" hill with belt slipping from some oil which had got on it somehow. Speed can be reduced to walking pace in traffic, and hills may be ridden, even with trailer, at a reasonable speed and without "rushing" them.

When going fast on the highest gear it is pleasant to hear the dignified, leisurely throb of the engine, instead of the vibratory burr-r-r we are accustomed to.

Changing speed is a gradual process and not a sudden jump from one speed to another.

The gear is unaffected by dust or wet, has no parts that can get out of order, and needs no attention beyond an occasional drop of oil. The loss of efficiency due to the gear is very slight. It is cheap to construct. I hope to be able shortly to give a description of this gear.

A WORD OF WARNING.

Next time the cylinder has to be taken off see that the split pins, which keep bolts securing gudgeon pin in piston from turning, are properly adjusted. From careless replacing I had one of these bolts work out whilst running, with disastrous results.

With this exception, I have had practically no stops due to the motor, a broken cotter to inlet valve being the only actual failure that has arisen. I have once had to pedal home, my accumulator having struck work after a spell of 900 miles. The bearing on pulley side of engine is practically unworn, being 2 in. in length.

THE ABSENCE OF ENGINE VIBRATION AND STEADINESS OF RUNNING ARE VERY MARKED.

I have ridden "side-saddle" for comfort for long journeys at any speed, with one hand keeping warm in the pocket and plenty of leisure for admiring the country.

As regards economy, I have ridden from Dover to Coventry (170 miles) on one charge of petrol—e.g., a gallon and one pint; but then I use a surface carburetter, which, by the way, I do not propose to exchange for any other device so long as there is decent petrol to be had. Failure to start—or to continue either, for that matter, due to carburetter—is, to me, an unknown quantity. This fact may be of interest now, as the merits of the spray carburetter are being actively discussed.



A VISITOR TO THE VILLAGE I

MAGNETO'S POINT OF VIEW.

Rules for Setting the Timing Gear of a Motor.

The chief detail to remember is to always set the timing of a motor from the exhaust valve, and not from the contact breaker and spark. To proceed to set the gear wheels, first set the piston *almost* at the completion of the firing stroke; then, whilst the piston is in this position, take the exhaust cam wheel and mesh the teeth with the small wheel, so that the exhaust valve is *just beginning* to be pushed off its seating. Next move the engine wheel round in its direction of rotation, and carefully note if the exhaust just shuts down on its seating before the piston has commenced its down or inlet stroke. If this is so, the timing is correctly set. Should the exhaust valve close too early, move the large gear wheel back by one tooth and try again. The larger the number of teeth on the gears for a given diameter the more accurately the timing can be set. Next, as to the setting of the contact rocker. Supposing that the spark lever is mounted on a ratchet quadrant, fix it in a vertical position, and then adjust the telescoping rod so that this position of the lever keeps the contact breaker in such a position that the spark occurs just at the moment the piston has completed the compression stroke. Then there should be ample range for retarding and advancing. The amount of advance that can be given to any motor depends on certain variable factors. It is not possible to have as much advance on the ignition when the machine is running under load as when it is running light and at a fast rate. To find the position of the piston in the cylinder, it is generally convenient to take the screw plug out of the combustion head and put a piece of straight wire, such as a spoke, into it. Then mark the beginning and end of the stroke with a file scratch, and then subdivide in between into ten equal parts. In some cases the cylinder head is easily detached and the position of the piston readily seen.

Accumulator Matters: Some Hints.

I know there are some of my readers who have been worried with an accumulator out of which the acid will persist in leaking from the vents and lug apertures. I have recently found a method which effectually cured a troublesome cell I had, and it may be worth recording, although I do not say it will prove a remedy in every case. I purchased for a few pence from a local druggist a couple of ounces of pure paraffin wax; then, after a look round the domestic department, I discovered an empty canister to melt it in. First of all, I made a spout on the tin with a pair of pliers. The plugs from the accumulator were next removed and some more acid run in to cover the plates by 3-8ths inch. Then, the next operation was to melt the wax in the canister over a bunsen burner—an ordinary gas flame will do—and then, when quite melted and just about to boil, I carefully poured the melted paraffin on top of the acid to a depth of nearly half an inch in each compartment. Then I let it set till quite hard, and bored a couple of small holes through the wax to let the gases escape when charging; these holes are 1-8th inch diameter, and it is very important they be made, or the cell might burst. In time, when the acid gets low, it will be an easy matter to replace it by means of an ordinary fountain-pen filler, costing a penny. It will always be noticed that it is the positive terminal of a battery that persists in corroding. This is because the acid creeps up the lug with the current. Now the paraffin wax dodge prevents this creeping. I may say the cell I repaired keeps its charge splendidly. Of course, once you get the wax inside, there is no getting it out again. I should have mentioned that, after the paraffin has set, some of the acid should be run out so as to leave an air space; otherwise the expansion of liquid in charging would cause it to overflow. There should be $\frac{1}{4}$ inch between the acid and the layer of paraffin.

Defective Steering.

I should like to call the attention of my readers to the importance of giving the steering adjustments a little attention from time to time. I had a curious experience of a machine with a defective steering in the early days of motor-cycling which might have resulted in an accident had I continued to ride this particular mount after I noticed the steering was a bit uncanny. Although for a short time the machine would steer perfectly easy, it would invariably become stiff and the machine make a bee-line for the kerbstone, necessitating a very hasty dismount. This rather puzzled me at first, because, on lifting the front wheel off the road and moving the handlebar, it seemed quite free. I then mounted again, and after a mile or two the same thing occurred; so on getting into the traffic I decided the best thing would be to walk the machine home and investigate at leisure. The result of my investigation was that the bottom ball race cup, or, rather, the outer edge of it, was grinding against the edge of the cup lug of the head tube; that is to say, the balls were not acting at all between the two cups, the result being that after a short time the film of oil between the edges of the two cups was used up, and the metal actually seized, as the markings plainly showed. I remedied this defect by grinding a small amount off the cup in the head tube, so as to let the weight be taken by the balls. But if the races had been thoroughly hard and well fitted this would not have occurred. It is pretty general, I think, to solder the cups in place in the sockets, and unless this is skilfully done the race may be softened sufficiently to wear out very quickly. Another instance of a machine having very erratic steering came to my notice recently. Instead of the steering column having a perfectly free motion, it moved in a series of jerks, as if there was some form of a ratchet clutch concealed about it. On taking this to pieces, I found the lower ball races deeply indented with a regular series of marks all round, caused by the hammering action from the balls themselves, and want of adjustment of the head.

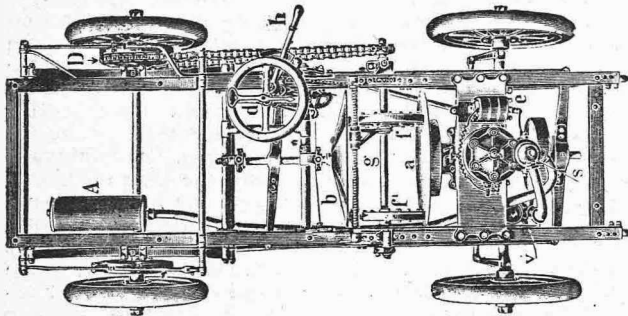
Treatment of the Head.

The head of a motor-bicycle should always be screwed up, so that whilst the steering is *quite free*, there should be no apparent play or slackness felt when the handlebar is firmly grasped at the ends and pulled upwards. Otherwise, if this adjustment is not attended to, after a few hundred miles' running the steering will go wrong, and be impossible to get right again. Just as much, in fact, as would result to a wheel bearing that has been ridden in a loose condition.

In the case referred to, new ball cups had to be fitted. Keep the head bearings well lubricated, and *don't* depend on the oil running down from the top ball race to the lower one to lubricate it. Makers should always provide a lubricating hole for the lower bearing. If you find that it does not exist, take the machine round to the nearest cycle repairer and get him to drill a 3-52nd inch hole (no larger) about half an inch above the cup. This hole can be kept plugged up with a tiny piece of wood cut to fit. Now and again it pays to clean the gritty oil out by running some petrol in; only be sure to re-lubricate. Thick cylinder oil, I find, is an admirable lubricant. Now a word as to keeping the handlebar "square" with the plane of the wheel. It requires a little practice to sight the position, but once found out, a centre punch mark or file scratch on the steering tube and one exactly alongside on the head nut will always show when it is set right. A crookedly set handlebar is uncomfortable to hold and very misleading in the steering. It is really surprising what a lot of riders have their handlebars askew. In the old days of cycling it was not unusual for makers to so construct the handlebar so that it was immovable relative to the steering plane.

THE "FRICK" LIGHT CAR.

The 7 h.p. "Frick" light car, which is being marketed at 140 guineas by Messrs. Alfred Dougill and Co., 36, St. George's Street, Leeds, is one which is spoken very highly of by users, and one, moreover, which possesses a number of interesting features. It is built upon the Maurer Union system (well known in Germany) and the following claims are made for it:—(1.) Speeds can be gradually increased at will. (2.) It has a direct transmission without gear wheels. (3.) It is simply constructed and has accessible parts, con-

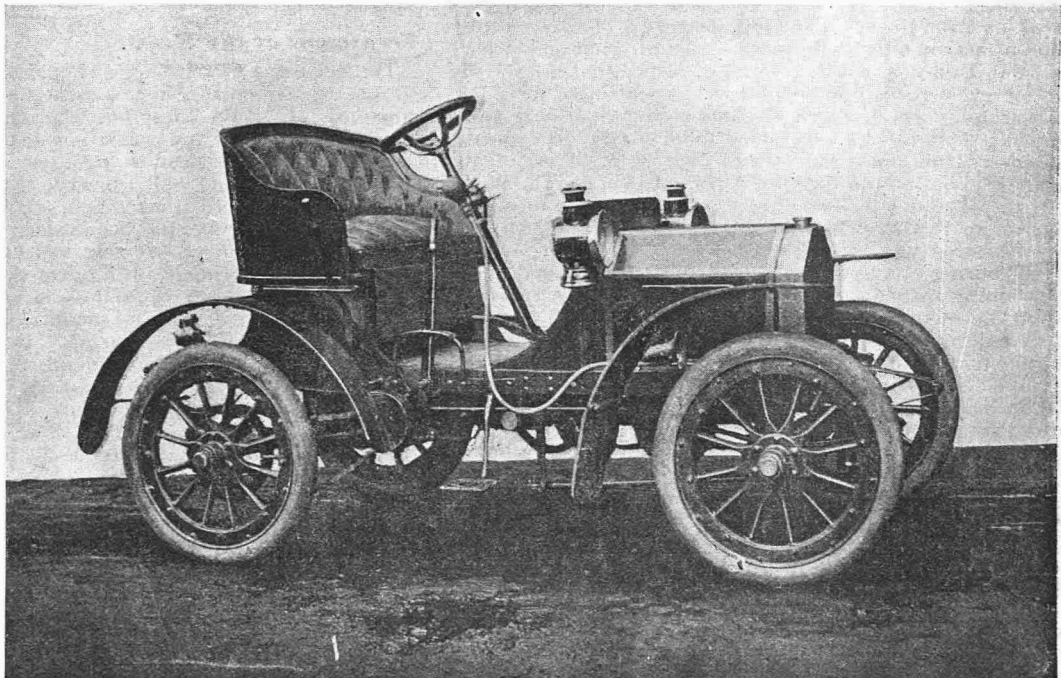


Plan of the "Frick" Chassis.

sequently worn-out parts may be easily replaced. (4.) Great economy of motor power up hill and on the level with a minimum consumption of petrol. (5.) It is a very reliable hill climber, and capable of a speed of 25 miles per hour along the flat. The motor is of a single cylinder type, with balanced internal flywheels, and has a bore and stroke of $4\frac{1}{2}$ in. \times $4\frac{1}{4}$ in. It is placed in the front part of the frame (which is of ash reinforced by cambered steel plates and with long and sensitive springs) under a bonnet in the usual manner.

The transmission is by chain, and having a straight drive it is claimed that high efficiency is secured, while changes of speed are effected by means of a patent friction device, which is said to give variable speeds ranging from zero to maximum in either direction. This is operated by a single lever, conveniently placed for the driver, and also by foot pedal. The transmission of power is performed by two friction wheels, f and fi, of which f is the actual working disc and fi a dummy disc which serves to increase the surface of friction. The disc

f is movable on its axle g in the direction of its axis in order to obtain variable speeds, and fi transmits the power from the flywheel (disc) a through a counter disc b to the wheel f. By moving the hand lever h the discs a and b, which also slide in the direction of their axes, are brought into contact with f and fi, thus setting the latter in motion. The drive from the countershaft g is by chain to the differential gear on the rear axle. In the figure the differential gear, D, is shown on the continuous axle. The other lettered parts are: A, exhaust silencer; d, the carburetter; e, the magneto device (ignition by coil and accumulator, however, can be fitted if desired); and s the inlet valve opener. The arrow d, which is fastened on to the steering wheel (the steering is of the irreversible type by worm and lever), is in connection with the throttle, and by pressing it down the gas becomes more or less shut off, thus allowing the car to run slower or faster and quite independently of the position of the friction wheel f. It is stated that the friction action is so perfect that it never fails to fulfil its functions efficiently. The car is provided with powerful brakes, one operating on the countershaft and brought into play by the foot, while another pair, actuated by a hand lever, act on two drums on the hind wheels. The water cooling is of an improved combined tubular radiator and tank type fitted to the fore-part of the bonnet. It is provided with a forced air circulation by a fan driven by a belt which also works the pump. A combined petrol and lubricating oil reservoir is fixed to the dashboard. The body, which is roomy and highly backed, has seating accommodation for two, and is upholstered in pegamoid. A spider seat for a third passenger can be attached at a small extra cost, while a detachable tonneau can, if necessary, take the place of the ordinary body. The wheel base is 6 ft. and the track 3 ft. 8 in. The wheels are of equal diameter (34 in.), and these have solid resilient tyres, although pneumatic tyres may be fitted. This, of course, entails an extra outlay.



THE "FRICK" LIGHT CAR.

CYCLOMOT'S CAUSERIE.

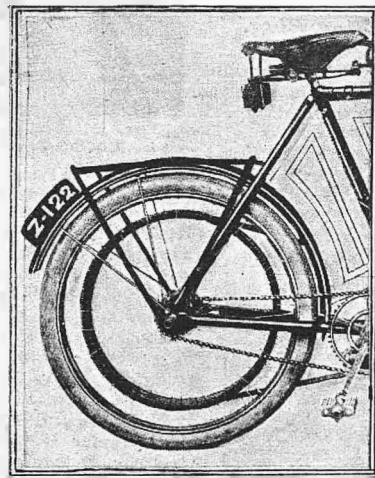
For the Cold Weather.

A friend of mine always used to say whenever I came out with one of my satirical remarks, "Don't you cast asparagus at me!" Well, I wish to refrain from aspersions, but how it is that tips on winter riding have not come along in even observable quantities from my readers? I can understand that in some of the filthy, greasy, slimy areas (such as London and its suburbs, for instance) winter riding on a single track machine is fraught with some uncertainty, but there are other districts and other roads, and even where oo'ite lies in wait to catch the unwary and introduce him to a ditch, you have stretches of better weather than we do in the metropolis—at least, I honestly hope you do, because I love to think that there really are places in these islands where life out of doors is worth living, because it is at one of those samples of Paradise that I look forward to spending the years of ease and retirement that should be the reward of all good journalists. For dwellers in those happy districts where the roads are clean in surface and void of treachery, and where it is in consequence possible to get a ride between the downfalls, perhaps a tip for keeping the hands and arms warm, even on a bitterly cold day, may be of service. A great objection with me is to anything that is tight or close-fitting in the way of garments, and although my tailors have invariably put wind cuffs in my motor coats and waistcoats, I have in every case taken the garment off at the first trial, and have carefully severed the elastic that caused the end of the sleeve to grip the wrist. I seem to always feel that, if I did not do this, I should suffocate. And so the best-laid schemes of the sartorial designer for keeping the wind from rushing up the sleeves as their open mouths face forward like ventilating shafts, always gang aft agley—and, by the way, so does the wind "gang aft." Gauntlets do the trick, but latterly I have taken to a pair of thick and warm woollen gloves, because they keep the fingers warm, are not so much trouble as the separate silk and kid gloves, and are easily cleaned. An idea occurred to me a few weeks ago after I had returned from a ride, during which the biting wind had searched out the weak spots along my arms, and I asked a relative to knit me a pair of mittens which, having a thumbhole, covered the palms of the hands and the wrists, and then swelled out so as to lap over the sleeve of the under coat gauntlet-wise. An overcoat going over this, and the mitten bunching somewhat at the wrist, the combination is absolutely perfect. The mitten does not ruckle up or become uncomfortable, nor does it interfere with the gloves, and not only is the wind completely excluded, but the wrist is kept beautifully warm, with a beneficial effect to the body. I was out on the car a few days back, and, during a long drive in a very cold wind, even my fingers were as warm as toast, and with a heavy motor overcoat—a garment which being storm-proof and wind-proof has been a blessing to me not only when motoring, but when crossing the Channel—I was genially warm all over, except in the feet, and there, I confess, I felt the cold badly. When the feet are deprived of all chance of exercise or movement, as they are when the clutch and brake pedals of a car demand unremitting attention, some strenuous measures are required to keep them warm. I should think that a good box cloth spat of the Highland style somewhat glorified would answer the purpose, that is to say the spat would come high up the leg and well cover the foot, even down to the toes, in fact. The only thing is that it is difficult to get anybody to make such an article at a reasonable price.

Evasion of the Law and its Risks.

A Woolwich reader writes to me with reference to my recent remarks on numbering, and says that he has decided to get two plates made to the curve of his mudguards, and rivet them along the centre of the guards, so that both at the front and rear the plates show their faces sideways. He proposes to put the front one at the extreme end of the front guard, with the idea that the lamp shall cast its rays upon it, and so illuminate it, whilst the back one shall be placed near the end of the rear-guard. With regard to the front plate, the idea would answer, provided the cone of rays from the lamp was of sufficiently wide an angle to illuminate the plate, even when the lamp should be jolting about. If it did not do this the fact that motorcyclists were not fully complying with the regulations would very quickly be communicated by the police to the Local Government Board, and the latter would then without hesitation introduce measures that would be

restrictive and expensive to carry out. Just a further word of warning to my correspondent: let him see that the letters are so disposed on the plate that they are perfectly vertical, for the regulations provide against any slope whatever. This latter fact, coupled with the stipulation that the plate on the back shall show towards the rear, will prevent him from adopting the same plan on the rear mud-guard. The illustration will show that the suggestion is thoroughly illegal.

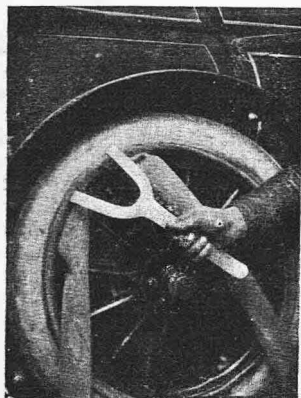


I cannot insist too much upon the advisability of a complete compliance with the requirements of the Local Government Board. The regulations are designed for the absolute identification of every motor vehicle at all hours of the day or night, and the most fatuous idea that has ever been advanced is that, if the plates are obscured in some way in the daytime or are not illuminated at night, the only thing that will happen will be the spoofing of the watchful policeman. The result of spoofing the police is quite overlooked or disregarded so long as the delinquent can for the moment avoid paying the penalty for his misdeeds. But the police will report to headquarters that they cannot read the numbers, and the Local Government Board will then be officially informed of the fact, and before we know where we are we shall have to adopt an official lamp that will be weighty, expensive, and unsightly, and the hard lines will be that those who have tried to comply with the law will not be able to get hold of the miscreants and kick them for their part in the introduction of the new measure. It must not be forgotten that the present restrictions are the outcome of soddish behaviour on the part of a few motorists. If we want to shake off those restrictions we must play the game until 1906, when the promised Motor Act will be discussed.

SOME INTERESTING NOVELTIES.

A New Lever for Tyres.

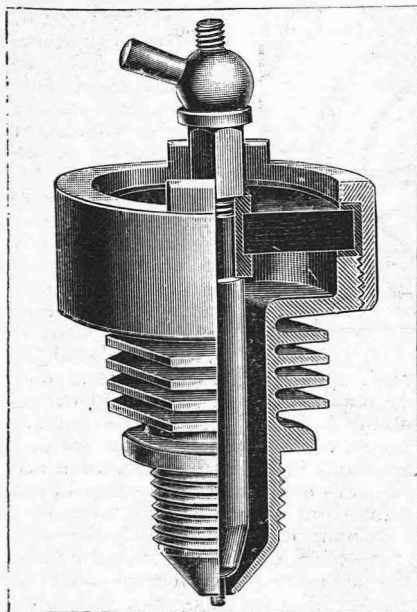
Messrs. A. W. Gamage are introducing a new motorcar tyre lever. The method of using this is well shown in the illustration. A special feature is that it is specially useful for replacing security nuts and valves by reason of the clearance provided in the lever prongs.



1.—Replacing an Air Tube.

The "Amac" Sparking Plug.

The Aston Motor Accessories Co., Ltd., 70, Aston Lane, Perry Bar, Birmingham, have just introduced the new sparking plug illustrated, for which they make the



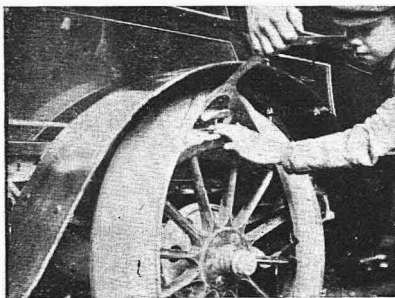
following claims:—1st.—The plug is designed in such a way so as to form a very long gas pocket between the combustion chamber and the insulation. The gas in this pocket does not get changed, consequently no sooting can possibly take place, either from too rich a mixture or from lubricating oil. 2nd.—The arrangement of the mica insulation is altogether different from any existing plug. It is impossible for any short circuiting to take place between the layers of mica (a com-

mon cause of failure with some mica plugs), as the distance between the central conductor and the body of the plug will not allow it. It is priced at 10s. 6d. and guaranteed for one year.

A New Silencer.

The Universal Silencer is the invention of Mr. Nathan Sharpe, who has recently joined the Inno Engineering Co., Ltd., 48, Tottenham Street, London, W. Mr. Sharpe is an engineer, who has had much experience with machinery and inventions for dealing with large volumes of gases, and "Magneto's" article in "THE MOTOR" some months ago on silencers, started him cogitating, with the result that within a week, this new silencer was designed and patented. The essence of the idea is that the exhaust gas shall not meet with any baffle plates, which would set up back pressure, but shall have a steady flow by easy curves

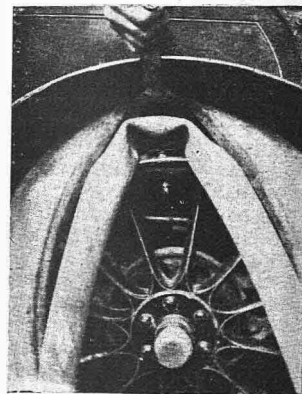
this by being larger in diameter, of greater length and having three bulbs instead of two. We have had the opportunity of seeing the new silencer fitted to a 12 h.p. Boyer car, alongside the silencer originally fitted. A two-way tap controlled the exhaust which could be directed into either silencer at will. This proved an excellent method of testing the merits of the invention, and while no difference in the running of the engine could be detected when the Universal silencer was brought into use, the reduction of the noise was most marked. On a Princeps motorcycle an equally satisfactory result was obtained and when the machine was on the road it was certainly as silent as any we have yet noted. The foreign patents are already secured and the invention will be placed on the market without delay.



2.—Placing Cover Clamp in position.

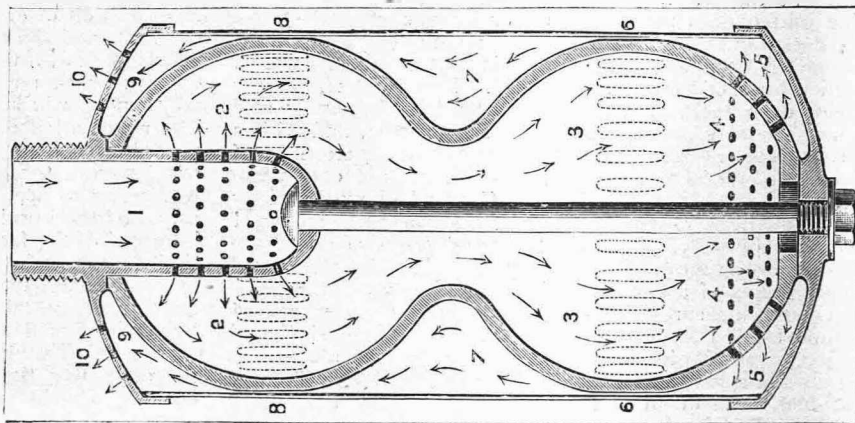
from the time of entering the silencer until discharged into the atmosphere. The arrows indicating the course of the exhaust, in illustration, will explain how this is secured. After passing from the inlet, and expanding in the two aluminium bulbs, the gases return along the outside of the bulbs, which are slotted all round the part which is in contact with the outer cylinder. These slots are indicated in the diagram, by light dotted lines. The bulbs and the two end covers are of aluminium, the cylinder is brass and the parts are held solidly together by one bolt and nut. By removing the single nut the parts can be at once separated for inspection or cleaning. We illustrate the motor-bicycle pattern, the car pattern only differing from

A very handy case for carrying a driver's licence has been submitted to us for inspection. It is about the size of a business envelope, and has clear celluloid let in one side so that the document can be read without removing it. As a licence has to do duty for two or three years, the



3.—Inserting Valve through Rim.

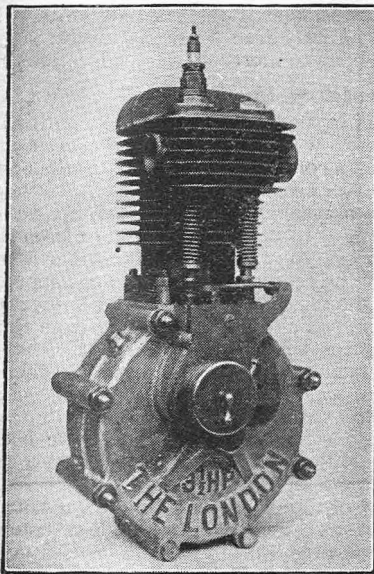
necessity for protecting it is obvious. The prices are: in leather, 1s. 6d.; morocco, 2s. 6d.; russia, 3s. 6d., post free; and it is supplied by Mr. A. Edwardes, 71, Knatchbull Road, London, S.E.



The Universal Silencer.

The "London" Motor.

The Rex Patents Company, of The Exchange, Clapham, are introducing a $\frac{3}{4}$ h.p. motor called The London. The name is chosen because it is made throughout in



the Metropolis. English threads and measurements are alone used, so that it will be possible to obtain nuts, bolts or similar fittings at any fitter's shop in town or country. The inlet valve is mechanically operated and a wipe contact is fitted. The bore is $3\frac{1}{2}$ in. and stroke $3\frac{1}{2}$ in. The sparking plug is fitted in the top of the combustion head and extra large radiators are fitted. An exhaust valve lifter is included in the design.

A Cheap Line in Number Plates.

We have inspected a couple of number plates supplied by the Victoria Works Company, Forest Hill, London, S.E. These are a very good substitute for the enamelled plates now on the market and the motorcycle size are supplied at the low figure of 2s. 6d. per pair, and motor-car size, 3s. 6d. a pair. The figures are painted in oils on a black enamelled iron plate. This has holes drilled at the corners for attaching to the machine.

The Hopper.

A $\frac{3}{4}$ h.p. water-cooled motor-bicycle is now being handled by The Farman Automobile Company, 100-104, Long Acre, W.C. It is christened the Hopper and the transfer will be the representation of a grasshopper. The engine has a steel cylinder and water jacket and is fitted in a shapely loop frame with three detachable clips. The carburetter is an F.N., and the contact breaker is of an improved type. The tank stores petrol, accumulator, lubricant and water, the water containing section being separated by a space to which the outer air has access. Efficient radiators are fitted at the head. The water tank has capacity for half a gallon which is sufficient for a hundred miles, and the petrol is ample for the same mileage. Front and back rim brakes operated by a single lever on left handlebar, are supplied, and the exhaust lift is by Bowden wire from right handlebar. Two ratchet levers on right hand of top tube operate the advance sparking and throttle. The drive is by V belt. The wheels are 26in. and the tyres 2in. The total weight when loaded with water and petrol, ready for the road, is 108lbs. The stock sizes of frames are 22, 24 and 26in., but any other size of frame can be supplied to order.

The Bat motor-bicycle having its back hub perfectly clear owing to the absence of pedals and chain, it is thought that the Hub two-speed gear can be conveniently fitted, and experiments are now being conducted with that object.

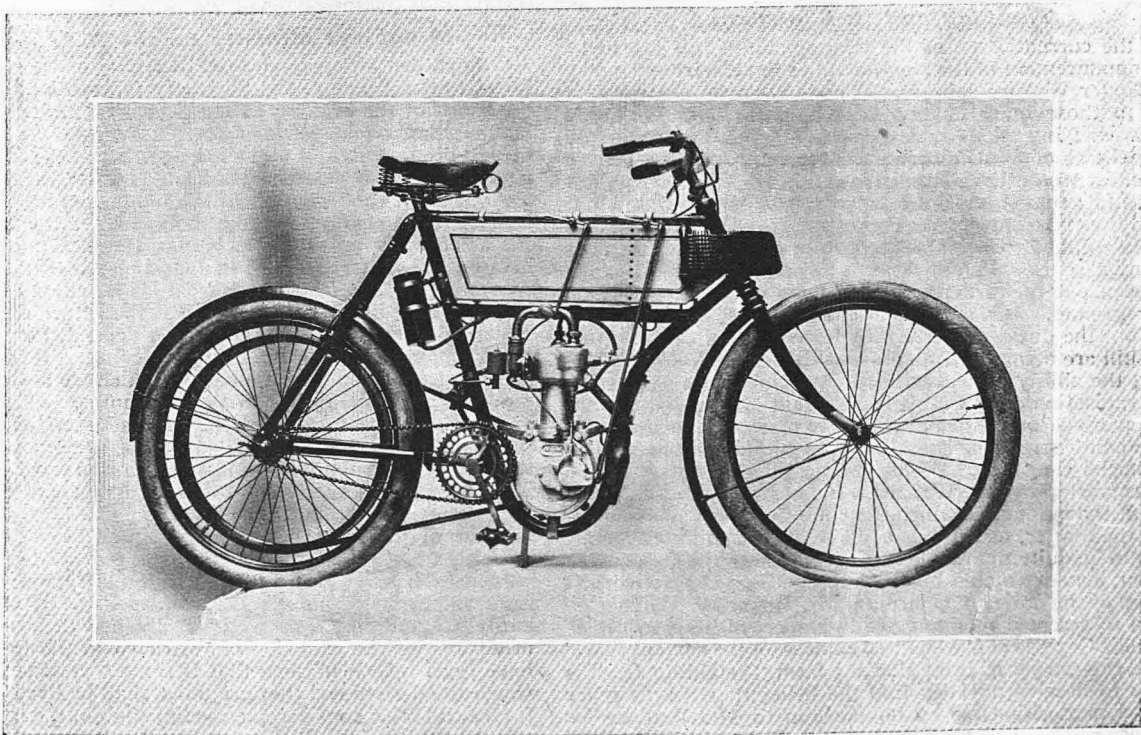
A Valveless Self-Sealing Tyre.

A valveless self-closing single tube tyre, the "Eolus," is one of the latest productions in Paris. As the illustration shows, it consists of three layers, the



THE SELF SEALING "EOLUS" TYRE

outer being of vulcanised rubber, the central of fabric, and the inner of non-vulcanised rubber. The makers claim that the thick inner wall of rubber closes effectively in the case of any puncture. There being no valve, the common trouble of leakage at the valve is eliminated. To inflate, the pump is fitted with a hollow needle with which the tyre is pierced. It is claimed that the tyre, whose walls are about one-third of an inch in thickness, will withstand any reasonable air pressure, and will support a weight of 1,500 lbs. on each wheel. The weight of the tyre is about $\frac{7}{8}$ lbs.



THE HOPPER WATER-COOLED MOTOR-BICYCLE.



The circulation of "The Motor" exceeds that of ALL other motor papers combined.

Conducted by

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and WALTER GROVES.

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OPINION

IMPORTANT ANNOUNCEMENT.

"THE MOTOR" is not a journal of half measures. From the first we have aimed at being the first motor paper out with the news, and "THE MOTOR" is still days ahead of any other journal with all the motor news of the week. In consequence of the enormous circulation it has been difficult to get copies on sale earlier than 10 o'clock on Tuesday in London, and much later in the day in the Provinces, but by the adoption of new methods we shall in future publish so that copies will be on sale at most newsagents first thing on Tuesday mornings in London and the Provinces.

The Club and its Chairman.

In the current issue of the "Automobile Club Journal," the announcement of the resignation of the Chairmanship by Mr. Roger Wallace appears. This will come as a surprise only to those quite outside the Club, for Mr. Wallace's desires and intentions have been fairly well-known in the inner circles of the Club for some time; in fact, we believe that effect would have been given to his desires earlier, but for the fact that it has not been easy to fill the vacancy that would thus be created. We do not suggest that Mr. Wallace will be a difficult Chairman to follow; or that the post calls for any exceptional abilities as such posts go, but no name has been put forward which would really be acceptable on every ground. Considering the importance of the Club's position, the duties are naturally onerous, and extreme tact and skill are demanded, together with a great knowledge of sport, the ability to deal with foreign clubs, and experience in organisation, and it must be said that Mr. Wallace, without having accomplished anything to mark him as a man of outstanding strength, has always acquitted himself well in his official capacity. Whilst the actual resignation of the Chairmanship by Mr. Wallace was not by any means unexpected, the manner in which the Club Committee have dealt with the matter, as set out in the published minutes, seems to us to be quite unprecedented. We quote the following: "That in view of his inability to continue the active discharge of the duties of chairman, Mr. Roger W. Wallace be asked to accept a retaining fee in respect of his services as Standing Counsel of five hundred guineas for the current year."

We can hardly imagine that the term "retaining fee" is likely to deceive anybody into the belief that this is other than a proposition for an honorarium to Mr. Wallace for services rendered as Chairman to the Club, and least of all is it likely, we should suppose, to deceive so astute a man

as Mr. Wallace. As such, then, we must regard it, and in that light we can scarcely believe that Mr. Wallace will submit to accept it. It is hardly necessary to point to the moral effect of establishing such a precedent. It seems to us to point directly to the lowering of the dignity of an office which has hitherto been regarded as *sans reproche* in its absolute disinterestedness, and it throws that office, which should, above all, be entirely free from the merest suggestion of personal gain, open to mercenary considerations.

"Moulding the Future."

There are two letters in the "O.P.V." section of this issue to which we desire to draw the attention of readers and the Trade. In one of them a correspondent expresses the opinion that the "O.P.V." columns of "THE MOTOR" are "doing more to mould the motorcycle of the future than all the trials that could be promoted, as most of the letters are from riders of actual machines in everyday use." In the other a correspondent states that "the motoring public should appreciate the manner in which makers have endeavoured to meet their wishes and suggestions which have been made from time to time in 'THE MOTOR,' for it is only by these means that progress is made if perfection is to be realised." When the scheme of this journal was formulated it was realised that, with a subject so complex to handle, the views of those who were constantly using n.o.o.r.s would be invaluable both to the public generally and to the trade. From the first, therefore, we gave encouragement to other people to express their views on every variety of motor subject, with the result that the "O.P.V." section—as it has come to be called—is one of the largest, most interesting, and most valuable features of "THE MOTOR." Our only regret is that we cannot go on indefinitely extending the section, which is always overcrowded with good things. For some months now we have been a fortnight behind—that is to say, as four pages appear eight are crowded out; but fortunately the matter is usually so good that it keeps without in any way losing its interest. Hundreds of valuable hints have been given and illustrated in these columns of public opinion, and whilst our modesty must naturally prompt the leaving of the verdict to the judgment of the readers, we think we may claim without egotism or exaggeration that the "O.P.V." section of "THE MOTOR" has had much to do with what our correspondent rightly calls the moulding of the future of the motorcycle.

A Cabinet Minister on the New Act.

On another page we report rather fully a speech made by Mr. Graham Murray, the Secretary for Scotland, who was the guest of the evening at the Scottish Automobile Club's annual dinner last week. Mr. Murray pointed out that he had been as great a user of the roads as anybody present, because for many years he had been a cyclist, and he became a motorist at the inception of the motor-bicycle, afterwards transferring his affections to a motorcar. After alluding to the astonishing amount of prejudice revealed by the discussion on the Motor Car Bill in the House of Commons, the Secretary for Scotland remarked that he could not say too strongly how much he thought that the future of the sport, which was dear to all of them, really depended on their own good behaviour during the next year or so. It is an opportune time to emphasise this advice, which we ourselves have tendered more than once in these columns. The new Act does not impose very great hardships upon the users of moderately powered vehicles, although it cannot be denied that the new regulations are likely at first to prove somewhat irksome. However, when all is said that can be said on the matter, everything depends upon the future good behaviour of motorists of all classes, and we cannot too strongly urge, at the start of the new year, the strict observance of the law. The future of automobilism as a pastime rests wholly with motorists themselves, and it will depend entirely upon their own actions whether their rights and privileges will be extended or restricted in the future. We have good reason to hope that if things work smoothly towards the desired end that prejudice shall be lived down, the future will see a considerable modification in the regulations, which, to the law-abiding motorist, seem unnecessarily harsh and exacting.

NEWS.

Mr. Roger Waliace has resigned the chairmanship of the Automobile Club.

Prince Henry of Prussia has just secured a 1904 pattern Locomobile "Surrey."

28,000 tons of South American rubber were turned out during the past year; 15,261 of which went to Europe, and 14,566 to America.

The Chater-Lea Manufacturing Company, 116, Golden Lane, London, E.C., are making a speciality of a high-class tank to suit the motorcycle frames they supply.

James Whitcomb Riley, the American poet, has been out on a motorcar recently. Perhaps the result will be an ode to the new locomotion in the view of the late Mr. Henley's "Speed."

£15 for a single bedroom for the Gordon-Bennett week is announced as the present hotel syndicate price in Homburg. Prices will almost certainly go up as the date of the race approaches.

Mr. Gray Dinsmore, of the American Automobile Club, will compete in the "Sneden" cup motorcar race which comes off shortly in Algeria. Baron de Crawbez is also spoken of as a probable starter.

The annual general meeting of the Motor Cycling Club will be held at the Restaurant Frascati, Oxford Street, London, W., January 28th, at 7 o'clock. Members are reminded of the importance of attending the meeting.

The Century Engineering Company have taken over the business of the Century Engineering and Motor Co., of Cumberland Park, Willesden. The management will be in the hands of Mr. R. W. Leader, and important developments in "Century" productions are promised.

A novel form of lifeboat has been constructed in France. It is worked by a petrol motor, and is rendered practically unsinkable by a lining of cork in addition to watertight chambers. A still more novel feature is a brake system consisting of four sheet iron wings, two on each side of the hull, which can be folded flat when not in use.

The latest Yankee invention promised is a motor which applied to railway trains will treble their speed, and will double the speed of Atlantic liners. Liverpool to New York in three days will be possible with this motor which, the prospective inventor says, will be simple and cheaper than any form of motor at present used. Steam or compressed air will be the motive powers.

Mr. Thomas H. Gibbon, an American civil engineer, advocates steel as the ideal material for roads. He draws attention to the disadvantages of stone in all its forms—flagging, setts, macadam, or mixed with tar or asphalt—its lack of durability, its power of creating dust and mud, its unhealthiness, its deleterious effect on all classes of vehicles, its high co-efficient of friction.

X.L.C.—4.

The shades of night were falling fast
As through a Blankshire village passed
A motorcar with this precise
Description (twas a strange device),

X.L.C.—4.

The chauffeur sat, his eyes beneath
A coloured glass and silken sheath,
And like a bull in terror rung
The accents of your brazen tongue,

X.L.C.—4.

"Oh, stay," the sergeant said, "and rest;
Your panting engine seems distressed."
The driver turned his dark blue eye,
And shouted as he hurried by,

X.L.C.—4.

"Try not to pass," an old man said,
"Another bobby lurks ahead,
Our ditches are both deep and wide,"
But still he hastened on and cried,

X.L.C.—4.

At break of day, as heavenward
The car rose of its own accord,
Drowning the driver's fervent prayer,
A loud report rang through the air,

X.L.C.—4.

The chauffeur, by a passing hound,
Half buried in the ditch was found
Still grasping like a blacksmith's vice
The plate which bore this strange device,

X.L.C.—4.

There in the twilight cold and grey
Hundreds of broken pieces lay,
While through the air was smelt afar
The scent of burning motorcar,

X.L.C.—4.

The smoking concert at the Automobile Club recently was so great a success that another will be held on March 24th to close the winter season.

Federation as it Appeals to Motorcyclists and to Car Owners.

The Automobile Club, we are glad to say, has risen to the occasion on the vexed question of affiliation, and as soon as it saw that the provincial clubs were in earnest in objecting to the original terms and were not merely quibbling, the club set itself to conciliate them and to reconcile the conflicting views. There has already been a deputation to the club and as a result of the exchange of views misapprehensions have been removed and we can foresee that at the conference to be held on February 15th the last word will be said about the projected rival federation. So far as motorcyclists are concerned, we would strongly recommend them to stand aloof from any attempts that may be made to induce them to join any body which is not solely devoted to their interests. When it comes to a matter of controlling a sport and taking active and vigorous steps to protect a pastime, a combination of interests invariably proves unworkable. For this reason the Auto-Cycle Club is well-advised in seriously considering a definite change of constitution whereby it may become a federation of motorcycling clubs rather than a body endeavouring to run a social programme.

Benz and Company have entered three "Parsifal" cars for the German eliminatory contest for the Gordon-Bennett race.

The Vauxhall car will in future be sold in the western district of London by The Gobron Motor Company, 157, Knightsbridge, which holds the sole agency for that area.

Duray, who holds the world's record for the kilometre, will drive a 25 h.p. Gobron-Brillie car, for trial purposes, in the grounds of the Crystal Palace during the forthcoming Show.

Herr Theodor Dreher has secured the option of one of the cars run in the Gordon-Bennett contest by the Austrian Motor Club. Of course, he intends to have it fitted up for touring.

Mr. Claud Johnson, the late secretary of the Automobile Club, who resigned that post in order to take a position in the motor trade has made another change, and is now with Messrs. Harmsworth, the publishers.

The first motor-bicycle to cross the magnificent new "Williamsburg" bridge which unites New York and Brooklyn, and which was opened on December 21st last, was ridden by George Decker of the Alpha Motorcycle Club.

Messrs. Romain Talbot have opened offices at 6, Holborn Viaduct in order to market the "Z.L." carburetter, for which they have the sole agency for the United Kingdom. They have also secured the agency for "Z.L." motors, but with these their business is restricted to the Colonies.

One should never leave a motor at any place without first enquiring what the charges are likely to be. The writer was recently charged 5s. for storing his tricycle for the night and having some of the mud removed from it, the latter being done without instructions having been given.

The New Year's Eve motorcycle race from New York to Tarrytown (23 miles) for the Pitman Cup was won by E. Kreuder, of the New York Motorcycle Club on a Marsh machine. Only two other competitors started, and neither of them finished; they rode motor-bicycles. The roads were frost-bound and lightly covered with frozen snow.

There will be three motorcycle events in the Daytona Beach races which begin tomorrow (Wednesday), on the east coast of Florida—a five mile American motorcycle championship; a ten mile handicap; and a one mile handicap. Lamberjack, the French motorcyclist, is expected to race on a special Griffon, which he has taken out.

The British Automobile Commercial Syndicate, Ltd., ask us to state that in the report of the "Speeds and Consumption Trials at Autwerp" given in a recent issue, the car there referred to as the Clement is now known as the Talbot. This fact is of importance, as the present Clement car is an entirely different make to the Talbot for which the company mentioned are the agents.

The motor glove which a gentleman dropped in the street, Cobham, Surrey, on Sunday the 10th inst., will be returned to the owner if he will communicate with C. A. Smith, "White Lion" Hotel, Cobham.

A Lecture at the German Motor Club.

On Thursday, January 14th, Dr. Max Levin-Stoelpling, a prominent member of the German Motor Club, lectured before the club on the motor industry and sport, the basis of which was furnished by the world-renowned "Daimler" with the invention of the explosion motor, although the French were the first to take the lead with really practical cars. In illustration of the mutual action and re-action of sport and industry the doctor showed how the German industry went ahead from the moment when a German car took part in some road races at Nice. Where the German industry stands to-day is scarcely in need of explanation. The lecturer deplored the strict police regulations in view of the ease and celerity with which cars could be brought to a standstill, and deprecated the application of the Railway Liability Act to motors, as suggested recently at the German Juristic Congress. Very earnestly did he impress upon the club the necessity of taking the most stringent precautions to prevent accidents at the Gordon-Bennett race.

Enamel Experiments.

Many correspondents ask us from time to time to name a good metallic paint for radiators, silencers, etc., and complain that the brands they have used flake off with the heat. We have recently been experimenting with three kinds and are now able to give our opinion. The samples were "Club" Aluminium Enamel, "Silverskin" (a sample given to us at the Stanley Show) and "E.G." (Electro-Galvanising Solution. In colour "Silver skin" is the brightest and most metallic, "E.G." is a shade darker and "Club" is the colour of aluminium and rather smoother in texture. "Silverskin" and "Club" dry hard immediately, "E.G." dries in about half an hour and hardens more slowly. It seems more of the nature of a paint than the others. When dry the portions painted were rubbed briskly with rags, first wetted with petrol and then with lubricating oil, but without appreciable effect.

Tested by heat there was not the slightest tendency to flake. The temperature was slowly increased until it stood at about 900 degrees Fahrenheit; this heat to some extent killed the medium used, and the metallic powder could be brushed off. All samples stood the test equally well. Our opinion is that it depends entirely upon the way in which these enamels are applied whether flaking takes place or not.

The surface should be entirely free from rust and washed over with petrol before being painted. Then if the enamel is put on thinly, a satisfactory result is assured. The makers of "Club" Aluminium Enamel are The Silico Enamel Company, Kerry Road, New Cross. "Silverskin" is made by Messrs. Kay Brothers, Ltd., Stockport, and the agents for "E.G." Solution are Messrs. W. B. Fordham and Sons, York Road, King's Cross.

Speed Evidence in France.

In a case which was recently heard in the Paris law courts the following dialogue occurred:—

Judge: "At what speed did you calculate the car to be travelling at?"

Constable: "Twenty-five miles an hour."

Judge: "Explain how you made your calculation."

Constable: "As the car passed me I looked at my watch, and when the car had got 200 yards away from me I looked at my watch again."

The case for the prosecution eventually collapsed, as much (let us hope) on account of the above method of chronometry, as by reason of the fact that the constable deposed to seeing a *white* car, whereas the defendant's car had never been any other colour but *green*.



The first organised meet of the Melbourne Motor Club at Princes Bridge, Melbourne, December 6th, 1903. Our Australian correspondent, who sends the above excellent photograph, says that it only represents a few of the members who took part in the run.

Watch for This!

Something new in motor tyres—specially applicable to large cars—may be expected shortly. A company with a great reputation will “father” the innovation. More anon.

The “Mudlarks.”

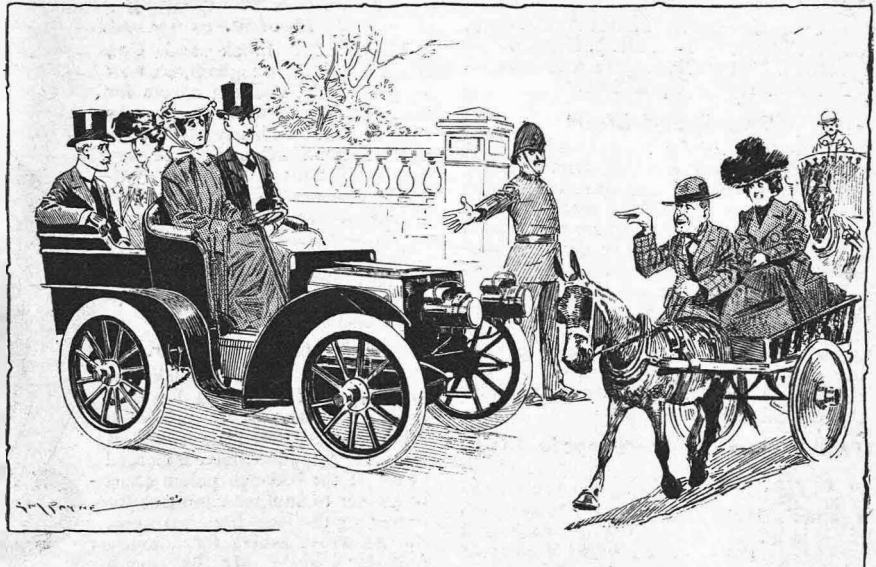
The “Mudlarks” will foregather at a beefsteak dinner during the New York Automobile Show. The “Mudlarks” is the name given to the survivors (about 150 in number) of the endurance runs held in America last autumn, the feature of which were the storms of wind and rain.

Marks Marks Time!

No one in Cobham was particularly astonished to see Inspector Marks, of Hersham, take up his position at the entrance to the village on a recent Sunday, and, with the assistance of the local police staff, several cars were stopped, and the owners' names and addresses taken. It was alleged by the police that they were in an excellent position to time the speeds, although Mr. S. F. Edge, who happened to enter upon the scene, pointed out to Marks that he could hardly see round a corner to time the cars at the so-called starting point of the trap. A resident of Cobham, when asked what he thought the speed was, answered “Fifteen miles an hour.” Timekeeper Marks, however, it is said, made it twenty-five an hour!

Prosecutions Under the New Act.

Two furious driving cases which occurred last week furnish food for consideration. Both alleged offences, curiously enough, were committed on the same day and at the same place—January 17th, at Cobham. In the first case Mr. Herbert Coombes was summoned on the evidence of Supt. Marks and Police-sergeant W. Lucas. The superintendent stated that he timed Mr. Coombes with a stop watch to do a measured quarter of a mile at the Tartar Hill in 23 secs.—a speed of 27½ miles an hour. The defendant sought to weaken this evidence by eliciting in examination that the superintendent was standing a quarter of a mile away from where the measured distance began. Still more unsatisfactory was the corroboration (legally required under the new Act) of the second witness, Sergeant Lucas. He was running in front of the car with his back towards it when it was stopped. The Chairman of the Bench, who saw the weak point of this, said it was important to know whether the sergeant was looking in front or behind; to which the witness judiciously replied, “I was looking both ways.” As the majority of the Bench were in favour of a conviction, the defendant was fined 20s., the relative lightness of the fine showing clearly, to our mind, the unsatisfactory nature of the conviction. In the second case Mr. H. Lidell was summoned for a similar offence, but on the Chairman reading a letter from defendant's solicitors complaining that defendant had had only two clear days' notice in which to prepare his defence, it was decided to adjourn his case for a week. The Chairman said that it was highly important in a case like this, where, under the new Act, a man might be sent to prison, that he should have at least a clear week in which to prepare his defence. We quite agree with this expression of opinion, and we are glad to know that Supt. Marks has undertaken to communicate it to the Chief Constable of Surrey.



The West End and the East.

Space for the Boston (U.S.A.) Automobile Show, to be held in March, is at a discount.

The new locomotion is penetrating to the uttermost ends of the earth. The little island of New Caledonia, a French colony situated in the Southern Pacific Ocean midway between Australia and Fiji, is to be traversed by a service of motorcars to be inaugurated in the coming summer.

The postal and telegraph departments of Denmark are experimenting with a service of motor vans. The average speed of these must attain to 15 miles an hour, and if this can be done consistently and economically, the horse “diligences” which at present carry letters, etc., will be entirely replaced by motor vehicles.

Wheel Steering on Tricycles.

As we were jogging along the Ripley Road the other day we were overtaken by a little speed beast, which attracted our attention. It was a very light Trimco, without the front seat, with a seemingly very powerful air-cooled engine, and a belt drive. The most noticeable feature, however, was the wooden steering wheel, a la car. The driver adopted a crouching position, and was travelling at a good 20 an hour along the “fair mile.”

A Consummation Devoutly to be Wished.

“In England, France and Germany,” says the “Automobile Review,” of Chicago, “laws compelling the carrying of lighted lamps at night on all classes of vehicles are national in character and are enforced everywhere. In America it is a matter of local option; but certainly, in well inhabited sections of the country, the general safety of everybody, whether walking, driving, riding, automobiling, or bicycling, is insured if all vehicles are obliged to carry lighted lamps after dark.” We agree with our American contemporary that a universal lights law is desirable for that country; but we are sorry to have to state that so far from having a universal lights law in England, national in character and everywhere enforced, there is a remarkable diversity both of law and practice, which is as illogical as it is inconvenient and dangerous.

Mr. Roger Wallace, late chairman of the Automobile Club, and Mr. Julian Orde were over at Homburg last week and inspected the Gordon-Bennett route before returning to town.

Motors and Live Wire Dangers.

Apropos of the recent scare arising from the accidents that have occurred recently in London from a live electric wire breaking, a question was put to one of “ours” at a discussion on motor matters as to whether the occupants of a car were safer than a pedestrian would be in the event of a tram wire breaking and falling into the tonneau of the car. Undoubtedly they would be in an infinitely safer position than a luckless pedestrian, on whom the wire might fall, especially if he were on damp ground and in the vicinity of the rails. The occupants of the car are exceedingly well insulated from the earth or rails by the tyres, and a fatal shock would be impossible; but, nevertheless, there is little doubt but that they would feel something in the way of a shock that would be decidedly uncomfortable, and if by chance the tyres were wet and muddy and in contact with the rails, there would most probably be some pretty fireworks round about the metal work of the motor. The only absolute precaution would be a rubber suit, mask and gloves, as a wire with a 550-volt current running through is not to be trifled with. It was recorded in one of the American papers last year that a broken live wire was responsible for a car blowing up in a New York thoroughfare. The wire struck the edge of the petrol tank, and either broke it or fused up the joint, and the flash fired the petrol. Although this story is of the sensational order, it has the elements of probability in it, and, as every motorist knows, a very tiny spark will suffice to set petrol on fire. A motor-bicyclist, if struck by a live wire, would certainly have a bad time. In the first place, it would throw him off his machine, because, when a wire breaks, it comes down with great force, and in endeavouring to get clear of the tangle he would get severe shocks. We have never heard of such an accident and we think the risk is really very small.

At a meeting of the Liverpool and District Cycle and Motor Trades Association, held on Thursday last, Mr. J. Edge, of the Liverpool Motor Club, gave a lecture on "The Motorcycle Up-to-date."

The Speed Limit

At a meeting of the roads and highway committee of the Preston District Council held last Thursday, the question of the proposed reduction of the speed limit to ten miles an hour came up for discussion. The chairman pointed out that the proposed reduction would necessitate an expenditure of £2,000 for notice boards and warnings, and advocated the "furious driving" clause, without any reduction of the limit. The question was adjourned for replies to be received from the authorities of the various districts under consideration.

The Liverpool Motorcycle Club.

The second annual meeting of the above club was held on Wednesday last at the Feather's Hotel, Liverpool. It was decided to admit car owners to the club, and to change the name to "The Liverpool Motor Club." The following officers were elected for the coming season:—Captain, Mr. J. Edge; Sub-Captains, Messrs. R. Harvey and R. Radcliffe; Treasurer, Mr. R. S. Tafner; and Secretary, Mr. E. S. Wilkinson. The secretary's address is 80, Gloucester Road, Bootle, and from him all information may be obtained. The entrance fee remains at 5s., and the annual subscription 5s.

Hotel Prospects.

Mr. Julian Orde has made a flying visit to Germany in connection with the Gordon-Bennett race, and reports that preparations for the great event are in full swing. The hotel keepers at Homburg have formed a committee and they are determined to make the best of the opportunity afforded them. Thus it has been decided to charge for a single bedroom from 20 to 50 marks per day (a mark equaling a shilling) and no room will be reserved unless it be taken for at least eight nights. If rooms are desired for a shorter period, the prices will be raised accordingly, that is to say, the cheapest price for a room is 100 marks, however long it may be used. Prices for meals will also be somewhat high.

An Explanation of the New Act.

Earl Russell read a paper before the members of the Automobile Club last Thursday evening upon the legal aspects of the Motor Car Act. He dissected this measure and touched upon almost every feature of it, elucidating a point here and there which to some might seem obscure. He pointed to some legal conundrums to which the phraseology of the Act gives rise and suggested wording which would have made the meanings clearer and the provisions in some cases more reasonable. A very interesting discussion followed, there being no lack of speakers, many of them being seekers after further information, and the conclusion to which the gathering was forced was that motorists must set to work without delay to formulate amendments to the Act, to agitate for the introduction of a more reasonable measure to replace the present one when it expires in December, 1906, and to conciliate public opinion by a general and generous observance of the provisions of the present law however distasteful some of them may be.

Another Non-skidding Device.

Messrs. Rushbrooke and Co., Moor Street, Birmingham, are now supplying non-skidding covers for motor and motorcycle tyres. As the illustration clearly shows, insets made of strands of thread, combined with rubber, are vulcanised to the cover, and project slightly above the surface, and it is claimed that the method not only prevents side-slips but does not affect the resiliency of the tyres. The insets can be vulcanised to any make of tyre.

A Motoring Mayor.

Mr. T. S. L. Scarisbrick, the late Mayor of Southport has had many conflicts with the police on account of alleged furious motoring. He was due to have appeared again at the borough police court in answer to another summons for exceeding the legal limit last week, but he wrote asking for adjournment for a week. Mr. Scarisbrick is a most enthusiastic motorist, and is known locally as the "Motoring Mayor."

Automobilism's National Importance.

The annual dinner of the Eastern Section of the Scottish Automobile Club was held on Thursday evening, in the North British Station Hotel, Edinburgh, Sir J. H. A. Macdonald, the Lord Justice Clerk of Scotland, President of the S.A.C., occupying the chair in the absence of the Lord Provost, Sir Robt. Cranston. There was a company of over one hundred gentlemen, including the Right Hon. A. Graham Murray, the Secretary for Scotland; Sheriff Lees, Chief Constable Ross, Edinburgh; Colonel Borthwick, Colonel Duff, Black Watch; Major Portal, 17th Lancers; Mr. Adam, chairman of Western Section S.A.C., Mr. G. Macmillan, secretary. Apologies were intimated from the Lord Provost, Mr. A. J. Balfour and Lord Rosebery. In proposing the toast of "The King," the Chairman said his Majesty was an excellent automobilist. A difference between the King and themselves was that he was not obliged to carry a number. He (the Chairman) strongly suggested that if any member thought that if he ran about without a number he would be taken for the King, he would be much mistaken. (Laughter.) Colonel Duff, whose name was associated with the toast of "The Military Forces," said that in the recent war their transport difficulties could have been lightened by the use of motorcars. The motorcar might be used in the fighting line if it was constructed to contain one or two machine guns. The idea was, the more lead they could pump into their adversary the better, and if a car could be used to concentrate fire on a particular point at a critical juncture, it might have decisive results. (Hear, hear.)

THE PASSING OF THE BILL.

The Chairman shortly proposed the toast of the guest of the evening, the Secretary for Scotland. Mr. Graham Murray was an automobilist, and that was a good thing in the interest both of the users of motorcars and of the public. Having a knowledge of what the rights of the public were, and of the reasonable ambitions, and, perhaps, of the failings of the auto-



A New Non-skidding Device.

mobile, he would be able to deal, as they all knew that he would deal, with perfect impartiality in regard to what was undoubtedly to be one of the great industries of the future, with what undoubtedly was to be one of the great advances, not only of sport, but of what was to benefit the country in the matter of road transport. (Applause.) The Secretary for Scotland said he believed he had been as great a road user as any of them, because he had been a bicyclist for many years. He took up the motorcycle at its very inception, and since then he had been the possessor of a car. There was another matter. He was in the House of Commons during the passing of the Bill which was their present charter. He was used in a humble way as a sort of intermediary between the automobilists and the anti-automobilists, of whom there were a considerable number on both sides in the House of Commons. No doubt the discussion of that Bill revealed a terrible state of things on both sides. It revealed an amount of absolute prejudice against this new form of locomotion which was perfectly shocking to anybody who knew anything about it. On the other hand, if human testimony was to be believed at all, it revealed a series of outrages on the part of those who used automobiles, which certainly was rather heartrending to anybody who had the sport at heart. But in the end, of course, the Bill was passed, and they knew what it was. While he was not prepared to speak, he was quite prepared to preach, and he could not say too strongly how much he thought that the future of the sport, which was dear to all of them, really depended on their own behaviour during the next year or so. (Hear, hear.) In what there yet remained to do he should do his best to hold an even balance between the two parties. He was quite certain that in doing so he would show the general public that there was no necessary incompatibility between the prosecution of automobilism as a sport and as one of the most useful means of locomotion, and the ordinary and proper regard for other users of the road. (Hear, hear.)

[We deal with the subject matter of this important speech editorially and direct the attention of our readers to that section.—Ed.]

The Motor Cycling Club: An Interesting Discussion.

On Friday evening last a gathering of members of the Motor Cycling Club took place at 2, Penywern Road, Earl's Court, London, at the invitation of Mr. H. Reeves, who read a paper entitled, "Horse Power and Transmission." A very fair attendance (25) of members was recorded, and a large number of letters and telegrams were received from members expressing regret at their inability to attend. Mr. Arnott took the chair, and introduced the author of the paper, who then proceeded with the subject. Dealing with the vexed question of power first, he held the view that the light small powered machine was of no use to him. He asked for a machine to travel at a maximum speed of 30 miles per hour, and suitably geared to climb a 1 in 10 gradient at 15 miles per hour. To do this the motor must be of exactly 3 h.p., as he proved by calculation and making a fair allowance for wind resistance, etc. He said that a more energetic man than himself might be best suited with 2½ h.p., whilst one carrying more weight might have 3½ h.p. He had some experiences recently with a 3½ h.p. Minerva 82 by 82 mm. engine, fitted to a machine primarily intended for passenger work. For a single rider he found this mount decidedly too powerful, difficult to start by pedalling, and for this reason a nuisance in traffic. Since then he has had a clutch fitted, and these objections have disappeared; but it was not a mount to put into the hands of a beginner. Still, the way it took Westerham Hill was a revelation, and for his part, at any rate, he said goodbye to low powered mounts. He then touched on the subject of belt transmission, with which he had had most experience, and had good results from a particular make of belt and suitable pulley, which had become worn to a certain degree by the belt. He did not believe in mechanical grip pulleys. He particularly asked for information from members as to their experiences with chain drives, and especially as to whether a spring chain-wheel or a slipping clutch was the better. He was glad to see there was a growing tendency on the part of makers to specify engines in terms of bore and stroke, compression and guaranteed b.h.p. at a given speed. For passenger work he deduced that a two-speed gear was essential, and that a single belt drive of the ordinary type was impossible, but he looked for great things being accomplished from Mr. van Hooydonk's duplex belt drive system. For this class of work he thought the best all-round engine would be one of 4 to 4½ h.p., at 2,000 revs., and two gears, viz., 5½ to 1, and 8 or 8½ to 1. After Mr. Reeves had concluded his paper, Mr. Arnott called on Mr. van Hooydonk to reply to the several points raised. Mr. van Hooydonk held the view that the small powered machine was the mount for the great majority of motorcyclists, something about 2 h.p. As his ideal, he thought that the most powerful engine that could be had for a fixed maximum weight, and to be as small and compact as possible, would fulfil it. Even with the inefficient little motors of several seasons ago he had got along wonderfully well, and provided the rider knew how to handle his low powered mount, and pedalled at the right time on the worst hills, some excellent performances could be done. The high powered machine idealised by Mr. Reeves, he was

of opinion, had many drawbacks. It was difficult to start on hills, for one thing, and although if one had a clear run up the machine would get along at a fine pace, it was a nuisance to be pulled up by an obstacle and get going again. He considered that a vast amount of pleasure was to be got from the machine that was easy to handle, of medium power, and that cost very little to run it. The next speaker was Mr. B. A. Hunt, who had views much at variance with the author of the paper. No high powered mounts took his fancy at all, and he thought great injury was being done to the pastime and industry of motorcycling generally by manufacturers advocating the use of ponderous and unwieldy mounts. These would never "catch on," except amongst the minority who asked for speed—more speed. Cyclists, who can be numbered by the thousand, were deterred from being converted to the new and fascinating pastime by having no choice but to go in for an unwieldy mount, that necessitated a crane to lift it or a specially constructed inclined plane to get it up a few steps into the house. They were choked off, and they still kept to their 25-pounder, and were likely to do so. What he advocated was a machine that would do 25 miles an hour on the level, climb hills up to 1 in 12 at 8 or 10 miles an hour, and over this gradient could easily be surmounted by pedal assistance. Weight must be kept down to 75 or 80 lbs. It can be done if the makers will only experiment and give us a highly efficient engine, developing its power at 3,000 revs., if need be.

Mr. Tuchmann agreed with much of what the last two speakers had dealt with. He was next season going in for a three-wheeler, and hoped to obtain some guidance on certain vexed questions in connection with the power and transmission. However, he had had a very long experience of a medium-powered mount, and for all-round work it exactly suited him. Mr. B. H. Davies said low-powered

mounts were useless in Devonshire, and he could say that anyone who went touring there with a 2 h.p. motor would be sorry for it. Nevertheless, for fairly level roads, he thought that there was a good scope for the machine advocated by the previous speakers. Mr. Clayton dealt with the subject of clutches, and pinned his faith to a friction clutch and chain drive. He thought that a most erroneous impression had been spread abroad as to the value of a slipping clutch through statements made in one of the papers that a clutch did not really perform any useful function. Mr. Booth held the view that the question of large fly-wheels was intimately connected with the hill-climbing power of a motor-bicycle. Several other members expressed their views, including Mr. Johns on chains, after which Mr. Arnott had something to say on the matters in discussion.

A hearty vote of thanks was proposed and given to the author, and the members expressed their pleasure at the profitable evening spent. It is hoped that another paper will be read on some important motor-cycling subject shortly, of which due announcement will be given.

We have already stated that the Wolseley Motor Car Co., Ltd., have purchased new works in Kent for the production of their light cars, and we now hear that plans have been passed for the erection of new premises opposite to their factory at Aderley Park.

The New Tri-Car.

The Rex Motor Manufacturing Co., Ltd., Coventry, are building a new tri-car, which will be styled the Rexete. The first will be ready early next month. It will be fitted with a 4 h.p. water-cooled free engine, and have a chain transmission. There will be a bucket seat in front, and a seat for the driver, instead of the ordinary saddle. We shall illustrate it and give further details in an early issue.



Mr. A. Stewart on the celebrated motorcar on which he appeared before His Majesty the King at Chatsworth.

The Edlin-Sinclair Tyre Co., Ltd., Sherlock Street, Birmingham, are engaged on the production of a new motor-cycle tyre.

A New Pattern Iris Motor-Bicycle.

The photograph depicts the latest type of 3 h.p. Iris machine with water-cooled engine. This is fitted with a new style of outside radiator shown on the side of the tank; there is also a clutch and hand starter provided and the latest petrol tank is of increased capacity. The company are now making these machines with English built frames and adding many improvements. The front forks are duplex and two rim brakes are fitted. The Iris specialities for 1904 will be the 3 h.p. single-cylinder and 6 h.p. twin-cylinder, both air and water-cooled. The makers are the Iris Motor Company, 58, Holland Street, North Brixton, London, S.W.

The Auto in the Prussian House of Lords.

In the Prussian Upper House Count von Schlieben interpellated the Government on the following text: "The public is not sufficiently protected by the Civil Code against injuries to person and property occasioned by the owners or drivers of motorcars. Does the Government think of helping to mitigate this evil by legislative measures?" Minister of Justice Schoenstedt begged the interpellant and his friends to have patience while material was being collected which should furnish grounds for determining whether the matter had better be settled by the Reichstag or the Prussian Diet; he and his colleagues had been giving the subject earnest attention. Several speakers insisted that the speed of cars should be kept within a prescribed limit, amongst them Count Mirbach, who failed to comprehend why permission should have been given to hold a motor race over a public highway, and demanded special liability legislation against motorists. Prince Schoenaich-Carolath, who followed, expressed the hope that the German motor industry would go on and prosper, but protested against the thinning out of Prussia's live stock and agricultural population by reckless motorists, especially foreign motorists, who, according to the Prince's account, had no more feeling than Vishnu's juggernaut car. Listening to the Prince, one could conjure up Prussia's country roads literally strewn with victims—herds of cattle moaning in ditches, fair-haired children, old men and women writhing in the dust, horses staggering about with gaping wounds, what time the relentless foreigner merrily rushes on his way darkening and poisoning the atmosphere with waste gases! The Minister of the Interior von Hammerstein repudiated the idea of forbidding narrow country roads to motors, and also of introducing draconic measures which, while protecting the life of the citizen, would radically shackle the progress of the industry. The Duke of Rati-bor, president of the German Motor Club, would welcome the sharpest punishment of reckless motorists, yet did not advise increasing the liability of motorists in general. He referred to the extraordinary precautions which the Motor Club intended to take in connection with the Gordon-Bennett race.

King Victor Emmanuel has sent £50 to the Touring Club of Italy towards the fund for providing guideposts and danger boards on the roads of the country.

French Licenses.

A proposition is now under discussion in France to hand over the granting of drivers' licences to certain of the automobile clubs. The idea is favourably entertained in motoring cases, as it is argued that under such an arrangement the risk of issuing a licence to an incompetent driver will be minimised; more especially if, as is anticipated, the test is made more severe.

A Big Output.

Since August last Humbers, Ltd., have turned out nearly 500 of their light Humberette runabouts and have orders in hand which, when completed, will bring the total output to nearly 600. This is a splendid record. By the way, the company claim that their annual output of cars is greater than that of any other English firm. They are doing a very good foreign trade, and on Wednesday last a 24 h.p. car was shipped to Buenos Ayres. Several orders are also in hand for South Africa.

Royal Autocars: "E R 7" and the Russian "Fiat."

"In matters sartorial," says the society tattler of a suburban weekly, "the King is naturally an absolute *autocar*." We noted also in this connection from our morning paper last week, that the Czar's *fiat* had been given against war, so that the "Autocar of all the Rushers" would also appear to be one of the absolute pattern. It is doubtful, however, in view of some of the lawless characteristics of the modern *autocar*, whether the publisher and editor of the suburban journal above quoted might not be proceeded against for *lese-majeste*. It is on record that a distinguished Cambridge professor was once sued for libel by a cabman who objected to being called an "isosceles triangle." The sport of motoring would seem to rather lend itself to the retort crushing, and one might easily reduce an inoffensive pedestrian to a state of collapse by calling him a "honeycomb radiator," or "a mechanically-operated inlet valve."

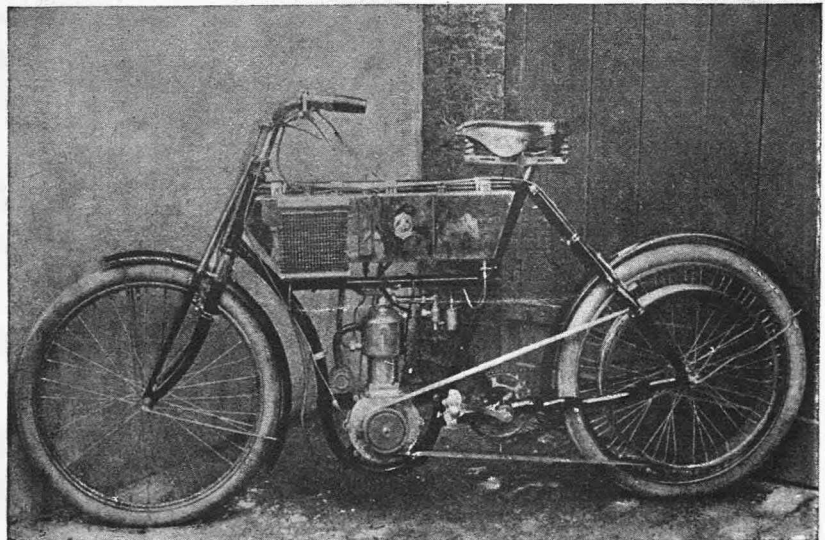
As a result of the recent inspection of the Circuit de l'Argonne the Automobile Club of France will apply for the necessary permission to hold their Gordon-Bennett trials over this course, which is said to be in many respects like the prospective Gordon-Bennett course itself.

Club Chairman Resigns.

Mr. Roger W. Wallace has resigned the position of chairman of the Automobile Club, a matter which we deal with editorially this week. For the present the three vice-chairmen will divide the duties between them. At the moment it is not easy to foresee who will follow Mr. Wallace. The ideal chairman of a club constituted as the A.C.G.B.I. is at present, will be a man of ready resource, quick of thought, with an immediate grasp of the significance of sudden and rapidly changing situations and with a keen perception of the full import of conflicting interests or influences, and, above all, possessed of the power to act decisively when occasion demands. It seems to us that a good way would be for the office to be an annual one, the chairman holding office for one year from the date of the annual meeting.

Small Cars, Commercial Vans and Protection Wanted.

Speaking at the second annual dinner of the Oxford Automobile and Cycle Agency, the other day, Mr. Claude Rippon said that if the authorities carried out the new Act in the spirit in which it was framed, England would be in a better position than any other country. With regard to the motor industry and its remarkable progress he was glad to see the flourishing condition of the small car at a moderate price, and he hoped that Oxford's application for the ten-mile limit would not cover the whole borough, but the small area enclosed by Magdalen Bridge, Folly Bridge, Osney Bridge and the Martyrs' Memorial. Mr. W. M. Burgess advocated the claims of the commercial car and the parcel delivery motor van; and Mr. F. G. Barton said that everyone was looking forward to a great increase in the motor industry as a result of Mr. Chamberlain's fiscal policy!



New Pattern Iris Motor-Bicycle.

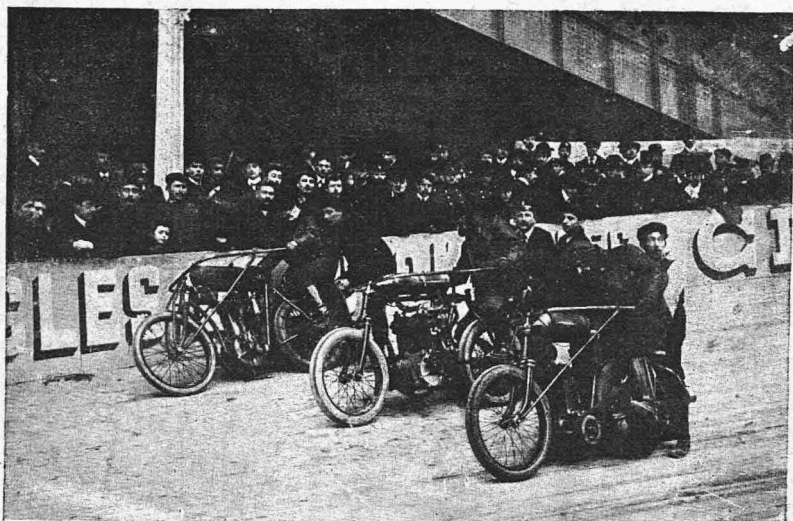
The agency for the well-known Bleriot lamps, established at 54, Long Acre by Mr. C. Bardies, has now been transferred to Messrs. C. Weldhen. In future the business will be carried on under the style of Messrs. Weldhen and Bleriot, who will retain their premises at 36, Seymour Place, as the works, and 54, Long Acre as the show-rooms and offices.

A Special Offer.

The Noble Motor Company are making an offer in their advertisement this week which is well worth the attention of those who wish to secure a motorcycle at a greatly reduced cost. It is the desire of this company to place one of their machines in every town with an approved private purchaser so that, when necessary, correspondents can be referred to it for inspection. To compensate for the service rendered a substantial reduction is offered to the original purchaser. We are satisfied that the offer is perfectly genuine and intending applicants should send in at once.

Weston-super-Mare Speaks its Mind.

A correspondent has kindly forwarded us a cutting from a Weston-super-Mare paper containing the report of the proceedings of the Urban District Council of that salubrious western watering-place. As is usual in council meetings of to-day the proceedings included some reference to the burning question of motor vehicle speed limits. Several letters were read from motorists and others pointing out the relative safety of the roads in and about Weston for fast well-controlled vehicles, and also the heavy expense which would fall on the ratepayers by adopting an unnecessarily timid policy of restriction, as well as calling attention to the fact that the general feeling of the country headed by the Local Government Board was against any restrictions which were not manifestly and urgently demanded by local conditions. Councillor Appleton re-echoed the above sentiments; and urged the council, if they must enforce the ten-mile limit somewhere, to schedule High Street, Regent Street, and Oxford Street, but to leave the urban district, generally, untouched. Councillor Dubin, the spokesman of the anti-progressive party, said "that in all the discussion that had occurred, he had failed to find one single argument why the streets of Weston should be given over to motorists. Why should ladies and gentlemen, merely on pleasure bent, seek to rush through the streets at the tremendous pace at which they evidently wished to go? During the earlier portion of the past summer he had lived in the front room of his residence in Locking Road, but the narrow escapes which he had seen children coming from the Locking Road School experience, as the result of furious and careless driving by motorists, had so unnerved him that for the rest of the season he had removed to the back part of the house." This powerful appeal so worked upon the feelings of the meeting that on a division Councillor Appleton's amendment to rescind the ten-mile limit motion was defeated by eight votes to five, and the residents and visitors of Weston-super-Mare will have the felicity of seeing Councillor Dubin at his front parlour window once more during the coming season.



Motorcycle racing at the Winter Track in Paris. Start for one of the motorcycle events.

According to the "Tausubote" the work of widening the curve opposite the Saalburg restaurant has begun. I understand that an English club has already booked a hundred beds in a Frankfort hotel for the period of the festivities.

The Surrey Police.

In conversation with some of the residents of Cobham, the writer found that the majority were not greatly concerned whether cars passed along the Portsmouth Road at 12 or 20 miles an hour, always providing no one was in danger. Another pointed out that the police action was merely that of one individual, for no one in the village had complained of the pace of the cars. It was thought that if the local policemen had less duties thrown on them Saturdays and Sundays during the day time there might be a chance of the village being better patrolled at night. Several cases of burglary and thieving are declared to have taken place round the vicinity recently. And the county police rate is 3d. in the pound.

A Screened Acetylene Headlight.

In view of the fact that the Local Government Board have issued a recommendation that the powerful headlights used on motorcars should be provided with some kind of a screen to prevent the glaring effect resulting in accidents such as frightening horses and endangering other traffic and pedestrians, Messrs. J. G. Statter, electrical and mechanical engineers, Cornwall Buildings, Newhall Street, Birmingham, have introduced a form of acetylene headlight in which a screening arrangement in the lamp can be operated by electrical means from the driver's seat. This screen and its attachments are made of aluminium and painted dead black and when it is desired to apply the screen it is turned round so that it covers up the reflector, this is thus entirely cut off from the source of light. For travelling in a fog a gauze screen may be substituted. In addition to the electrical system of control, an alternative method is by means of a Bowden wire with lever fitted to the steering pillar. With the electrical system there is a push button to actuate it.

The Automobile Components, Ltd., wish us to state that they have recently removed to more extensive premises at 366, Euston Road, Regent's Park, London, N.W. They are installing a new and complete plant in their new premises for the production of their specialities in large quantities.

Belt Slip.

Belt slip can be cured far more effectually by suitable dressing than by undue tightening. A properly flexible V belt will grip in the pulley when comparatively slack, and it is bungling to strain the belt up board hard when the stiffness and shiny surface of it are obviously the cause of the slip. It is curious that, whereas a piece of the rear mudguard is generally cut out to leave room for the belt, the metal is seldom or never turned back so as to form a protection from mud thrown by the back wheel. The Rex machines shown at the National this year had an extra width on the belt side of the mudguard to keep rain from falling on the belt—not much protection, one would think—but the writer does not remember that anything in the nature of a screen was interposed between the tyre and the belt.

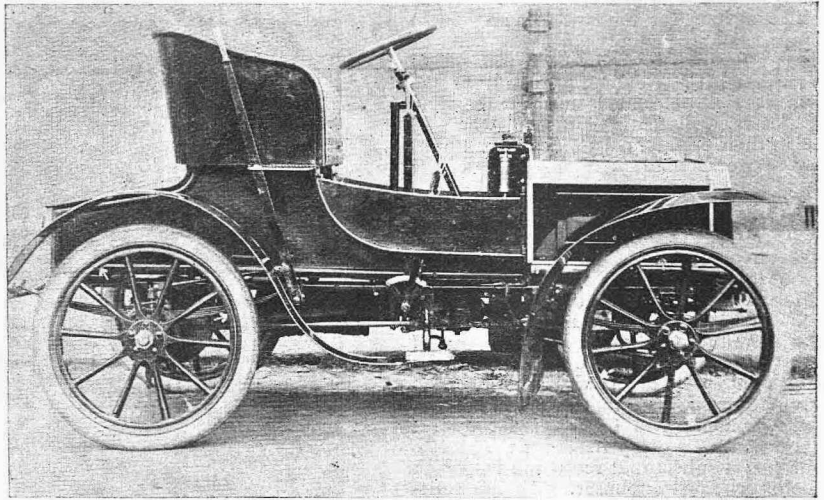
Wonderful Motors: Still They Come!

As the result of an article that appeared recently in the "Daily E—" describing in the most extravagant language a new motor invented by a gentleman in the Midlands, which is once again to revolutionise the trade, we have been inundated with requests to state what we think of it from readers, whether it can be applied to cycles, light cars, air-ships and bath chairs, when will it be on the market, etc., etc. We regret we cannot reply individually to each enquirer. We may say, however, nothing is known about the marvellous motor in trade circles and that a very large allowance must be made for the vivid imaginations of the gentlemen responsible for these glowing articles for popular consumption. One of the claims made for this engine is that it develops 15 h.p. and is so compact that it will fit in a handbag and cost practically nothing to run! Next?

The Latest Humberette.

The fact that since August last Humber, Ltd., of Beeston and Coventry have built no less than five hundred of their 4 h.p. Humberette two-seated cars and have still a considerable number of orders to meet proves, beyond a doubt, that there is at the present time a very wide demand for reliable and well-built light vehicles which are moderately priced. Humber, Ltd., although fully satisfied with the great success of their miniature automobiles, have not rested on their laurels; they find that for a few pounds extra they can produce an infinitely better vehicle and consequently they have just decided to place on the market another type of Humberette. Although very much on the lines of the earlier model it is of higher power and possesses several important improvements in addition to being stronger built all through and better finished. Instead of a 5 h.p. engine, a single cylinder, automatically governed 6½ h.p. Humber motor is fitted having a bore and stroke of 3¼ in. by 4 in. and developing its full power at 1,500 revolutions per minute. Like the other, it is placed under a bonnet and is water-cooled by a geared pump. Three speeds and a reverse (operated by two side levers) are provided—the forward speeds being 7, 15, 25 miles per hour. The extra speed adds greatly to the efficiency of the car, and it is worth noting that the size of the gear box has not been increased and there is no appreciable difference in the weight. The body, which is beautifully finished and upholstered in royal blue, is slung on semi-elliptical steel springs; it is

MORE ROOMY THAN LAST YEAR'S DESIGN and permits of a hood being attached, while the rear wings have been extended to the steps (there are side doors) in accordance with the practice adopted on most large automobiles. An improved radiator and tank combination is fitted and a fixed starting handle with a spring action is also a new feature. Apart from the fact that artillery wheels (having pneumatic tyres) supersede the cycle tangent type, the car does not in other respects vary much from the 5 h.p., which we have referred to on several occasions.



The New 6½ h.p. Humberette.

For the benefit of new readers, however, we may mention that it is gear-driven, the transmission being from the engine, through the clutch and gearing, to live axle. A direct drive is obtainable on the top speed. Two brakes on the back axle are applied by a hand lever and there is also a band brake on the driving shaft actuated by a foot lever.

THE FRAMEWORK

is strong and of tubular construction, the lubrication is by sight feed pump on the dash and a Longuemare carburetter is fed by gravity from a tank which is also attached to the dashboard. The vehicle possesses features, which are bound to commend themselves to many, and we have no doubt that the makers' claim that it is especially suitable for continuous hard work is fully justified. That it is a comfortable and easily controlled car we are quite satisfied. Both the Beeston and Coventry works are busily engaged turning out the Royal Humberettes—as they are styled—and models will be on exhibition at the Crystal Palace Show where they should command considerable

attention. The Coventry machine is being listed at 150 guineas; the Beeston model being obtainable at 160 guineas, the latter car being finished in a better style and possessing several additional detail refinements.

Moderate Reims.

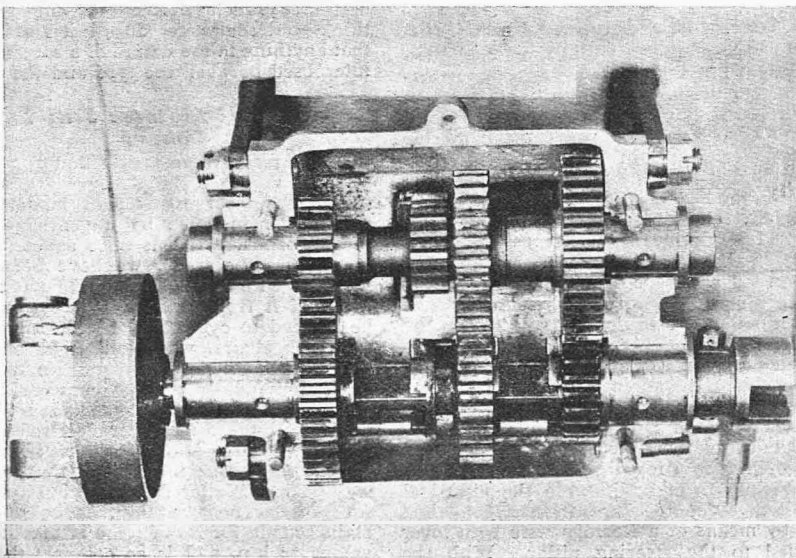
The Mayor of Reims, where a speed limit of 7½ miles an hour in the district and 5 miles an hour in streets and at cross roads is in force, has applied to the Touring Club de France for a supply of their notice boards which contain the following warning:—"An abatement of speed is required from all vehicles."

Motorcycle Racing at Barcelona.

After being twice postponed, the motorcycle race from Barcelona to Ignatada, organised by the Ciclista Athletic Club, came off on January 17th. Owing to the shocking state of the roads the competitors had to exercise great care and fast riding was impossible. Abadal, on a 3½ h.p. Werner, did a good performance under the circumstances, in covering the total distance (about 90 miles) in 3 hrs. 21 mins. The next three to finish were, in the order named, R. Escoda (2 h.p. Peugeot) 4 hours 2½ mins.; Meudelson (2 h.p. Decauville) 4 hours 28½ mins.; and Chassagne (1½ h.p. Clement) 5 hours 5½ mins.

A Sequel to the National Show.

One of the most popular features at the National Show last November were the trial runs on motorcars and motorcycles on the terrace and in the grounds of the Crystal Palace. A large number of keen motorists and prospective buyers availed themselves of an opportunity of trying a car or cycle which struck their fancy, and to members of the trade these trial runs were equally satisfactory. A sequel, not so satisfactory to one of these latter, has just turned up in the law courts. Mr. Edmund Howe, a clerk in H.M. Office of Works, went for a trip one dark evening on a car belonging to Messrs. Allday and Onions, and owing, presumably to the carelessness of the driver—an employee of the firm just mentioned—the car collided with an iron seat and Mr. Howe sustained a fracture of the right leg. He was awarded £200 damages in the King's Bench Division.



Gear-box of New Humberette.



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 invites correspondence on any motor subject, but owing to the very large number of letters received he directs attention to the following rules:

1. Plain Writing. Type-writing for preference.
2. All letters to be written on one side of the paper.
3. Letters to be kept as brief as possible.
4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists.

The Editor is not responsible for opinions expressed by correspondents in this section.

Fibre Pulley Rings.

Sir,—I note in your issue of the 30th December last (page 556) that a correspondent, Mr. R. S. Radcliff, recommends flexible red fibre rings for a 2½ h.p. 1903 Werner machine, and also a belt guard. Will he be kind enough to say where the rings can be obtained, and what kind of belt guard he has affixed?—Yours faithfully,
R. W. C. PIERCE.

Paraffin Fuel for Locomobile.

Sir,—Seeing in your issue of December 30th, in the "Information Bureau," one of your correspondents (G. W. Rock, London) inquiring as to whether paraffin can be mixed with petrol in Locomobile steam cars as fuel, I might say I have had a good number of Locomobile cars under my notice, and find that a mixture of one quart of paraffin to three gallons of petrol works very well; indeed, as well as, if not better than, all petrol. If more paraffin than I have stated is used, smoking will occur. Petrol and paraffin, if mixed as above, steams quicker, I think. Yours faithfully,
A. I. TONY.

Light Car Experiences.

Sir,—Noticing that you are taking a good deal of interest in light cars, would you kindly insert the following letter? Some little time back I purchased a 9 h.p. Prosper-Lambert car from the London agents, and after running the car for some time now, using it every day, I have had absolutely no trouble with it. It is a good hill climber, fast on the level, and extremely powerful. I have had several runs on it with five passengers up, and noticed no difference. I should very much like to hear the experiences of some other owner of a Prosper car through the medium of your columns. I may say that I was very doubtful for some time before buying that the car was too cheap to be any good, so that both I and my friends have been agreeably surprised.—Yours faithfully,
A. L. WALTERS.

Motorcycling to Monte Carlo.

Sir,—I intend to ride my motorcycle to Monte Carlo. Could any of your readers tell me the best route to take, and give me any hints about touring in France? For such I should feel greatly obliged.—Yours faithfully,
W. CARTER.

The F.N. Carburetter.

Sir,—I have a 1903 2 h.p. Minerva bicycle, which I have found amply powerful for ordinary use. Although I have done some 2,500 miles on it, I have never been troubled with overheating; and I have ridden every hill from Dondon to Falmouth, and in bad weather. I see that many of your subscribers complain of the F.N. carburetter being unreliable and difficult to start. Personally, I have never had the slightest trouble, and can invariably start the machine, when on the stand, in half a turn of the pedals. The secret is to flood the carburetter well and open the throttle wide. As soon as the engine has been running half a minute or so and gets warm, the air drawn in is also warmed, vaporisation of the petrol is increased, and the throttle can then be almost completely closed. I have more than once run from London to Bridgwater on one gallon of petrol at an average speed of 20 m.p.h. I do not think one can desire a better or more economical carburetter than that.—Yours faithfully,
F. W. GRIMSHAW.

Specification for Light Motor Vehicle.

Sir,—I am watching for the much-talked-of two-seated vehicle for the man of moderate means. Might I embody the rough specification of what, in my opinion, would meet the case? Type of vehicle:—Olympia tandem pattern. Drive:—Chain. Direct drive preferred from the motor to the back wheel, with friction clutch. (The Humber type is apparently satisfactory, but why insert a countershaft? Surely the transmission would be simpler and more efficient if taken direct, as I suggest?) Two-speed gear. Starting:—By hand, as in the Humber latest type. Tyres:—2½ in. all three, Palmers for choice. Engine:—Not under 3 h.p. Both valves mechanically operated. Engine to be governed to prevent racing at starting, etc. Cooling:—Air cooling by fan. Why not fit an air jacket round the cylinder, on similar principle to the water jacket on water-cooled engines? The fan could force a strong draught of air through this jacket, which could in addition be provided with radiating flanges. Ignition:—Accumulator, wipe contact, trembler coil. There are probably objections to several of my specification items. It is for the purpose of having these pointed out to me that I write my views on the matter. If you are good enough to insert this letter in "THE MOTOR," I am sure I shall soon be enlightened.—Yours faithfully,
F. S. N. MACRORY (Capt.).

Water Cooling.

Sir,—I read with interest an article in a recent issue of "THE MOTOR," under "Cyclomot's Causerie," and would like to have other experiences from users of water-cooled cycles. I am shortly going out to Cape Colony, and as I am taking out a motorcycle, I should be glad to know if there is a really good water-cooled one on the market. Personally, I prefer an air-cooled motor, but I am afraid that in a hot climate a 2½ h.p. air-cooled would overheat too readily. Perhaps one of your Cape readers would kindly give his experiences and suggestions in this respect, and would also say if the country round Port Elizabeth is very hilly, and if the roads are fairly good on the whole. Your paper I find almost invaluable to motorists.—Yours faithfully,
S. LUCKING.

Werner Engine Control.

Sir,—I notice in your issue of December 23rd a letter from R. R. Hubbard. My F.D. Werner was fitted with an extra inlet valve, worked by a small lever from the handlebar, which I am bound to say had great advantages for starting, and cooling the culasse (head) going down hill, the cold air striking on the hottest parts of the motor, which, by the bye, were usually a bright cherry red directly the engine had any work to do. Curiously enough, this engine always developed its greatest power when the cylinder head was red hot; but then it was insulated from the cylinder by a thick strip of asbestos. I also tried a fairly stiff spring on this extra valve, with the idea of getting automatic cooling directly the throttle was closed, or partially closed, to deliver a full supply of air to the cylinder; but no spring was ever able to stand the intense heat. The small lever actuating the stem of the valve gave great control over the entire machine, and in a way contributed to silencing the engine. This machine was fitted with a De Dion contact breaker, constructed on a method of my own. The machine itself is now in the hands of a bricklayer, who uses it in all sorts of weather, and is delighted with it. Herein lies a fact which may be of interest to your numerous readers. The new owner of this pioneer amongst motorcycles (bicycle) was in trouble with his carburetter. After putting this right for him, I casually asked him if he ever had any trouble with his trembler. He looked at me, and then asked what that was. I pointed to it. This was the answer I received, "Ah, no; you must never touch that!" I thoroughly believe the man, because I could not state when I last saw the trembler of my 2½ h.p. genuine De Dion. I am now using the same trembler and platinum, the little V-shaped piece having, of course, worn out long ago, and I have run about 23,000 miles.—Yours faithfully,
E. REGINALD WEBB.

Fore-carriage Work with $2\frac{1}{2}$ h.p. Motor.

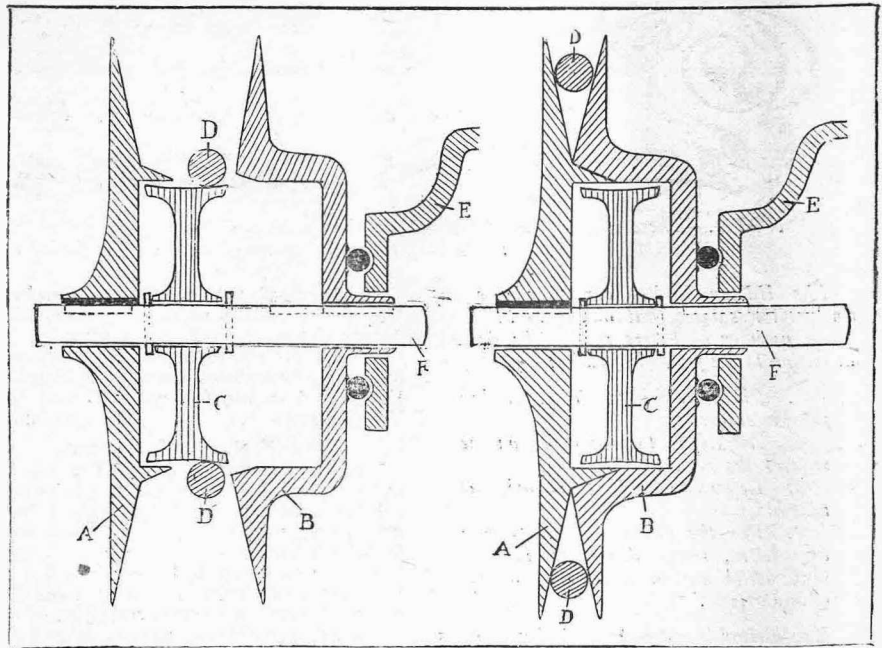
Sir,—If "Revilo Nottlef," whose letter appears in "O.P.V." issue 99, of "THE MOTOR," will have the gear of his $2\frac{1}{2}$ h.p. Singer altered to 9 to 1, he will find that the power is quite sufficient for all-round fore-car work. I speak from experience, having ridden a similar machine, with a Phoenix Trimco attached for the last nine months, and I am quite able to get up any ordinary hill (with a passenger) without pedalling, and have ridden the machine, with a passenger, up the zig-zag road of Box Hill, with the help of some pedalling at the bends, the turns being very sharp and necessitating some slowing down of speed. Of course, with the engine geared to 9 to 1 the speed is restricted to about 20 miles per hour, and that cannot be kept up for a great length of time; but I usually average between 14 and 15 miles an hour, including all hills, and with a passenger in the fore-car.—Yours faithfully,
M. H. PRANCE.

Wake Up, John Bull!

Sir,—During the last few months various letters have appeared in your columns suggesting that India is not a country suitable for motorcars, and that the only cars likely to go in India are those that at present do not seem very popular at home, namely, kerosene burners, with solid tyres, etc., etc. I was talking just recently to an American commercial traveller, who told me that he had just sold thirty petrol cars of a cheap American make in Calcutta. My own impression is that motorcars for men of moderate means are nowhere more required or more likely to be a success than among English officials in India. It seems a pity, both from the point of view of English trade and of motoring, that English manufacturers show no sign of taking any part in this development of their industry. The Anglo-Indian official is by no means deficient in intelligence, and therefore is fully capable of running any ordinary petrol car.—Yours faithfully,
"ANGLO-INDIAN."

Tyres, Fore-cars, Chain Drives, etc.

Sir,—I read with much interest "Mag-neto's" able article on the care of tyres. It is so very seldom one comes across articles, either in papers or in so-called "handbooks," on the tyre question which are not full of absurdities. I have had many good laughs at articles of this description. One in particular I remember reading some few years ago, in which the use of three arms was absolutely essential in performing one of the repairs described! Regarding the life of a tyre, one rider may make a pair last three years or more; another may ruin his in less than a year. I consider your columns of "O.P.V." are doing more to mould the motorcycle of the future than all the trials, etc., that could be promoted, as most of the letters are from riders of actual machines in everyday use. I am confident that the fore-car attachment will not survive very long; it will give place to a vehicle similar to the Raleigh three-wheeler, with a chain drive. I consider the perfect chain drive is one where a line ruled through the engine shaft, the countershaft (bracket shaft), and the rear wheel axle, would cut them into equal parts—this, of course, for motor-bicycles without attachments.—Yours faithfully,
JAMES B. LIVESEY.



Illustrating letter from A. D. Turner.

Variable Gears.

Sir,—I beg to send you sectional drawings of a combined free engine and multi-speed gear for motorcycles which I think should prove very simple, inexpensive and light. It works on the following principle:—The pulley consists of two parts, A and B, of which A is keyed on to the shaft F, whilst B is loose on the shaft and can be moved sideways by the lever E. The first drawing shows the belt D running on a loose pulley C, which gives a free engine. The second drawing shows B moved along the shaft and engaging with A, thus giving a positive drive with high gear. Moving B to the right lowers the gear by decreasing the diameter of the engine pulley. The belt would, of course, be kept at the right tension by means of a lever-operated jockey pulley. When raising the gear the belt would be temporarily slackened off to allow it to rise in the groove.—Yours faithfully,
A. D. TURNER.

A Motor Launch Suggestion.

Sir,—Why should not the modest motorcyclist be able to have his little launch and make his motor-bicycle drive it? All that is necessary, it appears to me, is to have a smart little boat fitted with a screw and propeller shaft geared up to a big fly-wheel lined with rubber. The motorcyclist rides down to the water, runs his machine on board, and fixes it on a sort of stand in the stern. Imagine a platform with an arrangement to hold the frame in position, while the back wheel rests on the top of the rubber-lined fly-wheel just coming through, on a level with the floor. Our motorcyclist then solemnly bestrides his machine, switches on, and starts the engine. His back wheel flies round, and, of course, so does the fly-wheel on which it is resting, and that is geared up to the propeller shaft, which in turn drives the screw in the water. Simplicity itself, you see. When our friend has started his engine, and likewise the boat, he is free to get off his ma-

chine and repose comfortably in the stern with the rudder in his hand. There are, of course, tiller ropes going up to the handlebars of the bicycle, so that our friend can steer from there if he likes. There is such an immense fortune in this idea that I am forming a trust. Here is a chance for your excellent humorous artists whose priceless talents have conserved me many a time before. They would greatly assist me in designing the new "Bikoboat"—all rights reserved.—Yours faithfully,
LEOPOLD CANNING.

[What about cooling the engine?—ED.]

An Extraordinary Puncture: Number Plate Hints, etc.

Sir,—My experience with a puncture might be interesting to your readers. On New Year's Day, after riding down from Northampton to London, and coming on to Southampton about 7.30 p.m., at Esher I picked up half a small horse-shoe, blunt at each end, with my back tyre (2in.): it went through the cover, the inner tube and both surfaces of the hollow metal rim, and stuck out $\frac{1}{2}$ in. inside and $\frac{1}{2}$ in. on the cover side. It must have gone in with great force, for the wheel was not put out of truth, and if I had used a sharp chisel and heavy hammer it could not have been a cleaner cut. The marvellous part is that I was not thrown, but the wheel dragged. The explosion and the collision of the iron with the brake (which was not damaged) will take a long time to forget; this sort of thing rather shakes one's nerves. It was a novel experience: I have heard of a long nail going through the single metal rim, but a puncture like mine is, I venture to say, a rare occurrence. The way to fix up numbers so as to be visible at night is causing a little trouble, so I will describe the method which I have used for 100 miles. My lamp is a Lucas' Luminator; the plate is of thick tin-plate turned over at the edges, size $6\frac{1}{2}$ in. by $2\frac{1}{2}$ in. as my "number" contains two figures and two letters. I used Aspinall's

Enamel for the surface and letters, and fixed the plate to the lamp thus:—Take a piece of steel $\frac{3}{16}$ in. wide and $\frac{1}{16}$ th inch thick by about 2 $\frac{1}{2}$ in. or 3 in. long, turn up the bottom edge at an acute angle and solder it on the inner side of the flange which carries the lens, then turn over the number plate to slide on to it. It is light, obstructs very little of the light from the lamp, can be read easily in the dark when travelling fast, and can be removed if desired. Any tinsmith will make the plate, etc., for a few pence.—Yours faithfully,
"J."

Carburation in Cold Weather.

Sir,—In your issue of January 6th there is a very interesting note on carburation in cold weather, to which I should like to add the following. When faulty carburation due to cold takes place, sooting of the plug is likely to occur, owing to the petrol getting in the cylinder, and it has been pointed out to me that this occurs more readily with plugs of the mica type than those of porcelain. Probably the explanation of this is that when you put in a porcelain plug to replace the mica one, you are providing just enough warm air by the plug leakage to enable you to obtain a better mixture. There is always 7 to 8 per cent. of air leakage in a porcelain plug, which, in the above case, may be useful, though, as a rule, you would be better without it. To remedy faulty carburation in cold weather, adjust the jet to give a fine sharp spray, or use a lighter spirit, such as Carless Capel's.—Yours faithfully,
WM. PETO.

Crossed Belt Drive.

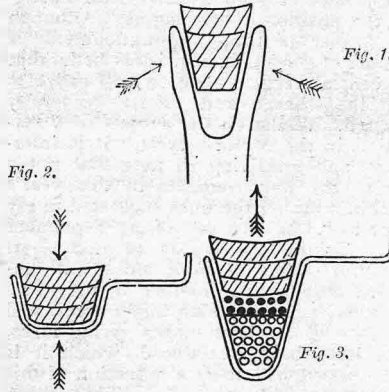
Sir,—In reply to Mr. Wilkin's letter, page 555, issue 99, he is quite correct in saying that the crossed belt runs from the top of the driving wheel pulley to the bottom of the engine pulley and vice versa, thus having the slack side on top. A simple device is fitted which prevents any wear. To reverse the motor the cam gearing has to be re-adjusted, and I think the cycle of operations was explained in "THE MOTOR" a few weeks ago. The De Dion type of engine runs just as well reversed, and such I believe is the case with the majority of motors. I might mention that my machine is a P.B. tandem, and (in answer to Mr. Radcliff's letter on page 556) is fitted with a guard to prevent the wheel throwing mud on to the belt.—Yours faithfully,
E. HODGES.

Belt Experiences.

Sir,—I saw in a recent issue of "THE MOTOR" that you advise A. Rigby (Oswaldtwistle) not to use a round belt in V belt pulley. Perhaps he would like to know my experience of this combination. The belt I have in use now is an Elswick twisted hide which I used all last summer in all weathers, and it has run something like 4,000 miles, and is still in excellent condition. The dressing I use is "D" oil used sparingly, and the belt should then be hung up in a warm place. With my belt dressed in this manner I have ridden up Reigate Hill in a non-stop run from Brighton without experiencing the least slipping. I tried a well-known make of V belt, but after running a few hundred miles it came unsewn. I also found that it slipped unless I had it pretty tight, so I discarded the V for the round belt. I should strongly recommend A. Rigby to give this a fair trial.—Yours faithfully,
H. KIRK.

Belt Slipping Remedies.

Sir,—A local mechanic has pointed out to me a mechanical defect in a rim pulley, as usually fitted, which is a source of belt slip, and which can be easily remedied. The groove in the engine pulley has the same width as the groove in the rim pulley. Consequently the belt is compressed laterally in the direction shown by the arrows in Fig. 1, both when passing over the engine pulley and when passing over the rim pulley. Hence the belt tends to assume the shape shown in section in Fig. 1. Its lateral surfaces become hard, and liable to slip. Supposing, however, that the groove of the rim pulley is made wider than that of the engine pulley, then, while passing over the latter, the belt is compressed laterally as before; but, while passing over the rim pulley, it is subjected to forces as shown by the arrows in Fig. 2: it tends to become expanded laterally, instead of compressed, and to acquire the shape shown in section in Fig. 2. Owing to this alternating action of the two pulleys the belt remains soft, and a good grip on the engine pulley is obtained. To try the effect of this suggestion I filled up part of the groove of my rim pulley with several turns of stout string, and embedded them in Chatterton's com-



pound. Over this I wound some turns of copper wire, which were afterwards soldered together, as shown in Fig. 3. The effect was immediate and surprising. During several months I have had this modified pulley in use, and have scarcely ever noticed any tendency to belt slip, although I have lately fitted a fore-carriage to my bicycle. Should the form of pulley here suggested come into use, it would be appropriate for it to be known as the "Galastin" pulley, after the name of the capable mechanic who suggested the idea.—Yours faithfully,
Agra, India. E. H. HANKIN.

1902 Werner Motor Hints Wanted.

Sir,—In reply to "A.C.C.," if he writes me I shall be pleased to give him particulars of carburetter. I do not know what kind of carburetter he has on his bicycle, or I might be able to suggest the cause of the flooding, but instructions have been given in "THE MOTOR" for adjusting most makes of carburetters. More particulars of his trouble would be necessary in order to locate the cause. Can engine not be made to start? Does it misfire frequently when running? Or does it not give sufficient power?—Yours faithfully,
R.E.S.

148, Wellington Road, Eccles.

1902 Werner Hint.

Sir,—In reply to "A.C.C.," in "THE MOTOR" of 30th December last, he does not state his particular trouble; but I presume it is a case of misfiring, or that the motor will not go at all. I think he will find the fault is that the exhaust cam on the 2 to 1 shaft is worn loose, through not being made a tight fit when assembling the motor. I have had a lot of trouble through misfires, and loss of power, so I had the motor down and found the feather key and keyway in the cam had worn so much that the play meant the distance of five teeth on the large wheel; that is to say, the exhaust was delayed in opening this much, and, of course, it would close too early as well. I think this is the cause of a lot of complaints I have seen about loss of power. I should be glad if some 1 $\frac{1}{2}$ h.p. Wernerite would tell me if the exhaust closes when the piston is dead at the top, or closes before it gets to the top—say, $\frac{1}{4}$ th of an inch from the top. The 2 to 1 gear is not marked where it should intermesh, and I want to know the correct position to get the most power.—Yours faithfully,

"2 $\frac{3}{4}$ H.P. WERNERITE."

Mechanical v. Automatic Valves.

Sir,—In your issue of December 30th you published a letter from "A.A." on the relative merits of automatic and mechanically operated valves, to which I should like to reply. I will give a list of working parts required in each case:—

Automatic Valve.	M.O.V.
Gear Wheels.	Gear Wheels.
Cam Shaft.	Cam Shaft.
1 Cam.	2 Cams.
1 Push Rod.	2 Push Rods.
1 Exhaust Valve.	2 Interchangeable Valves.
1 Inlet Valve.	
1 Exhaust Valve Spring.	2 Interchangeable Springs.
1 Inlet Valve Spring.	

Then there are the following spare parts to be carried:—

Automatic Valve.	M.O.V.
1 Exhaust Valve and Spring.	1 Valve and Spring.
1 Inlet Valve and Spring.	

I think that most riders will acknowledge that the same tension of spring does not give the best results at all speeds. The working tension is a compromise to give the best results over a great range of speed as possible. A weak spring is best for low speeds, but causes loss of compression and explosions in the carburetter at high speeds. A strong spring is best for high speeds, but throttles the charge too much at low speeds. Every strength of spring works perfectly at a certain speed, or within a certain range; above this speed it is too weak, and below it it is too strong. I do not think that greater h.p. can be claimed from the M.O.V. at normal speed; because, as I have shown above, the A.V. can be adjusted to give a perfect result at a certain speed, or rather within a narrow range; but I am certain that greater flexibility and range of power can be claimed for the M.O.V. I think that the principal fault of, or rather objection to the M.O.V. is the carburation. With the A.V. there is a partial vacuum in the cylinder when the valve opens, and the petrol in the jet gets

a "delightful suck." With the M.O.V. the pressure in the cylinder is the same as outside when the valve opens, and the air is taken in gradually, without the petrol being disturbed: Thus the M.O.V. gets the blame which rightly belongs to a bad or unsuitable carburetter. I think development should take the form of increased efficiency, and not the form of increasing the power by increasing the size of the engine and thereby the weight of all parts. As "A.A." says, the greater part of the work is done with less than full power: now of two equally efficient machines, the one with the smaller cylinder will use the least petrol to generate any given power. I think that the M.O.V. is the simpler of the two, as the average amateur would take a long time to adjust his A.V. up to concert pitch, whilst when once the M.O.V. motor has been fitted up and tested and the timing gear set and marked, there is no further adjustment needed. The fact that both valves are interchangeable ought to balance the cost of extra cam and push rod, besides reducing the number of spare parts to be carried.—Yours faithfully,
K. H. EVANS.

High-powered Motorcycles.

Sir,—As one of the oldest motorcycle riders and manufacturers in this country I was extremely surprised to read "Magneto's" criticism of the high powered motorcycle in a recent issue. The opinions expressed by him I consider compel immediate refutation. To begin with: (1) *The increase of horse-power capacity* is not introduced with the idea of obtaining excessive speed, but to supply a reserve of power to negotiate hills at a good average speed. (2) "Magneto's" idea of *maximum speed* on the level, which one can attain with comfort, 15-17 miles per hour, proves the futility of his argument in favour of a motorcycle being equal to hill climbing without pedalling. Experience has taught practical riders that a machine geared to a maximum of 17 miles an hour would not climb a 1 in 10 gradient without assistance. (3) *Consumption*.—The theory that a motor of, say, 3 to 3½ h.p. is less economical than a 2 h.p. is not substantiated in practice. With a properly designed surface carburetter it is possible to throttle down the motor in such a manner as to consume less petrol with a 3 to 3½ h.p. than with a 2 h.p., for the same mileage per hour. "Magneto's" idea of tank capacity amply proves absence of acquaintance with an up-to-date motor-bicycle. He states: "that riders of machines fitted with motors of 2½ h.p. to 3½ h.p. never venture on a 100 miles' run, unless they are provided with a spare gallon can of petrol." A standard 3 h.p. motor-bicycle is capable of running 150 miles on one gallon, without the necessity for a spare tank. *Vibration*.—Your writer's assertion that the vibration "is infinitely less from a motor developing its power at a high rate of speed, than from one running at a lower speed," is the very reverse of actual fact. A 2 h.p. motor, to develop its power, has to be raced to its maximum revolutions, to get uphill, which is the cause of vibration. Experienced riders I think will share my opinion that the higher the power (up to, say, 4 h.p.) the less vibration. *Traffic*.—It is not only just as easy, but infinitely more comfortable, to drive a 3 h.p. in traffic than a 1½ h.p., for the simple reason that

the 1½ h.p. has to run at a fast speed to run at all, in consequence of lighter fly-wheels. *Weight*.—Some of the leading makers of the 3 h.p. bicycle bring them out at 145 lbs., fully equipped, or 25 lbs. under "Magneto's" estimate. *Side-slip*.—The weight, in my contention, has absolutely nothing to do with the argument. The position of the engine, tanks, and design rule this. Any novice must see that an engine placed, e.g., over the front wheel or back wheel, must infallibly skid, be it 2 h.p. or 10 h.p.—Yours faithfully,

W. WILLIAMSON,
(Rex Motor Co., Coventry.)

Perfection in the Motor-Bicycle.

Sir,—Although much has been said and done about this subject, there seems to me a strange inconsistency thus:—The Hon. Leopold Canning, in his letter to "THE MOTOR" of 30th December last, still contends that the ideal position of the motor is that behind the diagonal; this position has been strongly advocated by the Ormonde Company and adopted consistently by them in their machines. On the face of it, how is it that in their latest pattern machines they are fitting the engine vertically in the frame? The Ormonde Company with their wealth of experience must surely have very good reasons for changing the position of the engine. Although the former position had undoubtedly a number of good points, it is my belief that the central vertical position will prove to be the best and most generally adopted. Whilst on the subject of "Perfection in the Motor-bicycle," it is interesting and gratifying to note that not a few of the improvements in this year's machines are on the lines suggested in my letter to "THE MOTOR" of 9th September last. Taking the points in order.—(1) *Vibration*.—This has been, and is still, engaging attention; a number of this year's machines are fitted with larger tyres, and in some of the best makes spring forks, etc., have been introduced, which it is to be hoped will effect a reduction of this unpleasant feature. (2) *The Starting Difficulty*.—The free engine clutch is now looked upon as almost a necessity, and I am pleased to see that several firms are fitting them: the ease in starting and the perfect control in traffic makes them indeed indispensable. (3) *Lubrication*.—Makers at last appear to have realised the importance of perfection in this, and the lubricating pumps and fittings on the new machines are a decided improvement, although there should be a future for automatic lubrication for motor-bicycles. (4) *Cooling*.—Water-cooling has been fitted to a few of the 1904 machines and especially in conjunction with fore-carriage attachments, but it still remains to be proved whether this will be the most successful method. Personally, on the score of lightness and simplicity, I should much prefer to see a system of cooling by small fans more generally in use. (5) *Transmission*.—The belt seems to be still holding its own, although for fore-carriage work the chain seems to be more used; but it is a disappointment that a more extended trial was not made of the twin-belt drive which was fitted to the Phoenix Trimo. The chain-belt has yet to prove its superiority. Lastly—*Electrical Details*.—Two-way switches are seen on a few new machines, in place of the unreliable switch handle: they will no doubt be more extensively used in future. In conclusion, I wish to

add that the motoring public should appreciate the manner in which makers have endeavoured to meet their wishes and suggestions, which have been made from time to time in "THE MOTOR," for it is only by these means that progress is made, if perfection is to be realised.—Yours faithfully,

R. G. PRIEST.

A Remarkable Experience.

Sir,—A brief account of a recent experience which befell me may be the means of averting a tragedy in the home of more than one fellow motorist. I had just put a new sparking plug in the engine of my car and was desirous of seeing if any improvement in its running would result from the change. The car was in an ordinary coach-house and all doors were closed: the engine was allowed to run for some nine or ten minutes whilst I leaned on the dash-board with head over the bonnet looking down at the sparking at the contact breaker. On rising to an erect position, I felt a queer sensation in my head which I took for a form of biliousness, and as an indication to stop the motor and go indoors. I got outside, locked the doors, and was proceeding towards the house when the trees on either side of the path apparently began to waver and I knew no more for about an hour, when I regained consciousness to find an anxious wife and a doctor standing over me. Carbon dioxide was the culprit which had stricken me down, and had it been a little more speedy in its effects, I should have fallen inside the motor house, and this tale would have been told by somebody else and not by—Yours faithfully,
"ASTERITE."

Illuminating Numbers of Motorcycles.

Sir,—Mr. A. Pellant is good enough to criticise my suggestion for the illumination of numbers, contained in a previous letter. He has evidently quite misunderstood my idea; perhaps it was not as clearly expressed as it should have been. My scheme was to have two pieces of sheet metal with the number cut therefrom as stencils are cut. Between the two portions a piece of tracing paper, or ordinary paper waxed, was to be "sandwiched." I may mention here that I have now had time to try the idea, and it works well. To continue; the longer design of the two official shapes to be adopted. It is clear that if this combination be fixed at the side of the lamp, with the "back" towards the light, the number will show up because of the transparent nature of the paper. To get the number to show on the other side the plate must be large enough to allow space below the stencilled part to have the number enamelled in the usual way, on one side only. The enamelled number will show on the side nearest the light, and the other side is provided for by the light shining through the waxed paper. I agree that the light at one side will of necessity be lost, but in my opinion this is better than having it dimmed in the middle where it is most needed. Some designs would seem to do this. I have a better idea still which I will forward you when it is worked out.—Yours faithfully,
E. W. KITCHIN.

[More than four pages of correspondence is unavoidably crowded out.—ED.]

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.

G.C.W. (Southend).—(1) Have the vertical engine. (2) You will not be able to have 28in. wheels, have 26in and 24in. tyres. (3) For use with a trailer do not have a higher gear than 1 to 6. (4) Have the Cord tyres.

B.G.D. (South Norwood).—You do not give any particulars of the clutch, but the slipping may be the result of the surfaces being greasy. Maxine may prove of some value in cleaning. It is probable that the spring is not acting as it should, or the leather surface may be worn.

S.J.S. (Plumstead).—The system of putting the two spark plugs in series will not prove satisfactory with your coil. The best thing you can do is to get a double coil: to use a single coil you would require a rotary contact maker to alternately switch the high tension current to each cylinder.

Damaged Carburetter, etc.

"Intermittent" (Birmingham).—We do not wonder at your getting intermittent firing in your two-stroke engine, because with the needle valve of the carburetter broken all the petrol will run into the crank case and get pumped into the cylinder, and thus get blown out of the silencer as you say. Of course, it is impossible to get any sort of a mixture. First make the needle valve right, and then see that your accumulator is in good order. Now with regard to the timing: you say that with the spark fully retarded the explosion occurs when the piston is within $\frac{1}{2}$ in. of the end of the compression stroke, and when fully advanced the explosion occurs at the completion of the firing stroke and when you attempt to advance the spark even a little the motor kicks back. This is all wrong; set the spark lever to move the contact quadrant to fire the charge one inch before the piston completes the compression stroke for the maximum advance; and then for the maximum retardation have the spark to occur $\frac{1}{4}$ in. on firing stroke.

H. C. Argyle (Halesowen).—The reason of your engine shaft bending may be due to defective design, such as having the shaft projecting a long way beyond the bearing. Unless your fly-wheel is abnormally heavy a $\frac{3}{4}$ th shaft, if made of good steel, should be amply strong enough. You must see that the wheel is securely keyed to the shaft, or you are sure to have trouble with it.

J. H. Baxter (Bristol).—If you have a weak spark at the plug and a very strong one at the contact breaker, the most likely cause will be an imperfect connection of the M terminal—wrongly termed earth terminal—with the frame of the machine. Other, but less probable, reasons are that the contacts are of imitation platinum, or that there is a broken connection inside the coil. This latter, however, rarely occurs with a coil of known make.

S.M.R. (Manchester).—The best advice we can give you is to make personal application at the garages and works in the district. You would doubtless be able to get lessons in driving for a consideration. After this your plan would be to advertise for an opening, and also keep a sharp eye on the vacancies advertised in the motoring journals. Be sure to negotiate with some reputed firm, and beware of sharks. The minimum age for a driver is seventeen years.

Carburetter Troubles.

T. H. Clarke (Devon) writes:—I should be much obliged if you would let me know what you think is the cause of the trouble with my motor. The particulars are—engine 2 $\frac{1}{2}$ h.p., Auto motor type; perfect compression, etc.; spark perfect at plug. The carburetter is an F.N. and worked fairly well but used to stop as if choked, especially on hills, though there is no air lock and the machine usually took any hill. I cleaned it thoroughly and put it on the machine again. Now it will only give half a dozen explosions at starting and then stops. The spark plug I find is heavily sooted by these few explosions, showing a very strong mixture. Petrol is found in the cup formed by the spraying cone. This points to flooding of the carburetter, but as the float is not punctured, and the needle valve seems right, I am quite at sea with it. I use the usual spirit, L'rat's "A" grade, but I have usually mixed "B" with it. I am now using the "A" alone.—We should say that the carburetter works erratically. The needle valve may seem right, but the chances are it is not petrol tight and the float chamber is overflowing, as evidenced by the accumulation of petrol in the spraying cone. The only detail of the spray carburetter that gives any trouble is the needle valve: this must be made to perform its function, or good running is impossible. The valve point should be very carefully ground into its seating with a touch of crocus powder and oil. If the valve leaks only slightly it is possible to

get fair running by adjusting the petrol tap on the tank to reduce the flow into the carburetter. We do not think the question of whether the petrol is "A" or "B" grade has anything to do with the running. It is not clear if you have a throttle on the machine, but you should have one. If the air inlet to the carburetter has a gauze over it, keep this clean and free from dust or your air supply will be choked.

W.W.E. (Wath-on-Dearne).—(1) Better get particulars of the car, as you will require these to fill in the form with. (2) You can register change of ownership of car for 5s. (3) A motorcar licence only does not entitle you to drive a motorcycle. (4) The total cost for registering, licence, and tax for motorcycle is 25s.; cars under one ton weight £3 7s.

Compression Leakage.

"Flywheel" (Northampton).—The most likely place, we think, where you will find the compression escapes is at the joint between the cylinder and head, as you say that you have recently had this off. If the two surfaces are ground together, they may require carefully touching up with the finest emery powder and oil, and in screwing down the bolts great care should be taken to see that they exert equal pressure, otherwise the head will spring. If a copper and asbestos washer is used in between the joint, see that the surfaces are smooth and true, and that the head is screwed down equally and with a good pressure. You can detect a leak by smearing some soapy water round the joint and noticing if bubbles form.

Accumulator Queries, Fan, etc.

"Pip-pip" (Dublin) writes:—I have had a lot of trouble with acid accumulator running down when using my F.N. motorcycle which otherwise gives no trouble whatever. I have been informed that if I empty out the sulphuric acid and replace with bichromate of potash the cells will give greater satisfaction. Can you tell me if this is so? (2) I intend fitting a fan in front of my engine when the fore-car is attached. Can you tell me which position would give best results, being in line with road wheels, or at right angles? I can run it either way.—(1) On no account replace the acid with bichromate of potash. Whoever recommended this has very confused ideas on the subject. Such an addition would spoil the cells completely. Bichromate is the salt used in charging batteries such as the Fuller type. Better have your accumulator seen to by a competent electrician; it is most probable that the cells are slightly sulphated through neglect. There are some excellent directions in the new edition of the "Motor Manual" on the subject. (2) The best position is to fix the fan so as to blow a good draught on the valve side and head. Do not fix it directly in front, otherwise the fan will act as a screen.

J. H. Boocock (Hull).—(1) You will not be able to get really satisfactory results with less than 2½ h.p. for a side-car, and even then pedalling will be necessary on steep hills. (2) You do not require to take out an extra licence.

T. H. Smith (Derby).—(1) Certainly, you must take out a licence, but it applies to any motorcycle you may ride. (2) You can safely disregard the facts stated in the cutting you send. The Revenue authorities will look pretty sharp after the 15s. licence or tax on any machine used for pleasure purposes.

Various Queries.

“Trawets” (London) writes:—(1) The “Motor Manual” and “Minerva Handbook for 1904” say that a spray carburetter must be flooded before starting the machine, but same text books and also “Information Bureau” state that a flooded carburetter is a frequent cause of the engine stopping. What is the explanation of these apparent contradictions? (2) Why are the platinum tips on the contact screw and trembler blade necessary? The screw, blade and bicycle frame are obviously of such conductivity as allows current to pass freely: why then is it not sufficient to have direct contact between the trembler blade and contact screw? (3) Where can distilled water for accumulators be obtained? Will ordinary water, which has been boiled, serve the purpose? (4) Am I right in saying (a) that a misfire is the passing of a charge of mixture into the silencer without its being fired? (b) that a backfire is an explosion which, occurring before the piston has completed the compression stroke, drives the piston backwards? (5) Is it not possible to compile a table showing the proportions of air and petrol vapour necessary to make an explosive mixture in different temperatures, after the style of the table in the “Manual,” which gives the varying density of petrol? This query is prompted by my fear of being unable to quickly find the right mixture when starting for a ride. (6) Must the oil that is drawn off from the crank chamber after a ride always be wasted? Would not a mixture of oil and paraffin give effective lubrication, prevent sticking during a rest, and enable all the oil to be used?—(1) Temporary flooding just at starting ensures a quick start of the machine; because, owing to the low suction when the engine is moving slowly, the amount of petrol that would otherwise be sprayed would be too small in quantity to give a mixture. It is also a sign when you see the petrol flooding out of the float chamber that the supply is all right. Of course the float, if working well, prevents any flooding when the engine is running and keeps the petrol at a constant level in the sprayer. (2) Platinum is the only metal that will resist the burning and oxidising effect of the spark at the break to any real extent. It is not so much a question of conductivity as infusibility. (3) Any local chemist will supply it. We have used ordinary tap water without the slightest ill effect on the accumulator: boiled water is purer, of course. (4) Yes, quite correct in both queries. (5) Not at all possible. It is a matter of adjusting the taps you will soon get into. (6) Not advisable to use the oil over again, and it does not pay to filter it; it is very cheap. A few drops of paraffin are useful at starting, but do not use a mixture.

R. Crosier (Newcastle on Tyne)—The connections you have are not the best. They should be as follows:—P on coil to positive pole of accumulator, M on coil to contact screw, brass bands on coil in good contact with frame, trembler blade to switch handle (one pole), other pole of switch handle to plug switch and thence to negative of accumulator. If you look up page 549, issue 75, you will find some excellent diagrams that would help you.

D. H. Neave (Fordingbridge).—(1) The Simms-Bosch low tension ignition can be advanced whilst the motor is running by a special arrangement on the trip gear. (2) It is difficult to say precisely what position the piston should be in for maximum advance of spark: the position in yours would be something like 50 mm. You will find this out best by experiment. (3) The armature should be in the position shown on your third diagram—if anything, at a slightly greater angle, say 60 degrees. This position induces maximum current.

A Question of Carburation.

“Perplexed” (Stockton-on-Tees). — I have got many useful tips in “THE MOTOR,” but I have not noticed a case like mine as yet. I generally empty the carburetter of my machine when I have done riding, and to do this I put it on the stand and stop the petrol supply (which is never very full on, and the carburetter never floods). Then when I next take the machine out the engine runs on quite the same till the carburetter is almost empty, when the motor runs off at about twice the pace till the petrol is quite exhausted. There appears to be power somewhere, and this happens every time. The machine is a Kerry, with F.N. carburetter, and always runs quite well, but having noticed this apparent increase of power I would like to have it in control, and shall be glad of your help.—It is not quite clear whether you mean that the engine runs on till the carburetter is emptied or the tank. The latter we think the most probable, because when the petrol reaches a certain level in the float chamber very little will come through the jet, hence the engine is bound to stop. But if, on the other hand, you run the engine normally with a full supply of gas rich in petrol—and hence not the best possible mixture—it is likely that when the petrol supply slacks off a little, owing to the tank level getting low, there is a reduced petrol supply at the jet, and you get a better explosive charge, and consequently the engine runs fast. There may be some other reason apart from carburation, but the above is a likely reason, judging from the symptoms; but it would be really necessary to have a clearer account of the phenomena.



Mr. E. R. Thomas, the pioneer motorcycle manufacturer of America, and the “Thomas” Motor-bicycle referred to by our American correspondent last week.

Surface Carburetter, etc.

E.F.G. (Liverpool) writes:—I shall be obliged if you will answer the following questions in connection with my 3 h.p. motorcycle: (1) Why is it that for efficient driving in cold weather I require to keep the carburetter (surface) practically full of petrol, and the air tap closed? Does this point to a leak somewhere, and the consequent intake of air at some other place? It now appears to work with no air at all, except that which enters through the carburetter chimney. (2) Is there a jockey pulley on the market which could be fitted on to my machine, so that it would take up the slack of the belt and do away with the tightening process? I am thinking of changing my driving pulley wheel and getting a smaller one, thereby lowering the gear, as I use a side-carriage and want more power on hills. When riding without the side-carriage I should probably want to substitute the larger pulley wheel again. (3) I am thinking of constructing a device to make the engine free, and would like your opinion on the following scheme: The belt would be fairly loose to start with (loose enough to make the engine free when once started), and have a jockey pulley fitted to take up the slack of the belt gradually when raised, thus transforming the free engine into a fixed engine by a gradual clutch-like process. This, if practicable, would prove a source of great comfort when riding with the side-carriage in traffic, or when rounding dangerous corners. Of course, the machine would have to be started in the ordinary way.—(1) The cold air has a lesser vapourising effect than air at a higher temperature, and consequently there is quite enough air taken in at the chimney

to give an explosive mixture. The stronger the air is charged with petrol inside the carburetter the more air you can admit at the tap. (2) This is a thing you would easily get made to specially suit the machine. (3) The method you suggest is quite workable; in fact, you will see something on these lines fitted to the Lamaudiere machines. It would be as well to arrange the jockey pulley lever so that when the belt is slacked off the spark is fully retarded to keep the engine from racing.

Failure of Oil Lamp.

A.P.H. (Coventry) writes:—Can you give me any cure for an oil lamp—burning three parts colza and one part paraffin—which only recently has become very troublesome, inasmuch as it goes out every mile; from what I can see it does not jolt out but simply burns out as if no oil got to the wick; and yet I have tried new wicks, fresh oil, and cleaned the lamp thoroughly. It is only quite recently that the lamp has become troublesome, as formerly it gave a capital light and never went out.—If you have actually paid attention to the cleaning and are sure about the quality of the wick, and oil especially, it seems to us that there must be something amiss with the burner, or it may be that the wick fits the holder too tightly and prevents the oil from being sucked up. A good deal of trouble can be caused also by a wick of too close a texture. When thick oils, such as colza, are used it is very important to see that the wick is of a loose open texture and fits easily in the holder. Another matter of importance is to see that the air admission holes to the lower part of the lamp are quite clear. The lamp cannot burn unless it has a fresh supply of air to draw upon.

Two-stroke Motor.

T. Hodgkinson (Liverpool) writes:—Please answer the following:—(1) Is the two-stroke motor more liable to overheat than the four-stroke motor, owing to twice the number of explosions, or would it run on a weaker mixture rendering the force and heat of each explosion less? (2) Would the cost of running be much greater with the two-stroke than the four-stroke? (3) Would not the smoother running mean less wear of tyres, belts, etc.? I have tried a "Bichrome" machine on the stand and was much struck with the absence of vibration from the engine, and also with the ease of starting.—(1) We have not heard of any special susceptibility of the two-stroke motor to overheat where the cooling flanges on the cylinder have been properly proportioned. Although the number of explosions per minute are double those of a four-stroke motor there is nothing like twice the amount of heat developed per cycle. (2) The fuel consumption is slightly more than on a four-cycle motor—this applies more to the American type of engine in which the charge of mixture is partly compressed in the crank case. In engines with separate compressor the efficiency is higher. There is twice as much current taken from the accumulators in a given time and more lubricating oil is used. (3) We should not like to say that there would be a very marked decrease in the wear on belts and tyres, but it can be safely said that the vibration is decidedly less as a very much more even torque is obtained on the shaft.

W.G. (Brackley).—The charging battery you refer to is a good one; we have tried it. You can reckon about 4d. a charge for a 20-ampere hour accumulator as an average, or less if you are very careful and get chemicals cheap.

"Petrol" (Manchester).—(1) The particular make you refer to is unknown to us. (2) Yes; 2½ h.p. is enough with two gears; 5 to 1 and 7 to 1 will be about right. The complete machine, if of first-class make, would cost about £55, including the gear, of course.

Connections.

D.B. (Lyncombe).—The connections you require are as follows: B terminal on coil to spark plug; P to positive of accumulator; C to the wipe contact blade on motor; negative terminal of accumulator to a switch, and thence to some part of the engine—any convenient screw or nut to which you can secure the wire. If there is a terminal on the coil marked "M," connect this also to the engine. If you still have difficulty in getting the launch engine to run, send us a diagram of your coil and contact breaker, and we will fill in the correct wiring for you.

French Touring.

G.E.W. (Birmingham).—(1) Via Dover and Calais, about 8s.; via Newhaven, 10s. 6d.—single journey. (2) Unless you join the Touring Club of France, which is very advisable, you have to deposit two francs per kilo (2.2 lbs.) weight of the machine. This deposit is returned in full on leaving at any port in France on producing the customs' receipt. (3) No; a bona fide tourist is not required to pay the tax or be numbered. (4) You can hardly go wrong as regards the roads in France. Excellent surface, but some fair hills in the district you mention. (5) We do not think you can get return bookings for the two different ports—that is, going by Calais and returning by Dieppe, or vice versa, as the railway companies are different.

Fore-carriage for South Africa.

"Colonist" (Cape Town) writes:—Is there any firm you can recommend who can supply a really practical 4 h.p. steam-propelled motor-bicycle and fore-carriage which uses common paraffin for fuel? If there is no machine made that would meet my requirements, would it be feasible to have a fore-carriage fitted with two engines, separate control, wheels fitted with thick cushion tyres and springs (pneumatics are no use at all for my work on account of the rough roads, which are covered with cactus splinters), magnetic ignition and battery ignition in reserve, if possible, and tank sufficient to contain spirit enough for 400 miles' running?—There is no steam-propelled motor-bicycle made to our knowledge; at least, there is nothing on the market. As to the other machine, it is just possible some firm would build you one to order. The Quadrant tri-car has two engines, which, however, have the ordinary high tension ignition. No engine made in small powers has two systems provided; and as to the cushion tyres, we question if any firm would fit them without designing a special frame; and it is a tall order to want a tank for 400 miles' spirit capacity. We should have thought that a small petroleum-driven car, to seat two, having solid tyres, and about a 6 h.p. engine, would have met your requirements best.

"Rex" (Ellesmere).—(1) The owner of the trailer must pay the tax of 15s.; but you can, of course, use the trailer providing you see that it has a duplicate number to that of your machine, or you can fix the number plate from the rear of motorcycle on it. (2) The local authorities are required to fix notice boards indicating the speed allowed on the highway to which it applies.

A.E.F. (Leicester).—The machine with the horizontal cylinders you refer to must be the Holden motor-bicycle. Great things were promised for this class of machine from the fact that had a direct drive on to the rear axle and entire absence of chains, belts, or gears. What the result was must be obvious. This type is no longer on the market, and considered obsolete. The Humber machine has, as you know, the cylinder fitted at a big inclination and this has proved very successful in practice.

Strange Behaviour of a New Mount.

B.I.B. (Cieza, Spain) writes:—I should be glad of your opinion and valuable advice on the following. I have recently received my new mount, a Minerva 1904, 2½ h.p., carburetter, etc., all latest Minerva pattern, 26in. wheels, 2½in. tyres, geared 4½ to 1. I can get no power out of it, and get left on any hill by a last year's 2 h.p. of same make; and on the level I can hardly hold my own. Any rise too long to be rushed requires vigorous pedalling to keep going. The motor is all right as regards compression and timing, and I have tried every possible combination of air and petrol supply, but with no better result. Overheating is not the cause. One thing I have noticed, which I cannot explain, is the small range of sparking. With very small advance there is bad hammering, and if retarded a little too much it misses and fires back into the carburetter, the flame coming through extra air supply holes. This latter is what I do not understand, as the inlet valve should be shut long before and after the ignition point. I should be glad if you can give me any light on the matter. Perhaps you have already had some tips on these motors. I am not quite a novice, but this beats me. Hills I can sail up on a smaller motor of my own making I cannot look at with this one.—Without an actual trial of the machine in a case like this, it would be a difficult matter to specify the exact reason, especially as the Minerva engine is one that is particularly well tested to show that it gives its full power before leaving the works. If anything, it should develop rather more power than it is rated at. It really looks as if the valve gear had become deranged in some way, and it is very likely that the lubrication is not as good as it should be. A new engine should have plenty of oil for the first few hundred miles. Imperfect lubrication will cause the engine to knock badly, and there will be a big loss of power as well. It would be as well to make a close inspection of the inlet valve, and see that it really shuts dead on its seating, and that there is a small clearance between the stem and lifter. It seems, from what you say, that the inlet does not shut properly, or the charge would not fire back into the carburetter. It is very strange altogether, presuming the timing gear has not been disturbed since it left the works.

G. Pinter (London).—You can obtain "Club" aluminium enamel from an accessory depot like Gamage's. There is also Kay's "Silverskin," which is a very suitable enamel: it does not require varnishing afterwards.

R. Railston Brown (Bridlington).—A cycle drawn by a motorcycle is classed the same as a trailer, and an extra 15s. tax will have to be paid. If the cycle is arranged as a trailer it will have to have a duplicate number; or if arranged as a side-car it must not obscure any of the numbers on the motor-bicycle.

"Buyer" (Selby).—The makers of the machine you refer to will certainly not fit a spray carburetter in addition to the surface. You can fit a Longuemare type yourself, and mount it below the tank with a connection to it. Then you will require to join the supply pipe to the present one, and have a two-way tap so that you can shut off either carburetter as you please. Your diagram is correct in principle.

A. P. Hodges (Bayswater).—It is not really possible to say definitely if the chain belt is going to prove more successful than either a belt or chain separately. We shall have more to say after the device has had a lengthy trial on the road. (2) In preference to either machine you mention, we should specify the Ariel at £35, if you can go to the additional few pounds; otherwise the second machine you mention (if 1903) would suit you.

Loss of Power.

J.P. (Arundel).—It is not advisable to make the alterations you suggest to a standard machine. The slowing up you experience will not be due to any inherent defect in the design. You had better see to the following: (1) Is the compression good? (2) carburetter not flooding? (3) you may be running on too great a supply of gas, and be overheating. If you have so much trouble with the contacts it seems to use they cannot be genuine platinum. If there is a good decisive make and break between, the fact of oil getting on should make no difference—it would improve the spark at plug if anything. If the contacts are german silver they will be continually fouling, and you will get no satisfaction at all. Try them by touching with a drop of strong nitric acid: if they turn green they are base metal.

Belt Defects.

H.B.W. (Sundridge Park) writes:—My 1903 2½ h.p. Ormonde bicycle drives with a Lincona V belt, which appears to fit both the engine pulley and the rear driving rim. The belt, however, persists in turning over when running. It rights itself when passing round the engine pulley, so that the simplex fastener with which it is connected does not suffer, but I fear that the belt itself is spoiling. I have tried putting it on and running it the other way round, but it is no better. The belt is amply tight, and the fastener is on quite straight.—This occurrence can generally be traced either to the belt having stretched out of shape in some part of its length, or to the rear driving rim not being perfectly in line with the engine pulley. This can be tested by laying a piece of twine across the diameter of the rim and stretching it tight across to the engine pulley: if the twine touches the edges of the rim and pulley equally, these can be considered in line. If you

are unable to make the belt run properly, the simplest plan would be to obtain a new one.

"Country Doctor" (Loch Gilphead).—The Diana lamp is one that will come the nearest to your requirements at present. You might also get particulars of Miller's special "Edlite": address, Milles Street, Birmingham.

"Jack Tar" (Old Hill).—(1) Your idea is almost identical with the Kyma light car, illustrations and description of which appeared some time back. You had better look this up. (2) Strickland and Co., Teddington. (3) You could have a petroleum engine fitted; it means having a special carburetter; probably the Trusty carburetter would suit you. But most of the small launches run with petrol; there are no starting difficulties with petrol.

"Belt Rim" (Walsall).—(1) The rim should, of course, run dead true: if it is eccentric it will not do the belt any good, as this will be alternately tightening and slackening. (2) It depends on how the belt rim is secured to the wheel. If fixed by steel arms and riveted it will hardly be possible to do anything with it. If fixed to the spokes it is a comparatively easy matter to set the rim by loosening the clips. Of course, if the rim is not a true circle to begin with no amount of adjusting will make a job of it. Some rims are particularly bad at the brazed joint.

Carburetter Difficulties.

"Weary" (Liverpool) writes:—From reading replies to your readers I have gained a lot of knowledge re motor ailments, but I cannot understand what is the matter with my carburetter. I have one of the latest Longuemare carburetters, fitted with automatic air regulator. When the engine is working the petrol drips out through the automatic air regulator. I do not think it is the fault of the needle valve, for when the engine is at rest and the petrol turned full on not a drop falls on the floor. I have the smallest nipple (nine notches), and have filed the float as far as I dare, but yet the petrol drips. I have made the float lighter by 15 grains. A very funny thing is that the previous carburetter (De Dion spray) I had fitted to the same engine had exactly the same defect.—This trouble, we think, can be explained in a simple manner. It is evident that too much petrol gets through the sprayer, and this cannot all vaporise. The best thing to do would be to solder up three of the slits, and note the result. It might be an advantage to slightly reduce the petrol feed at the tap. We presume you have the warming jacket of the carburetter connected up to the exhaust, otherwise the petrol spray tends to condense again and run down the sides of the vaporising chamber. See also that you have a suitable choke tube fitted.

ANSWERS BY POST.

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

Thursday, January 14th.—D. Hughes (Sunderland), R. Wilshire (Eastbourne), W. Hooton (Croydon), C. N. Parkin (Wolverhampton), W. D. Fair (London), H. Joy (Richmond), A. Sharp (Glasgow), A. S. Graves (Edinburgh), A. F. Guy (Liverpool),

T. W. Smith (Enniskeane), A. B. Robertson (Henley), R. Brook-King (Chippenham), K. Thornton (Southport), G. H. Saunders (London, N.), W. P. Sinclair (Belfast), G. W. Cooper (Suffolk).

Friday, January 15th.—A. L. Sinclairs (Cushenden), F. B. Firth (Bradford), W. Noble (Edinburgh), W. Cochrane (Salford), F. N. Campin (Henley), H. A. Wood (Thames Ditton), V. C. Davies (Eastbourne), W. Warburton (Liverpool), W. Liversedge (Skipton), R. Kirk (King's Lynn), R. J. Wilson (Sunderland), J. F. Dunlop (Glasgow), T. K. Reid (British Guiana), P. Hawkridge (Headcorn), W. Saunders (Chesterfield), G. Smith (Barnard Castle), F. Hilton (Oldham), C. Plowman (Harrowgate), A. Monk (Oswaldtwistle), W. Evers (Wath-on-Deane), C. Warren (Weston Favell), E. Lyall (Hednesford), D. J. Jones (Cheltenham), P. H. Farrington (Ilford), W. Rees (Pontardawe), J. Foster (Plymouth).

Saturday, January 16th.—Thos. Freeman (London), H. Mills (Croydon), L. Oliver (Airesford), A. Downe (Edinburgh), C. Good (London), Rowland and Sons (Salisbury), A. Shenton (Leicester), A. Reid (Greenock), K. H. Ashburton (Ashburton), E. Turner (London, N.), H. Carson (Stafford), J. J. Tennant (Clayton-le-Moors), T. D. Newbigg (Abington), F. H. Harpur (Ivybridge), J. G. Chipchase (Darlington).

Monday, January 18th.—J. Scotland (Bothkennar), F. W. Cory (Bournemouth), C. A. Cooke (London), H. J. Croft (Kendal), M. H. Randall (Ironbridge), N. Black (Glengarnock), T. N. Yeo (Swansea), H. D. Bateman (Maidenhead), S. Kirkwood (Shrewsbury), S. E. Atkin (Hatherleigh), H. M. Bridgeman (Hutton, Ceylon), E. Stuppel (Pontyggymmer), R. R. Brown (Bridlington), P. A. Rossiter (Croydon), C. G. Snook (Portsmouth).

Tuesday, January 19th.—H. Appleton (Wigan), J. McLennan (Motherwell), L. Vosper (W. Malling), O. and W. Ormerod (Rochdale), J. Lamont (Annan), W. H. Arnold-Forster (West Lynn, Massachusetts), E. Dould (Derby), D. F. Mann (Dundee), J. Soutter (Hedon), G. E. Ashton (Leyton), R. Randall (Southall), E. Blanchard (Dorchester), T. C. Askin (Woodbridge), S. W. Cowan (Hove), R. Owen (Devizes), P. Dowson (Hyde), Cardus Bros. (Skipton), A. Armstrong (Liverpool), P. Dewar (Lochwinnoch), T. A. Lyte (Jersey), C. Reed (Sunderland), P. Campbell (Glasgow), S. Harrison (London), A. Young (London), F. H. Harper (Ugborough), J. Bale (Isard), H. Gordon (Burton).

Wednesday, January 20th.—S. P. Lavelle (Burton), E. P. Porter (Hampstead), A. Rayner (Preston), E. A. Roberts (Winchcombe), R. Copeland (Clydebank), H. W. Smith (Nottingham), C. Moore (Lincoln), M. B. Costello (Glenamaddy), B. Dye (South Norwood), E. Newton (Harlow), A. F. Gwynne (Glasbury), R. B. Orme (Derby), H. B. Johnson (Wandsworth), V. Stebbings (Attleboro'), D. H. Mohr (Glasgow).