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PROBABLE DEVELOPMENTS IN THE CONSTRUCTION OF MOTORCYCLES.

By E. E. BARNHARD.

A defect inseparable from all one-cylinder internal combustion engines working on the Otto cycle of an impulse of one stroke (or half revolution) in every two revolutions is that in the first place a heavy fly-wheel is necessary to keep the engine going between the impulses, and further that the engine cannot be started or kept going satisfactorily at a less speed than some 500 revolutions per minute. At a lower speed than this the fly-wheel has not sufficient impetus to keep the engine going for the 1½ revolutions, which are between each power impulse. This, with the gearing usually in vogue, means that the engine will neither start work nor keep going unless the bicycle is travelling at a speed of at least seven miles an hour. In the first instance this necessitates in many cases an exhausting struggle with the pedals, when starting off, before the pace is reached at which the engine will "pick up," and secondly it means that, should the rider have occasion to slow up below this speed, either in traffic or to get round a nasty corner, his engine stops and he must either use his pedals—if he has any—to get a fresh start, or dismount and start the engine up again.

A VERY OBVIOUS REMEDY FOR THIS STATE OF THINGS

would be to alter the proportions of the pulleys constituting the drive, and gear the bicycle down and speed the engine up. This, while allowing the engine to travel faster in proportion to the rate at which the bicycle was moving over the ground, would, to some extent, minimise these two disadvantages. Unfortunately, however, with an air-cooled engine, belt-driven (as are nine out of ten motor-bicycles one meets), this remedy is only possible within very narrow limits. To begin with, if an air-cooled engine be driven at a high speed on a bicycle that is moving comparatively slowly, it is pretty certain to overheat, as the rapidly driven air-cooled engine has, to prevent overheating, to depend on the current of air resulting from the bicycle travelling at a proportionately rapid pace.

AN EFFECTIVE REMEDY AGAINST OVERHEATING

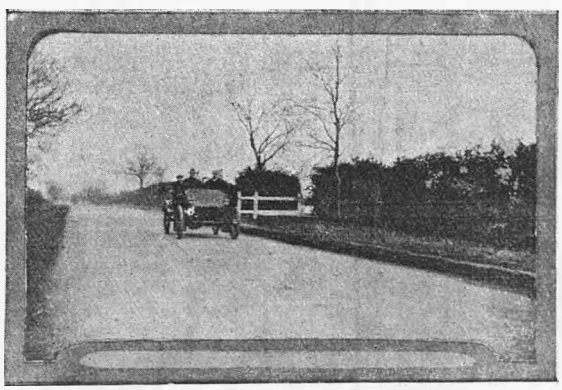
is water-cooling with thermo-syphon circulation, which I am glad to see many of the more enterprising manufacturers are already adopting, particularly with motor-bicycles intended to be used with fore-carriages. Another difficulty in gearing up the engine on a motor-bicycle with a belt drive lies in the fact that the greatest possible disparity between the driving pulley on the engine shaft and the pulley on the back wheel is restricted, on the one hand, by the size of the back wheel rim, and on the other hand by the limit of size of engine pulley on which it is possible to get anything like a satisfactory grip. Although many makers, for some reason which I have never been able to grasp, do not avail themselves of the full size of the driving wheel to have the back wheel pulley as large as possible, I have yet to find the motor-bicycle rider who can complain that his engine pulley is larger than is necessary to enable a moderately slack belt to give a good driving grip. We are told that the new combined chain-belt drives, of which two different patterns were exhibited at the Stanley Show, get over this difficulty, and render it possible to fit so small an engine pulley that

A GEAR OF 1 TO 14 CAN BE OBTAINED

by their use. Although such a gear would minimise starting difficulties, and give greatly increased hill-climbing power to a small engine, it would (as just explained) only be possible with a water-cooled engine, as an air-cooled cylinder would certainly overheat if driven in this manner. A further improvement, in addition to water-cooling and altered gearing, would, no doubt, be the adoption of a multiple-cylinder engine. Already motor-bicycles have been put on the market with two and even four cylinders. In the case of the two-cylinder engines an impulse of one stroke or a half revolution is given with each complete revolution of the engine shaft, and with a four-cylinder engine two impulses of one stroke each are given for each revolution; the impulses in the latter case being practically continuous. These improvements all tend to

ENABLE A MOTOR-BICYCLE TO BE STARTED EASILY,

and also driven conveniently at low speeds, which has not hitherto been possible, and should add greatly to the convenience and comfort of the rider. With regard to the retention of pedals for motor-bicycles, I believe that some writers on the subject treat this point as a mere matter of individual taste on the part of different riders. Personally I do not take this view. Let us consider what pedals are necessary for. In the first instance, if the motor-bicycle is so built that the engine will not work until a speed of some seven miles an hour has been obtained, I fail to see how anybody, except an acrobat, could run alongside his machine at this speed, and then vault on to it. The only alternative, therefore, is to mount and pedal laboriously until this speed is reached. Another necessity for retaining pedals is that most existing types of motor-bicycles, although speedy on the



A Lanchester Car bowling along the Stratford Road.

level, will not climb a very stiff hill without aid from the pedals. To sum up, therefore, pedals are absolutely necessary on all machines that cannot be conveniently started by being pushed along at a reasonably slow pace, or which require help to tackle hills.

WITH IMPROVED ENGINES GEARED TO A HIGH SPEED,

water-cooled, and with at least two cylinders, the necessity for pedals will no longer exist, and when the pedals disappear a new era opens out for the motor-bicycle. The small uncomfortable bicycle saddle, the ridiculous position of the motorcyclist—one leg extended with the foot on the lower pedal, and the other leg crooked with the foot on the upmost pedal will vanish. The present motor-bicycle will, in my opinion, give place to a convenient little two-wheeled, or, perhaps, three-wheeled vehicle, the motive power of which could be started by a moderate impulse which could be given by a push, and which would carry its rider with a certain amount of comfort, if not with ease and luxury. As far as the power or size of the engine is concerned, I quite agree with those who think we

HAVE GONE FAR ENOUGH IN THE DIRECTION OF INCREASED H.P.

A 2½ h.p. engine, preferably with two small water-cooled cylinders, geared to, say, 1 in 10, would, to my mind, provide a very satisfactory form of motor for so light a two-wheeled vehicle as a bicycle.

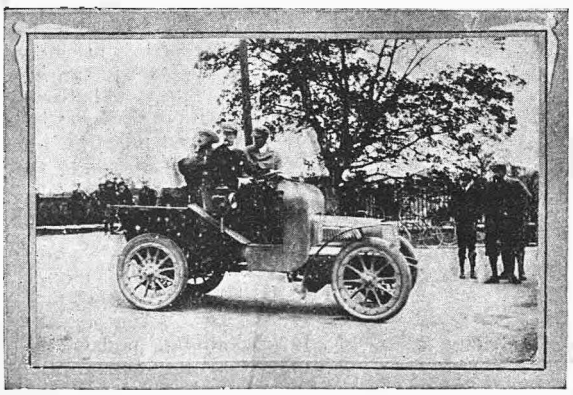
The improvements here sketched out will, of course, take time to effect, but evolution with motor-bicycles has in the past progressed very rapidly, and although the "arm-chair on wheels" ideal may not be realised very soon, we may, I think, expect to see within the course of the coming year the improvements which I have outlined in respect to the form of motors employed and methods of gearing. Although the two-wheeled cycle will probably remain much in favour, owing to the small space it occupies—on the other hand, with the advent of self-propelled vehicles, one of the great reasons for adhering to the two-wheeled form of construction disappears. Nowadays the various forms of three-wheelers which were more or less popular a few years back are practically extinct, owing to the

EXTRA LABOUR ENTAILED ON THE RIDER

in propelling a somewhat heavier machine which had three tracks instead of one.

When, however, an engine takes the place of human motive power for propelling the vehicle, the extra energy required to propel the three-wheeled cycle will not be a matter of so much moment; and as progress in self-propelled cycles is made we may expect to see the three-wheelers begin to recover the ground they have lost. As compared with the two-wheeled machine, the enormous advantages which the three-wheeled bicycle possesses for stability and comfort will be bound to score in the long run.

Builders of motor-tricycles must, however, bear in mind the fact that these machines will travel at a much higher speed than did the old pedal-tricycles; and that, in consequence, in order to minimise vibration and remove the danger of turning over or capsizing sideways, increased length and width of wheel base are very necessary.



THREE YEARS' EXPERIENCE WITH LIGHT CARS.

Three years may not seem a sufficiently long time for one to acquire much experience in any branch of engineering. Let, however, anyone who has been a motorist for so long or longer, look back on his first troubles and he will wonder perhaps, as I do, at his density in not diagnosing the fault in a moment. He will be struck too by the fewness of those troubles in his present car, if that be up-to-date, and unless he has been most fortunate in his novitiate days. My own first car was a 3½ h.p. Star, belt driven, and, in fact, a Benz in everything but carburetter, tyres and name. I may say at once, in fairness to the makers, that nearly all my troubles with this car were due to inexperience. Inexperience caused me to have pneumatic tyres fitted, and these caused so much mud to fly up on to the belts that in wet weather the average speed was reduced from this cause alone to about six miles per hour. The two belts had on some journeys to be taken off and wiped clean of mud and water to give them a grip of the pulleys before the car would mount even a gentle slope. Real

HILL CLIMBING UNDER THESE CONDITIONS WAS SLOW,

to say the least. Next to the belts the ignition was the chief trouble. Electricity as applied to the firing of the petrol engine was not then as reliable as it is now, and a journey accomplished without misfiring, or even without having to dismount and clean the contact breaker, which was absolutely unprotected, was almost unknown. In spite of all its faults, this car took one person up the famous Birdlip Hill. (It was fitted with a blessing in the shape of a Crypto gear). On other memorable occasions it took four adults for a forty mile drive without mishap. The road was hilly, and doubtless the passengers remember the hills better than I do. They had to walk a good percentage of them. My next acquisition was a 6 h.p. Panhard of the 1898 type, a good old stager which gave little trouble and would average 15 or 16 miles an hour all day. With this car many tours were undertaken, and with the exception of the water freezing one dark night at Cheltenham while we supped, and numerous punctures and bursts, its stay with me was uneventful.

Next came a 4½ h.p. De Dion Tonneau. This was fast as compared with its predecessors, but did not prove so reliable as the Panhard. Through some hitch in the lubrication,

THE PISTON SEIZED

on one of its first journeys. Ignition troubles were frequent, and adjusting the trembler in muddy weather was not a cleanly job. It was necessary to thrust one arm through the spokes of one back wheel and the other arm between the tyre and mudguard. Frost was again a trouble, as on one sharp morning a mile after starting the packing was blown out of the pump by the expansion of the ice which had been made inside during the night. This car and its successor, an 8 h.p. of same make, were most unsteady in mud, and this tendency to "wag their tails," caused many narrow escapes. Low consumption of petrol and ease of manipulation were their great advantages. The cooling of the larger De Dion was poor when new, but the adoption of a larger water tank cured this. I had Wilkinson treads fitted to the back wheels and they effectually prevented skidding and punctures, as long as they lasted. After about 500 miles, however, the wires in the treads broke, pulled out, or what was infinitely worse, pushed through and punctured the inner tube. My next two cars can hardly be called light. They were a 12 h.p. Daimler and a 12-16 h.p. Talbot. The former imposing looking, but in my opinion

TOO HEAVY, AND POSSESSING MANY FAULTS.

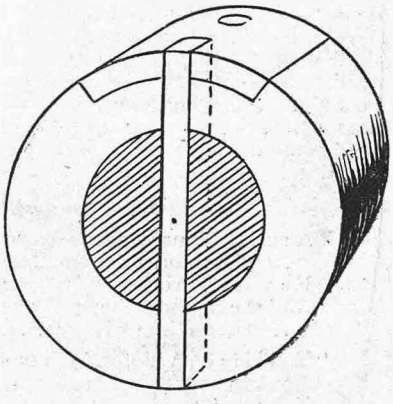
The latter most satisfactory. Of other light cars which I have driven, the 6 h.p. De Dion seems the best all round. Speedy, light and well sprung. Not too cheap, however, and noisy to an unnecessary degree. I could never understand why the steering wheel was placed on these cars so that the driver must adopt more or less the "Begging poodle attitude." A "Baby Renault" of 2¾ h.p. surprised me by its performance when its carburetter was in a good temper. The Miniature Velox had many possibilities, and it seems a pity that a car of a similar design is not being made now.

J. W. Aspinall.

MAGNETO'S POINT OF VIEW.

The Adjustment of Contact Breakers.

The manner in which a make and break is adjusted will affect the running of a machine to a very considerable degree. In the days of the motor-tricycle and quad, the De Dion trembling make and break held the field, and, as riders of these machines know, the correct setting of the adjustment of this type was a matter requiring judgment and experience. We do not often come across this type nowadays, and I will confine my remarks to the patterns most in use now. In the simple brush contact there is really very little scope for adjustment in its usual sense, the correct working of the coil depending simply on there being sufficient pressure of the spring on to the insulated sector on the fibre disc, to ensure perfect contact, but it is often the case that the spring does not bear firmly for its full width on the sector, that is to say, if it is examined very closely, it will be found pressing at one side only. Now the result of this is for the sector to become worn unequally, and in time there is insufficient contact between the surfaces to give perfect firing. If the spring is removed from the block to which it is screwed and the underside examined, it will show where the unequal contact has taken place. The remedy is to "set" the spring a little, so as to give it more bearing, or else file a very slight amount off one side of the block. A fault that sometimes develops with a brush contact is the fibre disc becoming slightly loose on the shaft. It is usual to pin or screw the sector right through to the shaft, but if this pin or screw has not a very firm hold in the shaft, misfiring may occur. I once had a contact of this type, and the method I adopted in preference to drilling out the pin in the sector was to take a very narrow file and cut a slit diametrically across the shaft, and cutting through the sector. This slit was a full ⅛th deep and wide, and I then filed a piece of steel wire to wedge in tight: then, by means of the soldering bolt, I soldered it in place at the shaft and sector. This made a very rigid job and it never gave further trouble. Of course, if the sector had been screwed on, I might with less trouble have put in a longer screw. But this method has the advantage that the connection is perfect, no matter how much oil or grit there is about the disc. It is important to always keep a brush contact well lubricated, as there is a considerable amount of friction set up, which will tend to wear the disc and spring rapidly. A word as to the connection from the coil to the brush. See that this is clean and tightly screwed up. If a film of oil gets under the terminal, it will set up a bad contact. Next week I shall deal with the make and break as used with a non-trembler coil.



Method of keying loose contact ring.

The Choice of a Second-hand Mount.

There are, I have no doubt, many of my readers who intend to become practical riders for the first time in the coming season, and amongst these are some who are on the look-out for a good second-hand mount. The outlay of between £40 and £50 for a brand new machine is a matter of the first importance, and circumstances may render it necessary that a reliable mount at somewhere about half this figure must be looked out for. In the selection of such a mount the novice who has had no practical experience as to what are the good and bad points in a motorcycle runs a considerable risk in the way of making a decidedly bad bargain, unless he can get someone to discriminate for him. I propose to—as they say in sporting parlance—put the novice "up to a thing or two" as to what is to be avoided in a second-hand mount. In paying a second-hand price for a motor-bicycle one must not expect too much in the way of high power and the very latest equipment. Rather must one look for a machine of known or standard make, of moderate power and in good condition, than for a "latest model 3½ h.p. De Dion pattern, converted chain drive," which may lead the novice on to think that this must be just the thing for him, as, being 3½ h.p., it will come in handy for side-carriage or trailer work. The chances are such a mount has been rigged up from a lot of odd parts in the workshop of some obscure cycle repairer, who is desperately anxious to get it off his hands. There are many "De Dion pattern" and "M.C.C. pattern" engines on the market which have not the slightest resemblance to the genuine article, and the workmanship is beneath contempt, and as to the frames one sees these engines fitted to, what weird and unmechanical looking structures they are!

Advantages of the Standard Makes.

I contend that a *known* make of 2 h.p. is infinitely preferable to an unknown and built-up mount of a reputed 3 to 4 h.p. Another reason why I say look out for a standard make is because it is always possible to get any spare component part of the motor. As an instance, it is an easy matter to get any component of the first Minerva 1¾ h.p. engine that came out in 1901, as all the parts have been accurately standardised. The same with the Excelsior, M.M.C. engines and many others. With the engine built up haphazard out of an odd set of castings it is different. If a part breaks it is a case of having to get a new one made specially to fit, which means great delay and considerable expense. Now, as to the question of power, I do not advise the novice to invest in any of the very low-powered machines that were put on the market about three or four seasons back. There are plenty about, and they are offered at tempting prices. They are, however, extremely difficult to dispose of again at any time. Now one can get along fairly well on a machine having a standard 1¾ or 2 h.p. engine if one does not expect to use a trailer or side carriage with it. If these additions are desirable, at the very least 2½ h.p. will be required, and anything less will only prove a disappointment. It is sometimes a matter of difficulty for the novice to judge whether any particular motor offered him is a 1¾ or 1¾ h.p., even if he knows what the cylinder bore should be for any particular power, because there is no means of testing it, except by removing the cylinder or combustion head. But one can see how the machine behaves on a hill, and as a plain, straightforward test there is really nothing like a long hill for showing up the weak spots in a machine. If the motor is claimed to be 1½ h.p. and in good running order, it should take a 1 in 16 hill without pedal assistance, even should it be a quarter mile long. If it claimed to be 2 h.p., it should take a 1 in 12 hill without pedal assistance. An expert, could, of course, tell if an engine was the right dimensions for any particular power by looking at its exterior only, but for the novice I say have it tested. Now as to the engine and the general equipment. Compression should be good when the pulley is turned by hand, and there should not be any up or down motion of the shaft in the bearings; if so, it shows the engine

has had a great deal of wear and wants re-bushing. Loose and ricketty fitments, such as contact breaker, valve lifter, throttle and spark levers, are not a good sign. Try the wheels for truth, spin them round and see if either of them runs crooked in the forks; if so, it is as likely as not there will be a loose or broken spoke somewhere. A machine that has been neglected will have slack bearings, and the probability is they will be worn oval and impossible of adjustment.

The Tyres.

The condition of the tyres is a good guide to the amount of wear a machine has had, unless new tyres have been put on. Deep gashes, patched places, parts where the fabric is exposed show hard wear, although a good deal of improvement may be effected by solutioning a non-slipping tread on. The electrical equipment one has to take largely for granted that it is in good order. Still, it is wise to see what sort of a spark the coil gives. The accumulator may or not be capable of holding its charge. If the plates look a distinctive grey and chocolate colour and the acid is clear, the cells are most likely good. If the plates have a chalky appearance, they are most probably "sulphated," and very little use; a test lamp put across the terminals will be a guide to the condition. If the ignition is of the magneto-electric type, the driving gear may be loose and ricketty and make a lot of noise. If the magnets have become weak it will be found that the engine will not fire regularly till a good speed is got up by pedalling. If the machine has a chain drive, see that the chains do not ride on top of the cogs, if they do it shows they have become worn out of pitch and require replacing. Try all nuts about the machine, as nothing is worse than to have a stripped or faked thread on some vital part of the machine.

THE LIGHT SIDE.

"After" George Moore.

In matters of Art the French are admittedly our superiors. Our artist, George Moore, will have to serve an apprenticeship in the artistic department of a French automobile journal before posing as a past-master of his craft. In our issue of September 2nd of last year George Moore tried to depict the amusing blunder made by a village constable who mistakes a grovelling chauffeur tightening up a nut for the victim of a furiously driving motorist. The mistake Moore made was to put the policeman in a helmet; because, as is well known, all rural bobbies in this country wear *cocked hats*. Another mistake of our friend George's was the omission of the constabulary sword which all P.C.'s wear on the left side.

These blunders were corrected in a revised version of the sketch, published on January 22nd of this year by the Paris Sporting daily "Le Monde Sportif," the editor of which generously left George Moore's name in the corner of the picture so that George might get the credit. The same issue of the French journal uses half of a double sketch of Percy Kemp's (which appeared in "The Motor" of October 21st, 1903) and kills it in the using. May we offer our Paris contemporary the other half for use in connection with the forthcoming Gordon-Bennett trials?

"Police Signs and Signals."

For the above title we are indebted to a penny magazine, one of those little papers from which one can learn so much without seeming to learn anything. We read the article through and were interested to discover that the police have at their command a complete system of signals by which to indicate one to another the approach of a sergeant, an inspector, a pickpocket, or a shower—no, we believe the code, varied though it is, omits any reference to the weather. These purposes, however, appear very ignoble compared with the ingenious use of signals devised to "cope with the motor and cycle scorching nuisance." We believe there have been no cases of cycle scorching since bigger game engaged the officers' attention; however, letting that pass—listen!

"Two constables take up a position in a hedge or other 'coign of 'vantage.' . . . As soon as the scorcher appears" (on the horizon?) "a rolled police cape is thrust upwards. This signal is noticed by other constables about 200 yards down the road, who at once step out and with rolled capes ready call upon the scorcher to stop. If he be wise he will do so, as otherwise, if a cyclist, he may find himself running against a cape and getting a bad spill" (is not this brutally callous?), "or if a motorist, he may discover that a nimble-footed" (ye gods!) "bobby has jumped upon his back step and will not alight until he has secured the name and address of the offender."

At night, it appears, the car is timed by means of a constable, a sergeant, two uniformed constables, probably of a different species to the first mentioned one, a flashlight, a whistle and a stop-watch. These being appropriately sorted, enter a motorcar. Constable No. 1 fires an electric flashlight, a sergeant, a quarter of a mile away, times the car with a stop-watch, and *if*—(mark the "if"!)—if it is going at a greater speed than the law allows, he blows the whistle and the P.C.'s in uniform stop the car "or, at least, endeavour to do so"—says the author naively.

We admire the ingenuity as well as the dead accuracy of these methods of timing, and the stopping of a motorist or a cyclist by means of a rolled cape (we wonder if the constable hits him on the head with it?) is a dodge much to be commended. We only wonder whether the author can have any conception of the utter imbecility of any system such as he describes.

Irreclaimable!

A surly old motorphobe sat on a stile,
And a motorist sat on a stone,
He was tink'ring a fizzywig thing with a file,
And the motorphobe eyed him, and after a while
Addressed him with scorn in his tone.

"You ride on a motor,' the motorphobe said,
"And your speed is alarming to view;
You cannot see aught but the roadway ahead,
To the beauties of Nature your soul must be dead;
Pray, how does it benefit you?"

"I have no desire," said the automobiller,
"The ditches' damp dangers to dare,
To stalk in the hedgerow the fierce caterpillar,
Or roam in the fields with a butterfly-killer,
Or track the wild worm to its lair."

"You ride on a motor," the motorphobe cried,
"A weapon devised by the de'il;
You scatter the dust and the stones far and wide;
And were I the head of the Government, I'd
Put a check on your murderous wheel."

"The dust," said the motist, "I'll freely admit,
But the fault's with the road, not with us;
And I cannot see why you should go in a fit
Because we have drawn your attention to it,
The surveyor's the man you should cuss."

"And further," he said, as he put in his clutch,
"You say we are going too fast.
Well, it seems to me, sir, you're expecting too much—
With the twentieth cent'ry you're quite out of touch,
You ought to have lived in the last."

The car moved away with a simmering sound
And a weird and unmusical hoot,
And the motorphobe said, as he horridly frowned,
And cast himself heavily down on the ground,
He said, motorphobially, "Brute!"

AFTER THE FLOOD.

MOTORIST (in despair): "My carburetter is flooded!"
FARMER: "Bah! I've got three acres of turnips under water!!"

CYCLOMOT'S CAUSERIE.

Buying Experience with an old Car.

There is an advantage in buying a second-hand car which has had a fair amount of use and which may even be somewhat behind the times, because, in effecting repairs and adjustments and in introducing improvements, there is wonderful scope for anyone who is interested in the work and is fond of mechanics. A soaking wet day is not so great a hardship to such an individual as it would be to a man owning a car which is distressingly new and uninterestingly perfect and complete. One can imagine the owner of a brand-new and absolutely up-to-date car in his motor-house, during a constant drizzle, with a machine in front of him that called for neither alteration nor improvement in the slightest particular; what a disconsolate man he would be if a fondness for mechanics and a desire to be allowed to worry out small problems were part of his nature. My first experience was with an old-fashioned car, with a two-cylindered horizontal engine, placed at the rear. It had tube ignition and a most complicated governor action on the exhaust valves. When I received the car its effective range was ten miles, at the end of which it would be fearfully overheated. The engine developed about 3½ h.p., and, as the car weighed quite half a ton, I used to look first at this vehicle and then over to the Humber motor-bicycle with a 2¾ h.p. engine, and weighing only about 1½ cwt., and to make the comparison all the more ridiculous, the car was intended to carry two persons and a fearful kit of tools and spare parts, whilst the motorcycle was for one person only, and it had a small bag for tools, but never a spart part, except a sparking-plug was required!

The one machine spelt efficiency, and the other—well, let us call it an undeveloped and out-of-date notion! Naturally, all my pleasure rides were taken on the motorcycle, and as the only attentions demanded by that were a clean down and a rapid overhaul after each ride, I used to turn for trouble, and the experience and knowledge which are the outcome of trouble to the car

Learning about Faulty Methods.

I think every possible part of its machinery was taken down at one time or another, and its faults and failings were, one by one, tackled and, in many cases, eliminated, but the overheating baffled me. I made sure that it was not the pump by taking it all to pieces on two occasions, adjusting it and renewing the packing. I also cleaned out the tank, renewed the rubber joints and tested the radiators, and finally was compelled to conclude that either the water jacket to the engine was badly furred, or there was some obstruction which was eluding my search. Tube ignition interested me because, starting, as I did, with knowledge and experience of electric ignition, I was able to compare it with the older form of ignition which it had displaced And I soon found that the burners could, with extreme care in cleansing, adjusting and handling, be made to work perfectly, their only bugbears being the need for lighting up, adjusting the feed of petrol, maintaining the pressure in the fuel tank, and last, but not least, the liability to a back fire when starting the engine. The great disadvantage of the burners in use was, of course, the inability to alter the moment of ignition.

With that car, too, I learned a lot about brakes—quite a lot, with all that weight of car and human load—and also a good deal about tyres. As for the carburation, it was the trickiest thing of its kind that I ever came across. I know that the carburetter was always performing its mechanical functions, but, considering that the air was drawn through the red hot chimney over the burners, that there was a slide (always red hot) to enable me to accurately adjust this supply, that an extra adjustable intake for cold air was placed below the driver's seat (just where a great coat would cover it up and choke it), and that, besides the above, there was an extra cold air intake—also adjustable—on the carburetter itself, I think I may rightly claim exemption from any responsibility for the mixture. The gear-box was the most satisfactory feature of the car—for it never gave a moment's trouble—but the clutch was the fiercest thing of the kind ever turned out of a factory. But I refrained from altering this because I realised that it would be a magnificent school for me, and now I am feeling the benefit of it, for on my Humber cycle and on my present car, the clutch always goes in with a cautiousness which brings its reward every time. I was never able to go far from home with the old vehicle, but when it left my hands it was in a very much better condition than when it first came home, whilst as for myself, I had accepted all the trouble and work in a philosophical spirit and even with a spirit of gratitude, because the schooling was so thorough and because I had this enormous advantage over the man for whom that car was built somewhere in the last decade. He had to put up with or fight against the inefficiency and the defects without any possibility of knowing whether what he was doing was simply a waste of time and money or not, whereas I had embarked on a sea of trouble knowing that in the modern car to which the old vehicle had led, these troubles were eliminated, and in locating the source of each defect I was already in possession of the knowledge of the means by which that defect had been overcome. So each trouble was taken with a light heart and with the feeling that the next stage would find me in command of an up-to-date- car, and with as much experience of useless devices and bad methods as if I had started motoring in 1896, when a motorist spent most of his time at the roadside.

Handling more modern Machinery.

My present car is shaping up splendidly, and a good many interesting hours have been spent upon it—in the double sense of the preposition. At first there were big ideas of doing all sorts of things in the way of dismantling, cleaning, adjusting and improving, and a general overhaul was started, with the result that the list of matters to be attended to was at once whittled down to more respectable proportions when it was found that certain details could be left alone, any attention to them being superfluous. The engine, the gearing, the water circulation and the ignition having been overhauled, the first serious problem was the steering, which was badly worn. The steering-wheel had an amount of slack equal to a quarter of a turn, and although this was in a small degree disconcerting, the most objectionable feature was the wobbling of the front wheels, especially when the car was not travelling at top speed. The effect of a pair of slack steerers on the public is marvellous, and nobody ever missed noticing it, some with a feeling of amusement, others with deep concern for the safety of the occupants of the car. By taking down the whole of the steering-gear, I found that a lot of the slack could be removed. The two halves of the worm-nut were removed, and their edges filed down so that they gripped the worm tighter, keyed connections were made absolutely tight, a worn bearing in which a double lever worked was packed, and finally I had eliminated almost every portion of the slack, except at the pins which couple the steering hinges of the wheels to the front cross rod. As the wear was too small to permit of bushing and the fitting of new pins somewhat troublesome, I slightly lengthened the connecting rod by the adjustment provided for that purpose, and then placed in tension between the two hinged knuckles a very strong rubber door spring, which tends to pull the two wheels towards each other, the connecting rod being the distance piece. I can now drive along in comfort, and as nobody now ever points to or looks at the front wheels, I know that the difficulty has been practically overcome.

AMERICAN TOPICS.

NEW YORK, *January 20th*, 1904.

The New York Show.

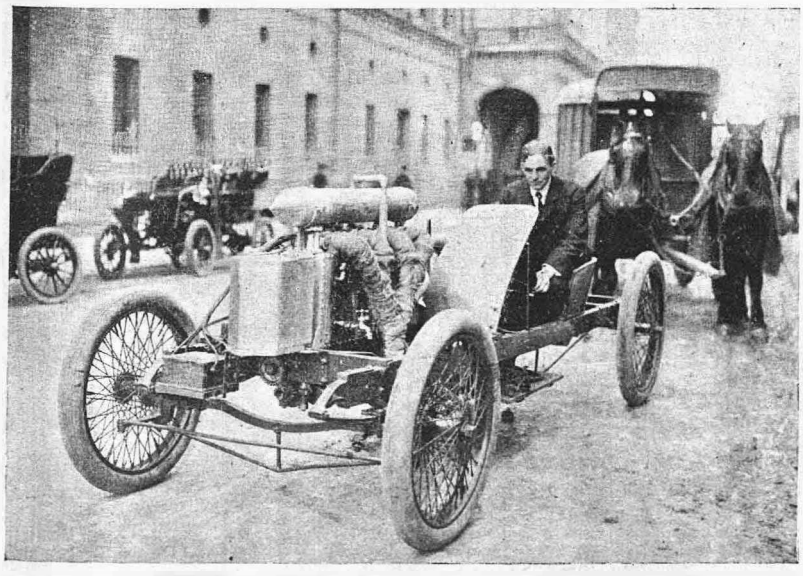
The present Automobile Show, at the Madison Square Garden, is where we "do ourselves proud," as the saying is. Starting from "scratch" about five years ago, allowing the mechanics in other nations of the world handicaps of from one to four years' prior start, the automobile industry of the United States has quite caught up. The fourth annual automobile show now in Madison Square Garden leaves no doubt about this. The great exhibition building is packed with big and little motor vehicles that equal in efficiency, up-to-date appearance, general style and finish, the best of the foreign-made cars.

* * *

Retrospective.

In 1899, when horseless carriages were quite common in Europe, a few American pioneers had an exhibition as an adjunct to a bicycle show in Madison Square Garden. No great amount of attention was paid to it by anyone. In 1900 the Automobile Club of America gave a show, in Madison Square Garden, of which track contests were a feature. This beginning, the first regular automobile show here, was laughed at abroad. In the fall of 1901 a second show was held by the club, in co-operation with the manufacturers. The machines were distinctly of the "horseless" type, however, suggesting that a motor had been put into the body of a regulation buggy, and those who knew the advanced stage that had been then reached by the industry abroad declared that the Americans were fully five years behind the European makers. No show was held in the fall of 1902, but in January, 1903, the third annual exhibit was held, and it was an eye-opener to all. The advance that had been made by the American designers was astounding, and it was common comment that in a year the makers had gained two or three years of the distance they were behind. In the present show the American manufacturers are no longer at school in the college of the European industry—1903 was their senior year. They have learned the foreign methods and the ideas that inspire them. They are employing them to a considerable extent, but there are abundant signs that the American industry has entered upon an independent career, which will no longer be hampered by servile imitation.

General view of the New York Automobile Show, at Madison Square Garden.



Harry Ford on "999," the 80 h.p. racer, on which he recently covered a mile in 39 2-5ths secs.

* * *

The Present Show the Best.

The present is the greatest exposition of any trade ever held in this country. There are in all 190 individual exhibitors, according to the official figures, and of them 90 are exhibitors of complete motor vehicles. At the show last year there were 143 exhibitors, and 56 were manufacturers. At the first show in 1900 there were only 28 makers exhibiting. At no previous exhibition have so many makers offered distinctly new models. The tendency towards increasing the power of cars, and building both engines and bodies bigger, has continued. The distinctively American type of runabout, with a single-cylinder horizontal engine in the body has been preserved, but is has been reinforced by companion runabouts having two cylinders, either vertical or horizontal, or sometimes only one, located under a hood in front, a type

that is becoming known as a touring runabout, because of a little more power than the original and typical buggy-like, low-priced vehicle.

* * *

General Car Progress.

Nearly every maker who heretofore made only a runabout has this year a new model in the form of a touring car with a tonneau body, and cars of this description can now be had in a great range of prices. The factory producing the best-selling and lowest-priced runabout, one of five horse-power, now offers also a touring runabout or seven horse-power at $750, and a nine horse-power car, with a tonneau body, at $950. The cheapest automobile in the show is a buckboard at $425. From that the prices range up to $11,000 or $12,000 for the big, imported cars, on which a duty of 45 per cent. is paid. With respect to the different methods of power employed, the show was well characterised by a man who said: "Gasoline—that's about all there is to it." There are in all only seven exhibits of electric cars and three where steam machines are sold. Of the latter, one is a distinctive model that has won a place for itself, and promises to last as a competitor with the gasolene cars.

* * *

General Tendencies.

Among the general tendencies noticed is that of building glass fronts and canopy tops, with side curtains for cars, so that the passengers can be enclosed and the cars used with comfort in any weather. This is a direct blow at the arctic fashions of dress that prevail among automobilists in winter. Among the novelties that attract attention is an automobile lawn-mower that seems practicable enough for large estates. Another novelty is the use of transparent celluloid, instead of glass, in the windows of a car with a "limousine," or enclosed body. There is an interesting display of motor trucks and delivery wagons and a slight increase is manifest in the attention being given to this branch of automobile development, but on the whole the makers slight the commercial vehicle for the pleasure carriage.

* * *

A Brief Summary.

The Madison Square Garden has beneath its roof just now nearly half a million dollars' worth of automobiles. Ninety makers of complete vehicles exhibit an average of four machines each, the average selling price of which is about $1,200. There are ponderous cars at $12,000, and diminutive runabouts at $500. These figures furnish an idea of the great amount of money invested in the new industry. Figures regarding the year's production lead to the belief that there will be a shortage in machines. Estimates of from 25,000 to 30,000 automobiles as the offering in America next year are considered conservative, and it is believed that more than that number will be in demand.

* * *

An 80-Horse Racer.

Among the "features" is Henry Ford's 80-horse-power racing automobile, with which he covered the wonderful mile of 39 2-5 seconds, over a sanded stretch of sea ice at New Baltimore, Michigan, on Tuesday. That the American car, known as "999," and formerly used by Barney Oldfield, should be able to supply such a wonderful mile is a source of universal satisfaction to Americans in general and to American automobile manufacturers in particular. Driven by an American, and fitted with American tyres, it is a national achievement of which any country might be proud. The only other time that America held the mile record was when Henri Fournier, with a foreign car, negotiated a mile on the Coney Island Boulevard in 51 4-5 seconds. Subsequently this was shattered by William K. Vanderbilt, Jr., and others across the water, finally reaching 46 seconds, which was to the credit of Augieres. All the marks have been washed from the slate by the wonderful performance of the Ford machine.

* * *

New Motor-Boat Trophy.

The American Power-Boat Association has decided to offer a perpetual challenge cup, valued at about $1,000, open to boats belonging to any recognised yacht club in the world, except that such club, if located in the United States, must be a member of the association. Boats must be not less than 25 feet water line and must rate not less than 35 feet under the measurement rules of the association, and in all cases their rating must not be less than their water-line length.

For first, second and third prizes the association will award their pennant to the winner in each class, and the winner will be entitled to fly this pennant as the winner of his class.

* * *

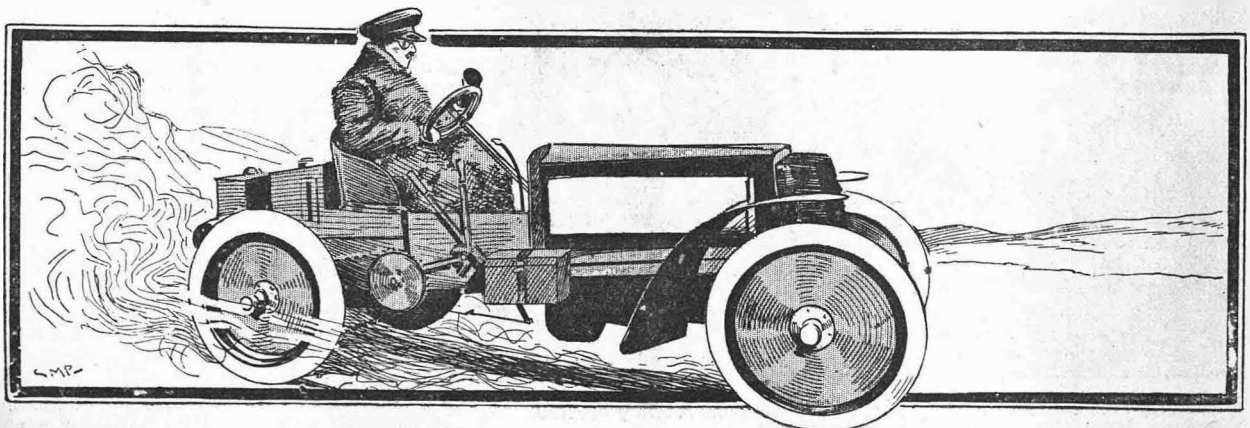
Track for New York.

It is quite probable that New York will have an automobile track next season of a mile in circumference, and that this track will be devoted exclusively to automobile racing. Big grand stands and a comfortable club-house, with quarters for the racing machines, are in the plans.

"WHEEL."

River motorcycling is the latest sport in France. The "river motorcycle" is the name given to a motor-propelled skiff; and the beauty of the new sport is that it gives you a lot for your money. You have to be, first of all, an expert sculler, so as to have acquired the knack of balancing your frail craft; secondly, you must be a motorist, in order to get the right sort of results from your motor; and thirdly and lastly you must be a good swimmer.

The Bury Town Council are in a grievous state of indecision as to whether to buy their surveyor a motorcycle at £48 or a car at £125. If they wait long enough, they will get a reduction on either or both. Meanwhile, they have referred the matter back to a committee, which will in its turn pass it on to a sub-committee, and from there it will be handed back to a council meeting. We think the Bury Town Council had better hire a barrow to expedite these carting operations.



SOME INTERESTING NOVELTIES.

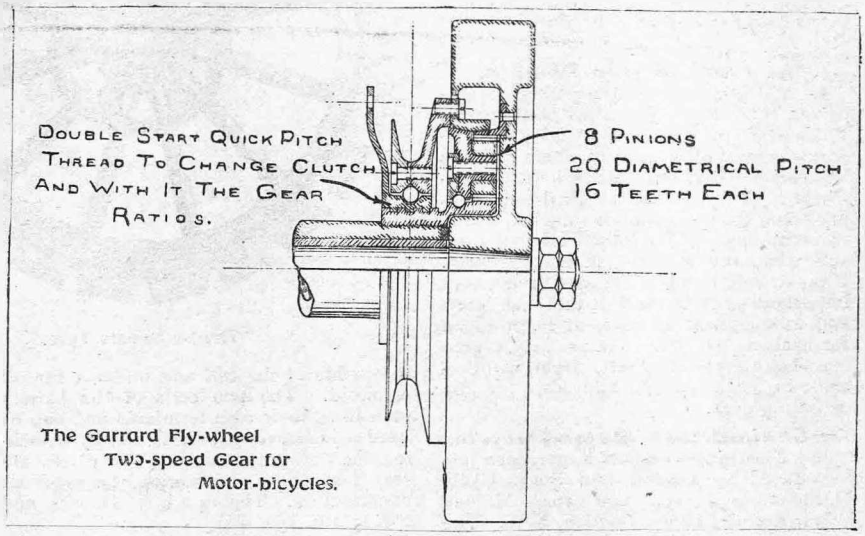
The measurements of the Universal silencer (noticed in our last issue) are for 2¾ h.p. size outside length 6½in., greatest width 3 3-16th inches. This is important, as in noting that it was as silent as any we had met with, we were placing it in comparison with others of much larger dimensions.

The Wolf Motor Tricycle.

The illustration depicts a new pattern of belt-driven tricycle just introduced by the Wearwell Motor Carriage Company, Thomas Street, Wolverhampton. It is fitted with a 3¼ h.p. air-cooled engine mounted vertically in the centre of the frame. The carburetter is a Longuemare pattern and the ignition is by coil and accumulator. If desired chain transmission can be had instead of the belt in conjunction with a free engine and Bowden friction clutch. The control is effected by Bowden wires throughout. The wheels are fitted with 2¾in. and 2¼in. Clincher tyres and extra large and extended mudguards are fitted. Band brakes are fitted to the front wheels and a rim brake to the rear wheel. A water-cooled engine can be supplied if wished. The price of this machine ranges from £54 to £64 10s.

The Garrard Fly-wheel Two-speed Gear for Motor-Bicycles.

This new gear has now been under private test for some time. It has many of the same principles embodied in it that characterised the other two-speed gear made by the firm, which, as is well known, is used as a countershaft, whereas the new one is placed direct on the fly-wheel. There is a double cone clutch of special construction. This clutch gives high and low gears in the two extreme positions, and free engine in the intermediate position. The clutch is metal to metal; but this is not ordinary metal, any of the ordinary metals, including cast steel, would drag or seize, but the makers have succeeded in carbonizing and treating this so that seizing is altogether impossible. Referring to the illustration, it will be seen that the gear is an epicyclic one. There are eight satellite pinions, each 16 teeth, at 20 diametrical pitch. The ratio of the gears gives 40 per cent. difference; thus if the engine on the high gear is 6 to 1, it will be 10 to 1 on the low. It may be objected that overheating may take place. This is only in cases where the cylinder is over 65 mm. bore. With cylinders from 55 to 65 mm. bore, and if the mixture is not "too rich," the makers claim no detrimental heating takes place at all.



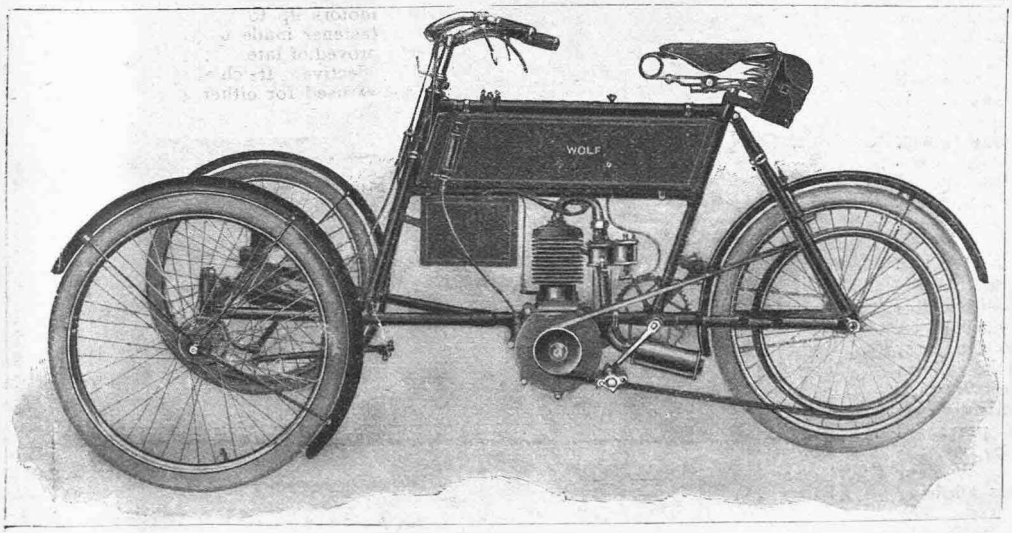
The Garrard Fly-wheel Two-speed Gear for Motor-bicycles.

A Detachable Chassis.

Mons. Lacoin, a French engineer, has devised a motorcar chassis which is constructed in two portions—the motor-chassis, which includes the motor and all its parts and accessories, the tanks, the steering gear, the steering wheels and all the pedals and levers with the exception of the brake and clutch lever; and the body-chassis which contains the driving wheels, the shaft, the body-work and the brake and clutch lever. The inventor claims that the two parts can be separated or united quite easily in a few minutes without any other apparatus but an ordinary jack. When they are so separated the free end of the shaft drops into a collar which supports it but which does not touch it in its normal position when the two chassis are united. By the employment of a special system of bolting Mons. Lacoin claims that absolute rigidity is obtained when the two parts are connected. The advantages claimed are the facility to attach cars of different weights and sizes to the same motor, and the ability to detach the motor for use in connection with a dynamo for recharging accumulators, or for any domestic purpose.

Non-Skid Improvements.

The Parsons Non-Skid is being continually improved, in order to secure the best results, so that almost every detail is today an advance upon the portion which occupied its place when the invention was first introduced. Experiments with chains have enabled the company to select exactly the right quality required for their purpose, and several Midland firms are engaged in their manufacture. The hardening and tempering of these chains is different from any hitherto made. A high-grade nickel steel has been adopted for the stranded wire forming the hoop. This is reliable in composition and less prone to rust, but it is advisable to grease the hoop occasionally. Users are recommended to turn the non skids inside out from time to time, so that the reverse side of the chains can be made to take the wear, and by this means the life of a set of chains is quite doubled. A handy twin spanner is now supplied with each set so that when the coupling is adjusted the screwed ends of the hoop can be easily held thus preventing any unstranding of the wires. The company will forward this to users who are not already provided with it, and will also be pleased to send the latest Instruction Card and Hints upon receipt of a postcard, requesting same. Application should be made to the Works Department, 175a, Manor Street, Clapham.



THE WOLF MOTOR-TRICYCLE.

C1

A New Process.

We have recently had the pleasure of inspecting a seamless steel barrel produced by a new process from a single flat sheet of steel. It is suggested that by the same means seamless tanks for use on motorcars and cycles can be manufactured at a lower cost than those at present in use, and that such tanks will be entirely free from any possibility of leakage. The invention is being developed by Mr. E. C. Thrupp, of 39, Victoria Street, S.W., and a company will shortly be formed to exploit it.

The Chain-driven Phœnix.

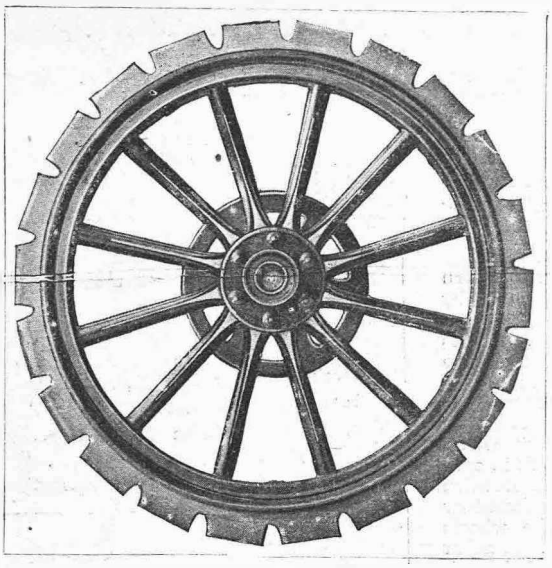
In addition to supplying their chain-driven bicycles with two-speed gears, Phœnix Motors are also supplying the machines without the gear, in which case the two-speed gear is replaced by a neat chain-wheel. A specially designed spring is placed on the engine shaft sprocket, which takes up any jar that might otherwise result when the machine is going slowly. Hans Renold's chains are used, and a very important point is the fact that a separate and independent adjustment is provided for each of the three chains, i.e., engine sprocket to countershaft, from countershaft to back wheel, and also for the pedalling gear.

A Chain-driven Motor-Tricycle.

The illustration depicts a motor-tricycle introduced by Castell and Sons, Cycle Manufacturers, 154 and 164, Malden Road, Kentish Town, London, N.W. The engine is a 2¾ h.p. Fernhead pattern mounted vertically in the forward part of the frame. The transmission is by a single chain, a clutch being fitted in the rear hub. The frame is so designed that the machine can be ridden by a lady or gentleman. The engine can be started up by hand. The control and clutch gear is mounted on the handlebar and down tube. Ignition is by coil and accumulator. The weight complete is claimed to be 150lbs., and the makers state that it has been tested to climb a good average hill without pedalling.

The "Sofel" Accumulator.

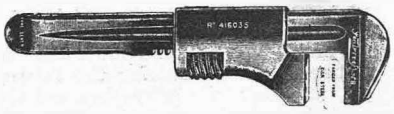
We have received from Messrs. H. Soar and Company, Electrical Engineers, 85, Grove Road, Bow, London, a sample of the Sofel accumulator made by them and designed for motor ignition and lighting purposes for cars. Whilst keeping to the standard 4in. plates the makers have increased the capacity to 25 amp.-hour at one ampere rate of discharge. At a half ampere rate of discharge the capacity is 35 amp.-hours. The active material is prepared by a special process and is well keyed in the grids and practically indestructible. Amongst the other special features are a special gas valve which entirely prevents leakage of the acid spray or spilling of the electrolyte when vibrated or even when inverted. Funnel-shaped mouths to the filling tubes. These are screw threaded and fitted with celluloid screw plugs and rubber washer. A simple handle arrangement to the case, celluloid studs being affixed to the cells to which a strap is attached. The cells may then be comfortably and conveniently carried. Corrosive creeping is prevented by insulating the connections of the terminals in celluloid tubes. A clear space is left between the plates allowing free examination of the entire grids. The instructions are fixed in optical contact to the inside of the cell and under a film of celluloid. The two cells of the battery each have their own terminals and can be used as separate two volt cells by detaching the connecting wire. The prices are very reasonable considering the excellent construction. The 12 a.h. is 12s. 6d. and the 25 a.h. 19s. 6d.



The De Nevars Tyre.

The Seabrook Spanner.

Spanners suitable in size and strength for motor-bicycles and cars are one of the leading lines of Messrs. Seabrook Brothers, Featherstone Street, London,



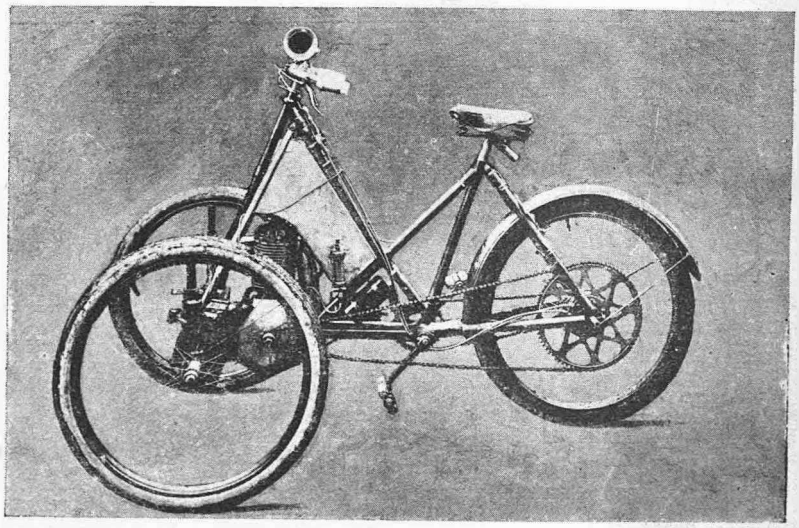
E.C. The motor-bicycle pattern is 9in. long and the handle forms a useful tyre lever. This spanner is shown in the illustration, and can be supplied in black or nickel finish. The car sizes are 14 and 18in. in length and heavier in proportion; these are made in black finish only. They are thoroughly well made tools and are forged from bar steel.

A New Tyre.

We illustrate on this page the "De Never's" Grooved Solid Tyre for motors, which will be shown at the Crystal Palace Show. It has, at certain intervals apart, transverse grooves, giving an impression of a tyre constructed in sections, but having an integral connection with the same base. The grooves allow each section, when under pressure, to distend independently of the others into the adjacent grooves, and when leaving the ground, each section is able to recover its original shape. This is not so with ordinary solid tyres, the weight on the rubber causing them to spread and distend in all directions, elongating and loosening the tyre, causing them to come out of the rims. All objections to the ordinary solid tyre are overcome, the grooves producing the effect of a pneumatic tyre, without its liability to punctures or burst. These grooves also prevent side-slip. The wearing surface of the rubber being grooved is neither under compression nor tension, consequently it retains its natural resiliency.

A New Silencer and Improved Belt Fastener.

We have received a sample of a new silencer placed on the market by Messrs. Coxeter and Sons, Abingdon-on-Thames. It is named the "Abingdon" silencer, and is claimed to be highly efficient, and having practically no back pressure. It is of the tubular type, three inches diameter at the ends, and 7¾ inches long. It is made in bronzed steel, with turned brass ends, and we should say would be suitable for motors up to 3 h.p. The Abingdon belt fastener made by this firm has been improved of late. It is extremely simple and effective. Its chief features are that it can be used for either a V or flat belt.



A Novel Chain-driven Motor-Tricycle.

The Motor
INCORPORATING Motor Cycling & Motoring

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

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OPINION

The Lesson of a Tragedy.

It is with great reluctance that we refer in these columns to a subject with which our readers must already be surfeited, and which our inner feelings prompt us to ignore. And yet it is obviously a duty no less than a necessity that we should point to the lesson which the tragedy of Whitaker Wright teaches in our own sphere of life. With the complicated case which has just ended with such a co-mingling of retribution, pathos and vivid tragedy, we have no concern whatever: with the principles underlying the whole turbid current of financial jugglery presented in the case, and as they might apply in the more restricted scope of motor commerce, we have a right to deal. The Company Promoter has already left us with a bitter lesson in the wreckage which followed in the train of his pernicious attentions to the cycle trade. The so-called "boom time" of that industry was short-lived enough to prove the hollowness of such upheavals. It brought in its wake the period of stagnation from which the cycle industry has not yet recovered, and it brought about the temporary downfall of the most prominent man whose financial manipulation—miscalled genius at the time—reared the unstable edifice upon a foundation of quicksand. It was responsible for the permanent downfall of others! A repetition of these disasters is scarcely likely under the stringent conditions of the new Act, but it must not be forgotten that the tentacles of the Company Promoter have already been felt in the motor trade, and may, for all we know to the contrary, be now overshadowing the industry intent upon a so-called boom. It is when we regard this possibility, as we must regard it, in the light of a menace, that duty prompts us to utter the one word—Beware! The public learns its lessons by bitter experience, but such is the greed for gain, for wealth easily acquired, that the lessons are soon forgotten. The Company Promoter keeps just within the line of demarcation beyond which the Law is operative, but the recent case has brought to light the disquieting fact that, if necessity compels him to trespass outside those limits, the Crown Officers may be reluctant, for sophistical reasons, to take action; and it is rare that those broken in the ultimate crash have the means and the courage to insist upon justice taking its rightful course. We have the further disquieting fact, brought to light time and again in the disclosures of company promotions, that it is impossible to place reliance upon the financial and the general Press. The Company Promoter adroitly manipulates them into his power, and they become subject to his will. It must not be thought that it is our desire to place an embargo upon legitimate and straightforward enterprise by forewarnings of an alarmist nature, but with such an object-lesson before us it is impossible to avoid plain speaking, and, even though it be premature to do so, there can be no harm in sounding a warning note.

The Inland Revenue Tax: An Important Appeal.

Are motorcyclists aware of the supreme importance to them, individually and collectively, of the case of O'Donoghue versus Moon, which is down for hearing at the present sittings of the King's Bench Division of the High Courts? The judge's decision in this case will decide, probably once and for all, whether the motorcycle and the trailer shall be subject to the Inland Revenue tax of fifteen shillings annually. The vigilance of the staff of "THE MOTOR" was the cause of the issue being unearthed, the facts being laid before the Auto-Cycle Club, which at once decided to go ahead and make the best possible fight for the cause of motorcycling. The facts are as follow: Last June a rider of the name of F. G. Rowe was summoned before the Bristol magistrates for riding a motor-bicycle without having paid the tax, and he was fined £1 and costs. He appealed against this decision, the case being heard at the June Quarter Sessions, before the Recorder (Mr. Castle, K.C.). The Recorder reversed the decision, holding (1) that a motor-bicycle was not a carriage in the meaning of the definition of the word in the Inland Revenue Act (51 and 52 Vic.); (2) that the machine was being used for purposes of trade; and (3) that if anybody should have been proceeded against at all, it was the company employing Mr. Rowe. The Inland Revenue got leave to appeal, but evidently waited for a case not complicated by other issues. In November last they proceeded against Mr. Moon for not holding a licence, and the Justices of the Bristol Court, whilst asserting that, in their opinion, a motor-bicycle fell within the definition of a carriage, gave a verdict for the owner of the machine, out of deference to the finding of the Recorder of Bristol, but they stated a case for the High Court. It is this case which is now down for hearing, and Mr. Moon (so it appears, now that the Auto-Cycle Club has got into communication with him) had not intended to defend it. This course would have been disastrous, for unless the case of the motorcyclist is put before the judges, the definition could well be held to cover the motorcycle, and, as the High Court has already held that the ordinary bicycle is a carriage, this could be used as an argument in favour of the Inland Revenue, although it tells equally well in favour of the motorcyclist, because the Inland Revenue Board have never attempted to extract a tax from cyclists. The Auto-Cycle Club has wisely decided to be represented by counsel when the case comes on for hearing (after Easter, probably), one of the arguments for the motorcyclist being that the motorcycle is adapted to be partially or wholly propelled by the power of the rider, and that it, therefore, bears a closer resemblance to an ordinary cycle than it does to a dog-cart. The latter is regarded as a luxury, and, therefore, fit matter for taxation, but a cycle has not been included in the same category, and may, therefore, be regarded as a necessity. Cycling, too, is the pastime of the man of minute means, and a source of health and recreation to him, and, now that the motor-bicycle is little, if any, more costly than the ordinary bicycle of 1896 (when the catalogues of the big makers contained prices of from £30 to £40), the same arguments can be extended to cover the motorcycle. It is, in fact, a necessary form of locomotion, and therefore should not be subjected to a tax imposed only on luxuries. As for a line of demarcation, we have it clearly in the fitting of the pedals, or the adaptation of the machine to human propulsion in case of breakdown of the motive power, and the difference between the failure of the engine of a motorcycle and the disablement of the horse drawing a dog-cart can be convincingly shown: in one case the rider slips off his belt and pedals the machine to his destination, but in the other the dog-cart is an encumbrance, and must be pushed into a stable, for no dog-cart driver would, in such circumstances, get between the shafts and haul the vehicle home! We hope that the Auto-Cycle Club will spare neither trouble nor expense in getting a final decision upon this most important matter.

NEWS.

Next week!

Our anniversary number!

It will contain many novel features.

This issue of "The Motor" is enlarged to twenty-eight pages, and still a mass of interesting matter is crowded out.

The Liverpool Corporation at present possesses seven 30 h.p. steam refuse wagons, which are all acting satisfactorily.

The number of licences in Liverpool has now reached 800, which is somewhat in excess of the number of cars and motor-cycles registered.

The Auto-Cycle Club is approaching the Trade in order to ascertain whether it would regard favourably a proposal to organise periodical all-day runs for motor-cycles very much on the lines of the Automobile Club's non-stop runs for cars.

The question as to whether the Board of Inland Revenue may legally demand the annual tax of 15s. in respect of a motor-cycle will come up for decision in the present sittings of the High Court. We deal with this important matter editorially.

We understand that motor-bicycles will be barred from competing in the forthcoming non-stop run from Glasgow to London because of the difficulty of observation. There is an opening here for the Auto-Cycle Club to organise an event to take its place and to provide for the observing of the competitors.

The Auto-Cycle Club is busy drafting a scheme under which motorcycling clubs throughout the kingdom will become federated together in order that the controlling body of the sport may be representative and that united action may be taken on any matter affecting the welfare of the pastime of motorcycling.

A curious thing was noticed up North the other day. The driver of a well-known light car was stopped on the road through his engine overheating. On going to the front of the car, however, it was noticed that he had painted his numbers on a big board, which entirely covered the front of the bonnet and radiators. No wonder it overheated!

Pressing Business!

(In a police case recently it was shown that the constable's watch stopped when slightly pressed).

I've read a very curious tale,
With which I'm much im-pressed,
Of how a p'liceman's watch may fail
Beneath a simple test.

And firstly, be it understood,
I do not mean to jest,
For even when a joke is good,
It makes me feel de-pressed.

Consid'rate though he is indeed,
The fact must be confessed:
The motist sometimes puts on speed
When he is slightly pressed.

The p'liceman takes his number down,
Whilst joy expands his chest,
And murmurs, with judicial frown,
"This man must be sup-pressed!"

But when he tells the magistrate
The speed he has assessed,
He cannot guarantee the rate
When he is slightly pressed.

Then Mr. Firth, in captious mood,
Exclaims, "I would suggest
That of his watch's rectitude
Some doubts have been expressed.

"And, further, I should like to state
It sometimes takes a rest—
I mean, it stops to meditate
When it is slightly pressed."

Examination showed the Court
It was as he had guessed;
And so I wrote this brief report,
Which is, of course, com-pressed!

—Pressman.

The automobile industry is beginning to stir in the Southern States of America. In Nashville, Tennessee, the number of cars has increased during the past year from six to 44, and the number of dealers from one to four. At the present time there are only a few motorcycles in Nashville.

February 9th, 16th and 23rd.

Three special issues of "The Motor" will be issued during the next three weeks.

In these the Crystal Palace Show will be interestingly dealt with from the point of view of the man of moderate means.

One of the Benz cars in the French Gordon-Bennett trials will be driven by a lady—Madame du Gast.

Launch motoring is going ahead rapidly. A petrol-driven submarine boat is spoken of, in rather guarded language, in the Paris Press.

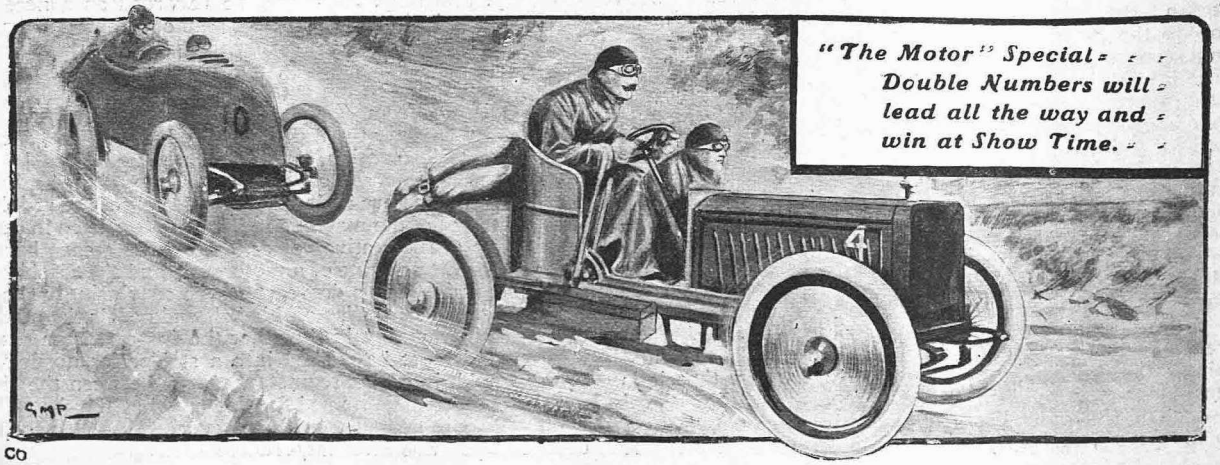
Henry Bowden coverd a straight mile in 44½ secs. on Saturday, January 23rd, at Daytona Beach on a 60 h.p. Mercedes car—just under 82 miles an hour!

Mr. Bert Holcomb who recently did a remarkable run from Chicago to New York announces his intention of traversing the whole width of the North American Continent, from San Francisco to New York, on a 35 h.p. Columbia. He calculates on accomplishing the run in 17 days.

A Spanish motorist, Senor Duro, has accomplished the journey from St. Jean de Luz on the Spanish frontier of France to Madrid, the crossing of the Pyrenees at this time of the year being rather an adventurous undertaking. Senor Duro drove the 12 h.p. Panhard with which he recently went to Moscow.

In a new motor launch just constructed in France the propeller shaft instead of being horizontal is inclined slightly downwards. It is claimed that as the screw revolves, a *downward* thrust is imparted which tends to raise the hull of the boat out of the water and so to diminish the draught and lessen the friction due to the resistance of the water.

M. de Carvalho, who is looking after the interests of the Benz-Parsifal cars which will compete for the third place in the German Gordon-Bennett team, thinks the Saalburg course very difficult by reason of the numerous turns. Fifty-five miles an hour will, he says, be good going; 60 miles an hour extraordinary; and beyond that, impossible.



The German Motor Cycle Union (Stuttgart) has issued to its members an earnest appeal to avoid "scorching."

The Midland Automobile Club.

The following meetings will take place at 8 p.m. at the Club Room, Grand Hotel, Birmingham:—Feb. 6th.—Annual dinner, 7.30 p.m.; Feb. 27th.—"Wire Wheels Tyred." Paper to be read by F. W. Lanchester, Esq. Smoking concert to follow; March 12th.—General meeting and report. Dinner and discussion on next season's events.

Launch Motoring.

Mr. Frank Kroker, who owns the first motor launch constructed by the Fischer-Herreshoff boat building firm, has challenged the owner of any boat of equal length to a race for £1,000. Mr. Kroker's boat is of Honduras mahogany and weighs 4½ cwt. (without the motor); its dimensions on the water-line are 40ft. long by 5ft. wide, and it is expected to do 30 miles an hour.

Touring Arrangements.

A tourists' run is being arranged by the Austrian Motor Club for the week preceding the Gordon-Bennett festivities. The tourists will start with a banquet (a good start anyway) in Salzburg, not far from the Bavarian border, on June 11th, "benzine" the next day to Munich, then on the following days to Stuttgart, Heidelberg and Homburg, where they are scheduled to arrive on June 15th.

Edinburgh Motor-cycle Club.

The general meeting of the above club was held on January 22nd in the North British Station Hotel, Edinburgh, when the following office bearers were appointed:—President, Mr. William Flint; vice-president, Mr. L. Morelli; captain, Mr. W. T. Cockburn; sub-captain, Mr. D. Cleland; committee, Messrs. Dempsey, Downie, Hammersley, McIntosh and Wight; hon. sec. and treas., Mr. T. M. Sleigh, 1, York Buildings, Edinburgh.

Motor Launch Enterprise in France.

A new motor launch, the "Gilberte," was tried last week on the Seine at Rouen with such success that several more of the same model will be put on the stocks at once with a view to having a small pleasure fleet ready by the summer. The "Gilberte's" hull is constructed of teak and mahogany, and is about 21 feet long. The 8 h.p. "Abeille" motor (paraffin) actuates an 18in. diameter screw, giving an average speed of 12 miles an hour.

The "Martin" Light Car.

The new "Martin" light car which is illustrated on this page is the latest product of H. Martin and Company, 137 and 139, Cherry Orchard Road, East Croydon. The following are the principal details of the vehicle. It is fitted with a 6½ h.p. De Dion engine, has the Panhard type of gear, three speeds forward and reverse on one lever, direct drive on top speed. The Mercedes type of bonnet and radiator has been adopted and Michelin Clincher heavy re-inforced tyres, 700 by 85, are fitted to artillery wheels. It has three brakes, two hand-acting on back axle, and one on the differential shaft. The two-seated car is to be priced at 150 guineas, and the car with tonneau, as illustrated, at 160 guineas.

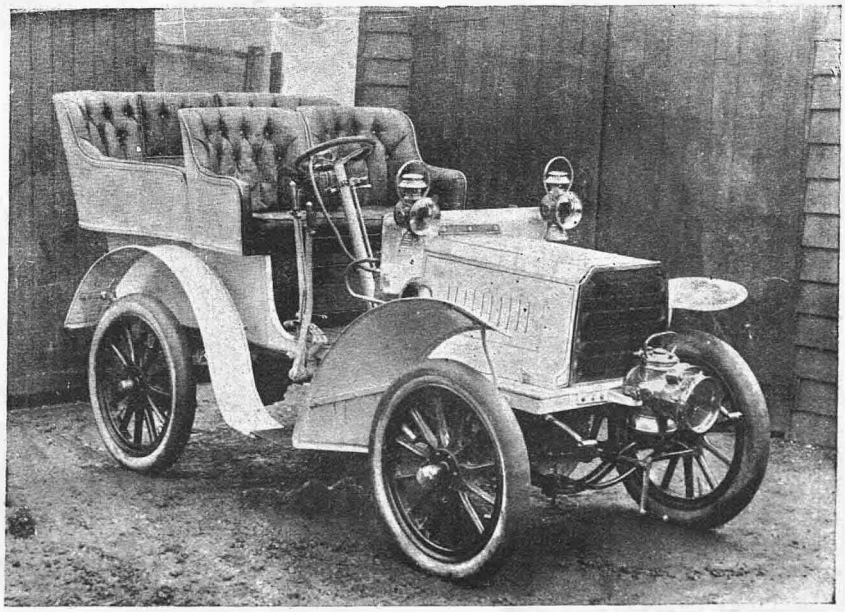
We hear from Windsor that an invention is soon to be placed on the market to keep the hands warm when motorcycling and we shall hope shortly to be in possession of the details of the appliance.

A Case Dismissed.

For two weary hours last Thursday the Kingston Bench listened with the closest attention and with some sympathy to the unravelling of a charge made by Superintendent Marks against Mr. Liddell, of Kensington, for exceeding the speed limit at Cobham. In his evidence, Marks stated that he timed the vehicle over a quarter of a mile course, and that the pace was about 25 miles an hour. The Cobham sergeant stated that he saw the car coming along at a furious pace. Mr. Staplee Firth, instructed by the Motor Union, then proceeded to examine Marks with regard to the possibility of timing a car 400 yards away. His appeal to Marks of "help me all you can" brought forth, amidst some laughter, the reply, "I will do that." With the help of numerous photographs and ordnance maps, Mr. Firth explained the trap to the Bench, pointing out that there must be some difference in the timing, on a car coming into the timekeeper's line of vision, if it was one side of the road or the other. Marks insisted that all allowance was made for this. Mr. Liddell on being questioned by Mr. Firth alleged that he could not have been driving more than 13 or 14 miles an hour. Mr. Liddell proceeded to explain how he insisted on Marks showing him the details of the trap, which took up so much time that this official remarked, "You're spoiling my day's business." Capt. Birney Clarke, of the Royal Fusiliers, and a resident of Cobham, deposed that he was out taking his usual Sunday morning walk and seeing that the police were apparently busily engaged with motors he stopped and asked Marks what pace was being allowed that day, Marks replied 20 miles an hour. He saw Mr. Liddell coming down the hill and witnessed the halt at the police signal. On being asked by Mr. Liddell what he thought the pace was, he replied about 15 miles an hour. Mr. Messenger, a surveyor, also gave evidence. Mr. Swindley, official timekeeper of the Automobile Club was next called, and, at the request of the Chairman, examined Marks' watch. To the amusement and astonishment of the Court, Swindley exclaimed that the watch was "quite worthless"! and proceeded to show to the Bench how the slightest pressure stopped its action, so that Marks having it concealed in his pocket might easily press his hand on it and stop it. At this juncture, the chairman interfered, and said that the case would be dismissed. Mr. Staplee Firth applied for costs but these Mr. Cockburn refused on the plea that the police had not been fairly treated. And thus ended a most remarkable case, one which Superintendent Marks, of Hersham, will never forget, as it clearly shows that he will not get much sympathy in his desire for dishing up motor cases from the present Bench at Kingston.

Fatal Accident to Motorists near Cannes.

A fatal motorcar accident occurred on the Riviera last week, which emphasises the necessity for cautious driving along country roads. Mr. Harold Mellor was driving a party of three—two ladies and a gentleman—out near Mandelieu on Wednesday evening when he overtook a wagon proceeding ahead in the middle of the road. Being either unable to pull up in time, or miscalculating the amount of available space, Mr. Mellor attempted to go by, but struck the wagon before getting clear. The wagoner was thrown off and fractured his skull, and the car swerved into a tree and flung out its occupants. One of the ladies, Mrs. Rathborn, a South Carolina widow, was killed on the spot, and the other—Mme. Echallaz, a French lady living in London—so badly hurt that her life is despaired of. The two men were badly, but not dangerously, cut and injured.



THE "MARTIN" CAR.
A new light touring car, particulars of which are given on this page

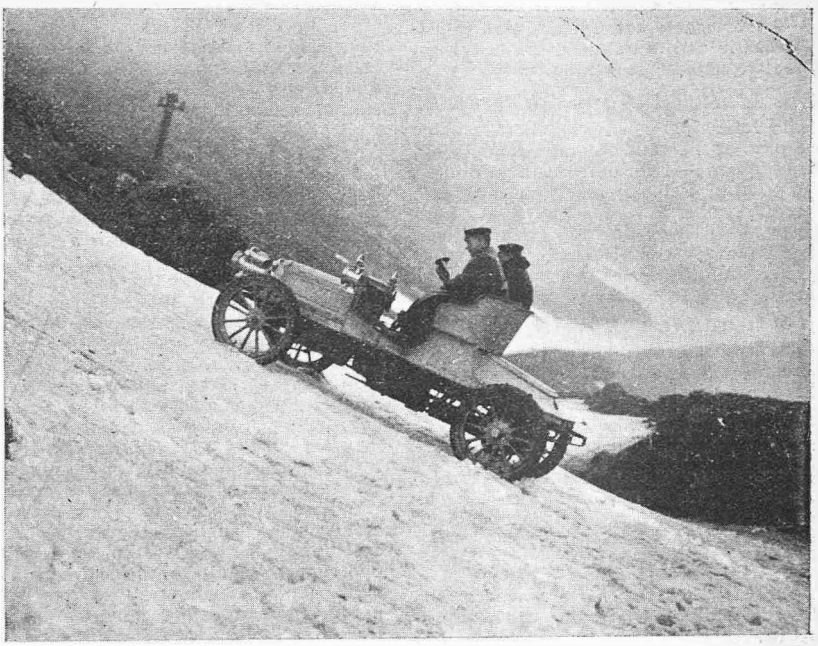
The Brussels Automobile, Cycle and Sports Show opened on Saturday last.

The Crypto Works Company themselves are not exhibiting at the Crystal Palace Show, but a Crypto tri-car will be shown on the stand of Mr. Douglas S. Cox, their agent for Norwood and district. A machine will also be running for trial purposes.

The English motorist's licence has been described as "a mean looking slip of paper, something like a dog licence," whilst the French automobiliste is presented with "a handsome three-folding document in the form of a pocket case, one of the flaps of which holds his photograph," so that no unauthorised person can make use of the licence.

Ascent of Snowdon by Motorcar.

Mr. Harvey du Cros made a plucky but unsuccessful attempt to reach the top of Snowdon on a 15 h.p. Ariel at the beginning of last week. His failure, however, in no way implied incapacity on the part of the car or its driver, being due solely to the unseasonableness of the weather or rather of the time—a ten foot drift of snow successfully blocking progress at the last steep pitch just below the top. With Mr. Charles Sangster as a passenger, the climb was begun on Tuesday afternoon, the route being not one of the many rock and grass slope tracks affected by members of the Alpine Club, but the cog-wheel rock railway which was laid some years ago. Good, but slow, progress was made, the shifting ballast of the railway bed affording a poor surface for the wheels to bite on. At the half-way house heavy mist and the shades of oncoming night suggested prudence and the car was halted for the night. On the following morning the attempt was resumed. As the car climbed higher the snow became deeper, till at last, as already intimated, a deep drift put an end to further progress, and the car had to be dug out. Mr. du Cros has stated that his object in going up was to demonstrate the ability of a British-made car to go up anything. The total length of the track is about five miles and the average gradient 1 in 6, although in places this rises to slightly under 1 in 5.



AN "ARIEL" MOUNTING SNOWDON.
Driving through a snowdrift, frozen hard and five feet deep, near the summit.

The first photograph of the ascent of Snowdon shows a greater gradient than 1 in 5. The photographer is possibly responsible for the apparent discrepancy.

An Enthusiast.

One of the most enthusiastic of motorists is Mr. A. G. Reynolds, a well-known Essex cyclist living at Woodford. He is one of those who, having a passion for mechanics, takes a delight in getting a motorcycle or car into beautiful trim and keeping it so. The fine results which he has for two or three years got out of his old Benz car are reflected in the enjoyment and satisfaction given him by his latest love—a Bat motorcycle. Mr. Reynolds has lately joined the Auto-Cycle Club at the instigation of a friend of his on the staff of "THE MOTOR."

AN "ARIEL" ON SNOWDON.
Lifting the car on to the snow, into which the wheels had sunk so deep that the attempt had to be abandoned.

The Auto and the Nun.

To parody Shylock, "some are mad if they behold a motorist," and Dr. Thoeny, a district magistrate in Vienna, has acquired the right to be classed with people so affected in virtue of a recent decision of his in a motor case. Andreas Gieshammer, a master builder, had just driven his voiturette (called in Austrian-German a "wagerl") on to the Schwarzenbergplatz when he espied a nun crossing the road. The lady was some thirty yards in front and, oblivious of mundane things, slowly wended her way with downcast eyes to the opposite footpath. Herr Gieshammer let go a profane pip-pip! and his chauffeur chimed in with "Give place!" But on she went—tranquilly, eyes cast to earth, dead to cloister time. To avoid bowling her over, the master builder saw himself obliged to jam on the brake suddenly and hard, with the result that his "wagerl," skidding on the greasy road (the local water cart had been doing duty), shot along a few car lengths half in the gutter and half on the pavement until brought up short by a lamp post. Nobody was hurt—nothing damaged; nor did the nun allow herself to be shaken out of her composure, but continued her course at the same gait and in the same self-absorbed fashion. Nevertheless, a policeman who could find nothing else better to do, put the builder down in his pocket-book for no good, and the worthy Dr. Thoeny had the hearing of the case, our motorist being charged with having "endangered personal safety" in riding half on the pavement. Protested the motorist: "But I can't do more than apply the brake so as to make my car spring aside. It is inconsiderate for a pedestrian to show no sign of giving way to my signal and call." Dr. T.: "The foot passengers have not to consider *you*, but you *them*. Had you been driving at a walking pace, you wouldn't have had to put the brake on so suddenly. A fine of 40 crowns!"

Albert Parry was the first motorist to be summoned in the City under the new Act for not carrying a lighted lamp so as to illuminate the identification plate on his car. He was fined 5s.

Mr. R. G. Knowles, the music hall humorist, has issued a book of stories which includes the following piece of advice: "When a motorcar race is in progress do not cross the track: you may hurt the feelings of the chauffeur and die before you have time to apologise."

A Loss to the Club.

The Rev. A. B. Whatton, M.A., is an old cyclist and has served on the old motorcycle advisory committee of the Automobile Club, the work of which was handed over last year to the Auto-Cycle Club. Mr. Whatton has, through family illness, been compelled to move out of town, and the A.C.C. are now regretting his loss from the deliberations of their committees.

Motor Enterprise in England.

The tiles are now fast being put on the main workshops of the Clement Talbot factory, which are expected to be entirely covered within the next fortnight. The whole of the drainage is now complete, and in the administration building everything is ready with the exception of decoration, which is now fast being completed. The roadway known as the Edinburgh is three-quarters finished and from the St. Quinton's Avenue end has reached the factory itself. The power house girders are up, tiling will be begun this week, and it is expected that the first of the huge engines will be placed in position within a few days. As regards the tools, an order for upwards of £40,000 has been placed—mostly with American firms.

Next Tuesday's Special.

"The Motor" is two years old next Tuesday, and will celebrate the occasion by issuing a Special Number, which will be an Anniversary and Show Special combined. It will be greatly enlarged, and will contain some new features quite unique in motor journalism. The price will be one penny as usual.

Ransom E. Olds, inventor of the Olds and Oldsmobile cars, has retired from the management of the Olds Motor Works.

It has been left to Monsieur A. Clement to challenge the Automobile Club of Great Britain and Ireland for the "Harmsworth Cup," and he has built a Talbot boat and fitted same with powerful Talbot motors for this purpose.

The general committee of the Motor Union, consisting of delegates from the affiliated clubs and from the private membership, is now meeting every month and is helping to make the Union a strong and live organisation. Its last meeting was held on Monday—a big agenda being discussed.

Wet and Filth.

The week-end was, as usual, wet in London. Rain fell heavily almost continuously during Saturday and Sunday, and, as a result, motoring was practically out of the question. The roads in and around the metropolis are in a dreadfully saddened condition; whilst the filthy condition of some of those on which traffic is heaviest is indescribable. Truly we have a lot to learn in this country.

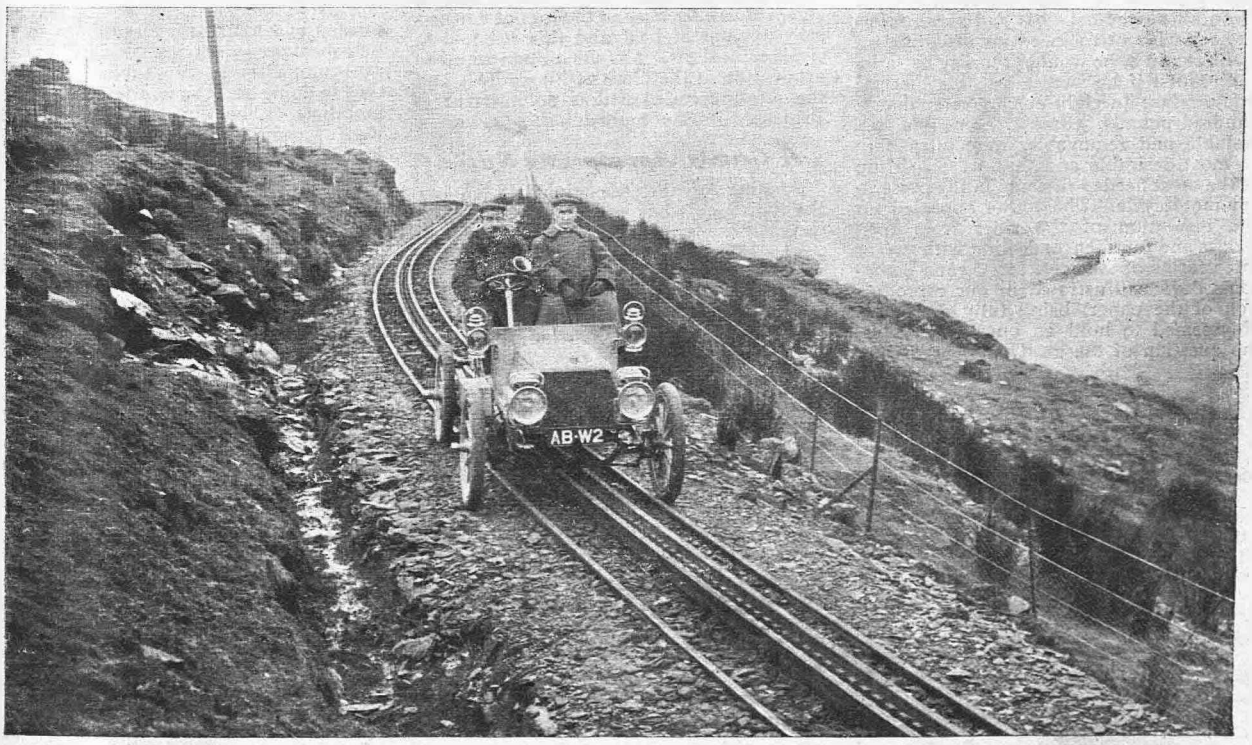
The inaugural dinner of the Berkshire Automobile Club will be held at Reading on Friday. It promises to be a brilliant function.

Gordon-Bennett Latest.

We understand there will be seven neutralised stations on the Gordon-Bennett course, Uflingen, Weilburg, Limburg, Esch, Königstein, Dornholzhausen and Saalburg. At these places the cars are not to travel at a racing place. We learn that two of the drivers of Austria's trio of cars will be Messrs. Braun and Werner. Who the third is to be has not yet been fixed.

The Auto in the German Reichstag.

On the 28th ult. the State Secretary, Count Posadowski, stated that he had caused a groundwork to be prepared for the general regulation of the motor traffic throughout the Empire. Upon this groundwork, which had been approved by the Federal Council, local regulations would be based. At the same time the motorcycle traffic would also be regulated. In the course of his utterances the State Secretary advised motorists to pay more consideration to their fellow men. He had seen cars driven in Berlin with a recklessness and at a speed which made it a mere matter of chance that no accident happened. It is in the highest degree unfortunate that the Count should have witnessed one of the rarest of spectacles in the Berlin streets—a reckless motorist jeopardising the lives of citizens with furious driving. One is curious to know how far the secretary's experience has influenced the groundwork in question.



AN "ARIEL" ON SNOWDON.
The car descending a gradient of 1-6.

Desirable Improvements on Motor-Bicycles.

Mr. Mervyn O'Gorman's paper upon this subject, which was given in full in the issue of "THE MOTOR" for December 9th last, was read by the author before a gathering of members of the Auto-Cycle Club and their guests in the Club Room at 119, Piccadilly, on Friday last. One of the famous Automobile Club house dinners—light, dainty and enjoyable—was served in the grill room, and soon after 8.30 Mr. C. Vernon Boys, F.R.S., who occupied the chair, called upon Mr. O'Gorman for his contribution to the evening's amusement, and from that point to close on midnight there was not a silent moment in the room and the chairman never once had to look round for a speaker, so that there was no lack of comment and opinion. Mr. O'Gorman made his paper interesting by his light after-dinner touches of humour and subtle flashes of wit. He dealt very fully with all the points of a mythical ideal motor-bicycle prefacing his analysis by saying that he wanted no weight, no vibration, no noise, no numbers and no price, proceeding to show how closely to each quality the ideal might attain. He made a passing reference to an explosion turbine as being likely to effect a weight reduction, whilst his deductions brought him to the possibility of multiple cylinders with water-cooling and pressure fuel feed. But Mr. O'Gorman gave many proofs throughout his paper and in his after remarks, that the light weight and moderately-powered motor-bicycle was best when all was said and done. His only complaint was that the small engine was at its worst in hilly country because it could neither go fast up hills nor down them. However, if the average rider could get 25 miles an hour under the most favourable circumstances and seven miles an hour without the need for pedalling on a hill of 1 in 8, he would probably be satisfied, whilst if he were a sensible man he would refuse a weight much greater than a hundred pounds. Brakes, accessible, adjustable and removable, were alleged to be most desirable and they were held up as the most needed fitments in the present-day motorcycle. The author appealed for the insulation of the rider from road shocks and for silence, dealing with two or three forms of silencer, Mr. Lyons Sampson's device (illustrated in our reproduction of the paper) being fully described. He seemed to hold an open mind upon the question of the need or otherwise for pedals, whilst as for ignition he plumped for the plain make and break and non-trembler coil. In the discussion which followed, contributed to by Professor Archibald Sharp, the Rev. B. H. Davies, Messrs. Lyons Sampson, A. J. Wilson, G. F. Sharp, A. G. Reynolds, M. Tuchmann, H. Reeves, M. G. Duncan, Chatterton, Gunn and others, various points in the paper were elaborated and one or two conundrums were put to the author. Professor Boys closed the discussion with a most interesting assertion that the turbine explosion motor was a hopeless quest The efficiency of the turbine would depend upon keeping up a high degree of temperature, and this would render the whole scheme abortive. As for the call for silence, he reiterated his preference for some instructive and warning noise. As he put it, he liked pedestrians to receive warning by means of a peaceful puff so as to check them in their aimless strayings all over the road. He also preferred a motorcycle of moderate power and asserted that such a machine would obtain more converts for the pastime than would any other kind of machine. Mr. O'Gorman took a lightning skim over the discussion because the hour was getting late, and on the matter of transmission he agreed that chains, free engines and clutches had been singularly ignored except by the speaker, who had brought them into the discussion, and he suggested that an evening should be devoted to transmission systems only. He replied to a questioner, who had asked why, on some machines, the act of opening a port and allowing the exhaust gases to get away freely caused a reduction in power. Mr. O'Gorman said that in a well-designed engine the result should be a relief of back pressure, but it occasionally happened that the only result was to cause a loss of compression, because of the loss of a necessary amount of heat and this resulted in weak explosions. Mr. O'Gorman received an ovation at the close of his address and the meeting ended with a compliment to Professor Boys for presiding.

A Grimly Appropriate Name.

Another of the sensational "looping the loop" acts has ended, as all of them must do sooner or later, in a terrible accident. Miss Mina Alix, the American lady who performs the feat known as "The Ring of Death" (i.e., looping the loop in a motorcar), fractured her skull last week in a circus at Madrid as the result of the car falling when at the top of the ring.

The Automobile Club is being greatly criticised for its decision to sell its patronage for £500 to the Ninth Annual Automobile Exhibition (known as Cordingley's) to be held at the Agricultural Hall in March.

The German Motor Club has given birth to a motor boat section. As nurse for this offspring a special motor boat committee has been elected, consisting of Count Talleyrand-Perigord, Baron Brandenstein and three others.

Werner Bros. have begun the new year in a manner which suggests that they will fully maintain their brilliant record of last year. As will have been seen from the report in last week's issue of "THE MOTOR," one of the earliest motorcycle road races of the year—that from Barcelona to Ignalada—was won easily by a 3½ h.p. Werner.

Three German-made Darracqs will compete in the Gordon-Bennett trials. The Darracq firm will, therefore, have a triple chance of being represented in the actual race—viz., for France, England and Germany. The German Darracqs will be manufactured at the works of Adam Opel, of Russelsheim, and will be driven by Fritz Opel, Heinrich Opel and Poge.

New Repair Works.

Motor repair works have been opened at 137½, King Street, Hammersmith, by the West London Motor Co., Ltd. It is their intention to make a speciality of re-enamelling and replating motorcycles. The garage is sufficiently spacious for 50 cars and they have the sole London agency for the Clyde light car, which has a 6½ h.p. Aster engine and sells at £175.

A New Monthly Motor Paper.

A new journal with international ambitions has just made its bow in Paris. It is called "Motoring in France," and is printed in English for circulation in English-speaking countries, and its aim is to post motorists in those countries in all that is doing in France, the home of automobilism. The paper is edited by Mr. R. F. Collins, probably the only English journalist resident in Paris, who is absolutely *au fait* with his subject, and his name alone is sufficient to give emphasis to the statement contained in the first issue to the effect that (contrary to the custom in France) not a line of veiled advertisement shall appear amongst the letterpress. Conducted on thoroughly independent lines the journel should be a success. It will be published monthly, and sell at sixpence.

AN ECHO OF A RECENT CASE.

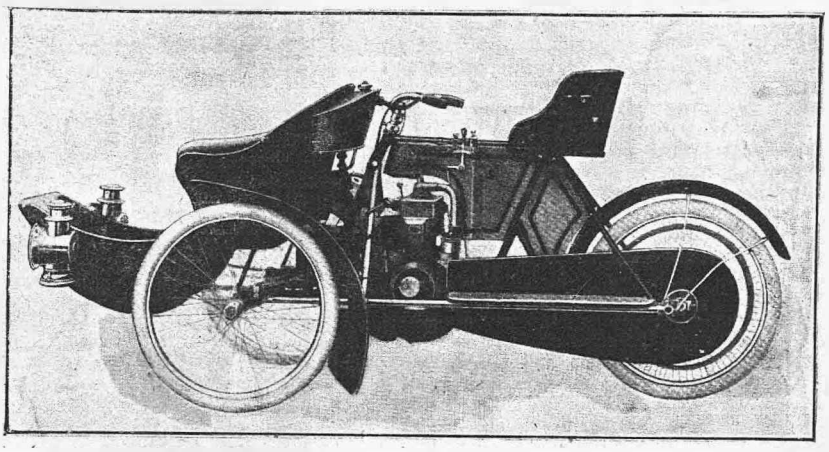
COUNSEL FOR DEFENCE: "I put it to you, officer, that you could manipulate such a watch as this so as to make any motorist do five miles in five seconds. What sort of a watch do you call it?"

P.C. X 95: "A stop watch."

COUNSEL: "A stop watch! I should be inclined to call it a go-ahead watch."

The Manchester Motorcycle Show.

The eighth annual show organised by the Manchester and District Cycle Trades Association was opened on Friday last, and will continue till Saturday next, February 6th. No motorcars were exhibited, as a special motorcar show will be held from March 7th to 12th. The number of motors exhibited showed a decided increase over that of previous years, over 100 machines being on the stands at the opening of the Show. The most noticeable feature was the number of fore-carriages and side-cars exhibited, almost every stand showing at least one. The first motorcycle stand was that of Brown Bros., who showed their 1904 model motor-bicycles with a number of accessories and motor sets. On stands 15 and 16, W. Prince, Manchester, exhibited the new model Ariel motor-bicycles, in all powers, and also the Royal fore-carriage attachment. A. Cope and Co. staged the Cope-Bohemian tri-car. This is fitted with a 3½ h.p. water-cooled engine, with starting clutch and combined belt and chain drive, with aluminium colour coach built body; this mount looked very fine. The Manchester Machinists Company had several J.A.P. motors on exhibition, one being fitted to a B.S.A. spring frame; together with a good line of accessories. A good stand was that of the Quadrant Cycle Company who, in addition to their 2 h.p. and 3 h.p. motor-bicycles, showed a Quadrant motor-tricycle, and also the 5 h.p. Quadrant tri-car, which is driven by two separate 2½ h.p. engines. Bradbury and Company, being a local firm, had a complete stand of motor-bicycles. Besides their 1904 models, they had the machine which won the S. F. Edge trophy and the one which was successful in the 1,000 miles' trials. A 2 h.p. model enamelled in aluminium, with crimson lines, looked very effective. H. Hargreaves, Bury, staged the Hargreaves motor-bicycles with Minerva engines, and also the Fleet motor-bicycle, with 3 h.p. vertical engine with mechanical valves. The Homer motor-bicycles were shown by F. Whitehead, Longsight. These are fitted with 2 h.p., 2¾ h.p., or 3½ h.p. Minerva engines. Humbers, Ltd., had a good show of their well-known motorcycles, fitted with the free engine clutch. A Beeston tri-car with 3½ h.p. engine, with water-cooled head and clutch, looked a fine model. Several 2 and 3 h.p. motor-bicycles were staged by the Triumph Cycle Company, also a 3½ h.p. water-cooled tri-car with honeycomb radiator under fore-carriage. This was fitted with belt drive, and band brakes actuated by foot pedal. The Rex motor-bicycles were shown by G. P. Cookson, of Old Trafford. One of these was fitted with a Perry fore-carriage. A 4 h.p. water-cooled Rexette (shown in the illustration) driving by long chain from the half speed shaft to back wheel will be shown. This is fitted with bucket seats and footrests. A very complete range of the Clement-Garrard motorcycles was shown by F. Bullock, Manchester, including several twin-cylinder models, and a feather-weight motor with Willoughby's spring cranks, which rest in any position. Singer and Co., Ltd., exhibited their 1904 model motor-bicycles with belt and chain drive, also a tricycle and Trimo. Newton and Company, Manchester, showed the Bradbury motorcycles, and also the Centaur and Royal Enfield motor-bicycles, both of which had both belt or chain drives. The Abingdon motor-tricycle with 2¾ h.p. Minerva engine was shown by S. Broadbent, Stretford; also two motor-bicycles fitted with Minerva engines and belt drive. W. H. Ireland and Company, Warrington, showed a Walton fore-carriage, with 5 h.p. twin-cylinder, water-cooled engine, with belt drive and starting clutch; also a Walton motor-bicycle with 3½ h.p. Minerva engine. Both these machines were fitted with very large copper silencers. H. Churchill and Company, Manchester, showed the James motor-bicycle, with 2¾ h.p. M.M.C. engine, and also a good supply of Bat motors, including the Bat car and spring frame model. Allday and Onions, Ltd., showed several of their 2¼ h.p. motor-bicycles, 1904 models. The Show closes on Saturday, February 6th.



The Rexette shown at the Manchester Show.

A Kansas chief constable objects to cycle bells and motor horns on the ground that the cyclist and motorist may strengthen their defence in the event of a run down by pleading that they had given audible warning of their presence. He advocates that the onus of dodging the danger should lie on the motorist and not on the pedestrian.

Hotel Charges during the Gordon-Bennett Week.

Wonderful reports are circulating about the exorbitant demands of hotel proprietors in Frankfort-on-the-Main and Homburg for rooms during the Gordon-Bennett week, so wonderful, inded, that one has felt inclined to suggest to the municipality of the first-named that the town should be re-named "Frankfort-on-the-Make." The Rooms Committee, however, comes forward and declares those reports to be moonshine, and discloses the tariffs agreed upon. Here they are for the first-class hotels in Homburg: Single-bedded room, a minimum of £1 a day; double-bedded room, 35s., a guarantee of a week's stay required in each case. The Frankfort-on-the-Main hotel proprietors will require a guarantee for six days' stay, and charge a minimum of 15s. a day for a single-bedded room and 35s. for a double-bedded one. Naturally, those who contemplate going in for apartments de luxe will have to draw heavily on their bankers before setting out. It is untrue that no more rooms are to be had in Homburg.

As the result of a test case in the town of San Leandro, California, an ordinance recently established there prohibiting motorcycles from using the public streets has been revoked as being untenable.

In some parts of Australia the farmers are said to rival the French peasantry in their hatred of the motor vehicle. A motorcycle road race had to be abandoned recently in consequence of the threat of the local farmers to turn out all their live stock on the road.

A Reminder!

"Cyclomot" wishes to remind an unknown motorist living, he thinks, in the north-west of London, of a loan of a very good sparking plug when the motorist was in trouble with the ignition on a motor tandem at the top of Digswell Hill a couple of months back. Our contributor was glad to be able to help towards the discovery of the trouble and was not anxious for any suggestion of gratitude, but he thinks the plug should have been returned.

Motor Licences.

In reply to several enquiries from readers as to whether a motorcar licence permits them to drive a motorcycle and vice-versa, the following are the regulations:—(1) A car licence covers every type of motor vehicle, so that a car driver can use a motorcycle. (2) A motorcycle licence alone does not include the right to drive a car. We mention these facts because, owing to the accidental transposing of a word in a recent query it would appear as if a motorcycle licence only sufficed also for driving a car.

The Leonard Light Car.

Messrs. J. J. Leonard and Company, of Brockley Garage, Crofton Park, London, S.E., are now prepared to supply a 6 h.p. light car with a genuine De Dion engine at £145. The car is of French make, and Mr. Leonard's own personal knowledge of the trade in France has enabled him to secure the best possible production at the price. In every sense the car is thoroughly in accordance with modern practice: it is fully guaranteed and, moreover, is supplied with a complete equipment of lamps, horn, tools and all accessories. The Leonard light car will be well worthy the attention of the man of moderate means.

The Dust Nuisance.

Mr. Charles Sangster, of Components, Ltd., Birmingham, writes to the "Daily Mail" suggesting that every motorcar owner should pay £5 or £10 towards a County Council Dust Abatement Fund, the money thus collected to be devoted exclusively to the purpose indicated, thus bringing home to every local authority the necessity for some action wholly at the motorists' expense in its initial stages. This, Mr. Sangster believes, would start dust preventive measures all over the country.

An Explanation of the New Act.

Earl Russell, the other evening, told his fellow members of the Automobile Club how he had taken the chairman of a County Council and the surveyor of the roads round on his car over a number of roads which, in the opinion of those dignitaries, were sufficiently unsuitable to motor traffic as to warrant its prohibition or restriction. The result of the ride was most satisfactory, one or two opportunities occurring of proving the facility of control in awkward situations and, in consequence, the Council has since decided not to schedule any of the roads under its control.

The "Selden" Patent and "Mercedes" Agency in America.

New Yorkers are much perturbed at what they call "the unlicensed invaders from foreign countries" who compete with their own licensed importers. Mons. Charley, who arrived in the States about the middle of January with the object of confirming his claim to be the exclusive agent for the Mercedes Company for the United States, has threatened to prosecute American agents who attempt to sell Mercedes cars in the country; but the A.L.A.M. (American League of Automobile Manufacturers) protest that, although the matter is not definitely clear, two or three of their licensed importers have a legal right to handle Mercedes vehicles, and that Mons. Charley's failure to observe the Selden patent has weakened his claim.

Halifax Automobile Club.

The second annual dinner of this club was held at the White Swan Hotel on Thursday evening, when about 20 members were present. Amongst the guests were His Worship the Mayor, who joined the company after dinner, the chief constable, Mr. Edgar Booth, solicitor to the club and others. After the dinner an enjoyable smoking concert followed when Messrs. Rhodes, Mortimer, Garside and Lopez very ably entertained the members with instrumental and vocal music. The event was a very enjoyable one, and was presided over by Mr. James Lord, the president of the past year. For the current year Mr. A. F. Firth, J.P., of Lightcliffe, was elected president, and Mr. James Lord, vice-president. During the last season the club arranged several pleasant runs, including two to Southport, also one to Scarborough for the Whitsuntide holidays, and during the coming summer a further number of day and week-end runs are being arranged. The club has decided to be affiliated with the Automobile Club of Great Britain and Ireland in order to strengthen the interests of motorists generally.

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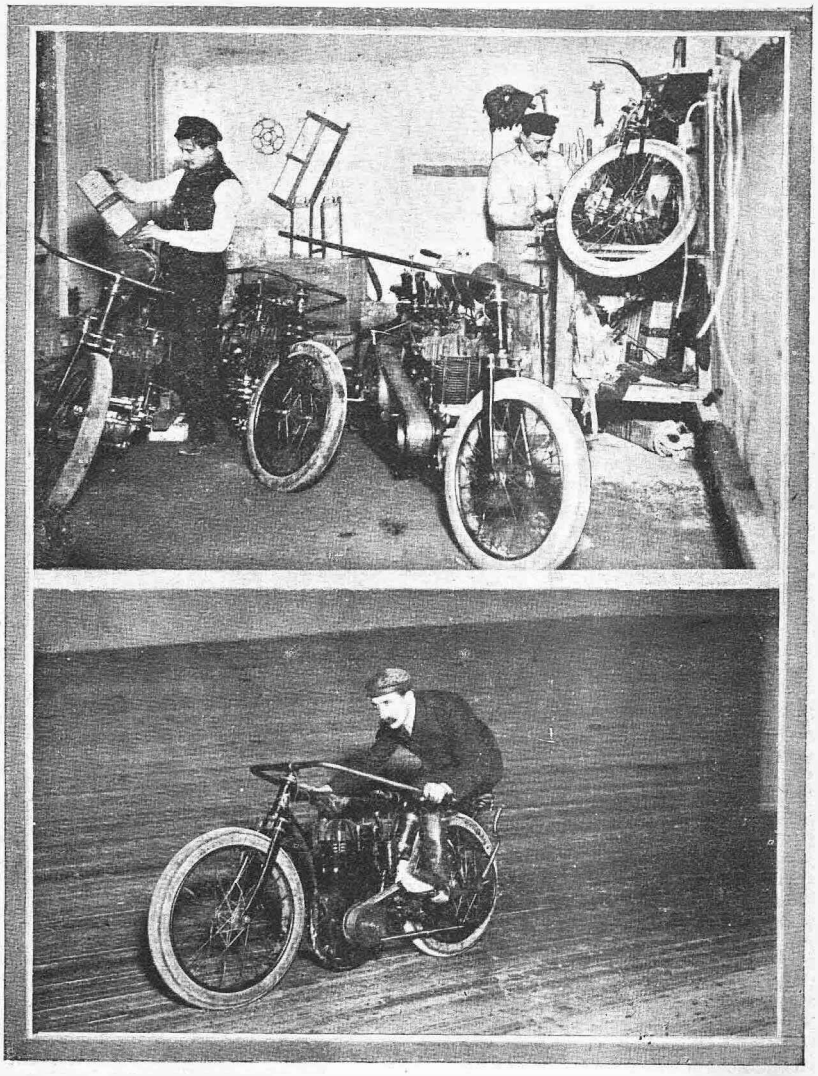


1. Cissac, holder of the Motor Cycling Brassard (on the right) in his workship at the Paris Winter Track.
2. Cissac on the track.

"A Man and a Motor."

"Surely there never was anything to hold a candle to a car for sheer downright mystery and inscrutability. With an ordinary automobile in the grey isolation of a country lane you can get a deeper insight into things occult and incomprehensible than was ever vouchsafed to the Prophets. In the first place you will wonder why the dim thing was called an automobile at all, seeing that there is very little 'auto' about it, and considerably less 'mobile.'"

Mr. Bradshaw-Needham, who moralises thusly in his recently published book "A Man and a Motor," has omitted one characteristic of the automobile—its power of evoking the humour of a funny man. Those who wish to find out what the humorist can make of the motorcar can do no better than read Mr. Needham's book: it is full of humour, mostly of the dry kind, though there is some rollicking fun in parts. We shall not speak of the plot, for there is none to speak of, nor shall we spoil the reader's pleasure by quoting any of the dialogues or situations. Our advice is to invest the necessary shilling at the bookstall and pass away a dull hour or two in the train pleasantly. Mr. Stephen Reid's black and white illustrations show a more accurate knowledge of the automobile than is usually found amongst humorous artists other than experts. The book is published at the price of one shilling by the Clements Publishing Company, Portugal Street, Strand.

A Sceptical Constable.

Lewis Stroud, the old 'Varsity cyclist, was summoned one day last week for driving a motorcar which was not provided with a registered number. Mr. Stroud explained to the policeman who stopped him that he had applied for a number but had not yet received it. Robert, however, was not satisfied with the explanation, and hauled his victim up to the Highgate Police Court where the magistrate decided that the explanation was perfectly reasonable and satisfactory and dismissed the case. The curious part of the affair is that the absence of a number on Mr. Stroud's car had attracted the attention of several other constables, all of whom had accepted the explanation given.

The Motor Cycling Club's Annual General Meeting.

The Motor Cycling Club's annual general meeting was held at Frascati's Restaurant, Oxford Street, London, on Thursday evening, January 28th. There was a fair attendance of members present. The statement of accounts and report of the work of the club was read by Mr. G. E. Roberts, the secretary. The number of members elected in 1903 was 109 as against 30 for 1902. A satisfactory statement of assets over liabilities was shown by the balance-sheet. The successful series of trials organised during last summer was referred to, and it was announced that Mr. S. F. Edge had offered two trophies for competition during the coming season. It is probable that a club run will be organised some time during the present year, to take place between London and Edinburgh, or if this should prove too far, some intermediate distance will be run off. The officers for the coming season were elected as follows:—S. F. Edge, Esq., president; vice-presidents, E. J. Kennard, Esq., J.P., Lt.-Col. Mark Mayhew, J. Pennell, Esq., E. Perman, Esq., Captain J. A. Jackson, Esq. The post of honorary secretary will be retained by Mr. G. E. Roberts for a time, pending the appointment of a successor. Honorary treasurer, Mr. E. March; committee, Messrs. Perman, Hooydonk, Chandler, Reeves, Goodwin, Johns, Brown, Cowles, Fry, Arnott and Jones. It is intended to form a riding committee in place of sub-captains, who will take charge of the various runs organised. It was announced that it was hoped shortly to state that a successor had been found for the post of editor of the "Club Gazette," vacant through the resignation of Mr. Fry, whose valuable services in this respect the committee were sorry to lose. Amongst the matters raised in discussion by the members present was the question of the desirability of having the executive committee composed solely of non-trade members. This point was raised by Mr. M. G. Tuchmann, who said that he was of opinion that it was to the interests of the club, as a social body, that there should not be any possibility of its being suggested amongst the public that motor trade interests of any order were embraced in the club policy, no matter how slight it might be. He thought that without going so far as to suggest that

TRADE MEMBERS SHOULD BE EXCLUDED

from the management of the club that a "modus vivendi" should be possible, and that the trade members, instead of being on the executive, should form an advisory committee and help the club in other ways. Mr. Fry replied that he was glad an opportunity had been afforded him to speak on the matter in question. He considered Mr. Tuchmann's suggestion quite impossible. The trade members on the committee, to his knowledge, had never in any instance made use of the club for business purposes. They were gentlemen who had the interests of the club keenly at heart and devoted many hours of their valuable time in promoting its welfare. He thought that to make invidious distinctions between trade and non-trade members would be the worst possible policy for the club to adopt. He spoke as a member of the committee who was absolutely unconnected in any way with the motorcycle trade. Mr. Reeves thought that it was not unlikely that there was a feeling abroad of the nature that Mr. Tuchmann had indicated from the fact that he saw a letter in one of the motor papers signed by a well-known firm in the trade commenting on an occurrence in one of the trials held by the club, and which directly applied to a machine of their make ridden by a competitor. Further discussion followed, and then the proposition was put to the meeting whether they were in favour of Mr. Tuchmann's proposal. On the vote there were 24 against it and 1 for it. Mr. Chandler raised the question of the 24 hours' run mentioned at the club dinner. He thought it would be a very popular event, and if run between the capitals of England and Scotland it would have a classic interest added. Several members replied; they viewed the project favourably, and thought it would be a fine sporting event, although some doubts were expressed as to the feasibility of accomplishing the distance in the time.

No Restrictions at Herne Bay.

The authorities at Herne Bay have decided not to impose any speed restrictions in that town. This should prove of great value to motorists generally, as Herne Bay is a very popular motoring resort. Thanks are due to Mr. Clark, the well-known motor and cycle agent, for his efforts in getting the speed limit of ten miles per hour originally proposed rescinded.

The India Rubber, Gutta-Percha and Telegraph Works, Co., Ltd., Silvertown, will shortly place a small electric car upon the market.

Motor Thefts.

The Cosi-Car Syndicate, 53, Warwick Street, Regent Street, London, W., write as follows:—"Might we ask the favour of your assistance in enabling us to trace a lost motorcycle with car attachment? On Monday, January 25th, we engaged a chauffeur without taking up his references. On Tuesday morning he was sent from our factory in Portland Street to Islington, since when both driver and car have vanished. The police are strenuously prosecuting the search, and are circulating the trade with a description of the motorcar, a 2¾ h.p. Standard pattern Brown, and the car attachment recently exhibited at the Stanley. The bicycle and body of car is easily replaced, but the unfortunate part is that the chassis has fittings on it which have taken many months to perfect, and was to have been used in the grounds at the Palace Show on the 12th February."

B X 032 (returning early from Club): "Heavens! Jones, what are you doing with that collection of implements—starting a prehistoric museum?"

C O 134 (embarrassed): "Er—no—been fined so heavily, lately, that I'm compelled, you see, to hunt for buried treasure!"

In addition to the "Automobile Week" at Nice this spring there will be a similar event at Cannes, motorcycle and car trials and launch races having been arranged; so that the Riviera will witness a large gathering of social and sporting automobilism.

The Austrian team for the Gordon-Bennett is (unofficially) announced to have been selected as follows:—Werner, Braun, and Hieronymus. We may remind the reader that Austria has entered only three cars, so that there will be no need for any eliminafory trials. The cars will be Austrian made Mercedes.

High or Low-powered?

The opinion of a rider and maker who has had the experience that Mr. J. van Hooydonk has had is worth listening to upon so complicated a subject as the question of the most suitable power for a motor-bicycle and so we have asked him to give us his views. He writes; "It appears to me that participants in each case champion the type they are most familiar with. Having ridden almost every type of motorcycle, from the so-called 1¼ h.p. to the machine I dared not let go 'all out,' I can look back and put to myself the question: which was really the most pleasant from every point of view? 'Motorcycles,' of course, embrace many types of machines, and when it comes to a type designed to carry two persons there is no such thing as too much power, within reason. With a motor-bicycle, however, it is an entirely different matter and for my personal pleasure I undoubtedly

PREFER THE SMALLEST ENGINED MACHINE

I ever rode. Many reasons combine in favour of the smaller machine:—Weight—A machine ridden by me four years ago did not weigh 75lbs. With the greater knowledge we have now, this could even be reduced. Cost—First cost less; cost of upkeep considerably less in proportion. Further, the attention required by the lighter machine is also considerably less. Tyres last longer. A simple twisted belt would carry one for thousands of miles. The machine is more silent. Vibration is much less and, on the whole, our mechanism more resembles that of a sewing machine than of a motorcar. It is when mechanism has to transmit a lot of power that everything is affected accordingly, and, of course, has to have a corresponding amount of time and money expended to keep it in order. Further, we hear a deal of side-slip of motor-bicycles. When I rode the very small engine, geared very low, the work on the back wheel being rotary and practically constant

THERE WAS NO FEAR OF SIDE-SLIP,

and many a time in winter have I ridden on the greasiest of roads where my companions on push-bikes (good cyclists) could not hold their machines up. With the larger and higher-geared machine the violent explosions have a tendency to make the back wheel revolve, it slips forward and when once slipping it may go anywhere. Thousands of miles have I covered on such a mount, and the hills I have had to walk can easily be counted on one's fingers. As things are now, my preference is for a motor not over 2 h.p., as light as possible and geared reasonably low. At the same time my opinion is that the future motor-bicycle will have a very small engine indeed with a good system of gearing to allow the revolutions, i.e., the power, to remain constant, and only the speed will decrease when hills have to be surmounted. It has taken years to bring the push-bicycle to what it is. In this case, however, the power can be increased for short periods when required A petrol motor, however, drops in power when speed decreases. Now the final improvement in bicycles is change of gearing. Surely this is sufficient reason why it should be adopted on the motor-bicycle

PRECAUTIONS!

The weather, 1904. A new rig out for up-to-date motorists.

The Rivierre Speed-gear Motor-Bicycle.

Gaston Rivierre, the once famous cyclist, now equally celebrated for his performances on the motor-bicycle, has turned his attention lately to the technical side of the sport and is turning out at Courbevoie a machine fitted with a change-speed gear which is said to give excellent results. The gear is contained in the rear hub. The starting of the De Dion motor is easily effected by a quarter turn of the pedal which suffices to give three revolutions to the motor. The motor power is transmitted to the rear wheel by a chain of 4 mm. (about 3-20ths of an inch) diameter. Rivierre claims that without any pedal assistance he can start off at full speed, and that his clutch gives the rider exceptional control in traffic: the machine can be pulled up, the motor still running, and can be gradually accelerated, without assistance, then pulled up again; and finally, when the road is clear, will bound off at full speed. In the event of a breakdown, the motor chain is detached, and the rider has a change-speed pedal bicycle.

A limited company has been formed, called The Samson Leather Tread and Tyre Co., Ltd., to manufacture the Samson non-slipping covers for pneumatic tyres. Captain Theo. Masui, of Hanover Court, Hanover Street, London, W., is appointed their sole selling agent.

A Paper on Tyres.

A very interesting paper dealing with the manufacture and use of pneumatic tyres will be read before the members of the Automobile Club on the 24th inst. by Mr. J. D. Siddeley, who is well qualified for the task he has undertaken. Both the paper and the discussion should be exceedingly interesting and the members should derive considerable advantage and knowledge therefrom.

A Fearful Risk.

The forthcoming side-slip trials of the Auto-Cycle Club will evidently not lack trade support, for there are quite a number of devices waiting to be submitted. The difficulty attending these trials is the risk to competitors and even the suggestion of a facetious motorcyclist that the Gordian knot be cut by the club's judges themselves riding the machines over the slimy course finds no favour—particularly with the judges! It is an open question whether the club should do anything to encourage an inventor to take the unavoidable risk attending a demonstration of his device, and if an accident occurred a lot of trouble might arise. The club will be well advised to consider this matter very fully before it decides to run the trials. There is an opening for a good arrangement which would prevent the rider from suffering the full effects of a fall. The overhead travelling trolley would do, but its cost is prohibitive.

OTHER PEOPLE'S VIEWS.

NOTE.—These columns are set apart for the discussion of motor topics by bona-fide *readers of* "THE MOTOR," *and trade letters containing veiled advertisements are not admitted.*

The Editor 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.

Cause of Loss of Power.

Sir,—Re query of January 6th, page 583, "W.J.P." (London): I had a car here for repairs which puzzled me all one day, and although everything was, to all appearances, perfect I could not get any power, and it was quite by accident that I found out the cause. I pressed the contact blade down to give a good hard wipe and the motor immediately regained its old power. I want you to understand that to all appearances the contact was perfect before, giving a splendid spark in each cylinder, and the engine would run on each cylinder with the other three cut out.—Yours faithfully, H. LUSTED.

A Mystery Explained.

Sir,—Having just emerged from a time of trial and tribulation with my motor-cycle, extending over many weeks, I think it is only right that I should give my experiences, on the chance that they may be of help to others in like trouble. I notice in a recent issue of "THE MOTOR" a letter from "H.H.F.," and I believe his trouble is identical with mine—the symptoms are so similar—the only difference being that my machine would only run for 300 yards before slowing up, whilst his will go for five miles. Briefly, the trouble was this: On starting, the engine would run well for about 300 yards, when it would slow up and finally stop altogether. If I waited a minute or so, the process was repeated, with the 300 yards reduced to about 200, depending on the length of time I waited. Of course, I dismissed the idea of overheating at once, the distance being palpably too short. Then I had the carburetter out, tried all possible adjustments, put new springs on both valves, tested the petrol flow, and indeed sent the carburetter to the makers. It was returned as having been found defective and repaired. But on trying it again, the trouble was there just as before. Finally, on removing the carburetter and the inlet pipe after another fruitless experiment with a similar carburetter from another machine I noticed that *the gauze in the inlet pipe was covered with a film of water.* Here then was the automatic throttle and the cause of all my worry. The film stopped the supply of gas to the engine: on waiting a minute or two the heat from the engine dried up the water, and the same thing occurred *ad infinitum* and *ad nauseam*. On removing the gauze altogether the machine romped away "on top form." The remedy would appear to be: (1) Take out the gauze, and risk a fire back; or (2) Fit a warming pipe from the exhaust round the supply tube.—Yours faithfully,

E.W.K.

Motors in Malta.

Sir,—Whilst we cannot give your correspondent "M.H." any information as to repairing facilities in Malta, we can tell him that the island is very hilly, and that plenty of power in the motor is requisite. We have recently sent out a 10 h.p. phaeton to a customer, who has sent us home his 4½ h.p. car to sell, as he found the power quite inadequate for the very stiff gradients encountered there. The roads, we understand, in addition to being very hilly, are both rough and narrow.—Yours faithfully,

THE DURYEA COMPANY.

Coventry, Jan. 13th, 1904.

Two-speed Gears.

Sir,—We beg, through your paper, to thank those gentlemen for the kind and useful criticisms regarding our two-speed gear, namely, the Seallis two-speed gear, by Seal and Ellis. Mr. Hugh Roberts mentions in his letter that the chain wheel on the countershaft for the high speed is smaller than its driver on the engine shaft. We should like to state that the sketch published in "THE MOTOR" was purely descriptive, entering into no details. The chain wheels on the countershaft will certainly be of larger diameters, with a larger pulley, thereby making a more efficient drive, as he mentions. As regards the pulley being in line with the driving wheel, it will be seen that the pulley may be put in any position on the countershaft in front, or at the back of the chain wheels. We feel under great obligation to Mr. Hugh Roberts for his kind offer to give the gear a good trial on his Trimo. Will that gentleman kindly communicate with us, and we shall be pleased to forward him a detail drawing and make necessary arrangements. Mr. S. E. Hodgkin, M.I.E.E., mentioned the lubrication problem. We are at present considering this point, and suggest in addition to special lubrication for the loose sprocket and sleeve a gear case with an oil bath for the chains, which will greatly prolong their life and keep grit out of the free-wheel.—Yours faithfully,

G. E. SEAL and C. ELLIS.

27, Stokenchurch Street,
Fulham, London, S.W.

A Request.

Sir,—In your issue of December 30th a correspondent signing himself Reginald S. Radcliff writes on suggested improvements to a 2¾ h.p. machine. I should be glad if he would let me know how he guards his belt from mud dashing off the tyre?—Yours faithfully

G. E. BADELEY.

Wragly Vicarage, Wakefield.

Werner Carburetter.

Sir,—We notice a letter on page 577, issue 100, which refers to the position of the carburetter in the new Werner motor-cyclette. Your correspondent draws attention to a point which he considers a disadvantage. We should like, however, to inform him through the medium of your paper that the machines exhibited at the Stanley Show were only fitted with the old carburetter, as the patent for the new type was not completed at that time. His remarks would be perfectly correct so far as he could judge from what he saw, but are not so as regards the new complete machines. We are glad to see also that he is sound on the question of the weights of machines. In this particular we claim that the weight of the Werner machine is less than any other make of equal horse-power.—Yours faithfully,

WERNER MOTORS, LTD.

The Belt Problem.

Sir,—I have devoted considerable time and attention to the letter signed by Mr. T. Verney Cave, in your issue of December 30th, but owing doubtless to my own density I still find myself unable to grasp his meaning in question three. Regarding question one, leather-faced pulleys are largely used now by racing men, but only in conjunction with flat belts, from which fact it seems probable that Mr. Cave is referring throughout to flat belts, though he does not say so. It would be a great help if Mr. Cave would make clear the following points:—(1) What is meant by tongue-shaped springs? (2) In what position are these springs to be bolted on the pulley? (3) If, as I take Mr. Cave to mean, the bulk of the driving stress is to be taken on the bolt-ends, would not this be bad for the belt? (4) Are the bolt-ends or the springs to be "bridged inwards"? What is "bridging"? And what, in this case, is meant by "inwards"? (5) To what would the "back stress" referred to be due? (6) What would the "back stress" occur in the top of? (7) Is the fabric to be "braced" round the cross section of the rim, or its circumference? I should like to have these points made clear as I am a motorcyclist and have had more than my share of belt troubles and, therefore, anxious to adopt any good practical suggestions.—Yours faithfully,

"YELLOWBOY."

Aluminium Washers.

Sir,—In answer to your recent correspondent on the above subject, I beg to state that I see no reason why these should not be more extensively used for joints. Granting that aluminium is not a good conductor of electricity, there is always the thread of the spark plug in good contact. Also, if used for combustion head, there are the holding-down bolts which form a good circuit. Perhaps some of your readers can throw a light on the above.—Yours faithfully,

"EXPERIMENTER."

Loss of Power on Hills.

Sir,—I have taken your paper for two years and find it very useful. I thought, perhaps, my little experience would help "Puzzled" (Nottingham) in your "Information Bureau" in a recent issue. I have a two-seated car, 6½ h.p. governed Aster engine, Longuemare carburetter and have driven it 6,000 miles. Last June I had great difficulty in getting it to take hills on the top speed. After trying everything I pulled out the Aster plain coil and put in Waterson's trembler coil and the car has been running well ever since.—Yours faithfully,

JOHN E. GRIFFITHS.

Radium and Motors.

Sir,—Noticing "Magneto's" account of radium and motors in a recent issue of your journal I think it may be of interest to your readers to know that radium has a marvellous effect on an electric spark. A tube containing five milligrammes of radium bromide brought close to the gap between the sparking points of a Rhumkorff coil which is only sparking occasionally, renders the sparking continuous. The air between the points is "ionised" by the radium rays and is rendered thereby more conductive. I think this property would be valuable if it could be made of use in a motor engine, especially when the accumulator is run down and only sparking feebly. Possibly sparking plugs could be made to hold a small tube of radium, or a special case could be screwed into the engine near the sparking plug.—Yours faithfully,

L. MARTINDALE.

Solid Fitting for Accumulators.

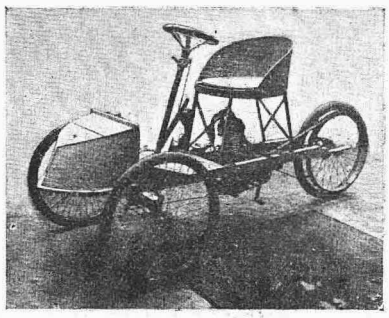
Sir,—Is the assertion made by your correspondents—that jelly electrolyte lowers the capacity of accumulators—borne out in actual tests? I have had a 1903 Minerva 30 ampere-hour jelly-filled accumulator in use for over 18 months, and with one charge it will run on an average 1,200 miles, whilst it has never "let me down" yet. It is a treat to open the battery case and find the terminals and wires quite dry and clean, not a mass of corrosion. Acid-filled cells, on the contrary, have proved a continual nuisance, in my experience, through corrosion of terminals; and I should very much like to see a splash-proof vent; I have never come across it yet. On one occasion my acid all escaped through a crack in the bottom of the case, leaving me stranded and making a fearful mess of the inside of the tank. This is impossible with the jelly filling. Those interested are sure to decry jelly electrolyte in motorcycle cells, since the more general its use the less accumulator breakdowns and troubles there will be.—Yours faithfully,

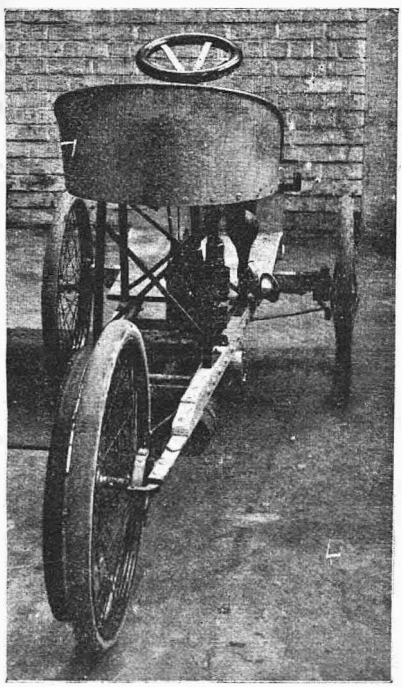
"NON-SPILLABLE."

A Light Three-wheeler.

Sir,—The letters that have been published in the last two or three issues of "THE MOTOR" relating to small vehicles induce us to send photographs of a machine that has primarily been designed for the use of those who do not possess the enthusiasm and agility necessary for riding a motor-bicycle, or the inordinate amount of muscular strength required to run a motor-tricycle. The general design and arrangement of parts is clearly shown by the photographs, and it will be understood that, although considerably lighter than a tricycle, the machine illustrated is much more comfortable besides being easier to handle. The front part of the dummy motor hood holds three gallons of petrol, while the rear portion provides ample accommodation for accumulators, coil, tools and accessories, all easily accessible and well protected. The frame is of special design, giving elasticity; and as the back wheel is supported on flat springs, riding is rendered pleasant owing to the absence of vibration. The photographs show the first car built by the designers, the trial runs having been eminently satisfactory, the car proving itself fast on the level and a good hill climber. A 3 h.p. engine, wheel steering, comfortable seat, protection for the feet, together with the other conveniences of a large car, should render "The Midget Car," at the price of a motor-bicycle, a popular little vehicle.—Yours faithfully,

J. N. CHAVIARA.
Liverpool. J. OKILL.





Illustrating letter from J. N. Chaviara and J. Okill.

The Speed Limit.

Sir,—Now that the closing of certain roads to motorists and limiting the speed to seven and ten miles an hour in several districts is being so much discussed, I should like to know if a motor-bicycle still continues to be a motor-bicycle when the belt is removed, and the machine is used as an ordinary pedal cycle through the above-mentioned districts, as I am sure many motorcyclists will find it fairly difficult to limit the speed to seven miles an hour for two or three miles at a time, whereas it is a very simple matter to remove the belt on such occasions and pedal the machine at ordinary cyclist's speed through these districts where the roads are fairly level. What have other readers of your admirable paper to say to this?—Yours faithfully, A. J WRIGHT, JUNR.

Devices to Keep the Hands Warm whilst Motoring in Winter.

Sir,—I have carefully scanned every weekly issue expecting to see some reply to "Cyclomot's" remarks in "THE MOTOR" of 16th December, 1903, and have been much disappointed at the absolute silence of your numerous readers on such an interesting subject. I have provisionally protected the following methods for warming the hands, or rather any handles or wheels of motors, ships, tramcars, etc., to be used in the open air. Firstly—By the use of a good circulating pump, gear-driven, belt or chain-driven, or driven from the fly-wheel, forcing the water *after* it has left the radiators and entered the pump, up a pipe attached to the steering pillar, to the jacket of the a stationary hot water bed just under the wheel, and thence by another pipe fixed to the steering pillar, to the jacket of the cylinder; this is much aided by the increased fall from the wheel, and from the jacket to the tank. By this means I am of opinion that the hands will be kept warm without the unsightly cumbersome gloves now worn, the engine cooler by the increased area of radiation, and the controlling power of the steersman much increased by doing away with the numbness of excessive coldness of the hands. After all, the steering gear is the Alpha of all mechanically propelled machines. Secondly—A funnel from the exhaust with a large bell mouth over the steering wheel, from which a continuous current of hot air would be thrown on the wheel and the hands of the driver. Thirdly—In some cases, especially electrically driven motors, trams, etc., the handle or wheel can be wound with resistances and thereby keep the handle or wheel warm. Fourthly—A hollow wheel can be made, into which can be inserted a slow combustion briquette, as is done in the foot warmers used in France. These briquettes can be made to last several hours, just giving out a slow, gentle, smouldering heat. I should be much interested in hearing your numerous readers' opinions on the above methods.—Yours faithfully, D. W. PARSONS, L.D.S.

4, Oxford Street, Liverpool.

The Humberette.

Sir,—With reference to "Ealing's" letter in your issue of December 30th, I would recommend him to try his car up Jasper Road leading out of Farquhar Road in front of the Crystal Palace. This is the steepest piece of road I know in London, and I should be much interested to hear if his Humberette can climb it.—Yours faithfully, C. A. COOKE.

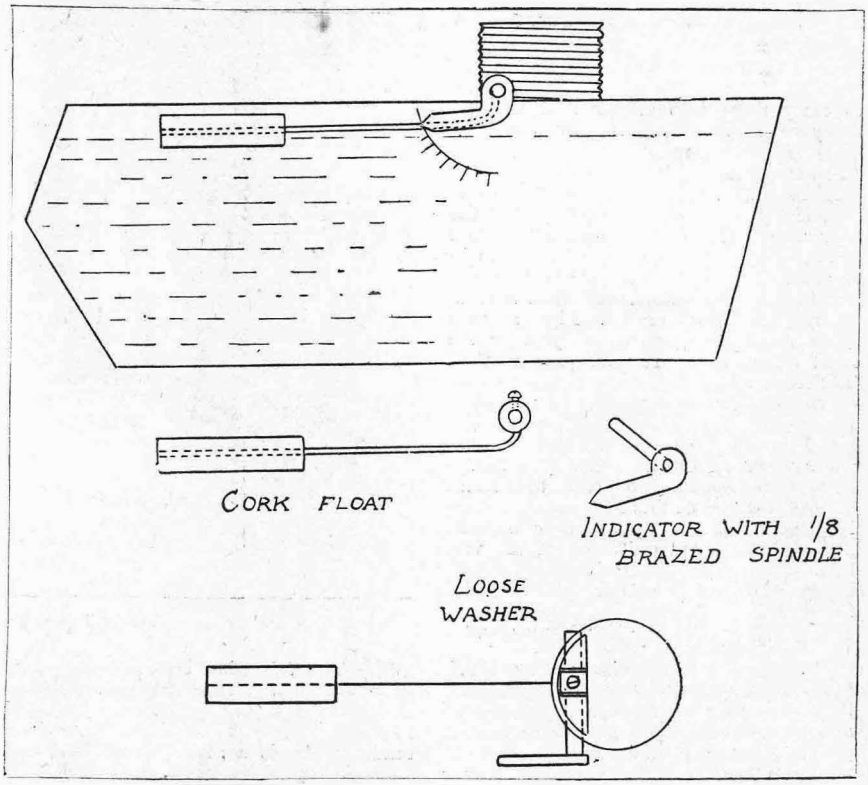
Lowering the Gear.

Sir,—I should like to put the following facts before your readers:—When it is apparent that the gear of a motor-bicycle is too high—that is, the motor gear—and it becomes necessary to reduce it, it is always better to effect the reduction whenever possible, by fitting a larger belt rim, rather than a smaller motor pulley. The effect in either case is, of course, the same, as far as the lowering of the gear is concerned, but an excessively small pulley is almost certain to slip on the belt, and so lead to racing and overheating of the engine. This may explain many cases of overheating consequent on a reduction of gear, which might have been effected by a larger belt rim without any harmful results to the engine. The now universally-used V belt is particularly liable to fail in its grip on an excessively small pulley, where the round belt might hold fairly well.—Yours faithfully,

SYDNEY J. TAYLOR.

A Simple and Effective Float.

Sir,—More attention is now being paid by manufacturers to the fitting of petrol gauges, which are of the greatest comfort to motorcyclists, and from time to time you have given some very interesting devices applicable to this end—but which hitherto required special fitments. You may, therefore, consider the indicator illustrated herewith of sufficient interest to your readers. By means of this any tank with a fair-sized stopper can be fitted without any alteration other than the drilling of one hole, a job which can be readily carried out by any amateur. First procure a length of steel wire about knitting needle size, and braze to one end a piece of metal of sufficient strength for ⅛in. spindle hole, and small set pin as in drawing: to the other end attach a round cork about 2in. long and of a diameter just small enough to pass through the filling hole; this constitutes the float. A ⅛th inch rod long enough to pass across one side of the filling hole, and to which has been riveted or brazed a suitably shaped piece of sheet metal, serves as an index finger. A hole can now be drilled across the filling hole as low and as near to one side as possible; but to carry out this work it will be necessary to plug the hole with a hard piece of wood, otherwise the drill would probably be broken when through one side and starting on the other. I utilise two shaped fibre washers for keeping the float in the centre of the tank, and find them answer well: the long leverage of the float ensures reliable working. When fitting all together I would suggest twisting a piece of fine wire to the set screw of the float, as in the event of being accidently dropped when inside the tank, it can be easily "fished" out again. The above device, of course, partially restricts the filling space, but even then almost any bicycle size funnel will fit.—Yours faithfully, F. H. GREEN.



Illustrating letter from F. H. Green.

Side-slip Trials.

Sir,—Re the forthcoming side-slip trials, I ride a 2¾ h.p. motorcycle which takes me in all directions in all conditions of road and weather. I have ridden almost daily the whole of this winter, and would like to give my experiences of the different roads under varying conditions, but this would take up too much of your valuable space. I will, however, enumerate what I have proved by actual experience to be the most dangerous in greasy weather:—(1) Large setts. (2) Wood paving. (3) Limestone roads. (4) Small setts. (5) Macadam roads. I think the trials should be held on one of the first two named, and that they should be on a hill, say, of about 1 in 40 gradient—trial to be once up and down. I have found that the application of the brakes has a lot to do with side-slip. Lastly, I think the road should have a bend in it.—Yours faithfully,

W. C. NORMAN.

A Light Tricycle.

Sir,—The letter, on page 509, issue 97, of Mr. Cleminson, with its drawing of a motor-tricycle very much resembling a design that I hope some day to be able to carry out, leads me to suggest that there is a large class of ladies and elderly men who are unable to use a bicycle or even the De Dion pattern tricycle, but who would, I am persuaded, eagerly purchase a light rear-driving motor-tricycle. The design would be not unlike Mr. Cleminson's, but, being for one only, the wheel base would be shorter, the steering post (which I should prefer with a bicycle handle adjustable for height) springing direct from the front axle. The engine would be clamped in front of the post, thus getting plenty of air, and being out of the way of the legs; and should have a two-speed gear, because the class of users I have referred to would require a machine that no hill or bad road would stop, rather than a very speedy vehicle. There should be a clutch, and the engine should be startable with a handle, or, preferably, from the seat. I should think the two-cylinder Clement-Garrard would be just the engine for this, or, perhaps, even better, the Starley with its worm drive. If pedals were thought advisable, they should have a two-speed gear, instead of the engine, so that starting might be very easy and yet the engine could be assisted without having to pedal at a high rate.—Yours faithfully,

"FABER."

The Vibration Question.

Sir,—With regard to Mr. Towlson's letter on the above subject in a recent issue, may I suggest that his engine, as described, is in no way a balanced one. If we examine his diagram No. 1, and put the suggested force of 1,000lbs. per square inch behind the pistons A. and B. or either of them, and then consider the countershaft as being either fixed, or subject to a resistance, what do we find? A couple tending to revolve the engine around the crank-shaft, and this has to be resisted through the cycle frame; hence the vibration. Mr. Towlson would also find he would have another reaction due to his use of cranked connecting rods. In my opinion the way to lessen vibration will be to use (if possible) a slower burning mixture, with a lower initial pressure; a flatter indicator card will result, and this will give a steadier turning moment.—Yours faithfully,

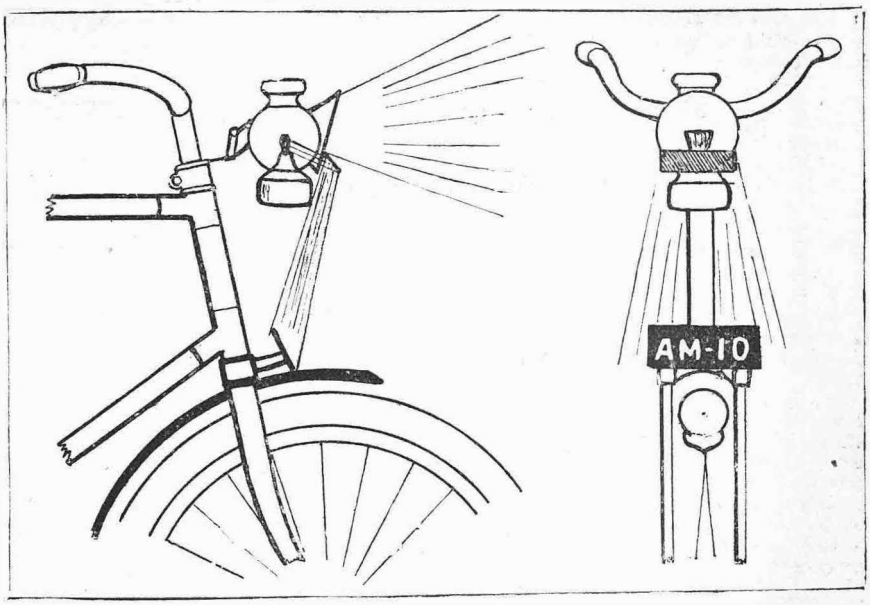
H. MENSFORTH.

Bradford.

Illuminating Numbers.

Sir,—Now that the regulations concerning number plates are in force it is necessary that we should work out the best way to carry them into practice. No doubt many of your readers will have suggestions to make; my idea is as follows:—The maximum width required is 4⅝in. and height 4⅛in. Now a good mudguard is sufficiently wide, and is, moreover, in the required position, i.e., at the back or front of the cycle. So all we have to do is in future to have all mudguards flat at the end instead of rounded and built so that the flat portion is vertical. Figs. 1 and 2 show the back wheel of a cycle or the front wheels of a fore-carriage so treated. The front wheel of a cycle is not so easy on account of the shortness of the mudguard, and the latter will need to be lengthened horizontally and then the flat portion turned down vertically. Fig. 3 shows the appearance from the front. The advantages of this idea are that there is no rattle from loose plates, no new parts, and the plates are quite out of the way both of the rider and his baggage. Can anyone suggest a better plan?—Yours faithfully,

"Mudlark."

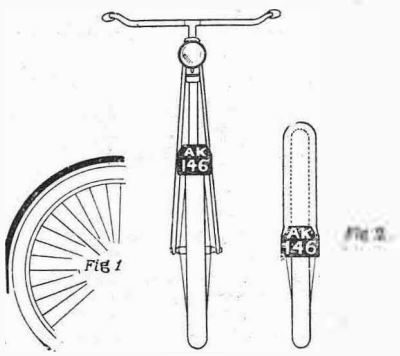


Illustrating letter from E. C. Skurray.

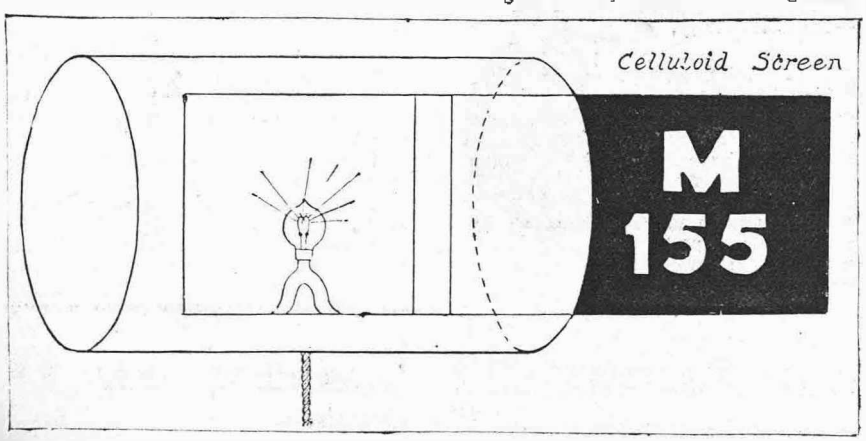
Sir,—Everyone has been very much puzzled lately to find a satisfactory means for lighting up the front number plate of a motor-bicycle, and I have tried several plans. The fixing of the number plate to the lamp itself is, in my opinion, not only unsatisfactory from a lighting point of view, but, to say the least of it, a decidedly amateurish dodge. I have thoroughly tested a system which is really simplicity itself and cannot find any faults in it. The number plate is fixed just above the front extension of the mudguard and is always there in daylight. At night it is lit by a small reflector fastened to the bottom of the front of the lamp. It is not necessary to use more than ⅜in. to ½in. of the glass, and by fixing a tin reflector in this manner the number plate is very clearly illuminated without throwing any shadow forward and without, to any appreciable extent, reducing the illuminating power of the lamp; and as the whole fixing need not cost more than 6d., and can be fitted on by anyone, I hope the readers of "The Motor" may appreciate the idea. I had intended in the first instance to protect it, but I do not intend to do so now.—Yours faithfully,

E. C. Skurray.

Sir—The following is a description of an arrangement I have adopted for illuminating the number on my motorcycle, and I think it may be of interest to your readers. It is a round metal box, 8in. by 5in. and contains a 4-volt lamp which shines through a piece of mica or celluloid. This mica plate is blacked out with black paint, leaving the letters and figures clear, and it slides in grooves over a hole cut out of the side of the box The whole arrangement rests upon the rear mudguard, and is fixed to the back stays, so that the number is quite legible from behind. I use the same accumulator for lighting and for running the motor. The diagram shows the mica plate drawn out of its slide to show the lamp behind it.—Yours faithfully, George H. Shaw.



Illustrating letter from "Mudlark."



Illustrating letter from George H. Shaw.

Self-cooling Motors.

Sir,—One of the most interesting and instructive of the pages and paragraphs of your valuable paper seems to me to be the "O.P.V." columns, and whilst I, among many others, have gained many wrinkles and important information from other sources in "The Motor," the discussions and opinions expressed by other amateurs must appeal to all who count motoring as a hobby, as one of the social privileges which without the aid of such a medium as the columns in question would be impossible. Amongst all the suggestions of methods of cooling small motors, however, whether for fore-carriage work or otherwise, I have felt surprised that, except in the case of a single American machine, the idea of cooling by means of the draught created by the exhaust gases has not been made more use of. Anyone who for the first time holds his hand in the direct draught caused by the escape of the exhaust gases must feel surprised to find, instead of a stream of hot air rushing from the exhaust, a rush of cold air. Of course, the same thing can be felt in a minor way by blowing hard with one's mouth on to the hand held at a little distance away, and it tends to show that the speed at which the gases escape from an exhaust box serves, together with the probable slight vacuum so caused, to lower the temperature of the draught set up by the moving gases. If any of your readers have experimented with this method of cooling, can they give us particulars of results achieved? Surely this would be a far simpler and easier way of cooling an engine (if practicable) than the present growing tendency of water-cooling on small motors.—Yours faithfully, "An Air-Cooler."

The Belt Problem.

Sir,—The suggestions of your correspondent, T. Verney Cave, with regard to the "Belt Problem" are well worth the serious attention of all motorcyclists. With regard to his suggestions 1 and 2 re covering the pulley with leather, this would undoubtedly minimise slipping, but is not lasting enough, the difficulty being in the making of a good attachment between the leather and the pulley. Suggestion No 3 is admirable in most respects, but I would submit the following improvements:—In place of the tongue-shaped springs he suggests, I think springs of an elliptical section placed at irregular intervals round the pulley rim would answer the purpose better. I would also suggest leaving a little end play in the springs, as they would prove more elastic under these conditions, and I would advise him to use rivets in place of bolts, as, however carefully the nuts may be secured, the pins are apt to come out. Moreover, if this were done it would avoid all risk of the undoubtedly prejudicial back stress mentioned by your correspondent. Hoping he will take my few suggestions in the kindly spirit they are given.—Yours faithfully,

"CONROD."

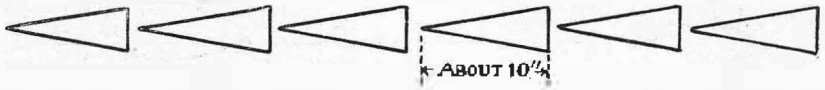
Automatic and Mechanical Valves.

Sir, Your correspondent, "A.A.," makes out in a recent issue a very poor case for the mechanically operated valve, and I presume he cannot be aware of its many advantages over the old automatic valve. His greatest objection to the M.O. valve is on the score of increased complication. This is true; but alas, the onward march of motor matters proves clearly that modern efficiency is being obtained by extra complication! Complication does not necessarily mean efficiency, but efficiency seems to necessitate complication. The worst thing about the automatic valve is the spring. Some makers of engines have not yet arrived at a satisfactory conclusion as to what the exact tension should be; and even when they have, it is impossible to make a spring that will maintain an even tension after use. Of course, on the tension of the spring depends the opening and closing of the valve, the rapidity or the reverse with which it will shut, and also the degree or depth to which it will open. Knowing that the spring is bound to lose its tension, makers have to try and strike a medium, the consequence being that for the first half of the life of the spring it is too strong and does not open enough, and for the second half it has become too weak and opens too much. Therefore, while the valve opens too little, your machine cannot do itself justice on hills, and when it opens too much, your machine will go less satisfactorily on the level. When the spring becomes weak, it cannot shut the valve smartly, and there is consequently loss of power, both on account of the bad compression thereby engendered, and from the fact that part of the charge is lost by being blown back through the valve. Even if the valve spring is at its best, the action of the valve is entirely dependent upon whether a good or bad compression exists in the cylinder. But by far the worst objection to the automatic valve—and one for the absence of which alone the M.O. valve is a priceless boon—was the way in which it would so frequently stick. A little over-lubrication, accidental or intentional (to be on the safe side), and there you were—held up and broken down. And the nuisance of it was that when an automatic valve started that trouble the usual result was that you had to take it out many times that day before it left you in peace. Now with the M.O. valve there is none of that, for it is obliged to work, whether it feels inclined to stick or not. That is the principal advantage of the M.O. valve: it is reliable. It is unaffected by over-lubrication, bad compression, etc. Moreover, the difficulty of a correct spring tension is solved: the mechanical operation opens it and a powerful spring closes it. Another advantage is that you can have the same size valve and spring, etc., as fitted to the exhaust, both being alike and interchangeable. One need only now carry a single spare valve, whereas formerly one of each sort was necessary among the spare parts. In the tests made, M.O. valves have shown much better efficiency at all speeds than the very best and most carefully selected automatic valves. Also with the M.O. valves, engines would work with perfect regularity and smoothness at very low speeds, speeds at which the automatic valves refused to work at all. Your correspondent, "A.A.," triumphantly produces the names of seven firms who do not use the M.O. valve, and says, "What names to conjure with!" Here are the names of fourteen firms that are well to the fore with the M.O. valve:—Ormonde, Werner, Minerva, Peugeot, Riley, Rover, Noble, Jap, M.M.C., Clyde, Coronet, Hulbert-Bramley, Brown, Pebok. I am sure there are others besides my fourteen, but greatly doubt if "A.A." could add any more to his seven. Besides which we shall be having those seven in our camp before long.—Yours faithfully,

Italy. LEOPOLD CANNING.

Vibration.

Sir,—My brother has a motor-bicycle fitted with a vertical engine, and I have noticed that on coming to a piece of good dry wood paving after riding over a wet road his machine leaves a track like the accompanying sketch.



Illustrating letter from J.L.C.

The force of the explosion making the machine jump must account for this, I think; and if this is the reason it shows what a lot of vibration must be transmitted to the rider unless he is properly insulated. Until we have some such balanced arrangement as Mr. Towlson's, I think the Humber position of engine much the best in regard to vibration. In concluding, I may say that I saw the other day a gentleman out horse driving with a hooter attached to the carriage.—Yours faithfully, J.L.C.

Motor Launches.

Sir,—I am very pleased to see that your columns are open for discussion of launches. I have a 20ft. launch driven by a 2 b.h.p. motor using ordinary paraffin. I have no trouble whatever with it. Electric ignition is used and the consumption of oil is very low, being about 1½ pints per hour at full work. My real idea in writing you is that I am curious to know what a horse-power is. My engine is 4in. bore, 4in. stroke, and drives my boat easily at six to seven knots per hour; but several makers call that size engine any h.p. up to even 6 h.p. My boat is not very light, and I was advised by more than one maker to put in 4 h.p., one even advising 5 h.p. Why this difference in h.p.? I hope readers who intend putting motors in their boats this coming season will purchase only British motors. Mine is made near London, and is all I could wish.—Yours faithfully,

"MOTO-LAUNCH."

[The mechanical definition of a h.p. is that it is a rate of doing work equal to 33,000 foot-pounds per minute. To find out the h.p. of your motor you would have to make a brake test on the fly-wheel. This test is explained in the "Motor Manual."—ED.]

The Lightweight Machine.

Sir,—I am pleased to see that you are keeping this important question well to the front. Your reiterated arguments will no doubt influence the manufacturers to see that their best interests lie in producing a really efficient motor-bicycle at a moderate weight. With a few exceptions the machines which are now being produced as standard are useless for the Scotch market (speaking of it in a general sense) because they are far too heavy. Manufacturers should understand that the conditions of housing in the great cities of Scotland are totally different from the conditions prevailing in England. In the principal cities here the vast majority of the houses are built on the tenement or flat system, which makes light weight an absolute necessity if the motor-bicycle is to be stored at home, as it ought to be. It is a sufficiently trying task to get a light weight of 90 to 100lbs. upstairs to one's dwelling-house. As to the heavy weight of 160lbs. or so it is impossible to get it up half a dozen steps unless with assistance, and it is a struggle even then. In Glasgow and suburbs, with a total population of 1,000,000, I am certain there are many who would go in for the motor-bicycle, but they are being frightened off by the excessive weight of the average machine. That immoderate weight is unnecessary I am convinced, as after a full season's riding experience, including touring, I agree with those writers who maintain that a genuine 2 h.p. is ample power for a single rider. It would be instructive if one of your experts would make a scientific calculation of the relative efficiency of the two different types on a given heavy gradient.—Yours faithfully,

JAMES S. FULTON.

Glasgow.

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

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

1. Plain writing. Type writing for preference.

2. All letters to be written on one side of the paper only.

3. Questions to be clear, terse, and to the point, without tedious preamble or needless flattery.

4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

H. C. Hunter (Ilkeston).—A mileage chart will not be issued with "The Motor," but it will be possible to obtain one by applying to our publishing department.

W. Warburton (Liverpool).—There should be no difficulty in wiring up your coil. You will find one terminal marked M; this connects up to the motor or frame, and completes the secondary circuit.

Flooding Carburetter.

T.S.D. (Aldershot) writes:—My 2 h.p. 1903 F.N. carburetter frequently floods, especially at low speeds. When flooded the needle is raised to its limit and is stuck fast and needs turning before it will fall into its seat. When in its seat it shuts off the petrol properly. I have ground it in with little effect. The needle is not bent, and the rollers do not rub anywhere. I should like to recommend to your readers a coat for motorcyclists made by Nicholls, 157, Strand (I think this is the address). It is cut in a special manner so that when on the machine it is converted into a combination knickerbocker coat; and when off, the wearer by undoing two or three buttons, converts it into an ordinary Chesterfield. It is used with gaiters, but is, I think, also made long, so that it can be used without them; and in this shape it is most suitable for motorcar drivers. It does not interfere with pedalling, and I have ridden for miles through the rain in it, without getting wet. And it is most convenient, when on tour, to have an overcoat for wear if necessary in the evening.—It is very probable that the flooding is due to the valve pin having become slightly short through wear and grinding-in. The only way to remedy this will be to move the collar a shade higher on the stem so that the float closes the valve sooner. It is just as well to make sure that there is nothing wrong with the float itself; it might just possibly be cracked at the edge or joint.

C. Warren (London).—If your accumulator is of large capacity you are quite correct in using four 25 c.p. lamps on the circuit. These would give something under three amperes. If the accumulator is an ordinary 20 ampere-hour size, do not use more than two lamps.

"Apis" (London, S.W.)—It would be difficult to say exactly what causes the noise in your engine. From the fact that you notice the noise when the chain wheel is moved backward and forward, there may be a small amount of wear in the piston rod bushes. Unless you find that the engine knocks when running, it may not be necessary to have the bushes renewed for a few hundred miles yet; they certainly ought to last 3,000 miles. (2) You will find Kay's "Silverskin" a good and lasting preparation.

Francis Thomas (Loughborough) writes:—I have a motorcycle and am not quite satisfied with the accumulators. Do you think I can have a small dynamo to charge the accumulators, and also to make the electric light, and what would be the cost do you think? Where can I get it?—Yes; you can have a small dynamo, but not to work from the machine. If you have a small ¼ h.p. gas engine or turbine you could run a Crypto dynamo to give 20 c.p. and charge your accumulators. Write to the Crypto Company, 29, Clerkenwell Road, London, for a descriptive list.

A Gearing Problem.

R.C.H. (Rugby) writes:—I should be glad to know if you consider it feasible to lower the gear of my motorcycle to about 6 to 1. The engine is a 2¾ h.p. De Dion, having a pulley 3½in. diameter at the bottom of the groove and 4½in. at the top of the groove. The back belt rim is 21in. diameter at the top of the groove, and the ratio is 4.9 to 1, as measured by counting the revolutions. It appears that I should require an engine pulley of about 3⅜ths inch diameter instead of 4½in. The difficulty I have is that the present pulley is overhung, and only just clears the ribs which strengthen the bearing. Would you advise filing away these ribs to allow of the smaller pulley? This difficulty must have occurred before with others who required a low gear with the De Dion engine, and I should be very glad to know if it is quite safe to take 3-16ths or ¼in. off the ribs. I cannot enlarge the back rim without altering the frame. The motor is an excellent one—do you think that 5½ to 1 would be low enough?—It would not be advisable to cut away the bearing ribs to any extent, although 3-16ths would not be a serious matter. But we are afraid a smaller pulley will not prove quite satisfactory. There will be very much more tendency for the belt to slip. We should say the smallest possible diameter for the pulley would be 3⅝ths outside. If you did get a lower gear than this it is probable you would have the engine overheating in summer time.

"Tordiffe" (Preston).—We should say that the best machine on your list was the No. 2, and very close to it No. 3—which, however, follows the lines of a small car more than a cycle. To get the exact width, drop a line to the makers for their catalogue. The No. 1 machine on your list has an air-cooled engine. We believe you could have a hand starter fitted.

E. A. Roberts (Winchcombe).—(1) The P. and R. battery would suit you well; this has lifting zincs. (2) An ammeter is not really necessary, neither is a resistance in the charging circuit, but they are useful to show if the charging current is of the right strength. (3) The chief parts of the battery will last years; of course, the zincs will wear out in time, and the solutions will require renewing from time to time. (4) As regards your silencer, have 15 holes—⅛th inch diameter—in first tube, 32 holes in central tube, and 70 holes, 1-16th inch diameter, in outer casing, there should not be much back pressure with these sizes.

On Charging.

J.B.T.N. (Norwich) writes:—I have recently had a charging board made by an electrical mechanic (who is not a motor expert) with, as far as I know, all proper connections and fuses and with a socket for one lamp. This board has been connected up to the main wire of installation, not to a branch wire. Our current runs at 110 volts. I have tried this board for several accumulators with a 32 c.p. lamp in the socket and it does not give satisfactory results. Indeed one accumulator mysteriously and suddenly lost its charge and has had to be opened and repaired. With a 16 c.p. lamp the result seems much the same. The fault with either lamp appears to be that an accumulator will not reach a reading on the voltmeter higher than 4.2, even if left on the board fully six hours. After this time the reading seems to recede a point or so, and I have at once had the accumulator removed. When the board terminals which attach to the accumulator are tested with the voltmeter the needle goes with considerable force to the highest reading. The charging current is thus over six volts. Will you please tell me (1) What lamp should be used for the current I have? (2) Is any special resistance required on the board in addition to the one lamp?—A 32 c.p. lamp should be quite right on 110 volts circuit. We presume you have taken care to get the connections right, viz., positive of circuit to positive of accumulator. A 16 c.p. will only pass enough current to charge the cells very slowly. We should think there was some defect in the cells themselves, either the acid not being full strength or plates short circuited or sulphated. (2) You do not require any other resistance except the lamp.

J. D. Jones (Cheltenham).—The lowest gear advisable in your case would be 1 to 6. If you gear lower than this there will be risk of overheating.

P. B. Bateman (Wangaratta, Victoria, Australia).—Yes, it is quite possible to use acetylene gas as a fuel. It gives a very powerful explosion if you strike the correct proportion of air. It is, of course, an expensive fuel to use and there is a tendency to get a formation of soot in the combustion head.

"Iscadamnon."—(1) Power of motor will not exceed 2 h.p.—if that. (2) Back pulley is really too small; it should have been 22in. diameter. The best size engine pulley to suit will be 3¼in. measuring from centre of groove. (3) Average speed about 14 miles per hour. (4) Tank should hold three-fourths gallon: this will do for 75 miles. (5) Coil marks are as follows:—B to spark plug; P to positive of accumulator; T to trembler or brush, negative of accumulator to plug switch, thence to handlebar. Get a copy of the new "Motor Manual": full diagrams of connections are given.

Carburetter Troubles.

F. H.D. (Diss).—(1) There must be something amiss either with the float or needle valve of the carburetter. The fact that you have a six-slit jet has nothing to do with the leakage of petrol. See if the needle valve wants grinding-in, or the float is cracked. (2) As regards your not being able to prevent the carburetter freezing up even with an exhaust by-pass fitted, this cannot possibly be effective for one of two reasons: (a) either the bore of the tube is too small—we fancy this is so, a ¼in. tube would only be about ⅛th inch bore and practically no gas would pass along it; or (b) you have not got the by-pass tube fixed in a good position in the silencer to catch the blast. Best to fit it directly under the inlet pipe to silencer and not on the outer casing.

Car Queries.

Geo. Cheetham (Boarhills, N.B.)—The induction coil of my car (Vauxhall) is out of order. The wiring is thus:—Positive of accumulator to coil; negative of accumulator through switch to wipe contact; primary of coil through trembler to frame; secondary of coil to plug. This is different from the plan in the "Motor Manual." Is it correct? The trembler does not start automatically, but it can be started by pressing the disc momentarily on the core. The platinum points are worn to cone and cup shape, and spark continuously when the trembler is in action. The coil, on slight shaking, seems as though something were loose. Primary wires show four volts. The breakdown was sudden. The car stopped owing, as I thought, to heating, but I failed to get it to start again, though I got a few explosions. Is it right that the coil should go out of order after 800 miles only?—The connections should work all right. We should say that the trembler contacts require trimming and re-adjusting in the first place, and there is a likelihood that your accumulator is not as strong as it should be. See that all the connections are clean and tightly screwed up, and that the wiper spring is pressing firmly on the fibre disc. If these details are seen to the ignition should be perfect. A good coil will keep in order indefinitely.

P. E. Dowson (Hyde).—If you were to continue running the engine you would draw the temper of the valve springs and damage the inside of the cylinder, or at any rate get a seized piston.

H. C. McNally (Ballina, Ireland).—Yes, you will require a licence. You must find out where the County Council offices are and apply there. (2) There are certain devices to do what you require. But it means a lot of alteration and detail fitting. We advise you to leave the machine as it is.

Water Jacket Troubles.

A. C. Pearce (Cleartham) writes:—I have had a 4½ h.p. geared Benz car for the last six months and have done nearly 4,000 miles on it. About four months ago the water jacket (which is made in one with cylinder) was cracked, but the car has gone well since until a few days ago. Then compression began to give out while running, though apparently good on starting, and has done so since in spite of all efforts to rectify.—We do not know if you have applied the usual tests for loss of compression at the valves and joints, but if these parts are in good condition it may be a case of the piston rings having gone wrong. Assuming there is no crack in the walls of the cylinder it should not be a difficult matter to localise the leak, if it is really a case of lost compression and not overheating or defective carburation.

Coil and Trembler.

W. L. Wynn (Edgbaston) writes:—I find on examining the induction coil on my car that a steel bolt and brass tube pass through the centre of the winding and soft iron core: this construction seems to me a contradiction of the theories on which transformers are arranged. The above coil bears the name of a well-known firm. When arranged with a trembler contact it will only give ⅛in. sparks, but with make and break the spark carries ½in. I should like to know if it is the solid metal in the core which causes this difference.—Strictly speaking this coil will not act well with a trembler contact by reason of there being a brass tube over the core, as this greatly retards the secondary current owing to what are known as eddy currents forming in the tube.

Fitting Castings.

"Mechanic" (London, S.W.)—To give you the full details as to how to fit your castings together is rather a tall order; this would mean a series of articles specially written. However, we can give you the following hints on the points you mention:—(1) Have the crank case machined, cylinder bored, and also the fly-wheels faced up and the crank and shaft put together, as your appliances are limited. The smaller turned work such as the piston, valves, bushes, etc., you would be able to do on your small lathe, (2) The gear wheels you would buy. (3) Make the pulley section for a V belt. (4) It will not pay you to make a coil; you can buy a very fair one for 25s., or even less. (5) Wheels, 26in. (6) Tyres, Palmer. (7) As to the power you might expect, this mainly depends on the workmanship put in the engine. Assuming you make a good engine with 2⅜ths bore, 2¾ stroke, you might reasonably expect 2¼ h.p., and a speed of anything up to 1,800 revolutions. (8) There are any amount of spark plugs to select from.

"Lumo" (Southport).—If you decide to illuminate your number plate electrically, carry a separate 4-volt accumulator on the machine to supply current.

C.B. (Exmouth) writes:—The spindle of the back wheel of my 3 h.p. Quadrant has broken twice in 600 miles since I attached a Phœnix Trimo fore-carriage. Can you tell me the reason? Is it due to the vibration of the arms of the fore-carriage which are bolted to the spindle? Can you suggest any remedy?—It looks as if the breakage was due to crystallisation of the steel from vibration. It is the first instance we have heard of. Are you sure that the axle is not sprung in some way when screwed up in the forks? Unless the axle is of poor quality steel or too hard a temper it should not break. Have a specially good axle made of the best steel and well tempered. Have you a spring seat pillar fitted to the machine? You should have, as it relieves the axle of a lot of vibration.

Paraffin Carburetter, etc.

N. Bridgman (Hatton, Ceylon) writes:—In your issue of December 2nd I see an answer which evidently is in response to a query as to using paraffin as a fuel on a motor-bicycle. I have a 2¼ h.p. Triumph 1904 pattern, and, owing to the difficulty of obtaining petrol, and its high price, I have been running it with great success on one part of kerosene to four of petrol (and latterly to four of benzine). I get great power, but occasionally it fires irregularly till the engine heats. I have a district to cover 42 miles long by about 25 wide: it is mountainous, and the roads are well engineered, but with sharp turns over ravines like one gets in Italy or Switzerland, and in places steady climbs for five to seven miles without any level. I do not find that the engine overheats. My bungalow is at an altitude of 4,200 feet. The lowest point of my district is 3,500, and the highest cart road about 5,500. Now to my queries:—(1) Does the kerosene injure the engine, i.e., foul the cylinder head? Would it be possible, by starting the engine with petrol or benzine, to run it afterwards on pure kerosene, and would this do any harm? The kerosene here is pretty inflammable; it gives a fine white light in lamp, and is used largely for running oil engines in the tea factories. My machine has a Longuemare carburetter. What are these carburetters? I am a considerable expert, and ran cars most successfully at home for two years, but the roads are too narrow for a car here for my work. (2) Can you recommend me a good form of cell to charge my Castle accumulator, as there is trouble in sending them away. I presume four cells are required. I have got some fine and large elements, cells, zincs, and carbons: the point is whether anything is more up-to-date than bichromate.—(1) No harm will result from the use of paraffin other than a tendency to foul the head and plug. You are lucky to be able to get such good results. The Longuemare carburetter is a good type of float feed spray, fully described and illustrated in the new "Manual." (2) The P. and R. battery with lifting zincs is a very convenient and efficient type, and so also is the Fuller. Nothing better than the bichromate type yet. But there are some good dry cells that can be used in place of the accumulators. The Castle (U.M.I.) we find gives good results

P. Macardle (Dundalk).—Yes, if your friend has a licence to drive he can, of course, try the machine.

G. Cheetham (Boarhills, N.B.)—We were surprised to hear that the firm in question dealt with the coil in such an unbusinesslike way. We are glad to hear that the local electrician was able to make an effective repair to it.

"Betat" (Druim).—(1) The machine would be equal to the journey in fine weather. (2) According to the makers' claims it would; we cannot say from experience. (3) The heavier car would be the safer. (4) The Humberette.

Speed Gears.

J.W.C. (New York).—The query you put us to answer is, indeed, a poser. The two-speed gear in general is still much in the experimental stage as far as motor-cycles are concerned, and for us to tell you of one that you can have fitted straight away to your 2¾ h.p. Excelsior is not possible. A considerable amount of alteration—in detail, at least—to the machine would be necessary. There are certain makes which can only be fitted to a particular machine—the makers' own—and some are for chain driving. Your best plan would be first of all to see if reducing your gear by fitting a 3¾in. engine pulley in place of your present 4¼in. would not meet the case.

Explosions in Silencer.

P. A. Rossiter (Croydon) writes:—I have a 3 h.p. machine, which had a Yankee type silencer; this was too noisy, so I have had a B.K. large silencer fitted, and I now experience firing in the silencer. When I cut out by brake lever on handlebar the report is very loud. I have removed some of the baffle plates (three out of eight), but it makes no difference. The gas gets past the exhaust valve, and seems to remain in the silencer instead of getting free.—The usual reason for explosions in the exhaust box is the lifting up of the exhaust valve before the spark is switched off. Always switch off a few moments before lifting the valve. Another reason is that due to a misfire now and again exploding an unfired charge in the silencer. The flame from the last ignition will fire a charge left in the silencer. Remedy, see there is no chance of a spark missing, and make the silencer freer by making a few more holes in the casing.

An Assortment of Queries.

H.B.B. (Colchester).—The effect of a small quantity of lubricating oil becoming mixed with the petrol in the tank would not be serious. You would probably get some fouling of the plug, and a stuck inlet valve now and again. If you do suspect a leak between the tanks, of course it would be advisable to have it soldered up—not an easy matter with some tanks by the way. (2) Yes, castor oil, applied to the belt with moderation, and allowed to soak in, is a good thing. The Collan oil you speak of is favoured by some riders, although personally we fancy castor oil gives the leather a better surface. (3) The Simms high tension magneto works on quite a different principle from the low tension. There are two windings on the armature, one of which induces a high voltage current in the other. As to the exact amount of power used up in the driving of the magneto, we have no actual figures at hand, but as an expression of opinion, we should estimate it at one-ninth h.p. (4) The larger wheel (28in.) is not adopted to any great extent. It is considered to steer better.

"Trimolette" (London, W.)—Undoubtedly the roller chain is to be preferred to the block pattern. The power lost through friction and the wear and tear on the sprockets and chain wheels are much less. A roller chain also works better when unprotected with a guard than the block.

Bicycle or Light Car?

J. Anstee (Guildford).—(1) A good motor-bicycle would certainly be the handiest and most economical, but it would depend on the circumstances as to whether it would be better than a small car. If you did much riding in all kinds of weather, a small car would be best, as you wish to take a passenger at times. (2) For trailer work you require 2¾ h.p. (3) On a 5 h.p. car you could reckon on doing 35 to 40 miles per gallon of petrol, if the car is skilfully handled. (4) With a forecarriage, 3½ h.p. engine, 60 miles to the gallon would be good. (5) The 3½ h.p. machine at £60 you refer to is far superior to the other one, and would prove a good investment. There is no more reliable engine made.

Not on a Bicycle.

"Ignition" (Sheffield) writes.—In connection with the motor-bicycle, the idea has just occurred to me of fitting a small dynamo to charge the accumulator and connected to same, and to work it with a small belt from the engine. It would thus provide ample ignition power without the trouble of recharging, and would at the same time light a lamp for night riding. The transmission could easily be effected by having a small fly-wheel attached to the engine. Would this idea be practicable, and, if so, could I turn the idea to any advantage, and how?—It cannot be done on a motor-bicycle, although the plan is quite practicable on a car. There are difficulties in constructing a suitable dynamo and governor to work on the limited space available on a motor-bicycle.

Throttle Valve Query.

J.S.F. (Glasgow) writes:—My machine is a 2 h.p. Clement-Garrard, and although it is fairly powerful, I notice that when full power is wanted the engine responds to the throttle only to the point when it is opened about one-half. Any increased opening beyond that has no effect at all on the power. What is the cause of this, and how may it be remedied? Two theories occur to me as possible explanations: (1) that the inlet valve lift, which is only ⅛th of an inch by actual measurement, is insufficient; (2) that the bore of the spray jet is insufficient.—If you increase the diameter of the sprayer by just a shade, say 1-100th inch only, and weight the float by the addition of an ordinary tack pushed in the cork, you will get a greater supply of gas, and have more range on the throttle. Of course, you must remember that a slight loss of compression in a small engine will affect the suction, and you will probably find that as you open the throttle the air lever must be moved in proportion and give more air.

ANSWERS BY POST.

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

Thursday, January 21st.—T. Churchill (Sheffield), G. L. Sterling (Dublin), H. G. Smith (Boughton), J. Bubenheim (Walthamstow), S. F. Herbert (Leicester), J. Gibson (Walton), W. Millar (Bootle), T. Slaughter (Weston-super-Mare), E. S. Whitley (Edinboro'), F. Thomas (Loughboro'), E. Robl (Wells-on-Seal, T. E. Webster (Dalston), F. P. Chapman (London), A. Sewell (Dagenham), R. J. Richardson (Stockton), A. Meigh (Hanley), T. Rous (Colchester), J. Allan (London), A. C. Collis-Adamson (London), C. W. Brown (Maybole), W. O'Neil (Kells).

Friday, January 22nd.—J. F. Stilwell (Bath), T. Tate (Invernine), G. Powell (Norwich), G. F. Richards (Didsbury), J. McDowell (Castlebellingham), A. Reiner (London), A. Harris (Leyton), S. Hopkins (Greenwich), W. F. Copeland (Stoke), D. C. Redfern (Southport), J. W. Rigby (Chorley), R. S. Stuart (Folkestone), J. Stoneman (Plymouth), W. Dunn (New Cross), Alexander Cycle Company (Londonderry), F. S. Blakemore (Putney), C. Good (London), W. Bartlett (Yorktown), G. Dietz (London).

Saturday, January 23rd.—E. Godman (West Cowes), G. Watkins (Chippenham), H. R. Green (Kensington), W. T. Clarke (Plaistow), Matthew Bros. (Leeds), W. L. Edge (Ludlow), C. F. Blunt (London), J. Trevor (Manchester), C. Fry (Leamington), W. H. Foxwell (Manchester).

Monday, January 25th.—F. Bentley (Tranmere), C. E. Godwin (Winchelsea), E. L. Vincent (Belfast), J. Cass (Bolton), W. Parke (Fareham), G. R. Holt-Sharpe (Huntingdon), T. W. Southwell (Peterboro'), A. G. Hay (Glasgow), R. Chadwick (Broadheath), T. D. Trew (Perth), G. H. Maud (Rugby), E. Pumphrey (Kettering), W. R. Bell (Carlisle), W. R. Lee (London), W. E. Singleton (Hull), C. H. Fyne-Clinton (Blandford), B. A. Lett (Adamstown).

Tuesday, January 26th.—J. A. Dixon (Bury), S. Huckings (Oxford), E. Ebley (Ogmore Vale), F. Rooke (Wicklow), F. Cooper (Burnley), F. Snawdon (Plymouth), H. Gray (Mobberley), E. E. Nicholls (Stourbridge), J. Crookall (Lancaster), R. Peart (North Shields), J. H. Dalton (Sheffield), F. H. Burgess (Eccleshall), F. R. Zepp (Hawick), H. J. Smith (Calcutta), J. Fenton (Fife), G. A. Carpenter (London), C. W. Crafter (West Ham), F. W. Brittain (Drogheda), G. Waller (Great Yarmouth).

Wednesday, January 27th.—F. Walker (Stone), H. G. Stephens (Bristol), G. C. Williams (Cambridge), J. Towler (Wellington), M. Dymond (Callington), P. Harragin (Aldershot), P. W. Hobbs (Blandford), W. H. Stevens (Carmarthen), H. Roberts (Deanshanger), E. Hyde (Clifton), J. Hampton (Peckham), G. Dearle (Etwall), F. W. Cory (Bournemouth).